Oct. 3, 1944. J. H. CHURCH ET AL 2,359,301

PROJECTILE

Filed March 22, 1941

Fig. 1.

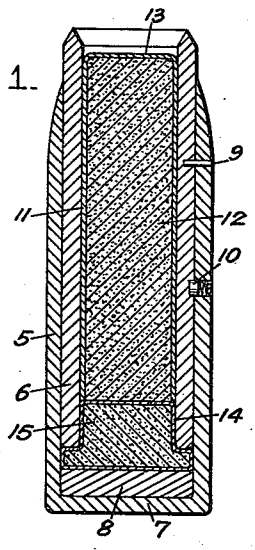


Fig. 2.

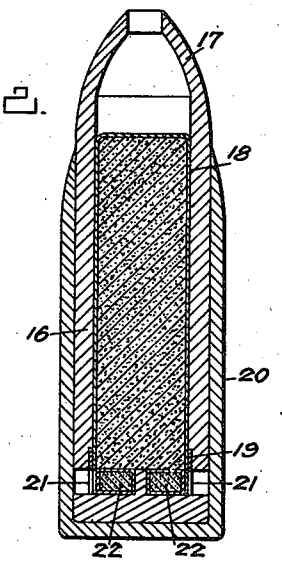
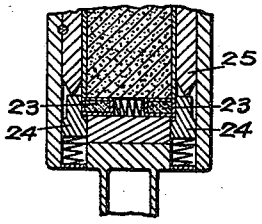


Fig. 3.



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PROJECTILE

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9 Claims. (Cl. 102—56)

(Granted under the act of March 3, 1883, as amended April 30, 1928; 370 O. G. 757)

The invention described herein may be manufactured and used by or for the Government for governmental purposes, without the payment to us of any royalty thereon.

This invention relates to a projectile.

The purpose of the invention is to provide a novel projectile in which controlled timing of the initiation of an explosive charge at its rear end is obtained by a pair of relatively movable members which comprise the body of the projectile.

The invention is further characterized by a novel firing mechanism which is armed during flight of the projectile.

The specific nature of the invention as well as other objects and advantages thereof will clearly appear from a description of a preferred embodiment as shown in the accompanying drawing in which:

Fig. 1 is a longitudinal sectional view of the improved projectile;

Figs. 2 and 3 are modifications thereof.

Referring to Fig. 1 the body of the projectile comprises an outer tubular member 5 and a slidably related inner tubular member 6 assembled with its rear end normally spaced a short distance from the closed base 7 of the outer member and from a cushioning disk 8, for example of lead, fitted therein.

The tubular members are maintained in spaced relation in any known manner, for example by a shear pin 9 and/or a centrifugally operable bolt 10, the purpose being to prevent relative movement of the members on set-back.

A capsule 11 containing an explosive charge 12 is placed in the tube 6 and has its front end 13 of any well known configuration spaced from the front end of the tube 6. A casing 14 in rear of the capsule has its marginal portion disposed in rear of the rear end of the inner tube and is seated on the disk 8. The casing contains a charge 15 of nitroglycerin carried by an absorbent such as kieselguhr. The nitroglycerin is adapted to be separated out from the absorbent under the influence of centrifugal force to occupy the marginal portion of the casing 14 underneath the tube 6.

On impact the tube 6 is arrested while the remaining elements continue forwardly. The nitroglycerin is set off by the shock of impact and it is insured by the action of the tube 6. This in turn sets off the main explosive charge 12 when it is in proper relation to the target to secure the best effect.

In the modification shown in Fig. 2 the inner tube 16 has an ogival nose 17 with provision for permitting relative forward movement of the capsule 18. The rear end of the tube is supported by a member 19 which may be carried by either the inner tube 16 or the outer tube 20, but, as shown, it comprises a cage having numerous light, laterally yieldable depending fingers 21. The fingers serve, in addition, to normally cage a pair of primers 22—22. Obviously the force of setback of the inner sleeve portion 16, is sustained by the fingers collectively, but centrifugal force acts upon them individually.

The fingers serve to support the inner tube against set-back and then are thrown outwardly by centrifugal force during flight. The primers, also under the influence of centrifugal force, are displaced radially and are positioned underneath the tube 16.

When the projectile is not subjected to rotation in flight as when fired from a mortar, such as disclosed by the modification in Fig. 3, the primers 23—23 are held by set-back pins 24 placed in the path of movement of the inner tube 25. The primers are moved into the path of the inner tube by a spring 26.

We claim:

1. A projectile comprising a cup-shaped body portion and an inner sleeve member slidably mounted in said body portion with its rear end spaced from the bottom thereof, and with its front end preadjacent the body portion, a charge in said projectile comprising a forward main explosive and a rearward initiator, said charge being supported by the base of said body portion and said initiator being positionable between the sleeve member and the base of the body portion under the action of centrifugal force.

2. A projectile comprising a cup-shaped body portion and an inner sleeve member slidably mounted in said body portion with its rear end spaced from the bottom thereof, and with its front end preadjacent the body portion, a main explosive charge within said sleeve member and an initiating unit rearward thereof, said unit comprising a capsule containing a priming charge and movable into position between the sleeve member and the base of the body portion under the action of centrifugal force.

3. A projectile comprising a cup-shaped body portion and an inner sleeve member slidably mounted in said body portion with its rear end spaced from the bottom thereof, and with its front end preadjacent the body portion, impact shearable means locking said body portion to said sleeve member, a main explosive charge

within said sleeve member and an initiating unit rearward thereof, said unit comprising a capsule containing a priming charge, spring means to force said capsule under said sleeve member and means releasable on setback, holding said capsule in its position away from the path of the sleeve member.

4. A projectile having a body comprising a cup-shaped outer portion and an inner initiating charge igniting sleeve portion slidably mounted in said outer portion with its rear end spaced from the bottom thereof and its front end adjacent the outer portion, a main explosive charge within said sleeve portion, and an initiating charge at the rear end thereof and positionable between the sleeve portion and the base of the outer portion under the action of centrifugal force.

5. In a projectile according to claim 4, centrifugally removable means holding the sleeve portion spaced from the bottom of said outer portion and holding the initiating charge inside the path of movement of the sleeve portion.

6. A projectile having a body comprising a cup-shaped outer body portion and an inner initiating charge igniting sleeve portion slidably mounted in said outer portion with its rear end spaced from the bottom thereof, and with its front end preadjacent the outer portion, a charge within said sleeve portion, an initiator behind said charge and extending to the space between said sleeve portion and the bottom of the outer portion, said initiator comprising nitro-glycerin mixed normally uniformly with an absorbent, the quantity of said nitro-glycerin beneath the sleeve portion being increased by centrifugal force.

7. A projectile having a body comprising a cup-shaped outer portion and an inner initiating charge igniting sleeve portion slidably mounted in said outer portion with its rear end spaced from the bottom thereof and with its front end preadjacent the outer portion, a container holding a main explosive charge within said sleeve portion and a priming charge at the rear end of said container and positionable between the sleeve portion and the base of the outer portion under centrifugal force.

8. In a projectile as in claim 4, blocking means for the initiating charge, said means being removable on setback.

9. In a projectile according to claim 4, means yieldable on impact holding the sleeve portion spaced from the bottom of the body portion.

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