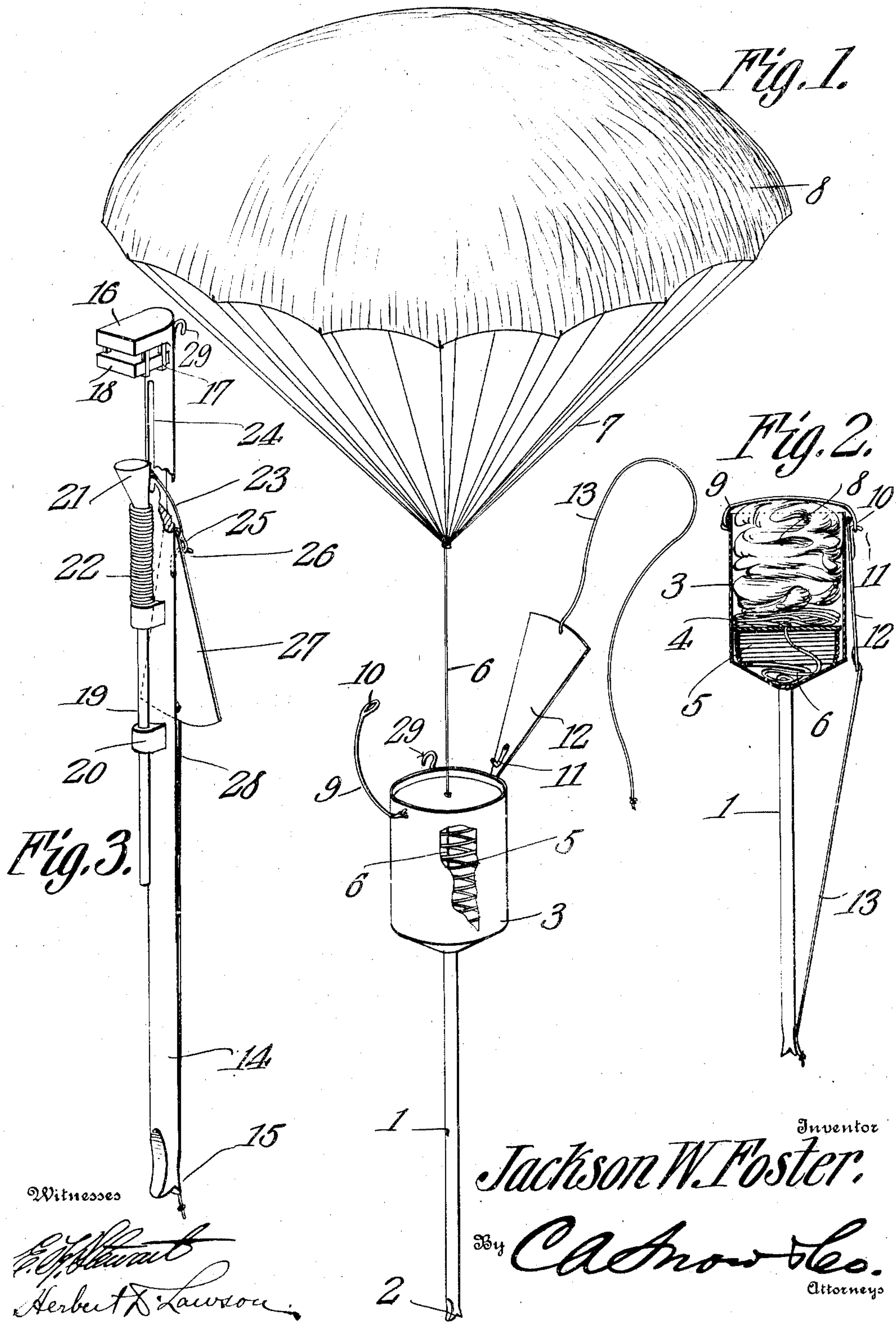


J. W. FOSTER.
AERIAL TOY.

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929,759.

Patented Aug. 3, 1909.



Witnesses

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UNITED STATES PATENT OFFICE.

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AERIAL TOY.

No. 929,759.

Specification of Letters Patent.

Patented Aug. 3, 1909.

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To all whom it may concern:

Be it known that I, JACKSON W. FOSTER, a citizen of the United States, residing at Jacksonville, in the county of Duval and State of Florida, have invented a new and useful Aerial Toy, of which the following is a specification.

This invention relates to aerial toys and its object is to provide a projectile preferably of that type designed to be shot after the manner of an arrow, although it is of course to be understood that the same may be discharged from a specially constructed rifle, mortar or the like, said projectile carrying means designed to be actuated automatically immediately prior to the downward movement of the projectile.

A further object is to provide a novel form of lock for holding in operation the device carried by the projectile, said lock being maintained in a predetermined relation to the projectile by the pressure of air thereupon produced during the flight of the projectile, there being means however for promptly automatically releasing the device on the projectile as soon as this air pressure is reduced, as, for example, when the projectile reaches the limit of its upward movement.

With these and other objects in view the invention consists of certain novel details of construction and combinations of parts hereinafter more fully described and pointed out in the claims.

In the accompanying drawings the preferred forms of the invention have been shown.

In said drawings:—Figure 1 is a perspective view of a projectile embodying the present improvement and showing one form of device connected thereto and released therefrom, said device having the form of a parachute. Fig. 2 is a longitudinal section through the head of the projectile and showing the position of the parachute when locked within the head. Fig. 3 is a perspective view of a modified form of projectile.

Referring to the figures by characters of reference 1 designates the stem or shaft of the projectile, the same being preferably notched at one end as indicated at 2, so as to properly engage the string of a bow used in shooting the projectile. The other end of the stem 1 has a head 3 preferably in the form of a hollow cylinder which is open at its outer end.

A disk or follower 4 is movably mounted within the head, and bears upon one end of a helical spring 5, the other end of which contacts with the closed or inner end of the head. A cord or other flexible device 6 is secured at one end to the inner end or bottom of the head 3 and passes through the spring 5 and the center of the disk 4 and is attached to the cords 7 of a parachute 8, said parachute being so proportioned as to be readily folded into a compact bundle and loosely seated within the head 3 and upon the disk 4. A retaining bar 9 is pivotally connected to the head 3 adjacent the open end thereof and is designed to swing across said open end and retain the folded parachute therein, the free end of the bar being formed with an eye 10. This eye is designed to be engaged by a lug 11 outstanding from a wing 12 which is hingedly connected to the head 3 at a point diametrically opposite the pivotal connections between bar 9 and head 3, said wing being designed to fold inwardly into position substantially parallel with the head 3 as clearly indicated in Fig. 2. When the wing is thus located with the stud 11 within the eye 10 the retaining bar 9 is, obviously, held in position across the open end of head 3, and the parachute thus prevented from becoming unseated. When the projectile is not in use a cord 13 which is secured to the free end of the wing 12 in any suitable manner, may be fastened to the stem or shaft 1 close to the notched end 2 thereof.

When it is desired to use the aerial toy herein described the cord 13 is unfastened from the shaft or stem 1 and held by the operator so as to maintain the wing 12 in its depressed position as indicated in Fig. 2. While the parts are thus disposed the notched end of the stem or shaft is placed in engagement with the string of a bow and the projectile may then be shot like an arrow, the operator of course releasing the cord 13 at the same instant that the projectile is released. During the movement of the projectile through the atmosphere under the impulse imparted to it by the bow the pressure of the air upon the wing 12 will be sufficient to maintain said wing in the position in which it was originally set. As soon however as the projectile reaches the limit of its upward movement and begins to descend the wing 12, being relieved of the air pressure to which it was subjected during the upward

flight of the projectile, will be swung outwardly by the spring 5 which, as is obvious, is held under stress while the parachute is housed within the head 3. A predetermined outward movement of the wing is sufficient to disengage the lug 11 and the eye 10, and the spring 5 will therefore promptly expel the folded parachute from the head. After the cord 6 has been fully paid out, the folds of the parachute will open in the usual manner, and the descent of the projectile will thus be greatly retarded. The positions of the parts immediately subsequent to the release of the parachute have been indicated in Fig. 1.

As heretofore stated, other devices than parachutes may be used in connection with the projectile. In Fig. 3 the projectile has been shown provided with means whereby a detonator may be exploded automatically as soon as said projectile reaches the limit of its upward movement. The stem or shaft 14 shown in Fig. 3 is notched at 15 in the same manner as is the stem 1, and has at its other end a head 16, from which guides 17 extend, said guides being disposed to support as well as guide a plate 18. This plate and the head 16 cooperate to hold a suitable detonator in position. A firing-pin 19 is slidably mounted in guides 20 arranged on the stem 14, and this pin has a head 21 designed to be forced against the plate 18 so as to explode the detonator contained between said plate and the head 16. A spring 22 is arranged on the firing-pin and bears at its ends against one of the guides 20 and the head 21 respectively, and serves to actuate said pin when it is released from its locking mechanism. This locking mechanism consists of a link 23 which is pivotally connected to the head 21 and mounted to slide within a slot 24 extending longitudinally within the stem 14. Said link 23 has an eye 25 at its free end which is similar to the eye 10 heretofore referred to and is designed to be engaged by a lug 26 extending from a wing 27 which is hingedly connected to the stem 14. A cord 28 is attached to this wing and is utilized to hold said wing against the stem 14, while the parts are set. After the parts have been set as shown in Fig. 3, a detonator may be placed between head 16 and plate 18 and the projectile then discharged or shot by means of a bow. As in the structure shown in Fig. 1 and heretofore described the air pressure will be sufficient to hold the wing 27 in set position as long as the projectile is traveling under the impulse imparted to it by the bow. When, however, the projectile reaches the limit of its upward movement and this air pressure is thus reduced, the spring 22 will be of sufficient power to swing the wing 27 upon its hinge and thus release the link 23 and permit the firing-pin 19 to be shifted against the plate 18. The detonator will thus be exploded.

Obviously, various other devices may be utilized in connection with a projectile and arranged to be released by means of the mechanism herein described when the projectile reaches its highest elevation, or when the air pressure is reduced to a predetermined degree from any cause. Also various changes may be made in the construction and arrangement of parts without departing from the spirit or sacrificing the advantages of the invention.

If desired a hook 29 such as indicated in Figs. 1 and 3 may be connected to the front or advancing end of the projectile and this hook can engage a spring or other suitable device whereby the projectile can be shot without the use of a bow or other device exerting pressure against the rear end of the projectile.

What I claim is:—

1. A projectile having a member movably mounted thereon, means for automatically actuating said member, and means controlled by the pressure of air thereon for locking said member against movement.
2. A projectile having a member movably mounted relative thereto, means for automatically actuating said member, a locking wing movably mounted and arranged to be held in a predetermined position by air pressure during the flight of the projectile, and means disposed to be engaged by said wing to hold the movable member in a predetermined position.
3. A projectile having a spring-actuated member movably mounted thereon, a hingedly mounted locking wing, and means upon the movable member and engaged by the wing for holding said movable member in set position, the movement of the wing being controlled by the pressure of air thereagainst, during the flight of the projectile.
4. A projectile comprising a stem, a spring-actuated member carried thereby, a wing mounted upon and disposed to swing relative to the stem, means engaged by the wing for holding said movable member set, the movement of the wing being controlled by the pressure of air thereon during the flight of the projectile.
5. In a projectile a housing, a member connected to and disposed to be seated within the housing, means for expelling said member from the housing, a locking device movably connected to the housing, and means engaged by the locking device for holding said member against the action of the expelling means, said locking means being disposed to be held in a predetermined position by the pressure of air during the flight of the projectile.
6. In a projectile a housing, a member connected thereto and disposed to be seated therein, means for automatically expelling said member from the housing, a retaining

device, and a locking wing movably connected to the housing and disposed to engage the retaining device to hold said member against the action of the expelling means while the wing is subjected to a predetermined air pressure.

7. In a projectile a housing, a member connected thereto and disposed to be seated therein, means for automatically expelling said member from the housing, a retaining device and a locking wing movably connected to the housing and disposed to engage the retaining device to hold said member against the action of the expelling means while the wing is subjected to a predetermined air pressure, and means for holding

the wing in set position prior to the flight of the projectile.

8. In a projectile a housing, a parachute disposed to be seated therein, means for expelling the parachute from the housing, and means controlled by the pressure of air during the flight of the projectile for locking the parachute against the action of the expelling means.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

JACKSON W. FOSTER.

Witnesses:

J. G. PERMENTER,
F. F. REID.