R. N. COOK.

EXPLOSIVE SHELL.

APPLICATION FILED MAY 16, 1918.

1,367,464. **Patented Feb. 1, 1921.**

Fig. 1

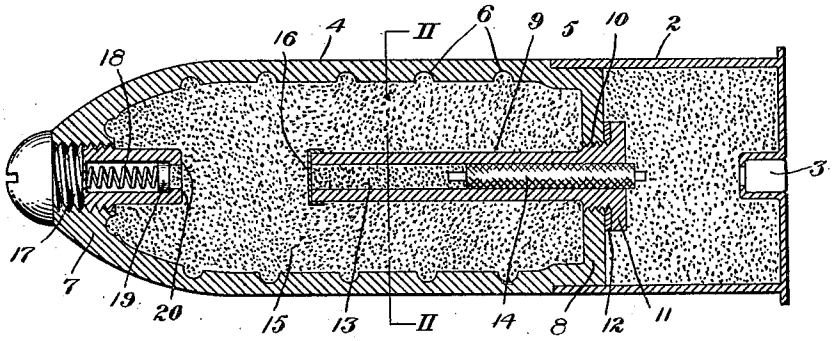


Fig. 2.

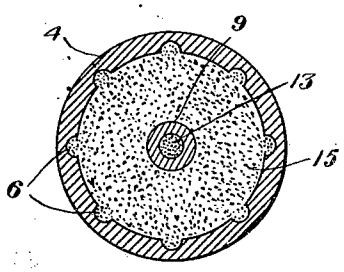
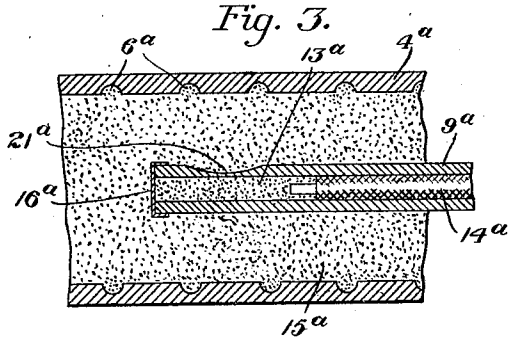


Fig. 3.



WITNESSES

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EXPLOSIVE SHELL.

1,367,464. Specification of Letters Patent. Patented Feb. 1, 1921.

Application filed May 16, 1918. Serial No. 234,975.

To all whom it may concern:

Be it known that I, ROBERT N. COOK, a citizen of the United States, residing at Aspinwall, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Explosive Shells, of which the following is a specification.

My invention consists of an improvement in explosive projectiles, of the general class adapted to be propelled to any desired point, and to be exploded by ignition of a time fuse. The device is adapted and intended for use in connection with a firing gun of suitable design and proportions, generally similar to the usual breech loading rifle or shot gun, but of a gage sufficiently large to admit of the insertion in the breech of the entire projectile and its cartridge shell.

The device, in its entirety, comprises a cartridge shell containing a sufficient amount of explosive material as powder, and the projectile itself, interfitting with the shell, and adapted to be propelled by discharge of the cartridge through the barrel of the gun as directed toward any point of use, the projectile itself containing a time fuse which is ignited by the primary cartridge discharge, and a priming and a main body of explosive substance adapted to explode the projectile in the manner of such devices, or similar to shrapnel shells.

Referring to the drawings, illustrating preferred embodiments of the invention:—

Figure 1 is a central longitudinal sectional view of the entire projectile, of substantially full size;

Fig. 2 is a cross sectional view on the line II, II of Fig. 1; and

Fig. 3 is a sectional partial detail view similar to Fig. 1 but showing a modified construction.

In the drawings, 2 is the cartridge shell adapted to be inserted in the breech of the firing gun and fired in the usual way by primer 3. 4 is the shell itself comprising a hollow casing, the walls of which are sufficiently thin and of a suitable material adapting it to be broken into a number of fragmentary pieces upon internal explosion. If desired, the shell may be grooved or weakened in any suitable manner, as indicated at 6, as is customary in devices of this type whereby to facilitate its separation into small fragments upon explosion.

The rear end of the shell is in interfitting telescoping engagement with the outer end of shell 2, as indicated at 5, so that when assembled the entire device resembles an ordinary cartridge, and is adapted to fit within the breech and barrel of the firing gun. The other end of the shell 4 may, if desired, be rounded as shown, or shaped in any other suitable manner. The ends of the device are closed by terminal walls 7 and 8 respectively, and preferably reinforced as shown.

A centrally arranged tube 9 extends inwardly of the shell, and is fixedly secured in the rear head 8 by screw threaded engagement, as at 10, and a turning head 11 with an intervening packing gasket 12 of asbestos or other suitable material.

Tube 9 provides by its central opening for a priming charge 13 of suitable explosive material, as powder, and an igniting fuse 14 extends from the rear end of the shell forwardly and terminates at any desired point, depending upon the length of the fuse and the desired time of explosion.

The forward terminal of the fuse extends into the priming charge 13 and its other terminal extends into the contents of cartridge shell 2, whereby it is immediately ignited upon explosion of the powder, or other charge therein.

The main interior body of the shell is filled with a highly explosive material 15, as powder, dynamite, T. N. T., or other suitable substance, and this main charge is ignited by the priming charge 13 through the inner terminal opening of the tube 9, which is temporarily closed by a thin cap 16 of lead or tin. The main explosive charge 15 is inserted within the shell through a central opening at its outer end, which is then closed by a screw plug 17.

Said plug is centrally hollow and is provided with a spring 18 and a terminal disk 19 retained in position by turned over lugs 20 of the plug shell. The object of such construction is to provide a resilient compensation for internal expansion, the device also providing in itself a separable shrapnel element upon explosion.

In Fig. 3 I show a modified construction in which the tube 9^a is provided with a very thin wall portion 21^a, as by grinding the tube at one side, providing a weakened portion which will be blown out upon ignition of the explosive 13^a and exploding the main charge 15^a when ignited by the fuse 14^a. Such mod-

ification may be used either with or without the temporary closing cap 16ª, as desired.

With either construction, upon firing the shell, the time fuse, of suitable length, will effect explosion of the priming and main charges at the desired time limit, whereupon, the shell will be exploded at the time and location intended. The matter of locating the point of discharge of the shell is greatly facilitated, and its range of travel is much amplified, and accuracy of placement is practically insured, by making it in the manner described, so that it can be fired from a gun in the manner of an ordinary bullet or other projectile. The gun itself may be of simple, light, and easily portable construction, and needs no further description.

The shell may be made of any desired or suitable dimensions, design, or quality of material, adapting it to its intended use, and may be furnished with time fuses of varying length, suitably indicated on the shell itself, so as to adapt it to selective use at different ranges.

The invention may be variously changed and modified by the skilled mechanic in different details of construction, design or other features, but all such changes are to be considered as within the scope of the following claims.

What I claim is:—

1. In combination, a main explosive shell having its interior surface provided with series of weakening grooves for facilitating explosive fracture of the main shell, a breech shell telescopically engaging the main shell and provided with a main propelling charge and an igniting cap, a fuse conduit extending from the interior of the breech shell to the interior of the main shell having within its rear portion a fuse and within its forward portion a primary explosive charge, and a conmpensator in the main shell.

2. In an explosive projectile, a main explosive shell having an explosive charge and a terminal closure provided with an elastic compensator, a firing breech shell having a propelling charge, a conduit extending from the breech shell charge to the explosive shell charge having a priming charge, and a fuse adapted to ignite said priming charge from the breech shell charge.

In testimony whereof I hereunto affix my signature.

ROBERT N. COOK.