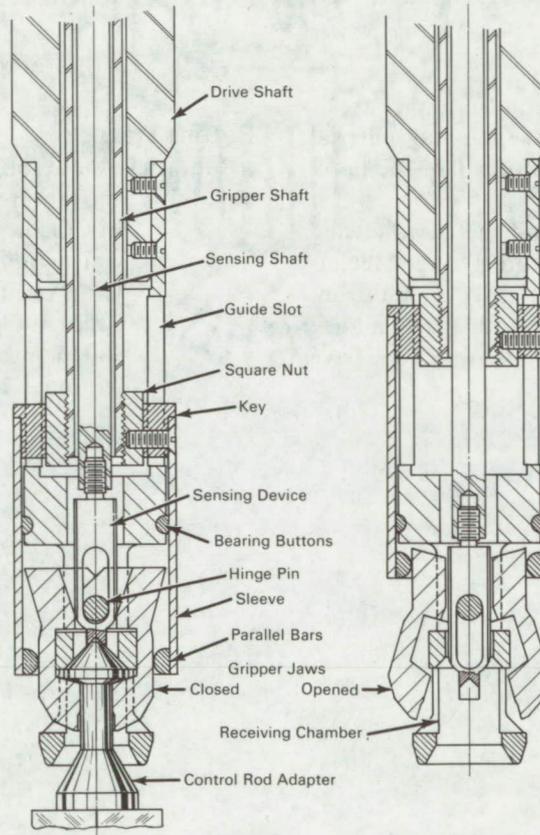


AEC-NASA TECH BRIEF



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Remotely Operated Gripper Provides Vertical Control Rod Movement



The problem:

To remotely connect or disconnect a vertical-motion control rod drive mechanism with its atomic reactor control rod and to provide remote indication of either operation.

The solution:

A gripper mechanism whose primary function is to effect engagement between a drive shaft and the control rod by remote actuation of the gripper shaft.

A secondary function of the gripper is to provide remote indication of positive completion of the gripping or ungripping operation.

How it's done:

Referring to the figure above, the mechanism is contained in a tubular body which is attached, at the upper end, to the control rod drive shaft. The lower end is formed into a guide funnel and receiving chamber for the cone-shaped upper adapter of the

(continued overleaf)

control rod. A transverse shaft, supported by the body, serves as a common hinge pin for a pair of single toothed jaws and also as a guide for the sensing device. The jaws are opened or closed by the vertical motion of a sleeve equipped with parallel bars that slide over the outer sides of the jaws. The sleeve is operated by the gripper shaft.

The presence or absence of the control rod adapter in the gripper guide chamber is detected by a sensing device which is centrally located in the chamber. This device is essentially a flat bar with a longitudinal slot; it is held in position and limited to vertical motion by the hinge pin of the gripper jaws. Upward or downward motion of the sensing device transmits positive indication to a control console as to whether a control rod adapter has entered or left the gripper guide chamber.

Notes:

1. This device may find application as a pickup or release device for helicopters, loading, and material handling systems where remote control of the hook is required.
2. Additional details may be found in the following reports. "FARET Control Rod Drive Mechanisms," ANL-7158, by E. Hutter, T. E. Sullivan, and G. D. Giorgis; "Design and Performance Characteristics of EBR-II Control Rod Drive

Mechanisms," ANL-6921, by E. Hutter and G. D. Giorgis; and "Hazard Summary Report—EBR-II" ANL-5719, by L. J. Koch. These reports are available from the Clearinghouse for Federal Scientific and Technical Information, Springfield, Virginia 22151; price \$3.00 (microfiche \$0.65). Information is also contained in Patent No. 2,924,483, which is available from the U.S. Patent Office for \$0.50 per copy.

3. Inquiries concerning this innovation may be directed to:

Office of Industrial Cooperation
Argonne National Laboratory
9700 South Cass Avenue
Argonne, Illinois 60439
Reference: B68-10359

Source: E. Hutter and L. J. Koch
of the Reactor Engineering Division
(ARG-10160)

Patent status:

Inquiries about obtaining rights for commercial use of this innovation may be made to:

Mr. George H. Lee, Chief
Chicago Patent Group
U.S. Atomic Energy Commission
Chicago Operations Office
9800 South Cass Avenue
Argonne, Illinois 60439