J. H. CLARY.

BOMB.

APPLICATION FILED OCT. 11, 1919.

1,345,130. **Patented June 29, 1920.**

Fig. 1.

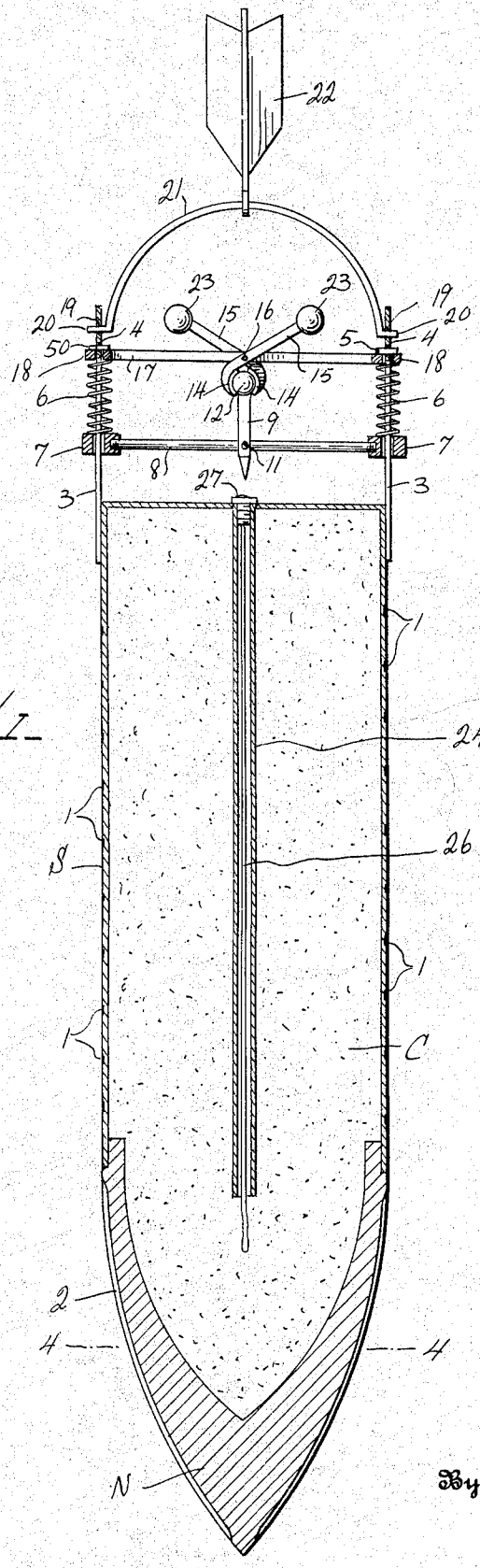


Fig. 2.

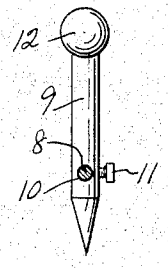
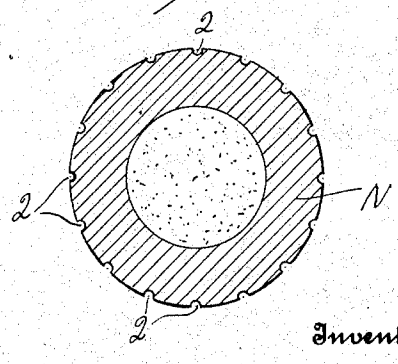


Fig. 3.



Fig. 4.



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UNITED STATES PATENT OFFICE.

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BOMB.

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To all whom it may concern:

Be it known that I, JOSEPH HARRY CLARY, a citizen of the United States, residing at Lincoln, in the county of Logan and State of Illinois, have invented certain new and useful Improvements in Bombs, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to certain improvements in bombs, and has relation more particularly to a device of this general character of a type adapted to be dropped from aerial craft, and it is an object of the invention to provide a novel and improved device of this general character including means whereby the charge is caused to explode after the bomb has made its strike.

It is also an object of the invention to provide a novel and improved device of this general character including a firing pin or plunger normally held in a firing position by releasable means rendered operative under the influence of the impact when the bomb makes a strike, together with means when the pin is released, for automatically causing said pin or plunger to become active.

An additional object of the invention is to provide a novel and improved device of this general character including a shell and nose, and wherein said shell and nose are provided with weakened portions to minimize the resistance offered by the shell and nose to the explosion of the charge.

The invention consists in the details of construction and in the combination and arrangement of the several parts of my improved bomb whereby certain important advantages are attained and the device rendered simpler, less expensive and otherwise more convenient and advantageous for use, as will be hereinafter more fully set forth.

The novel features of my invention will hereinafter be definitely claimed.

In order that my invention may be the better understood, I will now proceed to describe the same with reference to the accompanying drawings, wherein:

Figure 1 is a view partly in longitudinal section and partly in elevation of a bomb constructed in accordance with an embodiment of my invention;

Fig. 2 is an enlarged fragmentary view partly in section and partly in elevation illustrating the firing pin or plunger, as herein embodied, and in applied position;

Fig. 3 is an enlarged fragmentary sectional view taken through a wall of the shell, and,

Fig. 4 is a sectional view taken substantially on the line 4—4 of Fig. 1.

As disclosed in the accompanying drawings, S denotes a shell of desired dimension and configuration, one end of the shell being closed and the opposite end open. The open end portion of the shell is adapted to be closed by a pointed nose N. The nose N is preferably made of steel with its point portion solid and its inner or larger portion hollowed out, so that the charge C may be properly applied within the shell S and partially within the nose N. The nose N is pointed, so that the bomb will pierce or penetrate the object upon which it is dropped and the point portion of the nose N is of a weight to materially facilitate the requisite travel of the bomb toward its objective.

The outer face or periphery of the shell S is weakened at points therearound, and therealong by the recesses 1 partially bored in the walls of the shell S, and the nose N is also weakened at points therearound by the grooves or channels 2 cut therein. By providing the shell S and the nose N with the weakened portions 1 and 2 the resistance offered to the explosion of the charge is minimized.

Welded or otherwise secured to the closed end portion of the shell S are the end portions of the diametrically opposed elongated rods 3, extending outwardly from said closed end of the shell S and in parallelism with each other, and with the axial center of the shell. The outer end portions of the arms 3 are provided with the openings 4, through each of which is directed a pin 5 or the like to form an abutment for an expansible member 6 surrounding a rod 3. The expansible member 6, as herein disclosed, comprises a coil spring encircling the rod 3, and the opposite end portion bears against a sleeve or socket member 7 slidably mounted upon the rod 3.

Connecting the sleeves or socket members 7 is a rod 8, which extends substantially radially across the closed end of the shell S. The extremities of the rod 8 are preferably in threaded engagement with the sleeves or sockets 7 whereby the application of the rod 8 is facilitated.

9 denotes a firing pin or plunger, which is provided adjacent its firing end with an opening 10, through which the rod 8 is di-

rected. Threaded through the firing pin or plunger 9 is a binding screw 11 or the like for engagement with the rod 8, whereby the plunger or firing pin 9 may be effectively held in desired position for firing, or may be held in a position substantially in parallelism with the closed end of the shell S for safety when the bomb is in storage or transit, and not to be used.

The outer or opposite end portion of the plunger or pin 9 is provided with an enlargement 12, preferably substantially spherical, and which is adapted to be engaged between the socket jaws 14, provided at the similar ends of the crossed levers 15. The crossed levers 15 are pivotally supported by rivets 16 or the like, on a bar 17, and it is preferred that the levers 15 be arranged at opposite sides of the bar 17. The extremities of the bar 17 are provided with the eye members or rings 18, which surround the rods 3, and preferably between the pins 5 and the adjacent ends of the expansible members 6.

Outwardly of the openings 4 the opposed faces of the rods 3 are provided with the recesses or pockets 19, into which are adapted to be sprung the angular outstanding end portions 20 of the resilient and expansible yoke 21. Suitably secured to the central portion of the yoke 21 is an end portion of a tail 22, which operates to guide the bomb in its travel toward its objective.

When the bomb makes a strike the vibration of the bomb resulting from the force of the impact causes the socket jaws 14 to separate and release the plunger or firing pin 9, whereupon said plunger or pin 9 is automatically made active through the instrumentality of the expansible members 6. The members 6 are placed under tension when the rod 8 is moved outwardly along the rods 3 to effect an engagement of the enlargement or head 12 of the plunger or pin 9 with the socket jaws 14.

In order to facilitate the separating movement of the jaws 14 at the time of impact, the outer or upper extremities of the levers 15 are provided with the weighted enlargements or heads 23.

Extending through the axial center of the closed end of the shell S is a fuse container 24, preferably of a length to have its inner end terminate within the nose N. Arranged within the container 24 is a fuse 26, which may be either slow acting or quick acting, as desired. The outer end of the fuse 26 is provided with a cap 27. When the plunger or pin 9 becomes active, it strikes the cap 27, resulting in the ignition of the fuse 26, whereby the desired explosion of the charge occurs. By having the container 25 extend within the nose N, the ignition of the charge will occur therein, and which materially increases the effectiveness of the explosion.

From the foregoing description, it is thought to be obvious that a bomb constructed in accordance with my invention is particularly well adapted for use by reason of the convenience and facility with which it may be assembled and operated and it will also be obvious that my invention is susceptible of some change and modification without departing from the principles and spirit thereof and for this reason I do not wish to be understood as limiting myself to the precise arrangement and formation of the several parts herein shown in carrying out my invention in practice except as hereinafter claimed.

I claim:

1. A bomb comprising a shell adapted to contain an explosive charge, outstanding members carried by the shell, a rod slidably engaged with said members, a firing pin carried by the rod, means releasably, upon impact, engaging the pin for holding the same in set position, and an expansible medium coacting with the member and placed under tension, when the firing pin is set, to constantly urge the member toward the shell to ignite the charge therein when the firing pin is released, said firing pin being adjustable around the rod.

2. A bomb comprising a shell adapted to contain an explosive charge, outstanding members carried by an end portion of the shell, a firing pin slidably supported by said members, means releasably, upon impact, adapted for holding the pin in set position, means for urging the pin toward the shell when the pin is released, and a tail engaged with the outer end portions of the members.

3. A bomb comprising a shell adapted to contain an explosive charge, outstanding members carried thereby, a firing pin slidably supported by said members, a rod connecting said members outwardly of the pin, crossed levers pivotally engaged with said rod and provided with jaws engageable with the pin to hold the pin in set position, said jaws separating upon impact.

4. A bomb comprising a shell adapted to contain an explosive charge, outstanding members carried thereby, a firing pin slidably supported by said members, a rod connecting said members outwardly of the pin, crossed levers pivotally engaged with said rod and provided with jaws engageable with the pin to hold the pin in set position, said jaws separating upon impact, said levers being provided with weighted portions to facilitate the separating movements of the jaws.

5. A bomb comprising a shell adapted to contain an explosive charge, outstanding members carried by the shell, a rod having its opposite end portions slidably engaged with said members, a cross member con-

necting the outstanding members at a point outwardly of the rod, expansible members interposed between the rod and the cross member for urging the rod toward the shell, a firing pin carried by the rod, and means carried by the cross member for releasably maintaining the firing pin in set position, the rod, when the firing pin is in set position, placing the expansible members under tension.

6. A bomb comprising a shell adapted to contain an explosive charge, outstanding members carried by the shell, a rod having its opposite end portions slidably engaged with said members, a cross member connecting the outstanding members at a point outwardly of the rod, expansible members interposed between the rod and the cross member for urging the rod toward the shell, a firing pin carried by the rod, means carried by the cross member for releasably maintaining the firing pin in set position, the rod, when the firing pin is in set position, placing the expansible members under tension, said firing pin having movement around the rod, and means for holding the pin against such movement.

In testimony whereof I hereunto affix my signature.

JOSEPH HARRY CLARY.