

NASA TECH BRIEF



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Easy Insert, Easy Release Toggle Bolt Fastener

The problem:

To facilitate assembly tasks, such as the fastening or release of two or more objects.

The solution:

An easily releasable pin-type toggle bolt fastener constructed so that, when it is positioned in a hole,

a threaded back end to receive the locknut and desired attachments (tie-down ring, hand hold, snap ring, etc.). Slots in the cylindrical body act as receptacles for two or more toggle wings (or detents) which are held in place by pins. The toggle wings are extended except when the spring loaded central actuator pin is depressed.

To insert the fastener into a hole, the actuator pin is depressed, causing the toggle wings to retract. When the fastener is in place, the actuator pin is released and the toggle wings expand, preventing the fastener from being removed. The fastener is secured by screwing the locknut down firmly, thus exerting a compressive force between the locknut and the toggle wings. With the threaded portion of the cylindrical body functioning as a stud, a suitable attachment (tie-down ring, hand hold, snap ring, etc.) may be screwed on.

To remove the fastener from the hole, the locknut is loosened and the exposed portion of the central actuator pin is depressed, causing the toggle wings to retract.

Possible uses of the device include fastening items to a wall or deck where simultaneous access to both sides of the wall or deck is not possible, or fastening two surfaces of opposite curvature; i.e., a concave surface to a convex surface.

Note:

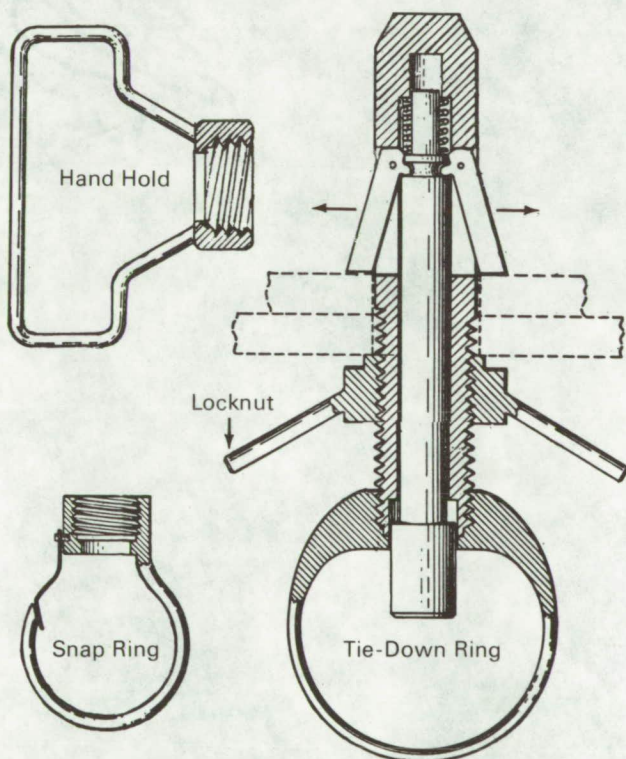
Requests for further information may be directed to:

Technology Utilization Officer
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Reference: TSP70-10509

Patent status:

This invention has been patented by NASA (U.S. Patent No. 3,534,650), and royalty-free license rights

(continued overleaf)



toggle action prevents its removal. A locknut anchors it firmly in place.

How it's done:

The cylindrical body of the fastener (see fig.) has a tapered head to facilitate entry into the hole, and

will be granted for its commercial development. Inquiries about obtaining a license should be addressed to:

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