June 7, 1960 L. R. KORTICK 2,939,449

LAUNCHING DEVICE AND ROCKET PROPELLED MISSILE THEREFOR

Filed June 16, 1955

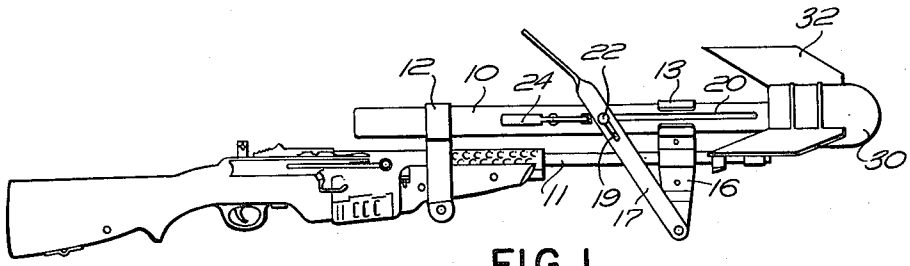


FIG. 1

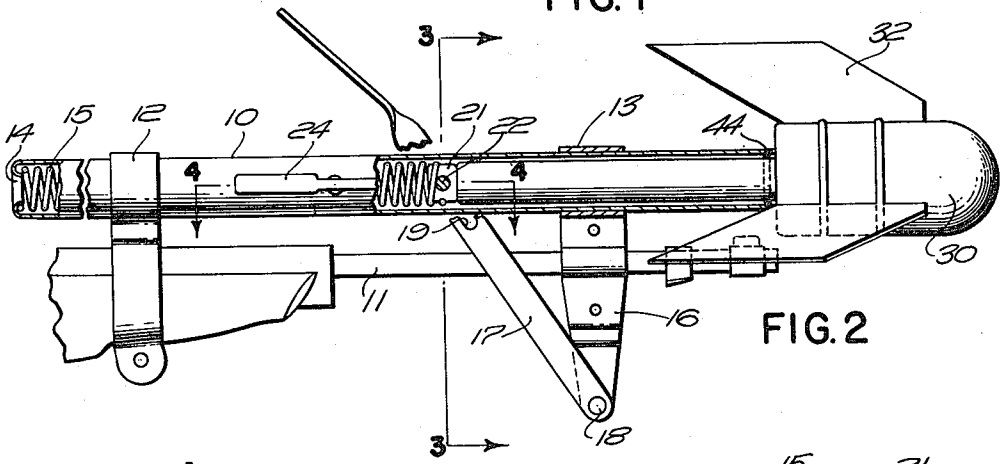


FIG. 2

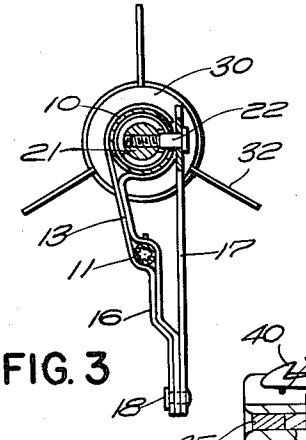


FIG. 3

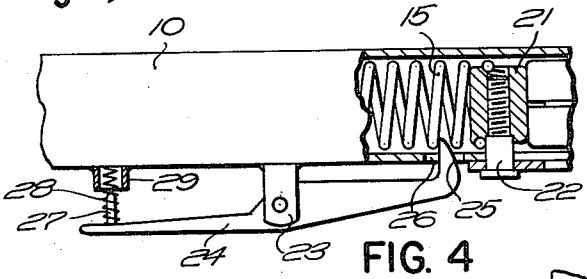


FIG. 4

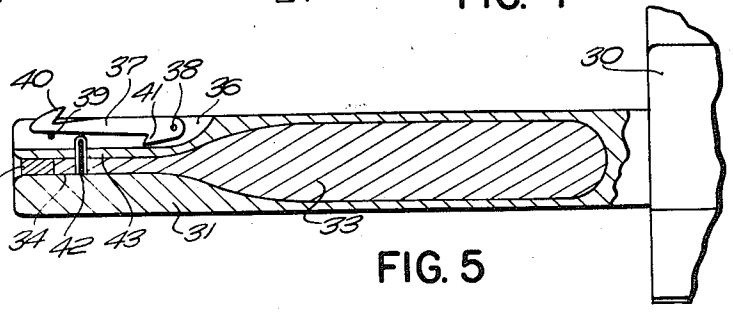


FIG. 5

INVENTOR.

LEONARD R. KORTICK

BY

Max Schwartz

ATTORNEY

United States Patent Office 2,939,449 Patented June 7, 1960

2,939,449

LAUNCHING DEVICE AND ROCKET PROPELLED MISSILE THEREFOR

Leonard R. Kortick, 13 Weiss Court, Providence, R.I.

Filed June 16, 1955, Ser. No. 515,981

6 Claims. (Cl. 124—28)

My present invention relates to an item of ordnance and more particularly to a readily portable launching device for a rocket propelled missile and the missile therefor.

The principal object of the present invention is to provide a portable missile launching mechanism which is light and easy to handle and silent in operation.

Another object of the present invention is to provide a launching device and missile therefor which can readily be mounted on a rifle without interfering with the functions of the rifle.

A further object of the present invention is to provide a light portable mechanism for propelling various types of explosives including grenades, shrapnel, anti-tank shells, flares, etc.

Another object of the present invention is to provide a launching device for a rocket propelled missile which will materially increase the effective range of the missile.

Another object of the present invention is to provide a launching device and missile therefore which is simple in construction and easy and economical to manufacture and assemble.

With the above and other objects and advantageous features in view, my invention consists of a novel arrangement of parts more fully disclosed in the detailed description following, in conjunction with the accompanying drawings, and more particularly defined in the appended claims.

In the drawings:

Fig. 1 is a side elevation of the launching device and missile of the present invention mounted on a rifle.

Fig. 2 is an enlarged view thereof in partial longitudinal section.

Fig. 3 is a section taken on line 3—3 on Fig. 2.

Fig. 4 is a section taken on line 4—4 on Fig. 2.

Fig. 5 is a longitudinal section of the rocket booster mechanism.

Certain small explosives such as grenades, are normally thrown by hand. In order to increase their range, launching devices have been devised to utilize the fire power of the rifle. In use, the soldier empties the rifle of live shells and inserts a blank. The mechanism is then attached to a barrel and the grenade put in place. When the rifle is now fired the explosion of the blank shell provides a propulsion for the grenade which gives it a wider range than by throwing. However, this method of launching has many disadvantages. When the device is in use the soldier is helpless to defend himself and cannot use the rifle either for firing or with a bayonet. Furthermore, it takes time to unload the rifle and mount the device and the noise of the blank often reveals the soldier's position to the enemy.

The present invention overcomes all of the above disadvantages by providing a launching mechanism of simple design and construction which can readily be mounted on a rifle, a shoulder mount, or even on a tripod. When mounted on a rifle it will in no way interfere with the functions of the rifle. In conjunction with the present invention the applicant provides a grenade or other missile which is rocket propelled. The launching mechanism is silent and the rocket propulsion provides an additional booster which takes over at a distance from the launching site. Thus the position of the soldier is never revealed. Furthermore, the launching mechanism and rocket booster give the weapon a range many times that of existing devices. In addition, the launching device of the present invention may be readily used to propel grenades, shrapnel, flares, and even anti-tank explosives.

Referring more in detail to the drawings, the figures illustrate the launching device of the present invention mounted on a rifle for purposes of illustration. The device may be individually mounted on its own shoulder mount or may be mounted on a tripod. Referring to Figs. 1 and 2, the device comprises a barrel 10 which is shown mounted on a rifle 11 by means of metal straps 12 and 13 which retain the barrel 10 in spaced parallel relation above the rifle 11. It is preferable that the mounting of the barrel 10 does not interfere with the sighting or aiming of the rifle. The straps 12 and 13 are therefore formed to one side as shown in Fig. 3 giving a clear view along the top of the rifle barrel. The barrel 10 is open at the front end and turned inwardly as at 14 at the rear end to form a shoulder or stop element. A heavy coil spring 15 is positioned in the barrel 10 with its rear end resting on the shoulder 14.

The spring 15 provides the power for the initial launching of the missile. I therefore provide a means for compressing and cocking the spring and a trigger release. One method of cocking the spring is shown in Figs. 2 and 4. The forwardly positioned strap 13 is provided with an integral downwardly extending portion 16. The lever 17 is pivoted to the lower end of the portion 16 at 18. The lever is of sufficient length to extend above the barrel 10. Adjacent the barrel 10, the lever 17 is provided with a short longitudinal slot 19. The barrel 10 is provided along one side with an elongated longitudinal slot 20. A small cylinder 21 is positioned in the barrel 10 and engages the forward end of the spring 15. A pivot pin 22 extends through the lever 17 at the slot 19, through the slot 20 in the barrel 10 and is threadedly anchored in the cylinder 21. This permits the upper end of the lever 17 to be manually pulled rearwardly forcing the cylinder 21 and spring 15 rearwardly into compressed position.

To hold the spring 15 in cocked position, a simple trigger arrangement such as shown in Fig. 4 may be used. A small pivot post 23 extends from one side of the barrel 10 and a lever or trigger 24 is pivotally mounted thereon. The forward end is provided with a hooked portion 25 which extends through an opening 26 in the barrel 10 a sufficient distance to engage and hold the coil spring 15. The other end of the lever 24 is provided with a pin 27 which extends into a small coil spring 28 mounted in a socket 29 for resiliently retaining the lever in the position shown in Fig. 4.

With the above arrangement the lever 17 can be pulled rearwardly compressing the spring 15. The spring will be held in compressed position by the end 25 of the lever 24. When the rear end of the lever 24 is pushed inwardly against the action of the spring 28 the forward end 25 will swing outwardly and release the spring 15 to fire the mechanism.

The above described launching mechanism is designed to eject a missile under heavy spring pressure. While the cocking mechanism shown employs a manually operated lever, it is obvious that other methods may be used. For example, the missile could be inserted in the barrel and the assembly pushed against the ground so that the missile will force the spring rearwardly into cocking position. This can be done even before the warhead is

attached to the missile. Furthermore, the trigger arrangement may be varied to suit different requirements and may be provided with a trigger guard to prevent accidental discharge. In conjunction with the launching mechanism above described I have provided a missile having a rocket booster timed to take over the propulsion of the missile in mid-air at a distance from the launcher. The combination of the mechanical launcher and rocket booster will provide the missile with a great range.

Referring to Figs. 1, 2 and 5, the missile comprises a warhead **30** mounted at the front end to a booster portion **31** which is elongated and of a narrower diameter adapted to easily slide into the forward end of the barrel **10**. The warhead may be provided with stabilizing fins **32**. If desired the fins may be slightly twisted to provide the missile with a spin for better accuracy. For this purpose the fins may also be extended along the portion **31**.

Referring to Fig. 5, the portion **31** is provided with an enlarged chamber **33** filled with a rocket fuel and narrowing rearwardly to a restricted passageway **34** which terminates in a dischargeable plug **35**. The upper rear portion of the portion **31** is provided with a cut out slot **36** in which the timing trigger **37** is mounted. The timing trigger **37** is held in the slot **36** by a shear pin **38** with its rear end resting on the pin **39** to keep it in horizontal position. The rear end of the trigger **37** is provided with an upwardly extending hook **40** and the front end is provided with a downwardly extending hook **41**. A time fuse **42** extends upwardly through the restricted passageway portion **34**, through a thin wall portion **43** and into the path of the hook **41**. At the forward end of the barrel **10** a ring stop **44** is mounted in the internal wall of the barrel as shown in Fig. 2.

In use it is essential that the launching device give the missile its initial impetus and that during this flight the rocket booster take over. This should be so timed that the rocket booster goes on just before the missile reaches the apex of its arc under the power of the launching device. Therefore, as the trigger **24** is actuated to release the spring **15** the missile is ejected from the barrel **10**. As it passes outwardly the hook **40** catches the ring **44** and the pin **38** is sheared. The continuous movement of the missile brings the fuse **42** in contact with the hook portion **41** and the top of the fuse is sheared off. All this occurs at the time the missile leaves the barrel **10**. The fuse is so timed that it will eat through the wall **43** and set off the rocket fuel at the predetermined interval to provide the maximum accuracy and range. The missile is therefore designed to take an initial impetus administered mechanically and then to continue at some predetermined point in its flight under the further impetus of the rocket fuel. With this type of missile the launching mechanism may be as shown and described or it may be provided with pneumatic or any other type of pressure.

The combination of applicant's launcher and missile permits a silent launching of a grenade or any other explosive. When mounted on a rifle it will not interfere with the functions thereof. The device is light and easily carried either on a rifle or on its own mounting. The barrel may be of a light thin metal and need not fit snugly or accurately with the rocket booster end of the missile. Close tolerances are therefore not required and the device can thus be manufactured easily and cheaply.

Other advantages of the present invention will be readily apparent to a person skilled in the art.

I claim:

1. In combination, a missile having a rocket propelling portion and a delayed action fuse for igniting the propulsion charge, and a launching device therefor, comprising a barrel, means for mounting said barrel on a rifle in spaced relation to the rifle barrel whereby said rifle may be operated independently of said launching device, said rocket propelling portion extending into the front end of said barrel, means in said barrel for applying an initial mechanical propulsion force to eject said missile from said barrel, and means in said barrel for setting off said fuse.

2. In combination, a missile having a rocket propelling portion and a delayed action fuse for igniting the propulsion charge, and a launching device therefor, comprising a barrel, means for mounting said barrel on a rifle in spaced relation to the rifle barrel whereby said rifle may be operated indepenedently of said launching device, said rocket propelling portion extending into the front end of said barrel, means in said barrel for applying an initial mechanical propulsion force to eject said missile from said barrel, said mechanical propelling means comprising a coil spring mounted in the rear portion of said barrel, and means in said barrel for setting off said fuse.

3. In combination, a missile having a rocket propelling portion and a delayed action fuse for igniting the propulsion charge, and a launching device therefor, comprising a barrel, means for mounting said barrel on a rifle in spaced relation to the rifle barrel whereby said rifle may be operated independently of said launching device, said rocket propelling portion extending into the front end of said barrel, means in said barrel for aplying an initial mechanical propulsion force to eject said missile from said barrel, said mechanical propelling means comprising a coil spring mounted in the rear portion of said barrel, a stop element at the rear end of said barrel, said spring bearing against said stop element, means for compressing said spring, and trigger means for releasably retaining said spring in compressed position, and means in said barrel for setting off said fuse.

4. In combination, a missile having a rocket propelling portion and a delayed action fuse for igniting the propulsion charge, and a launching device therefor comprising a barrel, means for mounting said barrel on a rifle, said rocket propelling portion extending into the front end of said barrel, means in said barrel for applying an initial mechanical propulsion force to eject said missile from said barrel, and means in said barrel for setting off said fuse, said fuse setting means including a trip mechanism between said missile rocket portion and said barrel.

5. In combination, a missile having a rocket propelling portion and a delayed action fuse for igniting the propulsion charge, and a launching device therefor comprising a barrel, means for mounting said barrel on a rifle in spaced relation to the rifle barrel whereby said rifle may be operated independently of said launching device, said rocket propelling portion extending into the front end of said barrel, means in said barrel for applying an initial mechanical propulsion force to eject said missile from said barrel, said mechanical propelling means comprising a coil spring mounted in the rear portion of said barrel, and means in said barrel for setting off said fuse, said fuse setting means including a trip mechanism between said missile rocket portion and said barrel.

6. In combination, a missile having a rocket propelling portion and a delayed action fuse for igniting the propulsion charge, and a launching device therefor comprising a barrel, means for mounting said barrel on a rifle in spaced relation to the rifle barrel whereby said rifle may be operated independently of said launching device, said rocket propelling portion extending into the front end of said barrel, means in said barrel for applying an initial mechanical propulsion force to eject said missile from said barrel, said mechanical propelling means comprising a coil spring mounted in the rear portion of said barrel, a stop element at the rear end of said barrel, said spring bearing against said stop element, means for compressing said spring, and trigger means for releasably retaining said spring in compressed position, and means in said barrel for setting off said

fuse, said fuse setting means including a trip mechanism between said missile rocket portion and said barrel.

References Cited in the file of this patent

UNITED STATES PATENTS

184,717	Laws	Nov. 28, 1876
1,270,293	Hoexter et al.	June 25, 1918
1,274,882	Hess	Aug. 6, 1918
2,131,048	Keyser	Sept. 27, 1938
2,308,798	Peiker	Jan. 19, 1943
2,563,969	Skinner	Aug. 14, 1951
2,579,323	Kessenich	Dec. 18, 1951
2,681,619	Chandler	June 22, 1954
2,763,256	Scott	Sept. 18, 1956