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(54) Apparatus for preventing and warning of drowning

(57) There is disclosed an apparatus for preventing and warning of drowning. The apparatus includes a detecting unit for detecting the drowning of a swimmer, a floating unit for floating the swimmer under the control of the detecting unit, a transmitting unit for transmitting a warning signal under the control of the detecting unit and a receiving unit for receiving the warning signal and locating the swimmer.

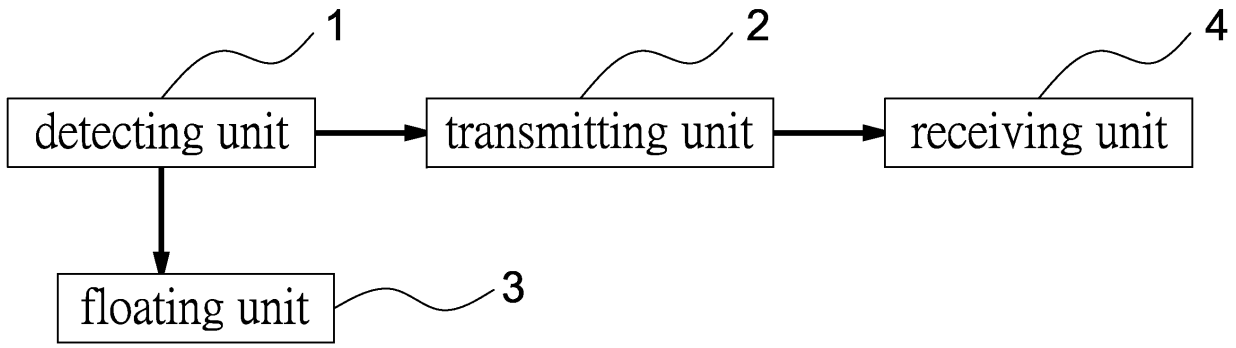

Fig. 1

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Description

BACKGROUND OF INVENTION

1. FIELD OF INVENTION

[0001] The present invention relates to an apparatus for preventing and warning of drowning and, more particularly, to an apparatus for floating a drowning swimmer and warning others of the emergency.

2. RELATED PRIOR ART

[0002] Wishing to enjoy waterborne activities, a non-swimmer tends to wade in shallow water or uses a life ring or board in deep water. With the life ring or board, the non-swimmer reduces the odds of getting drown and learns to swim faster than without.

[0003] A swimmer generally enjoys swimming in a swimming pool without any life ring or board. Should compulsion come to the swimmer, he or she might get drown. Lifeguards or people nearby might not be aware of the emergency at all. After knowing the emergency, the lifeguards or people nearby might not save the drowning swimmer in time for not knowing his or her position.

[0004] The present invention is therefore intended to obviate or at least alleviate the problems encountered in prior art.

SUMMARY OF INVENTION

[0005] The primary objective of the present invention is to provide an apparatus for preventing and warning of drowning.

[0006] To achieve the primary objective of the present invention, the apparatus includes a detecting unit for detecting the drowning of a swimmer, a floating unit for floating the swimmer under the control of the detecting unit, a transmitting unit for transmitting a warning signal under the control of the detecting unit and a receiving unit for receiving the warning signal and locating the swimmer.

[0007] Other objectives, advantages and features of the present invention will become apparent from the following description referring to the attached drawings.

BRIEF DESCRIPTION OF DRAWINGS

[0008] The present invention will be described via the detailed illustration of three embodiments referring to the drawings.

[0009] Fig. 1 is a block diagram of an apparatus for preventing and warning of drowning according to the first embodiment of the present invention.

[0010] Fig. 2 is a detailed block diagram of the apparatus shown in Fig. 1.

[0011] Fig. 3 is a perspective view of a pair of goggles used with the apparatus shown in Fig. 1.

[0012] Fig. 4 is another detailed block of the apparatus shown in Fig. 1.

[0013] Fig. 5 is top view of a display of the apparatus shown in Fig. 1.

[0014] Fig. 6 is top view of a display of an apparatus for preventing and warning of drowning according to the second embodiment of the present invention.

[0015] Fig. 7 is top view of a display of an apparatus for preventing and warning of drowning according to the third embodiment of the present invention.

DETAILED DESCRIPTION OF EMBODIMENTS

[0016] Referring to Fig. 1, there is shown an apparatus for preventing and warning of drowning. The apparatus includes a detecting unit 1, a floating unit 3, a transmitting unit 2 and a receiving unit 4. The apparatus can detect and warn of the drowning of a swimmer and float the swimmer.

[0017] Referring to Fig. 2, the detecting unit 1 includes a detector 11, a timer 12 connected to the detector 11, a determining element 13 connected to the timer 12 and a setting element 14 connected to the timer 12. The detecting unit 1 can measure how long the swimmer puts his or her head in the water and determine if the swimmer is drowning.

[0018] The floating unit 3 includes an actuator 31 connected to the determining element 13 and an inflatable element 32 connected to the actuator 31.

[0019] The transmitting unit 2 is connected to the determining element 13. The transmitting unit 2 includes an antenna 21. Under the control of the determining element 13, the transmitting unit 2 sends a warning signal.

[0020] The receiving unit 4 includes four receivers 41, a locating element 42 connected to the receivers 41 and a display 43 connected to the locating element 42. The receivers 41 can receive the warning signal from the antenna 21 wirelessly. The locating element 42 can locate the swimmer. The display 43 can show the position of the swimmer.

[0021] Referring to Fig. 3, the detecting unit 1 and the transmitting unit 2 are attached to a pair of goggles 5 to be worn by a swimmer.

[0022] The inflatable element 32 may be embodied in the form of a lifebelt, a life vest or a pair of arm rings to be worn by the swimmer. The actuating element 31 may be connected to the determining element 13 via a wire or wirelessly.

[0023] Referring to Fig. 5, each receiver 41 is provided on a related side of a rectangular swimming pool. The locating element 42 and the display 43 may be disposed in a control room or mounted on a wall near the swimming pool. The locating element 42 and the display 43 may alternatively be provided in a watch-like device to be worn by a lifeguard. The locating element 42 may be connected to the receivers 41 via wires or wirelessly. Similarly, the display 43 may be connected to the locating element 42 via a wire or wirelessly.

[0024] Before entering the water in the swimming pool,

a swimmer wears the pair of goggles 5 so that the swimmer carries the detecting unit 1 and the transmitting unit 2. By maneuvering the setting element 14, the swimmer sets a period of time in the timer 12. The period of time represents how long the swimmer can hold his breath. It is assumed that the swimmer is drowning if staying in the water longer than the period of time. In addition, the swimmer wears the floating unit 3 made in the form of a lifebelt or life vest or a pair of arm rings.

[0025] Referring to Fig. 4, the detector 11 detects if the swimmer is in the water and notifies the timer 12 of its state. When the detector 11 is out of the water, the timer 12 does not keep the time. When the detector 11 is in the water, the timer 12 continues to keep the time and measure the period of time. The timer 12 notifies the determining element 13 of the measured period of time. Whenever the detector 11 is out of the water again, the timer 12 stops keeping the time and is reset.

[0026] The determining element 13 compares the measured period of time with the set period of time. If the measured period of time is longer than the set period of time, the determining element 13 determines that the swimmer is drowning and instructs the transmitting unit 2 and the floating unit 3 to operate.

[0027] Instructed by the determining element 13, the actuator 31 actuates the inflatable element 32 to inflate and float the swimmer. Thus, the swimmer can easily be spotted.

[0028] Instructed by the determining element 13, the transmitting unit 2 sends a warning signal from the antenna 21 wirelessly.

[0029] On receiving the warning signal, each of the receivers 41 provides the locating element 42 with a receiver-specific signal. Then, the locating element 42 locate the swimmer based on the receiver-specific signals from the receivers 41 and instructs the display 43 to show the position of the swimmer.

[0030] Referring to Fig. 6, there is shown an apparatus for preventing and warning of drowning according to a second embodiment of the present invention. The second embodiment is identical to the first embodiment except that the screen of the display 43 is divided into eight areas A, B, C, D, E, F, G and H corresponding to eight areas of a swimming pool. The second embodiment is preferred for a big swimming pool.

[0031] Referring to Fig. 7, there is shown an apparatus for preventing and warning of drowning according to the third embodiment of the present invention. The third embodiment is identical to the first embodiment except including only two receivers 41, with one provided on a side of rectangular swimming pool and the other on an adjacent side of the swimming pool.

[0032] As discussed above, the detecting unit 1 can detect the drowning of the swimmer. The floating unit 3 can float the swimmer. The transmitting unit 2 and the receiving unit 4 can work together to warn the lifeguard or others of the emergency. Thus, the swimmer might be saved in time.

[0033] The present invention has been described via the detailed illustration of the embodiments. Those skilled in the art can derive variations from the embodiments without departing from the scope of the present invention. Therefore, the embodiments shall not limit the scope of the present invention defined in the claims.

Claims

1. An apparatus for preventing and warning of downing comprising:

   a detecting unit (1) for detecting the drowning of a swimmer;
   a floating unit (3) for floating the swimmer under the control of the detecting unit;
   a transmitting unit (2) for transmitting a warning signal under the control of the detecting unit; and
   a receiving unit (4) for receiving the warning signal and locating the swimmer.

2. The apparatus according to claim 1, wherein the detecting unit comprises a detector (11), a timer (12) connected to the detector, a determining element (13) connected to the timer and a setting element (14) connected to the timer.

3. The apparatus according to claim 1 or 2, wherein the floating unit comprises an actuating element (31) and an inflatable element (32) for inflation under the control of the actuating element.

4. The apparatus according to one of claims 1 to 3, wherein the transmitting unit comprises an antenna (21) for transmitting the warning signal wirelessly.

5. The apparatus according to one of claims 1 to 4, wherein the receiving unit comprises:

   at least two receivers (41) each for receiving the warning signal and providing a receiver-specific signal;
   a locating element (42) for receiving the signals from the receivers and locating the swimmer based on the receiver-specific signals; and
   a display (43) for showing the position of the swimmer under the control of the locating element.

6. The apparatus according to claim 5 wherein the receiving unit comprises four receivers (41).

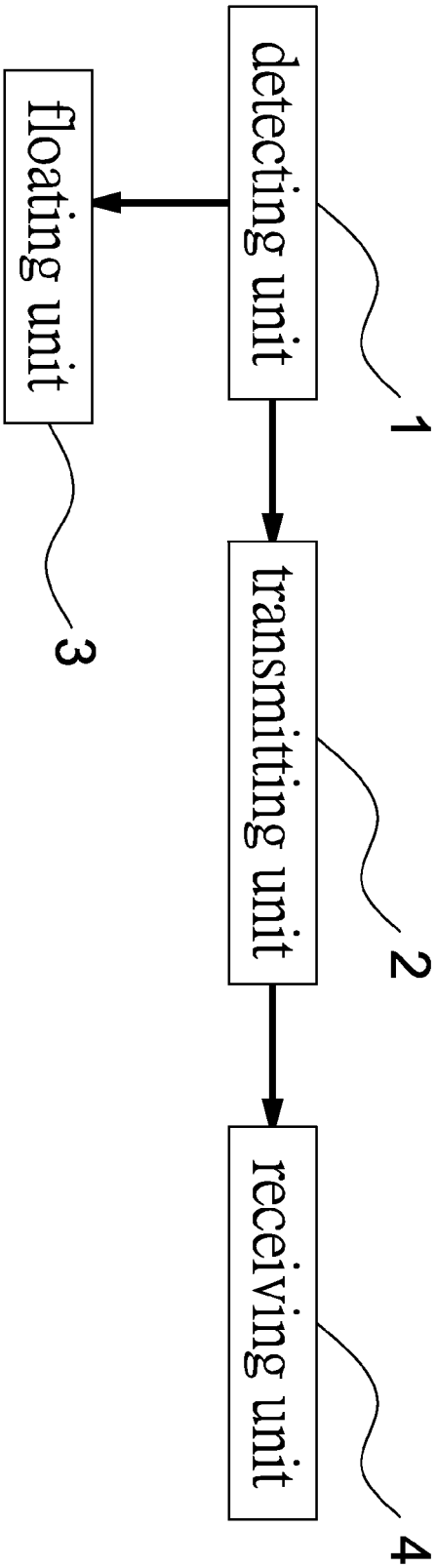
detecting unit
floating unit
transmitting unit
receiving unit
1
2
3
4

Fig. 1

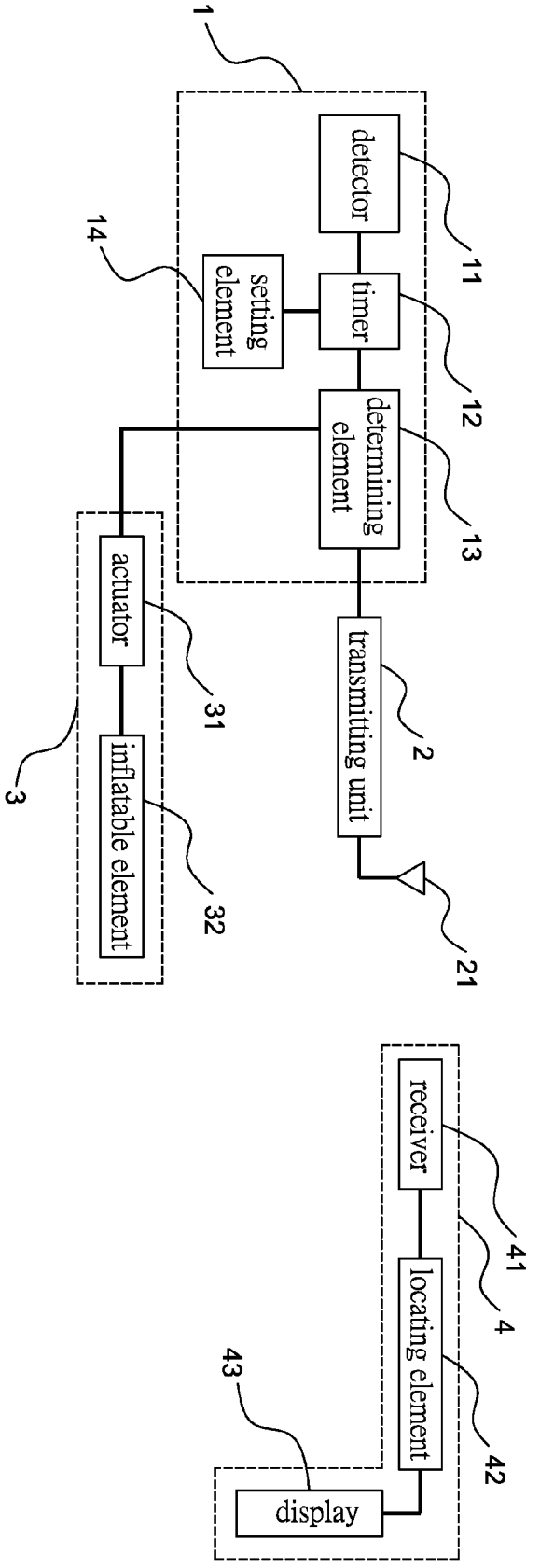
1
detector
11
timer
12
determining element
13
setting element
14
transmitting unit
2
21
actuator
31
inflatable element
32
3
receiver
41
locating element
42
4
display
43

Fig. 2

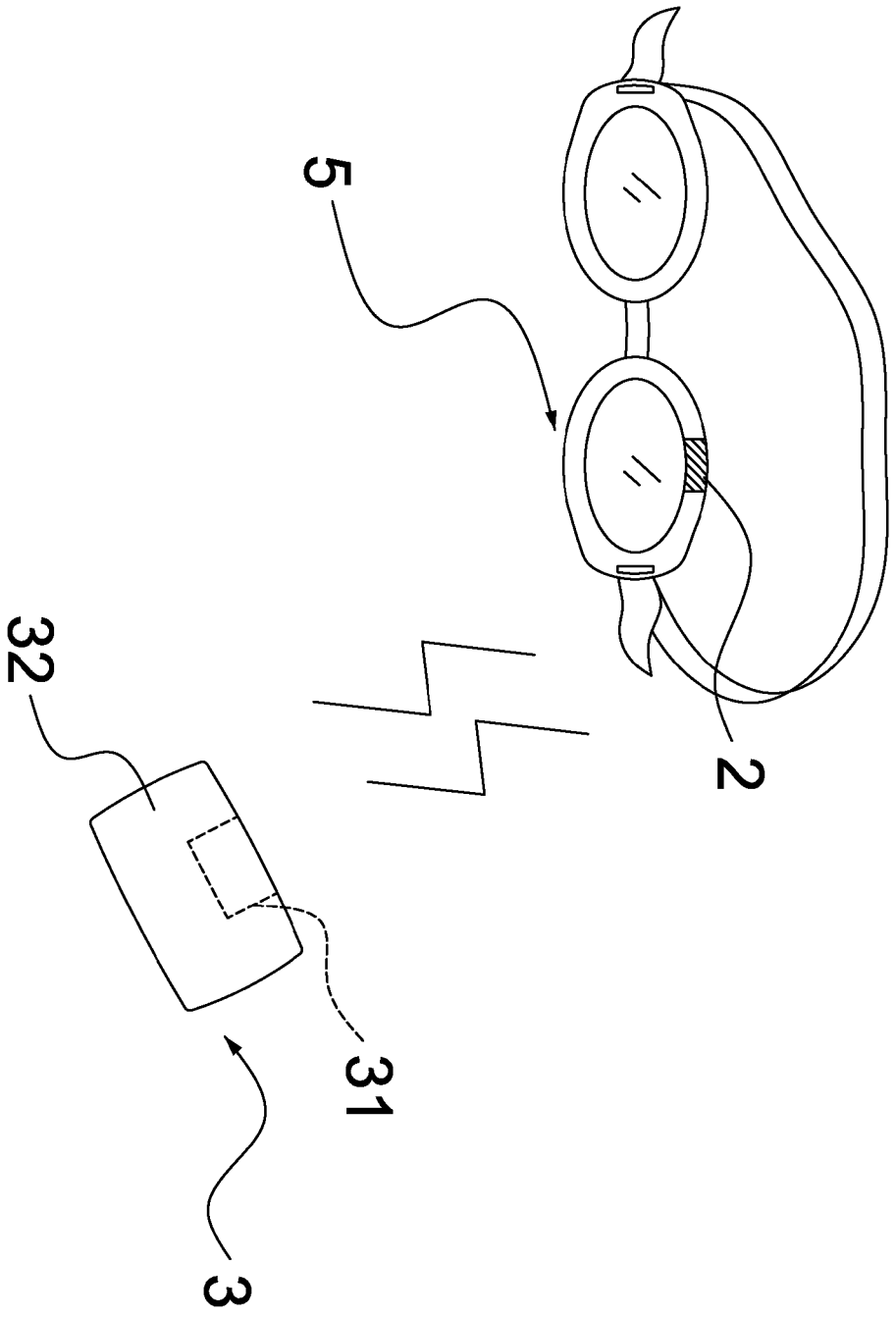

Fig. 3

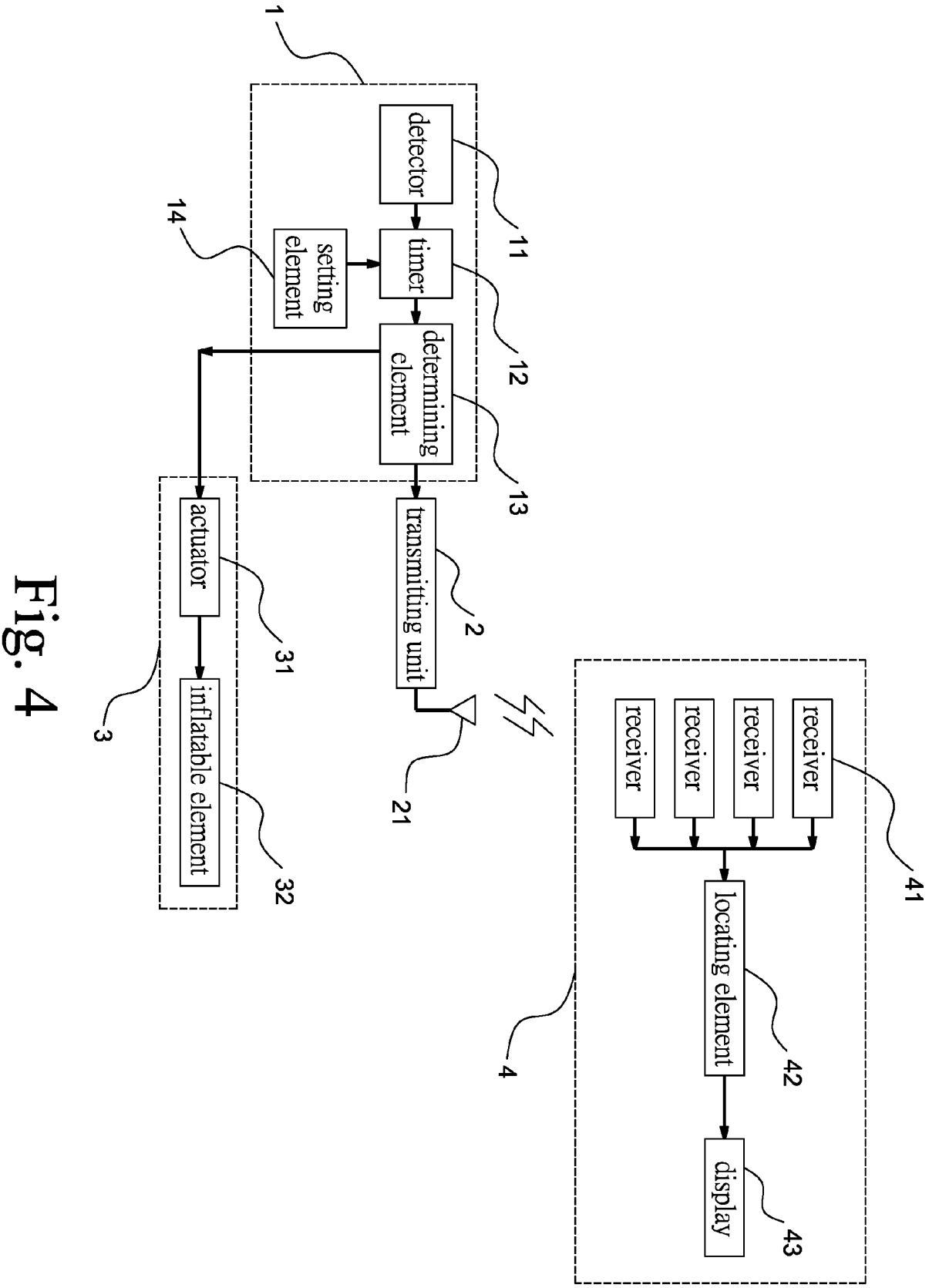
1
detector
11
timer
12
setting element
14
determining element
13
transmitting unit
2
21
actuator
31
inflatable element
32
3
4
receiver
receiver
receiver
receiver
41
locating element
42
display
43

Fig. 4

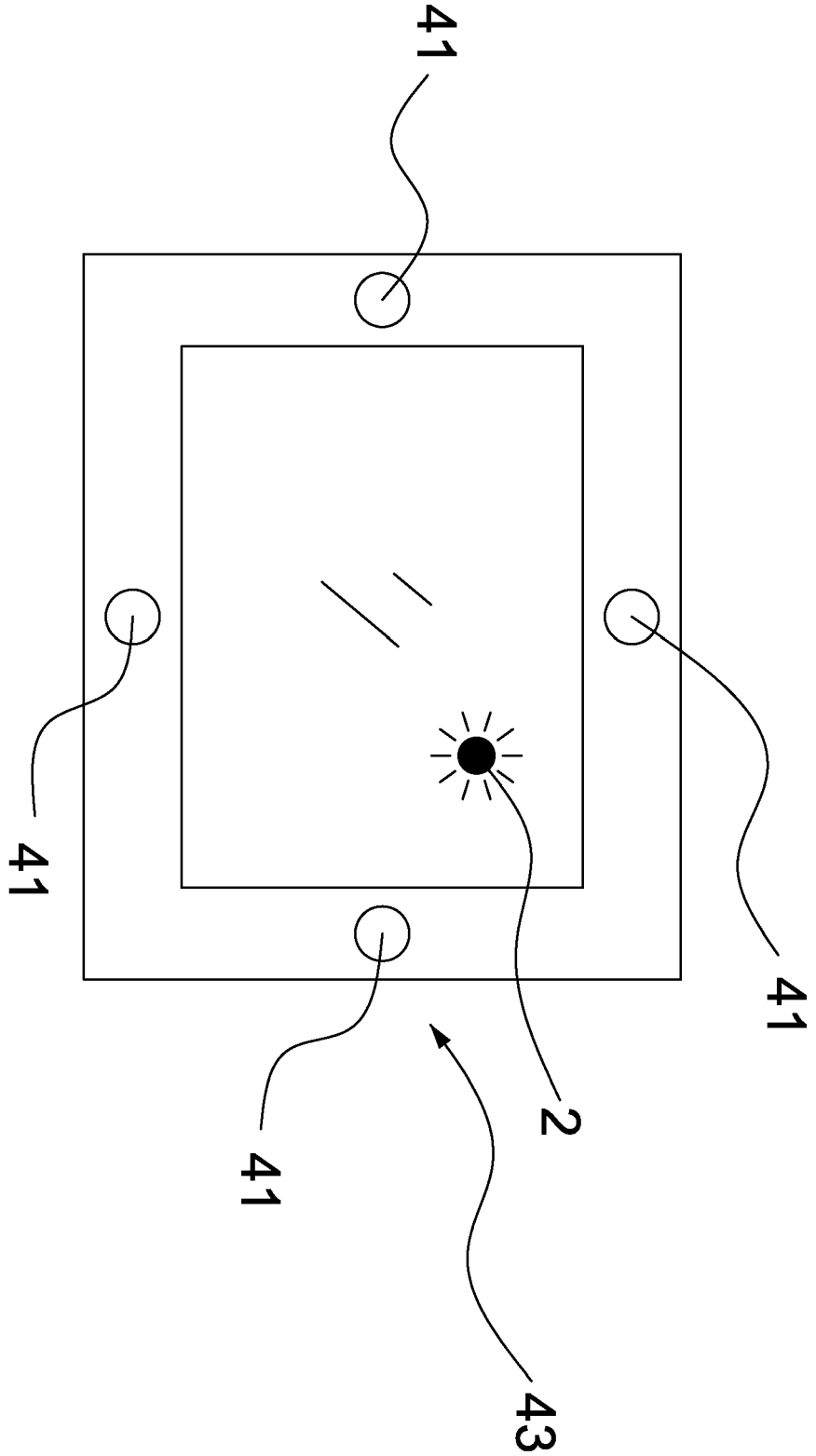

Fig. 5

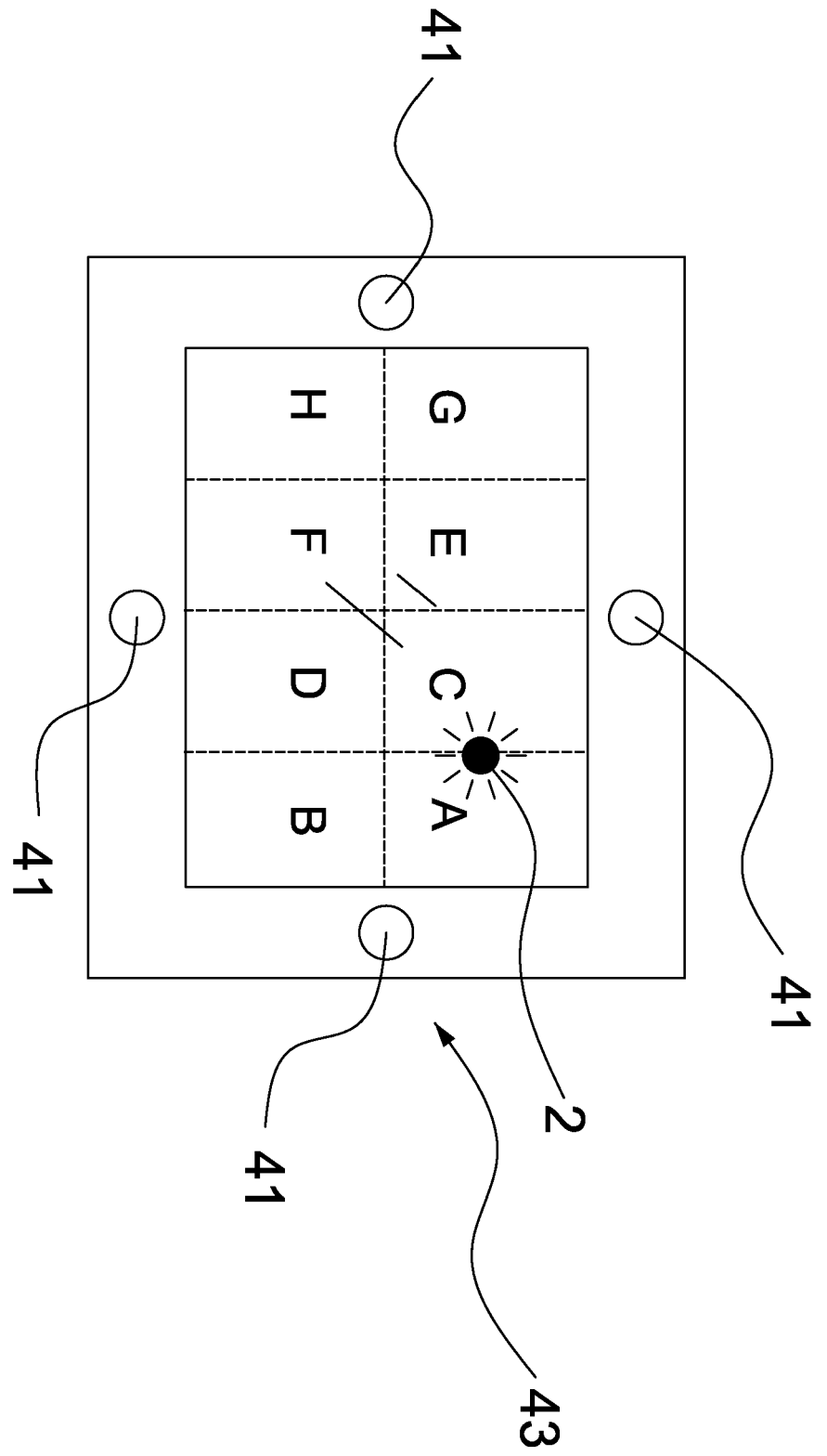

Fig. 6

Fig. 7