J. RAPP.

EXPLOSIVE BOMB FOR AERIAL WORK.

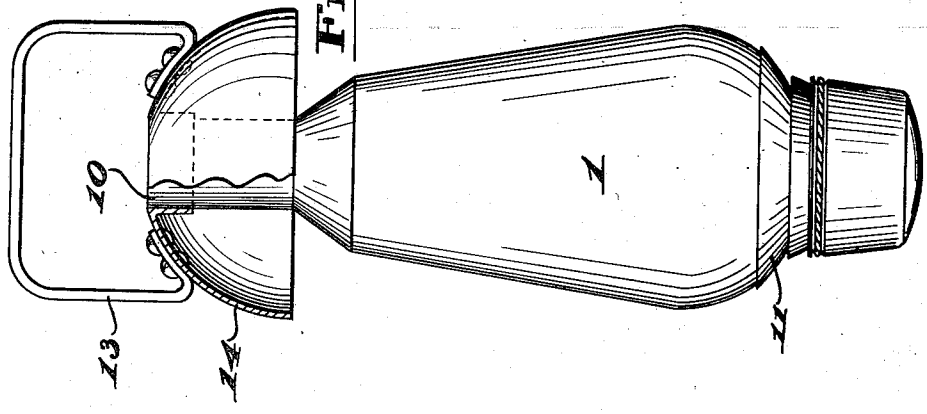
APPLICATION FILED JUNE 16, 1917.

1,291,685.

Patented Jan. 14, 1919.

2 SHEETS—SHEET 1.

Fig. 1



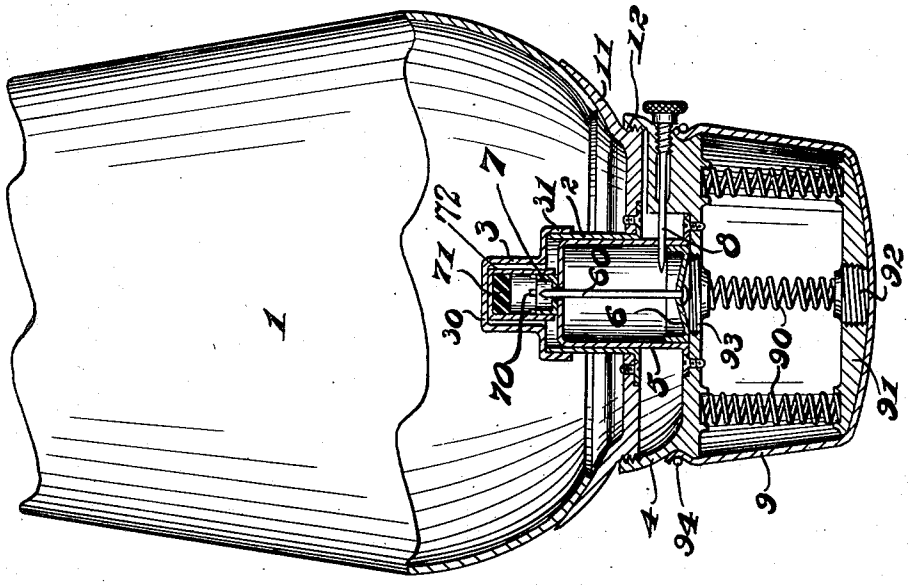


Fig. 2

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2 SHEETS—SHEET 2.

Fig. 4

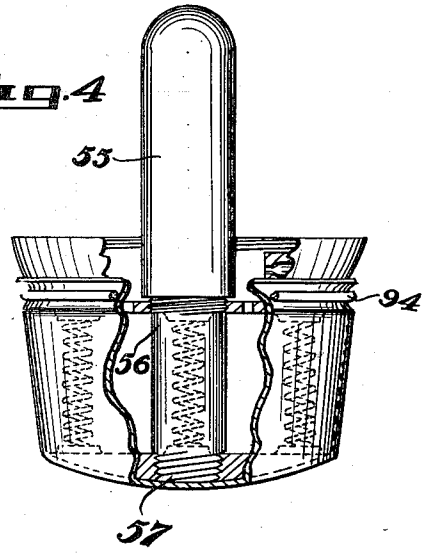


Fig. 3

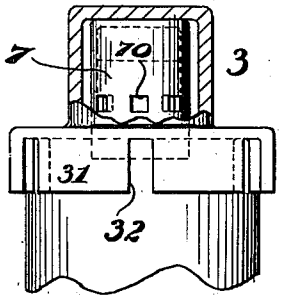
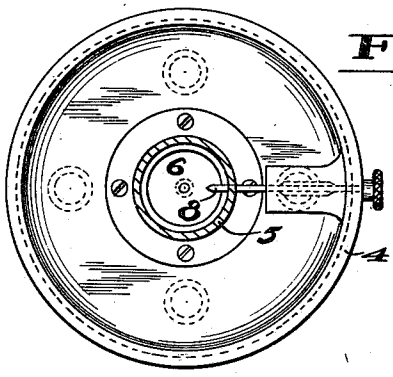


Fig. 5



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UNITED STATES PATENT OFFICE.

JOSEPH RAPP, OF MARYSVILLE, WASHINGTON.

EXPLOSIVE BOMB FOR AERIAL WORK.

1,291,685. Specification of Letters Patent. Patented Jan. 14, 1919.

Application filed June 16, 1917. Serial No. 175,147.

To all whom it may concern:

Be it known that I, JOSEPH RAPP, a citizen of the United States, and resident of Marysville, Snohomish county, State of Washington, have invented certain new and useful Improvements in Explosive Bombs for Aerial Work, of which the following is a specification.

My invention relates to firing heads for explosive containers and consists of certain improvements therein which are designed to improve the action of such devices and particularly in the line of delayed action upon entering water or similar substances.

The object of my invention is to provide a detonating device which may be attached to bombs, and like explosive containers, which will, with certainty, fire them upon contact with any resisting object, or after it has penetrated water for a given distance.

My invention comprises the novel features and combinations of parts which will be hereinafter described and then particularly pointed out by the claims. In the accompanying drawings I have shown the same as I now prefer to construct them.

Figure 1 is a side elevation of a bomb having my head attached thereto, said bomb being of the type which is adapted for discharging from air planes or balloons.

Fig. 2 shows the firing head in section and attached to the explosive containers.

Fig. 3 is an elevation of the portion of the firing head which receives the detonating cap, a part thereof being broken away.

Fig. 4 shows the manner of carrying or holding the firing head while detached from the bomb.

Fig. 5 is a plan view of the firing head with the air cylinder in section.

In the drawings 1 represents a casing or container which is designed to hold the explosives being used. This is provided with a neck 10 at its upper end which may be provided with any kind of closure, whether temporary or permanent, through which the explosives are introduced to the container 1.

As herein shown, the main body 1 of the case is provided at its lower end with a base 11 which is fixedly secured to the main body, as by being soldered or brazed thereto. This base 11 is provided with a threaded neck 12, at its lower side, by which the firing head may be secured in place thereon. It is also provided with a central opening to which is secured a cylindrical upwardly extending tubular case 2 which projects within the casing and which has over the same a cap 3. This cap 3 has an upper reduced section 30, and a lower enlarged section or flange 31. The lower section 31 is of such size as to fit snugly over the tube 2. It is, however, not fixedly secured in place. The depending flange which forms the enlarged section 31, has a series of slots 32 therein, so disposed so that if this member 3 is raised, free communication will be established between the space within this member 3 and the chamber which contains the explosives.

The firing head employs a metal base 4, which is threaded to screw upon the base 11 of the explosive container. It also has secured thereto a cylinder 5 which constitutes an air cylinder, within which is placed a piston 6. This piston has the firing pin 60 secured thereto and projecting through a hole in the upper end of the cylinder. The hole in the base 4, which makes free communication between the cylinder 5 and the pneumatic chamber beneath it, is of slightly less diameter than the cylinder, so that the piston is supported by the edges of this hole as upon a ledge.

Upon the upper end or head of the cylinder 5 is secured a cup-like member 7, which serves as a means for locating and holding the detonating cap. This detonating cap is in the form of a cup 72 having the detonating material 71 in the bottom thereof. This is, however, at the top, or closed end, as it is positioned in Fig. 2. This detonating cap also has holes 70 in its shell which may be normally covered by the edges of the cap 7. The firing pin 60 projects into the space inclosed by this detonating cap. If the firing pin be driven upwardly it will come in contact with the detonating material and fire the same. This will cause the cap 3 to be raised and will open communication through the holes 70 in the cap 7 and the slots 32 in the cap 3 to the explosive container in the main body of the bomb.

To prevent accidental forcing upward of the firing pin, I employ a lock pin 8, which is supported in the head 4 of the firing head and which passes through an opening in the wall of the cylinder 5 in such position that when the piston 6 is down the pin 8 will be placed just above the piston. This lock or safety pin 8, is screw threaded in place and

may be withdrawn when it is desired to use the bomb.

I provide a pneumatic chamber beneath the main frame or base 4, of the firing head, which chamber is so constructed as to be collapsible, as for instance, by using rubber or impervious fabric for the walls thereof. I also prefer to provide a disk or plate 91 in the lower side thereof and to hold this spaced from the base plate 4, as by springs 90.

When a bomb of this kind is dropped and comes in contact with any resisting object, the main body of the bomb is forced toward the plate 91, which compresses the air contained in this chamber. This air has free access through the hole 93 with the cylinder 5 and will, therefore, force the piston up and cause the firing pin to contact with the detonating material. The detonation of the material contained in the cap 7 will cause this, as well as the cap 3, to be raised and open firing communication with the main body of the explosives contained in the casing 1.

I have shown the fabric 9, which forms the wall of the air chamber, as being secured in place upon the base 4 by means of a cord or wire 94, which compresses the edges of the fabric in a slight peripheral depression formed in the base 4. The upper end of the bomb is preferably provided with a hemispherical bowl-shaped member 14, which acts to retard the bomb and thus to insure that it will fall right end first. I have also shown the case as provided with a handle 13 by which it may be transported.

Fig. 4 shows the manner of holding the parts of the firing head in shape before attachment to the case. At this time the cylinder 5 is removed and a handle 55, which has two threaded sections 56 and 57, is screwed into the threaded holes 92 and 93. This handle holds the parts properly spaced.

What I claim as my invention is:

1. A firing head for explosive containers comprising a firing pin having a piston connected therewith to operate it, a compressible gaseous container in operative communication with said piston, and means for normally maintaining said gaseous containers distended.

2. A firing device for explosive containers, comprising a firing pin, a piston operatively connected with said pin, means for normally restraining said pin, a collapsible air container having free communication with said piston, and yielding means normally maintaining said air container distended.

3. A firing head for explosive containers comprising a base adapted to be secured to an explosive container, a cylinder and a piston therein carrying a firing pin, a compressible air container communicating with said piston and adapted to be compressed upon striking a resistant object.

4. A firing head for explosive containers comprising a base adapted to be secured to an explosive container, a cylinder and a piston therein carrying a firing pin, said cylinder carrying means for holding a detonator, a compressible air container communicating with said piston and adapted to be compressed upon striking a resistant object.

5. The combination with an explosive container provided with means for securing a firing head thereto, and also having a recess in its bottom for the reception of a detonating charge, a firing head having complemental securing means, and a piston having means for applying a detonator thereto to hold said detonator within said recess in the explosive container, a firing pin carried by the piston and adapted to enter the detonator, and a collapsible air-container communicating with the piston and placed to be compressed on striking an object.

Signed at Marysville, Washington, this 9th day of June, 1917.

JOSEPH RAPP.