

[54] RESCUE BALLOON KIT

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[22] Filed: **Feb. 25, 1972**

[21] Appl. No.: **229,388**

[52] U.S. Cl. **244/98**, 9/9, 9/316

[51] Int. Cl. **B64b 1/62**

[58] Field of Search 9/9, 11 R, 11 A,
9/2 A, 316, 318; 244/1 R, 98, 138, 137, 148

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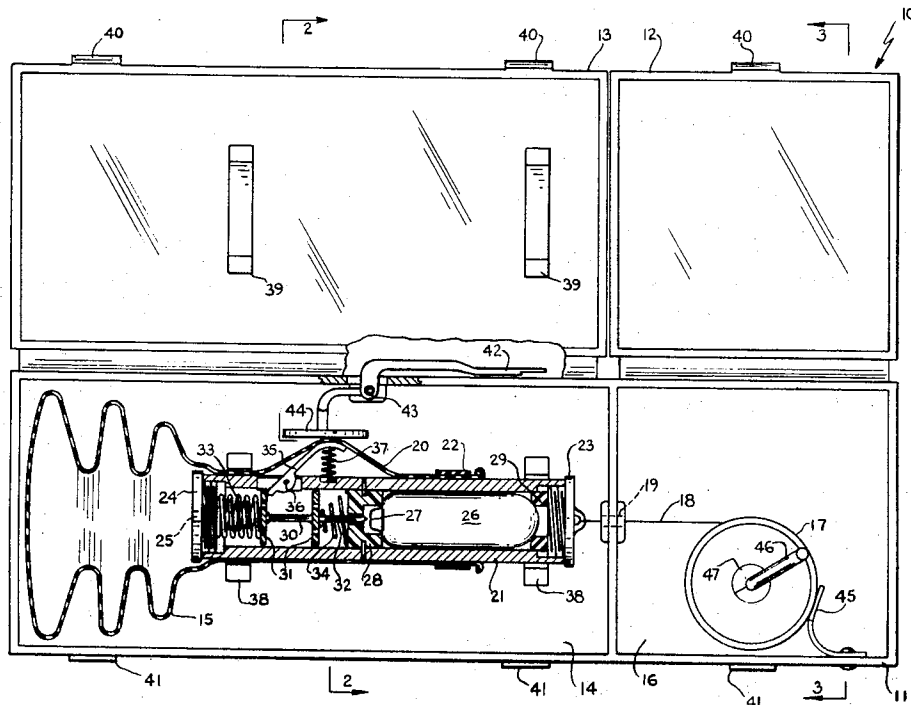
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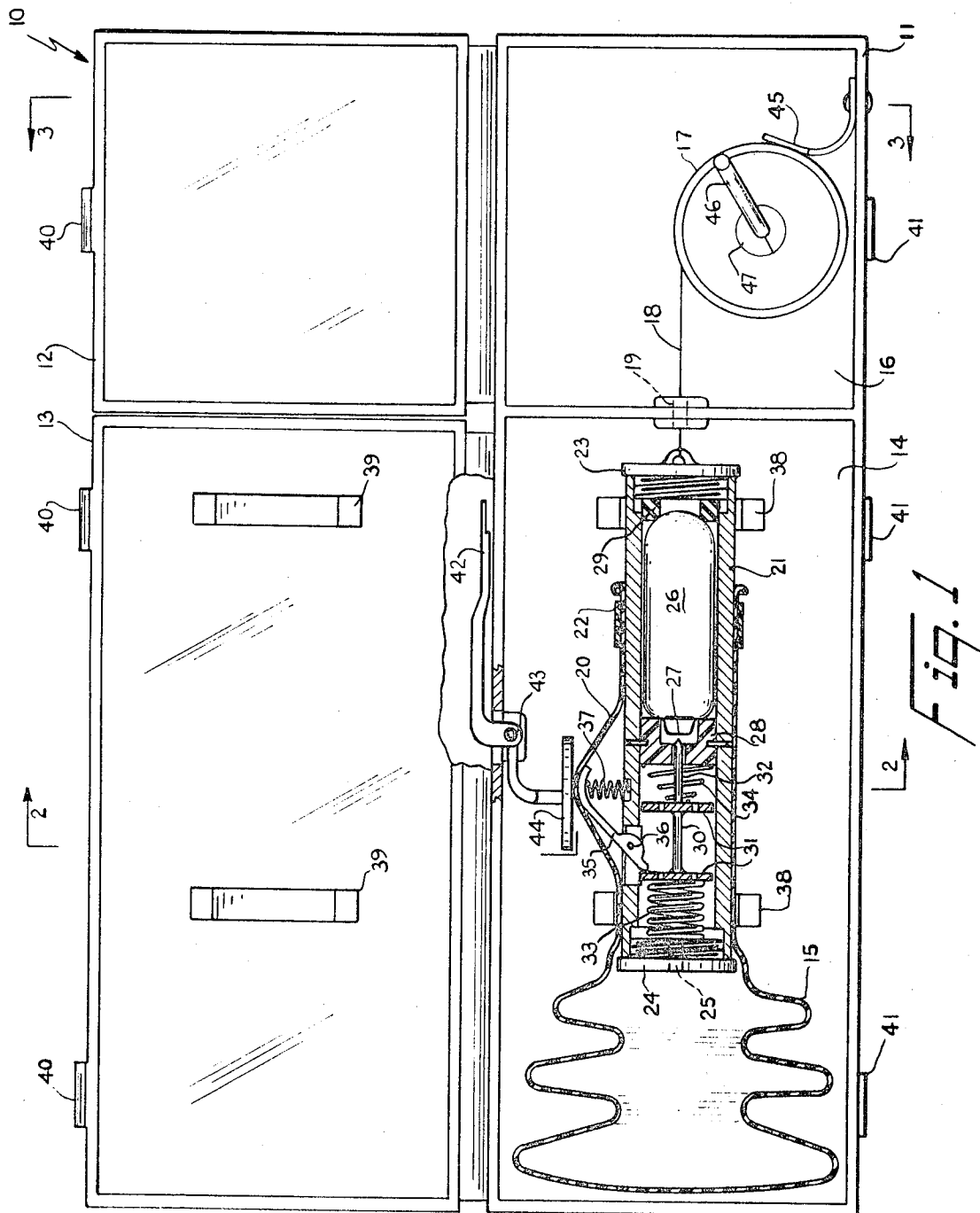
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ABSTRACT

A folded inflatable balloon is secured in fixed position in a box having a hinged cover with snap-type latches. The balloon has a long neck and contains a tubular container carrying a lighter-than-air gas cartridge having a frangible end and spring biased cartridge puncturing means which are held in biased position by a latch lever which extends outward from the container inside the neck. A pivoted trigger lever extends along the outer surface of the box and has an enlarged inner end adapted to depress the latch lever when the outer end is swung away from the box filling the balloon, opening the cover, and releasing the balloon. A light line, secured to the container, is wound on a reel in the box for tethering the balloon.

2 Claims, 3 Drawing Figures

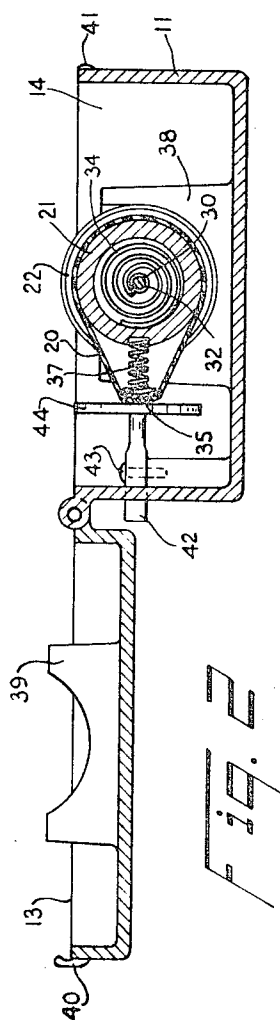
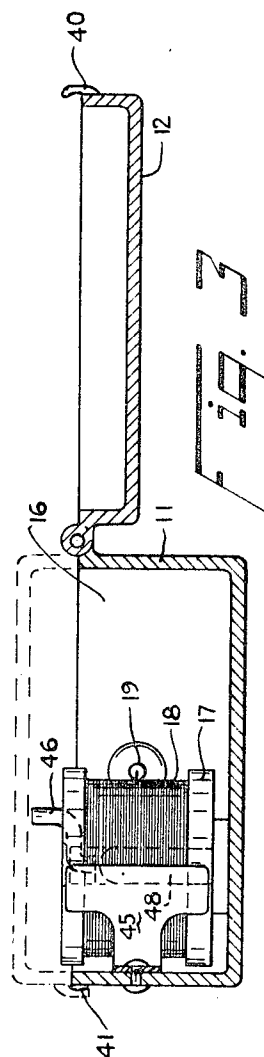




PATENTED JUL 17 1973

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RESCUE BALLOON KIT

BACKGROUND OF THE INVENTION

This invention relates to a kit including a box and folded balloon therein, the neck of the balloon containing compressed gas and gas releasing means operable by a lever on the box for filling the balloon, automatically opening the box and releasing the balloon, tethered by a light line as a position indicating means for someone lost or needing help in wooded areas.

Many prior art devices using a tethered balloon as position indicator are known, some being automatically released by the shock of a plane crashing or descending too low, others which have to be assembled by the person needing help, and still others requiring separate balloon filling and release operations. None, however, provide a lightweight kit which carries gas for inflating the balloon thereafter and gas releasing means carried in the balloon and being operable by a lever extending outside of the box, the balloon being automatically released upon inflation.

SUMMARY OF THE INVENTION

A lightweight box having a hinged cover and snap-type latch means contains an inflatable balloon in folded condition and a reel of lightweight line. In the neck of the balloon a tube contains a cartridge-type container of gas having a frangible end and a spring-biased plunger for rupturing the frangible end, the plunger being held in spring-biased position by a latch lever extending through the tube and away therefrom inside the balloon neck.

The tube and balloon neck are fixed in position in the box by cooperating cradle means secured to the box and its cover. A trigger lever extends along one outer surface of the box and thence past a pivot to an enlarged end inside the box adapted to depress the latch lever in the balloon when the outer end of the trigger lever is pulled away from the box.

Provision is made for replacing the gas cartridge, the end of the tube projecting out of the neck of the balloon having a removable cap. The end of the line on the reel is attached to this cap for tethering the balloon when it rises to a desired height after being automatically released from the box upon inflation.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a plan view of a kit embodying the invention, the box being open and having portions cut-away and a portion of the contents of the box shown in section;

FIG. 2 is a sectional view on the line 2—2 of FIG. 1; and

FIG. 3 is a sectional view on the line 3—3 of FIG. 1.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to FIG. 1, the kit 10 includes a box 11 and its covers 12 and 13, the box having a first compartment 14 containing the balloon 15 and its inflating means, and a second compartment 16 containing a reel 17 and a lightweight line 18 wound on the reel and passing through a hole 19 in the partition between the two compartments.

The neck 20 of balloon 15 is elongated and carries a tubular container 21 of a lightweight material such as

aluminum. A rubber band 22 or, alternatively, a conventional metal band secures the end of neck 20 to the container. One end of the container, which projects form the neck 20, is threaded and closed by the removable cap 23 and the end of line 18 is secured to an eye on the cap.

The other end of the container is closed by a plug 24, threadedly secured in the end or secured therein pins or other means, the plug being apertured at 25. A cartridge 26 of a lighter-than-air compressed gas, such as helium, is secured in the capped end of container 21. One end of the cartridge has a frangible seal therein at 27 and this end rests against a plug or partition 28 secured in the container by appropriate pins and of lightweight material such as plastic. The other end of the cartridge is secured by the cap 23 and intervening rubber washer 29.

At the other end of the container a pointed plunger 30 is slideable in the container and guided axially of the container by one or more apertured round disks 31 joined to the plunger. The pointed end of the plunger is contained in an axially extending hole 32 through the plug 28.

A relatively strong spring 33 extends between plug 24 and the disk 31 at the end of the plunger and a relatively weak spring 34 extends between the plug 28 and the other disk 31. Alternatively, one end of spring 34 may be secured to the plunger.

Spring 33 is normally latched under compression by a lever 35 which extends through a slot in the container wall and is pivotally secured to the container wall by a pin at 36. The latch lever 35 has a shorter end in the interior of the container and a longer end outside the container normally biased away from the container by a spring 37 inside of, and distending, the balloon neck 20 as shown.

The container 21 is secured in place in its compartment 14 by cradle members 38 secured to the box 11 and similar cradle members 39 secured to the cover 13. When the cover is closed the container and its encompassing balloon neck 20 are clamped securely between cradles 38 and 39. Snap-type closure catches 40, 41 are adapted to secure the covers 12 and 13 closed but to snap open automatically when the balloon is inflated.

Another lever 42, adapted to trigger the latch lever 35, extends through an appropriate slot in the sidewall of compartment 14 and is pivotally secured to the wall by a pin 43. The outer end of trigger lever 42 normally extends along the outer surface of box 11 and its inner end in compartment 14 terminates in a disk 44 adapted to contact the balloon neck 20 where it is bulged outwardly by the latch lever 35, the container being positioned by its securing cradles.

In compartment 16 the reel 17 is provided with a brake or drag 45 secured to the compartment wall and a crank 46 is secured by an expansion plug 47 to the reel for reeling in the balloon after it has served its purpose. A spindle 48 rising from the compartment floor provides a shaft on which the reel may rotate.

In operation the kit 10 is carried fully cocked and loaded, the spring 33 being under compression. To release the device, all that is necessary for the operator to do is to pull the trigger lever outer end away from box 11. This can be done by an injured person or a child not able to accomplish several steps of assembling parts or undertaking several successive operations.

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When the trigger lever 42 is turned the disk 44 at its inner end depresses the latch lever 35 and releases its cooperating plate 31 allowing spring 33 to propel the plunger 30 against the frangible seal at the end of the cartridge. Springs 33 and 34 are carefully chosen so that the plunger is propelled with considerable momentum against the seal so that after the seal is punctured spring 34 withdraws the point of the plunger from the broken seal allowing the compressed gas to escape and pass through the aperture at 25 to inflate the balloon.

As the balloon inflates it snaps open the cover 13, automatically releasing the balloon which rises controlled only by the brake 45. Cover 12 may be opened to control the rate at which the balloon rises by pressure against the brake 45 but this is not necessary. The inner end of the line is preferably secured to the reel but the height to which the balloon rises can be adjusted by looping line 18 around crank 46 when the selected height has been reached.

I claim:

1. A rescue balloon kit comprising a box having a hinged cover, an inflatable balloon in folded condition in the box, the balloon having an elongated neck, a tubular container in the neck having an apertured end and a threaded end, a closure cap sealed and secured to the threaded end and projecting from the neck, the neck and container being secured in a fixed location in the box when the cover is closed and freed when the cover is open, a cartridge of compressed lighter-than-air gas secured in fixed position in the capped end of the container, the cartridge having an axially centered

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frangible seal at one end, a plunger slideably mounted in the container apertured end and having a pointed end adapted for rupturing the frangible seal, at least one apertured disk secured to the plunger for guiding the plunger axially, a heavy spring biasing the plunger toward the frangible seal, a light spring adapted to bias the plunger for withdrawal of the plunger after the frangible seal has been broken, a pivotally mounted latch lever extending through the container wall and having a short end normally engaging the apertured disk for latching the plunger spring biased toward the cartridge, the latch lever having a longer end extending away from the container and inside the balloon, a third spring biasing the longer end away from the container, and a trigger lever pivotally secured to the wall of the box and extending therethrough, the trigger lever having an enlarged inner end adapted to be swung against the balloon neck over the long end of the latch lever and an outer end normally extending along the outer surface of the box and swingable away from the box to operate the latch lever for releasing the plunger to puncture the cartridge seal and fill the balloon with gas.

2. The kit defined in claim 1 wherein the box has a reel rotatably secured therein and a lightweight line on the reel having one end secured to the closure cap, the box having at least one snap-type closure catch, whereby the box is opened by operation of the trigger lever and the balloon is automatically released, tethered by the line, and may be raised by unreeling the line.

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