H. A. THACKER.

EXPLOSIVE BOMB.

APPLICATION FILED JAN. 5, 1917.

1,270,072. Patented June 18, 1918.

Fig. 1.

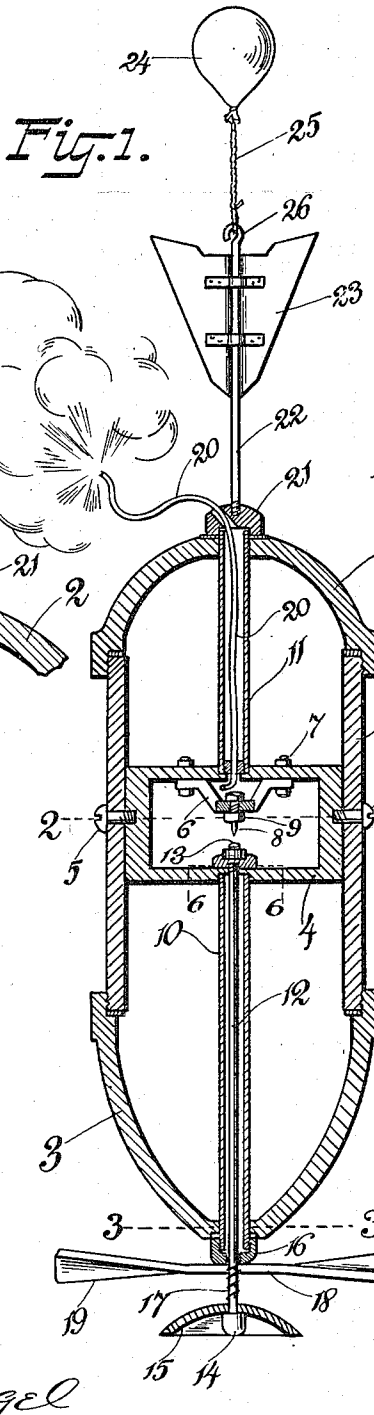


Fig. 2.

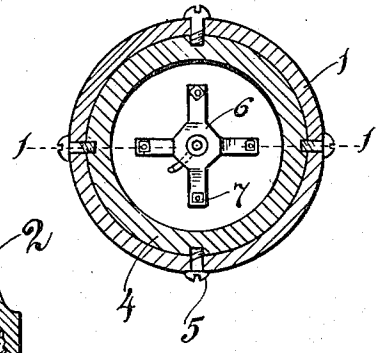


Fig. 3.

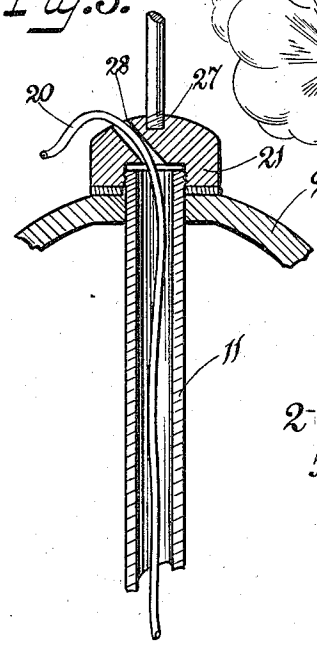


Fig. 4.

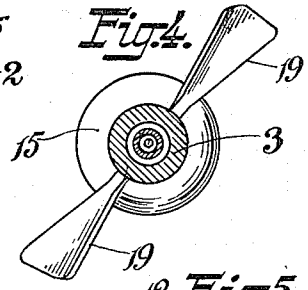


Fig. 5.

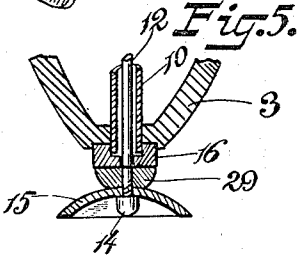
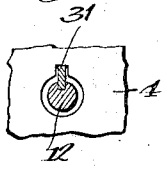


Fig. 6.



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UNITED STATES PATENT OFFICE.

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EXPLOSIVE BOMB.

1,270,072. Specification of Letters Patent. Patented June 18, 1918.

Application filed January 5, 1917. Serial No. 140,700.

To all whom it may concern:

Be it known that I, HARVEY A. THACKER, a citizen of the United States, residing in the city of Leavenworth and county of Leavenworth, State of Kansas, have invented certain new and useful Improvements in Explosive Bombs, of which the following is a specification.

My invention relates to explosives, and more particularly to bombs and other devices of this class which are designed for and adapted to be carried by aeroplanes, dirigibles, and the like, and released and dropped at a desired point to detonate or explode upon reaching the ground.

The objects of my improvement are to produce an article of this character possessing to high degree the element of safety, and that cannot ordinarily be accidentally set off or exploded, and which at the same time is adapted to be detonated upon contact, to make provision for pre-determined or time firing independently of the contact detonating mechanism, and to so form and construct the device that it will be simple, inexpensive, and durable in structure, and positive, reliable, and efficient in action and operation.

To accomplish these purposes, I construct my improved device with a plurality of parts which are detachably fastened together, and which, when assembled, form a hollow container having a main or principal interior chamber for holding a high explosive, such as gun cotton or the like, a highly inflammable material, a gas, liquid or semi-liquid, granulated or solid material possessing certain desired and required properties and qualities, and a smaller supplementary chamber for holding a detonating or exploding charge of black powder or similar material.

The means or mechanism by which I carry out the above and other objects will be hereinafter set forth in the following description, and particularly pointed out in the appended claims, reference being had to the accompanying drawings, in which embodiments or adaptations of my invention are illustrated.

In the drawings:

Figure 1 is a central vertical section through a bomb or container constructed in accordance with my improvement on line 1—1 of Fig. 2, and showing the interior construction, the main and supplementary compartments, and also illustrating the exterior safety mechanism and the guiding mechanism in side elevation.

Fig. 2 is a transverse section through a bomb or container constructed in accordance with my invention, taken on line 2—2, Fig. 1.

Fig. 3 is an enlarged fragmentary vertical section taken centrally through the upper portion of the bomb or container to illustrate the time fuse mechanism.

Fig. 4 is a transverse section taken on line 3—3, Fig. 1 through the bomb or container, and looking downward to illustrate one form of the safety mechanism.

Fig. 5 is an enlarged fragmentary view of the lower extremity of a bomb or container constructed in accordance with my invention and illustrating another form or type of safety mechanism.

Fig. 6 is a detail section taken on line 6—6 of Fig. 1.

In referring to the accompanying drawings in detail, in which embodiments or adaptations of my improved bomb or container are shown, like numerals indicate corresponding parts. While my improved explosive bomb is chiefly designed to be carried by and dropped from aeroplanes, it may, with slight alterations in construction, form and size, be utilized as a hand grenade, and for a number of other purposes. The shell of the bomb or container consists of an intermediate cylindrical portion, 1, a concavo-convex top cap, 2, and a lower end piece, 3, of slightly rounded hollow conical form.

These three portions are all detachably secured or otherwise fastened together to form an inclosed hollow chamber, in which a charge of high explosive, such as gun cotton, a gas, an inflammable material or other desired or required material may be placed. As shown in Fig. 1, the opposite ends of the cylindrical portion, 1, are externally screw threaded and both the top cap and lower end piece are provided with corresponding screw threads so that they may be screwed upon said ends in assembling the container. A smaller supplementary container or box, 4, is removably fitted within the cylindrical portion, 1, at approximately the middle thereof, being preferably secured in place by a series of screws, 5. I prefer to form or construct this inner box as shown in Fig. 1, so that it will fit snugly within the cylin-

drical portion. Within the box, I place a support or spider, 6, which has a series of arms that are secured by bolts, 7, to the under surface of the top of the box. The middle portion of the support, 6, depends within the box and carries an adjustable firing pin, 8, which is in part screw threaded and fitted within a screw threaded vertical opening in the support. The firing pin is locked in its adjusted position by means of a lock nut, 9. Two tubes, indicated respectively by the numerals 10 and 11, depend downward and extend upward from the box, 4, and pass through center openings in the top cap, 2, and lower end piece, 3. These tubes are screw threaded at their respective ends, and screwed into openings in the box, 4, top cap, 2, and end piece, 3, thereby serving to securely fasten and lock the three parts of the bomb or container together. These two tubes also each perform another function, the lower tube, 10, being arranged to provide a vertical passageway in which the stem or shank, 12, of a detonating bar is slidably fitted, said stem being keyed to the box 4 in any suitable manner, preferably by a key 31, to allow a sliding movement only. The upper end or head of this bar is adapted to carry the exploding cap, 13, and the lower end is provided with an enlarged head, 14, and the shock transmitting plate, 15, which is preferably of a concavo-convex form. I preferably extend the lower end of the tube, 10, so that it will project beneath the end piece, 3, and screw a lock cap, 16, thereon, which is centrally bored out to provide an opening through which the bar slidably extends. The detonating bar depends beneath the bottom of the bomb proper, as shown in Fig. 1, and its exposed projecting portion, 17, above the concavo-convex plate, 15, is peripherally screw threaded.

The safety propeller, 18, is centrally and rotatably mounted upon the screw threaded portion, 17, and is provided with turning blades or vanes, 19, which are so arranged that upward pressure of the air against their lower surfaces will rotate the propeller in a direction to cause it to descend along the screw threaded portion, 17, and thus release the detonating bar, unlocking the safety mechanism and placing said bar in position to be driven upward to strike the firing pin and explode the cap when the enlarged head, 14, and the plate, 15, come in contact with the ground or other object. The propeller also serves to rotate the bomb itself, and thus aids in maintaining it in perpendicular position as it passes downward through the atmosphere. The upper tube, 11, likewise forms a vertical passage way, in which a fuse, 20 can be placed. In Fig. 1, I have illustrated the upper end of the fuse as projecting above the bomb with its end ignited and its lower end extending within the smaller supplementary box or container. The smaller intermediate box is adapted to be filled with black powder or other lesser explosive possessing sufficient power to explode the shell and by its concussion to set off the high explosive in the main chamber or ignite the inflammable material therein.

A center piece, 21, is detachably fitted upon the upper end of the upper tube, 11, and serves as a supporting block for the stem, 22, of a directing rudder, 23. If desired, a small balloon, 24, may be attached by a cord, 25, to the upper eye, 26, formed in the bar, 22, substantially shown in Fig. 1. The center piece, 21, is provided with a top screw threaded socket, 27, in which the lower end of the bar 22 is screwed, as shown in Fig. 3, and also a diagonally extending opening, 28, through which the fuse, 20, passes. In the modified form, shown in Fig. 4, I provide a rubber ring or cushion, 29, which is fitted upon the lower projecting end of the detonating bar, 12, and is adapted to be compressed between a lower boss or enlargement, 15, on said bar, and the nut 16, when the detonating bar is driven upward by contact to explode the cap. This rubber ring or cushion, 29, thus forms a safety which will ordinarily prevent any accidental explosion of the bomb. My improved bomb is adapted to be utilized for a number of purposes, as before stated, and may be made in a variety of shapes or forms. Its principal advantages are that it can be transported and packed in knock-down form if desired, and easily assembled by any ordinary workman in a short period of time. This materially lessens, if it does not altogether prevent any danger of premature explosions and also enables a bomb to be filled with a variety of different materials. Owing to the large area or surface of the contact plate, 15, the bomb is adapted to be exploded immediately upon contact and before it enters the ground to any appreciable extent. From this it will be noted that the explosion takes place at, or directly above, the surface of the ground, thereby producing a highly destructive effect.

As illustrated and heretofore described, my improved device consists of the bomb proper, which is constructed so that it may be readily taken down or assembled, safety mechanism located at its lower extremity, and a directing and guiding means located at and projecting above its upper extremity.

The directing and guiding means serves to maintain the equilibrium of the device in its descent, holding the bomb in perpendicular position in its passage through the atmosphere and in readiness to be detonated the instant its lower extremity strikes an obstruction or the ground.

The concavo-convex plate, 15, presents sufficient transverse area to drive the detonating bar upward upon contact with the surface of the water, should the bomb drop upon the same, and explode the device.

It will thus be noted that should one of my improved bombs be released from an overhead aeroplane, to descend on one side of, but in the immediate vicinity of, a ship, it will explode upon contact with the surface of the water and probably damage and in some cases possibly sink the ship. My improved device, it will thus be seen, is equally adapted for both land or water.

While I have described in the foregoing specification adaptations or embodiments of my invention, it should be understood that the structural parts thereof may be varied, changed, modified or altered or one or more may be omitted or dispensed with without departing from the spirit of my invention as fairly defined in the following claims, or as may be imparted thereto by invoking the doctrine of equivalents.

What I claim as my invention and desire to secure by Letters Patent is:—

1. In a device of the class described, a main container composed of a plurality of separable portions, a smaller supplementary container removably fitted within the main container, a time fuse protruding through the top of the main container, a detonating bar depending beneath the main container, means for locking said detonating bar and a wind operated propeller adapted to release the detonating bar.

2. A device of the class described comprising an intermediate cylindrical portion, a concavo-convex top cap detachably secured on the upper extremity of the cylindrical portion, a hollow conical end portion detachably fastened on the lower end of the cylindrical portion, an intermediate box fitted within the cylindrical portions, two tubes extending in opposite directions from the box and secured respectively at their outer ends to the top cap and end portion, a time fuse fitting through one of said tubes, a detonating bar extending through the other tube, and a wind operated safety device at the lower end of the detonating bar.

3. A device of the class described comprising an intermediate cylindrical portion, a concavo-convex top cap detachably secured on the upper extremity of the cylindrical portion, a hollow conical end portion detachably fastened on the lower end of the cylindrical portion, an intermediate box fitted within the cylindrical portions, two tubes extending in opposite directions from the box and secured respectively at their outer ends to the top cap and end portion, a time fuse fitting through one of said tubes, a detonating bar extending through the other tube, a safety mechanism on the lower end of the detonating bar, and a balancing and directing mechanism extending above the top cap.

4. A device of the class described comprising an intermediate cylindrical portion, a concavo-convex top cap detachably secured on the upper extremity of the cylindrical portion, a hollow conical end portion detachably fastened on the lower end of the cylindrical portion, an intermediate box fitted within the cylindrical portions, two tubes extending in opposite directions from the box and secured respectively at their outer ends to the top cap and end portion, a time fuse fitting through one of said tubes, a detonating bar extending through the other tube, the lower end of the detonating bar being enlarged and provided with a shock receiving plate, a safety mechanism on the lower end of the detonating bar above the enlarged end and balancing mechanism arranged above the top cap.

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