March 19, 1935. L. A. SKINNER 1,994,490

ROCKET PROJECTILE

Filed Sept. 11, 1934

Fig. 1.

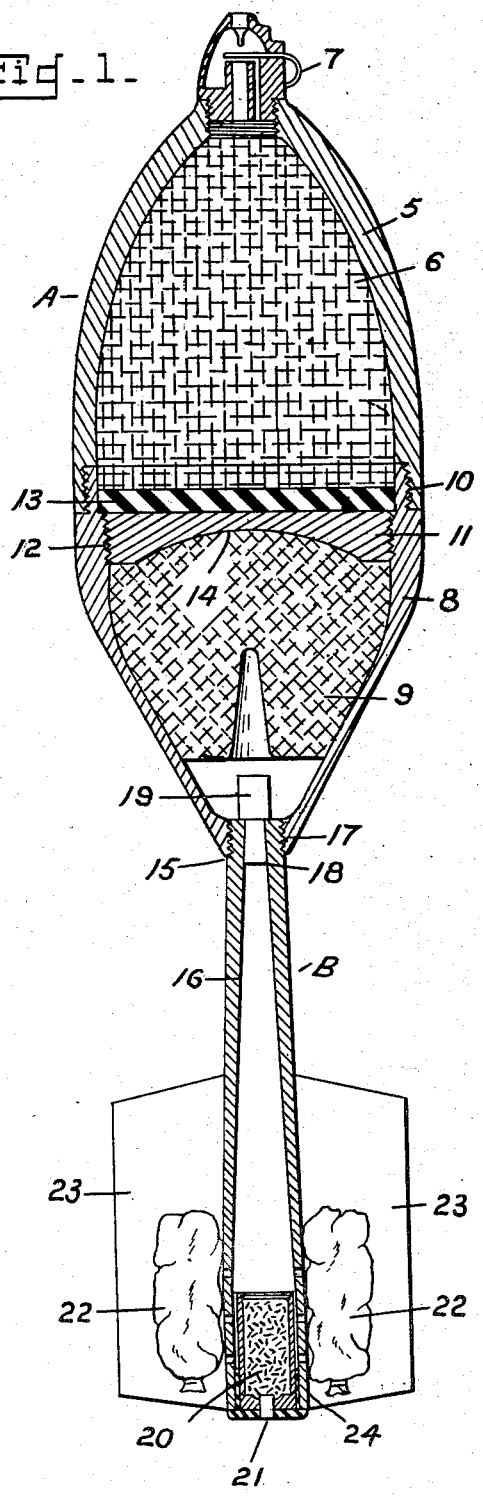
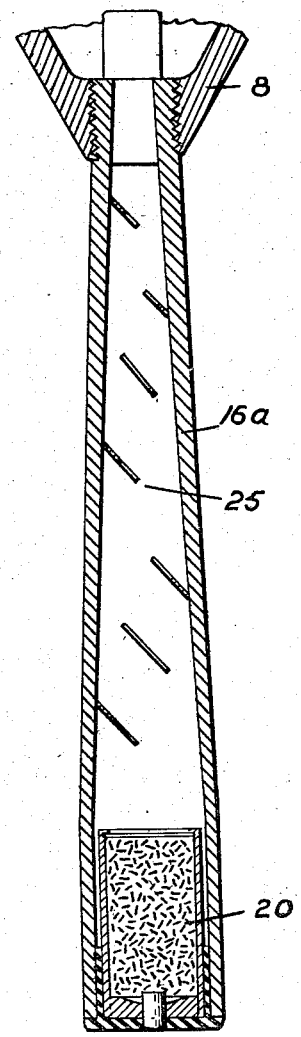


Fig. 2.



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UNITED STATES PATENT OFFICE

1,994,490

ROCKET PROJECTILE

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Application September 11, 1934, Serial No. 743,541

8 Claims. (Cl. 102—23)

(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 me of any royalty thereon.

This invention relates to a rocket projectile.

The purpose of the invention is to provide a projectile adapted to be discharged from the barrel of a mortar and to carry an auxiliary propelling charge functioning during flight to continue propulsion of the projectile in the manner common to rockets.

The invention is characterized by a novel arrangement in which the body is partitioned to carry a bursting and a propelling charge, and the tail is in the form of a tube constituting a stabilizing member and an exhaust conduit for the gases of the propelling charge.

With the foregoing and other objects in view, the invention resides in the novel arrangement and combination of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed may be made within the scope of what is claimed without departing from the spirit of the invention.

A practical embodiment of the invention is illustrated in the accompanying drawing, wherein:

Fig. 1 is a longitudinal sectional view of a rocket projectile constructed in accordance with the invention.

Fig. 2 is a similar view of the tail showing a modified arrangement of the fins or vanes.

Referring to the drawing by characters of reference there is shown a projectile consisting of a body A and a tail B.

The body is preferably formed of two parts, the front part 5 containing a bursting charge 6 adapted to be set off by a conventional fuse 7 carried in its nose and the rear part 8 containing a gas-forming propelling charge 9. The parts 5 and 8 are conveniently joined by a threaded connection 10.

The forward end of the rear part 8 is closed by a heavy metal plate 11 secured by a threaded connection 12. A thick disc 13 of insulating material, fitting in the rear part 8 and against the front face of the plate 11 serves to prevent heat exchange from the propelling charge 9 to the bursting charge 6. The rear face 14 of the plate is concave to provide increased capacity to the chamber. The rear part 8 is preferably of increasing cross-sectional area, being conical in shape so that the burning area of the propelling charge increases as the combustion and consumption of the charge increases the volume of the chamber available for the gases.

The rear end of the rear part 8 is provided with an opening 15 for receiving the end of a tube 16 which is secured by a threaded connection 17 and is almost as long as the body of the projectile. The tube 16 is preferably tapered, being enlarged towards its rear end, and it is open at both ends. In the front open end there is placed a delay pellet 18 associated with an igniting charge 19 for igniting the propelling charge 9. A cartridge 20 in the rear open end of the tube is fired by the usual primer 21 and serves to ignite the delay pellet 18 and also one or more propelling charges 22 which are carried between the fins 23 fixed to the tube 16. The cartridge case 24 is preferably of highly inflammable material such as celluloid or nitrocellulose so that it is capable of contributing to the propelling force and when it is consumed the tube 16 is unobstructed.

In the modification shown in Fig. 2 the external fins are omitted and inclined vanes 25 are secured to the inner wall of the tube 16^a, whereby a rotational effect is produced by the gases issuing out of the tube.

The rocket projectile is to be discharged from a mortar and is muzzle-loaded into the barrel of the mortar in the well known manner employed with trench mortars. The primer is fired by a fixed firing pin in the breech end of the barrel and the cartridge 20 and charges 21 propel the projectile. During its flight and after the projectile is well clear of the gun crew the delay pellet 18 transmits ignition to the charge 9. The rapid combustion of the charge 9 produces a large volume of gas which is forcibly expelled through the tube 16 and by impact on the air propels the projectile. The bursting charge 6 is set off upon impact or at the expiration of a prescribed time depending on the type of fuse employed.

I claim.

1. A rocket projectile comprising a body, an insulated partition in the body, a bursting charge in front of the partition, a propelling charge in rear of the partition, a tube fixed to the rear part of the body, a delay pellet in the front end of the tube, a cartridge in the rear end of the tube, fins on the outside of the tube, and a propellent charge on the outside of the tube.

2. A rocket projectile comprising a body, a propelling charge in the body, a tube fixed to the rear part of the body, a delay pellet in the front end of the tube, a cartridge in the rear end of the tube,

fins on the outside of the tube, and a propellent charge on the outside of the tube.

3. A rocket projectile comprising a body, a propelling charge in the body, a tube fixed to the rear part of the body, a delay pellet in the front end of the tube, a cartridge in the rear end of the tube, and a propellent charge on the outside of the tube.

4. A rocket comprising a body, a propelling charge in the body, a tube fixed to the rear part of the body, a delay pellet in the front end of the tube, and a cartridge in the rear end of the tube.

5. A rocket comprising a body, a propelling charge in the body, a tube fixed to the body and forming a tail and an exhaust conduit for the gases of the propelling charge, and means in the tail for igniting the propelling charge.

6. A rocket projectile comprising a body, a bursting charge in the body, a propelling charge in the body, a tube fixed to the body, means in the tube for igniting the propelling charge in the body, and a propelling charge on the outside of the tube.

7. A rocket comprising a body having a chamber increasing in cross-sectional area from rear to front, a propelling charge in said chamber, and a tube on the body at the small end of the chamber for venting the gases of the propelling charge.

8. A rocket comprising a body having a chamber increasing in cross-sectional area from rear to front, a propelling charge in said chamber, and a vent at the small end of the chamber.

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