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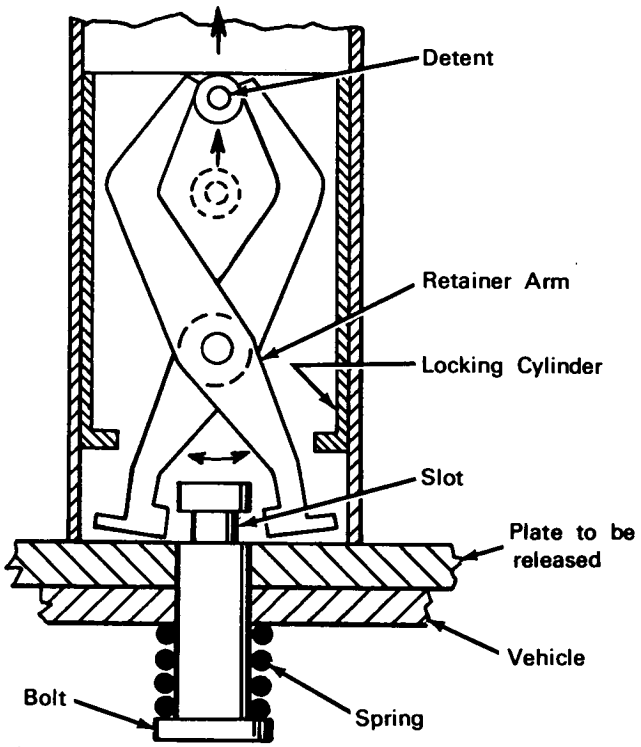
NASA TECH BRIEF

Simple Mechanism Combines Positive Locking and Quick-Release Features



The problem: To design a simple device which would hold two objects together securely and quickly release them on demand.

The solution: A quick-release mechanism shown in cross section.

How it's done: One object, such as a plate, is held to another object, such as a vehicle, by a spring-loaded slotted bolt, which is locked in position by two retainer arms. The retainer arms are constrained from movement by a locking cylinder. To release the plate, a detent is actuated to lift the locking cylinder and rotate the retainer arms free from contact with the slotted bolt head. As a result of this action, the spring-loaded bolt is ejected and the plate is released from the vehicle.

Notes:

1. Actuation of the slidable detent can be initiated by a squib, a fluid-pressure device, or a solenoid.
2. The principle of this device can be employed

(continued overleaf)

wherever a positive engagement that can be quickly released on demand is required. Some suggested applications of this principle are in coupling devices for load-carrying carts or trucks, hooks or pickup attachments for cranes, and quick-release mechanisms for remotely controlled manipulators.

Patent status: NASA encourages commercial use of this innovation. No patent action is contemplated.

Source: Lafayette B. Clayton
Hughes Aircraft Company under NASA contract to
Jet Propulsion Laboratory (WOO-4)