March 13, 1951 P. H. GRIFFITH 2,545,275

FUSEE

Filed May 14, 1948

FIG. 1.

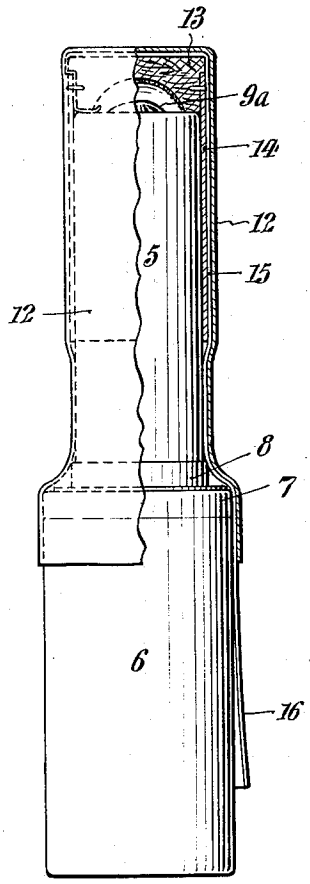


FIG. 2.

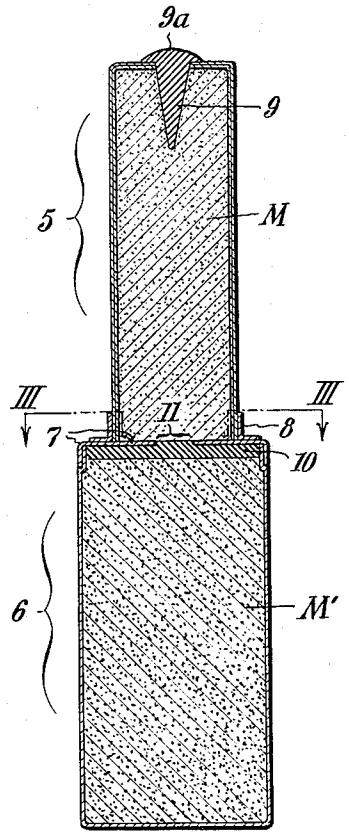
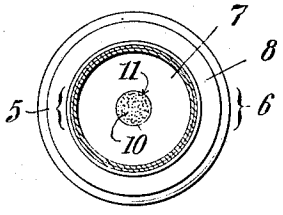


FIG. 3.



WITNESSES

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FUSEE

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5 Claims. (Cl. 102—37.7)

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This invention relates to fusees, i. e., to signal or warning devices such as are ordinarily carried on railway trains, ships at sea, aircraft, etc., for use in emergencies to give a visible alarm or distress signal which will endure for a considerable time interval and which can be seen from relatively great distances.

The chief aim of my invention is to make it possible, in a device of the kind referred to capable of use either during the day or at night and designed for the production first of a bright light of a suitable color and subsequently of colored smoke, to determine a definite time period for consumption of a given charge of smoke-producing material or composition with attendant creation of a billowing effect in the smoke throughout the period of its emission from the device.

How the foregoing and other important objectives and advantages may be readily realized in practice will appear from the following detailed description of the attached drawings, wherein Fig. 1 is a view, in elevation, of a fusee immediately embodying my invention, with a portion of its protective wrapping torn away and shown in section.

Fig. 2 is an axial section of the fusee with its protective wrapping completely removed; and

Fig. 3 is a horizontal section taken as indicated by the angled arrows III—III in Fig. 2.

In the form herein illustrated by way of example, my improved fusee has a hollow upper body component 5, and a coaxial lower body component 6 of somewhat larger diameter. In practice, the upper body component 5 is fashioned from combustible material, such as stiff cardboard or the like, and the lower body component 6 fashioned from non-combustible material, such as sheet metal, into the form of a can whereof the cover or lid 7 serves as a partition or separating diaphragm between the two. The component 5 is connected to the cover or lid 7 by means of a flanged annulus 8 with the aid either of glue or other suitable cementing medium. If this annulus be of metal, it may be soldered or welded fast to the cover or lid 7.

Packed into the upper component 5 is combustible composition M of a slow burning composition or mixture which, in burning, will produce a bright signal flame of a suitable color such for example as red, ignition of the charge being initiated by rubbing the protruding match head 9a of a block 9 of quick igniting priming material set into the upper end of the fusee, against any rough surface in a manner well understood in the art.

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In accordance with my invention, the lower component 6 of the fusee is packed with a combustible compound or mixture M' the burning of which is attended by emission of a dense signal smoke preferably of a bright color tint. Before application and sealing of the lid 7, a layer or disk 10 of instantaneous quick igniting priming material is laid over the packed composition M', said priming material being in intimate contact with the composition M in the upper component 5 through a central orifice 11 of restricted area in said lid.

To prevent accidental igniting of the fusee in storage, I have provided, as shown in Fig. 1, a cap 13 of wood or the like with an attached pendent sleeve 5 which fits down over the upper body component 5. After placement of the sleeve 14, a protective wrapping 15 of tough paper or the like is applied about the fusee, said wrapping being extended down to embrace the whole of the upper component 5 and part of the lower component 6, and pasted or glued fast. The wrapping 15 thus serves as an additional means for holding the two components 5 and 6 against the possibility of accidental separation incident to careless handling of the fusee. Secured to the cap 13 is a pull tape 16 of which the free end protrudes from beneath the wrapping 12.

To prepare the fusee for use, the projecting free end of the tape is grasped and pulled upwardly to rip the wrapping 15, thereby exposing the sleeve 14 which can thereafter be removed by first imparting a slight twist to loosen it and thereafter withdrawing it endwise. With this preparation, the match head 9a is rubbed against a frictional surface for ignition of the composition M in the upper component 5 of the fusee. As the material M burns, it gives off a bright signal flame, and, as it is being consumed, the cardboard shell of the upper component 5 burns away with it. Upon complete consumption of the composition M, the priming material 10 in the lower component 6 of the fusee is automatically ignited and in turn starts burning of the composition M' with attendant emission of signal smoke through the orifice 11 in the diaphragm 7.

Due to the restrictive effect of the orifice, pressure builds up in the lower component to check rapid combustion, with creation of a billowing effect in the smoke as it emanates from the lower component until the material M' is entirely consumed.

It is to be understood that the area of the orifice 11 is so proportioned to that of the cross section of the lower component 6 as to control

smoke emission at a definite rate and thereby predetermine a corresponding definite time period for consumption of the material M'. The diameter of the lower component 6 does not necessarily have to be greater than that of the upper component, but is preferably made so to provide stability against easy over-turning of the fusee after it is set off, the main requisite being that it be of non-combustible material so as not to be consumed. It is to be further understood that I am not restricted to the specific details of construction hereinbefore set forth, by way of example, since these are obviously susceptible to considerable variation within the scope of the broader of the appended claims.

Having thus described my invention, I claim:

1. A fusee with a hollow upper body component fashioned from combustible material and packed with a slow burning combustible signal flame-producing composition; an attached hollow lower body component fashioned from non-combustible material and packed with a combustible signal smoke-emitting composition; and a separating diaphragm of non-combustible material between the two components having an orifice therein for access of flame to the lower component to ignite the smoke emitting composition after the upper component is entirely consumed, the area of said orifice being so proportioned as to control the rate of emission of the smoke from said lower component with attendant creation of a billowing effect in the smoke discharge.

2. A fusee according to claim 1, in which the upper body component is fashioned from cardboard; and in which the lower body component is fashioned from sheet metal.

3. A fusee according to claim 1, in which the upper body component is cylindric and fashioned from cardboard; in which the lower body component is likewise cylindric but of greater diameter and fashioned from sheet metal; in which a cover for the top of the lower component constitutes the separating diaphragm; and in which a flange annulus serves as a connecting element between said upper and lower components.

4. A fusee according to claim 1, further including a protective wrapping of sheet material which entirely envelops the upper body component, and which extends down past the juncture between the two components and is adhered to both of them.

5. A fusee according to claim 1, in which the upper body component is cylindric and fashioned from cardboard; in which the lower body component is likewise cylindric but of greater diameter and fashioned from sheet metal; in which a cover for the top of the lower component constitutes the separating diaphragm; in which a flanged annulus serves as a connecting element between the upper and lower body components; and further including a protective wrapping of sheet material which entirely envelops the upper body component and which extends down past the juncture between the two components and is adhered to both of them.

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