No. 612,496. Patented Oct. 18, 1898.

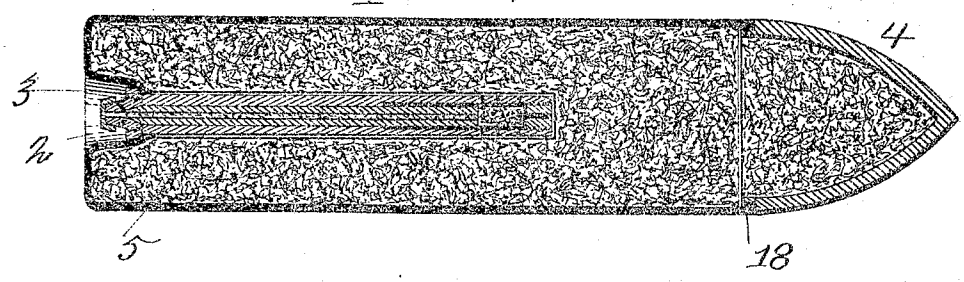
G. M. HATHAWAY.

HIGH EXPLOSIVE SHELL.

(Application filed July 11, 1896. Renewed Mar. 18, 1898.)

(No Model.)

Fig. 1.



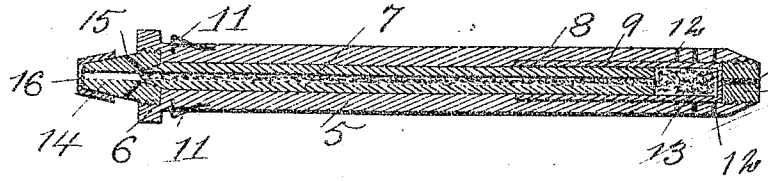


Fig. 2.

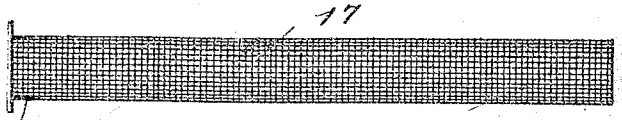
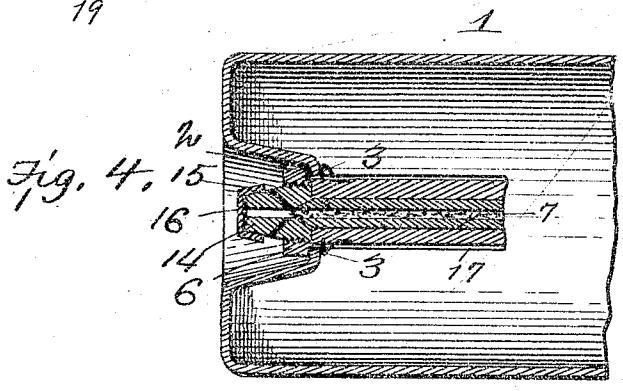


Fig. 3.

Fig. 4.



WITNESSES-

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HIGH-EXPLOSIVE SHELL

SPECIFICATION forming part of Letters Patent No. 612,496, dated October 18, 1898.

Application filed July 11, 1896. Renewed March 18, 1898. Serial No. 674,396. (No model.)

To all whom it may concern:

Be it known that I, GEORGE M. HATHAWAY, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in High-Explosive Shells; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The invention relates to certain improvements in explosive shells; and it consists of a specially-constructed case adapted to contain an explosive material and a detonating cap which is adapted to be exploded by a fuse which is affixed thereto and protected by a suitable casing, the fuse being fired by the explosion of a percussion-cap seated on a nipple fixed in one end of said casing, as will be hereinafter more fully explained, and specifically set forth in the claims.

The principal object of the invention is to produce a shell that can be carried and handled with perfect safety, but which when fired from a gun is caused to explode with terrific force.

Another object of the invention is to provide for the positive explosion of the shell after it leaves the gun.

These objects are attained by the means illustrated in the accompanying drawings, in which—

Figure 1 represents a longitudinal sectional view of my improved shell complete; Fig. 2, a similar view, somewhat enlarged, of the firing device detached; Fig. 3, a plan view of the wire-gauze sheath, and Fig. 4 an enlarged sectional view of the rear portion of the shell.

My improved shell is particularly designed to be fired from a specially-constructed gun, (not shown,) and when thus used is an effective means of defense, especially against train-robbing, it being the purpose of the invention to provide a means whereby trainmen or employees of a railroad may successfully defend themselves against would-be train-robbers.

Referring to the drawings, the numeral 1 indicates the case, which consists of a tube constructed of any suitable material, having one end formed with a central recess 2, provided with a central aperture 3, and the other end open and internally screw-threaded to receive a screw-threaded point 4.

The firing device consists of a casing 5, which is constructed of any suitable material, preferably wood, and is provided at one end with a flanged head 6, which is adapted to be seated in the central recess 2 of the case 1 when the firing device is inserted through the aperture 3 into said case.

The numeral 7 indicates a fuse-stock which carries at one end a detonating cap 8, the bore of the casing being counterbored, as at 9, to provide for the reception of said cap, the diameter of which is greater than that of the fuse-stock. The said fuse-stock is inserted into the casing through the counterbored end, and a plug 10 is employed to close the opening. The casing is provided with springs 11, which serve in connection with the flanged head to firmly hold the firing device against accidental displacement when inserted into the case 1, and perforations 12 are made in the inner end of said casing to permit the fulminate 13 to flash through into the explosive material when the cap is exploded. The flanged head 6 is also counterbored to receive a nipple 14, which is secured therein and provided with vents 15, which permit the escape of the gas during the burning of the fuse. The nipple carries a percussion-cap 16, which is adapted to be exploded by the hammer of the gun from which it is fired.

The case is charged with a high explosive, preferably that known as "joveite," and in charging the same a sheath or core 17, of a length equal to that of the firing device, is first inserted through the opening 3 into the case of the cartridge. The explosive is then slightly packed in the case around said sheath or core, and when filled a thin disk 18 is used to close the open end of said case. The point 4 is then filled and screwed into the end of the case. If the explosive material employed is joveite, the sheath or core is solid and may be withdrawn after the case has been properly charged, as said material possesses hardening qualities; but if the material is other than joveite the sheath or core is made of wire-gauze, as shown in Fig. 3 of the drawings, and remains in the case, the firing de-

vice being inserted therein, said sheath or core being provided with slots 19, through which the springs 11 project to hold said firing-device in position.

The firing device is designed to be kept detached from the charged case and only inserted just previous to being placed within the gun. Both the case and firing device may be kept conveniently at hand, and when required for use the firing device is quickly inserted into the case, and when placed into a gun and fired the explosion of the percussion-cap will set fire to the fuse (which extends well up into the nipple) and cause the detonating cap to explode the charged shell with terrific force.

Time-fuses are employed, so that the cartridge may be exploded at any predetermined time during its flight, and the destructiveness of the missile may be increased by placing in the case or its point any number of small balls or bullets.

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

1. In a shell, the combination with a suitable case, of a removable firing device consisting of a tubular casing having a nipple at one end and carrying a screw-threaded perforated plug at the other end, a fuse carrying a detonating cap at one end, located in said tubular casing, and means for holding the firing device within the shell-case.

2. In a shell, the combination with a suitable case, of a removable firing device consisting of a tubular case carrying a nipple at one end and a screw-threaded perforated plug at the other end, said tubular case provided with communicating passages, and a fuse, fitted at one end with a detonating cap, located within the tubular case, substantially as specified.

3. In a shell, the combination, with a case formed with an apertured recessed end and provided with a removable point, of a firing device composed of a fuse and a detonating cap inclosed by a casing provided with securing devices and carrying a capped nipple provided with gas-vents, and a wire-gauze sheath, substantially as specified.

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

GEORGE M. HATHAWAY.

Witnesses:
J. R. NOTTINGHAM,
THOS. J. STALEY.