

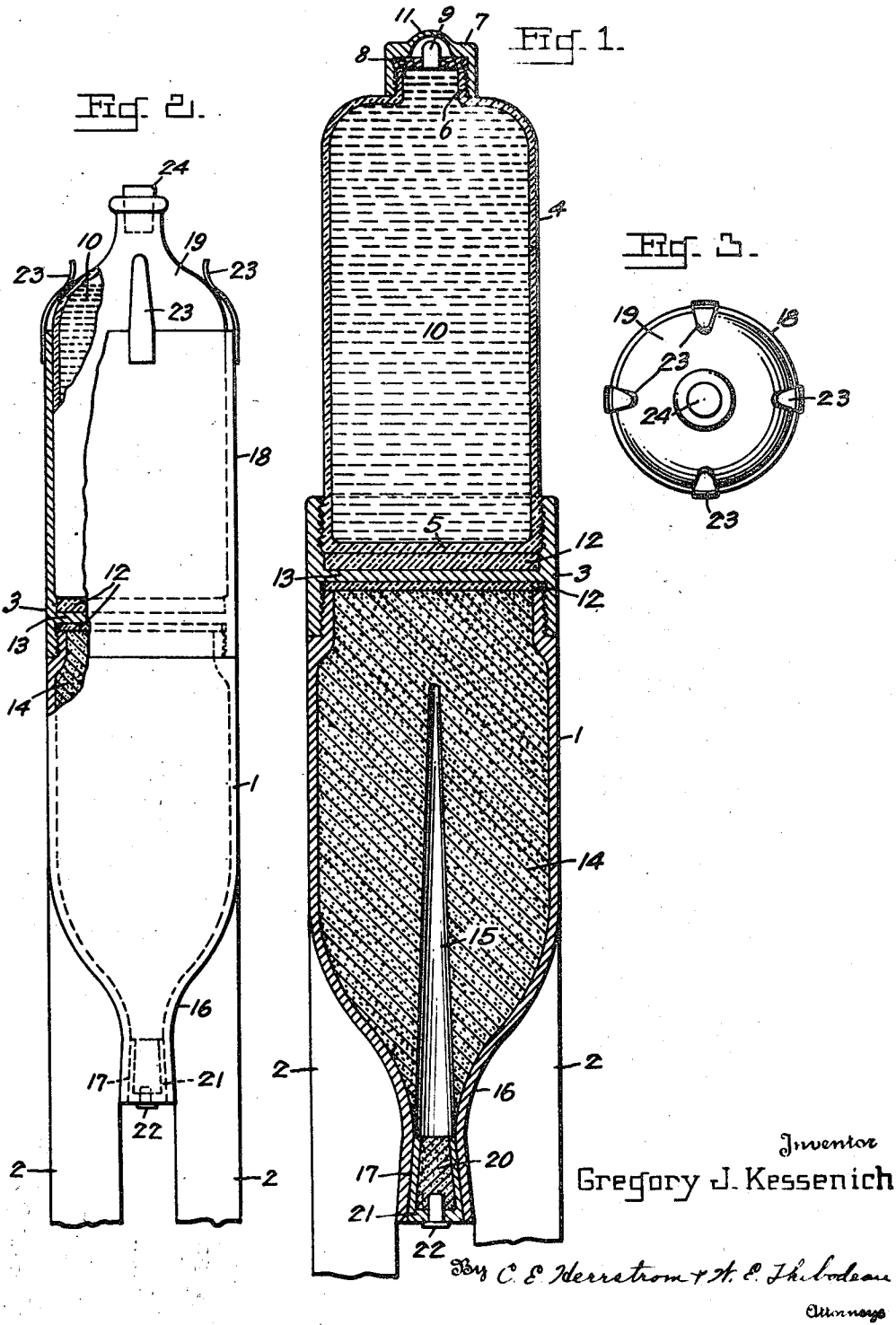
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ROCKET PROJECTILE

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ROCKET PROJECTILE

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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 projectile for a firearm and particularly to a rocket projectile capable of carrying a large charge of explosive or inflammable substance.

Modern warfare has demonstrated the need for a weapon of great destructive properties which may be transported and operated by an individual soldier. This is particularly true of infantrymen who must oppose tanks or other armored vehicles. One effective manner of combatting such vehicles has been the use of the so-called "Molotov cocktail" which comprises a container of gasoline or other inflammable material thrown at the armored vehicles from close range. The container breaks upon contact with the vehicle, a primer is discharged by the impact and the burning liquid is sprayed over the exterior of the armored vehicle. The disadvantage of the "Molotov cocktail" is, of course, the fact that the throwing must be done from very close range and hence the thrower must place himself in a very dangerous position. Besides the relatively large quantity of the fluid which must be thrown precludes the use by the individual soldier of shells loaded with such fluid instead of the usual explosive charge. The size of the gun required to fire such shells even at short range would be impossible for one man to transport.

Rifle grenades have heretofore been used with effectiveness but whether projected by gases from a blank cartridge or by-passed gases from a live round, their range is not great especially where the grenade is of some weight. Further, maximum range has only been obtained by high angle firing and as a consequence of the inherent inaccuracy the rifle grenade was not suited for firing at high speed targets. Attempts to increase the weight of the rifle grenade have resulted in decreased range, ballistic inaccuracy and in causing damage and breakage of the rifles.

With a view to obviating these disadvantages it is proposed in this invention to provide an improved projectile having great destructive properties which may be launched as a rocket from a projector capable of being transported and fired by an individual soldier. The projectile may be initially launched as a rocket or it may receive initial impulsion by a mechanical source or by the gases passing through the bore of a firearm the initial impulsion means being utilized to ignite the rocket charge. A low trajectory pro-

jectile is thus obtained which will present more favorable angles of impact and which will permit eye-aiming of a shoulder piece at a rapidly moving target.

Accordingly, it is an object of this invention to provide an improved projectile carrying a relatively large quantity of explosive or volatile charge yet which may be fired by one man in a light weight gun capable of being transported by one man.

A further object is to provide a rocket projectile which is so arranged that different types of containers carrying different contents may be readily attached to the rocket body. For example, the contents may consist of an explosive, gas, incendiary, message, or solid or liquid food.

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 a rocket projectile embodying this invention.

Fig. 2 is a side elevational view of a rocket projectile, partly in longitudinal section, showing an alternate form of construction.

Fig. 3 is a top elevational view of Fig. 2.

In Fig. 1 there is shown in assembled relation a rocket projectile embodying this invention. The projectile comprises a hollow metallic body 1 on the rear end of which are secured a plurality of fins 2 which serve to stabilize the projectile in flight. The forward portion of the body 1 is threaded to engage in an adapter 3 having a central wall 13. A charge container 4 is threaded into the forward end of adapter 3. Charge container 4 is shaped very much like a bottle, having a base 5 and a neck 6. The bottom portion of the periphery of the bottle 4 is provided with threads which engage the threads in the forward portion of adapter 3. Bottle 4 may be constructed from glass or any frangible plastic, the main requirement being that it will shatter upon impact with the target. The interior of bottle 4 is preferably filled with a volatile liquid charge 10 such as gasoline but it should be understood that any explosive or volatile charge might be used equally as well depending upon the effect on the target desired. A cap 7 is provided which screws onto neck 6 of bottle 4. A washer 8 is inserted between the base of cap 7 and the end of neck 6 and provides an adequate seal to prevent leakage of the charge 10. A percussion cap 9 is suitably mounted and sealed in the central portion of washer 8 and projects

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forwardly beyond washer 8. The central portion 11 of cap 7 adjacent percussion cap 9 is of relatively thin cross section and projects beyond the remainder of cap 7 so that upon impact with the target the central portion 11 of cap 7 will flex rearwardly and strike a hammer-like blow to percussion cap 9, thus serving to ignite the charge 10.

A modified arrangement for mounting the frangible container on the projectile is illustrated in Figs. 2 and 3. Here the adapter 3 has a forwardly projecting hollow cylindrical portion 18 integrally formed therewith. In the chamber defined by such portion a frangible container 19 filled with a volatile liquid charge 10 is inserted and held therein by a plurality of spring tabs 23 mounted on the end of portion 18. The container 19 may be similar to the container 4 of Fig. 1 and have an impact fuse closure cap 7, or container 19 may constitute merely a glass bottle or a light gauge metal can with a stopper 24.

Blocks 12 of heat insulating material are mounted on each side of wall 13 of adapter 3. The interior space of body 1 immediately to the rear of wall 13 is utilized as a propulsion motor chamber. The arrangement of the propellant charge in the motor chamber may take any of various well known forms and should be understood to be independent of this invention. In the illustrated construction a powder charge 14 comprising a compacted mass of powder grains is pressed into the hollow body portion 1, preferably around a long conical arbor (not shown) so as to define a central conical recess 15 extending into charge 14.

The rear of body 1 is shaped to define an annular nozzle portion 16. Nozzle portion 16 defines a restricted nozzle opening 17 through which gases developed by ignition of propellant charge 14 exhaust, and hence operates to set up a gas blast, the reaction force of which provides the propelling force of the projector. The propellant charge 14 is ignited by an ignition charge 20 of black powder contained within a cup 21 mounted in the end of nozzle 17. A percussion primer 22 is provided to ignite the ignition charge 20. After ignition of the propellant charge 14, the gas pressure developed blows cup 21 out of nozzle 17.

To launch this improved projectile only a hollow tube (not shown) open at both ends plus some conventional form of firing mechanism to strike or ignite primer 22 is required. The hollow tube is utilized to aim the rocket projectile, and since it is open at both ends there will be little, if any, recoil force exerted upon the tube and hence the tube may be readily held and fired by one man. Upon striking the primer 22 a hammer-like blow with any conventional form of hammer mechanism the small explosion of the primer flashes into the propellant charge 14, igniting such charge. The gases developed by the charge 14

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readily blow out the primer 22 and by the action of the nozzle 17 form a gas blast. The reaction force of the gas blast on the projectile starts it moving at a high velocity, launching it from the tube. Its flight is maintained stable by the fins 2. Upon striking the target, with a charge container shown in Fig. 1, the thin portion 11 of the cap 7 strikes the primer 9, which in turn ignites the volatile charge 10 within the bottle 4. This ignition takes place at about the same instant that the bottle 4 breaks due to the impact on the target. As a result the burning liquid will be sprayed over the target, operating in the same manner as a "Molotov cocktail" but permitting the soldier firing the projectile to remain in a much safer position several hundred yards away from the target. If a charge container 19 as illustrated in Fig. 2 is utilized then volatile liquid will be sprayed over the target and will ignite upon contact with any hot parts thereof.

If it is desired the charge carried by the bottle 4 be of the highly explosive type, then it is preferred that the bottle 4 be constructed of metal which will not break upon impact with the target and hence will increase the effect of the explosive charge. Obviously, the container 4 if made of sufficient strength could be utilized to transport food or other supplies to a remote position. The construction permits the ready substitution of any type of "pay load" by insertion of a container filled with the desired load into the adapter 3.

I claim:

1. A rocket projectile comprising a hollow body portion arranged to receive a propellant charge, a hollow cylindrical adapter having a solid web portion intermediate its ends, one end of said adapter being threadably secured to said body portion, a frangible container slidably insertable in the other end of said adapter, said container arranged to receive a volatile liquid charge, and a plurality of spring clips on said adapter arranged to resiliently secure said container within said adapter.

2. A rocket projectile as in claim 1 and an impact fuse mounted on said container.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
39,636	Felt	Aug. 25, 1863
785,644	Unge	Mar. 21, 1905
1,502,400	Safford	July 22, 1924

FOREIGN PATENTS

Number	Country	Date
305,160	Germany	Mar. 3, 1920
840,391	France	Jan. 16, 1939