

Feb. 20, 1934.

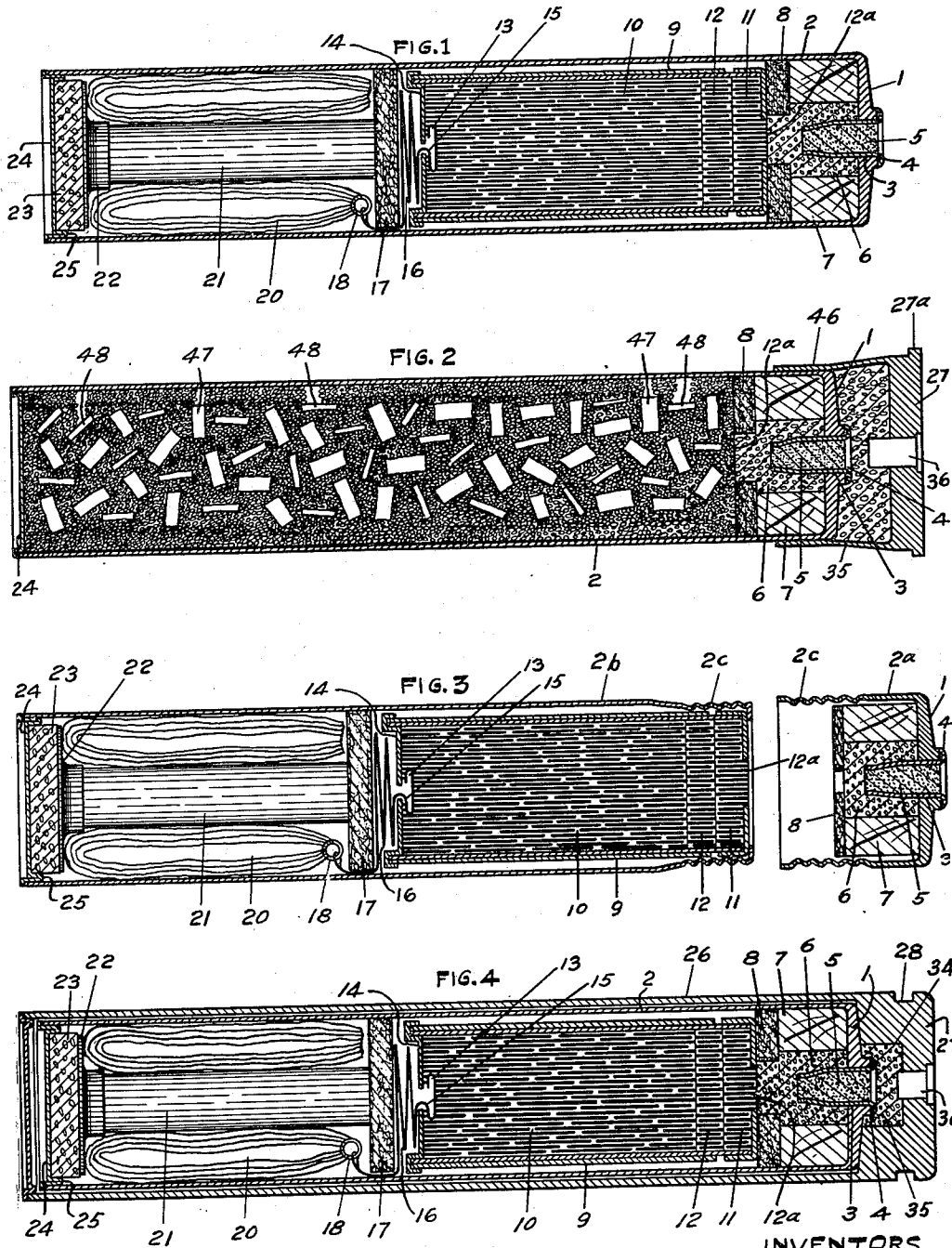
L. L. DRIGGS, JR., ET AL

1,947,834

FLARE SIGNAL

Filed Sept. 19, 1931

3 Sheets-Sheet 1



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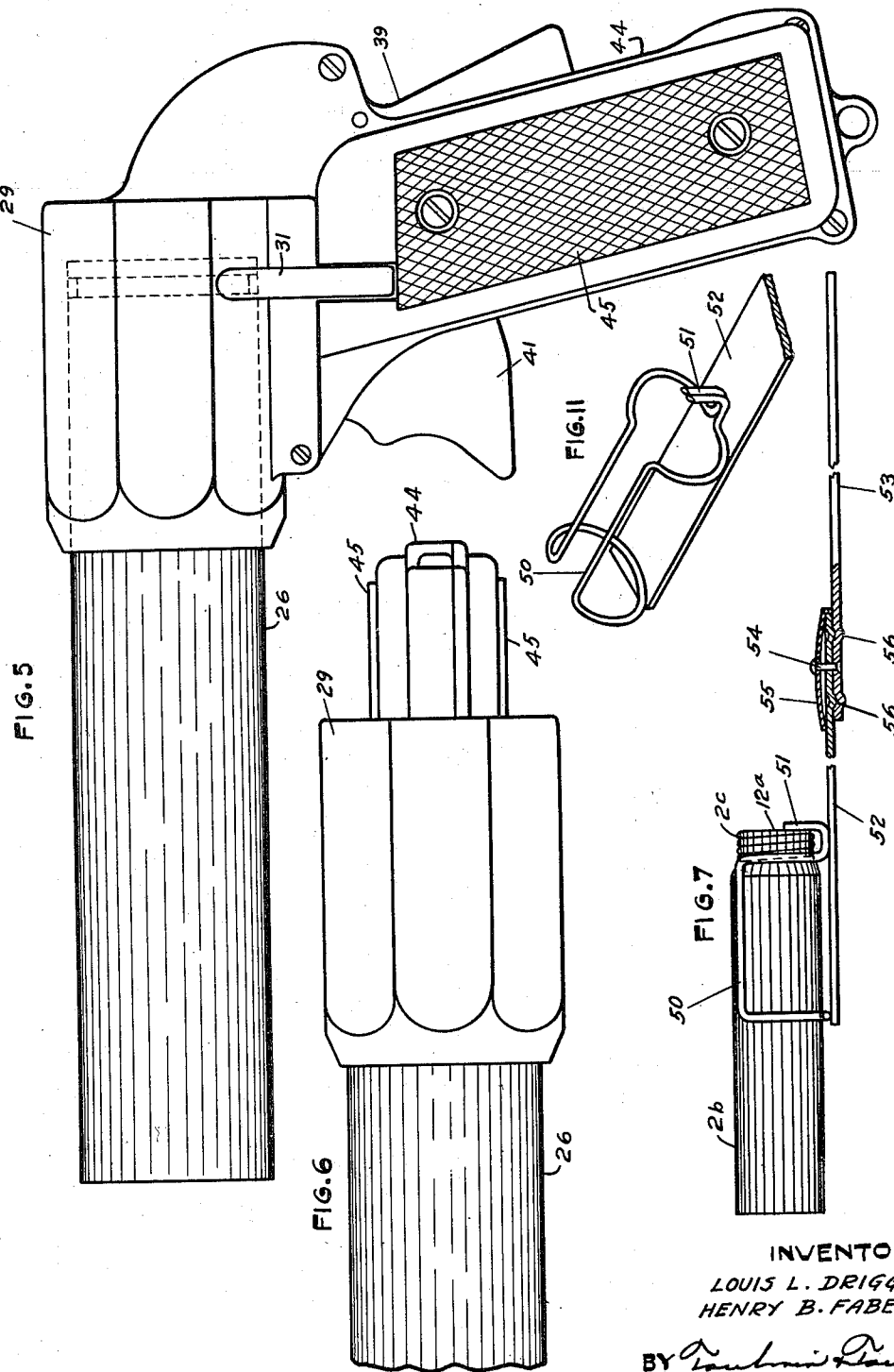
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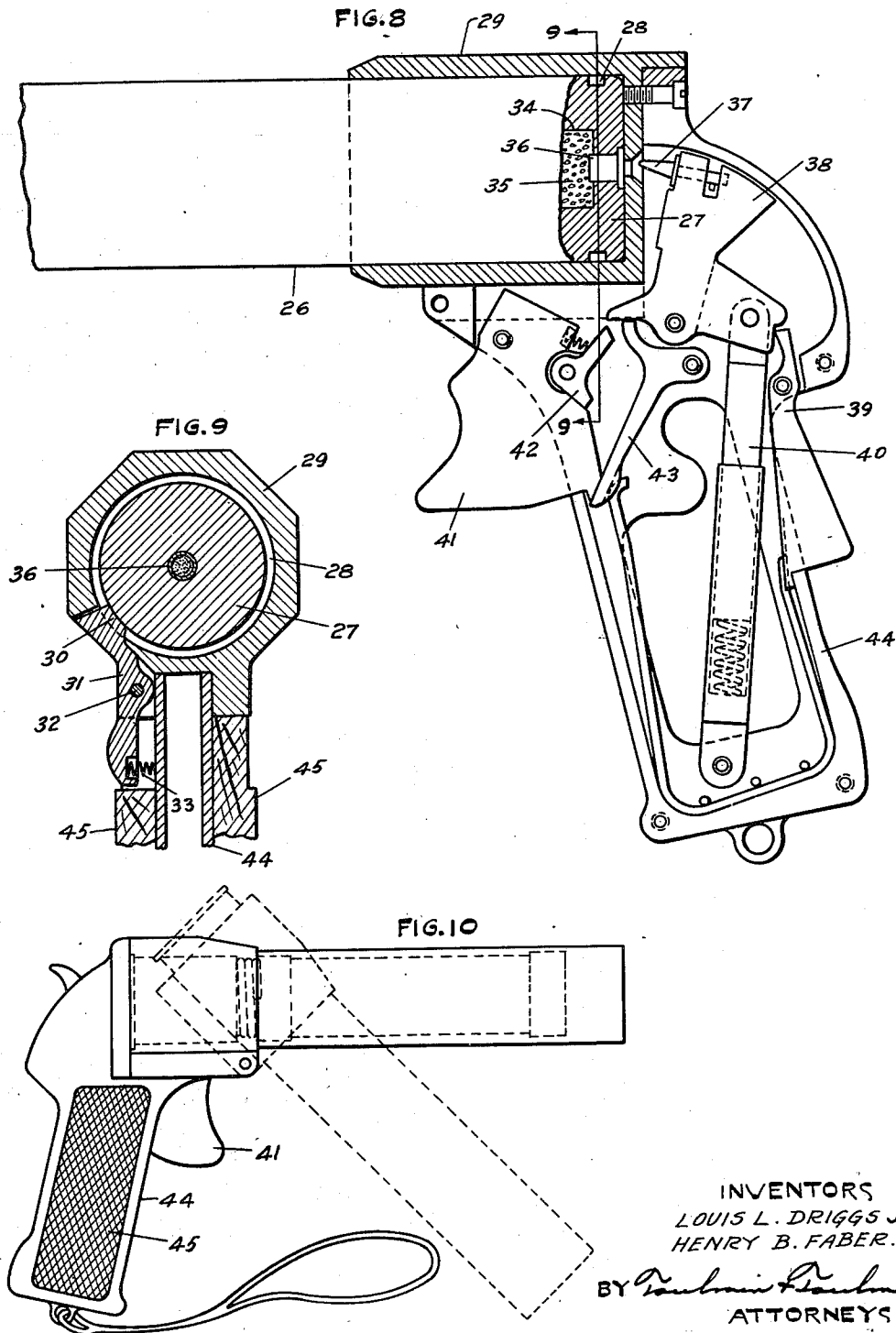
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UNITED STATES PATENT OFFICE

1,947,834

FLARE SIGNAL

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Application September 19, 1931
Serial No. 563,856

23 Claims. (Cl. 102—24)

This invention relates to flare signals.

It is the object of this invention to provide a flare signal and a detachable cartridge case therefor detachable from a holder or other firing mechanism.

In particular, it is the object of this invention to provide a flare signal contained within a metallic case having an integral base and side walls, the base being heavier than the side walls and the structure being preferably formed of a one-piece, drawn aluminum body, or other material of light weight and strength.

In particular, it is the object of this invention to provide such a flare signal which may be interchangeably mounted within a cartridge case from which it can be expelled by a powder charge, such cartridge case being detachably mounted in and forming a portion of the barrel of a firing pistol.

It is a further object to provide such a flare which can be used with a breech-loading pistol, as well as with a muzzle-loading pistol.

It is a further object of this invention to provide a flare which can be made in two parts so that they can be used interchangeably with a firing pistol or with a hand holder where it can be ignited by a hand match.

It is a further object of this invention to provide a novel form of fuse in combination with the novel shell for the flare.

It is an object of this invention to provide a flare comprising a fuse, a spacing member associated with an expelling charge, a gas check, a parachute, and means between the respective ends of the parachute for preventing the collapse and binding of the parachute during its expulsion with the flare in order to insure its perfect opening upon being expelled from the case.

It is a further object to provide a flare case which may employ pyrotechnics, such as stars, in place of the flare and parachute without altering the construction, making it possible to use interchangeably flare signals and fireworks in a single firing mechanism or universal hand holder.

It is a further object to provide a shell of such character that it will not injure a person if it should fall upon them after discharge from the gun but still be of sufficient strength to withstand the forces applied to it of propulsion and expulsion.

Referring to the drawings:

Figure 1 is a section through the flare;

Figure 2 is a section through the shell having fireworks or pyrotechnic contents and an adaptor

holder in which the shell is mounted acting as a cartridge case support;

Figure 3 is a section through the two-piece, interchangeable shell for use either in a cartridge case or in a hand holder;

Figure 4 is a section through the shell and the cartridge case;

Figure 5 is a side elevation of a breech-loading pistol with the cartridge case in position;

Figure 6 is a plan view thereof;

Figure 7 is a side elevation of the unfolded hand holder with the shell in position for firing;

Figure 8 is a section through the muzzle-loading pistol and the firing mechanism;

Figure 9 is a section on the line 9—9 thereof showing the mechanism for detachably locking the cartridge case in the pistol;

Figure 10 is a side elevation of the breech-loading piston showing in dotted lines its open or broken position;

Figure 11 is a perspective of the flare holder.

Referring to the drawings in detail, the shell comprises a base 1 of relatively heavy material and the side wall 2 of thinner material drawn from a single piece of aluminum. This gives an impervious shell—impervious both to moisture and gases, as well as a shell that is strong in handling and which protects the contents thereof from moisture and other agents bringing about deterioration of the contents. It is very light and, at the same time, strong and accurate. One of the essentials of a shell of this character for flare work is to have an extremely accurate shell, both for the alignment and positioning of the contents, for the free movement of the contents from the shell, and to enable the retention of gases when and where desired for facilitating the expulsion of the contents of the shell.

The base of the shell has an aperture 3 in which is mounted a copper eyelet 4 having compressed powder 5 therein constituting a fuse which ignites the black powder 6 within the wooden spacing ring 7. Mounted on the spacing ring 7 is the apertured felt washer 8 upon which rests the case 9 containing the flare 10. This flare is provided with a layer 11 and a layer 12 at the bottom for the purpose of furnishing a prime layer and a first fire layer in order to progressively ignite the flare 10 which is otherwise difficult to ignite, in some cases, direct from the powder charge 6.

The base of the flare is exposed at 12a for ignition by the black powder 6, which also acts as the expelling charge for expelling the flare and its parachute from the case. The top of the

flare has embedded therein at 13 within the cover 14 a wire 15 that is coiled at 16 and then passes around the gas check washer of felt 17 for connection to the ring 18 of the parachute 20. This parachute is protected by the column of wood 21 having a metal cap 22 upon which rests the cork plug 23 beneath the pressed metal retainer 24.

This retainer 24 is provided with a skirt 25 interposed between the margin of the cork disk 23 and the interior of the shell. It serves to align and position the column 21, the plate 22 and the cork member 23.

When the flare and its parachute are expelled, the tendency to compress the parachute is resisted by the column 21, but the parachute will remain in its original folded condition and satisfactorily open upon detachment from the shell.

The principal use of the cartridge with its flare and parachute is as shown in Figure 4 where it is mounted within a cartridge case 26 having a heavy base 27, such cartridge case preferably being made of aluminum. The base is provided with an annular groove 28 which acts as a part of the attaching means within the firing pistol. The firing pistol is provided with a short barrel 29, through one wall of which projects a spring-pressed nose 30 which enters the groove. This nose is a part of the finger 31 pivoted on the pistol at 32 and pressed in position by the spring 33.

The base 27 is provided with a chamber 34 containing black powder 35 which acts as a propelling and igniting charge as it is in communication with the fuse 5 and also with the base 1 of the shell.

This charge of black powder 35 is ignited by a firing cap or blank cartridge 36. This in turn is ignited by a firing pin 37 striking it in the usual manner.

The firing pin 37 is carried on the hammer 38 which is controlled by the hammer lock 39.

A hammer and cylindrical control casing 40 are attached to the hammer. 41 designates the trigger and 42 the sear. 43 indicates the trigger arm. This mechanism is contained within the handle 44 having wooden grips 45 on the sides thereof.

Returning to the form shown in Figure 2, the shell is pressed into the skirt 46 of a short cartridge case having the base 27 and a shoulder 27a. The remainder of the mechanism is the same. In this figure is shown a typical representation of a pyrotechnic contents consisting of stars 47 and pieces of quick match 48 contained within the casing 49 resting on the felt washer 8 in association with the powder charge 6.

In Figure 3 is the two-piece shell comprising a base 2a and a top 2b pressed into threads 2c so that, when threaded together, they can be used as a pistol-operated flare signal, and, with the base removed, the top 2b can be mounted within the spring wire holder 50 having the base 51. In such position, the base of the flare is exposed at 12a and can be ignited by a hand match.

This hand holder consists of a pair of plates 52 and 53 pivoted at 54 and yieldingly held in either collapsed or extended position by the spring 55 in the depressions 56 on the respective haves 52 and 53.

It will be understood that, by providing a shell of any light metal, such as aluminum magnesium and the like, we not only improve the operation of the construction but also make it safer in that observers will not be injured by the falling empty shell. Again, this shell falls over and over as

it descends and due to its form and shape it is retarded by the air so that its velocity upon arrival on the ground has been greatly reduced.

Again, it will be understood that we provide the very heavy barrel of the firing implement in line with the firing path so that the recoil will be absorbed by the mass of metal constituting the short permanent barrel. We have provided a detachable barrel constituting a cartridge case with a heavy base at the point of attachment to the main barrel and also form within its heavy base a powder chamber. We mount upon this base within the cartridge case the shell which is formed of one piece of metal having a relatively heavy base ample to form a powder chamber and provide a shell while of light weight yet of sufficient strength to withstand the rejection from the cartridge case and to retain, without being deformed, its own expelling charge and to expel therefrom its own cartridge contents freely and easily, which it would not do if it were deformed as in the case of an ordinary cartridge.

It will be further understood that we desire to comprehend within our invention such modifications as may be necessary to adapt it to varying conditions and uses.

Having thus fully described our invention, what we claim as new and desire to secure by Letters Patent, is:

1. In combination, a shell comprising a base and side wall of one piece of drawn metal, said base having an aperture, and a tubular eyelet having a shoulder inserted in said aperture, the shoulder thereon resting on the outside of the base of the shell.

2. In combination, a shell comprising a base and side wall of one piece of drawn metal, said base having an aperture, and a tubular eyelet having a shoulder inserted in said aperture, the shoulder thereon resting on the outside of the base of the shell, said eyelet having a reduced inner end.

3. In combination, a shell comprising a base and side wall of one piece of drawn metal, said base having an aperture, and a tubular eyelet having a shoulder inserted in said aperture, the shoulder thereon resting on the outside of the base of the shell, said eyelet having a reduced inner end and a contents of compressed powder.

4. In combination in a flare of a base and an integral wall shell of aluminum, a compressed powder fuse mounted in the base projecting into the shell, black powder surrounding said fuse, and an annular wooden spacer block containing said powder, a washer, a flare and a flare case mounted thereon having an exposed bottom to the black powder, a parachute wire embedded in the top of said flare and coiled on the exterior thereof, a washer mounted thereon around which said wire passes, a parachute folded above said washer, a cork plug above said washer, and means between said washers to prevent the collapse of the parachute, and a detachable closure member yieldingly forced in the open end of the shell and engaging said cork washer.

5. In combination in a flare of a one-piece shell having an integral base, a fuse, an expelling charge, a flare, a gas check, a parachute, means of connecting the flare around the gas check to the parachute, a closure for the shell, and means between the closure and the shell for preventing the collapse of the parachute.

6. In combination in a flare of a one-piece drawn aluminum case having a threaded base end, a detachable threaded metallic closure for

the open end thereof forming a base, a fuse mounted in the base thereof, an expelling charge in the base thereof, and a case mounted therein of pyrotechnics exposed to the powder charge.

7. In combination in a flare of a one-piece drawn aluminum case, a detachable metallic closure for the open end thereof, a fuse mounted in the base thereof, an expelling charge in the base thereof, and a case mounted therein of pyrotechnics exposed to the powder charge and held between the base of the shell and the closure therefor, and a relatively short cartridge case yieldingly engaging a portion of the side walls of the shell, the base of said cartridge case spaced from the base of the shell, a firing cap in the base of the cartridge case, and a propelling charge contained therein in engagement with the firing cap and the shell fuse.

8. In combination in a flare of a one-piece drawn aluminum case, a detachable metallic closure for the open end thereof, a fuse mounted in the base thereof, an expelling charge in the base thereof, and a case mounted therein of pyrotechnics exposed to the powder charge and held between the base of the shell and the closure therefor, a relatively short cartridge case yieldingly engaging a portion of the side walls of the shell, the base of said cartridge case spaced from the base of the shell, a firing cap in the base of the cartridge case, and a propelling charge contained therein in engagement with the firing cap and the shell fuse, and means on said base of the cartridge case for positioning said shell and case in a fire implement.

9. In combination, a cartridge case constituting a gun barrel having a base with an annular groove and heavy side walls, a propelling charge chamber and a fuse mounted therein, said base carrying side walls, a telescopically-arranged shell mounted therein having a relatively heavy smooth base and thin side walls, a fuse in the base of said shell communicating with the propelling charge of the cartridge case on one side and with an expelling charge in the shell on the other side, a flare and a parachute in said shell.

10. In combination, a cartridge case having a base with an annular groove, a propelling charge chamber and a fuse mounted therein, said base carrying side walls, a telescopically-arranged shell mounted therein having a relatively heavy integral base and thin side walls, a fuse in the base of said shell communicating with the propelling charge of the cartridge case on one side and with an expelling charge in the shell on the other side, a flare and a parachute in said shell, and means to prevent the collapse of said parachute.

11. In combination, a cartridge case having a base with an annular groove, a propelling charge chamber and a fuse mounted therein, said base carrying side walls, a telescopically-arranged shell mounted therein having a relatively heavy integral base and thin side walls, a fuse in the base of said shell communicating with the propelling charge of the cartridge case on one side and with an expelling charge in the shell on the other side, a flare and a parachute in said shell, and means to prevent the collapse of said parachute, and detachable closure means for said shell engaging said means for preventing the collapse of the parachute.

12. In combination, a one-piece cartridge case having an annular groove in the base thereof and a propelling charge chamber and a one-piece drawn shell of aluminum having a relatively

heavy base and thin side walls adapted to telescopically fit within said cartridge case and rest on the base thereof forming the top of the propelling charge chamber, and a firing implement having means for detachably attaching said cartridge case therein.

13. In combination, a one-piece cartridge case having an annular groove in the base thereof and a propelling charge chamber and a one-piece drawn shell of aluminum having a relatively heavy base and thin side walls adapted to telescopically fit within said cartridge case and rest on the base thereof forming the top of the propelling charge chamber, and a firing implement having means for detachably attaching said cartridge case therein, a propelling charge and fuse in said cartridge case, a fuse and an expelling charge in said shell, a flare engaging said expelling charge in said shell, a gas check, a parachute, means for connecting said flare and parachute, a closure member for said shell, and means interposed between said gas check and closure member longitudinally disposed in said shell to prevent the collapse of said parachute.

14. In combination, a one-piece cartridge case having an annular groove in the base thereof and a propelling charge chamber and a one-piece drawn shell of aluminum having a relatively heavy base and thin side walls adapted to telescopically fit within said cartridge case and rest on the base thereof forming the top of the propelling charge chamber, and a firing implement having means for detachably attaching said cartridge case therein, a propelling charge and fuse in said cartridge case, a fuse and an expelling charge in said shell, a flare engaging said expelling charge in said shell, a gas check, a parachute, means for connecting said flare and parachute, a closure member for said shell, and means interposed between said gas check and closure member longitudinally disposed in said shell to prevent the collapse of said parachute, said parachute being arranged around said means to prevent its collapse.

15. In combination, a one-piece annular shell open at either end having a restricted base with threads pressed thereon, and an annular internal shoulder, a flare resting thereon, a gas check, a parachute, means connecting the parachute and flare, a closure member, and means interposed between said gas check and closure member to prevent the collapse of the parachute.

16. In combination, a one-piece annular shell open at either end having a restricted base with threads pressed thereon, an annular internal shoulder, a flare resting thereon, a gas check, a parachute, means connecting the parachute and flare, a closure member, means interposed between said gas check and closure member to prevent the collapse of the parachute, a detachable, one-piece cup having a thin side wall formed in annular threads, and a relatively heavy base, a fuse therein, a propelling charge adjacent thereto, and means for retaining said propelling charge having an aperture therein whereby when said members are threaded one to the other the propelling charge will be in engagement with the exposed end of the flare.

17. In combination, a cartridge comprising an annular body having a base with a groove thereon, a thin wall, heavy base shell telescopically mounted therein, said shell being comprised of two pieces threaded one on the other, a propelling charge and fuse in one part thereof, and a flare and parachute in the other part thereof.

18. In combination, a permanent barrel of a firing implement, a detachable barrel therefor closed at its base and detachably closed at its outer end, and a shell of one-piece having a closed base and a detachably closed end.
19. In combination, a permanent barrel of a firing implement, a detachable barrel therefor closed at its base and detachably closed at its outer end, a shell of one-piece having a closed base and a detachably closed end, and a cartridge in said shell.
20. In combination, a relatively heavy permanent barrel of a firing implement capable of absorbing the recoil of fire, a detachable cartridge case mounted therein constituting an extension of the barrel, said case having a relatively heavy base and thinner side walls, a telescopically arranged shell having a relatively heavy base and side walls thinner than the cartridge case, and a cartridge detachably mounted in said shell.
21. In combination, a heavy permanent barrel, a detachable barrel constituting a cartridge case formed of one piece of metal having a heavy base and thin side walls, a telescopically arranged, closely fitting shell of one piece of metal having a heavy base and thinner side walls, said shell being capable of standing the strain of being expelled from the cartridge case and of expelling a shell from its own interior without being deformed.
22. In combination, a heavy permanent barrel, a detachable barrel constituting a cartridge case formed of one piece of metal having a heavy base and thin side walls, a telescopically arranged, closely fitting shell of one piece of metal having a heavy base and thinner side walls, said shell being capable of standing the strain of being expelled from the cartridge case and of expelling a shell from its own interior.
23. In combination, a one-piece cartridge case having an annular groove in the base thereof and a propelling charge chamber and a one-piece drawn shell of aluminum having a relatively heavy base and thin side walls adapted to telescopically fit within said cartridge case and rest on the base thereof forming the top of the propelling charge chamber, and a firing implement having means for detachably attaching said cartridge case therein, a propelling charge and fuse in said cartridge case, a fuse and an expelling charge in said shell, a flare engaging said expelling charge in said shell, a gas check, a parachute, means for connecting said flare and parachute, and a closure member for said shell.
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Disclaimer

1,947,834.—*Louis L. Driggs, Jr.*, Tippecanoe City, Ohio, and *Henry B. Faber*, New York, N. Y. FLARE SIGNAL. Patent dated Feb. 20, 1934. Disclaimer filed Jan. 22, 1951, by the assignee, *The Kilgore Manufacturing Company*.

Hereby enters this disclaimer to claims 6 and 12 to 23, inclusive, of said patent.

[*Official Gazette February 13, 1951.*]

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