

[54] **DECOY FLARE WITH TRAVELING IGNITION CHARGE**

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[73] Assignee: The United States of America as represented by the Secretary of the Navy

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[51] Int. Cl. C06d 1/04, C06d 1/10

[58] Field of Search.....102/34.4, 35.6, 37.6, 37.8; 42/1 F; 89/1 T

[56] **References Cited**
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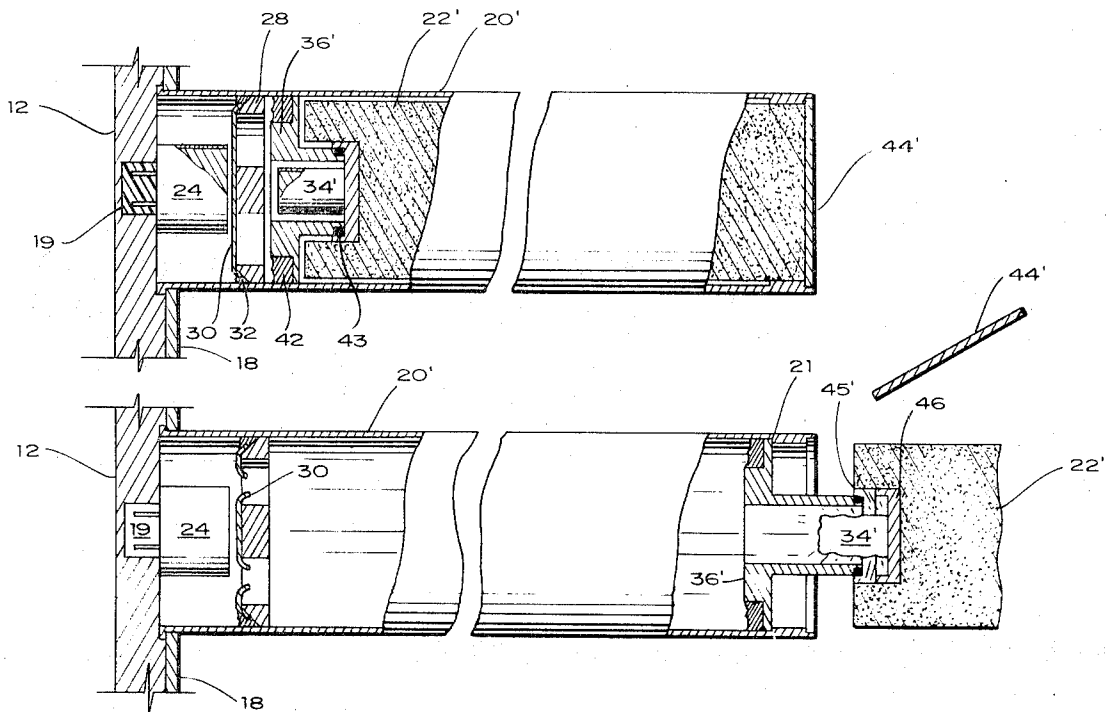
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[57] **ABSTRACT**

Cartridge type decoy flares are provided with ignition devices which will ignite the flare only after it has left the bore of the dispenser. Safety means is provided which remains in effect until after the flare has cleared the muzzle of the bore.

3 Claims, 2 Drawing Figures



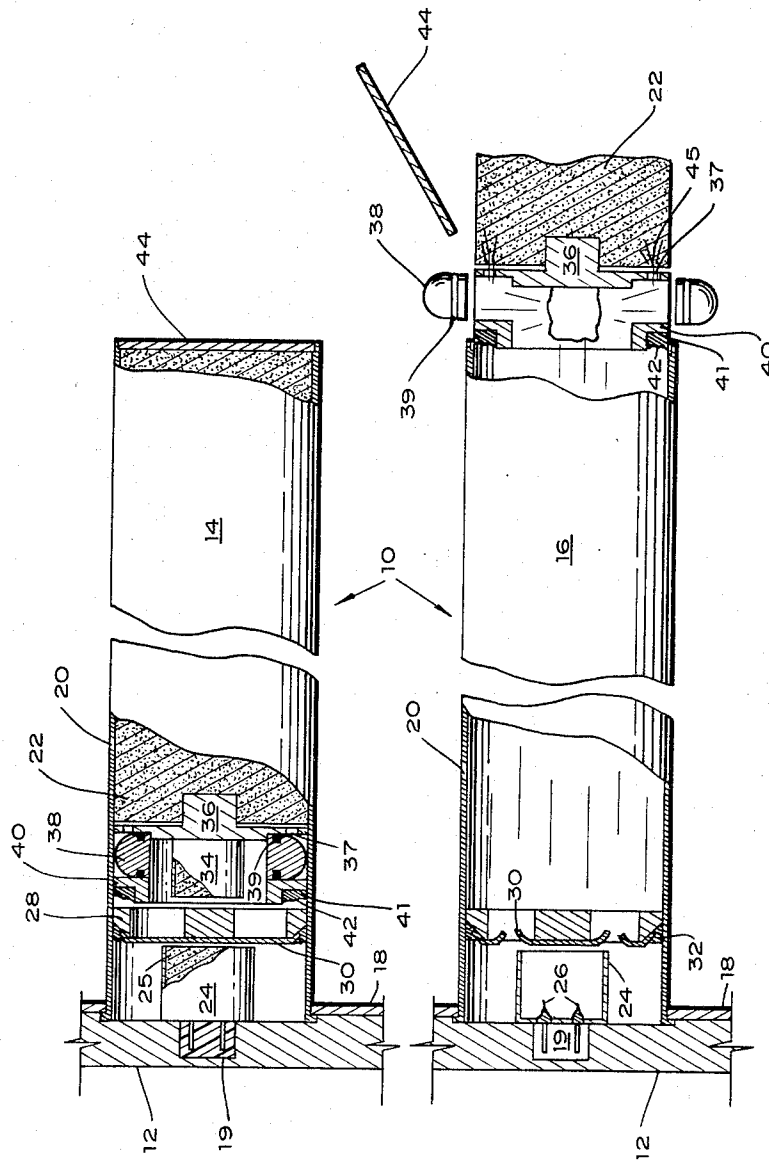


FIG. 1.

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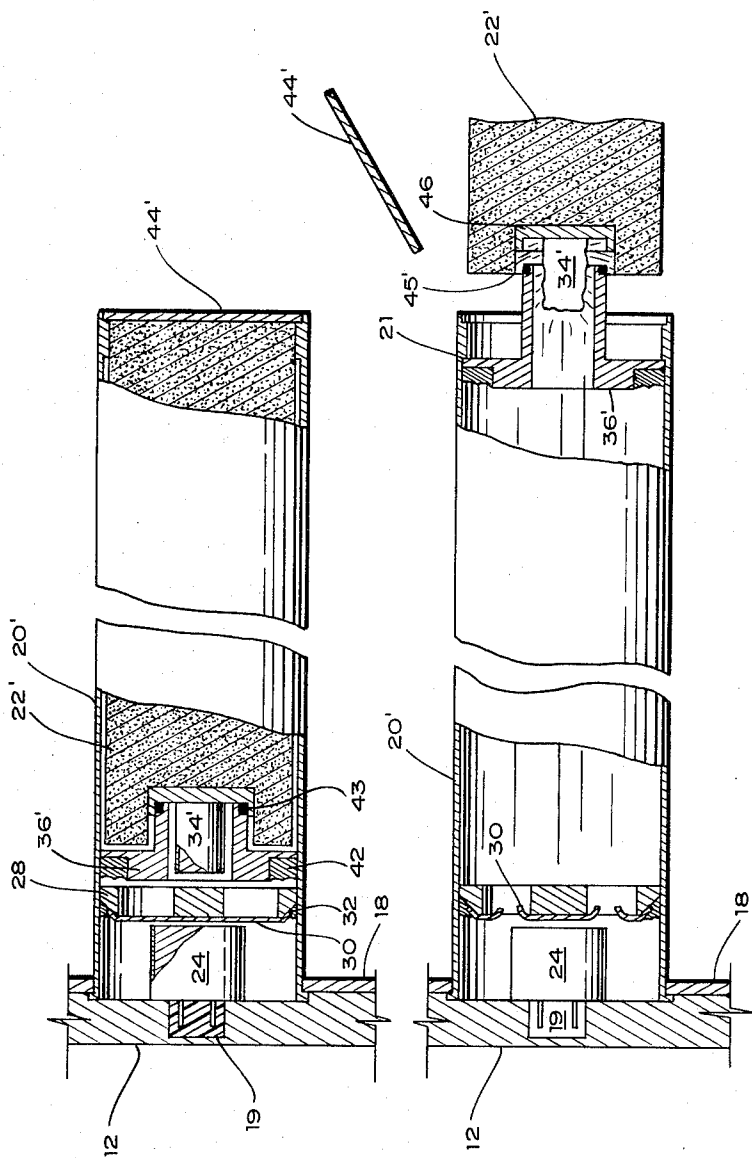


FIG. 2.

DECOY FLARE WITH TRAVELING IGNITION CHARGE

CROSS REFERENCE TO RELATED APPLICATION

The present invention is an improvement on Asignee's co-pending application, Ser. No. 766,039, filed Oct. 4, 1968, now U.S. Pat. No. 3582313.

BACKGROUND OF THE INVENTION

When extremely hot flares are deployed from an aircraft dispenser, it is important that individual flares not be ignited until after leaving the bore. Previous designs of such flares have included accelerometer, pull wire and pneumatic action igniters. These devices however have generally occupied an excess amount of valuable space, were complex and complicated, and also were generally low in reliability.

With this invention a simple, low cost, compact design, operating without the use of accelerometer, pull wire or the like, acts with great reliability utilizing a traveling ignition pellet. This traveling ignition pellet may also be used for a propelling charge, thus eliminating the usual impulse cartridge.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING

FIG. 1 is a cross sectional view longitudinally bisecting two flares in a dispenser; and

FIG. 2 is a view similar to FIG. 1 of a second embodiment.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

The flare system generally indicated at 10 in FIG. 1 comprises a dispenser body 12 designed to hold a plurality of flare cartridges 14, 16 as, for example, by flange members 18.

Each flare cartridge 14, 16 comprises a casing 20 which surrounds the flare material 22 and means for igniting the flare material when desired.

Also confined within casing 20 is an ejection charge 24 which may be fired through leads 26 by making contact with electrical circuitry (not shown) in dispenser body 12.

The flare 22 and its associated firing mechanism is separated from the ejection charge 24 by a blow-out disc 28 which comprises a rupturable diaphragm 30. The blow-out disc 28 is fastened into the cartridge case 50 by means of a suitable sealant 32.

The means for igniting the flare material 22 comprises an ignition pellet 34 fastened within a piston 36 containing two blow-out plugs 38 in diametrically opposing ports 40. The after end of piston 36 is recessed at 41 to contain a sealant 42 such as RTV6. Each of the plugs 38 are equipped with an obturation ring such as "O" rings 39. Each of the cartridges 14, 16 are closed by an end closure 44 which is designed to be blown out when the charge 24 is fired.

OPERATION

In FIG. 1, the flare cartridge 14 is shown before firing and, in FIG. 2, the cartridge 16 is illustrated after firing at the moment the piston 36 has cleared the case 20 sufficient for plugs 38 to be expelled. The sequence of events occurring between the firing of the ejection

charge 24 and the time represented by the parts of cartridge 16 take place in a time interval of less than 1 second.

When current is applied to conductors 26, the charge 25 of the ejection device 24 fires and ruptures diaphragm 30 of ring 28. Fire from the charge 25 then ignites the ignition pellet 34. Gas pressure from the firing of charge 25, and later gases caused by ignition of pellet 34, propel the flare 22 out of case 20 by means of pressure on piston 36. So long as piston 36 remains inside case 20, the fire from ignition pellet 34 is prevented from reaching flare material 22 because of the presence of plugs 38. As the flare assembly is expelled from the casing 20, however, plugs 38 are expelled by gas pressure allowing fire from ignition pellet 34 to be directed through ports 37 to ignite the flare material 22 as indicated at 45.

In the embodiment according to FIG. 2, a modified piston 36' has a forward opening which is closed by a cap member 46 which cap member carries an ignition pellet 34'. In this embodiment, the piston 36' and flare 22' are expelled from the casing 20' in much the same manner as described above when the ejection charge 24 is fired. The ignition pellet 34' is also similarly ignited.

In this case, the periphery of the piston 36' meets a flanged or embossed portion 21 of casing 20' and the forward momentum of flare material 22' causes a separation between piston 36' and the cap member 46, thus allowing the flare material 22' to be ignited at 45' by the ignition pellet 34'. An "O" ring 43 is placed between the cap member 46 and piston 36' to aid in retaining the members together until forced apart as described above.

The flare material 22' may take any shape and may include inhibiting or ignition strips, for example, as described in the above mentioned co-pending application. A comparison of the presently disclosed ignition devices with the ignition device, for example, in the co-pending application will be sufficient to indicate that applicant has devised an ignition device having advantages of simplicity and low cost without the sacrifice of safety or reliability. If desired, the ignition pellet 34 or 34' may be used as the propelling charge and the impulse cartridge eliminated.

What is claimed is:

1. A decoy flare system comprising:

a housing;

a plurality of flare cartridges in said housing;

a substantially cylindrical flare candle in each said cartridge;

piston means for expulsing flares individually from said cartridges and for preventing ignition of said flares until after said flare candle has cleared said cartridge;

ignition means on said piston means for igniting said candle; said cartridge having a central bore and abutment means projecting within said bore near the muzzle end of said cartridge;

said piston means including a bore riding portion and a cap portion;

said piston means being effective to prevent fire or flame from reaching said candle; and

said cap portion being separable from said bore riding portion to provide communication of fire and

flame through said piston means to said candle when said bore riding means meets said abutment.

2. In a flare system according to claim 1:

said piston means comprising a cylindrical cup attached to the breech end of said candle with the sides of said cup parallel to the bore of said cartridge;

the sides of said cup having one or more orthogonal cylindrical openings therein;

blowout means in each said opening;

said cup further including passageways communicating between the inside of said cup and the base of said candle;

said passageways being normally blocked by said

blowout means;

whereby, when said flare candle and piston are ejected from said cartridge, said blowout means will exit from said openings and allow fire from said ignition means to reach the base of said candle.

3. The flare system according to claim 2 wherein explosive means is provided for expelling said flare candle from said cartridge; and

a rupturable diaphragm is fastened within said cartridge between said candle and said explosive means.

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