Aug. 14, 1945. T. F. GILES 2,382,872

FIRING DEVICE FOR THE FUSES OF BOMBS, FLARES, AND THE LIKE

Filed Sept. 8, 1941 2 Sheets-Sheet 1

Fig. 1.

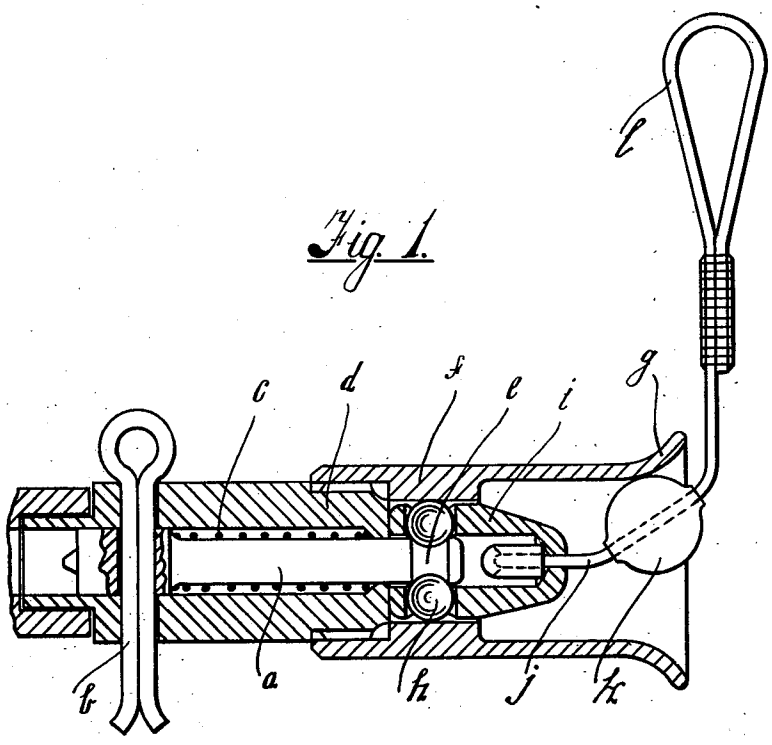
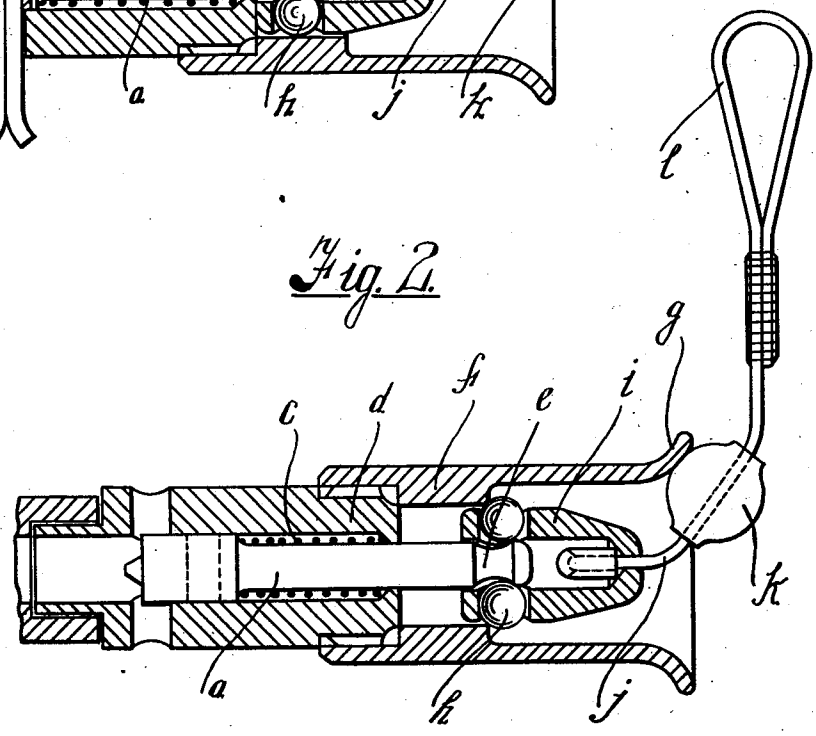


Fig. 2.



INVENTOR
Thomas Francis Giles
by Morris & Bateman
ATTORNEYS

Aug. 14, 1945. T. F. GILES 2,382,872

FIRING DEVICE FOR THE FUSES OF BOMBS, FLARES, AND THE LIKE

Filed Sept. 8, 1941 2 Sheets-Sheet 2

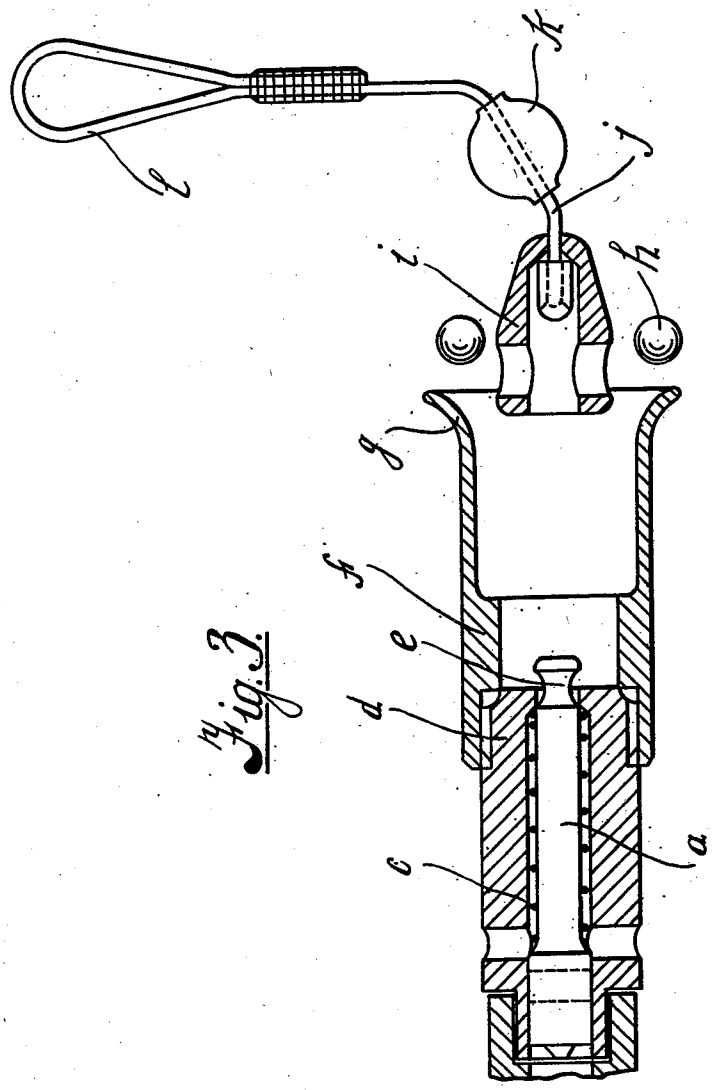


Fig. 3.

INVENTOR
Thomas Francis Giles
By Morris & Bateman
ATTORNEYS

Patented Aug. 14, 1945 2,382,872

UNITED STATES PATENT OFFICE

2,382,872

FIRING DEVICE FOR THE FUSES OF BOMBS, FLARES, AND THE LIKE

Thomas Francis Giles, Greenford, England

Application September 8, 1941, Serial No. 410,074
In Great Britain September 16, 1940

5 Claims. (Cl. 102—86.2)

This invention relates to bombs and pyrotechnic devices of the kind adapted for dropping from aircraft, certain types of which are commonly fired by means of a spring loaded striker which is released as the bomb or pyrotechnic device leaves the aircraft. Since both vertical and horizontal stowage is used in aircraft, it is desirable to provide a release mechanism which can be operated either in an axial or transverse direction relative to the bomb or pyrotechnic device.

One known method of achieving the desired result is to provide a cord or wire to operate the release mechanism adapted to be pulled only in the axial direction of the bomb or pyrotechnic device. For release by transverse pull, the fixed end of the cord or wire is surrounded by a long tube flared at its outer end. In operating, the relase wire slides over the flared portion of its surrounding tube and operates the striker mechanism by axial pull.

This type of release suffers from the disadvantage that unless the flared tube is long, in the case of transverse pull off the force applied to the release mechanism is not truly axial. Also the friction between the cord or wire and the flared portion of the tube considerably increases the pull required for release.

The object of the present invention is to provide an improved and simple release mechanism designed to overcome the disadvantages referred to above.

According to the present invention firing means applicable to bombs and pyrotechnic devices is provided and includes release mechanism wherein a metal ball or the like is fixed to the release wire and disposed so as to roll on the internal surface of the flared end of a tube for the purpose of enabling a truly axial pull to be exerted on the release mechanism for all operational directions of pull on the said wire.

Reference will now be made to the accompanying drawings which illustrate a construction according to the invention and in which—

Fig. 1 is a sectional elevation showing the release mechanism before operation,

Fig. 2 is a sectional elevation showing the release mechanism during operation, and

Fig. 3 is a sectional elevation showing the release mechanism after operation.

In the drawings *a* indicates the striker by which the fuse of a bomb or pyrotechnic device is fired, the said striker being normally held inoperative by a safety pin *b*. The shank of the striker is surrounded by a spring *c* housed within a striker tube *d* beyond the rear end of which the striker shank projects, the projecting portion being formed with a neck *e*. Fixed to the striker tube *d* is a sleeve *f* whose end is outwardly flared as shown at *g*. This sleeve serves normally to retain in position a number of balls *h* which engage the the neck *e* and prevent operation of the striker when the safety pin *b* is withdrawn. The balls *h* are carried in a cage *i* to which is attached a release wire *j* carrying a metal ball *k* and terminating in a loop *l* for convenience in operation.

The arrangement above described enables the ball *k* to roll on the internal surface of the flared portion *g* of the sleeve and by suitable choice of dimensions of the ball *k* and flare radius, a truly axial pull on the striker *a* can be obtained for all directions of pull on the release wire *j* from a direction coaxial with the striker *a* to a direction at right angles thereto. When such a pull is exerted the cage *i* and striker *a* are moved to the positions shown in Fig. 2. Thereafter the balls *h* fall away and the cage is thereby detached from the striker *a* which, under the action of its spring *c* compressed by the pull on the release wire, moves forward to detonate the firing cap, the parts being then in the positions shown in Fig. 3.

The invention gives a very smooth working release requiring a substantially uniform force to operate it, no matter in what direction the release wire is pulled.

I claim:

1. Firing means applicable to bombs and pyrotechnic devices, including a striker, a spring adapted to operate said striker, a cage surrounding the outer end of said striker, a number of restraining balls carried by said cage and engaging a recessed portion of said striker, a tube surrounding said cage and striker and having a flared portion, a release wire fixed to said cage, and a ball within the flared end fixed to said release wire and adapted for movement along and in contact with the flared portion of said tube.

2. Firing means according to claim 1, wherein said tube has a portion of reduced diameter normally engaging said restraining balls, and said cage is adapted, when a pull is exerted on said release wire, to cause movement of said striker substantially in the direction of the longitudinal axis of the tube and compress said spring until the cage passes beyond said reduced portion and releases both said restraining balls and striker from engagement.

3. Firing means according to claim 1 wherein said ball fixed to said release wire is of such proportions in relation to the flared portion of said tube as to enable the pull on the release wire

to be exerted at a variety of angles while maintaining a pull on the cage and striker in substantially the direction of the longitudinal axis of the tube.

4. Firing means according to claim 1, wherein said ball fixed to said release wire is of such proportions that a length of the release wire between said ball and said cage extends longitudinally of the axis of said cage and striker during and irrespective of the direction of pull of the release wire.

5. Firing means applicable to bombs and pyrotechnic devices, including a striker, a spring adapted to operate said striker, a sleeve surrounding the outer end of said striker, movable devices carried by said sleeve to lock the striker in inoperative position, a tube having a flared end surrounding said sleeve and striker and normally holding said movable devices in locking position, a release wire fixed to said sleeve, and a ball within the flared end carried by said wire and adapted for movement along and in contact with the flared end of said tube.

THOMAS FRANCIS GILES.