Jan. 17, 1967 R. T. CATLIN 3,298,311

SMOKE FLARE

Filed Sept. 7, 1965

Fig. 1.

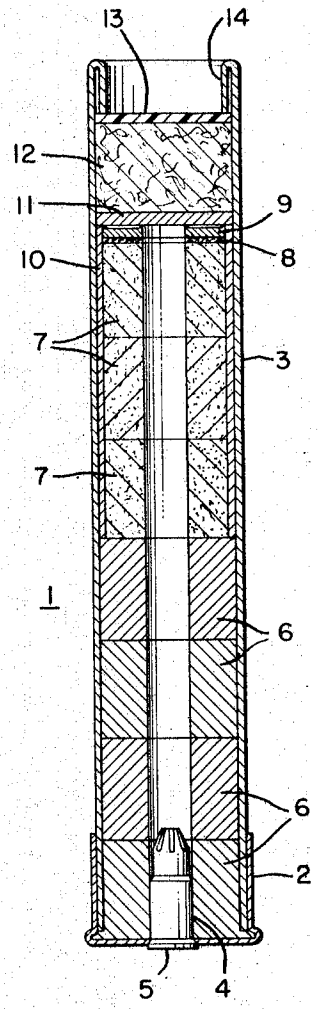
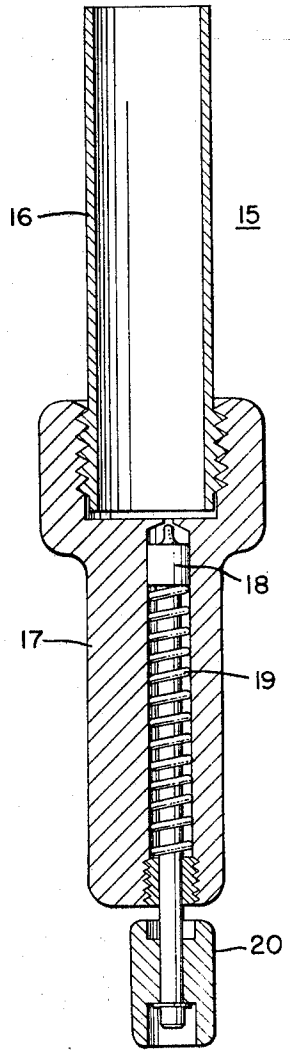


Fig. 2.



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SMOKE FLARE

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4 Claims. (Cl. 102—90)

This invention relates to signalling flares and in particular to a smoke flare intended to be fired in a hand held flare gun.

The tremendous increase in boating and other outdoor activity in recent years has led to a need for reliable, inexpensive and compact distress signalling devices. Both day and night signalling devices are needed that can be used with the same equipment.

It is the object of this invention to provide an improved smoke flare utilizing shotshell components for distress signalling during daylight hours.

It is another object of this invention to provide a smoke flare that can be fired from a low cost flare gun that can also fire aerial flares for night signalling.

Still another object of this invention is to provide a smoke flare ignited by a primed rimfire cartridge case.

A still further object of the invention is to provide a smoke flare with a completely inclosed and weatherproof ignition system.

The aerial flare referred to is disclosed and claimed in applicant's copending application Serial No. 485,390, filed September 7, 1965.

Other objects and advantages of this invention will become apparent as the following description proceeds, and the features of novelty which characterize this invention will be pointed out with particularity in the claims annexed to and forming part of this specification.

In the drawings:

FIGURE 1 is an elevation view in section of a smoke flare; and

FIGURE 2 is a sectional side elevation of a flare gun for firing smoke or other type flares.

The drawings illustrate a smoke flare **1** having a base **2** and a body **3**. While flare **1** can be made in any desirable size it is preferred to make it using components for 12-gauge shotshells. Base **2** is a standard 12-gauge shotshell base with a primer opening **4** into which is inserted a double primed 22 caliber blank cartridge or igniter **5**. Only priming is used in case **5** so that the gases generated from firing case **5** will ignite flare **1**. If a conventional blank were used, the gases generated would blow the flare mixture out of body **3**. Body **3** is a 12-gauge shotshell tube but is considerably longer than a conventional shotshell. Body **3** can be made of any ordinary shotshell material, such as paper or plastic, but paper is preferred to prevent hot fragments from dropping on the user's hands as would happen when a plastic body burned and melted.

A conventional shotshell basewad **6** is positioned in base **2** and body **3** is held between wad **6** and base **2**. Wad **6** is formed with an opening through the center to allow a primer to be put in base **2** and in this instance case **5** projects into the opening. Three additional wads **6** are placed within body **3** on top of the first basewad so that the smoke mix cylinders **7** are remotely positioned from base **2** for a reason to be hereinafter explained.

Each cylinder **7** is formed with a hole through its center to correspond to the holes in wads **6**. While any number of smoke mix cylinders **7** can be used, it has been found that three cylinders provide a burning time of about one minute and still result in a convenient sized flare.

This desired burning time can be achieved by making each cylinder contain four grams of smoke mix.

To insure proper ignition of the cylinders, a washer shaped piece of flare mix **8** is attached to the topmost cylinder and a washer shaped section of black powder **9** is attached to the flare mix **8**. The smoke mix cylinders **7**, flare mix **8** and black powder **9** are contained in a tube or liner **10** made from the body of a 16-gauge shotshell.

In order to have the flare function at all times, a solid disk of black powder **11** is attached to a shotshell filler wad **12** and this assembly is placed over cylinders **7** with disk **11** closest to igniter **5**. All parts are retained in body **3** by a top wad **13** which in turn is retained by roll crimp **14**. Wad **12** can be of felt while wad **13** can be of cardboard.

Washer **9** and disk **11** can be formed by sprinkling black powder on mix **8** and wad **12** and compressing in place or can be made of quick match which is string coated with black powder.

Reference is now made to FIGURE 2 which shows a flare gun **15** for firing flare **1**. Gun **15** has a barrel **16** and a breech **17** which are threadably connected together. The two are unscrewed to be loaded with a flare and then screwed together again. Breech **17** contains a firing pin **18** and a firing pin spring **19** biasing pin **18** toward barrel **16**. A knob **20** is attached to the rear of pin **18**.

The gun **15** is fired by the operator pulling back on knob **20** and releasing it so pin **18** strikes the rimfire cartridge of the flare. It can be seen in FIGURE 2, that firing pin **18** is offset from center so that it will properly strike and fire the rimfire cartridge loaded in the base of the flare but will not fire a conventional shotshell.

Basewads **6** are used to make the total length of flare **1** sufficient to keep all cylinders **7** out of barrel **16**. Because of this length all burning takes place outside gun **15**. The holes in wads **6**, cylinders **7**, flare mix **8** and black powder **9** allow the hot gases from igniter **5** to impinge upon black powder **9** igniting it and igniting the remaining sections of flare **1**. The force of the gas from only the double priming in igniter **5** is sufficient to force wads **12** and **13** out of body **3** after powder **11** has been ignited and in turn ignited powder **9** which ignites mix **8** which ignites cylinders **7**.

The smoke signal is not propelled into the air. The gun and shell are hand held while the shell generates a dense cloud of high visibility orange smoke. It has been found that flare mix **8** will function properly when made of ⅛ gram of mix and washer **9** should be 2.5 grains of black powder, while disk **11** should also be 2.5 grains of black powder.

What is claimed is:

1. A smoke flare comprising a shotshell body, a shotshell base attached to said body, at least one shotshell basewad positioned within said body adjacent said base, at least one smoke mix cylinder positioned within said body remote from said base and a primed only rimfire blank cartridge case mounted in said base to ignite said smoke mix cylinder.

2. A smoke flare comprising a paper shotshell body, a shotshell base attached to said body, a plurality of shotshell basewads positioned within said body adjacent said base, a plurality of smoke mix cylinders positioned within said body remote from said base, said cylinders having a hole through their centers, a top wad and crimp to retain said cylinders within said body and a double primed only rimfire blank cartridge case mounted in said base to ignite said smoke mix cylinders.

3. A distress flare comprising a paper shotshell body, a shotshell base attached to said body, at least four shotshell basewads positioned within said body adjacent said base, at least three smoke mix cylinders positioned within

said body remote from said base, said cylinders having a hole through their centers, a washer shaped disk of flare mix attached to said cylinder furthest from said base, a washer shaped disk of black powder attached to said flare mix, a top wad and crimp to retain said cylinders within said body and a double primed only rimfire blank cartridge case mounted in said base to ignite said black powder, flare mix and smoke cylinders.

4. The combination set forth in claim 3, which includes a shotshell filler wad positioned in said body adjacent said top wad and having a solid disk of black powder attached theerto in contact with said washer of black powder whereby said blank will propel said filler wad

out of said body after igniting said solid disk of black powder.

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