L. HELSMOORTEL.

BOMB.

APPLICATION FILED APR. 27, 1918.

1,282,574.

Patented Oct. 22, 1918.

2 SHEETS—SHEET 1.

Fig. 1.

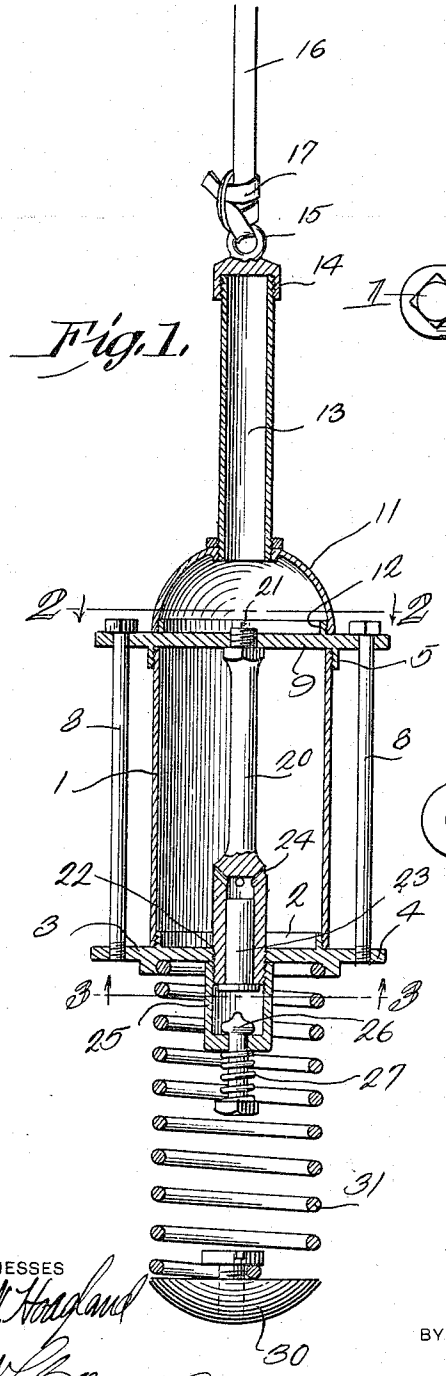


Fig. 2.

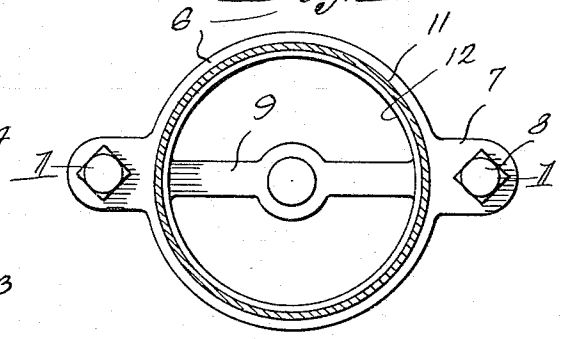


Fig. 3.

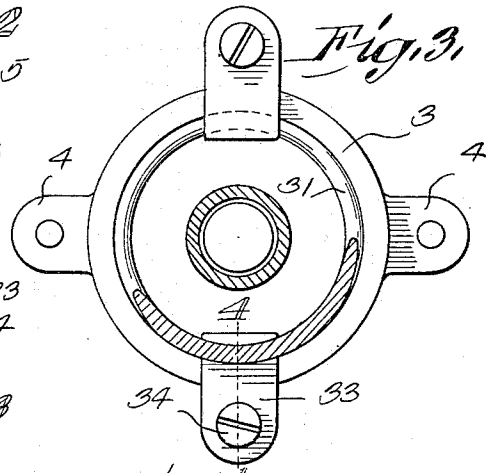
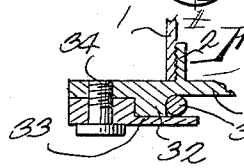


Fig. 4.



WITNESSES

R. W. Hoagland

N. L. Coleman

INVENTOR

Leon Helsmoortel,

BY Richard Bowen.

ATTORNEY

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

L. HELSMOORTEL.

BOMB.

APPLICATION FILED APR. 27, 1918.

1,282,574.

Patented Oct. 22, 1918.

2 SHEETS—SHEET 2.

Fig. 5.

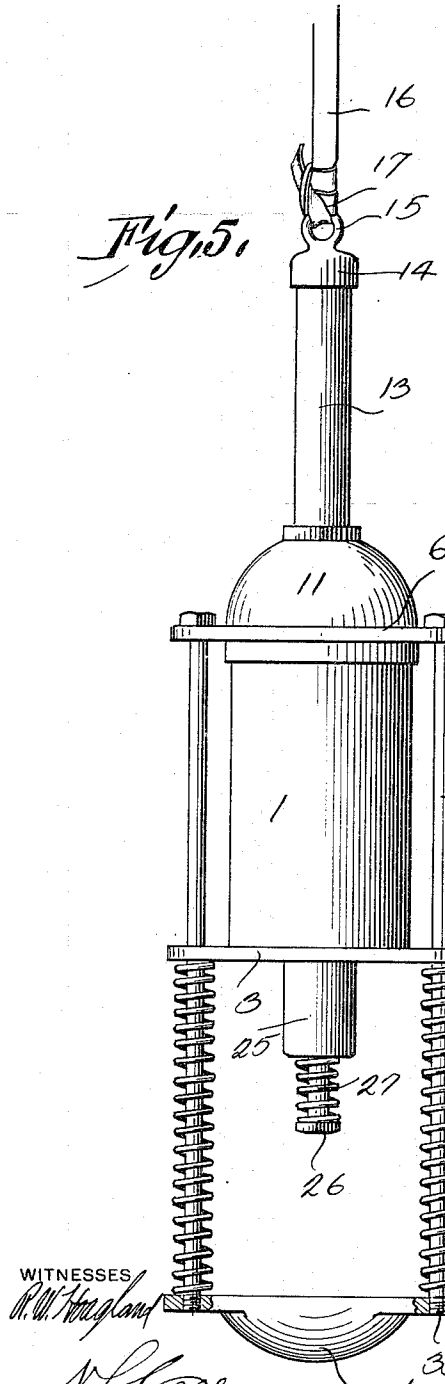


Fig. 7.

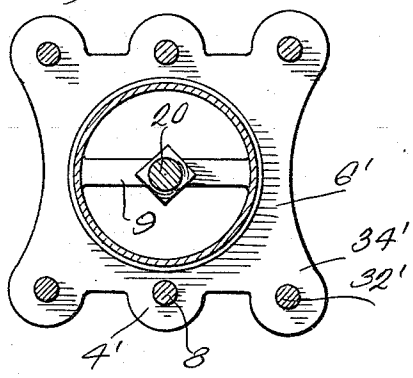
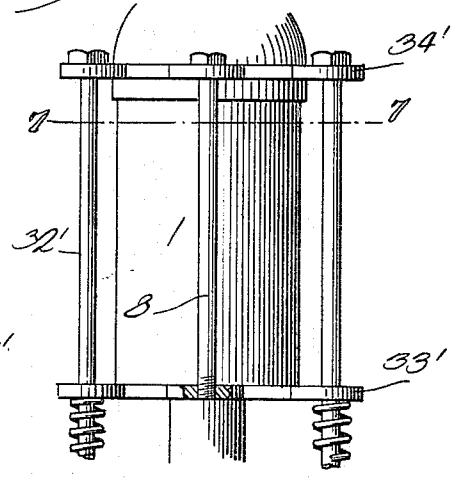


Fig. 6.



WITNESSES

R. W. Hoagland

N. L. Coldamer

INVENTOR

Leon Helsmoortel,

BY Richard Bowen.

ATTORNEY

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

LEON HELSMOORTEL, OF BROOKLYN, NEW YORK.

BOMB.

1,282,574. Specification of Letters Patent. Patented Oct. 22, 1918.

Application filed April 27, 1918. Serial No. 231,119.

To all whom it may concern:

Be it known that I, LEON HELSMOORTEL, a subject of the King of Belgium, residing at Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Bombs, of which the following is a specification.

This invention relates to ammunition and explosives, and more especially to bombs; and the object of the same is to produce a bomb which explodes on impact but which is provided with cushioning means for throwing it above the ground or away from the surface against which it hits, the object being to cause explosion to take place above the surface of the earth. It is well known that many high explosives and more especially dynamite, expend a large percentage of their energy downward when the explosion takes place, with the result that if a bomb is dropped onto the ground from overhead a considerable hole is made in the earth and no damage done in that direction. The basic idea of my invention is to cause the bomb to bounce off the ground and explode at some distance above the surface, so that its fragments may be scattered in all directions rather than that a considerable portion of them will be embedded in the earth and loose their usefulness.

Details are set forth in the following specification and claims, and attention is invited to the accompanying drawings, wherein:—

Figure 1 is a vertical section through one type of this invention,

Figs. 2 and 3 are cross sections on the lines 2—2 and 3—3 of Fig. 1, and

Fig. 4 is a detailed section on the line 4—4 of Fig. 3,

Fig. 5 is a side elevation of another type of this invention,

Fig. 6 a side elevation of a portion thereof at right angles to the position in which it is seen in Fig. 5, and

Fig. 7 a cross section on the line 7—7 of Fig. 6.

The body of this device comprises a shell or casing 1 which by preference is cylindrical as shown, screwed at its lower end onto a collar 2 upstanding from a base plate 3 which has radial ears 4. The casing is also screwed at its upper end into a collar 5 depending from an annular cap plate 6 also having radial ears 7 connected with the ears 4 by rivets or bolts 8, and within the annular plate is a cross bar 9 as best seen in Fig. 2. A dome-shaped cap 11 is screwed at its open lower end around a collar 12 upstanding from the cap plate, and into the upper end of the cap is screwed a tube 13 whose upper extremity in turn is closed as at 14 by a member preferably removable and having an eye 15. One feature of my invention is the means which I employ for disseminating information among the citizens and soldiers in the community attacked. This I do by attaching a tape 16 to said eye by knotting it at one end 17 thereinto, and the tape may well be coiled and laid on the top of the body so that when the bomb is dropped from an aeroplane overhead the coil is dislodged by the upward rush of the air and the tape becomes a long streamer serving in effect as a tail to guide the bomb straight downward. This tape may be of fireproof fabric, although by preference I make it of light strip metal; and it is inscribed with words, legends, and statements in the language of the people attacked so that after an explosion sections of the tape can be found in the debris and the message thereon read. The casing is filled with a high explosive charge by removing the closure 14 from the top of the tube 13 and pouring the charge through the tube. It then passes through the cap 11 and to either side of the cross bar 9 in a manner which will be clear.

A rod 20 is screwed at its upper end at 21 into the center of the cross bar 9 and at its lower end at 22 through the center of the base plate 3. Said lower end is tubular as shown, thereby producing a socket into which the cap 23 may be inserted from below, and a series of fine openings 24 connect the socket above the cap with the interior of the casing 1 containing the explosive. These openings are to contain trains of powder serving in effect as time fuses, so that the result will be that there is a momentary delay between the time the cap is fired and the time the explosive charge is fired. The protruding lower end of the rod and the head of the cap 23 are inclosed within a cup 25 which is preferably screwed onto the rod as shown in Fig. 1, and in the lower end of the cup is slidably mounted the firing pin 26 whose point is disposed upward toward but spaced slightly from the cap and whose head is at the lower end, a coiled expansive spring 27 holding this pin in its normal position as shown. When it is driven upward the cap is fired and this starts the time fuse

which perhaps a half second later explodes the charge within the body so that fragments of the shell or bomb are scattered in all directions. So much of the description as has already been given applies equally well to both sheets of the drawings and both types of my invention.

The numeral 30 designates an anvil carried at the lower end of a stout expansive coiled spring 31 whose coils are of ample size to loosely surround the cup and firing pin, and whose upper coil is held within a shoulder 32 on the lower side of the base plate 3 by means of clips 33 fastened to said base plate by screws 34 as perhaps best seen in Fig. 4. The length of the spring 31 is sufficient to cause the anvil to stand at some distance below the head of the firing pin, and the result is that when the bomb is dropped this end will strike the earth and the nature of the superstructure causes it to descend and compress the spring so that the firing pin strikes the anvil and the charge is exploded as already explained.

In the modification shown on Sheet 2 of the drawings, the base plate 3′ is of slightly different construction, and there are two bolts 8 passing through ears 4′ and four bolts 32′ passing through ears 33′ on the base plate and the ears 34′ on the cap plate 6′. These four bolts are rather long and their lower ends extend downward beneath the base plate and are screwed at 35′ into ears 36′ on the anvil 30′, their lower ends being surrounded by stout expansive springs 31′ between the ears 33′ and 36′ respectively. In other words, instead of a single large coiled spring 31 as shown in Fig. 1 there are four small coiled springs 31′, but these are mounted on extensions of the rods or bolts 32′ which serve as guides therefor. The action is substantially the same, and the upward movement of the anvil drives the firing pin upward and explodes the cap.

With a device of this kind dropped from overhead or perhaps thrown into the street or against a wall, the impact of the anvil causes the firing pin to explode the cap 23, and the inertia or momentum of the remainder of the body of the device puts the spring 31 or the springs 31′ under compression so that, in effect, the entire bomb bounces away from the point where it strikes. This consumes a half-second of time, perhaps, and meanwhile the powder train or fuses are burning throughout the length of the openings 24, with the result that the explosion of the charge does not take place until the bomb or shell has bounced off the earth, and therefore the lost effect of so much of the explosion as hitherto produced a large hole in the earth, is now conserved. In other words, the particles at the lower part of the comb are scattered about the surface with their disastrous results on humanity and property, rather than being driven down into the earth and producing a large shell-hole therein. The cap 11 and tube 13 will probably be blown off the top of the device, and carry with them the ribbon or tape 16 with its message to the people attacked. I do not wish to be limited, however, to the use of this tape on particularly this kind of a shell, although I consider it desirable that it be attached to a portion of the shell or bomb which is remote from the part specifically containing the explosive.

The foregoing description and the drawings have reference to what may be considered the preferred, or approved form of my invention. It is to be understood that I may make such changes in construction and arrangement and combination of parts, materials, dimensions, et cetera, as may prove expedient and fall within the scope of the appended claims.

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

1. In a bomb, the combination with a casing for the explosive charge, a base plate closing the lower end of said casing and having radial ears, an annular cap plate at the upper end of said casing also having radial ears, and bolts connecting said ears on the exterior of the casing; of a closure over said cap, and charge exploding means carried by the base plate and actuated by impact of the bomb.

2. In an explosive bomb, the combination with a casing containing a chamber for the explosive charge, and having at its lower portion a cap-recess, the recess being connected with the chamber by fuse openings, and a cap within said recess; of a cup carried beneath the casing in line with the recess, a firing pin slidably mounted through the lower end of the cup, an anvil in line with the firing pin, and yielding means holding the anvil spaced from said pin but permitting it to strike the same on impact of the bomb.

3. In a bomb, the combination with a casing containing the explosive charge, a cap, and a firing pin; of an anvil in line with said firing pin, and yielding supporting means holding said anvil remote from the firing pin but permitting it to strike the same on impact.

4. In a bomb, the combination with a casing containing an explosive charge, a cap in its lower end, and a time fuse between the cap and charge; of a movably mounted firing pin beneath the cap, an anvil beneath and spaced from the firing pin, and spring means holding the anvil remote from said pin but capable of yielding on impact of the anvil with an object struck, whereby the anvil actuates the firing pin and said means causes the rebound of the bomb.

5. In a bomb, the combination with a body

containing an explosive charge; of a cushioning spring at the front end of the body compressed on impact to produce rebounding of the shell, a time fuse for igniting said charge, a cap for igniting said fuse, a firing pin for exploding said cap, and an anvil at the forward end of said spring adapted to actuate said firing pin at the moment of impact, for the purpose set forth.

6. In an explosive bomb, the combination with top and bottom plates, a casing connecting them and containing the explosive charge, a rod connecting the plates within said casing and made tubular at its lower portion to produce a cap-recess, the recess being connected with the chamber by fuse openings, and a cap within said recess; of a cup beneath the bottom plate inclosing the recessed end of said rod, a firing pin slidably mounted through the lower end of the cup, an anvil in line with the firing pin, and yielding means holding the anvil spaced from said pin but permitting it to strike the same on impact of the bomb.

7. In a bomb, the combination with a casing for the explosive charge, a base plate closing the lower end of said casing and having radial ears, an annular cap plate at the upper end of said casing also having radial ears and a diametric cross bar, and bolts connecting said ears on the exterior of the casing; of a dome-shaped cap secured upon the cap plate and overlying the upper end of the casing, a tube rising from said cap, a closure at the upper end of the tube, and charge exploding means carried by the base plate and actuated by impact of the bomb.

8. In a bomb, the combination with a casing for the explosive charge, a base plate closing the lower end of said casing and having radial ears, an annular cap plate at the upper end of said casing also having radial ears and a diametric cross bar, and bolts connecting said ears on the exterior of the casing; of a dome-shaped cap secured upon the cap plate and overlying the upper end of the casing, a tube rising from said cap, a closure at the upper end of the tube, a tubular element fixed to said base plate and adapted to contain a cap, a cup screwed onto the protruding lower end of said element, a firing pin slidably mounted through the lower end of said cup with its point adjacent the cap and its head at the bottom, and a coiled expansive spring on the shank of said pin between its head and the lower end of said cup.

In testimony whereof I affix my signature in presence of two witnesses.

LEON HELSMOORTEL.

Witnesses:
WM. ZEAMAN,
JOHN E. BURCH.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."