

NASA TECH BRIEF

Marshall Space Flight Center



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Ball Detent Mechanism

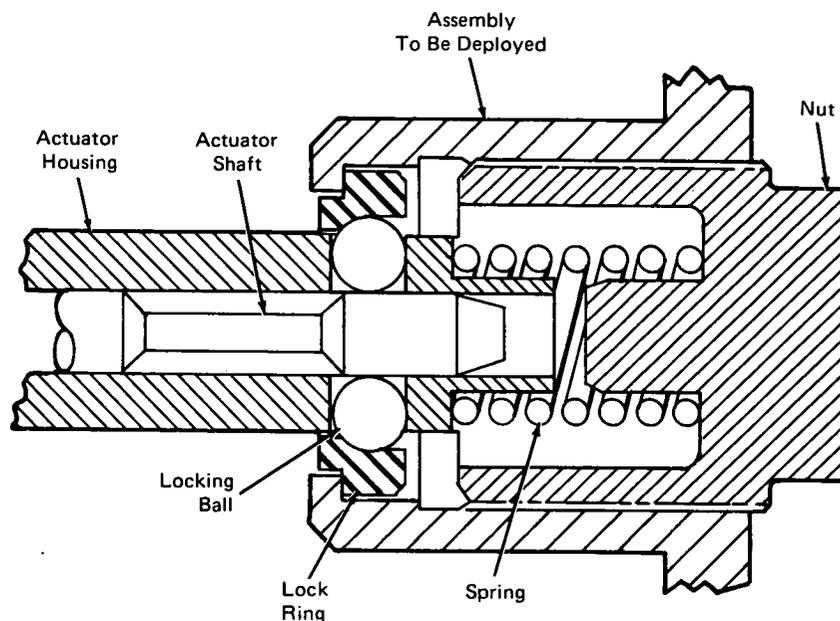


Figure 1

A ball detent mechanism has been designed with a segmented, spring loaded, locking ring that provides redundancy for critical operation. Figure 1 shows a standard ball detent release mechanism. As pressure is applied to the piston in the actuator housing, the actuator shaft moves to the right allowing the locking ball to fall inward

in the detent of the shaft. This allows the locking ring to slide off the outside diameter of the actuator housing thereby releasing the assembly to be deployed. However, if one or any of the locking balls hang up in their respective hole for one reason or another, the assembly could not be deployed.

(continued overleaf)

Figure 2 shows the same mechanism with two changes. The locking ring is segmented (like dogs on a quick disconnect coupling), and a segmented lock ring retainer has been added. Normal operation would be as described in Figure 1. However, if one or any of the locking balls should hang up in their respective holes, the assembly could still be deployed in the following method. The

motion of the actuator shaft picks up the segmented lock ring retainer (which is spring loaded in place) and moves it to the right uncovering the segmented lock ring. The only restraint on the segmented lock ring now is a light wire at the outside diameter of the segments. This allows the segments to expand outward and go over the outside diameter of the locking balls.

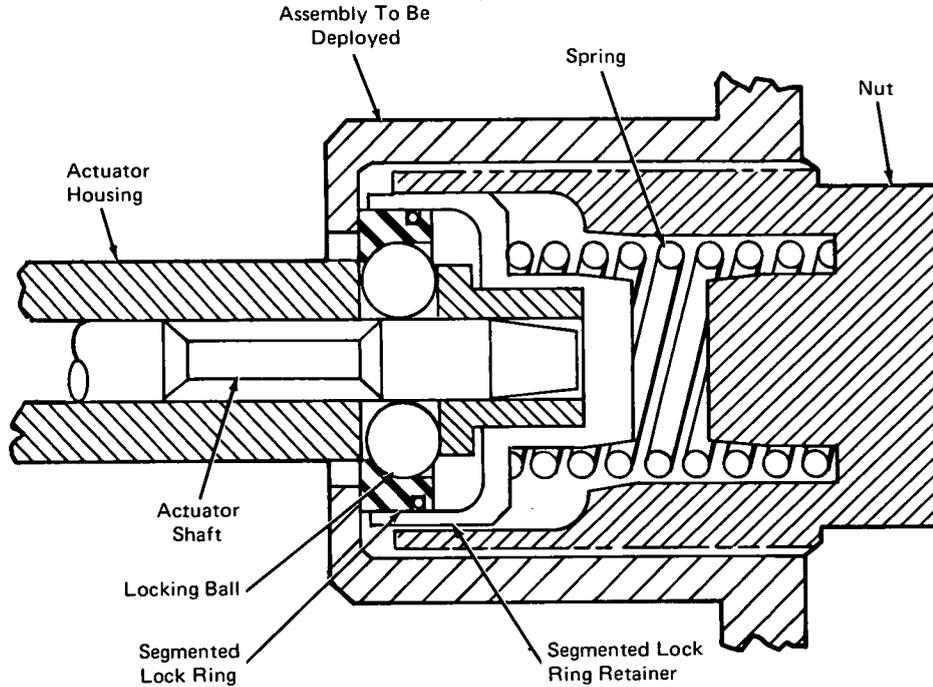


Figure 2

Note:

No further information is available. Specific questions, however, may be directed to:

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Patent status:

No patent action is contemplated by NASA.

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