

April 1971

Brief 71-10065

NASA TECH BRIEF

Manned Spacecraft Center



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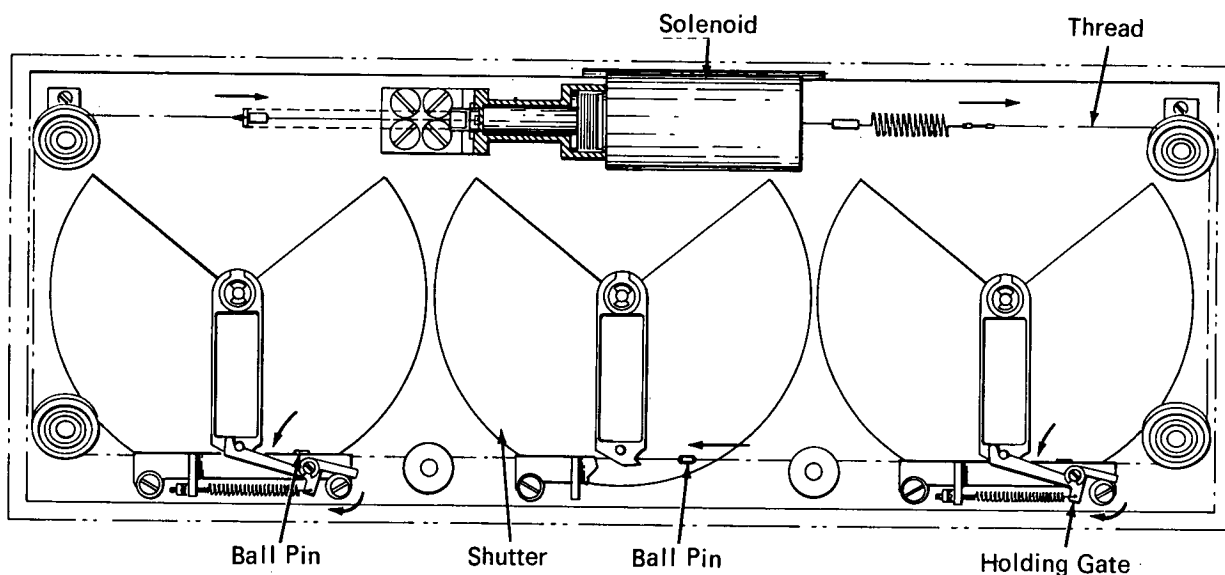
Multiple Shutters for a Stereoscopic Camera

The problem:

To be able to expose three separated photographic films simultaneously with an exposure time of 0.08 second. Exposure time must be repeatable within 2% and uniformity of exposure over all three films must be within 5%.

thread impact each shutter simultaneously and with sufficient force to free the blades from the holding gates. Each shutter rotates 2π radians (360 degrees) and returns to the normally closed condition in the holding gate.

A multiple number of shutter blades can be oper-



The solution:

A focal plane shutter assembly composed of three mechanically separate rotary shutters. Synchronization is achieved by means of an electrically operated solenoid-gate assembly.

How it's done:

The assembly is shown in the figure with each of the shutter blades in a shutter-closed condition. Upon actuation, the solenoid moves the thread attached to each of its ends. The ball pins attached to the

ated simultaneously at a high speed which is repeatable within 2%. The shutter was cycled 20 times per second and showed no adverse effects from temperature or voltage fluctuations across the solenoid.

The elimination of mechanical linkages and the independent synchronization of the three shutters are the novel, advantageous features which make the device especially applicable for multiple exposure photographic instrumentation such as stereoscopic cameras.

(continued overleaf)

Note:

No additional documentation is available. Specific questions, however, may be directed to:

Technology Utilization Officer
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Reference: B71-10065

Patent status:

No patent action is contemplated by NASA.

Source: D. B. Perkins, J. G. Riker, H. R. Sampey
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Goerz Optical Company, Inc.
under contract to
Manned Spacecraft Center
(MSC-13507)