

April 4, 1933.

G. C. ANDERSON

1,903,348

AERIAL BOMB

Filed June 18, 1932

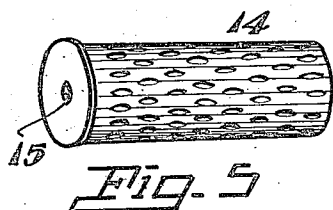
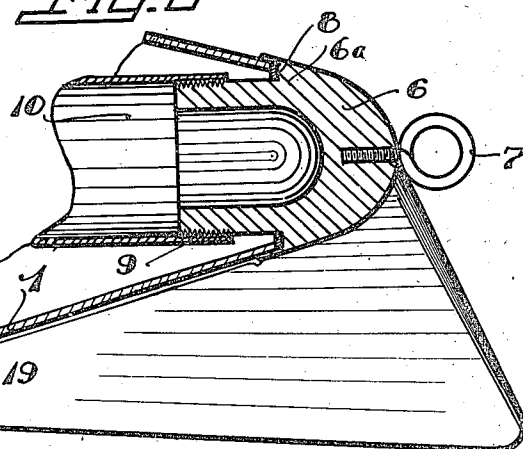
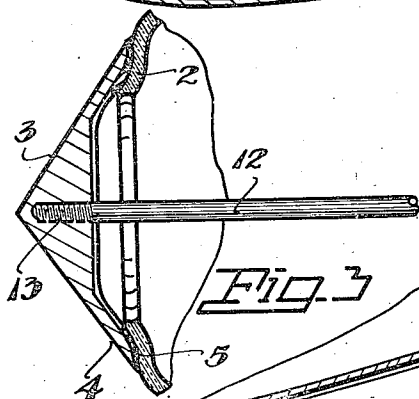
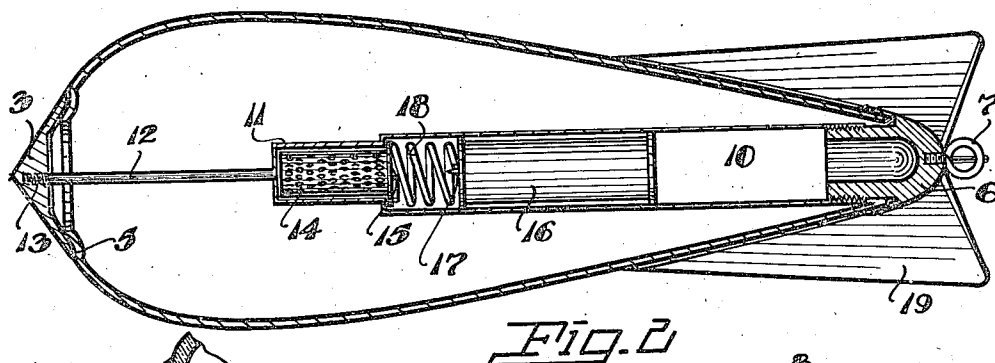
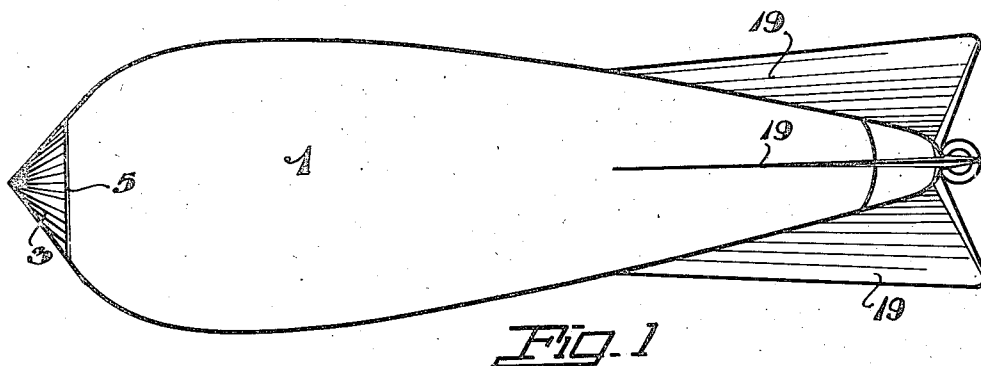


Fig. 4
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UNITED STATES PATENT OFFICE

GROVER C. ANDERSON, OF GATEWAY, MONTANA

AERIAL BOMB

Application filed June 18, 1932. Serial No. 617,940.

My present invention relates to an improved aerial bomb which, while adapted for various uses or purposes, is especially designed as a fire extinguisher, and employed particularly in fighting, extinguishing, and preventing forest fires.

In use a number of the bombs are carried by an aeroplane and one or more of the bombs are dropped from the aircraft to the ground for the purpose of scattering, either in liquid state, or in vapor, a fire-extinguishing gas that envelopes as a blanket, the burning area, excluding oxygen from the fire, and thereby extinguishing the fire.

In carrying out my invention I utilize a fragile or frangible shell, containing a fire-extinguishing chemical, and a charge or cartridge within the shell is detonated or exploded for the purpose of shattering the shell, releasing the fire-extinguishing compound, and scattering the latter element over a considerable area of the fire.

The detonation or explosion of the charge or cartridge is accomplished by impact of the bomb upon the ground, and the consequent action of a spring-held, weighted plunger. The weighted plunger is provided with a firing pin that contacts with a detonating cap on the cartridge or charge to explode the charge.

The invention consists in certain novel combinations and arrangements of parts as will hereinafter be more fully set forth and claimed. In the accompanying drawing I have illustrated one complete example of the physical embodiment of my invention wherein the parts are combined and arranged according to the best mode I have thus far devised for the practical application of the principles of my invention.

Figure 1 is a side view of a fire-extinguishing bomb according to my invention.

Figure 2 is a longitudinal sectional view of the bomb.

Figure 3 is an enlarged sectional detail view at the tip end or nose of the bomb, and Figure 4 is a similar view at the rear or upper end of the bomb.

Figure 5 is a perspective view of the ex-

plosive charge or cartridge carrier within the bomb.

In the preferred form of my invention I utilize a shell or container 1 of exaggerated ovate shape and fashioned of fragile or frangible material, as glass, with a larger or butt end provided with an annular depression or groove 2 extending around the rim of an opening in this end. This lower, or front end is provided with an impact-cap or conical shaped disk 3, of suitable metal, and the cap is fashioned with an annular retaining flange 3 for clamping an annular gasket or ring 5, in the depression or groove. Thus a gas tight and liquid tight joint is formed at the nose or front end of the bomb, to prevent leakage of the fire-extinguishing chemical that is contained in the shell.

The smaller, rear, or upper end of the shell is also open, but the opening in this end is closed by the use of a metal plug 6, which is provided with a suspending ring or loop 7, by means of which the bomb may be suspended in the aircraft from a suitable support, and in position readily accessible for use.

The plug is fashioned with an annular shoulder or abutment 6a, and a packing ring or annular gasket 8 is retained between this shoulder and the smaller, open end of the shell, to form an air tight and liquid tight joint, to prevent escape of the fire extinguishing chemical carried in the shell.

The inner end of the plug is threaded at 9 into the screw threaded end of an interior barrel or tube 10 that extends along the longitudinal axis of the shell, and this barrel or tube, at its forward end terminates in a reduced extension 11, the interior of the entire barrel being cut off or sealed against communication with the interior space of the shell.

Between the closed end of the extension 11 and the cap 3 of the shell a connecting rod 12 extends, and at 13 this rod is threaded into a complementary hole in the cap, as best seen in Figure 3.

In Figure 5 a cartridge or explosive charge 14 is illustrated, and provided with a detonating cap 15 at one end, and as seen in Fig-

ure 2 this cartridge, which is perforated, or provided with foraminous walls, to insure facility in expansion of the exploded charge, is carried in the reduced extension 11 of the barrel 10.

In the barrel, above the cartridge and cartridge chamber, a solid, cylindrical, weighted plunger 16 is located, and the end of the plunger adjacent the cartridge is provided with a pointed firing pin 17 adapted to impinge against or contact with the detonating cap 15 of the cartridge.

While the bomb is out of action, as when suspended by the loop or ring 7 from a support in the aircraft, the plunger is held a suitable distance from the cartridge by means of a spring 18 that is interposed between the plunger and the cartridge, but the spring is arranged in such manner that the firing pin may have access to the firing cap 15 at the proper time to explode the cartridge.

For guiding or steering the bomb, and maintaining it in perpendicular or vertical position during its descent when dropped from the aircraft to the ground, the tail end of the bomb is provided with two pairs of diametrically arranged vanes 19 that extend toward the butt end of the bomb a sufficient distance for the purpose required.

In use, when the aircraft has reached a commanding position over the burning area, the bomb is released and dropped in suitable manner to the ground. The impact of the cap on the ground brings to a sudden stop the bomb, resulting in a continued movement or plunge of the plunger 16, and consequent impingement of the firing pin against the firing cap of the cartridge. The cartridge is thus exploded, and the concussion shatters the frangible shell, releasing the fire-extinguisher contained in the shell, and the fire extinguisher is scattered over the burning area to form an enveloping blanket that is instrumental in excluding oxygen from the fire, and in the absence of the oxygen to support combustion, the fire is extinguished.

The bomb, is of course destroyed, but the cost of the bomb is comparatively insignificant when compared with the loss of life and property damage that might arise from the burning forest.

Suitable fire-extinguishing chemicals may be contained in the shell, which, upon contact with the fire, will become active in forming an enveloping blanket or pall over the burning area, or a screen may be formed in advance of the fire, by dropping the bombs, to prevent spreading of the fire. The extinguishing of the fire may thus be accomplished with comparative safety, and with less cost, as distinguished from the transportation of men and fire-fighting tools to the scene of the fire, and consequent danger to the fire-fighters on the ground or in the woods.

The fire-extinguishing bombs are carried by patrolling aircraft, and it will be apparent that the fire may with facility be detected from the air more readily than from the ground, thus enabling the patrol to fight the fire before it has reached large proportions, and permitting the patrol to control the fire more readily than could be done on the ground.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. The combination in a bomb as described with a frangible shell having a cap, of a longitudinally extending interior barrel having a cartridge chamber formed as an extension thereof, a spring-supported plunger in the barrel having a firing pin for contact with a cartridge in the chamber, and a closure plug for the rear end of the bomb, and co-acting means on the plug and barrel for joining these parts.

2. The combination with a frangible shell having an impact cap at one end and a closure plug at its other end, of a barrel supported at one end by said plug and extending within the shell, a cartridge chamber forming an extension of the barrel, a rod connecting the end of said extension with said cap, a weighted plunger in the barrel and a firing pin thereon, and a spring interposed between said plunger and the cartridge chamber or extension of the barrel.

3. The combination with a frangible shell, of a barrel supported therein and provided with an extension forming a cartridge chamber, a weighted plunger in the barrel and a firing pin on the plunger, and a spring interposed between said plunger and the extension of the barrel.

4. The combination with a frangible shell having a cap and a gasket between said shell and cap, and a closure plug and gasket at the rear end of the shell, of an interior barrel threaded on the plug and a reduced extension on the barrel forming a cartridge chamber, a connecting rod rigidly connecting the extension and cap, a weighted plunger having a firing pin and located in said barrel, and a spring interposed between said extension and plunger.

5. The combination with a frangible shell having a front opening and an annular, exterior groove surrounding the opening; a gasket in the groove, a conical cap closing the opening and having a flange engaging the gasket, said shell having a rear opening, a plug closing said opening and a shoulder on the plug, a gasket between said shoulder and the wall of the rear opening, and a barrel within the shell threaded on the inner end of the plug, of a weighted plunger having a firing pin and located in the barrel, a cartridge chamber forming an extension of the

barrel, a spring interposed between said extension and the plunger, and rod rigid with the extension and threaded in said cap, a suspending loop on the plug, and steering
5 vanes on the shell.

In testimony whereof I affix my signature.

GROVER C. ANDERSON.

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