J. E. FARRELL, JR.

COMBINATION GRENADE.

APPLICATION FILED DEC. 19, 1918.

1,309,280.

Patented July 8, 1919.

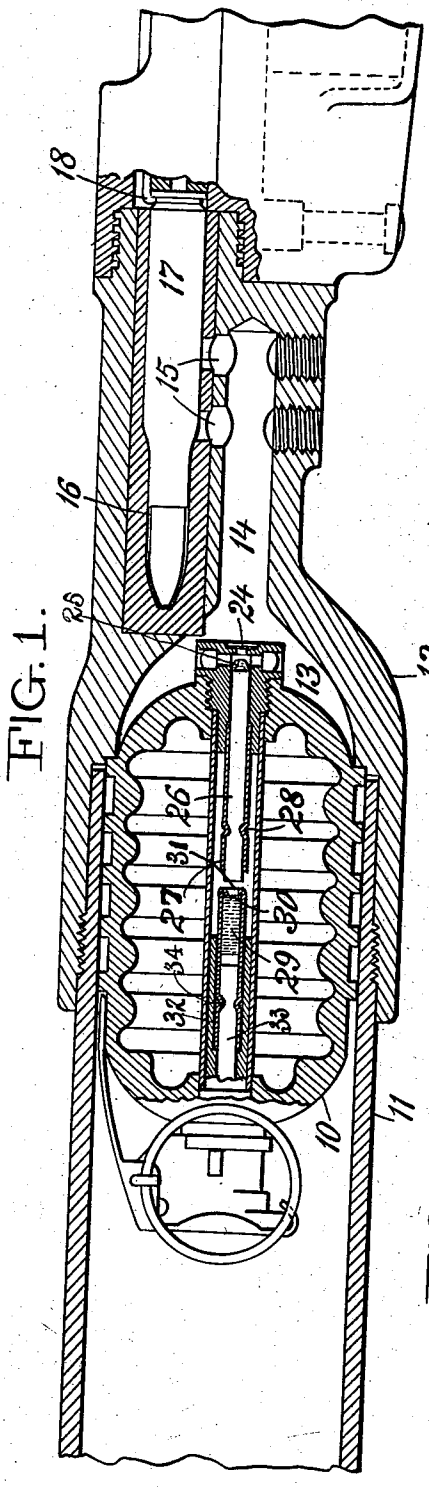


FIG. 1.

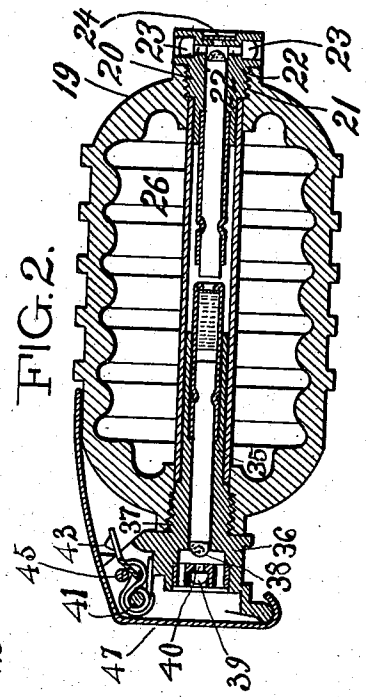


FIG. 2.

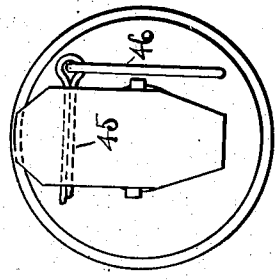


FIG. 3.

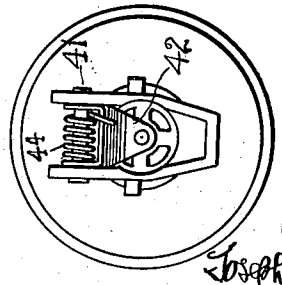


FIG. 4.

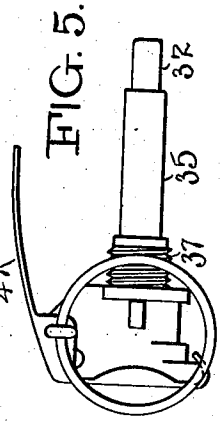


FIG. 5.

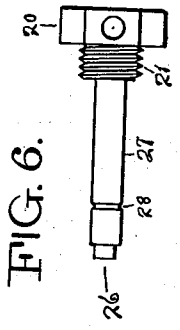


FIG. 6.

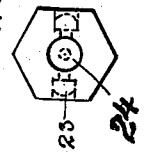


FIG. 7.

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JOSEPH EDWARD FARRELL, JR., OF WASHINGTON, DISTRICT OF COLUMBIA, ASSIGNOR TO INTERNATIONAL MUNITIONS COMPANY, INC., OF DELAWARE.

COMBINATION-GRENADE.

1,309,280. Specification of Letters Patent. Patented July 8, 1919.

Application filed December 19, 1918. Serial No. 267,526.

To all whom it may concern:

Be it known that I, JOSEPH EDWARD FARRELL, Jr., a citizen of the United States of America, and residing in the city of Washington, in the District of Columbia, have invented a new and useful Combination-Grenade, of which the following is a specification.

My invention relates, broadly speaking, to a grenade, or bomb, which can be used either as a hand grenade or, if desired, as a rifle grenade or mortar bomb, and my invention is particularly directed to so engineering the implement that it will function properly and as desired when thrown by hand and also when used as a rifle grenade or bomb thrower; that the hand grenade end will remain in-active and the firing unit will respond only to the action of the explosion resulting from the functioning of the service cartridge in the rifle when used in connection with a rifle or bomb thrower; and the rifle grenade end will remain in-active when the implement is used as a hand grenade: it is a combination grenade or bomb, capable of two different uses and the method of employing it is optional with the user.

Referring more particularly to my invention, I provide on one end of the lemon, or oval shaped, envelop, a means for functioning the fuse when thrown from the hand of the soldier and on the other hand I provide another fuse at the opposite end of the grenade which responds to suitable primers, the latter functioning from the explosive force of the cartridge powder.

Both of these fuses are extended inwardly to a detonator, the said detonator being arranged to function with either fuse, depending upon the initiating act of the mechanism at either end, it thus, as stated above, constitutes a combination hand and rifle grenade optional for use as either.

In providing this implement I have supplied an apparent necessity in modern trench warfare and have engineered and completed an instrument which, by reason of the fact that it can be used for either of the above purposes, meets one of the requirements of the present time in that it reduces the number of different military units employed; that is to say, in one implement I provide both the hand and rifle grenade, equally effective for either purpose, at practically the same cost as either implement singly.

Referring to the accompanying drawings which form a part of this specification:

Figure 1—represents a grenade in position in the grenade or bomb thrower.

Fig. 2.—is a longitudinal section of the grenade or bomb.

Figs. 3, 4, and 5,—are detail views of the hand grenade mechanism.

Figs. 6 and 7—show the head illustrating how the primers are arranged to take the fire from the gases of the rifle cartridge; also the fuse inserted therein and suitably crimped.

In these drawings, 10 is the shell or envelop of the grenade or bomb.

This grenade when used as a rifle grenade, or as a bomb, to be projected from a rifle or bomb thrower, is placed in a discharger or barrel 11, which latter is attached to a casing 12. In the present case I have shown it in connection with a bomb thrower which need not here be particularly described and forms no part of my invention. I will state, however, that the casing 12 incloses an explosion chamber 13, which opens out from a smaller chamber 14; this latter chamber is connected by passage ways 15 to a cartridge chamber 16; a cartridge is shown at 17; the ordinary means not shown are provided for functioning the cartridge, and the pin 18 is provided for withdrawing the mutilated unit; the explosive gases from the cartridge breaking through the walls of same opposite the passage way 15, pass into the channel 14 and therefrom into the chamber 13 at the bottom or base of the grenade or bomb; so arriving they will expel the implement from the discharger.

As before stated the grenade or bomb is double ended. At the end 19 contiguous to the chamber 13, as shown in Fig. 1, a functioning device adapted to respond to the blow pressure or fire of the explosive gases as they enter the chamber 13 is arranged. This device consists of a plug 20 screw-threaded at 21 into an opening at one end of the envelop. At 22 I show openings of a chamber above the flash head of the fuse; at 23 primers adapted to function into said chamber, the said primers constituting the initiating element of the firing unit; at 24 is a disk closing a vent at the top of the

chamber. The flash head is shown at 25 and the fuse at 26; this fuse is inclosed by a tube 27 and the fuse and tube are crimped together at 28; the tube 27 and the plug 20 are secured together in any suitable manner, as shown in Fig. 2, where the tube is inserted in the plug at some distance from the top or the plug can be shortened as shown in Fig. 6, and the tube pushed up into it in a similar way. In both cases the joint can be effected by a tight fit; the result being that the plug 20 carrying the primers 23 the tube 27 and the fuse 26 can be inserted in, or removed from, the envelop at any time and as a single unit.

The operation of the device when used in connection with a bomb thrower has been referred to above. When the explosive gases from the propelling unit arrive in the chamber 13 the blow, pressure or fire from same will ignite the primers 23, the primers igniting direct when they are of a sensitive nature, and the said primers functioning, will ignite the flash head 25 which in turn will communicate its fire to the fuse 26; this fuse can be made to burn in the number of seconds desired and is engineered to conform, in the matter of time, to the time of flight of the bomb so that it will function with the detonator as hereinafter described, at the moment of its arrival at its objective; in this way the bomb being employed with a projector will go much farther than when it is thrown by hand, it consequently, in this instance, needs a longer time burning fuse. The above unit becomes operative when the implement is, as stated, discharged from a projector, but when thrown from the hand this unit remains quiescent.

The detonator is illustrated in Figs. 1 and 2; at 29 is the fulminate compound and at 30 a thin tin foil disk; this latter straddles and covers a hole or part 31 at the inner end of the inclosing case 32 of the detonator; at 33 is a fuse crimped in the case 32 at 34; this detonator and fuse assembly is secured in any suitable manner in the tubular extension 35 of the plug 36; this plug 36 and its extension 35 is a part of the hand grenade device now more or less in use and which need not herein be particularly described but I will briefly set forth its members so as to identify its application with the present implement as I have engineered and developed it.

The plug 36 is screw threaded into the grenade body at 37; the fuse 33 is provided at its outer end with a flash head 38 and is positioned to function in response to the flash of the primer 39 through the channel 40.

Mounted upon a center 41 is a lever 42 having a striking point 43; an operating or lever throwing spring is shown at 44; this spring when in action causes the lever 42 to move rapidly around in its center 41 and permits its striking point 43 to deliver a blow upon the primer 39.

The spring is ordinarily held under control by the cotter pin 45 having a withdrawing ring 46; when the cotter pin has been removed the operation of the spring can still be controlled by the cover piece 47 retained in place by the grasp of the thrower when this pressure is withdrawn as the missile leaves the hand, the cotter pin having previously been removed, the spring 44 will come into action and cause the parts it controls to function the primer and so initiate the firing mechanism of the hand grenade end of the implement; the battle charge, not shown, of the implement is inclosed in the envelop 10 and will function of course in response to the detonator which latter responds to either fuse 26 or 33.

It will be seen by referring to Fig. 1 that cotter pin is not removed when the missile is placed in the gun but on the contrary the entire hand mechanism remains untouched and unadjusted.

It will be noted also that I have here engineered and produced a grenade, or bomb, which is adapted to be employed, at the option of the user, as a hand grenade, or a bomb, or also, if desired, as a rifle grenade; this combination can be more particularly employed in connection with the bomb thrower shown, described and claimed in the application filed in the United States Patent Office, December 9th, 1918, Serial Number 265889.

I claim:

1. A grenade embodying a fragmenting shell, a hand operating mechanism engineered to remain entirely inactive and without adjustment when the grenade is employed with a suitable gun, means at the opposite end for responding to the explosive gases of such a gun, said means being engineered to remain entirely inactive and without adjustment when used as a hand grenade, a centrally located detonator, two independent fuses arranged to function with the centrally located detonator the said two fuses extending outwardly toward the two ends of the grenade.

2. The combination in an imperforate grenade, of a shell, a hand grenade mechanism at one end of the shell, a fuse leading inwardly therefrom, a centrally located detonator, and an ignition unit at the opposite end of the grenade consisting of a plug, a primer, an inwardly extending fuse leading to the detonator with means of access for the primer to the fuse and a vent.

JOSEPH EDWARD FARRELL, JR.