United States Patent [19]

Sherer

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[54] SIGNAL BALLOON

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[21] Appl. No.: **44,153**

[52] **U.S. Cl.**.....**343/18 B**, 116/124 B
[51] **Int. Cl.**.....**G01s 9/02**, G01w 1/08
[58] **Field of Search**.....343/18 B; 116/124 B; 285/DIG. 2

[56] **References Cited**

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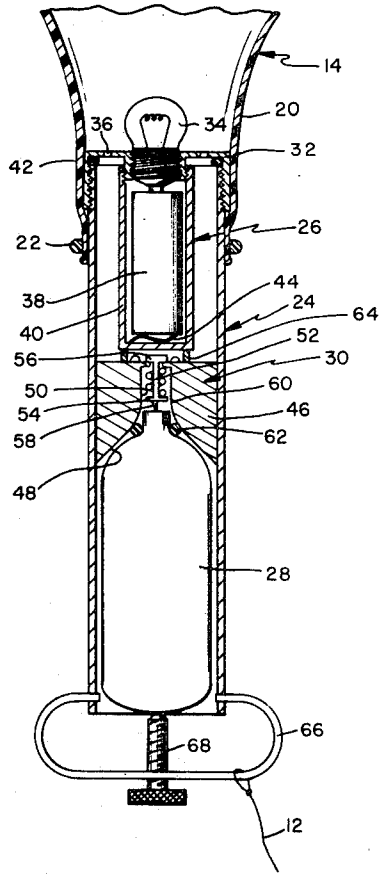
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[57] **ABSTRACT**

A signal balloon is provided for use by hunters, boatsmen and the like to attract searchers when the hunter or boatsman is lost or in distress. A brightly colored translucent balloon containing radar reflective material is attached to a cannister containing a battery and bulb for illuminating the balloon from inside and is formed with a charging chamber to receive a cylinder of helium and operating through a valve by which the balloon may be inflated. A line is attached to the casing for holding or anchoring inflated balloon.

2 Claims, 5 Drawing Figures



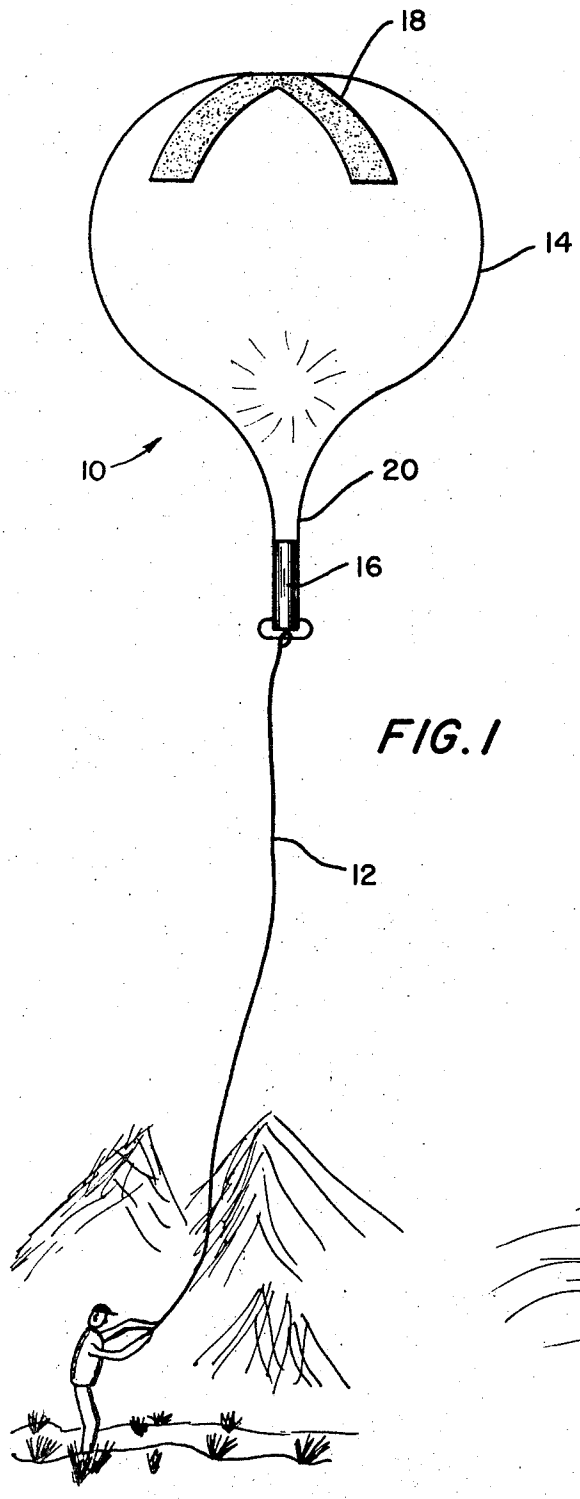


FIG. 1

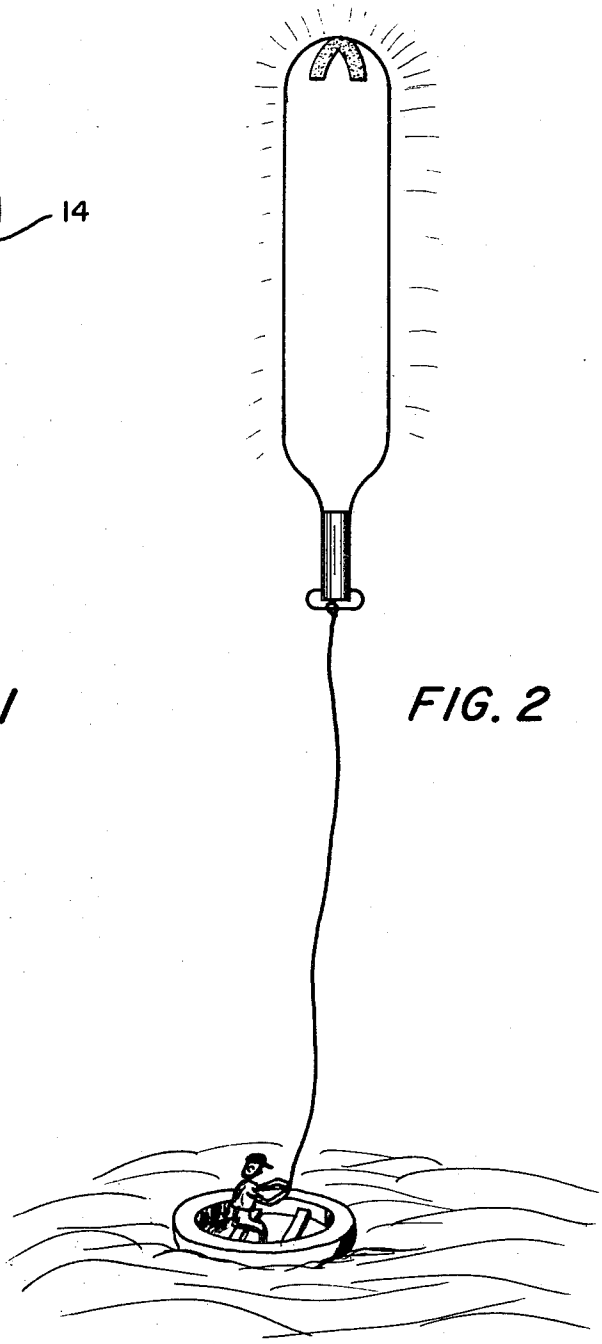


FIG. 2

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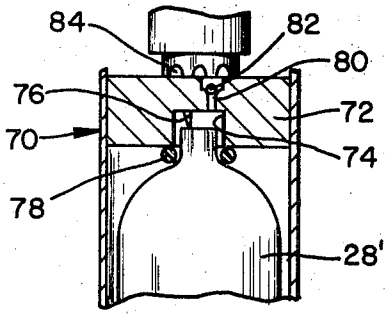


FIG. 4

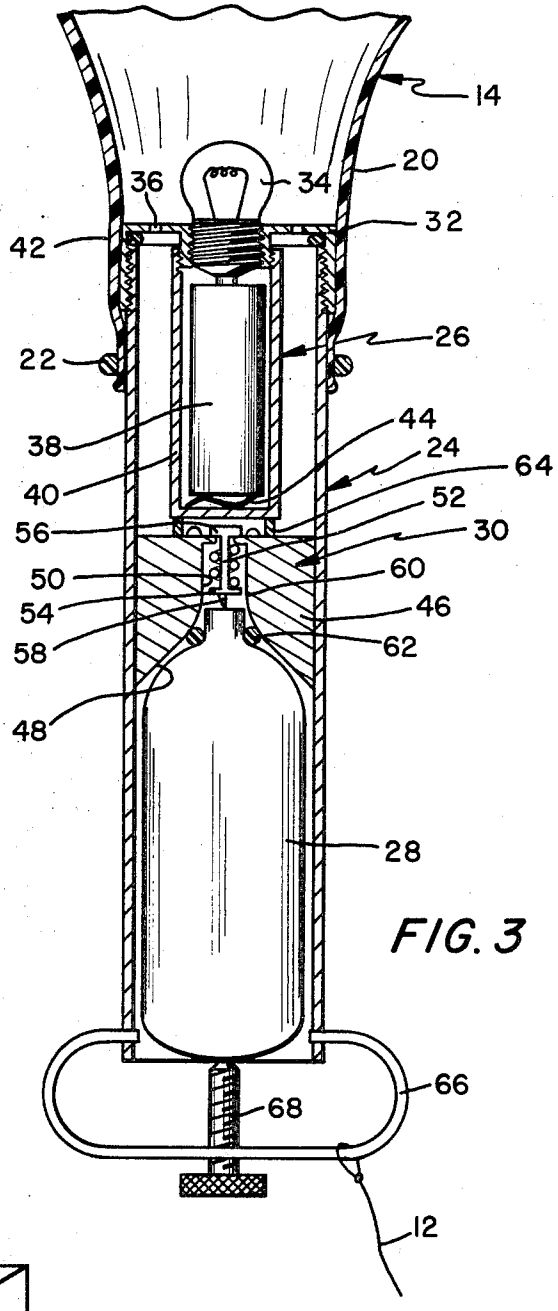


FIG. 3

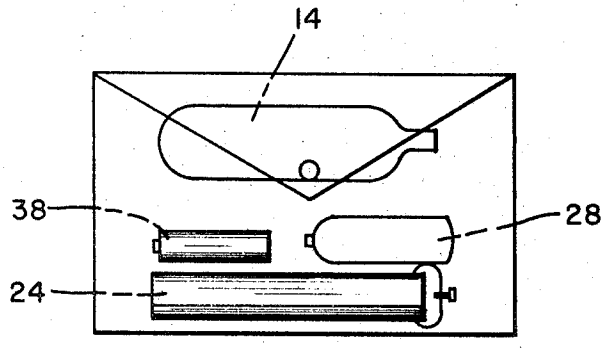


FIG. 5

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SIGNAL BALLOON

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates generally to signalling devices and more particularly is directed towards a new and improved signal balloon for aiding in the locating of lost hunters, boatsmen, hikers and the like.

2. Summary of the Prior Art

From time to time hunters, hikers, boatsmen and other personnel become lost or require assistance by reason of sickness, injury or the like. Since hunters and sailors in small craft seldom are equipped with radio transmitters they normally must rely upon their own ingenuity or luck in attracting the attention of a search party. An organized search effort may not begin for some hours or even days after the need arises by reason of the party not being missed by friends or relatives. In most instances, once a search has been instituted it is usually suspended during night time and during foggy weather. While various signal devices have been employed for use in these circumstances, none has been entirely satisfactory for various reasons. For example, ground markers require a clearing in woods and have but limited visibility, simple balloons must be visually spotted and are of no use at night time. Also, radio transmitting devices are generally quite expensive and cumbersome.

Accordingly, it is an object of the present invention to provide a new and improved signalling device for use in attracting the attention of a search party or others to a person requiring assistance. Another object of this invention is to provide a signal balloon which is illuminated for use in night time and which is radar reflective whereby radar may be used to detect and locate the party requiring assistance.

A further object of this invention is to provide a low cost, compact signal balloon kit which may be easily carried on the person and readily inflated when the need arises.

SUMMARY OF THE INVENTION

This invention features a signalling device comprised of a balloon, preferably fluorescent colored and containing radar reflective metal particles such as aluminum powder, for example. The mouth of the balloon is connected to a cannister containing a bulb extending into the interior of the balloon and electrically connected to a battery for use in night time signalling. A chamber is provided in the casing for receiving a cartridge of helium or the like and a valve and needle are positioned to release gas from the cartridge for inflating the balloon. A line is attached to the cannister for anchoring the inflated balloon to the ground or boat, for example.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a view in perspective of a signal balloon made according to the invention and in typical use,

FIG. 2 is a view similar to FIG. 1 but showing a modification thereof,

FIG. 3 is a sectional view in side elevation showing details in the construction of the cannister,

FIG. 4 is a fragmentary sectional view in side elevation showing a modified valve assembly, and,

FIG. 5 is a plan view of the invention in kit form.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring now to the drawings and to FIG. 1 in particular, the reference character **10** generally indicates an inflated signal balloon floating above the ground and anchored by means of line **12**, preferably a monofilament line which is light and strong with little bulk. The line is anchored to the ground or held by the person who may be lost or injured in the woods, for example, or adrift on the water as suggested in FIG. 2. The signal balloon is comprised of a balloon potion **14** the mouth of which is tightly sealed to a cannister **16** to which the line **12** is secured. The balloon **14** preferably is relatively large when inflated, on the order of perhaps three feet in diameter for a spherical balloon such as shown in FIG. 1. The size of the balloon is not critical but should be sufficient to raise the cannister **16** to an elevation of perhaps 200 feet or more according to the length of the line **12**. The balloon **14**, in the preferred embodiment, is brightly colored preferably with a fluorescent orange and an additional marking such as a black cross **18** may be provided so that an observer will realize that the balloon is a distress signal.

In the preferred form of the invention, the balloon material is impregnated with radar reflective particles such as aluminum powder or flakes, for example. The balloon material may be rubber, plastic or the like and may be lined with an epoxy film or the like to aid in retaining the helium for an extended period. The balloon is formed with a neck portion **20** terminating in an open mouth secured about the upper end of the cylindrical cannister **16** as by a clamp **22**.

The cannister **16** is comprised of a tubular cylindrical body portion **24** housing at its upper end a flashlight unit **26** and at its lower end a cartridge **28** of helium or the like. A valve assembly **30** is provided in the midportion of the cannister.

The flashlight unit **26** is organized about an annular cap or collar **32** the outer depending flange of which is threaded to the upper end of the body portion **24** while the inner neck portion is tapped to receive a bulb **34** threaded thereto. The annular cap **32** is formed with vents **36** through which the inflating gas is passed into the interior of the balloon **14**. A battery **38** is contained within a receptacle **40** threaded onto the central neck of the cap **32**. A resilient O-ring **42** may be provided between the cap **32** and the upper end of the body portion **24** to seal against loss of gas. In practice, a conductive spring or other resilient member **44** is provided at the base of the receptacle **40** to urge the battery into electrical contact with the base of the bulb.

The valve assembly **30** includes an annular block **46** formed with a conical lower face **48** and a central vertical passage **50** in which is mounted a needle valve **52** urged into a normally closed position by means of a spring **54**. The needle valve **52** is formed at its upper end with an enlarged head or disc **56** which seats against the shouldered upper portion of the passage **50**. The lower end of the valve element **52** is formed with a pointed tip **58** extending from a shoulder portion **60** and adapted to pierce the diaphragm across the mouth of a sealed cylinder **28** containing the charge of helium or other lighter than air gas. An O-ring **62** may be provided about the wall **48** to seal against the top of the cartridge **28** when the gas is being released. Mounted between the upper end of the valve block **46** and the

lower end of the battery receptacle **26** is a ported spacer **64** which may be formed separately from or integral with the receptacle **26** to provide a passageway for the gas released from the cartridge **28**, through the valve, so as to pass up and along the annular chamber formed between the battery receptacle and the wall of the cannister up through the ports **36** and then into the balloon.

At the lower end of the cannister is a baling handle **66** pivoted to the casing and carrying a screw **68**. It will be understood that the cartridge **28** is loaded into the cannister by swinging the handle **66** clear of the open lower end of the cannister and inserting the cartridge. Once in position, the handle is swung back across the opening and the screw **68** is tightened up against the base of the cartridge, forcing the needle tip **58** to puncture the cartridge diaphragm to release the gas. When the gas is released it will open the needle valve to fill the balloon and once the balloon is filled the pressure within the balloon and the force of the spring **54** will cause the valve to close itself to permit the cartridge **28** to be extracted and thereby reduce the weight of the unit.

Referring now more particularly to FIG. **4** there is illustrated a modification of the invention and in this embodiment a valve assembly **70** is in the form of a block **72** having a central recess **74** adapted to receive the upper end of a cartridge **28'** with a needle **76** fixed to register and puncture the diaphragm of the cartridge when pressed into seating engagement against an O-ring **78**. The block **72** is formed with a passage **80** through which the released gas passes, the passage **80** being equipped with a ball valve **82** seating in a conical lower end of the passage to serve as a check valve for the unit. As before, a ported spacer **84** is provided above the block to allow the gas to pass up and around the battery receptacle.

In practice, when the unit is to be put to use, if at night time, the battery and lamp are placed in position and turned on, the balloon is inflated and raised up by the line. The illuminated interior of the lamp will provide a brilliant visual signal which may be seen for a considerable distance at night and coupled with the radar reflecting particles in the balloon also provides a radar echo detectable over a considerable range. The radar reflecting characters of the balloon thus permit searching to be carried on in day and night and even in foggy or overcast weather. The balloon may be provided in the spherical shape of FIG. **1** or in an elongated configuration shown in FIG. **2** as desired. The spherical shape offers a larger viewing target where searching is carried out by airplane whereas the elongated balloon of FIG. **2** tends to be more visible where searching is carried on the ground.

The unit may be conveniently packaged in a small plastic or cloth envelope as in FIG. **5** for ease of carrying or storage.

Having thus described the invention what I claim and desire to obtain by Letters Patent of the United States is:

1. A signal balloon, comprising

a. an inflatable balloon having an open-ended neck portion,

b. an elongated tubular cannister secured at one end to said balloon in said neck portion,

c. a perforated cap threaded to said one end of said cannister,

d. said cannister being formed with axially aligned upper and lower chambers said upper chamber being adjacent to said balloon,

e. a battery case mounted in said upper chamber threaded to said cap and defining an annular passage with the walls of said cannister from said lower chamber to said balloon,

f. said cap being formed with a socket for mounting a bulb at the end of said cannister extending into said balloon for interior illumination thereof,

g. said lower chamber being adapted to receive a cylinder of gas axially inserted therein,

h. valve means disposed between said upper and lower chambers,

i. said valve means including a spring-loaded pointed element positioned to puncture the diaphragm of the gas cylinder inserted in said lower chamber whereby gas will be released from said cylinder through said valve means along said passage and into said balloon,

j. a baling handle pivoted to the lower end of said cannister and a screw threaded thereto adapted to bear against the end of said cylinder in said chamber for forcing the opposite end thereof against said pointed element, and,

k. a line secured to said cannister for anchoring said balloon.

2. A signal balloon according to claim **1** wherein said balloon includes radar reflective material and a visual marking.

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