



# UNITED STATES PATENT OFFICE

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## FLOATING SIGNAL

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6 Claims. (Cl. 9-8)

This invention relates to floating smoke signals and more particularly to a floating smoke signal for use by occupants of a lifeboat to attract the attention of the occupants of an airplane.

An object of this invention is an inexpensive small-size smoke signal of simple construction which can readily be stowed in a lifeboat and which upon being thrown into the water immediately assumes an upright position with a substantial portion thereof above the water level.

In general, a smoke signal embodying the invention consists of a heat-proof cylindrical casing within which is arranged a container filled with combustible powder and on the bottom of which is provided suitable ballast. The size of the casing is sufficient that it has enough buoyancy to maintain it about two-thirds out of water and the ballast is suitably arranged and heavy enough to keep the casing in upright condition. Preferably, the ballast is located along the periphery of the bottom of the casing rather than over the entire casing bottom in order to obtain maximum stability. Means are provided for automatically igniting the contents of the container and forming a vent for the escape of the products of combustion which, because of the composition of the powder, produce a suitably colored attention-attracting smoke.

Other objects, novel features and advantages of this invention will become apparent from the following specification and accompanying drawing, wherein:

Fig. 1 is a section partly broken away of an embodiment of the invention;

Fig. 2 is a section on the line 2-2 of Fig. 1, and

Fig. 3 is a fragmentary view similar to Fig. 2 on an enlarged scale.

A casing 10 of cylindrical configuration is provided at its top end with a threaded neck 11 of slightly less diameter than the diameter of the casing and integral with the top wall of the casing. In the bottom end of the casing 10 is provided a ring 12 of heavy material such, for example, as lead, concrete or other material of high specific gravity. The ring 12 is arranged adjacent the vertical wall of the casing and is held in contact with the bottom of the casing by any suitable means such, for example, as a rib 13 formed by rolling in a portion of the casing wall.

Within the casing is arranged a cylindrical container 14 of slightly less diameter than the interior diameter of the neck 11 and the con-

tainer has at its bottom end a neck 15 formed integral with the end of the container. The neck 15 is threaded and a threaded cap 16 is screwed thereon. The bottom of the container 14 extends into the ring 12 and rests on the bottom of the casing, the ring having as one of its functions to center the container in the casing.

The upper end of the container 14 is offset to form a collar 17 to which is mechanically attached a threaded neck 18. A cap 19 is screwed on to the neck 18 and is provided with a central aperture through which the neck 18 projects. A thin metal disk 20 having an aperture 21 engages the end of the neck 18 and a continuous disk 22 of thin frangible material such, for example, as Celluloid overlies the disk 20. The two disks are held in place by a cap 23 threaded on the neck 18 and having a flange between which and the surface of the cap 19 is arranged a gasket 24. A cap 25 is threaded on the cap 19 and encloses the neck 18 and the parts supported thereby.

The cap 19 carries an igniter 26 having as one of its elements a wire 27, to the end of which is attached a ring 28. From the igniter a fuse 29 leads halfway around the collar 17 and enters the container 14 through an aperture 30 in the collar and the fuse is suitably sealed in the aperture. The fuse 29 is connected to a detonator 31 which rests on the body of powder within the container 14.

In order to make use of the device above described, the cap 25 is removed and the wire 27 is pulled through the igniter by means of the ring 28, thereby igniting the fuse 29 by means, not shown. The casing is then tossed into the water in which it floats in an upright position with the neck 18 above the surface of the water by reason of the weight 12. The fuse leads the flame to the detonator 31, explodes after a predetermined length of time, and the force of the explosion fractures the disk 22 to provide a vent. The explosion also ignites the powder in the container 14 to produce smoke which escapes through the fractured disk 22. The arrangement of the ballast in the form of a ring increases the stability of the flare over that which it would have if the same weight were spread over the entire bottom of the casing and reduces the possibility of the flame being extinguished by waves.

The heat generated by the burning of the powder in the container is so great that the solder and the like cannot be used to attach the neck 18 to the top of the container 14. Therefore,

the neck is mechanically connected to the top of the container as shown in Fig. 3. The neck 18 is formed at its bottom with an inwardly directed flange 32 and the top of the container is formed with a return bend having an outwardly extending flange 33. The flanges are rolled together mechanically under sufficient pressure to provide a heat-proof seal which will withstand the temperature to which it is subjected.

The particular construction of the igniter, fuse and detonator forms no part of this invention and, therefore, is neither shown nor described in detail. Any suitable means for igniting the powder in the container 14 may be used and the neck 15 provides a large opening through which combustible powder may be quickly introduced into the container to facilitate filling the same.

I claim:

1. A floating smoke signal comprising a casing having a threaded neck at one end, a powder container within said casing extending into the casing neck, a separate threaded neck member for said container projecting beyond said casing neck, a mechanical heat-proof seal between said neck member and said container, a cap threaded on to said casing neck and having an aperture through which said container neck extends, and means clamping together said cap and container neck.

2. A floating smoke signal according to claim 30

1 characterized by a mass of high specific gravity material in the bottom of said casing.

3. A floating smoke signal according to claim 1 characterized by a loop of high specific gravity material on the bottom of said casing adjacent the casing periphery.

4. A floating smoke signal comprising a casing having a threaded neck at one end, a powder container within said casing extending into the casing neck, a separate threaded neck member for said container projecting beyond said casing neck, the material of the container being formed with a return bend around the periphery of the aperture and the material at the bottom of the member being formed with a return bend cooperating with the container return bend, said bends being mechanically pressed together to form a heat-proof seal between the container and neck member, a cap threaded onto said casing neck and having an aperture through which said container member extends, and means clamping together said cap and container neck member.

5. A floating smoke signal according to claim 4 characterized by a mass of high specific gravity material in the bottom of said casing.

6. A floating smoke signal according to claim 4 characterized by a loop of high specific gravity material on the bottom of said casing adjacent the casing periphery.

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