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EXPLOSIVE SHELL.

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1,340,871.

Patented May 25, 1920.

Fig. 1.

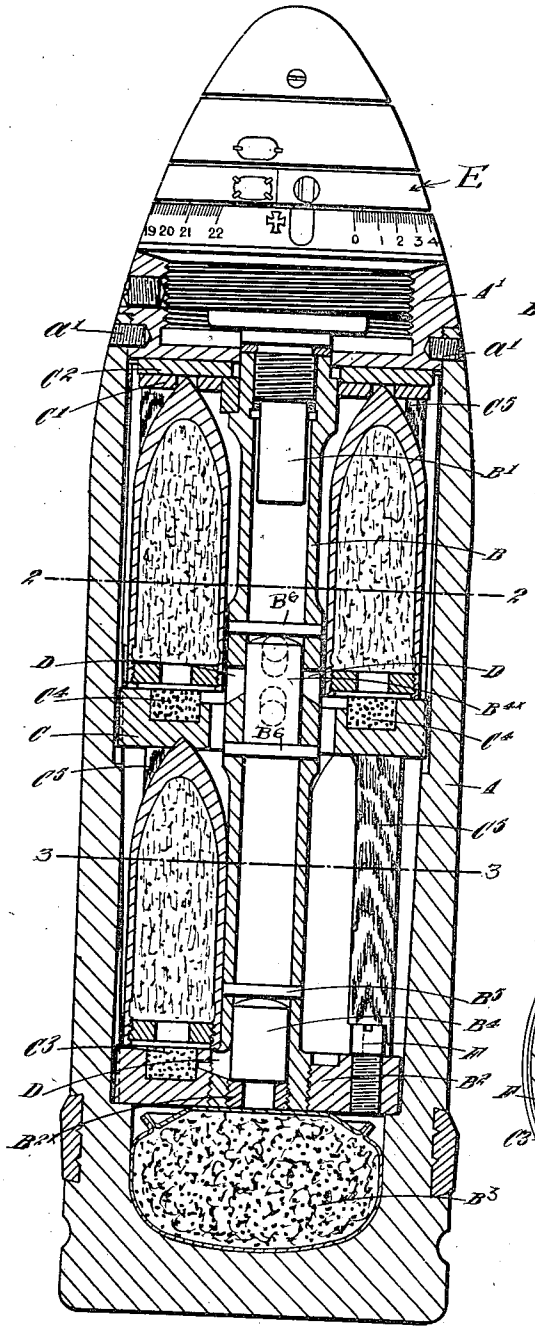


Fig. 2.

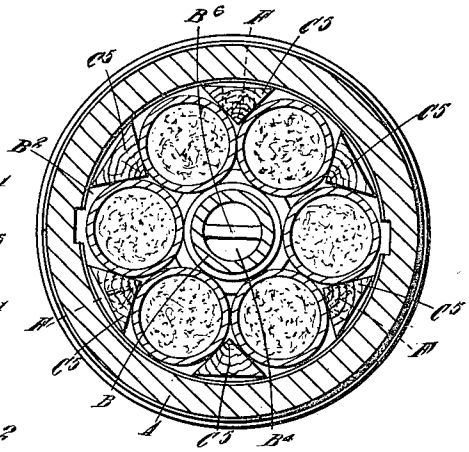
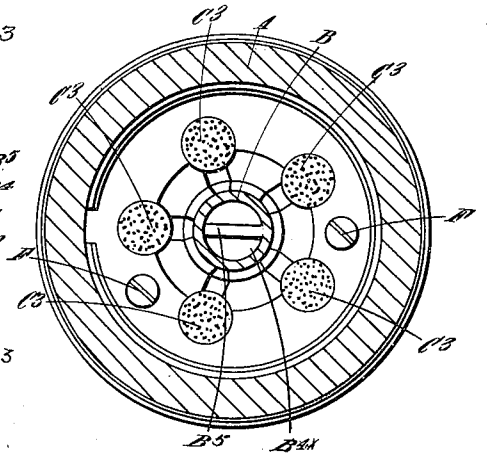


Fig. 3.



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UNITED STATES PATENT OFFICE.

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EXPLOSIVE SHELL.

1,340,871. Specification of Letters Patent. Patented May 25, 1920.

Application filed June 21, 1917. Serial No. 176,115.

To all whom it may concern:

Be it known that we, FRANCIS HENRY BARKER and Sir GEORGE THOMAS BUCKHAM, knight, both subjects of the King of Great Britain residing at Vickers House, Broadway, Westminster, in the county of London, England, have invented certain new and useful Improvements in or Relating to Explosive Shells, of which the following is a specification.

This invention relates to explosive shells intended for use against airships and balloons.

According to the invention the shell contains a number of projectiles or bullets which are projected from the shell by a bursting charge ignited by a fuse and which carry an incendiary composition intended to ignite the gas within the airship or balloon when the bullets penetrate the envelop thereof. The said bullets are made hollow to receive the incendiary composition and are arranged within the shell in a number of rows around the central flash tube which transmits the flash from the magazine of the fuse through a primer to the bursting charge situated in the rear part of the shell.

In order that the said invention may be clearly understood and readily carried into effect, we will describe the same more fully with reference to the accompanying drawings in which:—

Figure 1 is a longitudinal section of a shell constructed in accordance with our invention.

Fig. 2 is a section taken approximately on the line 2, 2 of Fig. 1, and

Fig. 3 is a section taken approximately on the line 3, 3 of Fig. 1 but with the bullets removed.

A is the body of the shell, A′ is the fuse socket or head screwed into the nose of the shell and fixed by means of screws *a′* or otherwise to the body A.

B is the aforesaid central flash tube, which at its forward end carries a primer B′ and at its rear end is attached to a base plate B^2 between which and the base wall of the shell body the bursting charge B^3 is situated. A steel plug B^{2x} having a central hole is screwed into the rear end of the flash tube B. A shalloon primer B^4 rests on the steel plug B^{2x} and is secured in position by means of a copper pin B^5, while one or more intermediate shalloon primers B^{4x} are held in position between copper pins B^6, B^6 or by other suitable means.

In the example shown the shell contains two rows of incendiary bullets arranged around the central flash tube B, the rear row containing five bullets and the front row six bullets. Obviously however the number of bullets in each row as well as the number of rows will vary in accordance with the size of the shell and the bullets. The said rows are separated by a pellet plate C upon which the bases of the bullets in the front row bear, and this plate is formed on the underside with recesses to receive the points of the bullets in the rear row. The points of the bullets in the front row are disposed in perforations or recesses in a steel disk C′ between which and the fuse socket or head A′ a felt washer C^2 is situated. Wood supports C^5 are placed between the bullets in both rows and a wood block may, under certain conditions, be used as a filling for the fuse socket or head.

The base plate B^2 and the pellet plate C have keys formed on their periphery for engaging with keyways cut in the shell body, these keys and keyways serving to rotate the whole of the incendiary bullets simultaneously with the shell body during the spin given to the latter by the rifling of the gun, thus preventing any drag between the bullets and the shell body. Guide screws F engaging with slots in the wood supports C^5 also help to rotate the bullets with the shell body.

The base plate B^2 and the pellet plate C are provided with powder pellets C^3 and C^4 respectively. A recess is cut in the upper face of the base plate B^2 and of the pellet plate C, these recesses being of such a diameter that portions of the powder pellets C^3 and C^4 are exposed. Flash holes D are bored through the central flash tube B to convey the flash from the shalloon primers B^4 B^{4x} to the powder pellets C^3, C^4 respectively.

The action is as follows:—The flash from the fuse E is conveyed by means of the primer B′ and the shalloon primers B^4, B^{4x} to the charge B^3 which bursts the shell, thus dispersing the bullets. The composition

within the bullets is ignited by the flash from the shalloon primers B^4, B^{4x} passing through the lateral perforations or flash holes D in the central flash tube B, and igniting the powder pellets C^3, C^4.

The design of the shell, the packing between the various parts and the means for transmitting the flash from the fuse to the bursting charge may be in accordance with any of the methods adopted in connection with shrapnel, star or other shell.

The bullets are made of a form and material capable of penetrating the outer cover of a Zeppelin or other airship, and the incendiary composition is retained in position within the bullets by metal plugs secured by the bases of the bullets being turned over, or by any other suitable method. Before loading the shell into the gun, the time portion of the fuse is set to act at some predetermined distance short of the target.

What we claim and desire to secure by Letters Patent of the United States is:—

1. In an explosive shell the combination of a bursting charge, means for igniting said charge, a number of hollow bullets which are open only at their base, incendiary composition carried by said bullets, means for igniting the incendiary composition and means for causing said bullets to rotate as a whole with the shell body during the flight of the shell.

2. In an explosive shell, the combination of a bursting charge, means for igniting said charge, a number of hollow bullets which are open only at their base, incendiary composition carried by said bullets, and means independent of the bursting charge for igniting the incendiary composition of the bullets.

3. In an explosive shell, the combination of a bursting charge, means for igniting said charge, a number of hollow bullets which are open only at their base, incendiary composition carried by said bullets, means independent of the bursting charge for igniting the incendiary composition of the bullets, and means for causing said bullets to rotate as a whole with the shell body during the flight of the shell.

4. In an explosive shell, the combination of a fuse, a flash tube arranged within the shell, a bursting charge communicating with the flash tube, a number of rows of hollow bullets containing an incendiary composition and disposed around the flash tube, a plate separating one row of bullets from another, powder pellets carried by said plate for igniting the incendiary composition of the forward row of bullets and communicating by holes with the flash tube, a plate disposed contiguous to the bases of the base row of bullets and powder pellets carried by said last mentioned plate for igniting the incendiary composition of the base row of bullets and communicating by holes with the flash tube.

5. In an explosive shell, the combination of a fuse, a flash tube arranged within the shell, a bursting charge communicating with the flash tube, a number of rows of hollow bullets containing an incendiary composition and disposed around the flash tube, a plate separating one row of bullets from another, a second plate arranged contiguous to the bases of the base row of bullets, powder pellets carried by said plates and disposed contiguous to the open ends of the bullets and means for igniting said pellets.

6. In an explosive shell, the combination of a fuse, a flash tube arranged within the shell, a bursting charge communicating with the flash tube, a number of rows of hollow bullets containing an incendiary composition and disposed around the flash tube, a plate separating one row of bullets from another and formed to receive the points of the adjacent bullets, a second plate arranged contiguous to the bases of the base row of bullets, and powder pellets carried by said plates for igniting the incendiary composition and communicating by holes with the flash tube.

7. In an explosive shell, the combination of a fuse, a flash tube arranged within the shell, a bursting charge communicating with the flash tube, a number of rows of hollow bullets containing an incendiary composition and disposed around the flash tube, a plate separating one row of bullets from another and formed to receive the points of the adjacent bullets, a second plate arranged contiguous to the bases of the base row of bullets, powder pellets carried by said plates for igniting the incendiary composition and communicating by holes with the flash tube and shalloon primers disposed in said flash tube contiguous to said holes.

8. In an explosive shell, the combination of a fuse, a flash tube arranged within the shell, a bursting charge communicating with the flash tube, a number of rows of hollow bullets containing an incendiary composition and disposed around the flash tube, a plate separating one row of bullets from another and formed to receive the points of the adjacent bullets, a second plate arranged contiguous to the bases of the base row of bullets, powder pellets carried by said plates for igniting the incendiary composition and communicating by holes with the flash tube, and another plate arranged contiguous to the fuse and formed to receive the points of the adjacent bullets.

In testimony whereof, we affix our signatures.

FRANCIS HENRY BARKER.
GEORGE THOMAS BUCKHAM.