L. P. BARLOW.

BOMB AND DISCHARGING MEANS THEREFOR.

APPLICATION FILED MAY 27, 1918.

1,318,955. Patented Oct. 14, 1919.

Fig. 1.

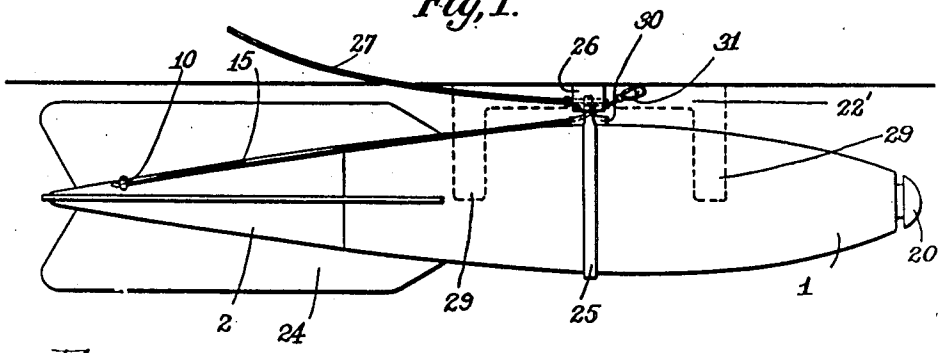


Fig. 2.

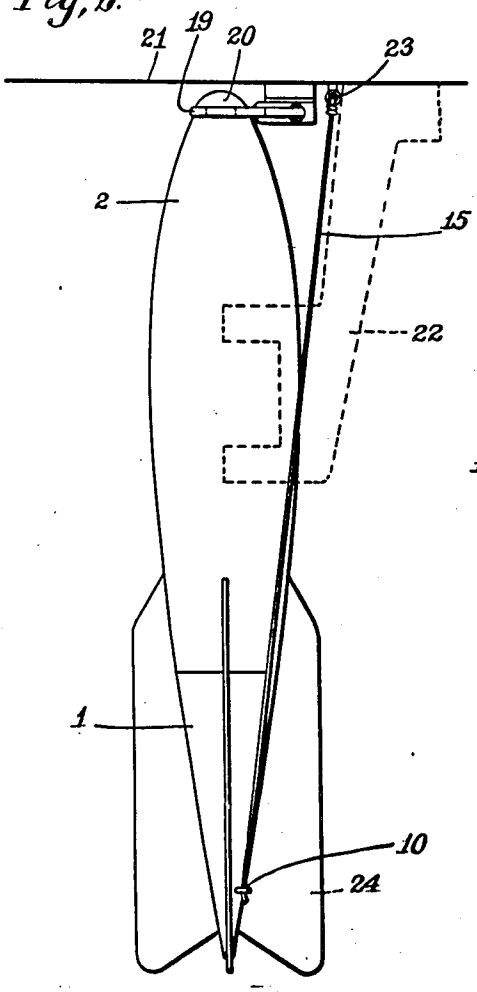


Fig. 3.

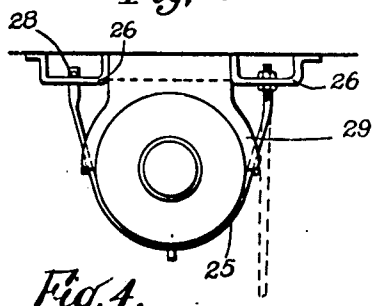
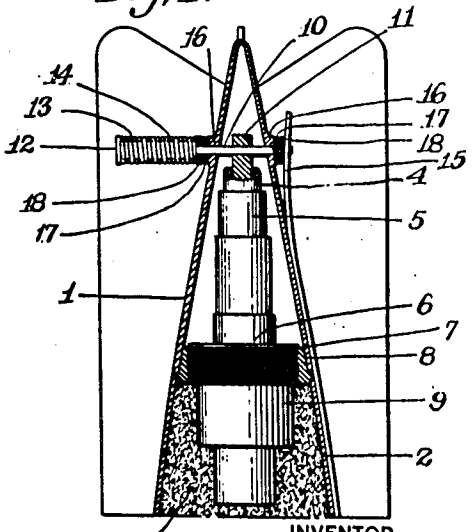


Fig. 4.



INVENTOR

Lester P. Barlow

BY

J. C. Edwards

ATTORNEY

UNITED STATES PATENT OFFICE.

LESTER P. BARLOW, OF NEW HAVEN, CONNECTICUT, ASSIGNOR TO MARLIN-ROCKWELL CORPORATION, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

BOMB AND DISCHARGING MEANS THEREFOR.

1,318,955. Specification of Letters Patent. Patented Oct. 14, 1919.

Application filed May 27, 1918. Serial No. 236,915.

To all whom it may concern:

Be it known that I, LESTER P. BARLOW, a citizen of the United States, residing at New Haven, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Bombs and Discharging Means Therefor, of which the following is a specification.

My invention relates to bombs adapted to be dropped or launched from an aeroplane, which explode on contact. The present invention is, in certain respects, an improvement upon a device described in my application Serial Number 195,609 entitled, Contact bombs, filed October 9, 1917. In the said application a construction is illustrated in which the detonator of the bomb is normally suspended at a safe distance to the rear of the explosive chamber, and means are provided to release the detonator upon the launching of the bomb so that the detonator may drop into position to be fired upon the impact of the bomb against its target. As is described in said application, the preferred suspension means for the detonator comprises a pin extending with a sliding fit through the walls of the casing toward the rear end thereof and through a portion of the detonator, a spring being provided to withdraw the pin from the detonator when the bomb is launched.

In accordance with the present invention a flexible wire or cord extends through a hole in the end of the pin referred to to constitute a holding means for the pin until the bomb is launched, whereupon the flexible wire is automatically withdrawn and the pin accordingly withdrawn from holding position in the detonator. When the bomb is suspended in a vertical position below the aeroplane it is ordinarily held forward end up by a suitable means, the flexible wire extending from the pin along the outer casing of the bomb to a point of fixed attachment to the aeroplane or the bomb cap thereof. When the holding means for the bomb is released by the aviator, the wire is automatically pulled from the pin as the bomb drops.

In case the bomb is suspended horizontally below the aeroplane, which is the more common practice, especial care must be taken to cause the flexible wire to be withdrawn smoothly from the detonator to release the pin and in such a manner as not to disturb the position of the bomb. The bomb being held in the trap in a horizontal position, the flexible wire extends along the outer surface of the bomb casing from the pin to a point approximately at the center of gravity of the bomb, at which point the wire is passed upwardly, through a cleat, secured to the bomb casing, the wire being secured above this cleat to the bomb trap. The bomb is preferably held in position by a strap which passes around the bomb at or adjacent to its center of gravity. When the bomb is to be dropped the aviator pulls a connection to open the strap and permit the bomb to drop whereupon the wire from the detonator holding pin is automatically withdrawn. Under these conditions the pull on the wire, as the latter passes through the cleat, does not disturb the position of the bomb and accordingly, as the bomb drops away from the aeroplane in horizontal position, there will be no tendency for the wire to kink or bend about the cleat and the wire will also be withdrawn without difficulty from the hole through which it extends in the detonator release-pin.

In order that a clearer understanding of my invention may be had, attention is hereby directed to the accompanying drawings forming part of this application and illustrating certain embodiments of my invention.

In the drawings Figure 1 represents a side elevation of a bomb suspended in horizontal position below an aeroplane; Fig. 2 is a side elevation of a bomb suspended in inverted vertical position below an aeroplane; Fig. 3 is a detail cross-section through the suspending means for the bomb shown in Fig. 1, and Fig. 4 is a longitudinal sectional view through the rear end of the bomb showing the detonator release mechanism.

Referring first to Fig. 4, the rear portion of the casing of the bomb, of stream line form, is indicated by the reference character 1, this latter casing-member being joined to a forward casing member 2 containing the explosive chamber 3. The detonator is represented at 4 as extending rearwardly from the guiding tube 5 which is connected with and extends rearwardly from the member 6, having a screw-threaded periphery as shown at 7. This is screw-threaded into a ring 8 which is secured to and suspended from the casing and forms a rear closure for the explosive chamber 3. A booster 9 may be em-

ployed and be integral with, or secured to, the closure member 6, a firing pin being placed in the lower portion of the booster construction to explode the detonator when the bomb strikes its target, as is fully described in my said application referred to.

The detonator 4 is suspended in position, until the bomb is dropped, by means of pin 10 which extends through opposite walls of rear-casing member 1 and through the rear portion 11 of the detonator, with a sliding fit. The pin extends some distance beyond the casing on one side and is provided at its end with a head or spring abutment 12. Preferably the pin is given an enlarged diameter, as is shown at 13, from the head 12 to a point adjacent the wall of the casing, to form a support for the spiral spring 14, which is coiled about the same.

Pin 10 extends a short distance beyond the opposite wall of the casing and is provided with a transverse opening through which extends a flexible wire or cord 15 which constitutes the holding means for the pin. Casing member 1 may be provided with bosses 16, 16, on its outer surfaces surrounding the openings through which the pin 10 extends. Also, if desired, gasket 17, 17, may be positioned against bosses 16, 16 and washers 18, 18, may be loosely slipped over the pin so as to press against the outer surface of the gaskets. When the parts are thus positioned spring 14 exerts a constant tendency to withdraw the pin, which is resisted by the wire 15, one end of the wire being adjacent to the pin so that it may be easily withdrawn therefrom, as shown in Fig. 4.

When the bomb is to be suspended in a vertical position beneath the aeroplane, as is shown in Fig. 2, this is preferably accomplished by holding the bomb forward end uppermost, a suitable holding means, such as a pair of levers indicated diagrammatically at 19 engaging the bomb at the recess formed between the nose piece 20 of the bomb and the forwarding casing member 2 thereof. These levers are suitably secured to and operated from the aeroplane indicated diagrammatically at 21. A suitable form of trap indicated diagrammatically at 22 may be employed for holding the bomb steady during the travel of the aeroplane.

When the bomb is to be dropped the levers 19 are released by the aviator. The flexible wire 15 is fixedly secured to the aeroplane by means of a pin 23 on the aeroplane extending through a loop at the end of a wire. Accordingly, when the bomb drops, wire 15 pulls out of the opening in the pin 10, the pin 10 then being withdrawn from the detonator by spring 14. The bomb will right itself in the air because of the stabilizing vanes 24 at the rear end of the bomb and the stream line construction of the bomb.

When the bomb is suspended horizontally beneath the aeroplane, as is shown in Fig. 1, it may be secured to the trap 22^1 by means of the strap 25 which extends around the bomb, preferably at or very close to the center of gravity of the bomb. This strap is secured to the transverse member 26 of the trap and is released by the release wire 27 which extends to the operator's position in the aeroplane, pull on wire 27 resulting in withdrawing pin 28 from the strap and permitting the latter to drop into the dotted line position shown in Fig. 3. The bomb is held steady in the position in which it is carried beneath the aeroplane by the lugs 29, 29 on the trap.

The bomb is provided with a curved cleat 30 extending outwardly from its upper surface at a point located approximately at the center of gravity of the bomb and in alinement with the opening through the pin 10 through which the wire 15 extends. The wire 15 is carried along the outer surface of the bomb from the pin 10 to the cleat 30 and extends through the same, being then curved upwardly to the point 31 at which it is fixedly secured to the trap 22^1 as by means of a pin. When now the bomb is dropped by the release of strap 25 a considerable pull is exerted on the wire 15 a the bomb drops away from the trap, but because of the fact that the cleat 30 is positioned at or close to the center of gravity of the bomb, this pull will not disturb the horizontal position of the bomb. Accordingly, wire 15 will move smoothly through cleat 30 on an easy radius without forming a sharp bend or kink. If, however, the cleat 30 were located at a considerable distance from the center of gravity of the bomb the pull on wire 15, as the bomb begins to drop, might be sufficient to throw the bomb into an inclined position which would result, very possibly, in causing the wire to bind in the cleat. It will also be noted that the provision of cleat 30 results in the wire 15 being carried in a straight line, or rather on a gently curving line along the upper surface of the bomb casing from the pin 10 to the cleat 30, so that the possibility of the wire kinking or catching in the opening of the pin is obviated. The placing of the strap 25 at approximately the center of gravity of the bomb insures the bomb dropping away from the plane in balanced horizontal position. As soon as the bomb has gone a short distance from the plane and wire 15 has passed out of its opening in pin 10 the bomb will right itself in the air, as previously described.

What I claim is:

1. In a drop bomb, the combination of a casing, having an explosive chamber, a detonator, a pin adapted to extend with a sliding fit through opposite lateral walls of said casing, adjacent the rear end thereof, and

through a portion of said detonator; to normally hold the latter to the rear of said chamber, a wire having one end portion extending through an opening at one end of said pin, a cleat on the outer surface of said casing, in alinement with the opening through said pin, situated at approximately the center of gravity of the bomb, said wire extending from the pin through said cleat, and being adapted to be secured above the cleat to an element of an aeroplane, when the bomb is suspended horizontally, and spring means to withdraw the pin from the detonator when said wire is withdrawn from said pin.

2. In a drop bomb, the combination of a casing, a movable element therein, a pin extending with a sliding fit through opposite walls of said casing and through said element, spring means tending to withdraw the same, a wire having one end portion extend through an opening at one end of the pin, a cleat on the outer surface of said casing, at the intermediate section thereof, in alinement with the opening in said pin, and releasable means holding the bomb horizontally below an aeroplane, said wire extending through said cleat and curving upwardly to a fixed connection with an element of the aeroplane.

3. In a drop bomb, the combination of a casing, a movable member extending therefrom, a cleat on the outer surface of said casing, situated in approximately the plane of the center of gravity of the bomb, when the latter is suspended horizontally, and a flexible wire for releasably holding said member, extending through said cleat and adapted to be secured above said cleat to an element of an aeroplane, said wire being arranged to be withdrawn from said member by lengthwise pull thereon.

This specification signed and witnessed this 22nd day of May, 1918.

LESTER P. BARLOW.

Witnesses:
DYER SMITH,
I. MCINTOSH.