NASA TECH BRIEF

Astronaut's Tool for Withdrawing/Replacing Computer Cards

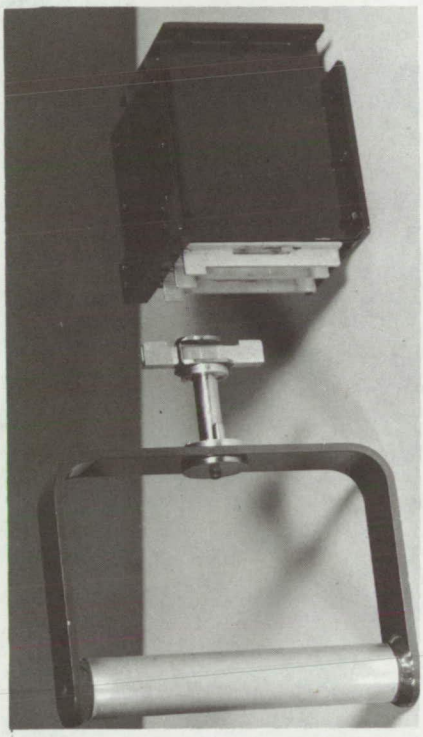

Figure 1. Unlocked tool approaches a card-adapter

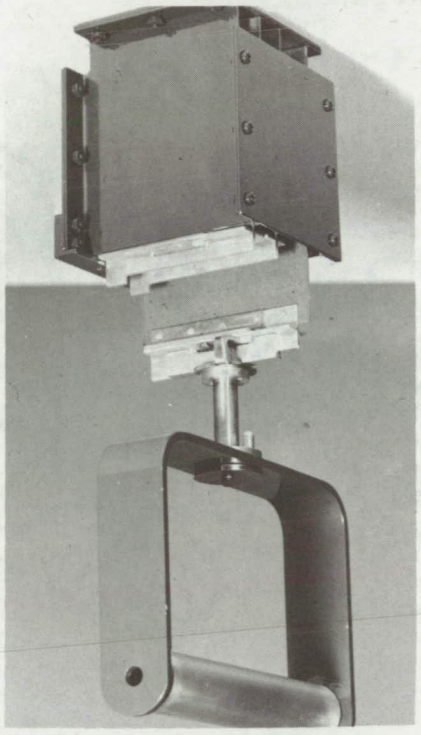

Figure 2. With tool locked by turning of the handle, a card is withdrawn; note the adapter.

The problem:

During extravehicular activities an astronaut requires a tool (tethered to his person) with which he can withdraw a program-control card from the Apollo Telescope Mount control computer and replace it. The tool must have such size and shape as to be easily manipulated by a gloved hand; it must provide positive locking of a withdrawn card; it must be symmetric so that the astronaut is not concerned with orientation of the tool relative to a card; and operation of the locking device must be plainly visible to the astronaut.

The solution:

The solution requires two elements:

1) A metallic card-adapter riveted to each card along with the latch guides; the latch is spring-loaded, and secure latching can be determined visually; in the card-adapter is a slot that is engaged by cams in the tool.

2) The tool proper.

(continued overleaf)

The basic material throughout is 6061-T6 aluminum alloy.

How it's done:

Turning of the D-shaped handle of the tool actuates two-lobed cams that lock the tool to the card-adapter. A detented channel member assists alignment of the tool with the adapter of the card to be removed.

A card is withdrawn by placing the channel member of the tool against the locating shoulder of the card-adapter (Fig. 1); rotating the handle 90° clockwise, and so unlatching the card and securing it in the tool during the withdrawal; and withdrawing the card locked to the tool (Fig. 2). A card is replaced by reversal of these three steps.

Notes:

1. This tool may interest personnel concerned with control equipment.
2. Documentation is available from:
   Clearinghouse for Federal Scientific and Technical Information
   Springfield, Virginia 22151
   Price $3.00
   Reference: TSP69-10183

Patent status:

Inquiries about obtaining rights for the commercial use of this invention may be made to NASA, Code GP, Washington, D.C. 20546.

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