United States Patent

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[54] **EMERGENCY BEACON WITH AUTOMATIC TIMER FOR STARTING TRANSMISSION OF DISTRESS SIGNALS**
4 Claims, 2 Drawing Figs.

[52] **U.S. Cl.** **325/166,** 325/111
[51] **Int. Cl.** **H04b 1/02**
[50] **Field of Search** 340/309.1, 309.5, 52, 53, 54, 27; 325/111, 166

[56] **References Cited**

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ABSTRACT: An emergency beacon with automatic timer for starting transmission of distress signals, wherein a presetable automatic timer is coupled to the emergency beacon so as to start the signals after elapse of the preset time without requiring further action by a pilot, or other individual. Thus the timer may be preset for a time greater than the anticipated time called for in a flight plan, and upon expiration of that time the distress signals will be automatically transmitted. A warning device is provided that will give a warning signal prior to elapse of the preset time, whereby the time that the beacon will start transmission may be delayed. Moreover, manually actuated means are provided that may be actuated in an emergency for starting transmission of the distress signals.

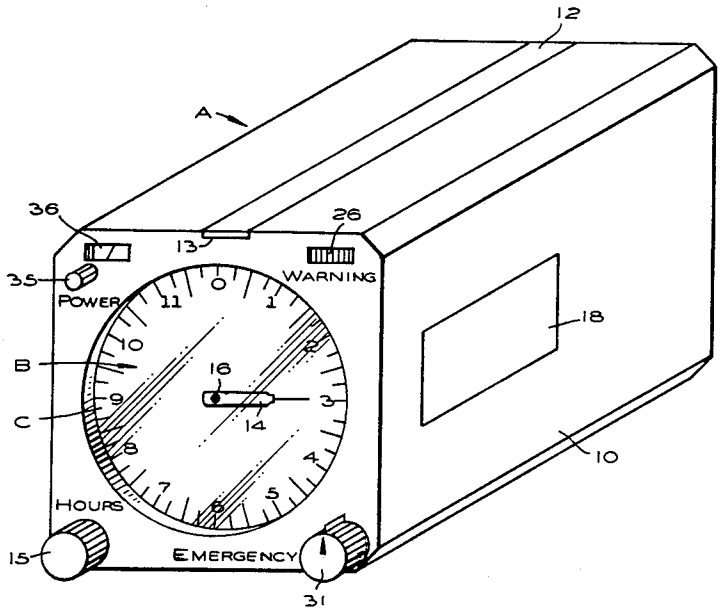
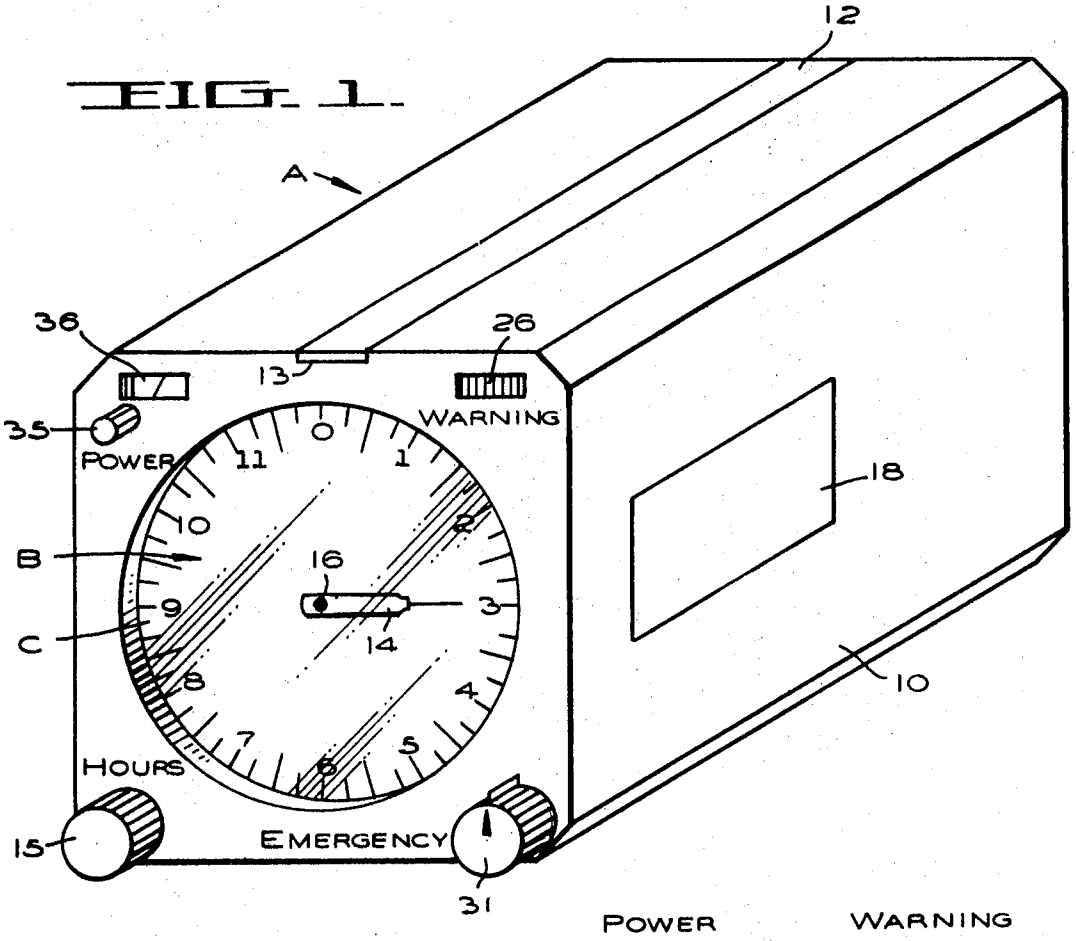


FIG. 1.



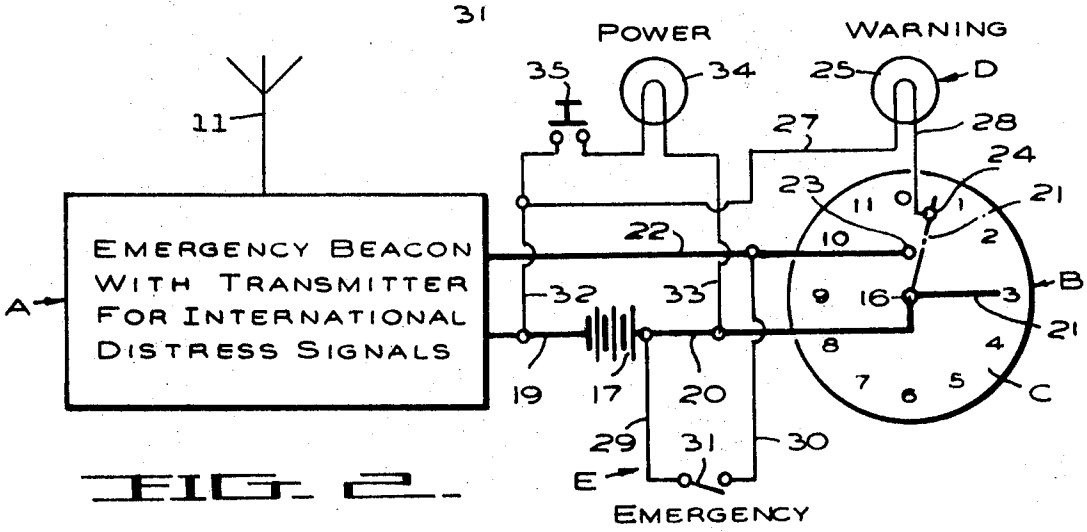


FIG. 2.

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EMERGENCY BEACON WITH AUTOMATIC TIMER FOR STARTING TRANSMISSION OF DISTRESS SIGNALS

BACKGROUND OF THE INVENTION

At the present time, it is old in the art to use an emergency beacon for transmitting the international distress signal, which is known world-wide as "SOS" and are used on aircraft. These are of two general types: (1) Those that are activated on impact and (2) those that must be manually turned on. However, with those of the impact type, the beacon may be so damaged during impact that it will not function; while those of the manually actuated type, the pilot may neglect to turn it on either before a forced landing or thereafter. U.S. Pat. No. 3,102,982, dated Sept. 3, 1963 discloses an air rescue transmission apparatus embodying both types.

SUMMARY

As the cardinal object of this invention, it is proposed to provide an emergency beacon with automatic timer for starting transmission of distress signals, whereby the timer may be preset and the signals will start automatically after elapse of the preset time without further action by a pilot, or other individual. Thus the timer may be preset for a time greater than the estimated flying time on a flight plan; and when this time has elapsed, the international distress signals will be transmitted, thus warning control towers and aiding in search flights or other parties.

Moreover, a warning device is provided that will give a warning signal to the pilot, or other individual, at a predetermined period of time prior to elapse of the preset time, whereby an opportunity will be afforded to delay the time at which the distress signals will start transmission, for example, where the plane is being delayed en route, or more time is required before clearance is obtained for a landing.

Another object of the invention is to provide manually actuated means that may be operated in an emergency for starting transmission of the distress signals immediately, for instance, when the pilot anticipates a crash landing.

Other objects and advantages will appear as the specification proceeds, and the novel features of the invention will be particularly pointed out in the appended claims.

BRIEF DESCRIPTION OF THE DRAWING

For a better understanding of the invention, reference should be made to the accompanying drawing, forming part of this specification, in which:

FIG. 1 is an isometric drawing of our emergency beacon with automatic timer for starting transmission of distress signals; and

FIG. 2 is a diagrammatic block and wiring diagram.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to the drawing in detail, an emergency beacon is designated generally at A, which has a transmitter for radio broadcasting international distress signals for use in aircraft rescue missions. The circuits for the transmitter have not been disclosed, since they are well known in the art, for example, in U.S. Pat. No. 3,102,982, dated Sept. 3, 1963. However, we do not wish to be limited in this respect, and have shown a rectangular block in FIG. 2 with an appropriate legend "Emergency Beacon With Transmitter for International Distress Signals."

The emergency beacon components are preferably housed in a crashproof and fireproof casing **10**. Also, the antenna **11** shown in FIG. 2 may be built into the interior of the casing **10**, or it may be extended from the casing by opening a slide **12** that is mounted in a slideway **13** formed in a wall of the casing.

A presetable automatic timer B may be exposed on one wall of the casing **10**, as shown in FIG. 1. However, we wish to point out the fact that the automatic timer B could be mounted on the instrument panel of an aircraft, where it will be under the control of the pilot, or other individual in the cockpit, while the actual emergency beacon for transmitting the distress signals is located in the tail section of the aircraft, since the tail section usually survives a crash and, therefore, the signals would continue after the crash.

The presetable automatic timer B is coupled to the emergency beacon A so that signals will start automatically after the elapse of the preset time without further action by a pilot, or other individual. For instance, when a flight plan is filed for a flight of say 2½ hours, pointer **14** on the timer B may be moved along the dial C of the timer to the numeral **3**, the dial being graduated in hours and segments thereof. This will give the pilot a leeway of one-half hour after the estimated time of arrival before the distress signals would start to be transmitted. After that time, the distress signals would be transmitted and thus indicating that the aircraft was in trouble or had crashed. Of course, it would not be desired that the signals of distress should start immediately upon expiration of the estimated flight time, since some margin of time must be provided for the aircraft to complete its flight.

The pointer **14** may be moved along the dial C by an operating knob **15**, which is shown in FIG. 1, and may be coupled to the shaft **16** on which the pointer is mounted by any suitable means. Although a 12-hour clock dial has been illustrated, it should be understood that no limitation in this regard is intended.

In FIG. 2, the automatic timer B has been shown as being coupled to the emergency beacon A by an electrical circuit, the latter including a suitable source of current **17** which may be batteries stored within the casing **10** when a plate **18** is opened, or the current may be supplied by the aircraft itself. This circuit has been shown as having a conductor **19** leading from the emergency beacon A to one terminal of the source of current **17**, while the other terminal of the latter is connected by conductor **20** to a switch arm **21** arranged to be advanced by the shaft **16** in unison with the pointer **14**. Another conductor **22** leads from the emergency beacon A to a fixed contact **23** on the timer, this contact and movable switch arm **21** forming part of the electrical circuit.

It will be apparent that the pointer **14** is movable along the dial C to indicate the preset time, and that the pointer is movable to an initial O position on the dial after elapse of the preset time. When the switch arm **21** reaches this **0** position, it is movable into closing relation with the fixed contact **23**, whereby transmission of the distress signals will start.

However, it is desirable that a warning device D be provided that will give a warning signal at a predetermined period of time prior to elapse of the preset time, whereby an opportunity will be afforded to delay the time at which the emergency beacon A will start transmission of the distress signals. This will alert the pilot, or other individual, and prevent distress signals when the aircraft is not in fact in trouble. This is accomplished by a second fixed contact **24** provided on the automatic timer which is arranged ahead of the initial **0** position on the dial C (see FIG. 2), and the switch arm **21** is movable into engagement with this second fixed contact **24** as it moves toward the initial **0** position, as indicated by the dot-dash lines of this switch arm. A warning light **25** in back of a glass **26** on a wall of the casing **10** is connected by a conductor **27** to the source of current **17**, and another conductor **28** leads from this light to the fixed contact **24**. Thus a warning will be flashed that the preset time is approaching expiration. At this warning, the pilot, or other individual, may advance the pointer **14** to a new preset time along the dial C and thus a false transmission of distress signals will be avoided.

Moreover, manually actuated means E are provided that may be operated in an emergency for starting transmission of the distress signals prior to elapse of the preset time. This means is provided by conductors **29** and **30** that are connected to the conductors **20** and **22**, respectively, with an emergency switch **31** that may be closed. This will start transmission of the distress signals.

In order that the source of current 17 may be tested from time to time, conductors 32 and 33 may be connected to opposite sides of the source of current, with one of these conductors having a light 34 therein and the other conductor having a push-type switch 35 therein. This switch may be mounted on one wall of the casing 10, as shown in FIG. 1, and the light 34 may be placed in back of a glass 36 on this wall of the casing. The legend "Power" has been associated with the switch 35.

The light 25 of the warning device D may be of the flashing type, if desired, and could be replaced by an audible signal rather than a visual signal, if desired.

We claim:

1. In an emergency beacon with automatic timer for starting transmission of distress signals:

a. an emergency beacon with transmitter operable for radio broadcasting of international distress signals for use in aircraft rescue missions to warn control towers and aid in search flights and parties in locating aircraft in which the beacon and operable is carried;

b. a presetable automatic timer coupled to the emergency beacon so that signals will start automatically after elapse of the preset time without further action by a pilot, or other individual,

c. and in which a warning device is provided that will give an electrically actuated warning signal at a predetermined period of time prior to elapse of the preset time, whereby an opportunity will be afforded to delay the time at which the emergency beacon will start transmission of the distress signals.

2. The emergency beacon with automatic timer for starting transmission of distress signals, as set forth in claim 1;

d. and in which manually actuated means are provided that may be operated in an emergency for starting transmission of the distress signals prior to elapse of the preset time.

3. The emergency beacon with automatic timer for starting transmission of distress signals, as set forth in claim 1;

d. and in which the automatic timer is coupled to the emergency beacon by an electrical circuit, the latter including a source of current;

e. the automatic timer having time interval graduated means operable to indicate the preset time and being movable to an initial 0 position after elapse of the preset time;

f. the automatic timer having a fixed contact and a movable switch arm forming part of the electrical circuit, the switch arm being movable in unison with the time interval graduated means in a direction away from the fixed contact when setting the preset time, the switch arm being movable into closing relation with the fixed contact after elapse of the preset time, whereby transmission of the distress signals will start.

4. In an emergency beacon with automatic timer for starting transmission of distress signals:

a. an emergency beacon with transmitter operable for radio broadcasting of international distress signals for use in aircraft rescue missions to warn control towers and aid in search flights and parties in locating aircraft in which the beacon is carried;

b. a presetable automatic timer coupled to the emergency beacon and operable so that signals will start automatically after elapse of the preset time without further action by a pilot, or other individual;

c. the automatic timer being coupled to the emergency beacon by an electrical circuit, the latter including a source of current;

d. the automatic timer having time interval graduated means operable to indicate the preset time and being movable to an initial 0 position after elapse of the preset time;

e. The automatic timer having a fixed contact and a movable switch arm forming part of the electrical circuit, the switch arm being movable in unison with the time interval graduated means in a direction away from the fixed contact when setting the preset time, the switch arm being movable into closing relation with the fixed contact after elapse of the preset time, whereby transmission of the distress signals will start;

f. a second fixed contact provided on the automatic timer which is arranged ahead of the initial 0 position, and the switch arm is movable into engagement with this second fixed contact as it moves toward the initial 0 position;

g. and a warning light electrically connected to the source of current and the second fixed contact so that the light will be illuminated when the switch arm engages with the second fixed contact, whereby a warning will be flashed that the preset time is approaching expiration.