(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) Publication number: **0 240 468**
A2

(12) # EUROPEAN PATENT APPLICATION

(21) Application number: **87830073.0**

(51) Int. Cl.³: **G 08 B 5/00**

(22) Date of filing: **02.03.87**

(30) Priority: **04.03.86 IT 4771586**

(43) Date of publication of application:
07.10.87 Bulletin 87/41

(84) Designated Contracting States:
AT BE CH DE ES FR GB GR LI LU NL SE

(71) Applicant: **Capanna, Franco**
Via Nazionale 63
I-64019 Tortoreto Lido Teramo(IT)

(72) Inventor: **Capanna, Franco**
Via Nazionale 63
I-64019 Tortoreto Lido Teramo(IT)

(74) Representative: **de Simone, Domenico et al,**
Ing. Barzanò & Zanardo Roma S.p.A. Via Piemonte 26
I-00187 Roma(IT)

(54) **A device for locating, rescue and recovery of people and/or objects.**

(57) A device for locating, rescue and recovery of people and/or objects, said device comprising a belt (3) for fastening the device to the person or to the object to be recovered, a housing (5) arranged on said belt (3) and rigidly connected to the same, an inflatable balloon (1) housed, in the resting or not operating conditions, within said housing (5) and connected to the same by means of a foldable cable (4), means for releasing said balloon (1), means (7) for inflating the balloon (1) itself, said balloon (1) being also provided with a grip handle (2), as well as with a transmitter (8) and the antenna thereof, with an emitter of sound signals (8) and an emitter of light signals (9).

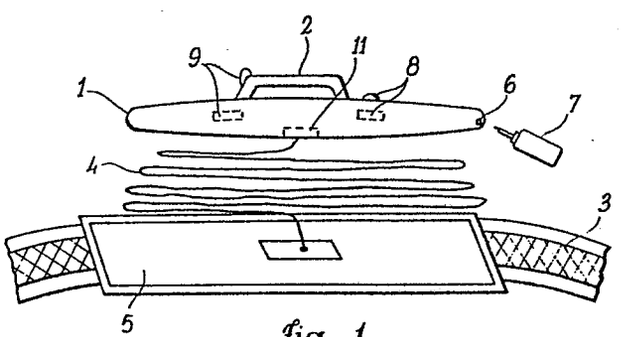

Fig. 1

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A DEVICE FOR LOCATING, RESCUE AND RECOVERY OF PEOPLE AND/OR OBJECTS

This invention relates to a device for locating, rescue and recovery of people and/or objects. More particularly, the present invention relates to a device of the type mentioned above, which is realized in such a way as to make the rescuing and recovering operations easier in any kind of situations, with particular reference to the situations in which the usual rescue means, such as for instance helicopters, cannot operate easily.

The problems in connection with the rescuing of people and means for solving such problems or at least for making the relative operations easier have become at the present time extremely important.

More particularly, the development of the techniques of locating, rescue and recovery is held in great consideration both as regards civil protection, and as regards those applications which are of a more specific military character.

The main object of the present invention is that of supplying a device that allows people, equipment and goods to be located and recovered in those cases which are considered difficult or impossible, such device being made up of a balloon or the like contained within a housing envelope fastened to the person in question or to the object, said balloon being capable of inflating automatically or as a result of a manually controlled action, said balloon being fastened to the person or the object through a strong and thin cable, said cable being able to support the weight of the person or the object to be recovered, said balloon being also provided with all

devices, such as for instance a signal transmitter with its antenna, a coating of a refractive material, a handle for a hooking operation, acoustic signaling devices, which make it possible to locate and recover people and/or objects under any condition.

Moreover, it is a further object of the present invention to provide a device of the kind mentioned above which can be employed for rescue operations in waters, in the mountain, in uneven zones such as brushwoods, in conditions of poor visibility, in case of fires or in those cases in which the people to be recovered are buried or as a safety means for the personnel employed for rescuing.

Accordingly, it is a specific object of the present invention to provide a device for locating, rescue and recovery of people and/or objects, said device comprising fastening means for fastening the device itself to the person or the object to be recovered, housing means arranged on said fastening means and connected to the same in a rigid way, inflatable balloon means housed in the non-operating condition within said housing means and connected to the same through foldable cable means, means for releasing said balloon means, such balloon means being also provided with gripping and hooking means, as well as signal transmitting means provided with the respective antennas.

According to a particularly preferred embodiment of the device of the present invention, said balloon means can also be provided with devices capable of emitting sound signals and/or with means capable of emitting light signals.

Again according to the present invention, said fastening means for fastening the device of the present invention to the person or to the object to be recovered can consist of a belt of sufficient strength to support the stresses caused by the rescue operations, as belts re-

alized in an independent way or integrated into a rescue equipment or system.

Further, said housing means are provided with manually actuated control means for releasing said balloon means and/or provided with sensor means that control said release following sharp changes in the temperature, in the altitude and the like.

Moreover, said balloon means belonging to the device according to the present invention can be coated with a coating of a material and of a color which are able to refract the light.

According to a further embodiment of the device of the present invention, said cable means are coated with an antifire and anticorrosive coat and they can include an electrical cable placed inside said cable means for connecting the device to radio sets and actuator means in possession of the people bringing help.

Said gripping and hooking means can be advantageously made up of a handle.

In addition, again according to the present invention, said transmitter means, which are qualified to transmit on frequencies set forth by the regulations in force in the various Countries, can be coated with a water-tight or sealing material, while said antenna can be of the flexible wire type, of the fishpole or the parabolic type.

Indeed, the particular structure of the device according to the present invention, allows through the automatic activation of the radio transmitting set the immediate introduction into the listening channels, the signal being in addition irradiated over a range that is remarkably wider than that of similar systems attached to the person because of the fact that said antenna resting on the balloon is placed high on the vertical line of the site to be reached by people

bringing help.

Thus in addition both naval and terrestrial search means can locate the person and/or the objects to be rescued in an easier way.

Moreover, in the case of a person who has been buried by a landslide or a snowslide and who has not been able to actuate the system before becoming completely buried, the locating of that person is much more rapid and consequently the probability to save the life of said person is much higher.

An additional advantage of the device according to the present invention is that of allowing a person to be located in cases in which said person cannot be sighted by the naked eye (e.g. in marshes, brushwoods, rough sea, crevasses, and the like) or in the case of adverse atmosheric conditions and in case of limited visibility.

The particular kind of the system for fastening the device to the person or to the object to be recovered allows in addition such operation to be carried out easily even in cases in which, once the person or the object have been located, the rescue helicopter cannot get sufficiently close to them.

Further, by means of the device according to the present invention it is possible to supply the person to be helped with equipment, food or any other thing that could be a comfort to the same by employing the cable as a cableway.

In addition, the device according to the present invention can be exploited as a recovery means when, after locating the person with other means, the direct recovery cannot be performed so that it is advantageous to drop a device like that proposed by the Applicant to the person to be recovered.

The device according to the present invention can be advan-

tageously employed, as already mentioned above, both in the military fields or like applications such as for instance the Navy, the Army, the paratroops, the Air Force, the police, the customs agents, guard corps, rescue squads, and in the civil field such as for instance the civil protection, the fire brigade, skiers, rock-climbers, hunters, aquatic sports, scouts, workmen in lonely erecting yards, people living in particularly lonely areas, and so on.

The present invention will be disclosed in the following for illustrative but not for limitative purposes with particular reference to the Figures of the enclosed drawings, wherein:

Figure 1 is a schematic exploded view of the device according to the present invention;

Figure 2 is a schematic view of the balloon of the device according to the present invention in the inflating phase;

Figure 3 is a schematic view of the device according to the present invention in the active position; and

Figure 4 is an illustrative view of the device according to the invention.

In Figure 1 the reference number 1 points out the inflatable balloon provided with the handle 2 for realizing the hooking operation with the rescue means. Said balloon 1 is fastened to a belt 3 provided on the person or on the object to be recovered, by means of a thin cable 4 that is made up of a material capable of supporting the weight of the person plus the weight of the equipment. An electrical cable can be provided inside said thin cable 4 for realizing any possible radio connection with those bringing help or for energizing any actuator means (not shown).

Obviously, a housing 5 is provided on the belt 3 for housing

the device according to the present invention in the non-operative condition.

The reference number 6 shows a valve for the inflation of the balloon 1, the inflating operation being carried out through the cylinder pointed out by the reference number 7.

The apparatus for the emission of sound signals is indicated with reference number 8 while the apparatus provided for the emission of light signals is pointed out by the reference number 9.

The balloon 1, as a result of the thrust due to the gas introduced into the same by means of the cylinder 7, takes in the inflated state a position right on the vertical line above the person in question, said position being pointed out by the reference number 10 in Figure 4, at such a height and with the emission of such signals as to allow the person to be located by means of radio-frequencies emission, the sighting by the naked eye and the rescue operations for instance in the case of rescue in a brushwood, as shown in Figure 4.

Indeed, the radio transmitter 11 contained inside said balloon 1 and its antenna 12 go into action immediately after the release operation of the balloon 1 out of its housing 5. The transmitter 11 will be of sufficient autonomy of operation to emitt help asking signals at pre-established frequencies according to the regulation in force in the various Countries where the device is employed.

In addition, the balloon 1 will be coated with materials and colors that are able to refract the light and to stand out from their environment.

When the balloon 1 has been located, the person bringing help can hook himself to the handle 2 which is to be sufficiently strong as to support the loads consisting of the weight as well as the lift-

ing action by means of a winch or the like.

The belt 3 also is to be of such a size as to warrant the strength required to support the stresses mentioned above.

A button (not shown) will also be provided on said housing 5, such button being able to release, following a manually controlled action, the balloon 1,or sensors will be provided which cause said release following sharp sudden changes in parameters such as the altitude, the temperature and so on.

The present invention has been disclosed with particular reference to some specific embodiments of the same but it is to be understood that modifications and changes can be introduced in the invention by those who are skilled in the art without departing from the spirit and scope of the invention for which a priority right is claimed.

CLAIMS:

1. A device for locating, rescue and recovery of people and/or objects, said device being characterized in that it comprises fastening means for fastening said device to the person or to the object to be recovered, housing means arranged on said fastening means and rigidly connected to the same, inflatable balloon means housed in the non-operative condition within said housing means and connected to the same through foldable cable means, means for releasing said balloon means, said balloon means being provided with grip and hooking means as well as with means capable of transmitting signals and provided with antennas.

2. A device according to claim 1, characterized in that said balloon means are provided with means emitting sound signals.

3. A device according to claims 1 or 2, characterized in that said balloon means are provided with means emitting light signals.

4. A device according to claim 1, characterized in that said fastening means for fastening the device of the invention to the person or the object to be recovered are made up of a belt of such strength as to support the stresses arising during the rescue operation.

5. A device according to claim 4, characterized in that said belt is provided in a rescue equipment or system.

6. A device according to claim 1 characterized in that said housing means are provided with means for manually controlling the release of said balloon means.

7. A device according to claims 1 or 6, characterized in that said housing means are provided with sensor means controlling the release of said balloon means following sharp sudden changes in any variable of the kind such as temperature or altitude.

8. A device according to claim 1 characterized in that said balloon means are coated with a light-refracting material.

9. A device according to claim 1 characterized in that said cable means are coated by an antifire and anticorrosive protecting coating.

10. A device according to claim 1 characterized in that an electrical cable is provided inside said cable means, said electrical cable being connected to radio sets or actuators in possession of people bringing help.

11. A device according to claim 1 characterized in that said grip means consist of a handle.

12. A device according to claim 1, characterized in that said means which transmit signals are coated with a water-tight or sealing material.

13. A device according to claim 1 characterized in that said antenna is of the flexible wire type or of the fishpole or the parabolic type.

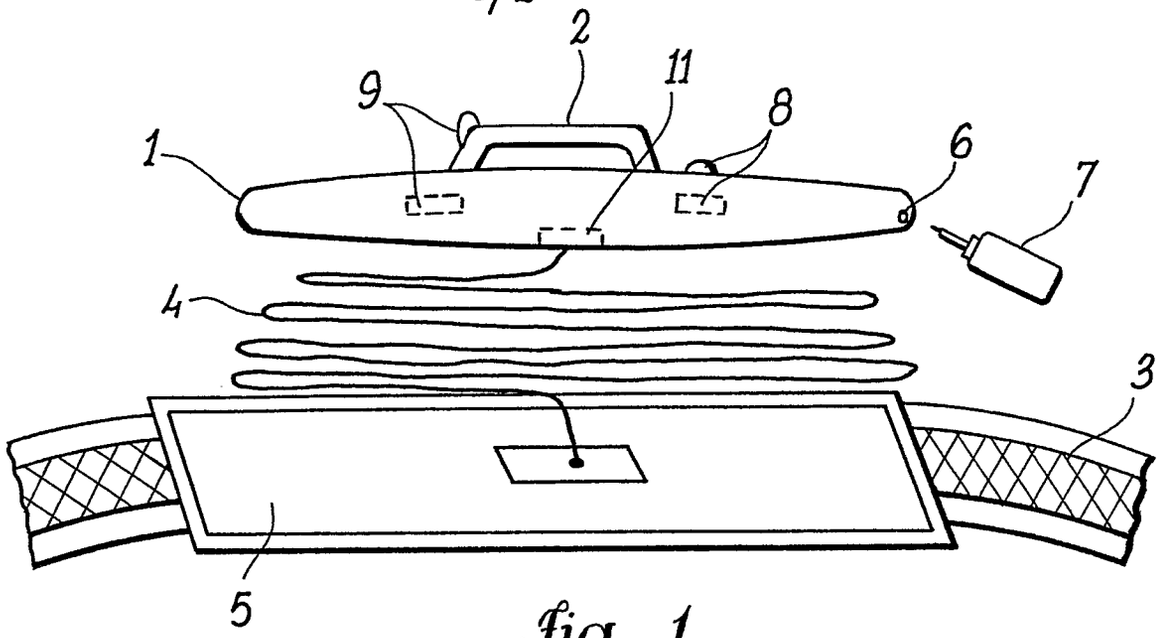

Fig. 1

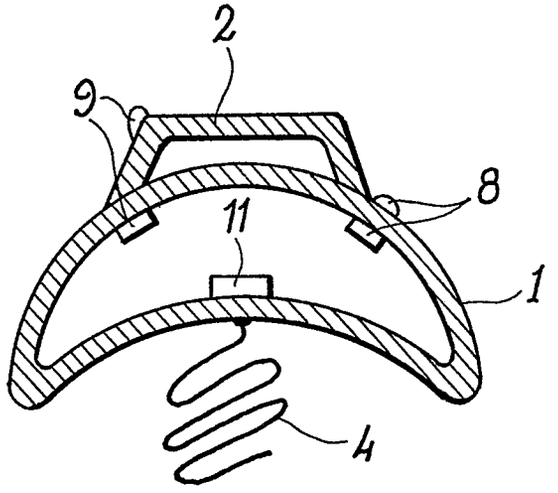

Fig. 2

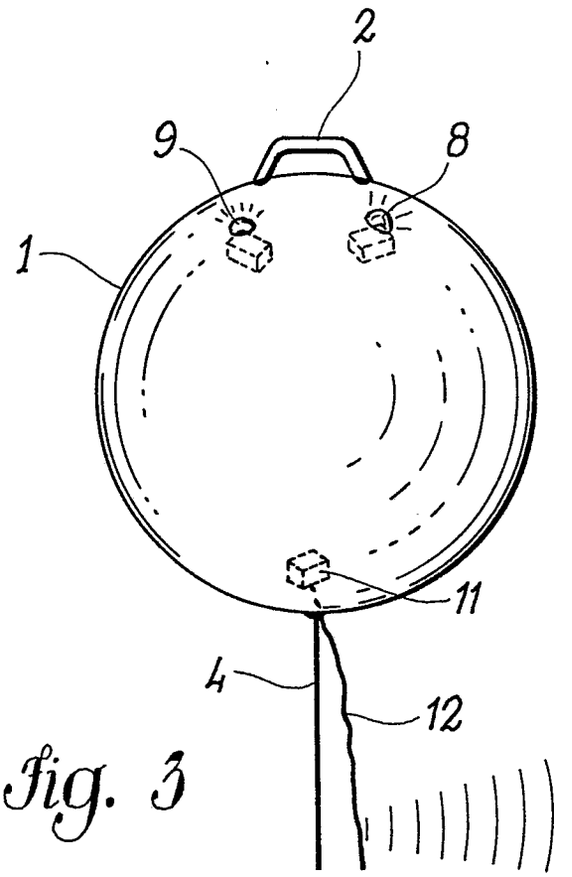

Fig. 3

Fig. 4