H. H. C. DUNWOODY.

ARMOR PIERCING SHELL.

APPLICATION FILED MAR. 27, 1915.

1,146,484.

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Fig. 1.

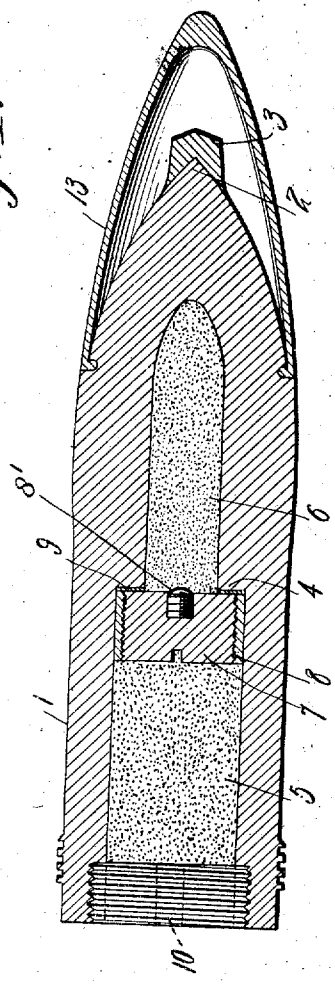
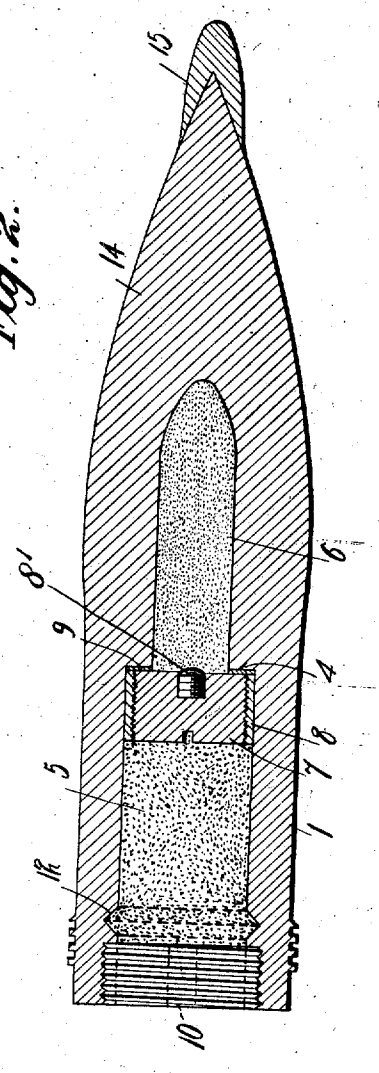


Fig. 2.



Witnesses

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UNITED STATES PATENT OFFICE.

HENRY H. C. DUNWOODY, OF WASHINGTON, DISTRICT OF COLUMBIA.

ARMOR-PIERCING SHELL.

1,146,484. Specification of Letters Patent. Patented July 13, 1915.

Application filed March 27, 1915. Serial No. 17,420.

To all whom it may concern:

Be it known that I, HENRY H. C. DUNWOODY, Brigadier General, U. S. Army, retired, a citizen of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Armor-Piercing 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.

This invention relates to armor piercing shells for ordnance and has for its object to provide a shell which will be comparatively inexpensive to produce and more effective in use than those heretofore proposed.

With these and other objects in view the invention consists in the novel details of construction and combinations of parts, more fully hereinafter disclosed and particularly pointed out in the claims.

Referring to the accompanying drawings forming a part of this specification in which like numerals designate like parts in all the views, Figure 1 is a diagrammatic sectional view of an armor piercing shell made in accordance with my invention; and Fig. 2 is a view similar to Fig. 1 illustrating a slightly modified form of the invention.

1 indicates the body portion of any suitable shell, preferably provided with the chilled armor piercing point 2 and the soft steel cap 3. The cavity of the shell is made of two diameters as shown, providing a substantial shoulder 4 between them. The larger or rear cavity 5 is filled with any suitable explosive and the forward or smaller cavity 6 is preferably filled with a suitable high explosive capable of being detonated after impact. Between the two cavities is the steel plug or block 7 firmly resting upon the shoulder 4 and provided with any suitable fuse 8′, for exploding or detonating the compound in the cavity 6.

Since armor piercing shells of necessity must be put through a chilling or hardening process, more or less difficulty is experienced in getting a tight fit for the plug 7, in that if screw threads are formed on the interior of the cavity 5 before the hardening process they are apt to be distorted during the chilling operation and therefore to not form as tight a joint as is desirable. In order to avoid the expense of reshaping the said screw threads after the hardening operation, I mold the cavities 5 and 6 in a manner well known and when necessary before the hardening operation I mill out a seat for a screw threaded soft metal tube 8. After the shell has gone through the hardening process the tube 8 may be slipped into place either while the shell is hot and expanded and the tube 8 is cold, or the tube 8 may be forced into place by means of a hydraulic jack. When the said tube 8 is in place the plug 7 may be readily screwed into place and jammed tightly against the shoulder 4. If desired a packing material 9 such as lead or other suitable material may be employed to insure that no gas leaks from the cavity 5 into the cavity 6. A suitable base fuse 10 is employed to ignite the charge in the cavity 5 and it is preferred to use a fuse 8′ of the delay action type so that the explosion of the charge in the cavity 6 will come an instant later than the explosion of the charge in the cavity 5.

The operation of the shell will be clear from the foregoing, but may be briefly summarized as follows: The cavity 6 is readily loaded by removing the plug 7 and filling the said cavity 6 whereupon the plug 7 may be screwed firmly into place and the cavity 5 loaded. Upon impact the fuse 10 may be of such a character as to cause an explosion of the charge in cavity 5, which will have the effect of blowing off the rear of the shell and thereby adding an impulse to the penetration energy of the shell and causing the latter to pierce more armor than would otherwise be the case. An instant after impact the fuse 8′ may be detonated or explode the charge 6 according to the character of the charge and the shell having had time to bury itself in the armor this second explosion will be largely utilized in further breaking up or shattering the armor. In order to facilitate the blowing off of the rear of the shell without destroying its penetrating qualities, I may provide the cavity 5 with a weakened portion such as 12, but such weakened portion is not essential to the operation of the invention.

The modified form shown in Fig. 2 is substantially the same as that shown in Fig. 1 except that the wind shield 13 is omitted but the general contour of the forward portion 14 of the shell is the same as that of the cap 13. Also the soft metal cap 15 in Fig. 2 is given a more tapered shape than is the cap 3 in Fig. 1.

What I claim is:

1. An armor piercing shell having a cavity having integral walls comprising a rear portion of a larger diameter and a forward portion of a smaller diameter with an abrupt shoulder between said portions and a solid plug fitting gas tight said larger portion, resting on said shoulder and completely separating said portions, substantially as described.

2. In an armor piercing shell having an integral body portion provided with a rear and a forward cavity of different diameters the combination of an abrupt shoulder integral with said body portion separating said cavities; a screw threaded member near the forward end of the rear cavity; and a solid closing plug engaging said screw threaded member and resting on said shoulder, substantially as described.

3. In a hardened armor piercing shell having an integral body portion provided with forward and rear cavities of different diameters, the combination of an integral abrupt shoulder between said cavities; a hollow screw threaded member fitting the rear cavity and resting against said shoulder; a solid screw threaded plug fitting said hollow member and also resting against said shoulder; an explosive charge in each of said cavities; and means for igniting said charges, substantially as described.

In testimony whereof I affix my signature.

HENRY H. C. DUNWOODY.