NASA TECH BRIEF

John F. Kennedy Space Center

Safe Electrical Receptacle and Modified Plug

The problem:

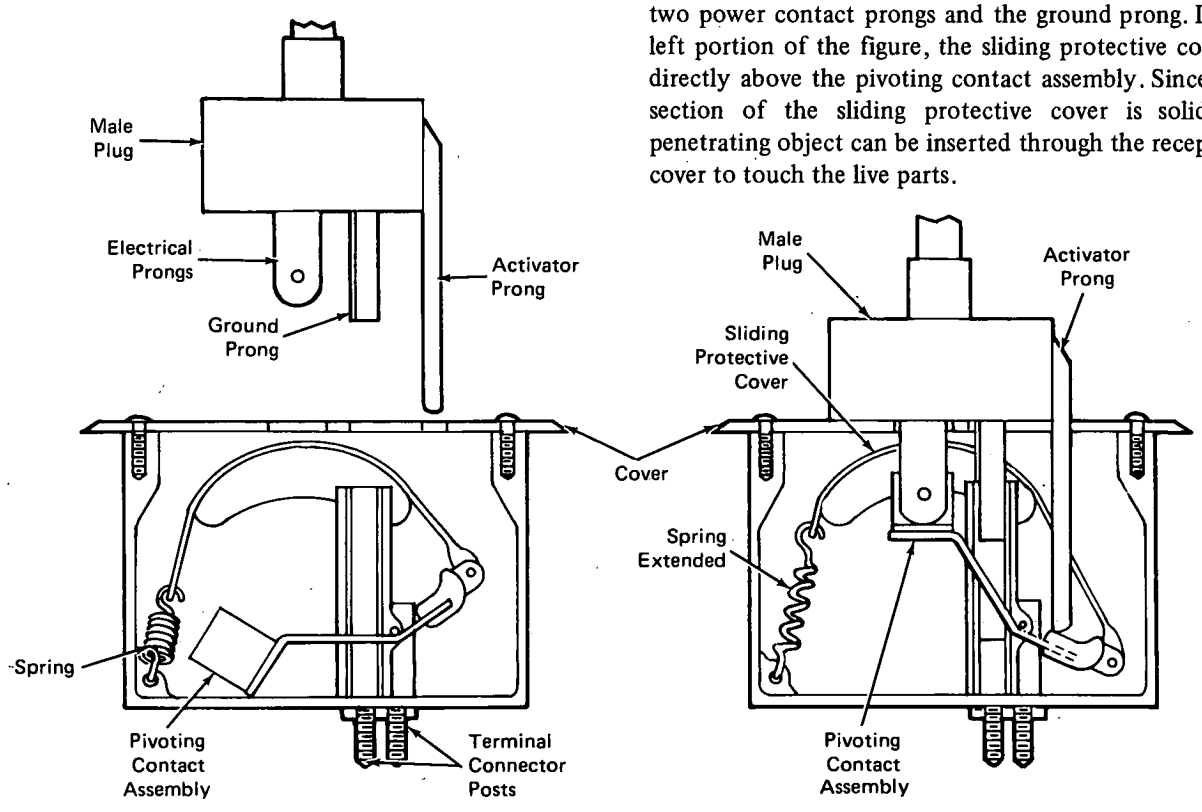
Standard electrical receptacles, used to power home appliances, are a safety hazard. Live contacts are just inside the surfaces of these receptacles and can be touched easily by any conductor (nail, pin, screwdriver, knife blade, or similar object) in the hands of a careless person. Some receptacles have spring-loaded rotary caps or spring-loaded doors which must be opened manually before inserting electrical plugs. These receptacles offer little improvement in safety.

The solution:

A recently-developed electrical receptacle has an internal sliding protective cover that prevents accidental contact with the live terminals. The sliding protective cover is used in combination with a modified male plug.

How it's done:

The figure shows the new receptacle and a modified standard three-prong male electrical plug. The plug includes an activator prong that protrudes beyond the two power contact prongs and the ground prong. In the left portion of the figure, the sliding protective cover is directly above the pivoting contact assembly. Since that section of the sliding protective cover is solid, no penetrating object can be inserted through the receptacle cover to touch the live parts.



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(continued overleaf)

When the male plug is pressed into the receptacle, the activator prong enters first and engages the end of the pivoting contact assembly opposite the electrical contact. This draws the sliding protective cover to the right to bring its slots (not shown) into alignment with the contact and prongs. When fully inserted into the receptacle, the male plug is held by a mechanical press fit as with conventional connectors. When the male plug is withdrawn, the spring returns the sliding protective cover and the pivoting contact assembly to the safe configuration.

Notes:

1. This design provides an excellent protector against electrical shock and should interest manufacturers of electrical connectors.
2. Requests for further information may be directed to:
   Technology Utilization Officer
   Kennedy Space Center
   Code AD-PAT
   Kennedy Space Center, Florida 32899
   Reference: B73-10366

Patent status:

NASA has decided not to apply for a patent.

Source: L. W. Rabb of
The Boeing Company
under contract to
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(KSC-10817)