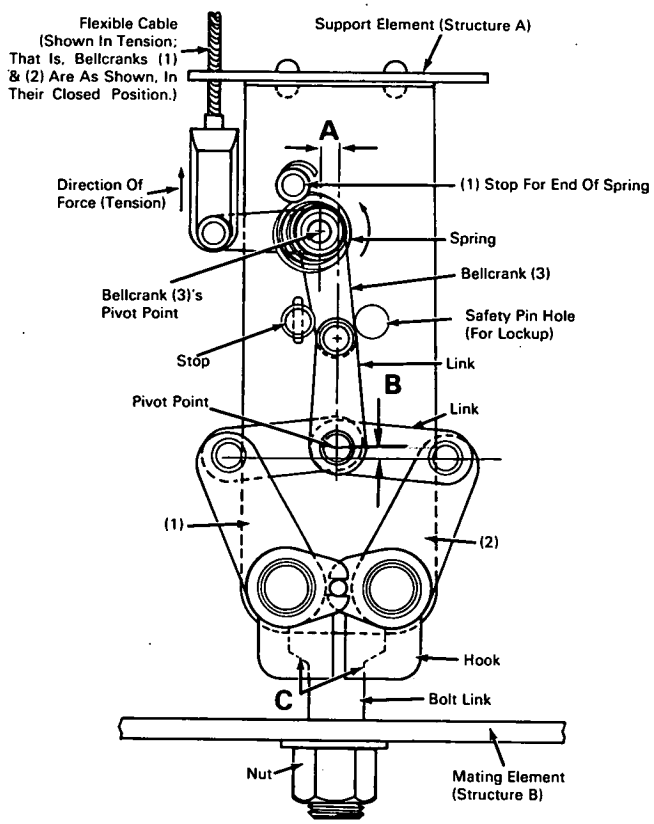
NASA TECH BRIEF

Toggle Operated Double Latch



A double hook latch has been designed to provide preloading capability, support capability up to 80,000 lbs, and to be self-energizing open when restraint linkage is released. The design incorporates a double hook latch held closed by a toggle linkage attached to a flexible cable rigged in tension. The cable is routed to a centrally-located, explosive-actuated guillotine-type cutter. Self-energizing open of the double jaw hooks is by means of the spring force in the linkage. A bolt link and nut assembly is used to attach the mating element (structure B) in a preloaded condition.

The bolt link and nut are torqued to produce the required preload between the two structural elements (A and B) to maintain structural rigidity and assure opening of the hooks under adverse loading conditions. Positive force is maintained by the flexible cable which is intercepted by the explosive-actuated, guillotine-type cutter (not shown). Severing of the flexible cable enables the spring load and preload

(continued overleaf)

forces to rotate the double hook latch, thus releasing the bolt link assembly.

Notes:

1. Points A and B indicate a small offset from the overcenter to open position of bellcrank and interconnecting linkage. Point C indicates the area in which the attaching bolt-type link imposes an opening force on the double hook latch.
2. This latch has been successfully used in aerial drop testing of hardware from aircraft.
3. Inquiries concerning this innovation may be directed to:

   Technology Utilization Officer
   Manned Spacecraft Center
   Houston, Texas 77058
   Reference: B68-10117

Patent status:

No patent action is contemplated by NASA.

Source: D. E. Necker and R. T. Barbour
of North American Aviation, Inc.
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