No. 674,509. Patented May 21, 1901.

R. MACMARTIN.

EXPLOSIVE SHELL.

(Application filed Sept. 1, 1900.)

(No Model.)

Fig. 1.

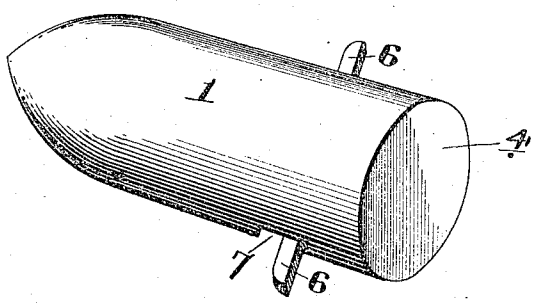


Fig. 2.

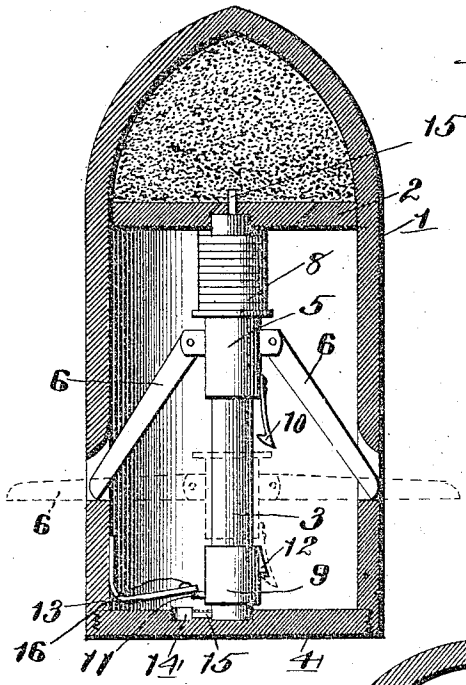


Fig. 3.

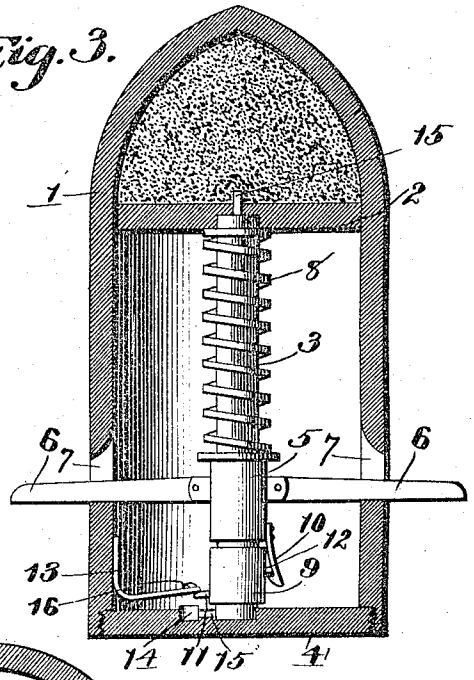
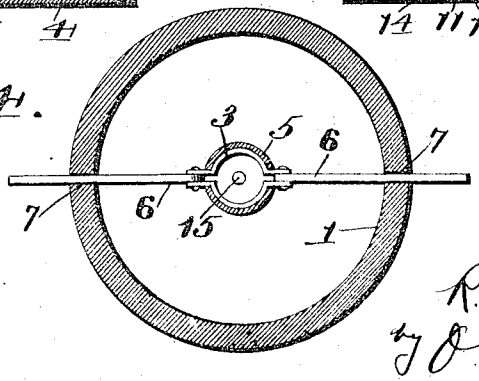


Fig. 4.



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ROBERT MACMARTIN, OF TOLEDO, OHIO.

EXPLOSIVE SHELL.

SPECIFICATION forming part of Letters Patent No. 674,509, dated May 21, 1901.

Application filed September 1, 1900. Serial No. 28,790. (No model.)

To all whom it may concern:

Be it known that I, ROBERT MACMARTIN, a citizen of the United States, residing at Toledo, in the county of Lucas and State of Ohio, have invented a new and useful Explosive Shell, of which the following is a specification.

My invention relates to explosive shells for warfare; and it has for its object to provide a shell with means for firing or exploding it whenever said means come in contact with an obstruction or object of any kind—as, for instance, the sides of a ship or walls of a fort; and it consists in the improved construction and novel arrangement of parts of a shell, as will be hereinafter more particularly set forth.

In the accompanying drawings, in which the same reference-numerals indicate corresponding parts in each of the views in which they occur, Figure 1 is a perspective view of my improved shell. Fig. 2 is a longitudinal view of the same ready for firing from the gun. Fig. 3 is a similar view after firing, the parts being shown in position for exploding the shell in dotted lines; and Fig. 4 is a cross-sectional view.

Referring more particularly to the drawings, 1 indicates the shell, which may be of any desired shape and size. A partition 2 divides the shell into two compartments, one of which is for the charge of explosive and the other one is for the firing mechanism.

The form of mechanism I prefer comprises a post or standard 3, arranged substantially axially between the partition 2 and the removable base 4. A sleeve or collar 5 fits loosely upon the standard and has arms 6 pivotally secured thereto at their inner ends. The arms are of such a length that when the collar is at the limit of its movement toward the base the outer ends of the arms will project radially a suitable distance from the sides of the shell to engage with an object as the shell moves forward, the shell being perforated, as at 7, for the projection of the arms; but when the collar is at the limit of its movement in the other direction or toward the point of the shells the arms will be withdrawn into the shell until their ends do not project therefrom. The collar, to which the inner ends of the arms are secured, is preferably formed in sections, which are adapted to be secured around the standard with the ends of the arms secured between their adjacent ends. A coiled spring 8 surrounds the standard between the collar and the partition to normally force the collar toward the base and project the arms beyond the sides of the shell. A second sleeve or collar 9, which I shall call the "firing-sleeve," is fitted loosely upon the standard between the collar 5 and the base and is provided with two shoulders or projections 10 and 11, one of which, 10, is adapted to engage with a catch 12 upon the collar 5 and lock the two together. The other projection 11 is adapted to engage with a spring-hammer 13 and cause it to be moved as to strike a cap or explosive 14, which communicates with the explosive in the point of the shell in any suitable manner, as by a tube or fuse 15. The hammer is preferably L-shaped, with its base securely fastened to the interior of the shell just inside the base 4. The tip is preferably weighted, as shown at 16, where the spring comes in contact with the cap 14.

In using my improved shell the arms or triggers are forced inward as far as they will go and preferably secured by any suitable means to retain them in that position until the shell is ready to be slipped into the gun, the bore of the gun retaining them in that position when loaded until after the gun has been fired. The arms are placed in this retracted position before the firing-sleeve and cap are in position or with the two sleeves on the standard at their greatest distance from each other. As soon as the gun has been fired and the shell leaves the gun the coiled spring forces the collar down until the arms are extended to their utmost limit and the catch projecting beyond its lower end engages with the projection on the firing-sleeve. Now as soon as the arms or triggers strike an obstruction they will be rocked upon the rear wall of the openings in the side of the shell, as upon a fulcrum, and the collar will be moved upon the standard against the tension of the coiled spring. This will cause the firing-sleeve to be drawn up on the standard until its projection raises the end of the hammer some distance from the cap and then slips out from underneath it, thereby permitting the hammer to fly back against the cap and

explode it and ignite the charge of explosive through the fuse or powder-tube. By arranging the parts in this manner it is evident that the shell is fired upon contact with any obstruction which has resistance enough to force back the ends of the arms, and when the shell pierces the sides of a ship or other structure the explosion must take place before the shell has passed through it, thus causing it to do the greatest amount of damage.

Although I have shown what I consider the most desirable manner of constructing my improved shell, yet it is evident that the arms could be made to project from the sides in a different manner from what is shown and the firing mechanism upon the interior might be differently arranged and the cap of explosive could be arranged adjacent to the charge in the point of the shell. Therefore I reserve the right to make such changes and alterations as come within the scope of my invention.

Having described my invention, I claim—

1. In a shell, the combination with a casing, of a partition therein, a charge of explosive on one side of the partition, a standard arranged on the other side, mechanism for firing the explosive, a collar loosely mounted on the standard, means carried by said collar for actuating the firing mechanism, and means for operating the collar a portion of which projects through the shell in position to engage with an obstruction.

2. In a shell, the combination with a casing, of a partition therein, a charge of explosive on one side of the partition, a standard on the other side between the partition and the end of the shell, mechanism for firing the explosive, a collar loosely mounted on the standard, means carried by said collar for actuating the firing mechanism, and arms pivotally secured to the collar, the ends of which project through the sides of the casing in position to be engaged by an obstruction.

3. In a shell, the combination, with a casing, of a partition therein, a charge of explosive on one side of the partition, a standard on the other between the partition and the end of the shell, a collar and a sleeve on the standard provided with means for detachably connecting them together, the collar being spring-pressed and the sleeve being provided with means for firing the explosive, and arms actuating the means pivotally secured to the collar and projecting through the sides of the casing in position to be engaged by an obstruction.

4. In a shell, the combination, with a casing provided with two compartments, a charge of explosive in one of the compartments and firing mechanism in the others, said firing mechanism comprising a standard, a spring-pressed collar and a sleeve on the standard, means for detachably connecting the sleeve to the collar, a hammer adapted to be operated by the sleeve for igniting the explosive, and arms on the collar projecting through the sides of the casing in position to be engaged by an obstruction.

5. In a shell, the combination, with a casing provided with a charge of explosive, of a standard, a spring-pressed collar and a sleeve on the standard, the collar being provided with means for moving it against the tension of the spring, and the sleeve being provided with two projections, a catch on the collar for engaging with one of said projections, and a spring-hammer in position for its free end to be engaged by the other projection said hammer being provided with means for firing the explosive.

6. In a shell, the combination, with a perforated casing provided with a charge of explosive at one end and an exploding cap at the other, a fuse from the cap to the charge, an L-shaped spring-hammer secured to the casing in position for its free end to engage with and explode the cap, a standard in the casing, a collar and a sleeve thereon the sleeve being provided with two projections, one of which is adapted to engage with the free end of the hammer, a catch on the collar for engaging with the other projection, a coiled spring on the standard above the collar, and arms pivotally secured to the collar and projecting through the perforations in the side of the casing in position to be engaged by an obstruction.

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Witnesses:
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