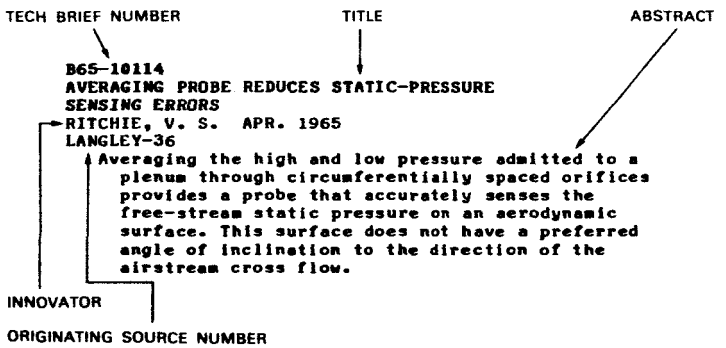
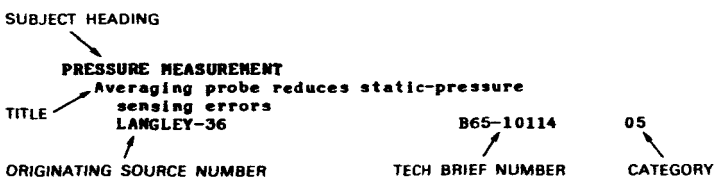
Introduction

This *Cumulative Index to NASA Tech Briefs* lists the technological innovations published in this form during the period from 1963 through 1965. The main section is arranged in five categories: Electrical (including Electronic); Energy Sources; Materials (including Chemistry); Life Sciences; and Mechanical. A typical entry has these elements:



To help users locate information of value, three indexes are provided. The first is a subject index, arranged alphabetically:



Note that in this index several routes are opened for obtaining further information. If the title seems promising, the Tech Brief number and category may be used to locate the abstract, which will be found in the main section arranged sequentially by Tech Brief number

within each category. Further, the Tech Brief number can of course be used for obtaining a copy of the original Tech Brief.

The second index relates all items by the originating source and number to the Tech Brief number and category.

The third index relates all items by the Tech Brief number and category to the originating source and number.

Copies of all Tech Briefs cited in this Index are available on subscription or in single copy as follows:

Availability of Tech Briefs

Annual subscriptions to Tech Briefs may be purchased from:

Clearinghouse for Federal Scientific and Technical Information
Springfield, Virginia 22151
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The annual subscription rates by subject category are:

Electrical (Electronic)	$6.00
Energy Sources	$2.50
Materials (Chemistry)	$5.00
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The purchase price of a set of Tech Briefs issued prior to January 1966 is $30.00.

The purchase price of individual Tech Briefs, also available from the Clearinghouse, is 15¢ each.

Other information on the availability of Tech Briefs may be obtained from:

TECHNOLOGY UTILIZATION DIVISION
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Washington, D.C. 20546

This *Cumulative Index* replaces the previous issues of the *Index to NASA Tech Briefs* which were published in January and August 1965.

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B63-10006
SETTING OF ANGLES ON MACHINE TOOLS SPEEDED BY MAGNETIC PROTRACTOR
VALE, L. B. MAY 1964
ARC-5
An adjustable protractor facilitates transference of angles to remote machine tools. It has a magnetic base incorporating a beam which can be adjusted until its shadow coincides with an image on the screen of a projector.

B63-10024
SOLENOID PERMITS REMOTE CONTROL OF STOP WATCH AND ASSURES RESTARTING
KODAI, C. JUN. 1964
FRC-17
A stop watch which may be remotely controlled by the use of a solenoid mechanism is described. When the solenoid is energized the coil spring pulls the lever arm and starts the balance wheel When it is not energized, the spring pulls the lever and stops the watch.

B63-10027
INCREASED PERFORMANCE RELIABILITY OBTAINED WITH DUAL /REDUNDANT/ OSCILLATOR SYSTEM
NOLIS, W. M. /IBM/ MAR. 1964
GSFC-36
Two crystal-controlled oscillators, each with an associated buffer stage, provide an output at a common point. The circuit design gives high reliability control of output frequency and amplitude.

B63-10033
INDIUM FOIL WITH BERYLLIA WASHER IMPROVES TRANSISTOR HEAT DISSIPATION
HILLIARD, J. JOHN, J. E. A. APR. 1964 /SEE NASA-TN-D-1753/
GSFC-42
Indium foil, used as an interface material in transistor mountings, greatly reduces the thermal resistance of beryllia washers. This method improves the heat dissipation of power transistors in a vacuum environment.

B63-10091
MODIFIED FILTER PREVENTS CONDUCTION OF MICROWAVE SIGNALS ALONG HIGH-VOLTAGE POWER SUPPLY LEADS
MATHISON, R. P. MAY 1964
JPL-63
Very lossy powdered iron material, in the lining of a polyester resin, replaces the dielectric material in the short coaxial transmission line of a simple filter. The lossy material absorbs microwave signals along high voltage power supply leads.

B63-10118
STEPPING SWITCH WITH SIMPLE ACTUATOR PROVIDES MANY CONTACTS IN SMALL SPACE
MILLER, J. V. MAY 1964
JPL-122
To reduce the space required for a stepping switch with many contacts, a simple electromechanical actuator with a maximum number of wipers has been incorporated into a compact assembly. This small sized unit is inexpensive to fabricate.

B63-10174
MODULAR CHASSIS SIMPLIFIES PACKAGING AND INTERCONNECTING OF CIRCUIT BOARDS
ARENS, W. E. BOLINE, K. G. MAY 1964
JPL-236A
A system of modular chassis structures has simplified the design for mounting a number of printed circuit boards. This design is structurally adaptable to computer and industrial control system applications.

B63-10193
REMOVABLE PREHEATER ELEMENTS IMPROVE OXIDE INDUCTION FURNACE
LEIPOLD, M. H. JAN. 1964
JPL-288
Heat and corrosion resistant preheater elements are used in oxide induction furnaces to raise the temperature to the level for conducting electricity. These preheater elements are then removed and the induction coil energized.

B63-10227
ELECTROMECHANICALLY OPERATED CAMERA SHUTTER PROVIDES UNIFORM EXPOSURE
FORD, A. G. MAR. 1964
JPL-357
A unidirectional camera shutter employing a solenoid and mechanical linkages permits uniform exposure and minimizes distortion of the image formed in the camera.

B63-10229
FLANGE ON MICROWAVE ANTENNA SUBREFLECTOR CUTS GROUND NOISE
POTTER, P. D. MAY 1964
JPL-362
The subreflector of a microwave antenna has been redesigned so that its outer edge has a conical flange. This reduces noise by causing ground energy radiation to cancel out before entering the antenna.

B63-10238
SHAPED SUPERCONDUCTOR CYLINDER RETAINS INTENSE MAGNETIC FIELD
HILDEBRANDT, A. F. WAHLQUIST, H. MAY 1964
JPL-381
The curve of the inner walls of a superconducting cylinder is plotted from the flux lines of the magnetic field to be contained. This shaping reduces maximum flux densities and permits a stronger and more uniform magnetic field.

B63-10250
LEVEL OF SUPER-COLD LIQUIDS AUTOMATICALLY MAINTAINED BY LEVELOMETER
TENER, W. M. MAR. 1964
JPL-397
A levelometer system, in which the level of cryogenic liquid to be controlled affects the level of an electrolyte, automatically switches a pump on and off. A pressure- sensitive diaphragm can also throw a microswitch to start or stop the pump.

B63-10255
TRANSFLUXOR CIRCUIT AMPLIFIES SENSING CURRENT FOR COMPUTER MEMORIES
MILLIGAN, G. C. MAR. 1964
JPL-406
To transfer data from the magnetic memory core to an independent core, a reliable sensing amplifier has been developed. Later the data in the independent core is transferred to the arithmetical section of the computer.

B63-10258
DOUBLE-THROW MICROWAVE DEVICE SWITCHES TWO LINES QUICKLY
CLAUSS, R. STELZRIED, C. T. FEB. 1964
JPL-410
By combining a single-throw microwave switch with a microwave circulator in a circuit, two input lines can be switched quickly. There is only a brief transition time when both /or neither/ of the two lines are connected to an output line.

B63-10262
IGNITING SYSTEM FOR MERCURY VAPOR LAMPS PROTECTS TRANSISTORIZED SUSTAINING SUPPLY
GUISINGER, J. E. JUL. 1964
JPL-421

A current from a sustaining power supply flows through the mercury vapor lamp and, as there are no resistors in series with this supply, the power is efficiently used. This high voltage igniting device protects the transistorized high current, low voltage power supply.

B63-10264
NOVEL HORN ANTENNA REDUCES SIDE LOBES, IMPROVES RADIATION PATTERN
POTTER, P. D. APR. 1964
JPL-425
A horn antenna, combining two propagation modes at selected power ratios, reduces side lobes, and improves the radiation characteristics. Noise and unwanted signals are considerably suppressed.

B63-10280
METER ACCURATELY MEASURES FLOW OF LOW-CONDUCTIVITY FLUIDS
LOVE, E. G. MAY 1964
JPL-0021
An electromagnetic flowmeter has been adjusted to minimize the errors inherent in measuring the flow of low conductivity fluids. This is done through use of a direct-coupled, differential cathode-follower, whose grid potential is adjustable with respect to ground levels.

B63-10284
SMALL DIGITAL RECORDING HEAD HAS PARALLEL BIT CHANNELS, MINIMIZES CROSS TALK
ELLER, E. E. LAUE, E. G. MAY 1964
JPL-0029
A small digital recording head consists of closely spaced parallel wires, imbedded in a ferrite block to concentrate the magnetic flux. Parallel-recorded information bits are converted into serial bits on moving magnetic tape and cross talk is suppressed.

B63-10321
IMPROVED VARIABLE-RELUCTANCE TRANSDUCER MEASURES TRANSIENT PRESSURES
MORTON, R. W. PATTERSON, J. L. MAY 1964
LANGLEY-10
A flush-diaphragm pickup and a feedback-stabilized carrier amplifier are among the features incorporated into an improved variable-reluctance transducer. This low-impedance device responds to steady-state as well as transient pressures.

B63-10338
OPTICS USED TO MEASURE TORQUE AT HIGH ROTATIONAL SPEEDS
KRSEK, A., JR. TIEFERMAN, M. DEC. 1964
LEWIS-13
In measuring torque transmitted by a high speed rotation shaft, an apparatus has been devised which includes a shaft, an optical system and readout servomechanism. This highly accurate method uses only optical contact with moving part and is statically calibrated.

B63-10342
RADIANT HEATER FOR VACUUM FURNACES OFFERS HIGH STRUCTURAL RIGIDITY, LOW HEAT LOSS
VARY, A. MAY 1964
LEWIS-39
Some problems associated with high temperature heaters for vacuum furnaces have been eliminated by the use of shaped filaments of refractory metal. These filaments, supported in cylindrical array by ceramic spacers, operate with high voltage, low current power.

B63-10440
NEW APPARATUS INCREASES ION BEAM POWER DENSITY
BALDWIN, L. V. SANDBORN, V. A. JUN. 1964
LEWIS-73
To increase ion engine or rocket power, an ion source and emitter, an ion beam focusing electrode, and an ion accelerator are incorporated into the system. In operation the space charge surrounding the ion emitter decreases, the ion beam density accelerates, and engine power increases.

B63-10443
IMPROVED SENSOR COUNTS MICROMETEOROID PENETRATIONS
DAVISON, E. H. MAY 1964
LEWIS-76
A sensor, consisting of a thin dual-capacitor assembly with an outer film of thermal-control material, is used to detect micrometeoroid particles. A coincidence counting circuit is used to count the penetrations.

B63-10493
TWO-STAGE EMITTER FOLLOWER IS TEMPERATURE STABILIZED
SCHMIDT, M. H. /MCDONNELL AIRCRAFT CORP./ MAY 1964
MSC-20
Two-stage temperature stabilized circuit using two transistors is described. Increase in temperature causes the base-to-emitter voltage of n-p-n transistor to become less positive whereas the base-to-emitter voltage of p-n-p transistor becomes less negative, so the temperature-induced variation in V sub 1 and V sub 2 cancel out.

B63-10508
CIRCUIT SWITCHES LATCHING RELAY IN RESPONSE TO SIGNALS OF DIFFERENT POLARITY
SMITH, L. S. /ELECTRO-OPTICAL SYSTEMS, INC./ MAY 1964
WOO-055
A circuit using one power supply and two storage capacitors, which may be separately discharged in opposite directions through a relay in response to change in polarity of a signal, is described.

B63-10511
FREQUENCY-SHIFT-KEYER CIRCUIT IMPROVES PCM CONVERSION FOR RADIO TRANSMISSION
MIKSZAN, D. P. /WESTINGHOUSE ELEC. CORP./ JUN. 1964
GSFC-80
A data logic circuit employing a fixed frequency, square-wave oscillator and flip-flop gates allows for the shifting from one frequency to the other at the end of a whole number of cycles of one shift frequency and at the beginning of a cycle of the second shift frequency.

B63-10512
LOW-COST TAPE SYSTEM MEASURES VELOCITY OF ACCELERATION
HARTENSTEIN, R. JUN. 1964
GSFC-85
By affixing perforated magnetic recording tape to the falling end of a body, acceleration and velocity were measured. The measurement was made by allowing the tape to pass between a light source and a photoelectric sensor. Data was obtained from a readout device.

B63-10514
COMPUTER CIRCUIT WILL FIT ON SINGLE SILICON CHIP
SMITH, C. JUN. 1964
JPL-513
A simplified computer logic circuit of two nand/nor gates and three additional inputs to accomplish the count and shift function is described. The circuit has capacity for parallel read-in, counting, serial shiftout, complement input and set and reset.

B63-10529
CONNECTOR FOR THERMOCOUPLE LEADS SAVES COSTLY WIRE, MAKES RELIABLE CONNECTORS
MILLER, H. B. APR. 1964
LANGLEY-26
A connector for use in the thermocouple circuits which is silver-brazed to the metal thermocouple sheath on one end and crimped over the insulation of the flexible lead on the other, assures protection against breakage and abrasion. A moisture-proof insulating material is used to encapsulate the wire junctions.

B63-10536
HOT-AIR SOLDERING TECHNIQUE PREVENTS OVERHEATING OF ELECTRICAL COMPONENTS

INNOVATOR NOT GIVEN /HUGHES AIRCRAFT CO./ FEB. 1964
GSFC-91
By using a hot-air gun with a small orifice, heat may be localized to the soldering area of the chassis. The solder is placed around the capacitor which is inserted in the mounting hole so the ring is in contact with the chassis.

B63-10537
SIMPLE CIRCUIT PROVIDES ADJUSTABLE VOLTAGE WITH LINEAR TEMPERATURE VARIATION
MOEDE, L. W. /DATAMETRICS CORP./ MAR. 1964
JPL-WOO-029
A bridge circuit giving an adjustable output voltage that varies linearly with temperature is formed with temperature compensating diodes in one leg. A resistor voltage divider adjusts to temperature range across the bridge. The circuit is satisfactory over the temperature range of -20 degrees centigrade to +80 degrees centigrade.

B63-10551
UNMANNED SEISMOMETER LEVELS SELF, CORRECTS DRIFT ERRORS
SUTTON, G. /COLUMBIA U./ MAY 1964
GSFC-100
An unmanned, self-leveling seismometer is developed which contains three subsystems- a mechanical, an electronic pickoff and feedback, + a leveling and vertical centering subsystem. Earth motions are detected by means of a seismic mass coupled to a coil-magnet assembly and a differential capacitor plate assembly.

B63-10553
TRANSISTORIZED TRIGGER CIRCUIT IS FREQUENCY-CONTROLLABLE
MOORE, E. T. /DUKE U./ JUN. 1964
GSFC-111
A trigger circuit employing two unijunction transistor oscillators, whose frequency is varied by changing the base-to-base voltage, provides variable electrical control of the frequency.

B63-10554
HIGHLY EFFICIENT SQUARE-WAVE OSCILLATOR OPERATOR AT HIGH POWER LEVELS
HALL, J. E., JR. /DUKE U./ JUN. 1964
GSFC-112
A square-wave oscillator circuit containing only simple resistor-capacitor combinations and transistors operates with high efficiency at relatively high power levels.

B63-10555
COMPUTER DETERMINES HIGH-FREQUENCY PHASE STABILITY
NICHOLS, G. B. JUL. 1964
GSFC-113
Determination of phase stability of a high frequency signal using a computer is accomplished by a circuit using two auxiliary oscillators, multipliers and low-pass filters in cross correlation with the oscillator producing the signal of interest.

B63-10561
TINY SENSOR-TRANSMITTER CAN WITHSTAND EXTREME ACCELERATION, GIVES DIGITAL OUTPUT
MOSSINO, R. L. ROBINSON, G. NOV. 1964
ARC-22
A self-pulsing oscillator transmits a pulsed signal. The time between pulses and the frequency are controlled by two networks. Variations in the component values in each of the two networks, due to environmental changes, appear as changes in frequency and time between pulses in the transmitted signal. Such a sensor is used to measure physical magnitudes.

B63-10567
SIMPLE CIRCUIT CONTINUOUSLY MONITORS THERMOCOUPLE SENSOR
GREENWOOD, T. L. AUG. 1964
M-FS-61
A series circuit was developed to check the continuity in thermocouple sensors. This method may be used in monitoring continuity in any dc voltage-operated control circuit.

B63-10572
DEVICE CALIBRATES VIBRATION TRANSDUCERS AT AMPLITUDES UP TO 20 G.
GREENWOOD, T. L. AUG. 1964
M-FS-86
A piezoelectric transducer provides accurate calibration of vibration amplitudes to 20 g. The calibration system uses an electromagnetically driven resonant beam to generate mechanical vibrations at a fixed frequency.

B63-10579
SMALL FOAMED POLYSTYRENE SHIELD PROTECTS LOW-FREQUENCY MICROPHONES FROM WIND NOISE
TEDRICK, R. N. MAY 1964
M-FS-123
A foamed polystyrene noise shield for microphones has been designed in teardrop shape to minimize air turbulence. The shield slips on and off the microphone head easily and is very effective in low-frequency sound intensity measurements.

B63-10596
FRONT AND BACK PRINTED CIRCUIT LAYOUTS PRESENTED ON SINGLE SHEET
PERRY, J. OCT. 1964
GSFC-93
A diazo photographic process of clear plastic masters is used in reproducing front and back printed circuit layouts of differing intensity on a single sheet.

B63-10597
PRECISION GAGE MEASURES ULTRAHIGH VACUUM LEVELS
HUDSON, J. B. SEARS, G. W. /GEN. DYN. CORP./ JUN. 1964
GSFC-114
An ionization gauge in which internally generated X-rays are minimized is described. This gauge permits the measurement of gas pressures in ultrahigh systems of micro-pico torr.

B63-10599
LIQUID SWITCH IS REMOTELY OPERATED BY LOW DC VOLTAGE
MOORE, E. T. /DUKE U./ MAY 1964
GSFC-119
A liquid switch which does not depend on any mechanical, gravitational, or inertial actuation is developed for use in space environments. It may be remotely operated on low DC voltage.

B63-10600
CIRCUIT CONTROLS TRANSIENTS IN SCR INVERTERS
MOORE, E. T. WILSON, T. G. /DUKE U./ JUN. 1964
GSFC-120
The elimination of starting difficulties in SCR inverters is accomplished by the addition of two taps of the output winding of the inverter. On starting or under transient loads the two additional taps deliver power through diodes without requiring quenching of SCR currents in excess of normal starting load.

B63-10603
MONOSTABLE CIRCUIT WITH TUNNEL DIODE HAS FAST RECOVERY
HEFFNER, P. MAY 1964
GSFC-132
A monostable multivibrator circuit using a tunnel diode makes it possible for the MSMV to exceed the performance of present multivibrators in two respects. The rise time of the output voltage is faster and the duty cycle is raised to approximately 95 percent.

B63-10606
NEW SINTERING PROCESS ADJUSTS MAGNETIC VALUE OF FERRITE CORES
INNOVATOR NOT GIVEN /IBM/ MAY 1964
GSFC-129
A two-phase sintering technique based on time and temperature permits reversible control of the coercive threshold of sintered ferrite cores. Threshold coercivity may be controlled over a substantial range of values by selective control

of the cooling rate.

B63-10609
TEMPERATURE-SENSITIVE NETWORK DRIVES ASTABLE MULTIVIBRATOR
INNOVATOR NOT GIVEN /RCA/ OCT. 1964
GSFC-137
The development of a simple circuit using two zener diodes and five resistors, which provides a temperature-sensitive voltage to drive the astable multivibrator, is described.

B63-10613
CRYOGENIC WAVEGUIDE WINDOW IS SEALED WITH PLASTIC FOAM
CLAUSS, R. STELZRIED, C. T. JUN. 1964
JPL-559
Waveguide windows made with polystyrene preformed plastic and sealed with foamed-in-place plastic are useful in any microwave waveguide system using cryogenic cooling.

B64-10002
CIRCUIT RELIABILITY BOOSTED BY SOLDERING PINS OF DISCONNECT PLUGS TO SOCKETS
PIERCE, W. B. MAR. 1964
JPL-447
Where disconnect pins must be used for wiring and testing a circuit, improved system reliability is obtained by making a permanent joint between pins and sockets of the disconnect plug. After the circuit has been tested, contact points may be fused through soldering, brazing, or welding.

B64-10004
ULTRA-SENSITIVE TRANSDUCER ADVANCES MICRO-MEASUREMENT RANGE
ROGALLO, V. L. MAY 1964
ARC-26
An ultrasensitive piezoelectric transducer, that converts minute mechanical forces into electrical impulses, measures the impact of micrometeoroids against space vehicles. It has uniform sensitivity over the entire target area and a high degree of stability.

B64-10007
LOW-POWER TRANSISTORIZED CIRCUIT PROVIDES STAIRCASE WAVEFORM
BREEN, G. D. JUL. 1964
GSFC-48
A low input power transistorized circuit is used to generate a staircase waveform of high step uniformity. Other characteristics are low step droop, fast transition time, and no feedback.

B64-10010
MODIFIED RF COAXIAL CONNECTOR ENDS VACUUM CHAMBER WIRING PROBLEM
WEINER, D. MAY 1964
GSFC-150
A standard radio frequency coaxial connector is modified so that a plastic insulating sleeve can be mounted in the wall of a vacuum chamber. This eliminates ground loops and interference from cable connections.

B64-10016
COMPACT COAXIAL CONNECTOR FOR PRINTED CIRCUIT ADDS RELIABILITY
RADECKE, T. F. MAY 1964
MSC-57
Soldering and welding techniques are used to connect a coaxial cable to a printed circuit board. This device aids reliability control of equipment as standard connectors are bulky and heavy.

B64-10017
BLOCKING OSCILLATOR USES LOW TRIGGERING VOLTAGE
INNOVATOR NOT GIVEN /WESTINGHOUSE ELEC. CORP./ DEC. 1964
MSC-58
To prevent premature triggering of a blocking oscillator, a smaller magnetic core is added to the conventional oscillator circuit. This serves as a second blocking oscillator and has a lower triggering threshold.

B64-10019
NEW METHOD USED TO FABRICATE GALLIUM ARSENIDE PHOTOVOLTAIC DEVICE
ELLIS, S. G. /RCA/ JUN. 1964
WOO-062
A new method for fabricating photocells, or solar cells, substitutes copper iodide for zinc diffusion. This produces a p-type surface layer and a photovoltaic junction.

B64-10024
EFFICIENT CIRCUIT TRIGGERS HIGH-CURRENT, HIGH-VOLTAGE PULSES
GREEN, E. D. /WESTINGHOUSE ELEC. CORP./ JUN. 1964
MSC-14
A modified circuit uses diodes to effectively disconnect the charging resistors from the circuit during the discharge cycle. Result is an efficient parallel charging, high voltage pulse modulator with low voltage rating of components.

B64-10042
OHMMETER SENSES DEPLETION OF LUBRICANT IN JOURNAL BEARINGS
ROSS, A. O. DEC. 1964
LEWIS-37
An ohmmeter is used as a sensor to determine when the lubricating oil in a high speed journal bearing becomes depleted.

B64-10064
DIGITAL LOGIC ELEMENTS PROVIDE ADDITIONAL FUNCTIONS FROM ANALOG INPUT
MATTY, T. C. /MCDONNELL AIRCRAFT CORP./ JUN. 1964
MSC-64
A D.C. analog input can be used to produce an integrator with high dynamic range or a position servo with inherent stability. This is done by a switching system using digital-to-analog converters and an electronic switch to obtain the desired outputs.

B64-10065
CONTINUITY TESTER SCREENS OUT FAULTY SOCKET CONNECTIONS
GOLDING, G. MAY 1964
JPL-596
A device, used before and after assembly, tests the continuity of an electrical circuit through each pin and socket of multiple connector sockets. Electrically insulated except at the contact area, a test probe is dimensioned to make contact only in properly formed sockets.

B64-10080
IMPROVED INSERTION-LOSS TESTER
FINNIE, C. J. SCHUSTER, D. JUN. 1964
JPL-358
An improved test method accurately measures the insertion loss of rf components while avoiding amplifier drift. Currents are balanced across a bridge transformer with shorted probes and then with each component to be tested. Differences in adjustments indicate the loss.

B64-10109
ANALOG DEVICE SIMULATES PHYSIOLOGICAL WAVEFORMS
HICKMAN, D. M. NOV. 1964
MSC-51
An analog physiological simulator generates representative waveforms for a wide range of physiological conditions. Direct comparison of these waveforms with those from telemetric inputs permits quick detection of signal parameter degradation.

B64-10114
AUXILIARY SILVER ELECTRODE ELIMINATES TWO-STEP VOLTAGE DISCHARGE CHARACTERISTIC OF SILVER-ZINC CELLS
CHREITZBERG, A. M. /ELEC. STORAGE BATTERY CO./ JUN. 1964
GSFC-169
In silver-zinc cells, an auxiliary silver electrode is electrically connected to the positive terminal only during discharge. This

eliminates the two-step discharge characteristic of such cells.

B64-10118
USE OF PHOTOGRAPHS SPEEDS INSPECTION OF PRINTED-CIRCUIT BOARDS
STARK, E. /IBM/ JUL. 1964
MSC-72
The projected images of a printed circuit board and the engineering drawing are superimposed on a screen for visual comparison. This technique speeds inspection, reduces the incidence of error.

B64-10122
SIMPLE TRANSDUCER MEASURES LOW HEAT-TRANSFER RATES
LAUMANN, E. A. OCT. 1964
JPL-466
A simple transducer is used to measure low rates of convective and conductive heat transfer from a fluid to a cooled surface under steady-state conditions. Temperature drop is measured by two thermocouples imbedded in a rod of low thermal conductivity.

B64-10143
FIELD-EFFECT TRANSISTOR IMPROVES ELECTROMETER AMPLIFIER
MUNOZ, R. NOV. 1964
ARC-36
An electrometer amplifier uses a field effect transistor to measure currents of low amperage. The circuit, developed as an AC amplifier, is used with an external filter which limits bandwidth to achieve optimum noise performance.

B64-10144
RING COUNTER MAY BE ADVANCED OR RETARDED BY COMMAND SIGNAL
LIBBY, J. N. MOORE, H. D. JUL. 1964
GSFC-101
A power logic circuit, with bidirectional capability, is used to drive small loads in planned sequence. This is designed in the form of a shift register, with a reversible ring counter.

B64-10150
NOVEL CIRCUIT COMBINES PULSE STRETCHER WITH NOR GATE
CLIFF, R. A. OCT. 1964
GSFC-187
A pulse-stretching circuit added to a conventional NOR gate circuit detects a preselected state and produces a pulse that the pulse stretcher maintains for a long enough period to reset all counter stages.

B64-10158
EMISSION TESTER FOR HIGH-POWER VACUUM TUBES
LUNDY, C. OCT. 1964
JPL-628
A simple emission-testing circuit for high power vacuum tubes to check their output stability is described. With modification it may be useful in testing mercury-arc rectifiers.

B64-10163
FIELD EFFECT TRANSISTORS USED AS VOLTAGE-CONTROLLED RESISTORS
INNOVATOR NOT GIVEN /IBM/ NOV. 1964
M-FS-174
Two new methods of incorporating field effect transistors into circuit designs have resulted in linear response of this type transistor over a wide range of controlled voltage levels. This increases its usefulness as a voltage-controlled resistor.

B64-10171
SUBMINIATURE BIOTELEMETRY UNIT PERMITS REMOTE PHYSIOLOGICAL INVESTIGATIONS
DEBOO, G. J. FRYER, T. B. OCT. 1964
ARC-39
A subminiature biotelemetry transmitter permits the measurement of biopotential response in humans or animals to controlled environmental stimuli without discomfort while engaged in normal activities.

B64-10173
HIGH-PASS RF COAXIAL FILTER REJECTS DC AND LOW FREQUENCY SIGNALS
BAILEY, J. W. MC AFEE, D. F. OCT. 1964
GSFC-73
A low-loss RF filter element for coaxial transmission provides DC isolation and eliminates low frequency signals. The characteristic impedance of the transmission line is not affected, as the design permits direct connection of the filter to the line.

B64-10200
BINARY SYSTEM GENERATES SIDEREAL RATE FROM STANDARD SOLAR RATE
GRANATA, R. MC CAUL, P. OCT. 1964
GSFC-190
A sidereal rate output from mean solar rate input is derived from a sidereal generator that uses digital division and multiplication techniques.

B64-10209
RASTER LINEARITY OF VIDEO CAMERAS CALIBRATED WITH PRECISION TESTER
INNOVATOR NOT GIVEN /RCA/ DEC. 1964
GSFC-200
The time between transitions in a camera*s video output is measured when registered at reticle marks on the vidicon faceplate. This device permits precision calibration of raster linearity of television camera tubes.

B64-10222
COMPACT CARTRIDGE DRIVES CODED TAPE AT CONSTANT READOUT SPEED
AUSTIN, D. C. OCT. 1964
JPL-472
To facilitate storage and repetitive reading of short-program coded tape, a cartridge case, containing mechanical drive and readout assemblies, has been fabricated. The drive transports the tape past a conventional pickup device during the reading function.

B64-10226
TEMPERATURE-COMPENSATION CIRCUIT STABILIZES PERFORMANCE OF VIDICONS
MALLING, L. R. NOV. 1964
JPL-486
A simple transistor circuit uses a thermistor to change the vidicon target potential in relation to temperature differences.

B64-10237
APPARATUS MEASURES CONCENTRATION OF SUSPENDED DROPLETS IN GAS STREAMS
BOOTH, F. W. DEC. 1964
LANGLEY-31
An apparatus, operating on the principle of wet- and dry-bulb thermometry, permits intermittent or continuous measurement of the concentration of droplets dispersed in a gas stream over a wide range of gas pressure.

B64-10255
ELECTRONIC DEVICE SIMULATES RESPIRATION RATE AND DEPTH
THOMAS, J. A. NOV. 1964
MSC-89
An oscillator circuit and a thermistor, in close proximity to a light bulb, periodically alter the heat output of the bulb by varying the voltage across its filament. Use of this simulator permits checkout tests on pneumographs.

B64-10258
DIGITAL CARDIOMETER COMPUTES AND DISPLAYS HEARTBEAT RATE
MITCHELL, V. M. NOV. 1964
MSC-93
To compute the heartbeat rate from the waveform output of an electrocardiogram, a digital cardiometer with solid state circuit elements has been developed. This computes the beat every 15 seconds and visually presents the data on numerical display tubes.

B64-10259
PNEUMOTACHOMETER COUNTS RESPIRATION RATE OF

HUMAN SUBJECT
GRAHAM, O. NOV. 1964
MSC-92
To monitor breaths per minute, two rate-to- analog converters are alternately used to read and count the respiratory rate from an impedance pneumograph over fixed intervals. The converter outputs are sequentially displayed numerically on electroluminescent matrices.

B64-10271
IMPROVED TECHNIQUE FOR LOCALIZING ELECTRO-POLISHING FEATURES NOVEL NOZZLES
INNOVATOR NOT GIVEN /GEN. DYN./ASTRONAUTICS/ NOV. 1964
WOO-101
Impingement electropolishing is accomplished by use of an electrolyte film, which is evenly distributed by an insulated nozzle designed to match the contour of the workpiece to be treated. The workpiece is connected to the positive terminal of a generator and the nozzle to the negative terminal.

B64-10280
SERVO SYSTEM FACILITATES PHOTOELASTIC STRAIN MEASUREMENTS ON RESINS
OTTS, J. W. NOV. 1964
JPL-504
To facilitate photoelastic measurements of the strains developed by stresses applied to birefringent resins, a servomechanism is employed.

B64-10281
PTC THERMISTOR PROTECTS MULTILOADED POWER SUPPLIES
LEVERONE, H. MANDELL, N. NOV. 1964
GSFC-236
A PTC /positive-temperature-coefficient/ thermistor placed in series with each branch load of a multiload circuit prevents power loss in parallel branches. This thermistor may be used in any circuit requiring current limiting or intended overload resetting.

B64-10283
MOUNTING FOR DIODES PROVIDES EFFICIENT HEAT SINK
INNOVATOR NOT GIVEN /RCA/ NOV. 1964
M-FS-197
Efficient heat sink is provided by soldering diodes to metal support bars which are brazed to a ceramic base. Electrical connections between diodes on adjacent bars are made flexible by metal strips which aid in heat dissipation.

B64-10299
RADIATION DETECTOR-OPTICAL HANGING DEVICE IS OF SIMPLIFIED CONSTRUCTION
INNOVATOR NOT GIVEN /WESTINGHOUSE ELEC. CORP./ DEC. 1964
GSFC-251
A simplified radiation detector was designed which employs an activated continuous front surface consisting of either the diffused or barrier type of semiconducting material with a grid structure on the nonactivated side of the detector. Its form may be either a rectangular coordinate or a polar coordinate system.

B64-10305
TRANSISTORIZED CONVERTER PROVIDES NONDISSIPATIVE REGULATION
INNOVATOR NOT GIVEN /DUKE U./ DEC. 1964
GSFC-238
A transistorized regulator converter efficiently converts fluctuating input voltages to a constant output voltage, avoiding the use of saturable reactors. It is nondissipative in operation and functions in an open loop through variable duty cycles.

B64-10309
WELDING PROCEDURE IMPROVES QUALITY OF WELDS, OFFERS OTHER ADVANTAGES
MC CAMPBELL, W. M. MC CAIG, J. C. DEC. 1964
M-FS-32
An improved procedure for arc spot welding uses the SIGMA /submerged inert gas metallic arc/ method. This has resulted in welds of higher quality than are obtainable by conventional means.

B64-10320
VOLTAGE GENERATOR SWEEPS OSCILLATOR FREQUENCY LINEARLY WITH TIME
INNOVATOR NOT GIVEN /MELPAR, INC./ JAN. 1965
M-FS-219
A voltage-tuned oscillator circuit is described which sweeps the output signal frequency linearly exponentially varying with time.

B64-10330
ECONOMICAL FABRICATION PROCESS PRODUCES HIGH-QUALITY JUNCTION TRANSISTORS
INNOVATOR NOT GIVEN /IBM/ DEC. 1964
JPL-SC-065
A convenient, three-step fabrication process, with a p-type layer of gallium arsenide vapor-deposited on a starting wafer of germanium, is used to produce heterojunction-homojunction p-n-p transistors. These are of high quality with good injection efficiency and low capacitance.

B64-10349
BANDWIDTH SWITCHING IS TRANSIENT-FREE, AVOIDS LOSS OF LOOP LOCK
INNOVATOR NOT GIVEN /SPACE TECHNOL. LABS./ DEC. 1964
WOO-054
A circuit, in a wide bandwidth mode, overcomes transient-producing capacitance switching by maintaining an equivalent voltage at all times. Bandwidth switching may be done at any time, and integrity of the loop lock is maintained.

B65-10001
CIRCUIT CONVERTS AM SIGNALS TO FM FOR MAGNETIC RECORDING
INNOVATOR NOT GIVEN /RCA/ JAN. 1965
GSFC-227
Convert AM signals to FM for magnetic recording by relaxation-type voltage-controlled oscillator /VCO/. This circuit may be used in radar, telemetry, and test equipment.

B65-10002
TUNNEL-DIODE CIRCUIT FEATURES ZERO-LEVEL CLIPPING
BUSH, E. G. JAN. 1965
GSFC-241
Tunnel-diode circuit starts clipping action as input voltage crosses zero axis. This clipper circuit is effective as limiter in FM receiver.

B65-10005
COMPUTER MODIFICATION REDUCES TIME OF PERFORMING ITERATIVE DIVISION
INNOVATOR NOT GIVEN /IBM/ FEB. 1965
M-FS-166
Time reduction in performing iterative division results from using a serial-by-parallel divider employing a look-ahead feature that predetermines the sign relationships of several iterations before the computer cycle begins. This method can be employed in any data handling system performing high-speed division.

B65-10006
MODIFICATION INCREASES LIGHT OUTPUT OF INJECTION-LUMINESCENT DIODES
INNOVATOR NOT GIVEN /RCA/ JAN. 1965 SEE ALSO B64-10283
M-FS-192
Removing a section of the electrode area from the N-face of injection-luminescent diodes for pumping lasers substantially increases light output. Light is emitted from the N-face as well as from the four edges of the diode.

B65-10010
INEXPENSIVE, STABLE CIRCUIT MEASURES HEART RATE
VICK, H. A. JAN. 1965
MSC-95
Inexpensive transistorized circuit provides reliable analog indications of heart rate in response to preamplified electrocardiograph signal applied to its input.

B65-10011
CIRCUIT IMPROVEMENT PRODUCES MONOSTABLE MULTIVIBRATOR WITH LOAD-CARRYING CAPABILITY
GOLDMAN, N. E. SCHAFFERT, J. C. JAN. 1965
GSFC-34A
Improved circuit provides greater reliability and load-carrying capabilities for monostable multivibrator.

B65-10012
HELICAL COAXIAL-RESONATOR MAKES EXCELLENT RF FILTER
INNOVATOR NOT GIVEN /RCA/ JAN. 1965 1965
GSFC-243
Isolation of closely spaced transmitting and receiving frequencies of an antenna without insertion loss by filtering the receiver input is accomplished by an inner conductor with two winding helices and an outer conductor of aluminum. A tuning slug is at either end of the inner conductor form.

B65-10013
ZENER DIODE FUNCTION GENERATOR REQUIRES NO EXTERNAL REFERENCE VOLTAGE
BOLTE, G. BURNS, R. JAN. 1965
JPL-33
Function generator utilizing parallel impedance networks with zener diodes produces functions which are discontinuous in slope. The function generated appears at the output of the parallel network in the form of a voltage varying in time.

B65-10018
CARBON ARC IGNITION IMPROVED BY SIMPLE AUXILIARY CIRCUIT
INNOVATOR NOT GIVEN /RCA/ JAN. 1965
MSC-103
High voltage, low current pulse in series with arc power supply efficiently ignites a carbon arc. The easily and economically produced circuit is useful with arc burners and searchlights and with plasma jets.

B65-10023
MINIATURE STRESS TRANSDUCER HAS DIRECTIONAL CAPABILITY
SAN MIGUEL, A. SILVER, R. H. JAN. 1965
JPL-591
Miniature stress transducer uses a semi-conductive piezoresistive element to detect stress only on specific axes. Measurement of internal mass stress is based on the compressive deformation of the transducer. The device is applicable to constant stress monitoring in building and dam structural parts.

B65-10025
LOGIC REDUNDANCY IMPROVES DIGITAL SYSTEM RELIABILITY
INNOVATOR NOT GIVEN /STANFORD RES. INST./ FEB. 1965
JPL-SC-069
Redundant-channel system automatically corrects any single error in a set of three binary signal channels. This system is especially applicable to digital computers where data is transmitted in parallel channels.

B65-10026
STEPPING MOTOR DRIVE CIRCUIT DESIGNED FOR LOW POWER DRAIN
INNOVATOR NOT GIVEN /HARVARD COLL./ FEB. 1965
GSFC-198
High power drain is eliminated by a circuit consisting of a divide-by-two stage, two identical inputs, a wiggle amplifier, driver, and power output stages to drive the step motor.

B65-10028
TRANSISTOR VOLTAGE COMPARATOR PERFORMS OWN SENSING
CLIFF, R. A. FEB. 1965
GSFC-228
Detection of the highest voltage input among a group of varying voltage inputs is accomplished by a transistorized voltage comparison circuit. The collector circuits of the transistors perform the sensing function. Input voltage levels are governed by the transistors.

B65-10030
LIBRARY OF DOCUMENTS COMPRESSED INTO LAP-HELD DISPLAY KIT
INNOVATOR NOT GIVEN /NATL. CASH REGISTER CO./
FEB. 1965
MSC-125
A lightweight Apollo flight kit containing microfilmed data is packaged in a hinged box with a viewing screen cover, and a writing surface. It is secured to the users lap.

B65-10033
PHOTOELECTRIC SEMICONDUCTOR SWITCH OPERATES WITH LOW LEVEL INPUTS
INNOVATOR NOT GIVEN /IBM/ FEB. 1965
JPL-SC-068
Photoelectric semiconductor switch with a buried emitter region avoids high-leakage currents across the emitter. It exhibits high emitter-to-collector transport efficiency beta at low signal levels.

B65-10041
PULSE HEIGHT ANALYZER OPERATES AT HIGH REPETITION RATES, LOW POWER
INNOVATOR NOT GIVEN /SPACE TECHNOL. LABS., INC./
FEB. 1965
WOO-046
Simple multistage transistor gating circuit provides a pulse height analyzer that operates at high repetition rates and low power. the circuit compares the input pulse heights to discrete reference voltages.

B65-10045
THERMISTOR CONNECTOR ASSEMBLY INCREASES ACCURACY OF MEASUREMENTS
INNOVATOR NOT GIVEN /ATLANTIC RES. CORP./ FEB. 1965
LANGLEY-62
Isolation of the thermistor from spurious heat transfer for accurately measuring ambient air temperatures is accomplished by a mounting consisting of a transparent plastic film bonded to a U-shaped phenolic board with depositions of aluminum on each face and upper edge, and a variable capacitor for fine tuning.

B65-10047
CIRCUIT DETECTS ERRORS IN ADDRESS CURRENTS FOR MAGNETIC CORE ARRAYS
INNOVATOR NOT GIVEN /IBM/ FEB. 1965
M-FS-234
Address current error detector generates a signal whenever any error producing conditions arise in magnetic core arrays. Can be used with test equipment and memory storage units.

B65-10048
MICROPARTICLE IMPACT SENSOR MEASURES ENERGY DIRECTLY
ALEXANDER, W. M. BERG, O. E. FEB. 1965
GSFC-252
Construction of a capacitor sensor consisting of a dielectric layer between two conductive surface layers and connected across a potential source through a sensing resistor permits measurement of energy of impinging particles without degradation of sensitivity. A measurable response is produced without penetration of the dielectric layer.

B65-10050
NULLING PYROMETER USES KERR CELL SHUTTER FOR FAST RESPONSE
INNOVATOR NOT GIVEN /WESTINGHOUSE ELEC. CORP./
FEB. 1965
NU-0010
Conventional pyrometer, in which Kerr cell replaces mechanical shutter and polarizers are added to filters, yields rapid shutter response.

B65-10051
METAL SHEATH IMPROVES THERMOCOUPLE USING GRAPHITE IN ONE LEG
INNOVATOR NOT GIVEN /WESTINGHOUSE ELEC. CORP./
FEB. 1965
NU-0011

Thermocouple using graphite in one leg is sealed in a moistureproof metal sheath which permits high EMF output and good mechanical strength.

B65-10052
ZENER DIODE IS STARTER FOR TRANSISTOR-REGULATED POWER SUPPLY
INNOVATOR NOT GIVEN /WESTINGHOUSE ELEC. CORP./
FEB. 1965
NU-0015
Zener diode in parallel with a silicon transistor supplies the starting current for a transistor-regulated power supply.

B65-10054
PULSE GENERATOR PERMITS NONDESTRUCTIVE TESTING OF COMPONENT BREAKDOWN VOLTAGE
INNOVATOR NOT GIVEN /HONEYWELL/ MAR. 1965
MSC-122
Nondestructive testing of the breakdown voltage of transistors and other electronic components is achieved by a simple relay circuit. The circuit operates by applying low-energy, high- voltage microsecond pulses to the components under test.

B65-10055
FM OSCILLATOR USES TETRODE TRANSISTOR
BOENSEL, D. W. MAR. 1965
JPL-82
Tetrode-driven crystal oscillator achieves large frequency variations for a given input signal. Frequency control is obtained by variation of the second base current of the tetrode.

B65-10056
VIBRATING-MEMBRANE ELECTROMETER HAS HIGH CONVERSION GAIN
COON, G. W. DIMEFF, J. APR. 1965
ARC-38
Vibrating-membrane transducer in a circuit can measure current below 10 to-the-minus 17 ampere. This electrometer has a high conversion gain and a minimum internal power consumption.

B65-10057
FEED-THROUGH HAS POLYTERMINAL FEATURE
SANDERS, L. H. MAR. 1965
M-FS-25
Feed-through connector with individual solder pots in the polyterminal side provides good connections with small amounts of solder and permits visual inspection of bonds. Poly- terminal also provides a friction mechanical bond to position conductors prior to soldering.

B65-10059
METAL DIAPHRAGM USED TO CALIBRATE MINIATURE TRANSDUCERS
INNOVATOR NOT GIVEN /ASTRO-SPACE LABS./ MAR. 1965
M-FS-207
Dynamic comparative calibration system measures response of miniature pressure transducers, The system is composed of an electromechanically-driven metal diaphragm, a calibrated and an uncalibrated transducer and an oscillator.

B65-10061
SIMPLE CONTROL DEVICE SENSES SOLAR POSITION
LONBORG, J. O. RANDALL, J. C. MAR. 1965
JPL-638
The amount of solar radiation incident on a specially prepared bimetallic strip is simply and reliably controlled by a light valve. This device is valuable for systems requiring temperature regulation.

B65-10062
PULSED PLASMA ACCELERATOR OPERATES REPETITIVELY WITHOUT COMPLEX CONTROLS
SABOL, A. P. MAR. 1965
LANGLEY-48
Self-repeating pulsed plasma accelerator operates with a wide variety of gases over a large range of pressures without complex control equipment. The accelerator combines a circular channel with a tangential channel at the entrance way of a high-velocity gas.

B65-10066
FUEL CELL SERVES AS OXYGEN LEVEL DETECTOR
INNOVATOR NOT GIVEN /GE/ MAR. 1965
JPL-SC-072
Monitoring the oxygen level in the air is accomplished by a fuel cell detector whose voltage output is proportional to the partial pressure of oxygen in the sampled gas. The relationship between output voltage and partial pressure of oxygen can be calibrated.

B65-10067
SENSITIVE LEVEL SENSOR MADE WITH SPIRIT LEVEL, GIVES ELECTRICAL OUTPUT
BRYANT, E. L. MAR. 1965
LANGLEY-49
Sensor incorporating a circular spirit level, electrical lamp and two pairs of photocells, provides an electrical indication of flat surface level deviation.

B65-10068
AUTOMATIC THERMAL SWITCH ACCELERATES COOLING-DOWN OF CRYOGENIC SYSTEM
WIEBE, E. R. MAR. 1965
JPL-655
Automatic switch uses short stainless steel tube with copper heat sinks to accelerate helium gas cooling and provides good thermal conductivity and good thermal insulation.

B65-10069
FEEDBACK OSCILLATOR FUNCTIONS AS LOW-LEVEL PULSE STRETCHER
INNOVATOR NOT GIVEN /SPERRY RAND CORP./ MAR. 1965
GSFC-261
Low trigger pulses of the pulse stretcher circuit are obtained by forward biasing the transistor oscillator. The loop gain is kept below unity and prevents free-running oscillation. Two parallel feedback loops improve the stretching capabilities.

B65-10072
SYNCHRONIZED PULSE GENERATOR NEEDS NO EXTERNAL POWER
CANCRO, C. A. JANNICHE, P. J., JR. MAR. 1965
GSFC-274
Simple circuit with high input and low output impedance generates a fast rise-time pulse synchronized with an input pulse of slower rise and fall times. Circuit requires no external power.

B65-10073
SYSTEM MEASURES ANGULAR DISPLACEMENT WITHOUT CONTACT
DAVIS, W. T. MAR. 1965
LANGLEY-46
Optic system coupled to an electronic detection and measuring system converts angular movement of reflected light to a direct readout, without any direct contact with the object.

B65-10076
LIGHT-SENSITIVE POTENTIOMETER MEASURES PRODUCT OF TWO VARIABLES
HAERTSCH, O. C. MAR. 1965
GSFC-240
The output voltage from a photoconductive potentiometer circuit using a galvanometer mirror reflecting the light beam is directly proportional to the product of the input voltage.

B65-10079
PHOTOELECTRIC SENSOR OUTPUT CONTROLLED BY EYEBALL MOVEMENTS
INNOVATOR NOT GIVEN /SPACO/ MAR. 1965
M-FS-274
The difference between the infrared absorption of the iris and infrared reflectivity of the eyeball controls the operation of a device consisting of an infrared source and amplifier, a cadmium selenide infrared sensor, and an infrared filter.

B65-10080
PHASE DETECTOR CIRCUIT SYNTHESIZES OWN REFERENCE SIGNAL
INNOVATOR NOT GIVEN /FAIRCHILD STRATOS CORP./

MAR. 1965
M-FS-247
Circuit with isolation amplifier connected to a frequency multiplier and synchronous phase detector synthesizes the phase reference signal from the phase modulated input signal.

B65-10085
TRANSDUCER SENSES DISPLACEMENTS OF PANELS SUBJECTED TO VIBRATION
PEA, R. O. MAR. 1965
ARC-37
Inductive vibration sensor measures the surface displacement of nonferrous metal panels subjected to vibration or flutter. This transducer does not make any physical contact with the test panel when measuring.

B65-10086
SYSTEM SELECTS FRAMING RATE FOR SPECTROGRAPH CAMERA
INNOVATOR NOT GIVEN /AM. OPT. CO./ MAR. 1965
LANGLEY-55
Circuit using zero-order light is reflected to a photomultiplier in the spectrograph monitors incoming radiation to provide an error signal which controls the advancing and driving rate of the film through the camera.

B65-10087
APPARATUS MEASURES SWELLING OF MEMBRANES IN ELECTROCHEMICAL CELLS
HENNIGAN, T. J. APR. 1965
GSFC-280
Apparatus consisting of a pressure plate unit, four springs of known spring constant and a micrometer measures the swelling and force exerted by the polymer membranes of alkaline electrochemical cells.

B65-10089
TRANSDUCER MEASURES TEMPERATURE DIFFERENTIALS IN PRESENCE OF STRONG ELECTROMAGNETIC FIELDS
WALD, D. APR. 1965
ARC-27
Measurement of temperature rise of cooling water under pressure and in strong electromagnetic fields is accomplished by a transducer using a magnetically shielded thermocouple arrangement. The thermocouple junctions are immersed in oil to isolate them from electric currents in the water.

B65-10091
SIMULATOR PRODUCES PHYSIOLOGICAL WAVEFORMS
EKEROOT, S. MAR. 1965
MSC-94
Physiological waveform simulator capable of producing signals to simulate an axiliary and a sternal electrocardiogram, blood pressure, respiratory rate and body temperature. This may be used to check out bioinstrumentation.

B65-10093
COMPUTER PROGRAMS SIMPLIFY OPTICAL SYSTEM ANALYSIS
INNOVATOR NOT GIVEN /HONEYWELL/ APR. 1965
GSFC-306
The optical ray-trace computer program performs geometrical ray tracing. The energy-trace program calculates the relative monochromatic flux density on a specific target area. This program uses the ray-trace program as a subroutine to generate a representation of the optical system.

B65-10096
DIGITAL SYSTEM ACCURATELY CONTROLS VELOCITY OF ELECTROMECHANICAL DRIVE
NICHOLS, G. B. APR. 1965
GSFC-287
Digital circuit accurately regulates electromechanical drive mechanism velocity. The gain and phase characteristics of digital circuits are relatively unimportant. Control accuracy depends only on the stability of the input signal frequency.

B65-10097
VARIABLE VOLTAGE SUPPLY USES ZENER DIODE AS REFERENCE
KLEINBERG, L. L. LAVIGNE, R. C. APR. 1965
GSFC-262
Using a zener diode as the reference element, a simple transistorized circuit provides a stable variable reference voltage.

B65-10102
SIMPLE CIRCUIT FUNCTIONS AS FREQUENCY DISCRIMINATOR FOR PFM SIGNALS
BILLINGSLEY, J. APR. 1965
GSFC-267
Simple circuit monitors the frequency of PFM /pulse frequency modulated/ telemetry signals. This discriminator can be used as a constant current integrator in such circuits as linear sweep and time delay.

B65-10103
IMPROVED MAGNETOMETER USES TOROIDAL GATING COIL
INNOVATOR NOT GIVEN /CORNELL UNIV./ APR. 1965
GSFC-249
Improved magnetometer employs a cylindrical, high permeability magnetic core with a toroidal gating coil and a solenoid pickup coil. Flux interaction can be reduced by electrostatically shielding the pickup coil from the gating coil. The magnetometer principle can be applied to navigation devices.

B65-10105
VARIABLE LOAD AUTOMATICALLY TESTS DC POWER SUPPLIES
BURKE, H. C., JR. SULLIVAN, R. M. APR. 1965
GSFC-291
Continuously variable load automatically tests dc power supplies over an extended current range. External meters moniter current and voltage, and multipliers at the outputs facilitate plotting the power curve of the unit.

B65-10108
MAGNETIC FIELD CONTROLS CARBON ARC TAIL FLAME
INNOVATOR NOT GIVEN /RCA/ APR. 1965
MSC-139
Polarity of two electromagnets placed near the exhaust flue cancels out a high carbon-arc field. The arc tail flame is correctly drawn to the exhaust flue and contamination is diverted. This device should reduce maintenance cycles on any arc-powered illuminator.

B65-10112
UNIJUNCTION FREQUENCY DIVIDER IS FREE OF BACKWARD LOADING
FAIRBANKS, A. F. APR. 1965
JPL-W00-010
Simple frequency divider composed of relaxation oscillators uses unijunction transistors to reduce backward loading to a minimum. This circuit design is applicable in timing devices and sync generators for television systems.

B65-10118
TRANSISTORIZED CIRCUIT CLAMPS VOLTAGE WITH 0.1 PERCENT ERROR
INNOVATOR NOT GIVEN /RCA/ APR. 1965
GSFC-196
Transistorized clamping circuit clamps either of two voltage levels to input of digital-to-analog resistive matrix with 0.1 percent error. Clamping circuit technique has analog, digital, and hybrid circuit applications.

B65-10119
VARIABLE FREQUENCY TRANSISTER INVERTERS USE MULTIPLE CORE TRANSFORMERS
INNOVATOR NOT GIVEN /DUKE UNIV./ APR. 1965
GSFC-183
Magnetic-coupled multivibrators containing two or more square-loop cores with multiple windings in a single transformer package, provide indirect frequency control and improved operational characteristics. This multivibrator can be used for power oscillators, nonlinear magnetic circuitry and telemetry circuits.

B65-10120
MULTIPLE TEST TUBES STIRRED MECHANICALLY

LEON, H. J. STRONG, I. J. APR. 1965
ARC-42
Mechanical device simultaneously stirs multiple test tubes under controlled laboratory conditions. The invention provides a variable stirring rate, minimal amount of contamination of tube contents, unattended and simple operation, and easy maintenance and cleaning.

B65-10123
EFFICIENT THIN FILM HEATING ELEMENT TAKES MINIMUM SPACE
BUSCH, A. H. APR. 1965
GSFC-289
Light, thin-film heating element is formed by vacuum deposition of metal onto a nonconductive surface to be heated. This small-sized heater has a very fast response time.

B65-10124
VARIABLE FREQUENCY MAGNETIC MULTIVIBRATOR GENERATES STABLE SQUARE-WAVE OUTPUT
PAULL, S. MAY 1965
GSFC-AE-21
Variable frequency magnetic multivibrator operates in a full wave fashion to provide a stable square wave output over wide variations in temperature and power supply potential. This invention is applicable in clocks and control devices.

B65-10125
SIMPLIFIED ELECTROMETER HAS EXCELLENT OPERATING CHARACTERISTICS
BRANTNER, R. E. MAY 1965
JPL-413
Simplified and improved electrometer circuit provides high-input impedance, stability of gain and operating point, linear response, and low power requirements.

B65-10127
TRAVELING-WAVE TUBE CIRCUIT SIMPLIFIES MICROWAVE RELAY
ALLEN, W. K. IPPOLITO, L. J. NACE, D. A. MAY 1965
GSFC-299
Circuit with a sawtooth-modulated traveling-wave tube, which acts as a frequency converter and as an amplifier, simplifies microwave transmission. Lower power losses and reduced size and weight are also realized in this circuit.

B65-10128
PIEZORESISTIVE GAGE TESTS PIN-CONNECTOR SOCKETS
BOND, W. W. MAY 1965
JPL-675
Connector pin consisting of a piezoresistive crystal, retainer spring and a bridge circuit with voltmeter is used to test connector sockets and may be adapted for multiple socket testing.

B65-10137
INSTRUMENT CALIBRATES LOW GAS-RATE FLOWMETERS
COPELAND, A. C. FULTON, W. C. SMITHER, M. A. MAY 1965
MSC-134
Electronically measuring the transit time of a soap bubble carried by the gas stream between two fixed points in a burette calibrates flowmeters used for measuring low gas-flow rates.

B65-10138
HIGH-GAIN AMPLIFIER HAS EXCELLENT STABILITY AND LOW POWER CONSUMPTION
KLEINBERG, L. L. MAY 1965
GSFC-272
Transistorized amplifier, in which an external reference voltage controls gain, combines high gain with stability and low power consumption. This circuit is useful in electronic servo and portable audio equipment.

B65-10139
SPHERICAL ELECTRODE ELIMINATES HIGH-VOLTAGE BREAKDOWN
FINKE, R. C. VETRONE, R. H. MAY 1965
LEWIS-155
Spherical electrodes surrounding electrode-dielectric junctions eliminate high-voltage breakdown. The gap between the spherical electrode and the dielectric must be of an optimum size for proper operation. Modified, this electrode should be suitable as a high- voltage feedthrough between various liquid and gaseous media.

B65-10142
AUXILIARY CIRCUIT ENABLES AUTOMATIC MONITORING OF EKG*S
INNOVATOR NOT GIVEN /TEX. INST. FOR REHABILITATION AND RES./ MAY 1965 SEE ALSO B65-10143 AND B65-10010
MSC-106
Auxiliary circuits allow direct, automatic monitoring of electrocardiograms by digital computers. One noiseless square-wave output signal for each trigger pulse from an electrocardiogram preamplifier is produced. The circuit also permits automatic processing of cardiovascular data from analog tapes.

B65-10143
DIGITAL-OUTPUT CARDIOTACHOMETER MEASURES RAPID CHANGES IN HEARTBEAT RATE
VICK, H. MAY 1965 SEE ALSO B65-10010 AND B65-10142
MSC-133
Cardiotachometer circuits produce an output voltage proportional to the heartbeat rate on a beat-by-beat basis. This is less complex and less costly than the digital cardiotachometers.

B65-10145
LOGARITHMIC AMPLIFIER USES FIELD EFFECT TRANSISTORS
STEWART, J. L. MAY 1965
JPL-509
Solid-state amplifier utilizes field effect transistors and planar junction diodes to provide a logarithmic response to a wide range of input signals.

B65-10146
FREQUENCY OFFSET IN LINEAR FM/CW TRANSPONDER ELIMINATES CLUTTER
INNOVATOR NOT GIVEN /MELPAR/ MAY 1965
M-FS-249
Clutter is eliminated by offsetting the frequency of a transponder signal with respect to an interrogation signal. This improves the tracking of aircraft and spacecraft by FM/CW transponders.

B65-10151
ROTOR POSITION SENSOR SWITCHES CURRENTS IN BRUSHLESS DC MOTORS
INNOVATOR NOT GIVEN /WESTINGHOUSE ELEC. CORP./ MAY 1965
GSFC-315
Reluctance switch incorporated in an induction motor is used for sensing rotor position and switching armature circuits in a brushless dc motor. This device drives the solar array system of an unmanned space satellite.

B65-10152
CIRCUIT REDUCES DISTORTION OF FM MODULATOR
INNOVATOR NOT GIVEN /RCA/ MAY 1965
GSFC-257
Correction circuit improves the linearity of a voltage-variable capacitor used to modulate a free-running oscillator. This improvement only applies to audio frequency modulation and will not correct for slowly varying dc input in some telemetry systems

B65-10158
LASER BEAM TRANSMITS ELECTRIC POWER
INNOVATOR NOT GIVEN /RCA/ JUN. 1965
GSFC-293
Semiconductor laser beam supplies sustained level of electrical power to remote location not served by conventional conductors. This system would be useful where transmission of energy is critical, such as in nuclear reactors, or other hazardous environments.

B65-10159
SOLID-STATE SWITCHING USED TO SPEED UP CAPACITIVE INTEGRATOR
NEWCOMB, A. L., JR. JUN. 1965
LANGLEY-104
Capacitive integrator circuit using silicon controlled switches /SCS/ insures output voltage linearly proportional to input pulse width. This circuit provides high input impedance and relatively low output impedance.

B65-10161
INTERFEROMETER COMBINES LASER LIGHT SOURCE AND DIGITAL COUNTING SYSTEM
INNOVATOR NOT GIVEN /MIT/ JUN. 1965
MSC-151
Measurement of small linear displacements in digital readouts with extreme accuracy and sensitivity is achieved by an interferometer. The instrument combines a digital electro- optical fringe-counting system and a laser light source.

B65-10165
SUPERCONDUCTOR MAGNETS USED FOR STAGGER-TUNING TRAVELING-WAVE MASER
INNOVATOR NOT GIVEN /RCA/ JUN. 1965
GSFC-292
Superconducting materials reduce size and weight of magnets used for stagger-tuning individual traveling-wave maser crystals. The invention is useful in microwave communication systems requiring a high information rate.

B65-10169
PHASE SHIFT FREQUENCY SYNTHESIZER IS EFFICIENT, SMALL IN SIZE
INNOVATOR NOT GIVEN /SPACE TECH. LABS./ JUN. 1965
M-FS-250
Phase shift frequency synthesizer produces suppressed-carrier signals at the sum and difference frequencies. All unwanted frequencies are suppressed by this small-sized synthesizer.

B65-10178
INNOVATOR NOT GIVEN /DUKE UNIV./ JUN. 1965
GSFC-130
Self-oscillating dc to ac converter with transistor switching to produce a square wave output is used for low and high voltage power sources. The converter has a high efficiency throughout a wide range of loads.

B65-10182
FORCE CONTROLLED SOLENOID DRIVES MICROWELD TESTER
INNOVATOR NOT GIVEN /N. AM. AVIATION/ JUN. 1965
WOO-125
Solenoid-driven device tests the integrity of a microweld joint between an electronic component lead wire and a wire ribbon by applying tension stress to the joint. Variable measured force is provided when either destructive or nondestructive testing is performed.

B65-10183
MODIFIED INTERELEMENT SPACING IMPROVES YAGI ANTENNA ARRAY
BECK, F. B. JUN. 1965
LANGLEY-130
Symmetrical antenna array is designed by adjusting the Yagi disk interelement spacing so that the grating lobe of the array factor coincides with the first sidelobe of the element pattern.

B65-10184
PRESSURE SENSOR RESPONDS ONLY TO SHOCK WAVE
INNOVATOR NOT GIVEN /BOEING CO./ JUN. 1965
M-FS-238
Pressure sensor responds only to high pressure crest of a shock wave, and will not respond to conditions of overpressure. The sensor uses plates of a battery to produce voltage output used to actuate an alarm signal or crew escape system.

B65-10187
CRYSTAL MEASURES-SHORT TERM, LARGE-MAGNITUDE FORCES
PFEIFFER, C. G. JUN. 1965
JPL-77
By using the magnitude of piezoelectric crystal response to distortion and compression, this device measures transient accelerations and their rate of change. The invention could be used in a servo control system by supplementing the accelerometer and taking over its function when its range was exceeded.

B65-10193
LOGIC CIRCUIT EXHIBITS OPTIMUM PERFORMANCE
HUSSON, C. JUN. 1965
LANGLEY-129
Performance of circuits are compared to determine the optimum circuit configuration for implementation into microelectronic functions. Comparison is made in terms of power drain, propagation time, and component variations with temperature and load.

B65-10194
ANALOG-TO-DIGITAL CONVERTER HAS INCREASED RELIABILITY AND REDUCED POWER CONSUMPTION
THORNWALL, J. C. JUN. 1965
GSFC-246
Eight-bit analog-to-digital converter decreases average power consumption and increases component reliability. The converter uses solid-state components in pulse operation and magnetic core components for minimizing power consumption. The magnetic core components also increase reliability.

B65-10195
DEVICE MEASURES FLUID DRAG ON TEST VEHICLES
FREEMAN, R. JUDD, J. H. LEISS, A. JUN. 1965
LANGLEY-34
Electromechanical drag balance device measures the aerodynamic drag force acting on a vehicle as it moves through the atmosphere and telemeters the data to a remote receiving station. This device is also used for testing the hydrodynamic drag characteristics of underwater vehicles.

B65-10196
INEXPENSIVE ELECTRICAL CONNECTOR IS MOISTURE AND CORROSIONPROOF
INNOVATOR NOT GIVEN /N. AM. AVIATION/ JUN. 1965
1965
MSC-164
Compression-sealed electrical connector made principally of plastic components is used in a corrosive atmosphere. This inexpensive and moistureproof connector can be modified to provide a multiple-pin connector.

B65-10197
IMPROVED SOLDERLESS CONNECTOR IS EASILY DISCONNECTED
INNOVATOR NOT GIVEN /HUGHES AIRCRAFT CO./ JUN. 1965
JPL-SC-060
Compression type solderless connector is easily disconnected and reassembled and resists vibration. The connector, which uses a tapered, split sleeve that is tightened by a nut into a mating bug, is used in place of standard solder lugs and to connect unsolderable wire.

B65-10199
MODULAR THERMOELECTRIC CELL IS EASILY PACKAGED IN VARIOUS ARRAYS
EPSTEIN, J. JUN. 1965
GSFC-339
Modular thermoelectric cells are easily packaged in various arrays to form power supplies have desirable voltage and current output characteristics. The cells employ two pairs of thermoelectric elements, each pair being connected in parallel between two sets of aluminum plates. They can be used as solar energy conversion devices.

B65-10200
DENSITY TRACE MADE WITH COMPUTER PRINTOUT
WILSON, M. JUN. 1965
GSFC-322
Special drum for a computer-controlled printer improves density trace of scientific data. The

drum provides uniformly shaped characters and evenly spaced variations of print density that precisely reflect data magnitude. This device plots temperature profiles, geographic contours, pressure gradients, electric potential gradients, and magnetic field configurations.

B65-10202
QUICK-DISCONNECT COUPLING SAFE TRANSFER OF HAZARDOUS FLUIDS
DEWITT, R. L. SCHMIDT, H. W. JUN. 1965
LEWIS-125
Quick-disconnect coupling is used for uncoupling of plumbing during ground-to-vehicle transfer of cryogenic and hazardous fluids. The coupling allows remote positive control of liquid pressure and flow during the transfer operation, remote connection and separation capabilities, and negligible liquid spillage upon disconnection

B65-10203
TINY BIOMEDICAL AMPLIFIER COMBINES HIGH PERFORMANCE, LOW POWER DRAIN
DEBOO, G. J. JUL. 1965
ARC-41
Transistorized, portable, high performance amplifier with low power drain facilitates biomedical studies on mobile subjects. This device, which utilizes a differential input to obtain a common-mode rejection, is used for amplifying electrocardiogram and electromyogram signals.

B65-10204
VOLTAGE VARIABLE OSCILLATOR HAS HIGH PHASE STABILITY
HEARN, C. P. JUL. 1965
LANGLEY-123
Two or more series RLC circuits are used with a negative feedback amplifier to make a voltage variable oscillator. This combination results in high phase stability and optimum frequency modulation.

B65-10206
SENSITIVE ELECTROMETER FEATURES DIGITAL OUTPUT
DOONG, H. JUL. 1965
GSFC-288
Four-stage transistorized electrometer eliminates the need for a logarithmic compression network. It measures very low currents and produces a digital output directly indicative of the input current magnitude.

B65-10208
HYBRID COMPUTER TECHNIQUE YIELDS RANDOM SIGNAL PROBABILITY DISTRIBUTIONS
CAMERON, W. D. JUL. 1965
ARC-34
Hybrid computer determines the probability distributions of instantaneous and peak amplitudes of random signals. This combined digital and analog computer system reduces the errors and delays of manual data analysis.

B65-10209
OSCILLATOR CIRCUIT MEASURES LIQUID LEVEL IN TANKS
INNOVATOR NOT GIVEN /IBM/ JUL. 1965
M-FS-245
Oscillator circuits automatically measure the liquid level in tanks. The circuit employs a twin transmission line as a liquid level probe.

B65-10212
DETECTOR CIRCUIT COMPENSATES FOR VIDICON BEAM CURRENT VARIATIONS
INNOVATOR NOT GIVEN /RCA/ JUL. 1965
GSFC-310
Signal detector circuit compensates for black level shifts in vidicons by dark current cancellation. It clamps the video signal to the dark current component of the signal. The device also compensates for background noise variation or transducer bias fluctuations in other repetitive pulse systems.

B65-10213
MULTIAXIAL ANALYZER DETECTS LOW-ENERGY ELECTRONS
LIND, D. L. OGILVIE, K. W. WILKERSON, T. D.
JUL. 1965
GSFC-329
Three curved plate energy analyzers coupled with three electron multiplier tubes detect and measure low energy electron flux in several directions simultaneously.

B65-10215
ELECTRICAL PROBE ENSURES RELIABLE CONTACT IN SOCKET
INNOVATOR NOT GIVEN /IBM/ JUL. 1965
M-FS-315
Spring-loaded probe makes a reliable electrical contact by producing a circular wiping motion at the tip when inserted into a mating socket.

B65-10218
GRAPHITE ELEMENT SERVES AS RADIANT HEAT SOURCE
INNOVATOR NOT GIVEN JUL. 1965
M-FS-105
Radiators using a graphite heating element as a radiant heat source have high heat flux and long operational lives. They are used to test the thermal resistance of materials.

B65-10221
INSTRUMENT ACCURATELY MEASURES EXTREMELY LOW AIR DENSITIES
INNOVATOR NOT GIVEN /ELECTRO-OPTICAL SYSTEMS/
AUG. 1965
M-FS-193
Gauge accurately measures low air densities in high-vacuum systems. It relies on the detection of near-visible light radiated from nitrogen molecules present in the system.

B65-10223
VOLTAGE CONTROLLED OSCILLATOR IS EASILY ALIGNED, HAS LOW PHASE NOISE
SYDNOR, R. L. AUG. 1965
JPL-510
Voltage controlled oscillator /VCO/, represented by an equivalent rf circuit, is easily adjusted for optimum performance by varying the circuit parameter. It contains a crystal drive level which is also easily adjusted to obtain minimum phase noise.

B65-10225
SIMPLE BCD CIRCUIT ACCURATELY COUNTS TO 24
SPAFFORD, M. L. AUG. 1965
GSFC-317
Ripple-through counter with divide-by-24 output pulse is used in digital control clocks to register hours and give a daily output signal. It uses commercially available digital modules that incorporate and-gates with flip-flops.

B65-10226
MAGNETIC-SHIFT-REGISTER CIRCUIT CONTROLS STEP MOTOR OPERATIONS
VEILLETTE, L. J. AUG. 1965
GSFC-340
Magnetic-shift-register circuit controls bidirectional operations of a phase-pulsed step motor. The circuit draws no power in standby, is nonregenerative, and is insensitive to switching transients.

B65-10228
SIMPLE CIRCUIT PRODUCES HIGH-SPEED, FIXED DURATION PULSES
GARRAHAN, N. M. AUG. 1965
GSFC-285
Circuit generates an output pulse of fixed width from a variable width input pulse. The circuit consists of a tunnel diode in parallel with an inductance driven by a constant current generator. It is used for pulsed communication equipment design.

B65-10232
FIELD EFFECT TRANSISTOR PRESENTS HIGH INPUT IMPEDANCE IN AC AMPLIFIER
MARSHALL, J. H. AUG. 1965

JPL-500
Four-stage transistorized ac amplifier provides high input impedance and operates at low intrinsic noise levels. It is suited to carrier or narrow band sine wave applications.

B65-10233
HIGH-SPEED SQUARE-WAVE CURRENT LIMITER OPERATES EFFICIENTLY
INNOVATOR NOT GIVEN /LABKO SCI./ AUG. 1965
JPL-SC-073
Transistorized high speed circuit limits currents from a square-wave ac power supply. The current limiter resets after each half cycle of the square wave and thus minimizes power losses.

B65-10234
SIMPLE CIRCUIT REDUCES TRANSISTOR SWITCHING TIME
INNOVATOR NOT GIVEN /WESTINGHOUSE ELEC. CORP./ AUG. 1965
GSFC-314
Silicon-controlled rectifier /SCR/, gated by a voltage divider, controls the potentiometer in transistorized switching circuits. The SCR acts as a gate to trigger the switching transistor only when the input signal reaches an amplitude that will switch the transistor rapidly.

B65-10237
BRUSHLESS DC MOTOR USES ELECTRON BEAM SWITCHING TUBE AS COMMUTATOR
STUDER, P. AUG. 1965
GSFC-345
Electron beam switching tube eliminates physical contact between rotor and stator in brushless dc motor. The tube and associated circuitry control the output of a dc source to sequentially energize the motor stator windings.

B65-10238
SOLID-STATE LASER TRANSMITTER IS AMPLITUDE MODULATED
BILDERBACK, R. AUG. 1965
MSC-121
Amplitude modulated laser transmitter affords radio frequencies unlimited bandwidth. The system, which is solid state and compact, uses a gallium arsenide diode that emits in the near infrared.

B65-10242
ELECTROMETER HAS AUTOMATIC ZERO BIAS CONTROL
INNOVATOR NOT GIVEN /APPLIED PHYSICS CORP./ AUG. 1965
GSFC-350
Zero biasing circuit in a vibrating reed type electrometer counterbalances residual potential. It charges a capacitor to the residual potential and connects that capacitor in series with the vibrating reed so that the voltages cancel. This enables the electrometer to read zero output potential in the absence of an input current.

B65-10243
NOVEL PROBE SIMPLIFIES ELECTRONIC COMPONENT TESTING
SYNER, W. F.
GSFC-342
Test probe, in conjunction with standard equipment, tests axial-lead electronic components in their original packages. The probe can be modified to test any electronic component with automatic or nonautomatic equipment.

B65-10244
LIGHTWEIGHT COAXIAL CABLE CONNECTOR REDUCES SIGNAL LOSS
BREJCHA, A. G., JR. AUG. 1965
JPL-720
Connectors with milled interface surfaces for perfect electrical contact eliminate secondary-emission discharge and low signal loss in rf coaxial cables. The connectors which contain alignment and centering components for proper joint concentricity are used in communications systems designs.

B65-10247
SERVO CALORIMETER MEASURES MATERIAL HEATING RATE
GILMOUR, G. WILSON, J. H. /WESTINGHOUSE ELEC. CORP./ AUG. 1965
NU-0024
Servo calorimeter accurately measures the heating rate of a material exposed to nuclear radiation independently of the specific heat and theraml conductivity of the material. The electrical power used is a direct measure of the nuclear heating rate.

B65-10249
MANUAL-FEED ADAPTER PERMITS MICROFILMING OF CONTINUOUS OSCILLOGRAPH OUTPUT
BENNETT, J. /WESTINGHOUSE ELEC. CORP./ AUG. 1965
NU-0029
A manual-feed adapter used with a microfilm recording unit permits continuous filming and reduces oscillograph output to manageable dimensions.

B65-10255
BORON TRIFLUORIDE NUCLEAR DETECTOR PREAMPLIFIER USES SINGLE-CABLE CONNECTION
HECKELMAN, J. D. SHUMAKER, R. E. AUG. 1965
LEWIS-178
Preamplifier for a nuclear particle detector operates with a single interconnecting cable. Isolating and bypass networks permit this single cable operation.

B65-10257
INDUCTOR FLYBACK CHARACTERISTIC GIVES VOLTAGE REGULATOR FAST RESPONSE
SMITH, G. D. AUG. 1965
GSFC-361
Voltage regulator alternately connects an inductor in parallel and in series with the input voltage source. This flyback voltage regulator provides a regulated dc voltage to varying loads from a varying dc supply and gives fast response to load and supply changes.

B65-10258
GAPPED TOROID PROVIDES INFINITE RESOLUTION OF DELAY-LINE PICKUP
ROBINSON, G. B. AUG. 1965
GSFC-370
Gapped toroid magnetically coupled to a delay line provides continuous adjustment of the time delay line signal retrieval. A rotating screw moves the toroid pickup parallel to the delay line. This device can be used in signal detection devices and instrumentation equipment.

B65-10259
INCREASED JUNCTION LEAD INDUCTANCE BALLASTS HIGH-FREQUENCY TRANSISTORS
GILBERT, G. J. /RCA/ SEP. 1965
GSFC-387
Segmentation of transistor bonding stripes and the inherent inductance of individual leads provides ballast for even current distribution across the junction of a high-frequency transistor.

B65-10260
SIMPLE PULSE COUNTING CIRCUIT COMPUTES SUM OF SQUARES
SCHAEFER, D. H. SEP. 1965
GSFC-391
Pulse counting circuit with an extra chain of flip-flops, delay lines, and and/gates computes the sum of the squares of the pulse sequences. A pulse train and the sum of the squares of the pulses are simultaneously completed.

B65-10263
INDEXING DEVICE ENSURES PROPER MATING OF ELECTRICAL CONNECTORS
JENKINS, L. M. JENKINS, S. M. SIMMONS, W. H.
SEP. 1965
MSC-155
Indexing splines with modified standard male and female connectors eliminates the possibility of incorrect mating. Large stock quantities of differently indexed connectors are unnecessary since connectors from a single stock can be

indexed as desired at installation time.

B65-10264
PLASTIC BAGS IN EVACUATED CHAMBER MAKE LIGHTWEIGHT GAS SAMPLING SYSTEM
SHAFFERNOCKER, W. M. /GE/ SEP. 1965
FRC-31
Portable, lightweight system collects the exhaust gas of an aircraft during flight for use in analyzing combustion efficiency. The system uses an evacuated chamber and plastic bags.

B65-10265
WELD LEAKS RAPIDLY AND SAFELY DETECTED
INNOVATOR NOT GIVEN /BOEING CO./ SEP. 1965
M-FS-362
Test method detects leaks that occur during hydrostatic pressure testing of welded joints in metal tanks. A strip of aluminum foil and a strip of water-soluble paper are placed over the weld. A voltage applied between the tank wall and the foil strip is monitored to detect a decrease in ohmic resistance caused by water leakage into the paper layer.

B65-10267
ELECTROMETER PREAMPLIFIER HAS DRIFT CORRECTION FEEDBACK
LABARTHE, L. C. /LABKO SCI./ SEP. 1965
JPL-SC-074
Negative feedback circuit corrects output drift in an electrometer. The negative feedback is used in the no signal state to maintain the output level at zero reference. Drift voltage storage in the signal on state is also used to provide a drift-free readout.

B65-10268
MULTIPLE TEST CHAMBER EXPOSES MATERIALS TO VARIOUS ENVIRONMENTS
JOHNSTON, R. L. SEP. 1965
MSC-179
Multiple compartment test chamber exposes several material specimens to various environmental conditions for prolonged periods. The specimens are individually mounted in chamber compartments, rotated to various positions, and measured through optical windows to determine progressive changes in the material properties.

B65-10269
SIMPLE DEVICE PRODUCES ACCELEROMETER CALIBRATION PULSE
INNOVATOR NOT GIVEN /LOCKHEED MISSILES AND SPACE CO./ SEP. 1965
M-FS-363
Shock-impulse exciter produces a remote checkout of the amplitude calibration and frequency response of a piezoelectric vibration accelerometer. The exciter employs a bimetal spring to apply a mechanical acceleration pulse of a known amplitude and frequency to the accelerometer.

B65-10271
COMPOSITE SEAL REDUCES ALKALINE BATTERY LEAKAGE
CLATTERBUCK, C. H. PLITT, K. F. SEP. 1965
GSFC-337
Composite seal consisting of rubber or plastic washers and a metal washer reduces alkaline battery leakage. Adhesive is applied to each washer interface, and the washers are held together mechanically.

B65-10273
ELECTROMECHANICAL FLOWMETER ACCURATELY MONITORS FLUID FLOW
GRANT, D. J. SEP. 1965
GSFC-357
Electromechanical flowmeter remotely and accurately monitors the flow rate and total volume of a transparent liquid discharged from a dispensing system. A dual dispensing tube system provides a relative reference level which permits compensation for temperature variations.

B65-10274
ELECTRONIC OHMMETER PROVIDES DIRECT DIGITAL OUTPUT
SEMYAN, J. SEP. 1965
GSFC-363
Self-balancing wheatstone bridge acts as all-electronic digital readout ohmmeter

B65-10275
IMPROVED CIRCUIT MINIMIZES GENERATION OF PSEUDONOISE CHECK BITS
ANDERSON, T. O. LUSBAUGH, W. A. SEP. 1965
JPL-698
Computer switching network consists of parallel and series combinations of mod 2 adders using the minimum number of gating levels. This network minimizes the propagation time in which a sequence of pseudonoise check bits are generated.

B65-10276
ADDED DIODES INCREASE OUTPUT OF BALANCED MIXER CIRCUIT
ROBINSON, G. B. SEP. 1965
GSFC-354
Two diodes added to a conventional balanced mixer circuit increase the output signal level. The resulting half-wave carrier switch balanced modulator is used in radio equipment.

B65-10277
NONLINEAR FEEDBACK REDUCES ANALOG-TO-DIGITAL CONVERTER ERROR
MUNOZ, R. M. SEP. 1965
ARC-46
Nonlinear analog-to-digital converter measures the analog input level and continuously adjusts the digital readout scale sensitivity to effectively increase the accuracy. It is able to acquire more accurate low-level data.

B65-10278
MODIFIED DEVELOPER INCREASES LINE RESOLUTION IN PHOTOSENSITIVE RESIST
INNOVATOR NOT GIVEN /WESTINGHOUSE ELEC. CORP./ SEP. 1965
GSFC-386
Standard developer solution is mixed with dipropyl carbonate. This reduces swelling in the photosensitive resist and permits application of relatively thick films with minimal pinhole formation and increased line resolution.

B65-10279
INFLATABLE BLADDER PROVIDES ACCURATE CALIBRATION OF PRESSURE SWITCH
SMITH, N. J. /BOEING CO./ SEP. 1965
M-FS-367
Calibration of a pressure switch is accurately checked by a thin-walled circular bladder. It is placed in the pressure switch and applies force to the switch diaphragm when expanded by an external pressure source. The disturbance to the normal operation of the switch is minimal.

B65-10281
CIRCUIT MAINTAINS DIGITAL DECISION THRESHOLD AT PRESET LEVEL
INNOVATOR NOT GIVEN /AVCO CORP./ SEP. 1965
M-FS-331
Optimum decision-level circuit maintains the decision threshold at any preselected percentage of the input-signal amplitude. Communications equipment involving recognition of transmitted digital information can benefit from this circuit

B65-10282
CONSTANT-CURRENT REGULATOR IMPROVES TUNNEL DIODE THRESHOLD-DETECTOR PERFORMANCE
CANCRO, C. A. SEP. 1965
GSFC-239
Grounded-base transistor is placed in a tunnel diode threshold detector circuit, and a bias voltage is applied to the tunnel diode. This provides the threshold detector with maximum voltage output and overload protection.

B65-10284
FIELD-EFFECT TRANSISTOR REPLACES BULKY TRANSFORMER IN ANALOG-GATE CIRCUIT
INNOVATOR NOT GIVEN /RADIATION, INC./ SEP. 1965
GSFC-351

Metal-oxide semiconductor field-effect transistor /MOSFET/ analog-gate circuit adapts well to integrated circuits. It provides better system isolation than a transformer, while size and weight are appreciably reduced.

B65-10286
UPPERCASE AND LOWERCASE COMPUTER PRINTOUT INCREASES READABILITY
HAND, W. W. JONSBERG, M. B. /DOC., INC./ SEP. 1965
HQ-12
Print chain of 120 characters facilitates production of computer printout in both uppercase and lowercase characters. Although the output speed is reduced, the use of the print chain increases the computer printout readability.

B65-10287
PHOTORESISTANCE ANALOG MULTIPLIER HAS WIDE RANGE
HARTENSTEIN, R. G. SEP. 1965
GSFC-360
Photoactivated bridge facilitates equal performance of analog multipliers over a wide frequency range. The multiplier operates from direct current to an upper frequency limited by either the light source or the closed-loop amplifier.

B65-10289
BORON NITRIDE HOUSING COOLS TRANSISTORS
INNOVATOR NOT GIVEN /SPACE TECHNOL. LABS./ SEP. 1965 SEE ALSO B63-10033 AND B65-10186
WOO-079
Boron nitride ceramic heat sink cools transistors in rf transmitter and receiver circuits. Heat dissipated by the transistor is conducted by the boron nitride housing to the metal chassis on which it is mounted.

B65-10290
FM/CW SYSTEM MEASURES AIRCRAFT ATTITUDE
INNOVATOR NOT GIVEN /MELPAR/ SEP. 1965
M-FS-276
FM/CW radar system measures attitude of an approaching aircraft relative to a ground station. The FM/CW transmitter on board the aircraft transmits through two antennas to a ground-based receiver.

B65-10293
ELECTROSTATICALLY DRIVEN DYNAMIC CAPACITOR EMPLOYS CAPACITIVE FEEDBACK
LONBORG, J. O. OCT. 1965
JPL-771
Three-part signal electrode provides capacitive feedback to an oscillator driven dynamic capacitor in an electrometer circuit.

B65-10298
TITANIUM DIAPHRAGM MAKES EXCELLENT AMPLITRON CATHODE SUPPORT
TEICH, W. W. /RAYTHEON CO./ OCT. 1965
GSFC-394
Cathode support structure designed around a titanium diaphragm prevents radial misalignment between the cathode and anode in amplitrons. The titanium exhibits low thermal conductivity, tolerates lateral thermal expansion of the cathode, and is a poor primary and secondary emission medium.

B65-10299
ELECTROPNEUMATIC RHEOSTAT REGULATES HIGH CURRENT
HAACKER, J. F. JEDLICKA, J. R. WAGONER, C. B. OCT. 1965
ARC-44
Electropneumatic rheostat maintains a constant direct current in each of several high-power parallel loads, of variable resistance, across a single source. It provides current regulation at any preset value by dissipating the proper amount of energy thermally, and uses a column of mercury to vary the effective length of a resistance element.

B65-10300
IMPURITY DIFFUSION PROCESS FOR SILICON SEMICONDUCTORS IS FAST AND PRECISE
MC LOUSKI, R. M. SKOUSON, G. W. /WESTINGHOUSE ELEC. CORP./ OCT. 1965
GSFC-397
Impurity diffusion process produces precision silicon semiconductor junctions economically and fast. Oxide is deposited on a silicon wafer and a controlled concentration of impurity atoms in gaseous form is simultaneously introduced into the reaction.

B65-10301
REMOTE RAPIDLY VARYING PRESSURES ACCURATELY MEASURED
INNOVATOR NOT GIVEN /GE/ OCT. 1965
FRC-26
Transmitting-damping tube with one end closed, the other open to a pressure source, has a pressure sensor connected to a port close to the pressure source. This accurately measures transient or rapidly varying fluid pressures.

B65-10304
IMPROVED STRAIN-WIRE FLOWMETER HAS FAST RESPONSE TIME
DILLON, R. C. DUNBAR, W. R. OCT. 1965
LEWIS-241
Strain-sensitive resistance wires in a Wheatstone bridge arrangement form the sensing element of a flowmeter. The change in resistance of the wires is measured as a function of stream velocity. Thus the electrical output is a measure of both rapidly varying and steady fluid-flow rates.

B65-10305
THIN-FILM RESISTORS USED IN FUNCTIONAL ELECTRONIC BLOCKS
INNOVATOR NOT GIVEN /WESTINGHOUSE ELEC. CORP./ OCT. 1965
GSFC-380
Vapor-deposited thin-film resistors replace diffused resistors in R-C tank circuits in a solid state electronic block. This allows an optimum parallel capacitance to be obtained for circuit applications requiring a high resistance and a low capacitance.

B65-10306
OPAQUE MICROFICHE MASTHEAD PERMITS EASY READING
LOWE, E. M. /DOC., INC./ OCT. 1965
HQ-7
White-pigmented backing applied to the reverse side of microfiche mastheads makes the area opaque and easily readable. This technique is of value for organizations involved in large volume information storage and retrieval.

B65-10307
FREQUENCY CORRECTION DEVICE USES DIGITAL CIRCUITRY
SCHAEFER, D. OCT. 1965
GSFC-268
Signal acquisition and tracking system covering a wide range of frequencies uses a digital circuit to sample the frequency of an incoming signal and provide correction pulses to the voltage-controlled oscillator. The circuit can also sense the presence of a signal on any one of the input lines.

B65-10308
ELECTRONIC AMPERE-HOUR INTEGRATOR IS ACCURATE TO ONE PERCENT
PAULKOVICH, J. OCT. 1965
GSFC-203
Electronic ampere-hour integrator is based on current-to-frequency conversion. It operates on low power and is accurate to one percent. This device can measure the ampere-hour capacity of batteries and can be adapted for other functions.

B65-10309
THERMOELECTRIC ELEMENTS DIFFUSION-BONDED TO TUNGSTEN ELECTRODES
INNOVATOR NOT GIVEN /TYCO LABS./ OCT. 1965 SEE ALSO B65-10220

GSFC-346
Solid-state diffusion process bonds lead telluride and lead telluride-tin telluride thermoelectric elements to tungsten electrodes. The resulting bond is nonmagnetic and has high strength and low electrical and thermal resistance. This method is also used with tantalum electrodes.

B65-10310
THRESHOLD DETECTOR PRODUCES NARROW PULSES AT HIGH REPETITION RATES
GARRAHAN, N. M. OCT. 1965
GSFC-383
Solid state device generates fixed width output pulses from variable width input pulses in the nanosecond range. The circuit produces pulse repetition rates in the megacycle range and exhibits low power drain.

B65-10311
PCM MAGNETIC TAPE SYSTEM EFFICIENTLY RECORDS AND REPRODUCES DATA
COLE, P. T. OCT. 1965
GSFC-375
Split-phase PCM technique consists of data and clock signal recording and reproduction systems. This PCM magnetic tape system achieves a high packing density on the tape and provides a symmetrical reproduction of the recorded signal.

B65-10313
PLANETARY CAMERA CONTROL IMPROVES MICROFICHE PRODUCTION
CHESTERTON, W. L. LEWIS, E. B. /DOC., INC./ OCT. 1965
HQ-1 HQ-5
Microfiche is prepared using an automatic control system for a planetary camera. The system provides blank end-of-row exposures and signals card completion so the legend of the next card may be photographed.

B65-10314
HYBRID CIRCUIT ACHIEVES PULSE REGENERATION WITH LOW POWER DRAIN
CANCRO, C. A. OCT. 1965
GSFC-382
Hybrid tunnel diode-transistor circuit provides a solid-state, low power drain pulse regenerator, frequency limiter, or gated oscillator. When the feedback voltage exceeds the input voltage, the circuit functions as a pulse normalizer or a frequency limiter. If the circuit is direct coupled, it functions as a gated oscillator.

B65-10315
MAGNETOMETER MEASURES ORTHOGONAL COMPONENTS OF MAGNETIC FIELDS
INNOVATOR NOT GIVEN /SPECTRA PHYS./ OCT. 1965
GSFC-395
Driven magnetometer accurately measures the components of a low strength magnetic field in each of three mutually perpendicular directions. To accomplish this, it employs the principle of magnetic resonance in optically pumped rubidium vapor.

B65-10317
INSTRUMENT PERFORMS NONDESTRUCTIVE CHEMICAL ANALYSIS, DATA CAN BE TELEMETERED
TURKEVICH, A. /CHICAGO UNIV./ OCT. 1965
JPL-SC-078
Instrument automatically performs a nondestructive chemical analysis of surfaces and transmits the data in the form of electronic signals. It employs solid-state nuclear particle detectors with a charged nuclear particle source and an electronic pulse-height analyzer.

B65-10318
REMOTE CONTROL ELECTRICAL SWITCHING SYSTEM HAS 1000-OUTPUT CAPABILITY
INNOVATOR NOT GIVEN /IBM/ OCT. 1965
M-FS-380
Electromechanical remote control system has a capacity of 1000 individual on-off functions yet uses only seven pairs of telephone-type lines for interconnection. Installation and maintenance costs are decreased by using this system.

B65-10320
RUGGED PRESSED DISK ELECTRODE HAS LOW CONTACT POTENTIAL
DAY, J. L. MOSIER, B. /INST. OF RES. AND INSTRUMENTATION/ OCT. 1965 SEE ALSO B64-10025
MSC-158
Pressed-disk electrode with low contact potential monitors physiological processes. It consists of silver and silver chloride combined with bentonitic clay. The clay affords a surface that permits use over extended periods without contact deterioration.

B65-10322
CAM-OPERATED LIMIT SWITCH FEATURES SAFE FUSE REPLACEMENT
WEBER, G. J. /MCDONNELL AIRCRAFT CORP./ OCT. 1965
MSC-218
Two hermetically sealed, short travel, limit switches permit fuse replacement without danger of a spark or arcing. The switches are wired in parallel circuits and actuated by manually operated cams containing the circuit fuses.

B65-10324
SELENIUM BOND DECREASES ON RESISTANCE OF LIGHT-ACTIVATED SWITCH
INNOVATOR NOT GIVEN /IBM/ NOV. 1965
JPL-SC-101
Vitrified amorphous selenium bond decreases the ON resistance of a gallium arsenide-silicon light-activated, low-level switch. The switch is used under a pulse condition to prolong switch life and minimize errors due to heating, devitrification, and overdrawing.

B65-10325
DIRECT FORCE-MEASURING TRANSDUCER USED IN BLOOD PRESSURE RESEARCH
EIGE, J. J. /STANFORD RES. INST./ NEWGARD, P. M. PRESSMAN, G. L. NOV. 1965
ARC-53
Direct force-measuring transducer acts as an arterial tonometer, gives a direct readout to instrumentation, and is unaffected by ambient noise. It uses a semiconductor strain gauge which is deflected by pressure pulses in the artery. The deflection changes the resistance of the gauge and alters the voltage reading on the associated instrumentation.

B65-10328
FEED-THROUGH CONNECTOR WITHSTANDS HIGH TEMPERATURES IN VACUUM ENVIRONMENT
KREISMAN, W. S. /GEOPHYS. CORP. OF AM./ NOV. 1965
GSFC-442
Feed-through connector with sealing action augmented by any temperature increase can be used through the wall of a vacuum device. It retains vacuum integrity through successive cycles of high temperature.

B65-10329
BAKING ENABLES MCLEOD GAUGE TO MEASURE IN ULTRAHIGH VACUUM RANGE
KREISMAN, W. S. /GEOPHYS. CORP. OF AM./ NOV. 1965
GSFC-440
Accurate measurements in the ultrahigh vacuum range by a conventional McLeod gauge requires degassing of the gauge*s glass walls. A closed system, in which mercury is forced into the gauge by gravity alone, and in which the gauge components are baked out for long periods, is used to achieve this degassing.

B65-10333
COMMUNICATION SYSTEM USES MODULATED LASER BEAM
MINOTT, P. O. NOV. 1965
GSFC-377
Electro-optical system is placed on a satellite to effect communications between two remote stations. The system employs an essentially passive, retrodirective, laser beam modulator- reflector.

B65-10334
FREQUENCY DIVIDER IS FREE OF SPURIOUS OUTPUTS

MC DERMOND, D. NOV. 1965
GSFC-308
Frequency divider provides sixteen output states free of spurious pulses from four input circuits. The input is binary coded, and a change of one in the input only changes the number of output states by one.

B65-10340
MINIATURE SERVO ACCELEROMETER IS FORCE-BALANCED
JOHNSTON, A. R. /CALIF. INST. RES. FOUND./ NOV. 1965
JPL-155
Miniature servo accelerometer measures unusually small forces of torques. The pendulous mass of the accelerometer is suspended by fused quartz torsion fibers in an electromagnetically force-balanced environment. It is used in gravity surveys for exploring mineral deposits.

B65-10343
DELAYED RIPPLE COUNTER SIMPLIFIES SQUARE-ROOT COMPUTATION
CLIFF, R. NOV. 1965
GSFC-398
Ripple subtract technique simplifies the logic circuitry required in a binary computing device to derive the square root of a number. Successively higher numbers are subtracted from a register containing the number out of which the square root is to be extracted. The last number subtracted will be the closest integer to the square root of the number.

B65-10345
VARIABLE WORD LENGTH ENCODER REDUCES TV BANDWIDTH REQUIREMENTS
SIVERTSON, W. E., JR. NOV. 1965
LANGLEY-87
Adaptive variable resolution encoding technique provides an adaptive compression pseudo-random noise signal processor for reducing television bandwidth requirements. Complementary processors are required in both the transmitting and receiving systems. The pretransmission processor is analog-to-digital, while the postreception processor is digital-to-analog.

B65-10347
COMPACT SCR TRIGGER CIRCUIT FOR IGNITRON SWITCH OPERATES EFFICIENTLY
FOSTER, L. E. NOV. 1965
M-FS-371
Trigger circuit with two series-connected SCR triggers an ignitron switch used to discharge high-energy capacitor banks. It does not require a warmup period and operates at relatively high efficiency.

B65-10349
FREQUENCY DISCRIMINATOR WITH BINARY OUTPUT ELIMINATES TUNED CIRCUITS
DE VELDE, E. /IBM/ NOV. 1965
M-FS-376
Frequency discriminator has a binary output and permits microminiaturized packaging techniques. It uses a bandpass amplifier and standard logic elements that convert two input frequencies into two discrete logic pulses.

B65-10350
ZENER DIODE CONTROLS SWITCHING OF LARGE DIRECT CURRENTS
INNOVATOR NOT GIVEN /IBM/ NOV. 1965
MSC-188
High-current zener diode is connected in series with the positive input terminal of a dc supply to block the flow of direct current until a high-frequency control signal is applied across the zener diode. This circuit controls the switching of large dc signals.

B65-10352
VIBRATING DIAPHRAGM MEASURES HIGH ELECTROSTATIC FIELD STRENGTHS
INNOVATOR NOT GIVEN /ELECTRO-OPT. SYSTEMS/ NOV. 1965
MSC-189
Meter with flexible conductive diaphragm measures electrostatic charge density on a conducting surface in a vacuum. The diaphragm is supported from an insulated conductive support ring rigidly attached to the conductive surface whose electrostatic charge density is to be measured.

B65-10353
MULTIPHASE CLOCK-PULSE GENERATOR USES SIMPLIFIED CIRCUITRY
INNOVATOR NOT GIVEN /IBM/ NOV. 1965
M-FS-297
Multiphase clock-pulse generator converts a simple pulse train into nonoverlapping clock pulses. The generator employs multistable circuits to minimize the number of electronic components.

B65-10355
SIMPLE CIRCUIT PERFORMS BINARY ADDITION AND SUBTRACTION
CLIFF, R. A. SCHAEFER, D. H. NOV. 1965
GSFC-399
Ripple adder reduces the number of logic circuits required to perform binary addition and subtraction. The adder uses dual input and delayed output flip flops in one register. The contents of this register are summed with those of a standard register through conventional AND gates.

B65-10359
IMPROVED WIRE MEMORY MATRIX USES VERY LITTLE POWER
FEDDE, G. A. /SPERRY RAND CORP./ NOV. 1965
JPL-SC-167
Thin-film, plated-wire memory matrix for computer applications requires little power yet has higher speed and four times greater storage capacity than ferrite-core memories of the same size.

B65-10361
HIGH-INTENSITY FLASHING BEACON POWERED BY MERCURY CELLS
INNOVATOR NOT GIVEN NOV. 1965
LANGLEY-80
Pair of xenon flashlamps powered by mercury batteries in a transistorized circuit provides a flashing beacon with an effective intensity of a second-magnitude star at a distance of ten statute miles. This beacon is lightweight, long lasting and it withstands shock and vibration.

B65-10362
TEMPERATURE TRANSDUCER HAS HIGH OUTPUT, IS TIME STABLE
FOLLETT, W. H. /BALL BROTHERS RES. CORP./ NOV. 1965
GSFC-446
Compact, lightweight temperature transducer requires no amplification of its output signal and is time stable. It uses the temperature-dependent characteristics of a silicon transistor to provide a zero-to-five-volt signal proportional to temperature.

B65-10363
REGENERATIVE FUEL CELL COMBINES HIGH EFFICIENCY WITH LOW COST
DOYLE, H. FRANK, H. STEPHENS, C. W. /ELECTRO-OPT. SYSTEMS/ DEC. 1965
WOO-090
Hydrogen/oxygen regenerative fuel cell stores electrical energy efficiently and inexpensively. The fuel cell has a high energy-to-weight ratio, and is adapted for a large number of cycles with deep discharge

B65-10365
BLOOD-PRESSURE MEASURING SYSTEM GIVES ACCURATE GRAPHIC OUTPUT
INNOVATOR NOT GIVEN /GARRETT CORP./ DEC. 1965
MSC-191
Electronic blood-pressure system provides an external measurement of arterial blood pressure in the form of an easily interpreted graphic trace. The system employs a standard occluding cuff, a gas-pressure valve, and an electronic timer and cycle-control circuit.

B65-10369
RESPIRATORY TRANSFER VALUE HAS FAIL-SAFE FEATURE
PUCCINELLI, A. A. SMITH, J. R., JR. DEC. 1965
ARC-1
Quick-acting, remote controlled valve connects either one of two oxygen or air supplies to a breathing tube. The valve, which is fail-safe, incorporates a cammed piston arrangement that is driven by a remote controlled reversible rotary solenoid or reversible electric motor.

B65-10376
THREE-POSITION ROCKER SWITCH ACTUATOR HAS POSITIVE CENTERING
BOGLEY, R. L. /N. AM. AVIATION/ DEC. 1965
MSC-261
Three-position rocker switch actuator provides positive center positioning to inhibit possible override. Switch position is visually identified by rocker position, and functions can be shown on tabs and bars.

B65-10377
BINARY COUNTER USES FLUID LOGIC ELEMENTS
INNOVATOR NOT GIVEN /RAND CORP./ DEC. 1965
M-FS-323
Binary counter with two fluid flip-flops in each stage has an output taken from the output of the second flip-flop. The flip-flops each contain three fluid logic elements.

B65-10379
THREE-DIMENSIONAL WIRE-MESH CAPACITOR SYSTEM MEASURES FLUID DENSITY
INNOVATOR NOT GIVEN /GARRETT CORP./ DEC. 1965
WOO-194
Gaging system automatically measures the bulk density of a stored, electrically nonconductive fluid containing varying portions of liquid and vapor. The system employs a three-dimensional wire-mesh capacitor whose capacitance varies with the bulk density of the fluid dielectric medium between the capacitor plates.

B65-10380
DEVICE DETECTS UNBONDED AREAS IN PLASTIC LAMINATES
INNOVATOR NOT GIVEN /DOUGLAS AIRCRAFT CO./ DEC. 1965
WOO-206
Device generates an acoustic signal whose frequency changes disclose the presence of delaminated or unbonded areas in plastic laminates. A microphone makes the frequency change audible.

B65-10381
KEYED PLUGS AND SOCKETS PREVENT IMPROPER CONNECTIONS
BUCKEY, D. L. LANKFORD, H. /MCDONNELL AIRCRAFT CORP./ DEC. 1965
MSC-231
Plugs and sockets individually keyed so that no plug can be mated with other than its proper socket facilitates multiple connection in electrical systems.

B65-10382
PHOTOELECTRIC SYSTEM CONTINUOUSLY MONITORS LIQUID LEVEL
INNOVATOR NOT GIVEN /BOEING CO./ DEC. 1965
M-FS-417
Immersion probe presents a depth-sensitive optical transmission path between a light source and a photoelectric cell to continuously monitor the level of a transparent liquid in a tank. This system operates automatically, without moving parts, and provides output signals to a remote recorder.

B65-10387
SHRINKABLE SLEEVE ELIMINATES SHIELDING GAP IN RF CABLE
INNOVATOR NOT GIVEN /GEN. DYN./CONVAIR/ DEC. 1965
WOO-207
RF shielding gap between an RF cable and a multipin connector is eliminated by a sleeve assembly installed between the connector and the terminated portion of the shielding. The assembly is enclosed in a heat-shrinkable plastic sleeve which completes the continuous RF shield.

B65-10389
INSULATOR-HOLDER PROTECTS TRANSISTORS IN DENSE ELECTRONIC ASSEMBLIES
INNOVATOR NOT GIVEN /WESTINGHOUSE ELEC. CORP./ DEC. 1965
MSC-214
Molded insulating spacer with one or more cavities is use as an insulated holder for mounting metal-case transistors in a chassis containing densely packed electronic components. The transistors are mechanically supported on their bases and electrically isolated from each other by the holder.

B65-10392
NONCONTACTING VIBRATION TRANSDUCER HAS CONSTANT SENSITIVITY
FLAGGE, B. DEC. 1965
LANGLEY-99
Noncontacting transducer with constant sensitivity automatically measures the vibration amplitudes along the span of a vibrating structure of irregular contour. A system employing a feedback control positions the transducer at a constant height above the test surfaces. A differential transformer facilitates calibration and extends the amplitude range of the system.

B65-10396
ADHESIVE-BACKED TERMINAL BOARD ELIMINATES MOUNTING SCREWS
INNOVATOR NOT GIVEN /N. AM. AVIATION/ DEC. 1965
MSC-173
Low-profile terminal board is used in dense electronic circuits where mounting and working space is limited. The board has a thin layer of pressure-sensitive adhesive backing which eliminates the need for mounting screws.

B65-10399
BINARY COUNTER ACCUMULATES TIME BY COMPLEMENTARY PRESET
MARRINER, G. E. /N. AM. AVIATION/ DEC. 1965
MSC-242
Binary counter reduces the number of logic elements required to furnish electrical control functions. The counter is automatically preset to the complement of the desired time increments in milliseconds. An output pulse is produced each time it reaches its capacity.

B65-10400
ELECTRICALLY HEATED DIAPHRAGM ELIMINATES USE OF PYROTECHNICS
MATHEWSON, R. C. /N. AM. AVIATION/ DEC. 1965
MSC-241
Membrane-type diaphragm is used in systems where fluids are contained under pressure until a certain pressure threshold or point of time has been reached when the fluids are automatically released. The diaphragm is resistance heated until its strength is degraded to the point of rupture, thus releasing the contained fluids.

02 ENERGY SOURCES

B63-10260
SOLAR-ANGLE SENSOR HAS NO MOVING PARTS
EXNER, D. W., JR. MEISENHOLDER, G. W. SCHMIDT, L. F. MAY 1964
JPL-418
To measure the direction of the sun over a spherical field of view, a cube-shaped solar sensor with a photocell on each side is used. The outputs from the six cells are fed into a computer for determining the position of the sun relative to an orthogonal coordinate system.

B63-10344
COOLING METHOD PROLONGS LIFE OF HOT-WIRE TRANSDUCER
BALDWIN, L. V. SANDBORN, V. A. JUN. 1964
LEWIS-41
To cool a hot-wire transducer, the two ends of the

wire are supported on thermally and electrically conductive rods, surrounded by a fluid cooling medium. By keeping the supporting rods at a substantially constant temperature, the probe is prevented from overheating.

B63-10346
NEW METHOD USED TO FABRICATE LIGHT-WEIGHT HEAT EXCHANGER FOR ROCKET MOTOR
BAEHR, E. F. MAR. 1964
LEWIS-43
A grooved capstrip, to straddle the metal edges of regenerative cooling channels, increases the strength and heat transfer characteristics of lightweight motor cases. This capstrip is so designed as to form a firm joint between the channels that form the rocket casing wall.

B63-10421
MIRROR DEVICE ALIGNS MACHINE SURFACE PERPENDICULAR TO SIGHT LINES
INNOVATOR NOT GIVEN /JPL/ MAY 1964
WOO-5
A sight alignment device is used to align two machines so that an axis of the first machine is parallel to a flat surface on the second. This sighting device depends on the reflection of a light beam from the surface to be aligned.

B65-10036
IONIZATION VACUUM GAGE STARTS QUICKLY, IS UNAFFECTED BY SPURIOUS CURRENTS
GARWOOD, D. C. FEB. 1965
JPL-304
Ionization vacuum gauge with a switch-operated starting device and a microammeter begins functioning quickly in a high vacuum. The microammeter is also protected by its circuit design from spurious currents.

B65-10046
WIDE-APERTURE SOLAR ENERGY COLLECTOR IS LIGHT IN WEIGHT
INNOVATOR NOT GIVEN /BECKMAN INSTRUMENTS/ FEB. 1965
JPL-SC-055
By mounting the Fresnel lens in eight steps above three paraboloidal reflector rings of epoxy resin with aluminized surfaces, a light weight, wide-aperture solar energy collector is devised.

B65-10071
SIMPLE OPTICAL SYSTEM USED TO ALIGN SPECTROGRAPH
EXTON, R. J. MAR. 1965
LANGLEY-92
Optically fast, portable spectrograph incorporates auxiliary optics in a boresight technique to use the zero order of the grating for visual alignment. This device obtains moderately resolved spectra of a multitude of light sources.

B65-10081
MAGNETIC FIELD TEST COILS ARE TEMPERATURE COMPENSATED
INNOVATOR NOT GIVEN /SPECTRA PHYS./ APR. 1965
GSFC-294
Magnetic field test coils with auxiliary winding wound opposite to main coil winding eliminates changes in field configurations due to temperature changes. The auxiliary coil is made with aluminum wire.

B65-10082
MULTIPLE ELEMENT SOFT X-RAY SOURCE PRODUCES WIDE RANGE OF RADIATION
CARUSO, A. J. NEUPERT, W. M. MAR. 1965
GSFC-286
A rotating mount with target elements positioned independently for direct electron bombardment produces soft X-ray radiation with a wide range of characteristics. The device may be used to study solar radiation from a satellite.

B65-10084
MODIFIED CONTOUR PROJECTOR MAKES EXCELLENT *CONTOUR DENSITOMETER*
EXTON, R. J. MAR. 1965
LANGLEY-93
Thin glass beam splitter, densitometer head, and densitometer electronics are incorporated in a standard contour projector. The density contour of small areas of photographic film can be read. This instrument can be used as a research tool in process engineering.

B65-10100
ROTATING FILTERS PERMIT WIDE RANGE OF OPTICAL PYROMETRY
EXTON, R. J. SIVITER, J. H., JR. STRASS, H. K.
APR. 1965
LANGLEY-33
Gear-driven dual filter disks of graduated density vary linearly with respect to rotation, allowing a wide range of photographic pyrometry. This technique is applicable in metallurgy, glass, plastics and refractory research, and crystallography.

B65-10122
MICROWAVE TECHNIQUE MEASURES PLASMA CHARACTERISTICS
LEONARD, W. F. APR. 1965
LANGLEY-134
Plasma electron density and temperature distribution is measured by passing a high frequency millimeter wave through plasma. Variations in density and temperature are determined by measuring insertion loss as the plasma travels between the microwave transmitting and receiving antennas

B65-10129
APPARATUS PERMITS FLEXURE TESTING OF SPECIMENS AT CRYOGENIC TEMPERATURES
DENABURG, C. R. REECE, O. Y. MAY 1965
M-FS-257
Cryostat with support structure for test specimen allows flexure fatigue testing of honeycomb composite sandwich structures at cryogenic temperatures. The cryostat consists of a cryogen container enclosing two pairs of yokes which support two rotating end clamps.

B65-10132
SIMPLE CIRCUIT POSITIONS FILM FRAMES IN PROJECTOR
SILVER, R. H. MAY 1965
JPL-508
Individual frames on a photographic film strip in a projector are automatically positioned by a simple circuit. The circuit uses a photodiode that senses frame registry position and a relay that stops the film-advance motor to suspend the film at point of registry.

B65-10133
PROBE MEASURES CHARACTERISTICS OF HOT GAS STREAM
INNOVATOR NOT GIVEN /PLASMADYNE CORP./ MAY 1965
M-FS-240
Shielded, tubular flow calorimeter operated by valve position measures characteristics of a hot gas stream of unknown composition. Measurements of mass flow density and total heat content per unit mass, total heat content per unit mass only, and pitot pressure are made.

B65-10157
INTERNAL COOLING INCREASES RANGE OF IMMERSION-TYPE TEMPERATURE PROBE
LANZO, C. D. JUN. 1965
LEWIS-171
Temperature probe used in a high temperature, high velocity gas stream consists of cooled outer shell and a cooled platinum sensing tube with iron constantan thermocouples.

B65-10171
FRESNEL ZONE PLATE FORMS IMAGES AT WAVELENGTHS BELOW 1000 ANGSTROMS
INNOVATOR NOT GIVEN /SMITHSONIAN INST./ JUN. 1965
GSFC-231
Fresnal zone plate with openings replacing the usual transparent rings produces images in a vacuum ultraviolet. The plate is made by etching and electrodeposition.

B65-10186
ELECTRONIC MODULES EASILY SEPARATED FROM HEAT SINK
INNOVATOR NOT GIVEN /WESTINGHOUSE ELEC. CORP./
JUN. 1965 SEE ALSO B63-10033
MSC-142
Metal heat sink and electronic modules bonded to a thermal bridge can be easily cleaved for removal of the modules for replacement or repair. A thin film of grease between a fluorocarbon polymer film on the metal heat sink and an adhesive film on the modules acts as the cleavage plane.

B65-10188
REFRACTORY METAL SHIELDING /INSULATION/ INCREASES OPERATING RANGE OF INDUCTION FURNACE
EBIHARA, B. T. JUN. 1965
LEWIS-202
Thermal radiation shield contains escaping heat from an induction furnace. The shield consists of a sheet of refractory metal foil and a loosely packed mat of refractory metal fibers in a concentric pattern. This shielding technique can be used for high temperature ovens, high temperature fluid lines, and chemical reaction vessels.

B65-10211
LIGHT RAY MODULATION CONTROLS OPTICAL SYSTEM ALIGNMENT
INNOVATOR NOT GIVEN /KOLLSMAN INSTR. CORP./ JUL. 1965
GSFC-171
Light ray modulator maintains focus in optical system subject to severe thermal gradients, vibration and shock. The modulated signals drive a servo system that aligns the system optics.

B65-10224
HEATER DECOMPOSES OIL BACKSTREAMING FROM HIGH-VACUUM PUMPS
SHAPIRO, H. AUG. 1965
GSFC-356
Heater placed between an oil diffusion pump and a vacuum chamber prevents backstreaming of oil molecules into the work area of the chamber. It breaks the oil molecules into basic constituents that can be pumped away.

B65-10239
ION PUMP PROVIDES INCREASED VACUUM PUMPING SPEED
INNOVATOR NOT GIVEN /GEOPHYS. CORP. OF AM./ AUG. 1965
NEO-13
Multiple-cell ion pumps with increased vacuum pumping speed are used for producing ultrahigh vacuums in vacuum tubes and mass spectrometers. The pump has eight cathode-anode magnetron cells arranged in a cylinder which increase the surface area of the cathode.

B65-10240
INSULATION ACCELERATES RATE OF COOLING WITH CRYOGENIC FLUID
ALLEN, L. D. AUG. 1965
MSC-161
Thermal insulating material increases the rate of heat transfer from the interior of a chamber to a liquid nitrogen-filled metal jacket. A thin film of the material is bonded to the surface of the metal wall facing the liquid nitrogen.

B65-10252
DISTANT OBJECTS DETECTED VISUALLY WITH OPTICAL FILTERS
INNOVATOR NOT GIVEN AUG. 1965
LANGLEY-166
Fluorescent coating aids visual daylight detection and identification of distant objects. An object appears as a blinking light when the area is alternately scanned with transmitting and obscuring filters. This method can be effective in search and rescue operations.

B65-10253
OIL-DAMPED MERCURY POOL MAKES PRECISE OPTICAL ALIGNMENT TOOL
THEKAEKARA, M. P. AUG. 1965
GSFC-353
Mercury pool with a cover layer of high viscosity oil provides a reference reflector for precise alignment of optical instruments. The cover layer effectively damps any ripples in the mercury from support structure vibrations.

B65-10272
INFRARED SHIELD FACILITATES OPTICAL PYROMETER MEASUREMENTS
EICHENBRENNER, F. F. ILLG, W. SEP. 1965
LANGLEY-133
Water-cooled shield facilitates optical pyrometer high temperature measurements of small sheet metal specimens subjected to tensile stress in fatigue tests. The shield excludes direct or reflected radiation from one face of the specimen and permits viewing of the infrared radiation only.

B65-10280
ELECTRON BOMBARDMENT IMPROVES VACUUM CHAMBER EFFICIENCY
PRZYBYSZEWSKI, J. SWIKER, M. A. WATSON, J. SEP. 1965
LEWIS-160
Bombardment of vacuum chamber walls by an electron gun within the chamber achieves greater efficiency with less cost. The ultimate vacuum reached using the gun is greater than the system design level.

B65-10283
ELECTRON-BEAM DEFLECTION CONTROLLED BY DIGITAL SIGNALS
CRESSEY, J. R. SEP. 1965
GSFC-385
Electron-beam deflection in electronic image converters in controlled by a tapped magnetic deflection yoke and a series of current generators. The generators supply equal current to each tap through digitally controlled switches, thereby increasing the inherent accuracy of the system.

B65-10291
SPIRALED CHANNELS IMPROVE HEAT TRANSFER BETWEEN FLUIDS
HIGA, W. WIEBE, E. R. OCT. 1965
JPL-694
Spiral flow channels increase heat transfer between two fluids in a countercurrent heat exchanger of given volume. The heat exchanger is constructed by connecting a spiraled bellows-shaped ducting between two concentric cylindrical tubes.

B65-10292
INTERFEROMETER CONSTRUCTION ASSURES PARALLELISM OF CRITICAL COMPONENTS
CONNES, P. OCT. 1965
JPL-704
Interferometer with rigidly mounted components assures parallelism of critical components. The interferometer is constructed for effective operation even if the total instrument is subjected to mechanical stress.

B65-10295
UNIQUE CONSTRUCTION MAKES INTERFEROMETER INSENSITIVE TO MECHANICAL STRESSES
BEER, R. OCT. 1965
JPL-725
Michelson-type interferometer with a cat-eye reflector operates effectively even in the presence of randow mechanical stresses. A cubical beansplitter with dichroic surfaces permits operation in infrared or visible light.

B65-10296
COAXIAL CAPACITOR USED TO DETERMINE FLUID DENSITY
ATKISSON, E. A. OCT. 1965
LEWIS-232
Sensing device measures directly the density of compressible fluid existing simultaneously in both liquid and gaseous phases. The device is comprised of a capacitor connected as one leg of a bridge circuit, a power source, and an indicator calibrated to indicate density as a direct

measurement.

B65-10297
SUPERCONDUCTOR SHIELDS TEST CHAMBER FROM AMBIENT MAGNETIC FIELDS
HILDEBRANDT, A. F. OCT. 1965
JPL-627
Shielding a test chamber for magnetic components enables it to maintain a constant, low magnetic field. The chamber is shielded from ambient magnetic fields by a lead foil cylinder maintained in a superconducting state by liquid helium.

B65-10330
WEDGE IMMERSED THERMISTOR BOLOMETER MEASURES INFRARED RADIATION
DREYFUS, M. G. /BARNES ENG. CO/. NOV. 1965
GSFC-443
Wedge immersed-thermistor bolometer measures infrared radiation in the atmosphere. The thermistor flakes are immersed by optical contact on a wedge-shaped germanium lens whose narrow dimension is clamped between two complementary wedge-shaped germanium blocks bonded with a suitable adhesive.

B65-10331
CLOSED FLUID SYSTEM WITHOUT MOVING PARTS CONTROLS TEMPERATURE
STENGER, F. J. NOV. 1965
LEWIS-222
Closed fluid system maintains a constant temperature in an insulated region without the use of any moving parts. Within the system, the energy for thermodynamic cycling of two- phase heat transfer fluid and a hydraulic fluid is entirely supplied by the heat generated in the thermally insulated region.

B65-10356
SEGMENTED ELECTRODE INCREASES OPERATING PRESSURE OF MHD ACCELERATOR
INNOVATOR NOT GIVEN /WESTINGHOUSE ELEC. CORP./ NOV. 1965
LANGLEY-95
Circumferentially segmented-ring electrode replaces the solid-ring electrode in a basic magnetohydrodynamic /MHD/ accelerator. This produces diffuse discharges at pressures as high as 100 atmospheres.

B65-10368
VACUUM CHAMBER PROVIDES IMPROVED INSULATION AND SUPPORT FOR CRYOSTAT
INNOVATOR NOT GIVEN /GE/ DEC. 1965
M-FS-415
Taut wires in an evacuated cylinder minimize heat transfer through the walls and junctions of a liquid-helium-filled cryostat by suspending the cryostat.

B65-10373
MODIFIED PROCEDURE SPEEDS CAMERA COPY LAYOUT FOR OFFSET PRINTING
SMITH, L. F. DEC. 1965
GSFC-424
Projecting a grid pattern on a steel layout board facilitates the alignment of camera copy for photo-offset reproduction. Small flat bar magnets fasten the copy to the board.

B65-10395
OPTICAL OUTPUT ENHANCES FLOWMETER ACCURACY
WOLPIN, E. G. /N. AM. AVIATION/ DEC. 1965
M-FS-482
Magnetic flowmeter with a direct-coupled optical output increases accuracy and operates independently of other system inputs. The design includes simple external adjustment and signal amplitude control.

03 MATERIALS (CHEMISTRY)

B63-10004
REFERENCE BLACK BODY IS COMPACT, CONVENIENT TO USE
DIMEFF, J. NEEL, C. B. APR. 1964
ARC-3
To replace the classical hollow sphere, a compact reference black body has been constructed from stacked razor blades. Treated with a deposit of black oxide on the surfaces or notches between the upper edges of the blades, the device is useful over a wide range of incident angles.

B63-10207
THERMALLY CONDUCTIVE METAL WOOL-SILICONE RUBBER MATERIAL CAN BE USED AS SHOCK AND VIBRATION DAMPER
HOUGH, W. W. APR. 1964
JPL-321
Bronze wool pads, impregnated with silicon rubber, meet the requirement for a thermally conductive, shock and vibration absorbing material. They serve as spacers in equipment mounting and are resistant to high temperatures.

B63-10234
FILTER FOR HIGH-PRESSURE GASES HAS EASY TAKE-DOWN, ASSEMBLY
MAC GLASHAN, W. F. FEB. 1964
JPL-373
A small metal filter body, for use in tubing supplying sterilization gases, has an inlet end that can be unscrewed. Inside, the high pressure filter is supported on both sides and sealed by an O-ring. Design facilitates easy assembly and disassembly of parts.

B63-10235
CRYOGENIC FILTER METHOD PRODUCES SUPER-PURE HELIUM AND HELIUM ISOTOPES
HILDEBRANDT, A. F. MAR. 1964
JPL-374
To purify helium, it is cooled in a low pressure environment until it becomes superfluid. The liquid helium is then filtered through iron oxide particles. Heating, cooling and filtering processes continue until the purified liquid helium is heated to a gas.

B63-10263
FRESNEL CUP REFLECTOR DIRECTS MAXIMUM ENERGY FROM LIGHT SOURCE
LAUE, E. G. YOUNGBERG, C. L. MAY 1964
JPL-424
To minimize shielding and overheating, a composite Fresnel cup reflector design directs the maximum energy from a light source. It consists of a uniformly ellipsoidal end surface and an extension comprising a series of confocal ellipsoidal and concentric spherical surfaces.

B63-10311
OIL-SMEARED MODELS AID WIND TUNNEL MEASUREMENTS
KATZOFF, S. LOVING, D. K. 1 APR. 1964 /SEE NASA-MEMO-3-17-59L/
LANGLEY-4
For visualizing flow characteristics in wind tunnel tests, model surfaces are smeared with any common petroleum-base oils. These fluoresce under ultraviolet light and the flow patterns are readily visualized.

B63-10318
QUICK-HARDENING PROBLEMS ARE ELIMINATED WITH SPRAY GUN MODIFICATION WHICH MIXES RESIN AND ACCELERATOR LIQUIDS DURING APPLICATION
JOHNSON, O. W. MAR. 1964 /SEE U.S. PATENT NO. 2,930,532/
LANGLEY-6A
A modified spray gun, with separate containers for resin and additive components, solves the problems of quick hardening and nozzle clogging. At application, separate atomizers spray the liquids in front of the nozzle face where they blend.

B63-10337
GALLIUM USEFUL BEARING LUBRICANT IN HIGH-VACUUM ENVIRONMENT
BUCKLEY, D. H. MAY 1964 /SEE U.S. PATENT NO. 3,072,574/
LEWIS-12
Solid gallium is used as a lubricant on bearings

made of compatible materials. Such lubricants perform well in a high vacuum and under low temperature.

B63-10345
APPARATUS FACILITATES HIGH-TEMPERATURE TENSILE TESTING IN VACUUM
SIKORA, P. F. JUN. 1964
LEWIS-42
An apparatus for heating refractory materials to high temperatures during tensile testing includes a water-cooled stainless steel vacuum chamber. This contains a resistance heater consisting of a slit tube of tantalum or tungsten to enclose the tensile test rod.

B63-10351
NEW COBALT ALLOYS HAVE HIGH-TEMPERATURE STRENGTH AND LONG LIFE IN VACUUM ENVIRONMENTS
ASHBROOK, R. L. FRECHE, J. C. KLIMA, S. J. MAR. 1964
LEWIS-47
Cobalt refractory metal alloys combine sheet formability with high temperature strength and low material loss in vacuum.

B63-10365
LOW-COST INSULATION SYSTEM FOR CRYOSTATS ELIMINATES NEED FOR A VACUUM
CALVERT, H. F. MAY 1964
LEWIS-64
In order to eliminate the hazard caused by residual air trapped between the concentric shells of a cryostat, these annular spaces are pressurized with helium gas. This system is more economical than the use of powdered insulation maintained at low vacuums.

B63-10378
LIQUID-LEVEL METER HAS NO MOVING PARTS
ESCUE, W. T. /BENDIX CORP./ JUN. 1964
M-FS-3
An electro-optical system, without moving parts, reliably indicates liquid levels at cryogenic temperatures. Glass prisms, which act as liquid level probes inside the tank, extend from optically aligned photoelectric assemblies mounted on the outside.

B63-10389
LIGHTWEIGHT MAGNESIUM-LITHIUM ALLOYS SHOW PROMISE
ADAMS, W. T. CATALDO, C. E. JUN. 1964
M-FS-17
Evaluation tests show that magnesium-lithium alloys are lighter and more ductile than other magnesium alloys. They are being used for packaging, housings, containers, etc., where light weight is more important than strength.

B63-10424
VARIABLE LIGHT SOURCE WITH A MILLION-TO-ONE INTENSITY RATIO
SNOW, W. B. /SPACE TECHNOL. LAB./ MAY 1964
JPL-W00-008
A wide range, variable intensity light source of constant color characteristics has been developed for testing and calibrating photomultiplier tubes. A light attenuator first diffuses light from a constant source, then permits variable attenuation through a series of chambers and adjustable apertures.

B63-10429
WELDED PRESSURE TRANSDUCER MADE AS SMALL AS 1/8TH-INCH IN DIAMETER
COON, G. W. MAR. 1964 /SEE U.S. PATENT NO. 3,027,769/
ARC-11
A special spot welding technique is used to make miniature capacitance transducers for placing in a wind tunnel model. Rugged and relatively low in cost, they have a flat response up to one-third of the resonant frequency.

B63-10453
MOLYBDENUM DISULFIDE MIXTURES MAKE EFFECTIVE HIGH-VACUUM LUBRICANTS
INNOVATOR NOT GIVEN /MIDWEST RES. INST./ NOV. 1964
M-FS-54
Five different mixtures of molybdenum disulfide are found to be effective bearing lubricants when tested at very low pressures and high temperatures.

B63-10476
CESIUM IODIDE CRYSTALS FUSED TO VACUUM TUBE FACEPLATES
FLECK, H. G. /ELECTRO-MECHANICAL RES. INC./ MAY 1964
GSFC-67
A cesium iodide crystal is fused to the lithium fluoride faceplate of a photon scintillator image tube. The conventional silver chloride solder is then used to attach the faceplate to the metal support.

B63-10479
IMPROVED MOLYBDENUM DISULFIDE-SILVER MOTOR BRUSHES HAVE EXTENDED LIFE
HORTON, J. C. KING, H. M. MAY 1964
M-FS-64
Motor brushes of proper quantities of molybdenum disulfide and copper or silver are manufactured by sintering techniques. Graphite molds are used. These brushes operate satisfactorily for long periods in normal atmosphere or in a high- vacuum environment.

B63-10481
REFRACTORY CERAMIC HAS WIDE USAGE, LOW FABRICATION COST
INNOVATOR NOT GIVEN /GEORGIA INST. OF TECH./ APR. 1964
M-FS-67
Particulate, fused amorphous silica is formed into complex shapes by casting in plaster molds. high temperature firing is not required. δthis ceramic is resistant to thermal shock and exhibits good strength properties.

B63-10528
VARIABLE-TRANSPARENCY WALL REGULATES TEMPERATURES OF STRUCTURES
OSULLIVAN, W. J. JUN. 1964
LANGLEY-25
An effective temperature regulating wall consists of one layer /e.g., one of the paraffins/ relatively opaque to thermal radiation in the solid state and transparent to it in the molten state and placed between two transparent layers. A mirror coating is applied to back layer.

B63-10546
TEST DEVICE PREVENTS MOLECULAR BOUNCE-BACK
HARDGROVE, W. F. SHAPIRO, H. JULY 1964
GSFC-82
A test device, which consists of six pyramidal reflectors joined together, acts as a baffle to impede the free path of the molecule to the test item by interposing a slanted surface which imparts an angular vector to the molecule and bounces it back to the chamber wall.

B63-10557
RAPID HELIUM-AIR ANALYZER CAN MEASURE OTHER BINARY GAS MIXTURES
MELFI, L. T. WOOD, G. M. YEAGER, P. R. FEB. 1964
LANGLEY-16
An instrument comprised of an ionization pressure gauge + a diaphragm pressure gauge consisting of strain gauges to make a four-arm bridge, and a ratio meter is constructed for analyzing gas mixtures. The ratio of the outputs of the two gauges is proportional to the mixture composition.

B63-10562
GATE VALVE WITH CERAMIC-COATED BASE OPERATES AT HIGH TEMPERATURES
BRASS, A. JUL. 1964
ARC-23
A copper base insert coated with a layer of aluminum oxide ceramic prevents frictional binding between the gate and base surfaces of a gate valve which are subject to rapid sliding action and high temperatures.

B63-10612
METALS PLATED ON FLUOROCARBON POLYMERS
FORD, H. KRASINSKY, J. B. VANGO, S. P. OCT. 1964
JPL-544
Electroplating lead on fluorocarbon polymer parts is accomplished by etching the parts to be plated with sodium, followed by successive depositions of silver and lead from ultrasonically agitated plating solutions. Metals other than lead may be electroplated on the silvered parts.

B64-10068
MECHANICAL PROPERTIES OF PLASTICS PREDETERMINED BY EMPIRICAL METHOD
LOHR, J. J. PARKER, J. A. JUL. 1964
ARC-28
To predetermine the mechanical properties of rigid plastics as a function of plasticizer content and composition, a set of equations has been empirically derived. These relate strain rate, yield stress, temperature, and weight fraction of the plasticizer.

B64-10099
REFRACTORY THERMAL INSULATION FOR SMOOTH METAL SURFACES
INNOVATOR NOT GIVEN /GOODYEAR AEROSPACE CORP./ OCT. 1964
M-FS-160
To protect rocket metal surfaces from engine-exhaust heat, a refractory thermal insulation mixture, which adheres to smooth metals, has been developed. Insulation protection over a wide temperature range can be controlled by thickness of the applied mixture.

B64-10113
ELASTOMERS BONDED TO METAL SURFACES SEAL ELECTROCHEMICAL CELLS
SHERFEY, J. M. AUG. 1964
GSFC-168
A leakproof seal secondary cell containing alkaline electrolytes was developed by bonding an alkali-resistant elastomer, such as neoprene, to metal contact surfaces. Test results of several different elastomers strongly indicate the feasibility of this sealing method.

B64-10116
LEAD OXIDE CERAMIC MAKES EXCELLENT HIGH-TEMPERATURE LUBRICANT
JOHNSON, R. L. SLINEY, H. E. AUG. 1964
LEWIS-144
A dry lubricant coating in ceramic form consisting of 95 percent lead monoxide and 5 percent silicon dioxide withstood a temperature of 1200 deg F, with a bearing operating at various atmospheric pressures. From this testing, there was no galling or metal transfer of the bearing.

B64-10138
NOVEL SHOCK ABSORBER FEATURES VARYING YIELD STRENGTHS
GEIER, D. J. JUL. 1964
MSC-63A
A shock absorbent webbing of partially drawn synthetic strands is arranged in sections of varying density related to the varying mass of the human body. This is contoured to protect the body at points of contact, when subjected to large acceleration or deceleration forces.

B64-10142
STRINGENT CLEANING TECHNIQUE ASSURES RELIABLE EPOXY BOND
INNOVATOR NOT GIVEN /RCA/ JUN. 1964
GSFC-161
For reliable aluminum bonding to withstand stress, the mating surfaces are carefully cleaned, etched, rinsed and dried. An epoxy and hardener designed for metal-to-metal bonding is then used for a rigid assembly.

B64-10151
PLASTIC FILMS FOR REFLECTIVE SURFACES REPRODUCED FROM MASTERS
INNOVATOR NOT GIVEN /MINNEAPOLIS HONEYWELL/ OCT. 1964
GSFC-188
Accurate reproduction in plastic of the surface of the optical master to which a reflective finish may be applied is done by using backing from any suitable material to which cured plastic will adhere tightly. Plastics used for reflectors should be of the thermosetting or catalytically hardened type.

B64-10166
FILLER DEVICE FOR HANDLING HOT CORROSIVE MATERIALS
INNOVATOR NOT GIVEN /PRATT AND WHITNEY AIRCRAFT/ OCT. 1964
MSC-85
A bellows-type bag with its own heating element is developed for safe handling and injection of hot corrosive liquids into modules.

B64-10206
SOLDER FLUX LEAVES CORROSION-RESISTANT COATING ON METAL
BAUMAN, A. J. OCT. 1964
JPL-611
A soldering flux consisting of perfluoro-octanoic acid hydrazine provides a corrosion resistant film on metal surface, particularly copper. It is ineffective for soldering aluminum.

B64-10270
PRESSURE MOLDING OF POWDERED MATERIALS IMPROVED BY RUBBER MOLD INSERT
INNOVATOR NOT GIVEN /ELECTRO-OPTICAL SYSTEMS CORP./ NOV. 1964
WOO-100
Pressure molding tungsten microspheres is accomplished by applying hydraulic pressure to a silicone rubber mold insert with several barrel shaped chambers which is placed in a steel die cavity. This technique eliminates castings containing shear fractures.

B64-10282
FINE-MESH SCREEN MADE BY SIMPLIFIED METHOD
INNOVATOR NOT GIVEN /HUGHES AIRCRAFT CO./ DEC. 1964
WOO-104
Strong fine-mesh screens are fabricated by a method involving uniform distribution of fine ferromagnetic particles on a nonmagnetic plate. Such screens are commonly used for grids in electron tubes and ion devices.

B64-10319
GAS DIFFUSION CELL REMOVES CARBON DIOXIDE FROM OCCUPIED AIRTIGHT ENCLOSURES
INNOVATOR NOT GIVEN /IOWA U./ DEC. 1964
MSC-118
A small, lightweight permeable cell package separates and removes carbon dioxide from respiratory regenerative while chemically inert in the presence of carbon dioxide so that only adsorption takes place.

B65-10004
SCREENING TECHNIQUE MAKES RELIABLE BOND AT ROOM TEMPERATURE
INNOVATOR NOT GIVEN /IBM/ JAN. 1965
M-FS-227
Stainless-steel screen used to lay room temperature curing epoxy adhesive permits reliable bonding of electronic circuits boards. This technique would be useful with thin-walled structures that warp during conventional bonding operations.

B65-10015
IMPROVED CONDUCTIVE PASTE SECURES BIOMEDICAL ELECTRODES
INNOVATOR NOT GIVEN /BAYLOR UNIV./ JAN. 1965 SEE ALSO B64-10025
MSC-107
Nontoxic paste consisting of a dispersion of graphite or silver granules in a mixture of

polyvinylpyrrolidone and diluted glycerol secures biomedical electrodes to human skin. Silver paste has a high electrical conductivity and forms a bond between metal and moist or dry skin.

B65-10016
ADHESIVE FOR VACUUM ENVIRONMENTS RESISTS SHOCK AND VIBRATION
INNOVATOR NOT GIVEN /WESTINGHOUSE ELEC. CORP./
FEB. 1965
MSC-56
A mixture of a polyamide, an epoxy resin, and fine silica or glass microballoons provides an adhesive which is flexible, resistant to shock and vibration, and has improved heat-transfer characteristics.

B65-10024
FLUID PRESSURE USED TO TEST TURBOPUMP BEARINGS
INNOVATOR NOT GIVEN /AEROJET-GEN. CORP./ FEB. 1965
NU-0001
Testing of turbopump bearings operating in an intense radiation field is accomplished by the use of a fluid bearing tester providing radial and axial loading.

B65-10032
WIRE WINDING INCREASES LIFETIME OF OXIDE-COATED CATHODES
KERSLAKE, W. VARGO, D. FEB. 1965 SEE ALSO AIAA PAPER-64-683
LEWIS-154
Refractory-metal heater base wound with a thin refractory metal wire increases the longevity of oxide-coated cathodes. The wire-wound unit is impregnated with the required thickness of metal oxide. This cathode is useful in magneto-hydrodynamic systems and in electron tubes.

B65-10034
GAGE MEASURES ELECTRICAL CONNECTOR PIN RETENTION FORCE
INNOVATOR NOT GIVEN /RCA/ FEB. 1965
JPL-SC-071
The retention force of a female connector pin is measured by observing the action of a calibrated spring in a gauge consisting of housing, a plunger terminating in a male subminiature connector pin and the tension spring.

B65-10043
MOUTHPIECE ADAPTER FOR PIPETTES PROTECTS MOUTH FROM HARMFUL LIQUIDS
MC SMITH, D. G. FEB. 1965
LANGLEY-47
To prevent the laboratory technicians mouth from contacting harmful liquids, a device with a hermetically sealed elastic bellows is attached to a standard pipette.

B65-10044
FLEXIBLE CURTAIN SHIELDS EQUIPMENT FROM INTENSE HEAT FLUXES
INNOVATOR NOT GIVEN /ARROWHEAD PROD./ MAR. 1965
M-FS-48
Flexible, high strength curtain made of fiberglass-silicone elastomer laminate provides thermal shielding for equipment.

B65-10065
SPHERICAL MODEL PROVIDES VISUAL AID FOR CUBIC CRYSTAL STUDY
BACIGALUPI, R. J. SPAKOWSKI, A. E. MAR. 1965
LEWIS-108
Transparent sphere of polymethylmethacrylate with major zones and poles of cubic crystals is used to make crystallographic visualizations and to interpret Laue X-ray diffraction of single cubic crystals.

B65-10083
DIDYMIUM COMPOUND IMPROVES NICKEL-CADMIUM CELL
INNOVATOR NOT GIVEN /GE/ MAR. 1965
GSFC-295
Nickel electrodes impregnated with an additive solution of didymium hydrate and nitric acid mixed with nickel nitrate increases ampere-hour capacity of cells and does not affect the voltage characteristics.

B65-10088
FIBERGLASS PARTS CURED DURING FILAMENT WINDING ELIMINATES OVEN, SAVES TIME
CARMODY, R. J. APR. 1965
M-FS-14
Resistance wire layer is introduced during winding of the fiberglass filaments with simultaneous heating. Emission of heat from the wire layer cures second fiberglass layer.

B65-10092
LIGHTWEIGHT ALUMINUM CASTING ALLOY IS USEFUL AT CRYOGENIC TEMPERATURES
INNOVATOR NOT GIVEN APR. 1965
M-FS-267
M-45, a lightweight, high purity aluminum casting alloy has superior tensile properties for use at cryogenic temperatures.

B65-10095
CARBON-ARC ROD HOLDER HAS LONG LIFE, REDUCES ARC SPLATTER
INNOVATOR NOT GIVEN /RCA/ APR. 1965 1965
MSC-144
Carbon-arc rod holder with front end of beryllium oxide, a high electrical resistor and good thermal conductor, prevents nonuniform burning of the positive carbon rod and corrosion of the rod holder. Useful in optical instrument light sources.

B65-10106
MINIATURE BEARINGS LUBRICATED BY SONIC DISPERSION METHOD
INNOVATOR NOT GIVEN /LITTON IND./ APR. 1965
M-FS-202
Evenly distributing a monomolecular film over the balls and tracks of miniature precision ball bearings by sonic dispersion results in precise lubrication which prevents lubricant bleed out to adjacent components. Varying the lubricant-to-solvent ratio of the mixture causes varying lubricant coating thicknesses.

B65-10107
CRACK DETECTION METHOD IS SAFE IN PRESENCE OF LIQUID OXYGEN
INNOVATOR NOT GIVEN /BOEING CO./ APR. 1965
M-FS-236
Visual flaw detection method for metals utilizes color precipitate. This method can be used safely in the presence of liquid oxygen.

B65-10117
DOUBLE GLOVES REDUCE CONTAMINATION OF DRY BOX ATMOSPHERE
HERBELL, T. P. QUANTINETZ, M. REINHARDT, G.
APR. 1965
LEWIS-211
Pair of encased low permeability hand gloves between which an inert gas circulates reduces dry box contamination. This innovation is applicable to dry boxes using radioactive and alkali metal compounds, submicron powders, and liquid metals.

B65-10136
VAPOR PRESSURE MEASURED WITH INFLATABLE PLASTIC BAG
INNOVATOR NOT GIVEN /GEOPHYS. CORP. OF AM./ MAY 1965
GSFC-281
Deflated plastic bag in a vacuum chamber measures initial low vapor pressures of materials. The bag captures the test sample vapors and visual observation of the vapor-inflated bag under increasing external pressures yields pertinent data.

B65-10140
GALVANIC CORROSION REDUCED IN ALUMINUM FABRICATIONS
INNOVATOR NOT GIVEN MAY 1965
M-FS-272
Titanium alloy fasteners dipped in zinc chromate primer are installed while wet in protective coated aluminum panels to reduce galvanic

corrosion. Moisturetight seals at fastener points are also provided.

B65-10156
INORGANIC PAINT IS DURABLE, FIREPROOF, EASY TO APPLY
SCHUTT, J. B. JUN. 1965
GSFC-366
Inorganic paint with a water-potassium silicate base is impervious to water. It is also fireproof and adheres to various surfaces exposed to wide temperature fluctuations

B65-10162
ELECTROLESS NICKEL RESIST USED IN ALKALI-ETCHING OF ALUMINUM
INNOVATOR NOT GIVEN /G. T. SCHJELDAHL CO./ JUN. 1965
GSFC-284
Electroless nickel resist is unaffected by caustic soda applied as a milling or etching agent on aluminum.

B65-10164
IRRADIATION IMPROVES PROPERTIES OF AN AROMATIC POLYESTER
BELL, V. L., JR. JUN. 1965
LANGLEY-115
Aromatic polyester, PEN-2,6, is improved through cross-linking effected by radiation. Polymer retains properties of high tensile strength and toughness and stability at high temperatures.

B65-10167
REFRACTORY OXIDES EVALUATED FOR HIGH-TEMPERATURE USE
INNOVATOR NOT GIVEN JUN. 1965
LANGLEY-121
Partially calcia-stablized zirconia used for insulation and heat-storage in high temperature /3000 deg to 4000 deg F/ cyclically operated pebble bed air heater.

B65-10172
ALUMINUM ALLOYS PROTECTED AGAINST STRESS-CORROSION CRACKING
INNOVATOR NOT GIVEN /ALCOA RES. LABS./ JUN. 1965
M-FS-235
Topcoat of epoxy-polyamide paint is effective protection for aluminum alloys against stress corrosion cracking. The paint can be used on unprimed surfaces.

B65-10173
PEEL RESISTANCE OF ADHESIVE BONDS ACCURATELY MEASURED
INNOVATOR NOT GIVEN /RCA/ JUN. 1965 1965
GSFC-320
Strength of adhesive bond between layers of laminated material is tested by peel force to the facing with a tensile testing machine. Testing jig has stainless steel rollers which constrain material to move horizontally while maintaining free end of facing at constant 90 deg angle.

B65-10175
TANTALUM CATHODE IMPROVES ELECTRON-BEAM EVAPORATION OF TANTALUM
INNOVATOR NOT GIVEN /ELECTRO-OPTICAL SYSTEMS/ JUN. 1965
JPL-W00-021
Tantalum cathode is used in assembly for electron beam evaporation of tantalum onto a substrate. The cathode and anode are made of pure tantalum rather than tungsten to prevent contamination of the tantalum film deposited on the substrate.

B65-10179
REUSABLE NEOPRENE JACKET PROTECTS PARTS FOR CHEMICAL MILLING
INNOVATOR NOT GIVEN /RYAN AERONAUTICAL CO./ JUN. 1965
W00-071
Reusable neoprene jacket is used to prepare metal part or panel for chemical milling. Jacket covers back and upper rim of part and is sealed before the masking solution is applied to surface to be milled. This reduces amount of masking material required for milling identical parts and increases production.

B65-10189
TESTING DEVICE SUBJECTS ELASTIC MATERIALS TO BIAXIAL DEFORMATIONS
BECKER, G. W. JUN. 1965
JPL-616
Testing device stretches elastic materials biaxially over large deformation ranges and varies strain ratios in two per pendicular directions. The device is used in conjunction with a tensile testing machine, which holds the specimen and permits control over the direction and magnitude of the stresses applied.

B65-10190
IR-TRANSMISSION GLASSES FORMED FROM OXIDES OF BISMUTH AND TELLURIUM
ULRICH, D. R. JUN. 1965
M-FS-279
Bismuth trioxide-tellurium dioxide glasses have improved infrared transmission characteristics.

B65-10214
EMERGENCY SOLAR STILL DESALTS SEAWATER
INNOVATOR NOT GIVEN /MELPAR/ JUL. 1965
MSC-135
Solar energy apparatus distills seawater into fresh water. The inflatable buoyant still produces two pints of drinking water a day.

B65-10217
THIN TRANSPARENT FILMS FORMED FROM POWDERED GLASS
INNOVATOR NOT GIVEN /HOFFMAN ELECTRON./ JUL. 1965
GSFC-352
Glass film less than five mils thick is formed from powdered glass dispersed in an organic liquid, deposited on a substrate, and fused into place. The thin films can be cut and shaped for contact lenses, optical filters and insulating layers.

B65-10220
THORIATED NICKEL BONDED BY SOLID-STATE DIFFUSION METHOD
BALES, T. T. MANNING, R. C., JR. AUG. 1965
LANGLEY-116
Solid-state diffusion bonding in an inert-gas atmosphere forms high-strength joints between butting or overlapping surfaces of thoriated nickel. This method eliminates inert-phase agglomeration.

B65-10250
COATING METHOD ENABLES LOW-TEMPERATURE BRAZING OF STAINLESS STEEL
SEAMAN, F. D. /WESTINGHOUSE ELEC. CO./ AUG. 1965
NU-0030
Gold coated stainless steel tubes containing insulated electrical conductors are brazed at a low temperature to a copper coated stainless steal sealing block with a gold-copper eutectic. This produces an effective seal without using flux or damaging the electrical conductors.

B65-10261
BORON CARBIDE WHISKERS PRODUCED BY VAPOR DEPOSITION
INNOVATOR NOT GIVEN /GE/ SEP. 1965
HQ-24
Boron carbide whiskers have an excellent combination of properties for use as a reinforcement material. They are produced by vaporizing boron carbide powder and condensing the vapors on a substrate. Certain catalysts promote the growth rate and size of the whiskers.

B65-10270
CERAMIC MATERIALS PURIFIED BY EXPERIMENTAL METHOD
INNOVATOR NOT GIVEN /IIT RES. INST./ SEP. 1965
LEWIS-225
Crystalline ceramic materials are purified for use as high-temperature electrical insulators. Any impurities migrate to the cathode when a dc voltage is applied across the material while it is heated in an inert gas atmosphere.

B65-10288
ORGANIC REACTANTS RAPIDLY PRODUCE PLASTIC FOAM
LOOK, G. F. SEP. 1965 SEE ALSO B65-10090
LANGLEY-37
Adding trichlorofluoromethane to polyether resin accelerates the reaction between the resin and toluene diisocyanate. This accelerated reaction instantaneously produces a plastic foam of low density and uniform porosity needed to provide buoyancy for flotation recovery of instrument packages dropped into the sea from spacecraft.

B65-10294
ADHERENT PROTECTIVE COATINGS PLATED ON MAGNESIUM-LITHIUM ALLOY
INNOVATOR NOT GIVEN /IBM/ OCT. 1965 SEE ALSO B63-10389
M-FS-365
Zinc is plated on a magnesium-lithium alloy by using a modification of the standard zinc-plate immersion bath. Further protection is given the alloy by applying a light plating of copper on the zinc plating. Other metals are plated on the copper by using conventional plating baths.

B65-10302
BURNISHING TECHNIQUE IMPROVES LUBRICATION OF THREADED FASTENERS
GRUPER, J. L. /LOCKHEED MISSILES AND SPACE CO./ OCT. 1965
LEWIS-217
Burnishing a molydisulfide coating into the thread surfaces of fasteners eliminates the need for binders and vehicles which ensure coverage and retention of the lubricant during fastening. The coating may be applied by any convenient method.

B65-10303
NICKEL SOLUTION PREPARED FOR PRECISION ELECTROFORMING
INNOVATOR NOT GIVEN /ELECTRO-OPTICAL SYSTEMS/ OCT. 1965
WOO-070
Lightweight, precision optical reflectors are made by electroforming nickel onto masters. Steps for the plating bath preparation, process- control testing, and bath composition adjustments are prescribed to avoid internal stresses and maintain dimensional accuracy of the electrodeposited metal.

B65-10316
REMOVABLE WELL IN REACTION FLASK FACILITATES CARBON DIOXIDE COLLECTION
NEVILLE, E. D. FELLER, D. D. OCT. 1965
ARC-47
Removable plastic well with a flange that seats on the rim of an Erlenmeyer screwcap flask aids quantitative collection of carbon dioxide liberated in the flask. The well can be removed without danger of cross-contamination. It can collect other gases using appropriate absorbents.

B65-10321
PLATED NICKEL WIRE MESH MAKES SUPERIOR CATALYST BED
SILL, M. /BELL AEROSYSTEMS CO./ OCT. 1965
MSC-216
Porous nickel mesh screen catalyst bed produces gas evolution in hydrogen peroxide thrust chambers used for attitude control of space vehicles. The nickel wire mesh disks in the catalyst bed are plated in rugose form with a silver-gold coating.

B65-10335
MAGNETIC FLUID READILY CONTROLLED IN ZERO GRAVITY ENVIRONMENT
PAPELL, S. S. NOV. 1965
LEWIS-126
Colloid composed of finely ground iron oxide in a fluid such as heptane, is controlled and directed magnetically in a zero gravity environ- ment. It will not separate on standing for long periods or after exposure to magnetic or centrifugal forces. Because of its low density and low viscosity, it is easily pumped.

B65-10336
ANODIZATION PROCESS PRODUCES OPAQUE, REFLECTIVE COATINGS ON ALUMINUM
INNOVATOR NOT GIVEN /LOCKHEED MISSILES AND SPACE CO./ NOV. 1965
M-FS-348
Opaque, reflective coatings are produced on aluminum articles by an anodizing process wherein the anodizing bath contains an aqueous dispersion of finely divided insoluble inorganic compounds. These particles appear as uniformly distributed occlusions in the anodic deposit on the aluminum.

B65-10337
SPECIAL COATINGS CONTROL TEMPERATURE OF STRUCTURES
FULK, M. M. MAYER, R. W. /BALL BROTHERS RES. CORP./ NOV. 1965
GSFC-444
Special coatings in the form of paints that exhibit controlled ratios of sunlight absorptivity to grey-body emissivity control the temperature of structures in space flight. These finishes exhibit good resistance to ultraviolet radiation and do not discolor.

B65-10341
LIGHTWEIGHT HINGED BELLOWS RESTRAINT HAS HIGH LOAD CAPACITY
IMUS, E. E. /N. AM. AVIATION/ NOV. 1965
WOO-151
High angular stresses in fluid-handling ducts are accommodated by a lightweight hinged bellows restraint. This device transmits angular stress to points close to the axis center and spreads it over a rigid configuration.

B65-10344
SOLUBLE UNDERCOATING FACILITATES REMOVAL OF FOAMED-IN-PLACE INSULATION
DUNCAN, A. C. HILL, C. L., JR. NOV. 1965
LEWIS-193
Foamed-in-place insulation can be removed and reused by coating the surface with a soluble peel coat before applying the foam mixture. Removal of the insulation is effected by slitting it and pouring a solvent in the slit to dissolve the peel coat. The insulation can then be stripped off intact.

B65-10354
PIGMENTED COATING RESISTS THERMAL SHOCK
HARADA, Y. RECHTER, H. L. /IIT RES. INST./ NOV. 1965
JPL-SC-083
Coating pigment composed of zinc oxide and potassium silicate resists the effects of thermal shock and long exposure to direct sunlight.

B65-10357
AIR-CURED CERAMIC COATING INSULATES AGAINST HIGH HEAT FLUXES
SEITZINGER, V. F. NOV. 1965
M-FS-150
Reflective insulating ceramic coating protects supporting structures in area adjacent to rocket engines from the intense heat fluxes in the rocket exhaust plumes.

B65-10364
POROUS GLASS MAKES EFFECTIVE SUBSTRATE FOR OZONE-SENSING REAGENT
INNOVATOR NOT GIVEN /PARAMETRICS/ DEC. 1965
GSFC-388
Porous-glass substrate is used for absorption of a dye used in measuring the concentration of atmospheric ozone at high altitudes. This measurement is based on the chemiluminescence produced in the reaction between ozone and the dye, rhodamine b. The porous glass provides a large interstitial surface area which promotes this reaction.

B65-10366
UNIQUE GEAR DESIGN PROVIDES SELF-LUBRICATION
WINIARSKI, F. J. /SPACE TECHNOL. LAB./ DEC. 1965
JPL-SC-079
Composite gear configuration provides a reliable automatic means for replenishing gear mechanism lubricants that dissipate in the harsh environment of space. The center or hub section of the

gear consists of a porous, oil-impregnated material, and the outer or toothed section has radially drilled passages to cause the oil to gradually flow to the gear teeth surfaces.

B65-10372
WIRE BUNDLE FORMED INTO GRIDS WITH MINUTE INTERSTICES
TODD, H. H. /ELECTRO-OPT. SYSTEMS/ DEC. 1965
WOO-089
Deforming the ends of a bundle of closely packed parallel wires to restrict the interstices to substantially uniform and minute dimensions produces grids or filters for ion engines. Porous metal structures made by this process are also used as fuel cell electrodes, diffusion membranes, and catalysts.

B65-10374
PLASTIC PLUS STAINLESS-STEEL FIBERS MAKE RESILIENT, IMPERMEABLE MATERIAL
SMIRRA, J. R. /THOMPSON RAMO WOOLDRIDGE/ DEC. 1965
WOO-246
Plastic material combined with stainless-steel fibers and molded under heat and pressure into a desired configuration is both soft enough to deform under a load and resilient enough to return to its original shape when the load is removed.

B65-10384
PROBE SAMPLES COMPONENTS OF ROCKET ENGINE EXHAUST
SCHUMACHER, P. E. /N. AM. AVIATION/ DEC. 1965
M-FS-485
Water-cooled, cantilevered probe samples the exhaust plume of rocket engines to recover particles for examination. The probe withstands the stresses of a rocket exhaust plume environment for a sufficient period to obtain a useful sample of the exhaust components.

B65-10390
TEST STRIPS DETECT DIFFERENT CO2 CONCENTRATIONS IN CLOSED COMPARTMENTS
INNOVATOR NOT GIVEN /MELPAR/ DEC. 1965
MSC-210
Four different test strips, using crystal violet for one pair of strips and basic fuchsin as a dye for the second pair, give unambiguous colorimetric indications of four different concentrations of carbon dioxide in the atmosphere of a closed compartment. Tetraethylene pentamine is used as a dye decoloring agent.

B65-10397
NEW BRAZING ALLOY ELIMINATES METAL-STRESS CRACKING
HUSCHLER, E., JR. ROEDER, E. R. /N. AM. AVIATION/ DEC. 1965
WOO-249
Silver 15 zinc brazing alloy avoids the liquid-metal stress cracking of base metals when applied to 347, 316, and 410 stainless steels and certain other alloys.

B65-10398
NICKEL/TIN COATING PROTECTS THREADED FASTENERS IN CORROSIVE ENVIRONMENT
CHARLES, J. VEEDER, L. /N. AM. AVIATION/ DEC. 1965
MSC-253
Threaded fasteners used in corrosive environments are plated with electroless nickel and electroplated, over the nickel, with tin. This provides a corrosion-resistant coating for the fasteners.

04 LIFE SCIENCES

B63-10003
NEW LOW-LEVEL A-C AMPLIFIER PROVIDES ADJUSTABLE NOISE CANCELLATION AND AUTOMATIC TEMPERATURE COMPENSATION
SMITH, J. R., JR. MAR. 1964
ARC-2
A circuit utilizing a transistorized differential amplifier is developed for biomedical use. This low voltage operating circuit provides adjustable cancellation at the input for unbalanced noise signals, and automatic temperature compensation is accomplished by a single active element across the input-output ends.

B64-10025
IMPROVED ELECTRODE GIVES HIGH-QUALITY BIOLOGICAL RECORDINGS
DAY, J. L. LIPPITT, M. W. MAY 1964
MSC-17
To obtain high quality waveforms from a subject engaged in physical activity, an improved electrode assembly has been devised. This consists of a cup containing an electrically conductive paste and a silver electrode. The paste maintains contact between the skin and the plate.

B64-10108
DEVICE INDUCES LUNGS TO MAINTAIN KNOWN CONSTANT PRESSURE
LIPPITT, M. W. REED, J. H. JUL. 1964
MSC-50
This device requires the use of thoracic muscles to maintain prescribed air pressure in the lungs for brief periods. It consists of a clear plastic hollow cylinder fitted with a mouthpiece, a spring-loaded piston, and a small vent for escaping air when exhalation into the mouthpiece displaces the piston.

B64-10146
TECHNIQUE SIMULATES EFFECT OF REDUCED GRAVITY
HEWES, D. E. SPADY, A. A. JR. JUN. 1964
LANGLEY-44
To simulate the effects of lunar gravity, an arrangement of near-vertical cables has been devised. These suspend the test subject perpendicular to an inclined walkway to give the effect of reduced gravitational pull.

B65-10332
TEST MONKEYS ANESTHETIZED BY ROUTINE PROCEDURE
INNOVATOR NOT GIVEN /SPACE/DEFENSE CORP./ NOV. 1965
HQ-18
Test monkeys are safely anesthetized for five minutes by confining them for less than six minutes in enclosures containing a controlled volume of ether. Thus the monkeys can be properly and safely positioned on test couches and fitted with electrodes or other devices prior to physiological tests.

05 BIOTECHNOLOGY

B63-10007
HIGH PURITY ELECTROFORMING YIELDS SUPERIOR METAL MODELS
HAEFELI, R. M. HOUSTON, J. P. JAN. 1964
ARC-6
Ultrasonic electroforming has proven successful in making high purity metal models for heat transfer studies. This process provides smooth, pit-free models.

B63-10008
VACUUM FORMING OF THERMOPLASTIC SHEET RESULTS IN LOW-COST INVESTMENT CASTING PATTERNS
CLARKE, A. E., JR. MAR. 1964
ARC-7
Vacuum forming of a sheet of thermoplastic material around a mandrel conforming to the shape of the finished object provides a pattern for an investment mold. The thickness of the metal part is determined by the thickness of the plastic pattern.

B63-10009
CHAIN FRICTION SYSTEM GIVES POSITIVE, REVERSIBLE DRIVE
DAVIDSEN, J. S. APR. 1964
ARC-8
By cementing a strip of an elastomer to the smooth metal rim of the pulley and neoprene covered

idlers providing suitable tension to the chain around the pulley, a positive reversible drive is accomplished more quietly and with less vibration.

B63-10023
V-SLOTTED SCREW HEAD AND MATCHING DRIVING TOOL FACILITATE INSERTION AND REMOVAL OF SCREW FASTENERS
HANDLEY, M. G. JAN. 1964
FRC-16
A V-slotted designed screw and a screwdriver with a V-shaped tang facilitate driving the screw into difficult locations and minimize axial forces thus avoiding damage to the screw.

B63-10123
ELASTIC ORIFICE AUTOMATICALLY REGULATES GAS BEARINGS
BATSCH, F. LAUB, J. L. JUN. 1964
JPL-135
An elastic, pressure-sensitive orifice is used to automatically regulate the rate of gas flow into bearings under varying loads. Formed of a molded elastomer, tests show these orifices increase the stability of gas bearings.

B63-10139
METHOD OF WELDING JOINT IN CLOSED VESSEL IMPROVES QUALITY OF SEAM
FREEMAN, R. LEVOE, C. MAY 1964
JPL-170
To facilitate welding of closed vessels, a metal backup strip is used at the junction inside the vessel. After welding from the outside, this strip is dissolved by a chemically reactive solvent poured through a filler hole into the vessel.

B63-10141
VENTED PISTON SEAL PREVENTS FLUID LEAKAGE BETWEEN TWO CHAMBERS
MAC GLASHAN, W. F. MORRISON, R. DEC. 1964
JPL-179
To prevent fluid leakage around piston seals separating two fluids under differential pressure, a venting system has been devised. Two methods may be used for venting seals through internal passages to an external low-pressure area, O-ring or split-ring seals.

B63-10143
COINCIDENT SWITCH CLOSING REDUCES ERROR IN MOTOR-DRIVEN TIMER
RICH, S. DEC. 1964
JPL-182
To cut the lag-lead in motor-driven timing devices, the timing circuit has been extended to include a second switch. This is actuated in time with the first but driven directly at a speed x times faster than the first.

B63-10170
HIGH-PRESSURE REGULATING SYSTEM PREVENTS PRESSURE SURGES
KELLER, O. F. MAC GLASHAN, W. F. JUN. 1964 /SEE U.S. PATENT NO. 3,105,515/
JPL-231
Gas flow is controlled by means of a pressure regulating system which prevents pressure surges. A high-pressure fluid source, a spring-loaded fluid-damped regulator valve, an accumulator, a conventional normally closed command valve, and a control valve are the main components.

B63-10198
DEVICE TRANSMITS ROTARY MOTION THROUGH HERMETICALLY SEALED WALL
PORTER, R. N. APR. 1964
JPL-303
A wobble plate, metal bellows, and two shafts, assembled in a four-section housing, make it possible to transmit rotary motion through a hermetically sealed wall. In operation a rotational torque is developed by the wobble plate.

B63-10200
APPARATUS OF SMALL SIZE CAN BE EXTENDED INTO LONG, RIGID BOOM
MILLER, J. V. MAY 1964
JPL-305
Three metal sheets, having prenotched edges, are interlocked as they are unrolled from three feed rollers, which form a triangle. The apparatus is relatively small, and the sheets can be erected into a rigid trianglar boom of considerable length.

B63-10226
SELF SEALING DISCONNECT FOR TUBING FORMS METAL SEAL AFTER BREAKAWAY
GERNANDT, H. H. JAN. 1964
JPL-354
Disconnect fittings form a positive metal seal when the fill tube pulls against a metal sleeve when disconnected by force. A specially designed sleeve surrounds the fill tube. O-rings in the shoulder of the sleeve and near the outer end of the fill tube seal against leakage.

B63-10228
PACKLESS VALVE WITH ALL-METAL SEAL HANDLES WIDE TEMPERATURE, PRESSURE RANGE
MAC GLASHAN, W. F. MAR. 1964
JPL-361
A durable line valve utilizes stacked metal disks to seal off an inlet port. No packing or shaft sealing in needed, and the valve operates satisfactory over a wide temperature and pressure range.

B63-10236
LIGHTWEIGHT UNIVERSAL JOINT TRANSMITS BOTH TORQUE AND THRUST
BAMFORD, R. M. JAN. 1964
JPL-375
A lightweight universal joint uses a thin steel flexure plate to transmit torque and a steel rod to transmit thrust. Both the plate and rod are independently mounted and can act individually.

B63-10237
SUPERCOLD TECHNIQUE DUPLICATES MAGNETIC FIELD IN SECOND SUPERCONDUCTOR
HILDEBRANDT, A. F. NOV. 1964
JPL-376
A superconductor cylinder, charged with a high magnetic field, can be used to create a similar field in a larger cylinder. The uncharged cylinder is precooled, lowered into a helium dewar system, and fitted around the cylinder with the magnetic field. Magnetic flux lines pass through the two cylinders.

B63-10240
SLEEVE AND CUTTER SIMPLIFY DISCONNECTING WELDED JOINT IN TUBING
PERKINS, G. S. APR. 1964
JPL-384
To test equipment, welded tubing joints may have to be disconnected and rewelded. To eliminate rewelding, a nonstandard welding sleeve permits the tubing to be welded and then disconnected by a specially designed sleeve cutter. Use of this tool assures that only the sleeve is cut.

B63-10241
VEITCH DIAGRAM PLOTTER SIMPLIFIES BOOLEAN FUNCTIONS
RUBIN, D. K. APR. 1964
JPL-385
This device for simplifying the plotting of a veitch diagram consists of several overlays for blocking out the unwanted squares. This method of plotting the various input combinations to a computer is used in conjunction with the boolean functions.

B63-10247
NEW PACKAGE FOR BELLEVILLE SPRING PERMITS RATE CHANGE, EASY DISASSEMBLY
MAC GLASHAN, W. F. MAR. 1964
JPL-392
A spring package, with grooves to hold the spring washers at the inner and outer edges, reduces hysteresis to a minimum. Three- segment retainers permit easy disassembly so that the spring rate can be changed.

B63-10251
HELICAL TUBE SEPARATES NITROGEN GAS FROM LIQUID NITROGEN
STEPHENS, J. B. JUN. 1964
JPL-398
To prevent a boiloff problem, liquid nitrogen flowing from a storage tank to a container, is separated into liquid and gaseous components. This is accomplished by centrifugal and venting action, using a section of perforated helical aluminum tubing.

B63-10289
FRICTIONAL WEDGE SHOCK MOUNT IS INEXPENSIVE, HAS GOOD DAMPING CHARACTERISTICS
TENER, W. M. MAY 1964
JPL-IT-1001
A wedge-shaped shock mount uses rubber for energy absorption, and the frictional characteristics of ordinary brake material for damping.

B63-10291
SPECIAL PLIERS CONNECT HOSE CONTAINING LIQUID UNDER PRESSURE
BLAYDES, R. A. MAR. 1964
JPL-IT-1003
For speed and safety in handling disconnect fittings on a hose carrying liquid under pressure, special pliers have been constructed. A gear and rack mechanism is combined with two or more wide-opening U-shaped jaws which are placed over the quick-disconnect fittings.

B63-10292
HEAVY-DUTY STAPLE REMOVER OPERATED BY HAND
MORRISON, T. RENNER, R. MAR. 1964
JPL-IT-1004
To remove staples from thick reports, a rooter, bending hook and post are incorporated into a heavy duty hand tool. This makes possible one-step extraction of long staples.

B63-10304
BREAK-UP OF METAL TUBE MAKES ONE-TIME SHOCK ABSORBER, BARS REBOUND
HATHAWAY, M. MC GEHEE, J. R. ZAVADA, E. FEB. 1964 /SEE NASA-TN-D-1477/
LANGLEY-1A
A frangible metal tube has the capability to dissipate the energy generated when a vehicle lands with excessive velocity. The tube is so placed that, at impact, it is forced against a die and, as it fragments, energy is absorbed.

B63-10340
CRYOPUMPING OF HYDROGEN IN VACUUM CHAMBERS IS AIDED BY CATALYTIC OXIDATION OF HYDROGEN
CHILDS, J. H. GROBMAN, J. RAYLE, W. JUN. 1964
/SEE NASA-TN-D-863/
LEWIS-15
Vacuum test facilities are required for high speed cryopumping of gaseous hydrogen at low pressures. One method involves the catalytic oxidation of hydrogen and condensation of the resulting water on a liquid nitrogen-cooled surface.

B63-10341
DESIGN OF VALVE PERMITS SEALING EVEN IF THE STEM IS MISALIGNED
SCHMIDT, H. W. JAN. 1964
LEWIS-38
A conical-walled valve plug is designed to seal against a recessed spherical valve seat. This insures proper sealing during numerous seating cycles even though the valve stem is misaligned or forced out of its proper axis.

B63-10354
RAPID BILLET LOADER AIDS EXTRUSION OF REFRACTORY METALS
DOLINSHEK, A. F. HERMAN, L. E. APR. 1964
LEWIS-50
A combination gravity and manually powered rapid billet loader reduces the time required for transferring hot metal billets from a heating furnace to an extrusion press. Positioned between the furnace and extrusion press, this loader is a simple slide-delivery device.

B63-10367
CONNECTOR FOR VACUUM-JACKETED LINES CUTS TUBING SYSTEM COST
CALVERT, H. F. MAY 1964
LEWIS-66
A low-cost fitting, fabricated from standard connectors, is used for disconnecting flow lines in cryogenic systems. Utilizing vacuum-jacketed lines made from two sizes of tubing welded at the ends, the connectors are stronger and setup time is reduced.

B63-10368
COMPOSITE, VACUUM-JACKETED TUBING REPLACES BELLOWS IN CRYOGENIC SYSTEMS
CALVERT, H. F. JUN. 1964
LEWIS-67
For reliability control of high pressure cryogenic systems, one or more 90 degree elbow expansion devices are substituted for the metal bellows normally used. The device consists of a conducting tube inside a support tube, with the space between the tubes evacuated for insulation.

B63-10376
NOVEL CLAMPS ALIGN LARGE ROCKET CASES, ELIMINATE BACK-UP BARS
FRANKLIN, W. J. MARTIN, N. C. JAN. 1964
M-FS-1
Welding clamps, placed inside and outside a rocket case, hold it in proper alignment during tungsten inert gas welding. These metal blocks, connected by a stainless steel band, eliminate the need for backup bars.

B63-10384
VACUUM-TYPE BACKUP BAR SPEEDS WELD REPAIRS
CARMODY, R. J. AUG. 1964
M-FS-12
A backup bar designed to use both vacuum and air pressure provides a method of sealing the weld root of a faulty section of seam weld. With slight redesign, the bar can be made sufficiently flexible to fit any large cylindrical surface.

B63-10385
FLEXIBLE HONEYCOMB STRUCTURE CAN BEND TO FIT COMPOUND CURVES
CARMODY, R. J. APR. 1964
M-FS-13
For flexibility in forming a curved surface, a honeycomb configuration using multiple pleats has proved superior to the usual core structures. The partial pleats formed in individual cell walls permit movements to and from the central axis without tearing.

B63-10387
PORTABLE FLOORING PROTECTS FINISHED SURFACES, IS EASILY MOVED
CARMODY, R. J. MAR. 1964
M-FS-15
To protect curved, finished surface and provide support for workmen, portable flooring has been made from rigid plastic foam blocks, faced with aluminum strips. Held together by nylon webbing, the flooring can be rolled up for easy carrying.

B63-10420
SIMPLE MECHANISM COMBINES POSITIVE LOCKING AND QUICK-RELEASE FEATURES
CLAYTON, L. B. /HUGHES AIRCRAFT CO./ FEB. 1964
WOO-4
For secure locking and quick release of two objects, this device uses a spring-loaded slotted bolt, locked in position by two retainer arms. When these retainer arms are freed from contact, the bolt is ejected and the objects released.

B63-10431
HIGH-TEMPERATURE, HIGH-PRESSURE SPHERICAL SEGMENT VALVE PROVIDES QUICK OPENING
GIOVANNETTI, A. HIMMELRIGHT, R. MEYER, K. NITTA, H. APR. 1964
ARC-13
A hollow spherical segment valve with an eccentric permits non-rubbing closure and provides a means for gas-cooling the seal. The design allows quick opening at high temperatures and discharge

pressures.

B63-10435
PORTABLE DISPLAY PANELING HAS WIDE USE, EASY TAKE DOWN AND ASSEMBLY
DEVOTO, H. J., JR. MAR. 1964
ARC-17
Design for a modular display panel is based on a cross-shaped corner connector and wooden lattice bars. The bars are fitted into the arms of the metal connector and a pocket slot holds a modular-size panel.

B63-10442
KINETIC-ENERGY ABSORBER EMPLOYS FRICTIONAL FORCE BETWEEN MATING CYLINDERS
CONRAD, E. W. MAY 1964
LEWIS-75
A kinetic energy absorbing device uses a series of coaxial, mating cylindrical surfaces. These surfaces have high frictional resistance to relative motion when axial impact forces are applied. The device is designed for safe deceleration of vehicles impacting on landing surfaces.

B63-10489
FINE-PARTICLE FILTER PREVENTS DAMAGE TO VACUUM PUMPS
HARLAMERT, P., JR. APR. 1964
LEWIS-106
A filter system for mechanical pumps is designed with a baffle assembly that rotates in a circulating oil bath which traps destructive particles. This prevents severe damage to the pump and is serviceable for long periods before it requires cleaning.

B63-10497
INTEGRAL COOLANT CHANNELS SIMPLY MADE BY MELT-OUT METHOD
ESCHER, W. J. D. JUN. 1964
M-FS-91
A melt-out method of constructing strong, pressure-tight fluid coolant channels for chambers is accomplished by cementing pins to the surface and by depositing a melt-out material on the surface followed by two layers of epoxy-resin impregnated glass fibers. The structure is heated to melt out the low-melting alloy.

B63-10502
FLUID-PRESSURE METER CAN BE CALIBRATED WITHOUT REMOVAL FROM FLOW LINE
MELTON, D. E. MAR. 1964
M-FS-98
The construction of a fluid pressure meter with two inlet ports, flexible diaphragms and a pressure-responsive transducer is described. One port can be connected to the line and the other to a source of standard pressures for calibration.

B63-10517
MINIATURE OXYGEN-HYDROGEN CUTTING TORCH CONSTRUCTED FROM HYPODERMIC NEEDLE
SHLICHTA, P. APR. 1964
JPL-545
A miniature cutting torch consisting of a main body member, upon which the hydrogen and oxygen containers are mounted, valves for controlling gas flow, and a hypodermic needle that acts as a mixing tube and flame tip is constructed.

B63-10519
TOOL FACILITATES SEALING OF METAL FILL TUBES
COOLEY, H. H., JR. /UNITED AIRCRAFT CORP./ JUL. 1964
MSC-24
A hand tool is designed for sealing metal fill tubes containing corrosive or inflammable liquids without the use of heat or open flame. The tool aligns the fill tube into which a tapered sealing pin is dropped and driven below the neck of tube.

B63-10526
BUILT-IN TEMPLATES SPEED UP PROCESS FOR MAKING ACCURATE MODELS
INNOVATOR NOT GIVEN FEB. 1964
LANGLEY-23
From accurate scale drawings of a model, photographic negatives of the cross sections are printed on thin sheets of aluminum. These cross-section images are cut out and mounted, and mahogany blocks placed between them. The wood can be worked down using the aluminum as a built-in template.

B63-10530
NEW ANEMOMETER HAS FAST RESPONSE, MEASURES DYNAMIC PRESSURE DIRECTLY
LYNCH, J. W. REED, W. H., III OCT. 1964
LANGLEY-28
A simple anemometer having a fast response to high frequency wind fluctuations by direct measurement of two drag-force components in orthogonal planes is described. It may be used to determine wind profiles to extensive heights and would be helpful in takeoff and landing of light planes.

B63-10547
ELLIPSOIDAL OPTICAL REFLECTORS REPRODUCED BY ELECTROFORMING
HUNGERFORD, W. J. LARMER, J. W. LEVINSOHN, M. OCT. 1964
GSFC-92
An accurately dimensioned convex ellipsoidal surface, which will become a master after polishing, is fabricated from 316L stainless steel. When polishing of the master is completed, it is suspended in a modified watt bath for electroforming of nickel reflectors.

B63-10556
LATHE CONVERTED FOR GRINDING ASPHERIC SURFACES
LARMER, J. W. LEVINSOHN, M. MC CRAW, D. PESSAGNO, E. H. TAUB, F. J. JUL. 1964
GSFC-115
A standard overarm tracing lathe converted by the addition of an independently driven diamond grinding wheel is used for grinding aspheric surfaces. The motion of the wheel is controlled by the lathe air tracer following the template which produces the desired aspheric profile.

B63-10558
NEW METHOD FORMS BOND LINE FREE OF VOIDS
KING, C. B. OCT. 1964
LANGLEY-20
A new bonding method using vacuum, pressure and heat, which produces a bond line free of voids, is described. This method is very successful in bonding ablation shields to a magnesium structural component in simulated reentry tests involving great heat and air turbulence.

B63-10560
CAMERA SHUTTER IS ACTUATED BY ELECTRIC SIGNAL
NEFF, J. E. NOV. 1964
ARC-20
A rotary solenoid energized by an electric signal opens a camera shutter and when the solenoid is de-energized a spring closes it. By the use of a microswitch, the shutter may be opened + closed in one continuous, rapid operation when the solenoid is actuated.

B63-10564
A TECHNIQUE FOR MAKING ANIMAL RESTRAINTS
CLARKE, A. E., JR. REITMAN, J. SEP. 1964
ARC-25
A contoured shell for restraining animals is made by thermoforming plastic over the anesthetized, frozen specimen. It may be vented, or pieces may be cut out to facilitate working in localized areas.

B63-10568
PLASTIC MOLDS REDUCE COST OF ENCAPSULATING ELECTRIC CABLE CONNECTORS
KNOTT, D. NOV. 1964
M-FS-69
Resin casting of the aluminum master pattern forms a plastic mold for encapsulating a cable connector. An elastomer is injected into the mold and cured. The mold is disassembled leaving an elastomeric encapsulation around the connector.

B63-10571
SELF-BALANCING BEAM PERMITS SAFE, EASY LOAD HANDLING UNDER OVERHANG
EDWARDS, O. H. MAR. 1964
M-FS-84
The use of a self-balancing I-beam with a counterweight and motor simplifies moving heavy loads that are inaccessible for cranes. The beam cannot be overloaded, as the counterweight will not balance the load, and thus acts as an automatic safety device.

B63-10590
STAINLESS-STEEL ELBOWS FORMED BY SPIN FORGING
INNOVATOR NOT GIVEN /CHANCE-VOUGHT CORP./ DEC. 1964
M-FS-122
Large seamless austenitic stainless steel elbows are fabricated by spin forging /rotary shear forming/. A specially designed spin forging tool for mounting on a hydrospin machine has been built for this purpose.

B64-10001
NEW INFLATABLE LIFERAFT IS NONTIPPABLE
RADNOFSKY, M. I. SHEWMAKE, G. A. MAR. 1964 /SEE NASA-TN-D-1083/
MSC-4A
A one-seamed lightweight life raft has three underwater ballast buckets as stabilizers. Non-tippable, it can be compactly packaged and inflated with carbon dioxide.

B64-10006
SPEED-SENSING DEVICE AIDS CRANE OPERATORS
MC FORD, E. L. OCT. 1964
WS-4
So that crane operators can judge payload movements accurately, a friction-driven multilobed cam device energizes a buzzer and indicator lamp in the crane cab. The signal frequency of this speed sensor has a sensitivity to hoist movement of 1/8 inch.

B64-10011
METAL STRIP FORMS 21 FOOT BOOM, ROLLS UP FOR COMPACT STORAGE
INNOVATOR NOT GIVEN /CANADIAN COMMERCIAL CORP./ MAY 1964
GSFC-151
An extensible boom, carrying three separate electric conductor tapes, can be rolled into a compact storage drum. The tape is curved in cross section so that the boom automatically forms a tube as it is extended.

B64-10014
GUIDE FOR EXTRUSION DIES ELIMINATES STRAIGHTENING OPERATION
GYORGAK, C. A. HOOVER, R. J. NOV. 1964
LEWIS-152
To prevent distortion of extruded metal, a guidance assembly is aligned with the die. As the metal emerges from the extrusion dies, it passes directly into the receiver and straightening tube system, and the completed extrusion is withdrawn.

B64-10015
COMFORTABLE, LIGHTWEIGHT SAFETY HELMET HOLDS RADIO TRANSMITTER, RECEIVER
ATLAS, N. D. /N. AM. AVIATION, INC./ MAY 1964
MSC-53
For two-way radio communication where safety gear is required, a lightweight helmet with few protrusions has been designed. The electronics components and power supply are mounted between the inner and outer shells, and resilient padding is used for the lining.

B64-10021
PRESSURE TRANSDUCER 3/8-INCH IN SIZE CAN BE FAIRED INTO SURFACE
SCHAFFER, R. J. /N. AM. AVIATION, INC./ MAY 1964
WOO-065
To measure fluid pressure with minimum disturbance to fluid flow, a miniature pressure transducer can be imbedded and faired into the test surface. Incorporated in the design are piezoresistive elements, mounted on a diaphragm, which transform pressure strains into an electrical signal.

B64-10028
QUICK-ACTING CLUTCH DISENGAGES IDLE DRIVE MOTOR
STARK, K. W. AUG. 1964
GSFC-143
Positive-drive, no drag, over-running clutch is developed to conserve power of idle motor in a low-power system using multiple drive motors. This device is useful where a number of shaft speeds are required with frequent shifting.

B64-10031
MULTIPLE PORT PRESSURE SCANNER VALVE FEATURES GREATER ACCURACY, QUICKER DATA
VINCENT, E. R. SEP. 1964
JPL-555
A fast, accurate, multipressure measuring system, which employs a multiple port pressure scanning valve that connects a pressure transducer to many pressures, is described.

B64-10050
MODIFIED GAS BEARING IS ADJUSTABLE TO OPTIMUM STIFFNESS RATIO
EVANS, J. L. AUG. 1964
M-FS-145
Inexpensive and rapid-adjustments of the radial-to-axial stiffness ratio of a spherical gas bearing are achieved by a series of gas passages in the equatorial plane of the sphere which feed into orifices that can be readily changed in size.

B64-10058
INSULATED WELD TOOLING PERMITS UNIFORM, HIGH-QUALITY WELD
INNOVATOR NOT GIVEN /N. AM. AVIATION/ AUG. 1964
MSC-42
The application of a ceramic material coating to all surfaces contacting parts to be welded permits greater weld strength than the conventional weld tooling method.

B64-10066
ENCAPSULATION PROCESS STERILIZES AND PRESERVES SURGICAL INSTRUMENTS
MONTGOMERY, L. C. MORELLI, F. A. JUL. 1964
JPL-484
Ethylene oxide is blended with an organic polymer to form a sterile material for encapsulating surgical instruments. The material does not bond to metal and can be easily removed when the instruments are needed.

B64-10069
METAL-BENDING BRAKE FACILITATES LIGHTWEIGHT, CLOSE-TOLERANCE FABRICATION
ERCOLINE, A. L. WILTON, K. B. OCT. 1964
ARC-29
A lightweight, metal bending brake ensures very accurate bends. Features of the brake that adapt it for making complex reverse bends to close tolerances are a pronounced relief or cutaway of the underside of the bodyplate combined with modification in the leaf design and its suspension.

B64-10084
MOLDED ELASTOMER PROVIDES COMPACT FERRITE-CORE HOLDER, SIMPLIFIES ASSEMBLY
HAYDEN, R. R. NOV. 1964
JPL-584
A ferrite-core holder, fabricated by casting an elastomer in a simple mold, simplifies the assembly of modular matrix units for computers. Use of the device permits the core leads to be multiply threaded and soldered to terminals, without requiring intermediate terminals.

B64-10119
BUCKLE JOINS WEB STRAPS QUICKLY, ADJUSTS EASILY
WILKINSON, J. E. /CHANCE VOUGHT CORP./ JUN. 1964
LANGLEY-21
To join web straps used to hoist heavy loads, a novel buckle permits two straps to be quickly joined and held by the combined forces of strap load tension and friction.

B64-10121
ELECTRONIC ASSEMBLY RACK PANELS SNAP ON AND OFF
BAILEY, J. W. JUN. 1964
GSFC-59
Snap fasteners on each side of an electronic assembly rack blank panel give quick access to the interior. Guide pins extending from the inside face easily slip into standard screw holes on the frame and provide additional support.

B64-10124
ATTACHMENT CONVERTS MICROSCOPE TO POINT SOURCE AUTOCOLLIMATOR
SHLICHTA, P. J. JUL. 1964
JPL-499
A low-power microscope or telescope provides a simple means of autocollimation. This is done by fitting the instrument with a light source to permit alignment from a reflecting surface normal to the optic axis of the instrument.

B64-10130
BEARING TRANSMITS ROTARY AND AXIAL MOTION
DOW, N. F. PETERS, R. W. SEP. 1964
LANGLEY-27
A low friction, two-component bearing comprised of a pair of ball-bearing races for transmitting rotary motion and an inner series of ball bearing assemblies for transmitting axial motion is described and should be useful in mechanisms such as stress-strain testing machines.

B64-10141
PNEUMATIC POWER IS TRANSMITTED THROUGH AIR BEARING
JOHNSON, H. I. WOBIG, O. A. JUL. 1964
MSC-8
A more efficient method for supplying high pressure air to an air bearing and pneumatic equipment mounted on it has been developed. The system uses a conventional air bearing and an air-supported sphere with a central passage. High pressure air is channeled through it into the pneumatic equipment on the sphere.

B64-10145
FLEXIBLE FASTENER ALLOWS THERMAL EXPANSION
CRUMPLER, W. B. JUN. 1964
LANGLEY-40
A flexible fastener permits thermal expansion of model skin sections which are rigidly attached to supporting structures in wind tunnel tests. The device uses a modified ball joint contact between the fastener and a skin section.

B64-10164
UPSETTING BUTT EDGE INCREASES WELD-JOINT STRENGTH
VESCO, D. OCT. 1964
M-FS-175
Mechanical upsetting /a mode of cold forging/ of butt edges to be welded is accomplished by the use of hydraulic rams and pressure rollers. The mechanical upsetting increases the thickness of the material in the heat-affected zone and compensates for the lower specific strength per unit thickness common to this area.

B64-10170
BALL BEARING USED IN DESIGN OF RUGGED FLOW-METER
MINKIN, H. L. JAN. 1965
LEWIS-159
A volumetric flowmeter which has a small magnet imbedded in the outer perimeter of the turbine wheel or in the bearing permits measurement of liquid flow rates in the presence of wide ranges and violent surges.

B64-10178
MACHINE TESTS CREASE DURABILITY OF SHEET MATERIALS
JONES, L. K. STANFORD, H. B. NOV. 1964
JPL-604
To test the crease resistance of sheet materials, the mid-section is folded over crease-control blades. One end is clamped to a motor-driven eccentric, the other to a spring, and durability is measured by the cycles required to produce failure.

B64-10185
THREADING HOOK FACILITATES SAFE RECOVERY OF HEAVY LOADS
ARTHUR, J. S. WILLIAMS, D. C. OCT. 1964
MSC-46
A C-shaped threading hook and shuttle mounted on a spring-loaded driving rod located inside the long-handled pole are developed for recovering massive loads afloat in the sea.

B64-10188
BLADE VALVE ISOLATES COMPARTMENT IN PIPE, OPENS TO ALLOW FREE FLOW
IMUS, R. NOV. 1964
JPL-585
Two thin blades are incorporated into a valve which, when closed, form a sealed compartment in the shock-tube portion of a pipeline. When forced open by an actuator, gas flows through the system.

B64-10211
MICROMACHINING PRODUCES OPTICAL APERTURES TO MICRON DIMENSIONS
WALCH, A. J. OCT. 1964
GSFC-206
A micron dimensioned rectangular optical aperture is formed under a high-powered toolmaker*s microscope by laying two knife-edged blocks over the miniature knife-edged hole in the base.

B64-10223
TWO-PART VALVE ACTS AS QUICK COUPLING
MAC GLASHAN, W. F., JR. NOV. 1964
JPL-478
A two-part valve simplifies the problem of filling large tanks from smaller ones. One part acts as a check valve and remains integral to the recipient system, while the other part is integral to the donor system.

B64-10249
INSTRUMENT ADJUSTMENT KNOB LOCKS TO PREVENT ACCIDENTAL MALADJUSTMENT
INNOVATOR NOT GIVEN /LEAR SIEGLER CORP./ NOV. 1964
M-FS-190
A device, incorporating a collar with a hexagonal opening which fits snugly over a hexagonal nut used to engage instrument panel components, keeps the adjustment knob locked. A quick release mechanism frees the knob for rotational adjustment.

B64-10272
VISCOUS-PENDULUM DAMPER SUPPRESSES STRUCTURAL VIBRATIONS
REED, W. H., III NOV. 1964
LANGLEY-45
The viscous pendulum damper consists of a cylinder containing round trays on which round lead slugs rest. When assembled, the container is filled with a viscous liquid and attached, with axis vertical, to the structure. The device permits varying the damping of structural vibrations.

B64-10274
VEHICLE WALKS ON VARIED TERRAIN, CAN ASSIST HANDICAPPED PERSONS
INNOVATOR NOT GIVEN NOV. 1964
WOO-005
A battery-powered motorized vehicle with three pairs of legs connected to push rods and a series of linkages is constructed for traversing varied terrains. Two cams connected to the drive mechanism control the motion of the legs. The basic design may be adapted for use with motorized wheelchairs.

B64-10277
APPARATUS ALTERS POSITION OF OBJECTS TO FACILITATE DEMAGNETIZATION
RINARD, G. WATSON, J. D. NOV. 1964
GSFC-234
An apparatus consisting of pulleys, a drive shaft and an inner compartment, in which components to be demagnetized are mounted, is constructed. Due

to the speed ratio of the three frames, every point on a component in the inner compartment is cycled through an optimum locus in the demagnetization field.

B64-10278
SENSITIVE LOW-PRESSURE RELIEF VALVE HAS POSITIVE SEATING AGAINST LEAKAGE
INNOVATOR NOT GIVEN /N. AM. AVIATION INC./ NOV. 1964
WOO-041
A pilot-operated relief valve which provides positive seating against leakage in cryogenic systems is described. The principal advantage is that the pilot poppet is unaffected by variations in control pressures in the pilot cavity, and results in a more accurate sensing of inlet pressure conditions.

B64-10284
APPARATUS MEASURES VERY SMALL THRUSTS
INNOVATOR NOT GIVEN /HUGHES AIRCRAFT CO./ NOV. 1964
WOO-048
Measurement of very small thrusts of an ion engine are made by mounting the engine on a platform supported by leaf springs which are loaded to have a zero spring constant. Measuring apparatus includes an inductive sensor, servo amplifier, and a counterthrust feedback system.

B64-10306
COMPRESSED GAS SYSTEM OPERATES SEMITRAILER BRAKES DURING WINCHING OPERATION
TUPPER, W. E. DEC. 1964
JPL-0036
To move van-type semi-trailers into and out of confined spaces, an auxiliary braking system is mounted on a standard dolly converter. Compressed nitrogen is used to actuate the brakes which are used in conjunction with a power winch.

B64-10327
CONNECTOR SEALS FLUID LINES AT CRYOGENIC TEMPERATURES AND HIGH VACUUMS
KITTS, W. T. PLATT, P. K. JAN. 1965
GSFC-253
A connector that will serve as a seal for fluids at cryogenic temperatures and in high vacuums was constructed by installing a metal disk between two sets of mating serrations to form two sealing surfaces. Compression on both sealing surfaces is ensured by spring action of the disk.

B64-10348
SAFETY RESTRAINER PREVENTS WHIPPING OF RUPTURED HIGH-PRESSURE HOSE
THOMPSON, W. E. DEC. 1964
LEWIS-99
The braid at each end of a standard electric cable puller is modified to reinforce high pressure, flexible, fluid transfer hoses. This safety device acts as a restraint if the line ruptures.

B64-10406
POLYCHART CONTOUR ENABLES DATA EXTRAPOLATION FROM MULTIPLE PLOTTING CHARTS
SWINDALL, P. M. WISE, T. E. JUL. 1964
M-FS-37
A polychart contour plotter is used to reduce the data from all 19 antenna pattern charts to a one-chart form.

B65-10003
ILLUMINATED DISPLAY PANEL IS EASILY CHANGED
INNOVATOR NOT GIVEN /IBM/ JAN. 1965
MSC-108
Photographic negative placed between two plastic sheets and back-lighted in selected areas prepares illuminated multicolored display panels. The device is inexpensive, easily changed, and quickly fabricated.

B65-10007
THERMOCOMPRESSION BONDING PRODUCES EFFICIENT SURFACE-BARRIER DIODE
INNOVATOR NOT GIVEN /IBM/ JAN. 1965
JPL-SC-066
Thermocompression bonding of a gold wire to a gallium-arsenide wafer produces a quality surface barrier diode with fast recovery times. The properties of this combination may be useful in semiconductor devices.

B65-10008
SHOCK ABSORBER PROTECTS MOTIVE COMPONENTS AGAINST OVERLOADS
INNOVATOR NOT GIVEN /DOUGLAS AIRCRAFT CO./ JAN. 1965
WOO-092
Shock absorber with an output shaft, hollow gear, and a pair of springs forming a resilient driving connection between shaft and gear, operates when abnormally high torques are applied. This simple durable frictional device is valuable in rotating mechanisms subject to sudden overloads.

B65-10009
FORMING BLOCKS SPEED PRODUCTION OF STRAIN GAGE GRIDS
BONN, J. L. GARDNER, D. E. FEB. 1965
LEWIS-182
A tool is designed which facilitates the forming of wire grids used in manufacturing strain gauge grids. Flattening the grid wire by a cold working process produces a stabilized grid which can be readily handled for storage or shipment.

B65-10014
USE OF TEAR RING PERMITS REPAIR OF SEALED MODULE CIRCUITRY
INNOVATOR NOT GIVEN /IBM/ JAN. 1965
M-FS-210
Improved packaging technique for modulator electronic circuitry utilizes a tear ring which may be removed for repair and resealed. The tear ring is put over the container and header to which the electronic circuit assembly has been attached.

B65-10017
EXPLOSIVES ACTUATE NONMAGNETIC INDEXING DEVICE
BAUERNSCHUB, J. P., JR. JAN. 1965
GSFC-237
Nonmagnetic explosive-actuated indexing device creates magnetic field that can be tolerated by a sensor.

B65-10019
WIDE-ANGLE SENSOR MEASURES RADIANT HEAT ENERGY IN CORROSIVE ATMOSPHERES
INNOVATOR NOT GIVEN /BOEING CO./ JAN. 1965 SEE ALSO B63-10004
M-FS-228
Ellipsoidal cavity device measures radiant heat energy over wide incident angles in corrosive atmospheres. The instrument consists of a cavity in copper heat sink sealed with sapphire window to protect thermocouple.

B65-10020
OPTICAL ARRANGEMENT INCREASES USEFUL LIGHT OUTPUT OF SEMICONDUCTOR DIODES
INNOVATOR NOT GIVEN /IBM/ JAN. 1965 SEE ALSO B64-10297
JPL-SC-064
Useful light output of semiconductor diodes increased by incorporating the diode in an integral reflector and lens assembly. This reduces normal reflection losses between the diode and the air.

B65-10021
PICKUP DEVICE READS PRESSURES FROM PORTS IN ROTATING MECHANISMS
JANAS, B. JAN. 1965 SEE ALSO B64-10031
LEWIS-158
Indexing pickup monitors fluid pressures from ports at various angles on high or low speed rotating mechanisms in operation. By a simple axial movement of a takeoff connector, angle changing takes place. This device can be adapted for electric current monitoring.

B65-10022
KNOB LINKAGE PERMITS ONE-HAND CONTROL OF SEVERAL OPERATIONS
CODDING, G. C. LAVENDER, C. E. JAN. 1965
MSC-30

Electromechanical device with single knob provides one-hand control of numerous electrical or mechanical functions. The principle of this design may have application to remote-control switching devices.

B65-10027
FLUID-PRESSURE MEASUREMENT APPARATUS USES SHORT-LENGTH MANOMETER TUBES
SATHER, B. I. MAR. 1965
LEWIS-28
System of short length U-tube manometers with a proportionally divided reference pressure measures high fluid pressures.

B65-10029
SEISMIC TRANSDUCER MEASURES SMALL HORIZONTAL DISPLACEMENTS
GREENWOOD, T. L. MAR. 1965
M-FS-81
Pendular seismic transducer mounted on base plate measures small horizontal displacements of structures subjected to vibration where no fixed reference point is available. Enclosure of transducer in transparent plastic case prevents air currents from disturbing the pendulum balance.

B65-10031
SPRING LOADED BEADED CABLE MAKES EFFICIENT WIRE PULLER
INNOVATOR NOT GIVEN /N. AM. AVIATION/ FEB. 1965
1965
WOO-108
An efficient wire puller consists of a steel probe with a hole in one end fastened to a steel cable which is strung with metal beads compressed by spring loaded ferrules. This device allows cables to be pulled or forced around bends and elbows in pipes or tubes.

B65-10035
OCEANBORNE TRANSPONDER PLATFORM HAS GOOD STABILITY
INNOVATOR NOT GIVEN /IBM/ FEB. 1965
M-FS-171
Determination of space vehicle range and orbit is aided by a stable subsurface oceanic transpounder. This device consists of a buoy held below the surface by a three-point system of anchors and mooring lines with an above surface antenna.

B65-10037
IMPROVED HOLDER PROTECTS CRYSTAL DURING HIGH ACCELERATION AND IMPACT
LE VAY, K. H. FEB. 1965
JPL-463
A plastic holder, which retains a crystal blank with standard silvered contacts sandwiched between two copper contacts, protects the crystal against vibration during high acceleration and impact.

B65-10038
FASTENER PROVIDES COOLING AND COMPENSATES FOR THERMAL EXPANSION
INNOVATOR NOT GIVEN /AEROJET-GEN. CORP./ FEB. 1965
NU-0003
A fastener composed of a concentric bellows welded to two plates forming an annular cavity provides cooling and thermal expansion compensation in a high temperature environment.

B65-10039
NONRESONANT SUPPORT FACILITATES VIBRATION TESTING OF STRUCTURES
INNOVATOR NOT GIVEN /BOEING CO./ FEB. 1965
M-FS-224
An essentially frictionless four-point support system which utilizes bearings and pistons and allows for determination of vibration frequencies of large structures. Retardation of vertical or horizontal motion is due to the viscous damping by the hydrostatic pressure of the oil or by adjustment of the gas volume in the accumulator.

B65-10040
VALVE DESIGNED WITH ELASTIC SEAT
MAC GLASHAN, W. F., JR. FEB. 1965
JPL-442
Absolute valve closure is accomplished by a machined valve with an axially annular channel which changes the outlet passage into a thin tubular elastic seat member with a retainer backup ring. The elasticity of the seat provides tight conformity to ball irregularity.

B65-10042
FLEXURE SUPPORT SYSTEM PROTECTS THERMALLY AND DYNAMICALLY LOADED MODELS
CRUMPLER, W. B. FEB. 1965
LANGLEY-39
The design of an eight legged flexure support system which permits differential thermal expansion of thin skinned models subjected to high temperatures is done by setting the length- wise axes of the supporting legs approximately normal to the line of absolute motion of the model supported.

B65-10049
SCREW LOCKING CUPS QUICKLY AND NEATLY CRIMPED
INNOVATOR NOT GIVEN /WESTINGHOUSE ELEC. CORP./
FEB. 1965
NU-0009
A tool consisting of a positioning pin which is engaged in the screw and depressed until the tool body contacts the locking cup permits quick and neat crimping.

B65-10053
SEAL ALLOWS BLIND ASSEMBLY AND THERMAL EXPANSION OF COMPONENTS
INNOVATOR NOT GIVEN /WESTINGHOUSE ELEC. CORP./
FEB. 1965
NU-0005
The design of a seal consisting of two concentric cylinders with outer and inner threaded elements attached to each side of the system interface withstands large temperature changes and allows for blind assembly.

B65-10060
NEW ALLOY BRAZES TITANIUM TO STAINLESS STEEL
INNOVATOR NOT GIVEN /N. AM. AVIATION/ MAR. 1965
1965
MSC-102
Brazing alloy of palladium, silver and silicon is used in brazing titanium to stainless steel without embrittling metals at the brazed interfaces.

B65-10063
CERAMIC-COATED BOAT IS CHEMICALLY INERT, PROVIDES GOOD HEAT TRANSFER
SPITZER, C. R. MAR. 1965
LANGLEY-90
Refractory metal foil sprayed with ceramic coating serves as evaporating boat for inorganic materials. The high thermal conductivity of this boat makes it useful with ohmic heaters.

B65-10064
DEVICE MEASURES CURVED SURFACE FINISH ON GEAR TEETH
INNOVATOR NOT GIVEN /GE/ MAR. 1965
WOO-112
Measurement of the curved surface finish on gear teeth is made by a device used in conjunction with a conventional profilometer.

B65-10070
SIMPLE SCALE INTERPOLATOR FACILITATES READING OF GRAPHS
FETTERMAN, D. E., JR. MAR. 1965
LANGLEY-88
Simple transparent overlay with interpolation scale facilitates accurate, rapid reading of graph coordinate points. This device can be used for enlarging drawings and locating points on perspective drawings.

B65-10074
NITROGEN DIOXIDE PRODUCED BY SELF-SUSTAINED PYROLYSIS OF NITROUS OXIDE
SABOL, A. P. MAR. 1965
LANGLEY-32
Apparatus is developed for achieving continuous

self-sustaining pyrolysis reaction in the production of nitrogen dioxide from nitrous oxide. The process becomes self-sustaining because of the exothermic reaction and the regenerative heating of the gases in the pyrolysis chamber.

B65-10075
TENSION IS SERVO CONTROLLED IN FILM ADVANCE SYSTEM
INNOVATOR NOT GIVEN /AM. OPT. CO./ MAR. 1965
LANGLEY-54
Servocontrol device feeds film into a roller system. Two linear potentiometers connected to spring loaded tension rollers furnish servo input signal. Can be used in any continous material transport system.

B65-10077
NEW COUPLING COMPENSATES FOR SHAFT MISALIGNMENT
INNOVATOR NOT GIVEN /WESTINGHOUSE ELEC. CORP./ MAR. 1965
NU-0013
Coupling of splined shafts with slight misalignment is accomplished by means of a crown spline and sleeve arrangement.

B65-10078
FABRICATION METHOD PRODUCES HIGH-GRADE ALUMINA CRUCIBLES
PALMOUR, H. MAR. 1965
M-FS-216
Alumina-binder mixture, which has been dry pressed in a die using a mating punch, forms crucibles of various configurations and after firing results in a ceramic structure for use in diffusion experiments.

B65-10090
COMPACT ASSEMBLY GENERATES PLASTIC FOAM, INFLATES FLOTATION BAG
INNOVATOR NOT GIVEN APR. 1965
LANGLEY-96
Device for generating plastic foam consists of an elastomeric bag and two containers with liquid resin and a liquid catalyst. When the walls of the containers are ruptured the liquids come into contact producing foam which inflates the elastomeric bag.

B65-10094
CUTTER AND STRIPPER REDUCES COAXIAL CABLE CONNECTION TIME
THOMPSON, F. E. APR. 1965
ARC-40
Consisting of three pivoted members, this hand cutter and stripper positions to cut shielding and insulation at the right distance and depth. Coaxial cable is prepared quickly and accurately for connector attachment.

B65-10098
CONTACT STRESSES CALCULATED FOR MINIATURE SLIP RINGS
ALBRIGHT, F. G. DOMEREST, K. E. HORTON, J. C. APR. 1965
M-FS-280
Using mathematical formulations to plot the graphs of the contact preload versus the Hertzian load, calculations of unit loading of the preloaded brushes on slip rings can be made. This optimizes the design of contact brushes and miniature slip rings.

B65-10099
SLIT FEEDS REDUCE UNBALANCED TORQUES IN GAS-LUBRICATED BEARINGS
BATSCH, F. F. LAUB, J. H. APR. 1965 SEE ALSO B63-10123 AND B64-10050
JPL-264
Gas-lubricated journal bearing with narrow radial slits forming circular gas-feed passages regulates gas flow in precision instruments. Asymmetrical flow pattern and unbalanced torques are prevented.

B65-10101
JIG AND FIXTURE AID FABRICATION OF TUNGSTEN RIVETS
CHATTIN, J. H. APR. 1965
LEWIS-185
Jig and fixture that holds several lengths of tungsten rods produces rivets simply and inexpensively. The apparatus allows sufficient tungsten to be exposed for heating and forging into a rivet head.

B65-10104
LEAF-SPRING SUSPENSION PROVIDES ACCURATE PARALLEL DISPLACEMENTS
MC CREARY, R. A. APR. 1965
JPL-480
Leaf-spring suspension device with the springs symmetrically mounted on suspension frames provides accurate parallel displacements of loads over short linear distances.

B65-10109
ROCK BIT REQUIRES NO FLUSHING MEDIUM TO MAINTAIN DRILLING SPEED
INNOVATOR NOT GIVEN /HUGHES AIRCRAFT CO./ APR. 1965
JPL-WOO-031
Steel drill bit having terraces of teeth intersected by spiral grooves with teeth permits the boring of small holes through rock with low power. The cuttings are stored in a chamber behind the cutting head. Could be used as sampling device.

B65-10110
MAGNETS POSITION X-RAY FILM FOR WELD INSPECTION
WAGNER, R. P. APR. 1965
M-FS-253
Film-positioning device uses magnets to hold X-ray film for weld inspection in nonferrous structures, such as tanks, where access to interior points is difficult.

B65-10111
PROBE TESTS MICROWELD STRENGTH
INNOVATOR NOT GIVEN /DOUGLAS AIRCRAFT CO./ APR. 1965
WOO-118
Probe is developed to test strength of soldered, brazed or microwelded joints. It consists of a spring which may be adjusted to the desired test pressure by means of a threaded probe head, and an indicator lamp. Device may be used for electronic equipment testing.

B65-10113
SHOCK MOUNT ISOLATES PRESSURE TRANSDUCERS FROM VIBRATION
ROGERO, R. S., JR. APR. 1965
JPL-631
Pressure transducer is isolated from shock and vibration forces by a pressure-compensated shock mount. Silicone elastomer O-rings within the shock mount serve as shock and vibration-damping pads.

B65-10114
AVERAGING PROBE REDUCES STATIC-PRESSURE SENSING ERRORS
RITCHIE, V. S. APR. 1965
LANGLEY-36
Averaging the high and low pressure admitted to a plenum through circumferentially spaced orifices provides a probe that accurately senses the free-stream static pressure on an aerodynamic surface. This surface does not have a preferred angle of inclination to the direction of the airstream cross flow.

B65-10115
INERT GAS SPRAYING DEVICE AIDS IN REPAIR OF HAZARDOUS SYSTEMS
TELEHA, S. APR. 1965
LEWIS-88
Inert gas spraying device aids in safely making mechanical repairs to a cryogenic fluid system without prior emptying of the system. This method can be applied to any natural or bottled gas system and with modifications to gasoline transports.

B65-10116
LOW-COST TOOL MINIMIZES DAMAGE TO O-RINGS DURING INSTALLATION
INNOVATOR NOT GIVEN /N. AM. AVIATION/ APR. 1965
MSC-140
Tapered cylindrical tool enables O-ring installation over threaded fasteners without seal damage.

B65-10121
FLOW CONTROL VALVE IS INDEPENDENT OF PRESSURE DROP
INNOVATOR NOT GIVEN /THIOKOL CHEM. CORP./ APR. 1965
JPL-W00-039
Remote control of fluid flow in a low-power system is established by a flow control valve with a flapper and nozzle flow control. Constant rates are maintained despite fluctuating pressure across the valve.

B65-10126
COLLAPSIBLE TRUSS STRUCTURE IS AUTOMATICALLY EXPANDABLE
INNOVATOR NOT GIVEN /GE/ MAY 1965
GSFC-265
Coil springs wound with maximum initial tension in a three-truss, closed loop structure form a collapsible truss structure. The truss automatically expands and provides excellent rigidity and close dimensional tolerance when expanded.

B65-10130
COLLAR POSITIONS STRIP STOCK USED TO FORM COIL ON MANDREL
BLAZE, C. J. MAY 1965
JPL-198
Guide collar fastened to a mandrel helps form a coil of strip sheet metal stock. The collar maintains the strip stock in its proper position during winding of each turn of the coil.

B65-10131
APPARATUS FACILITATES PRESSURE-TESTING OF METAL TUBING
GYORGAK, C. A. MAY 1965
LEWIS-174
Burst-testing of refractory metal tubing is conducted in an apparatus in which tubular specimans are firmly gripped and test pressures and temperatures are applied. Porosity, flaw, and fatigue-stress rupture are also tested.

B65-10134
HIGH PERMEABILITY SEMICONDUCTORS PERMIT CLOSE-TOLERANCE SOLDERING
INNOVATOR NOT GIVEN /HUGHES AIRCRAFT CO./ MAY 1965
GSFC-319
High permeability semiconductors concentrate magnetic field energy in small areas to allow soldering of small components. This device can be used in microminiature parts in thin-film fabrication.

B65-10135
COILED SPRING MAKES SELF-LOCKING DEVICE FOR THREADED FASTENERS
INNOVATOR NOT GIVEN /N. AM. AVIATION/ MAY 1965
MSC-149
Coiled spring device provides both easy self-locking and disassembly for screw-threaded fasteners. When the fastener turns in one direction the spring grips one of the fastener threads and releases when the fastener turns in the opposite direction.

B65-10141
INTEGRAL RIBS FORMED IN METAL PANELS BY COLD-PRESS EXTRUSION
BRADIE, P. R. SCHUERER, P. H. MAY 1965
M-FS-230
Metal panels with integral ribs are formed by the cold-press extrusion method without material loss. Integral ribs in aluminum-alloy panels are formed by this process.

B65-10144
LIGHTWEIGHT LOAD SUPPORT SERVES AS VIBRATION DAMPER
LAYMAN, W. E. MAY 1965
JPL-661
Omnidirectional antennas and solar panels can be supported by a thin-walled tubular strut. Silicon grease is used as the vibration-damping medium and a coil spring supports static loads.

B65-10147
IMPROVED FLUID CONTROL VALVE EXTENDS DIAPHRAGM LIFE
MAC GLASHAN, W. F. MAY 1965
JPL-345
Wear resistance of flexible diaphragms in fluid control valves is increased by incorporating a soft rubber washer at the bottom of the piston, a flexible buffer between the diaphragm and the valve seat, and a fluid feedback arrangement. The stress and wear of components at the valve seat are minimized.

B65-10148
BIDIRECTIONAL TORQUE FILTER ELIMINATES BACKLASH
BAKER, R. VEILETTE, L. WILLIAMS, S. MAY 1965
GSFC-335
Two elastic springs connecting a hub and two spur gears absorb bidirectional step torque differentials and provide antibacklash characteristics between input and output shafts. This device is used in precise control systems.

B65-10149
CANTILEVER SPRINGS MAINTAIN TENSION IN THERMALLY EXPANDED WIRES
TERSELIC, R. A. MAY 1965
LEWIS-136
Two deflected cantilever springs strung with wire provide force displacement compensation to maintain tension in the wires as they undergo thermal expansion. This method of maintaining tension in thermally expanded wires is used in electric space heaters and residential heat exchangers.

B65-10150
METAL BELLOWS CUSTOM-FABRICATED FROM TUBING
INNOVATOR NOT GIVEN MAY. 1965
LEWIS-192
Mandrel assembly mounted in a lathe chuck is used with a forming wheel to roll-form bellows from standard sheet metal tubing. Spacers and mandrels of various sizes custom-fabricate bellows of any desired dimensions.

B65-10153
TITANIUM TREATMENT IMPROVES BRAZED JOINTS
INNOVATOR NOT GIVEN /MIT/ MAY 1965
MSC-127
Pretreating metal with a thin coating of pure titanium improves the wettability and flow of brazing alloys. This can be used in the manufacturing of aviation and aerospace components where high strength-to-weight ratio must be achieved.

B65-10154
SYSTEM MEASURES UNIDIRECTIONAL FORCES, EXCLUDES EXTRANEOUS FORCES
BEHRENDT, D. R. HEGLAND, D. E. MAY 1965
LEWIS-170
System measures unidirectional force without interference from other directional forces. The measuring apparatus is mounted so that it only moves vertically and is constrained from horizontal and rotational movement. This system can be used to accurately measure small forces in one direction, or as an analytic balance.

B65-10160
LOW-COST SEAL COMPENSATES FOR SURFACE IRREGULARITIES
INNOVATOR NOT GIVEN /AEROJET-GEN. CORP./
JUN. 1965
NU-0016
Seal assembly consisting of a steel V-ring and a perforated tubular fluorocarbon polymer O-ring provides a barrier to gaseous and liquid hydrogen under high pressure.

B65-10163
DEVICE DISCONNECTS SEVERAL COUPLINGS SIMULTANEOUSLY
KORSYTHE, A. K. JUN. 1965
JPL-226
Actuator assembly disconnects electric cable and fluid-line coupling from a rocket. The disconnector incorporates interconnected hydraulic cylinders which effect an equal and simultaneous displacement of pistons upon admission of compressed air through a solenoid control valve.

B65-10166
SPLICE PLATE DESIGN ASSURES STRUCTURAL SEPARATION BY MILD EXPLOSIVE
INNOVATOR NOT GIVEN /N. AM. AVIATION/ JUN. 1965
1965
MSC-137
Splice plate with mechanical joint is separated by expanding gases of a mild detonating fuse. The gas pressures of the low-yield explosive eliminate component fragmentation and achieve excellent control of the separation line.

B65-10168
LATHE ATTACHMENT USED TO MACHINE ELLIPTICAL CONES
ALLEN, J. H., SR. WOBIG, O. A. JUN. 1965
MSC-100
Close-tolerance elliptical cones are fabricated by cutting-tool guide assembly used with conventional tracer cartridge on turret lathe accurately produced in two machine operations

B65-10170
METAL PARTS HYDROSIZED BY EXPLOSIVE FORCE
INNOVATOR NOT GIVEN /N. AM. AVIATION/ JUN. 1965
1965
M-FS-289
Large metal parts are sized by a charge exploded above a sealed container filled with evacuated die and water. Explosive hydrosizing achieves close dimensional tolerances, eliminates damage to the surface, and allows longer force application and more even pressure distribution.

B65-10174
PRESSURE TRANSDUCER SYSTEM IS FORCE-BALANCED, HAS DIGITAL OUTPUT
INNOVATOR NOT GIVEN /GIANNINI CONTROLS CORP./
JUN. 1965
M-FS-154
Forced-balanced pressure transducer and associated circuitry controls pressure testing of space equipment systems under actual operating conditions. The transducer and circuitry automatically converts the sensed pressure to digital form.

B65-10176
DEVICE ENABLES MEASUREMENT OF MOMENTS OF INERTIA ABOUT THREE AXES
CONN, J. JUN. 1965
GSFC-49
Device measures moments of inertia of an irregularly shaped mass about three mutually perpendicular axes by the standard pendulum and torque methods. A fixture suspends the test mass at one point and can be adjusted to allow oscillation of the mass.

B65-10177
EPOXY-RESIN PATTERNS SPEED SHELL-MOLDING OF ALUMINUM PARTS
INNOVATOR NOT GIVEN /ALABAMA UNIV./ JUN. 1965
M-FS-303
Half patterns cast from commercial epoxy resin containing aluminum powder are used for shell-molding of aluminum parts. The half patterns are cast in plastic molds of the original wooden pattern. Ten serviceable sand-resin molds are made from each epoxy pattern.

B65-10180
NEW NUT AND SLEEVE IMPROVE FLARED CONNECTIONS
GARRARD, J. S. JUN. 1965
M-FS-194
Improved nut and sleeve of standard stainless steel flared tube connection allows forces on the mating surfaces to be uniformly applied. This can be applied to pressurized fluid systems such as refrigeration, air conditioning, and hydraulic systems.

B65-10181
HAND TOOL BENDS COMPONENT LEADS ACCURATELY
INNOVATOR NOT GIVEN /CHRYSLER CORP./ JUN. 1965
M-FS-308
Hand-operated die set bends, without damage, electrical component leads to perfectly match holes in printed circuit board. This tool speeds up printed circuit fabrication and reduces the number of component rejections.

B65-10185
DISPENSING SYSTEM ELIMINATES TORSION IN DEPLOYED HOSES
INNOVATOR NOT GIVEN /IIT RES. INST./ JUN. 1965
MSC-80
Dispensing system uses a rotating drum, transfer arm, and stationary drum to deploy, reel in, and store an attached hose. This system which eliminates torsion and minimizes strain and wear of flexible hoses, is used for handling flexible cables that have one end permanently attached to an outlet or connector.

B65-10191
EXTENDIBLE COLUMN CAN BE STOWED ON DRUM
HOLTZ, G. M. HOWARD, E. A. JUN. 1965
JPL-686
Column formed from a series of segments held together by an internal spring or cable can be coiled on a drum or extended into a rigid structure. This storable coil is useful in boring for soil samples and supporting electrical and optical sensors.

B65-10192
SPIRAL HEATER COILS HAND-FORMED WITH FIXTURE
CHATTIN, J. H. JUN. 1965
LEWIS-208
Bench model jig and fixture used for hand fabricating spiral coils of various lengths from flat strip stock. This tool is used to make springs and coils to custom lengths.

B65-10198
SELF-ALIGNING FIXTURE USED IN LATHE CHUCK JAW REFACING
LINN, C. C. JUN. 1965
FRC-21
Self-aligning tool positions and rigidly holds lathe chuck jaws for refacing and truing of the clamping surface. The jaws clamp the fixture in the manner of clamping a workpiece. The fixture can be modified to accommodate four-jawed checks.

B65-10201
ELECTRICAL CABLE CONNECTOR-CLAMP HAS SMOOTH EXTERIOR SURFACE
INNOVATOR NOT GIVEN /N. AM. AVIATION/ JUN. 1965
1965
MSC-154
Electrical cable connector-clamp fitted with a collet has a smooth exterior surface that can be easily gripped. The collet clamps a portion of the cable and provides for connecting it to a standard electrical connector.

B65-10205
BALL-AND SOCKET JOINTS PROVIDE ACCURATE BIAXIAL GIMBAL
ROUZE, E. R. JUL. 1965
JPL-658
Ball-and-socket joints are used to connect two rotating inputs to orthogonally pivoted outputs. This provides an accurate biaxial gimbal which will operate in continuous motion without backlash.

B65-10207
FLUID CHECK VALVE HAS FAIL-SAFE FEATURE
GAUL, L. C. JUL. 1965
JPL-0019
Check valve ensures unidirectional fluid flow and,

in case of failure, vents the downstream fluid to the atmosphere and gives a positive indication of malfunction. This dual valve consists of a master check valve and a fail-safe valve.

B65-10210
FIBERGLASS DIES SPEED FORMING OF LARGE METAL SHEETS
BROWN, R. L. SCHUERER, P. JUL. 1965
M-FS-214
Fiberglass tooling dies accelerate forming of large metal sheets. The dies, fabricated to fit over and fasten to the die bases, are lightweight, quickly replaced and have nongalling surfaces.

B65-10216
WIRE MESH ISOLATOR PROTECTS SENSITIVE ELECTRONIC COMPONENTS
KERLEY, J. J., JR. JUL. 1965
GSFC-347
Sensitive electronic components are enclosed in wire mesh for protection. The wire mesh isolates the component from shock and vibration. It acts as a heat sink and as a screen against rf interference.

B65-10219
FLEXIBLE MAGNETIC PLANNING BOARDS ARE EASILY TRANSPORTED
INNOVATOR NOT GIVEN /GEN. DYN./ASTRONAUTICS/ AUG. 1965
M-FS-340
Easily transportable preprinted magnetic planning boards are made by coating thin sheet steel with clear plastic. Flexible magnetic boards used with paper charts are constructed from close mesh steel screen.

B65-10222
INEXPENSIVE CHECK VALVE IS INSTALLED IN STANDARD AN FITTINGS
MARTINEZ, J. S. AUG. 1965
JPL-2A
Check valve with a cylindrical flanged tube body is used in standard AN fittings. The valve also has an easily removable spring-loaded piston.

B65-10227
DIAPHRAGM ELIMINATES LEAKAGE IN CRYOGENIC FLUID DUCT COUPLING
INNOVATOR NOT GIVEN /DOUGLAS AIRCRAFT CO./ AUG. 1965
WOO-142
Duct coupling with nickel steel diaphragm of low thermal expansivity is leakproof when used with cryogenic fluids. The diaphragm, located between the two flanges of the coupling, reduces axial shrinkage at the coupling flanges to a minimum.

B65-10229
SCOOP ATTACHMENT MAKES HELICOPTER RECOVERIES EASIER AND SAFER
KOONS, W. E. AUG. 1965
MSC-130
Helicopter with rigid boom and net attachment performs rescue or recovery operations easily and safely. The attachment in the front of the helicopter scoops objects from difficult and otherwise inaccessible areas and pivots to the side hatch of the aircraft so that no crew member need leave the craft.

B65-10230
HYDRAULIC DEVICE PROVIDES ACCURATE DISPLACEMENTS TO MICROINCHES
TSUTSUMI, K. /MIT/ AUG. 1965
MSC-112
Hydraulic drive device translates microinch deviation measurements into precise corrective displacements. The unit is driven by a servomotor activated by the output of an attitude sensing device.

B65-10231
HANDTOOL FACILITATES EXTRACTION OF CIRCUIT MODULES
LUSBY, T. K., JR. AUG. 1965
LANGLEY-38
Compact handtool extracts electronic modules from circuit board socket. It is used on modules that have four small notches in the base of the plastic housing.

B65-10235
ANGULAR GLASS TUBING DRAWN FROM ROUND TUBING
INNOVATOR NOT GIVEN /DEBELL AND RICHARDSON/ AUG. 1965
HQ-20
Round glass tubing softened in a furnace is drawn over a shaped plug or mandel to form shapes with other than a circular cross section. Irregularly shaped tubing is formed without limitations on tube length or wall thickness.

B65-10236
BURST DIAPHRAGM PROTECTS VACUUM VESSEL FROM INTERNAL PRESSURE TRANSIENTS
HOTZ, G. M. HOWARD, E. A. AUG. 1965
JPL-687
Supported dual-mode burst diaphragm protects vacuum vessels from transient internal pressures. It forms the interface between the vacuum in the vessel and an external pressure.

B65-10241
SHOCK ABSORBER OPERATES OVER WIDE RANGE
CREASY, W. K. JONES, J. C. AUG. 1965
MSC-168
Piston-type hydraulic shock absorber, with a metered damping system, operates over a wide range of kinetic energy loading rates. It is used for absorbing shock and vibration on mounted machinery and heavy earth-moving equipment.

B65-10245
CAPTIVE NUT FASTENER SECURELY JOINS BRITTLE MATERIALS
SACCOCIO, R. M. /WESTINGHOUSE ELEC. CORP./ AUG. 1965
NU-0008
Extension tube captive nut with a standard bolt joins assemblies with an inaccessible nut location. This fastener is excellent for joining brittle materials.

B65-10246
THERMOCOUPLE-TO-INSTRUMENTATION CONNECTOR FEATURES QUICK ASSEMBLY
HENSHAW, E. /WESTINGHOUSE ELEC. CORP./ AUG. 1965
NU-0022
Rigid thermocouple leads are connected to flexible instrumentation leads by a crimping and bridging process. This method eliminates the need for expensive transition sections and can be accomplished in about five minutes.

B65-10248
SYSTEM TRANSMITS MECHANICAL VIBRATION INTO HAZARDOUS ENVIRONMENT
ARMSTRONG, D. G. /WESTINGHOUSE ELEC. CO./ GAAL, A. E. AUG. 1965
NU-0025
Vibration transducers are tested in a hazardous environment using a single axis transmission system with an electromagnetic shaker table and vibrating wires which drive identical rocker arms, one in the test cell and the other outside. This system can be modified for a multiaxis configuration.

B65-10251
CONTROL OF COMPONENT DIFFERENTIAL HARDNESS INCREASES BEARING LIFE
ANDERSON, W. J. PARKER, R. J. ZARETSKY, E. V. AUG. 1965
LEWIS-190
Bearing fatigue life is maximized when the bearing ball or roller hardness is between one and two points greater than that of the bearing race as measured on the Rockwell C scale.

B65-10254
REMOTELY OPERATED CLAMPING TOOL HAS POSITIVE GRIP
ADUCCI, S. A. SEWALD, A. W. /WESTINGHOUSE ELEC. CORP./
NU-0020
Jaw-type clamping tool inserts or removes objects

in a hazardous environment. It has a strong, positive gripping force which is remotely operated by means of a wedge-screw mechanism.

B65-10256
HOLLOW PLASTIC HOOPS PROTECT THERMOCOUPLE IN STORAGE AND HANDLING
OSMOND, L. H. /WESTINGHOUSE ELEC. CORP./ AUG. 1965
NU-0023
Thermocouples are shipped and stored in hollow plastic hoops. The hoop is an inexpensive but efficient method of protection.

B65-10262
ROTATING HOLDER PERMITS ACCURATE GRINDING OF METALLURGICAL MICROSAMPLES
CRAMER, D. L. SEP. 1965
LEWIS-131
Metallurgical microsamples are held in a fixture which rotates the sample across a rotating grinding wheel. The dual rotation results in a level, flat surface on the sample.

B65-10266
ONE-SHOT VALVE MAY BE REMOTELY ACTUATED
KAMI, S. /HUGHES AIRCRAFT CO./ SEP. 1965
WOO-195
One-shot valve, with spring-loaded plunger and sealing diaphragm, incorporates an emergency release actuated by a remote sensor. The plunger is released by the electrical melting of a fuse link and pierces the valve seal. The valve lowers fluid pressure in a container without losing the contained fluid.

B65-10285
DIFFERENTIAL PRESSURE GAUGE HAS FAST RESPONSE
WEBER, H. S. /ARMOUR RES. FOUND./ SEP. 1965
M-FS-358
Differential pressure gauge with semiconductor-type strain gauge elements measures rapidly changing pressure. Output of the strain gauge elements is a dc voltage that is directly proportional to the pressure difference being measured.

B65-10312
AIR BRAKE-DYNAMOMETER ACCURATELY MEASURES TORQUE
INNOVATOR NOT GIVEN OCT. 1965
LEWIS-163
Air brake-dynamometer assembly combines the principles of the air turbine and the air pump to apply braking torque. The assembly absorbs and measures power outputs of rotating machinery over a wide range of shaft speeds. It can also be used as an air turbine.

B65-10319
REFRACTORY METALS WELDED OR BRAZED WITH TUNGSTEN INERT GAS EQUIPMENT
WISNER, J. P. OCT. 1965
LEWIS-219
Appropriate brazing metals and temperatures facilitate the welding or brazing of base metals with tungsten inert gas equipment. The highest quality bond is obtained when TIG welding is performed in an inert atmosphere.

B65-10323
VOLUMETRIC SYSTEM CALIBRATES METERS FOR LARGE FLOW RATES
INNOVATOR NOT GIVEN /N. AM. AVIATION/ NOV. 1965
WOO-130
Volumetric system calibrates meters used for large liquid flow rates. The system employs trip probes and equipment to time the flow of liquid from a tare vessel into a calibrated vessel. This calibration system is used in the petroleum and chemical industries.

B65-10326
ROUGH SURFACE IMPROVES STABILITY OF AIR-SOUNDING BALLOONS
SCOGGINS, J. R. NOV. 1965
M-FS-320
Aerodynamic stability of balloons used for measuring the intensity and direction of atmospheric winds at various elevations is improved by incorporating a rough surface on the balloons. The rough-surfaced balloon is useful for collecting wind profiles and other meteorological data.

B65-10327
PRESSURE RESPONSIVE SEAL HANDLES STATIC AND DYNAMIC LOADS
MARSH, H. W. /N. AM. AVIATION/ NOV. 1965
GSFC-441
Ported ball valves are sealed under both static and dynamic load conditions by a line-pressure responsive double-acting seal. The top of the seal engages the ported ball at the outer circumferential edge of the seal upper end, and the bottom of the seal seats on a flat circular land with a continuous wall.

B65-10338
INERT-GAS WELDING AND BRAZING ENCLOSURE FABRICATED FROM SHEET PLASTIC
WISNER, J. P. NOV. 1965
LEWIS-220
Custom-fabricated plastic bag maintains an inert-gas atmosphere for welding and brazing certain metals. The bag fits over part of the workpieces and the welding and brazing tools. It is also used for metal brazing and fusion plating which require an inert-gas atmosphere.

B65-10339
DISK CALCULATOR INDICATES LEGIBLE LETTERING SIZE FOR SLIDE PROJECTION
HULTBERG, R. R. NOV. 1965
GSFC-409
Hand-operated disk calculator indicates the minimum size of letters and numbers in relation to the width and height of a working drawing. the lettering is legible when a slide of the drawing is projected.

B65-10342
ELECTROMAGNETIC HAMMER REMOVES WELD DISTORTIONS FROM ALUMINUM TANKS
SCHWINGHAMER, R. J. NOV. 1965
M-FS-287
Distortions around weld areas on sheet-aluminum tanks and other structures are removed with a portable electromagnetic hammer. The hammer incorporates a coil that generates a controlled high-energy pulsed magnetic field over localized areas on the metal surface.

B65-10346
IMPROVED POPPET VALVE PROVIDES POSITIVE DAMAGEPROOF SEAL
WALLACE, E. D. NOV. 1965
M-FS-293
Soft-seat poppet valve provides positive closure against fluid without damage to the seating surface on repeated cycling. It incorporates two compressible soft rings and a retaining ring of hard metal. Sealing is effected when the poppet seat is forced into intimate contact with a mating surface on one of the soft rings.

B65-10348
STANDOFF TOOL SPEEDS PLACEMENT OF FRICTION-FIT ELECTRICAL TERMINALS
MOORE, D. J. SKIFSTROM, W. W. /SPACE TECHNOL. LABS./ NOV. 1965
WOO-029
Hand operated tool inserts terminals through compartment walls in electronic equipment. The tool is in the configuration of a modified pair of pliers with jaws consisting of a split chuck and anvil.

B65-10351
HYDRAULIC DRIVE SYSTEM PREVENTS BACKLASH
ACORD, J. D. NOV. 1965
JPL-371
Hydraulic drive system uses a second drive motor operating at reduced torque. This exerts a relative braking action which eliminates the normal gear train backlash that is intolerable when driving certain heavy loads.

B65-10358
FASTENER DISTRIBUTES STRESS EVENLY FROM SANDWICH-PANEL-HUNG ITEMS
SHAPIRO, J. /N. AM. AVIATION/ NOV. 1965
MSC-236
Items are attached externally to cellular-core sandwich panels by a fastener anchored in the panel by a constant amount of adhesive. The changes caused to the core cells and skin sheets are minimized.

B65-10360
PORTABLE TOOL REMOVES BURRS FROM PIPE AND TUBING
HEADLEY, C. A. PADILLA, V. E. SCHOPPMAN, R. A. /MCDONNELL AIRCRAFT CORP./ NOV. 1965
MSC-237
Portable tool cleanly removes burrs that remain on tubing when it is cut. It restores the cut end to its original configuration, and carries away all chips and pieces. This tool is used in places of limited access where a larger tool could not be used

B65-10367
FLEXIBLE PLASTIC RING ASSEMBLY MAKES DURABLE SHAFT SEAL
INNOVATOR NOT GIVEN /N. AM. AVIATION/ DEC. 1965
WOO-227
Stacked flexible rings interleaved with solid metal rings of smaller width provide a durable seal ring for rotating shafts used in vacuum or pressure pumps.

B65-10370
BRAZING METHOD PRODUCES SOLID-SOLUTION BOND BETWEEN REFRACTORY METALS
INNOVATOR NOT GIVEN /AVCO CORP./ DEC. 1965
LEWIS-212
Brazing two refractory metals by diffusion bonding minimizes distortion and avoids excessive grain growth in the metals. This method requires the selection of an interface metal that forms intermediate low-melting eutectics or solid solutions with the metals to be brazed.

B65-10371
UNIVERSAL BELLOWS JOINT RESTRAINT PERMITS ANGULAR AND OFFSET MOVEMENT
KUHN, R. F., JR. /N. AM. AVIATION/ DEC. 1965
WOO-102
Universal joint-type restraint that employs ball joints permits maximum angular and lateral- offset movement in a bellows joint without danger of rupture or pressure drop in the line. It is used in high pressure and high- temperature applications in refineries, steam plants, or stationary power plants.

B65-10375
PORTABLE TOOL CLEANS PIPES AND TUBING
HEADLEY, C. A. HEADLEY, R. JONES, D. D. /MCDONNELL AIRCRAFT CORP./ DEC. 1965
MSC-238
Portable tool cleans and polishes the external surfaces of tubes and pipes without contaminating the interior areas with loose particles. The tool is driven by an electric drill and is connected to a vacuum source that removes debris resulting from the cleaning and polishing action.

B65-10378
REINFORCEMENT CORE FACILITATES O-RING INSTALLATION
INNOVATOR NOT GIVEN /N. AM. AVIATION/ DEC. 1965
WOO-228
Reinforcement core holds O-ring in place within a structure while adjacent parts are being assembled. The core in the O-ring adds circumferential rigidity to the O-ring material. This inner core does not appreciably affect the sectional elasticity or gland-sealing characteristics of the o-ring.

B65-10383
THREADED SPLIT RING CONNECTOR SEPARATES STRUCTURAL SECTIONS
MAYO, J. W. JUL. 1965
LANGLEY-145
Threaded split ring connector quickly and cleanly separates two structural members by remote control. The connector is retained in an expanded position by spring plates that are deflected and held by an explosive bolt. Ignition of the bolt effects the separation. This conceptual approach lends itself to various configurations and sizes of structures.

B65-10385
HAERTHER, L. W. ZIMMERMAN, P. A. /COLLINS RADIO CO./ DEC. 1965
MSC-244
Rack mounted chassis units are quickly inserted or extracted by a device which is driven in either direction by turning a simple hand crank. This device is used in aircraft and water craft.

B65-10386
DRILL BIT DESIGN ASSURES CLEAN HOLES IN LAMINATED MATERIALS
TILLOTSON, R. N. /DOUGLAS AIRCRAFT CO./ DEC. 1965
WOO-098
Drill bit eliminates delamination when drilling laminated material. It cuts or shaves the material as it progresses through it. The bit acts to hold down the material during drilling to prevent tearing or ripping and produces a clean, smooth and defect-free hole. It prevents chipping in stretched plastic windows for high-altitude, high-performance aircraft.

B65-10388
STRAINER FITS INSIDE FLARED-TUBE FITTINGS
PARKER, O. J. DEC. 1965
LANGLEY-180
Cylindrical wire-mesh strainer which fits inside flare-tube fittings is readily installed and easily replaced. It has a collar that seats on the tapered shoulder of the male fitting.

B65-10391
TUNGSTEN WIRE AND TUBING JOINED BY NICKEL BRAZING
INNOVATOR NOT GIVEN /AUTO-CONTROLS LABS./ DEC. 1965
M-FS-394
Thin tungsten wire and tungsten tubing are brazed together using a contacting coil of nickel wire heated to its melting point in an inert-gas atmosphere. This method is also effective for brazing tungsten to tungsten-rhenium parts.

B65-10393
DIE AND TELESCOPING PUNCH FORM CONVOLUTIONS IN THIN DIAPHRAGM
INNOVATOR NOT GIVEN /HONEYWELL/ DEC. 1965
JPL-SC-135
Die and punch set forms convolutions in thin dished metal diaphragm without stretching the metal too thin at sharp curvatures. The die corresponds to the metal shape to be formed, and the punch consists of elements that progressively slide against one another under the restraint of a compressed-air cushion to mate with the die.

B65-10394
CENTRIFUGAL DEVICE SEPARATES LIQUID FROM GAS
HANDLEWICH, R. M. STROUP, K. E. /UNITED AIRCRAFT CORP./ DEC. 1965
MSC-282
Liquid-to-gas ratio is reduced from maximum efficiency of jet engine fuel by a centrifugal separator. The amount of liquid removed from the fuel is controlled by the separator-screen mesh size and its rotational speed.

B65-10401
PHOTOSENSORS USED TO MAINTAIN WELDING ELECTRODE-TO-JOINT ALIGNMENT
BOWEN, J. B. /N. AM. AVIATION/ DEC. 1965
MSC-243
Photosensors maintain electrode-to-joint alignment in automatic precision arc welding. They detect the presence and relative position of a joint to be welded and actuate a servomechanism to guide the welding head accordingly thus permitting alignment for more than straight line or true

circle joints.

B65-10402
LIGHTWEIGHT DOOR SEALS CRYOGENIC CONTAINER AGAINST DIAPHRAGM TYPE LOADING
ENGLEHART, R. C., JR. /N. AM. AVIATION/ DEC. 1965
M-FS-476

Lightweight, removable, sealed joint access door for a spherical or semispherical pressure vessel containing cryogenic materials uses a joint overlock design to take the shear and moment loads. Oversize bolt holes are used so that the attaching bolts are in tension only.

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B65-10006	01	M-FS-192
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B65-10044	03	M-FS-48
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B65-10125	01	JPL-413
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B65-10132	02	JPL-508
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B65-10157	02	LEWIS-171
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B65-10317	01	JPL-SC-078
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B65-10324	01	JPL-SC-101
B65-10325	01	ARC-53
B65-10326	05	M-FS-320
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B65-10329	01	GSFC-440
B65-10330	02	GSFC-443
B65-10331	02	LEWIS-222
B65-10332	04	HQ-18
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B65-10334	01	GSFC-308
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B65-10336	03	M-FS-348
B65-10337	03	GSFC-444
B65-10338	05	LEWIS-220
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B65-10372	03	WOO-089
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B65-10394	05	MSC-282
B65-10395	02	M-FS-482
B65-10396	01	MSC-173
B65-10397	03	WOO-249
B65-10398	03	MSC-253
B65-10399	01	MSC-242
B65-10400	01	MSC-241
B65-10401	05	MSC-243
B65-10402	05	M-FS-476