Sept. 19, 1944. C. ESPESETH 2,358,498

EMERGENCY CALLING SET

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Fig. 1.

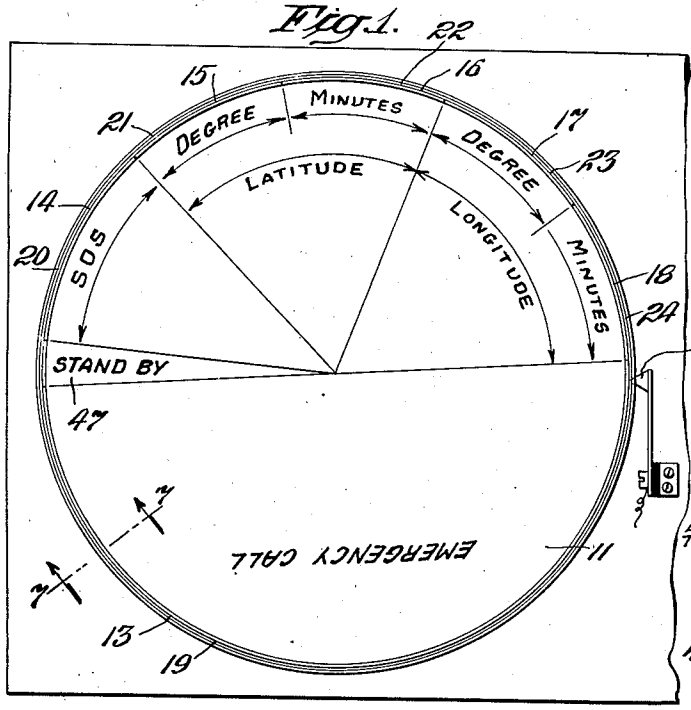



Fig. 3.

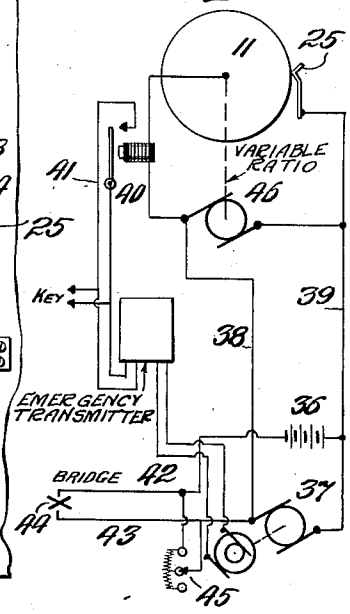
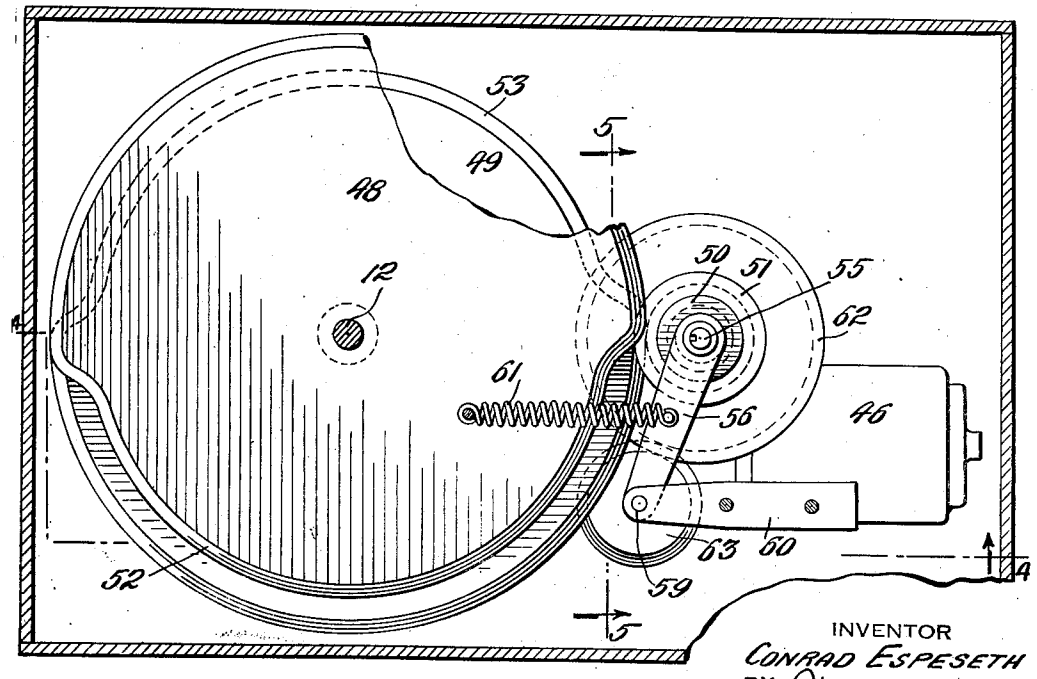



Fig. 2.




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Fig. 4.

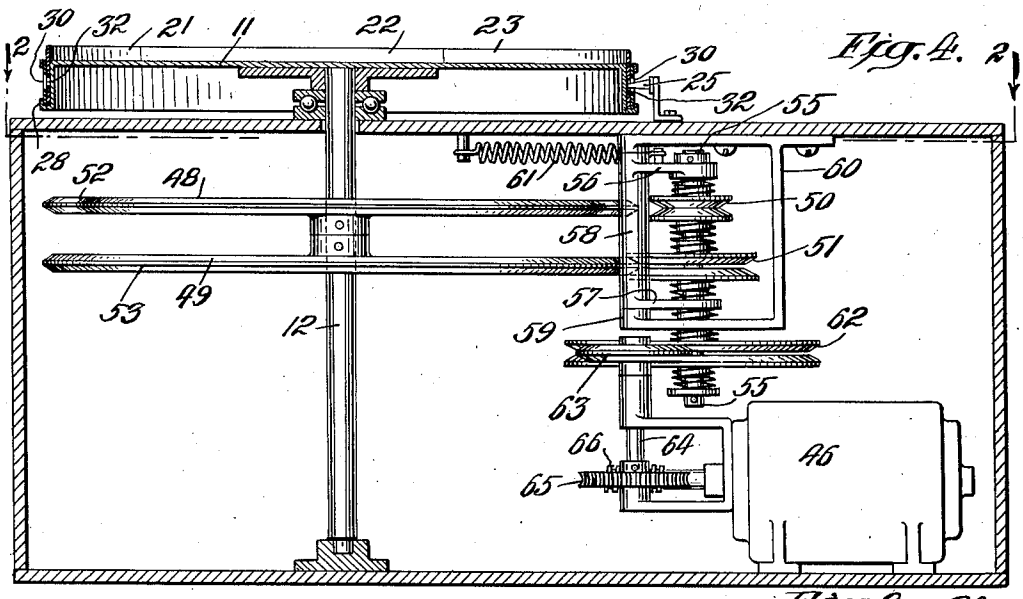



Fig. 8.

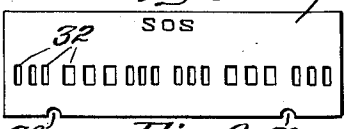



Fig. 6.

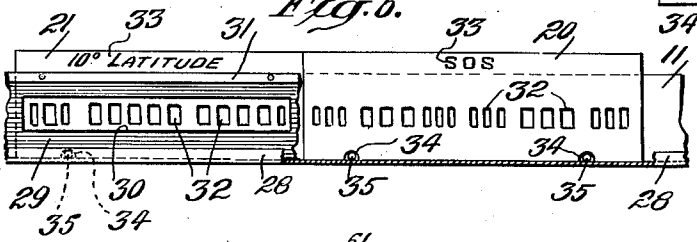



Fig. 9.

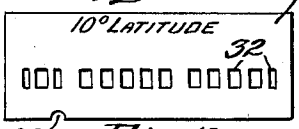



Fig. 10.

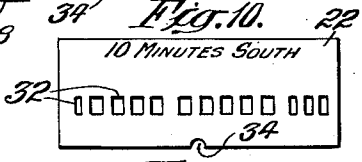



Fig. 5.

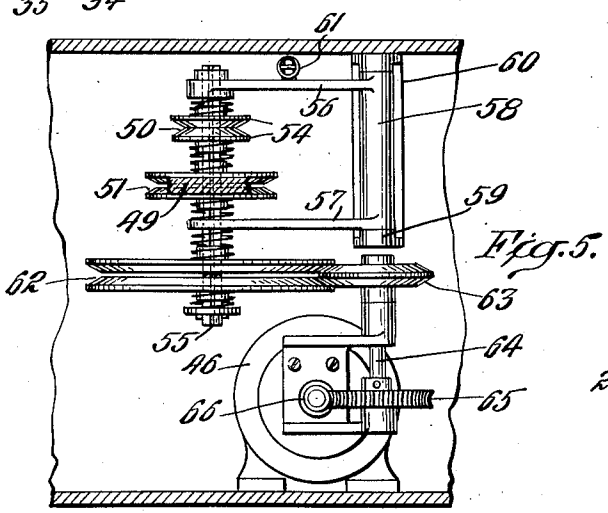
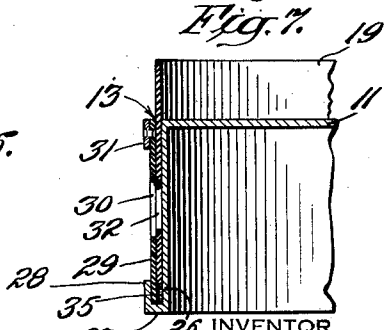



Fig. 7.




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# UNITED STATES PATENT OFFICE

2,358,498

## EMERGENCY CALLING SET

Conrad Espeseth, Brooklyn, N. Y.

Application November 2, 1942, Serial No. 464,295

9 Claims. (Cl. 177—380)

The invention here disclosed relates to apparatus for sending out emergency calls from ships at sea.

Special objects of the invention are to provide simple, practical and reliable means, preferably in the nature of a unitary device, which may be readily applied to and connected with existing radio transmitting sets, ready to be started at any time to send out distress or other calls, over the regular transmitting set.

Other special objects are to provide a control unit of this character, which will automatically send out the emergency call necessary to actuate standard automatic receivers or listening sets, accompanied by the "SOS" or other call and signals giving the position and further to so construct and equip the unit that the means required for signalling the position can be quickly and conveniently changed to keep the unit constantly in condition for sending out the true position.

Other important objects are to accurately time the emergency call portion of the total signal, so that it will be surely picked up by automatic listening sets and to time the message and position indicating portions of the signal at the standard rates for their proper reception.

Other objects are to provide the signalling or control unit in a compact small size structure, which will take up but small space on shipboard and which while of a substantial sturdy character will be relatively inexpensive as to cost.

Other desirable objects and the novel features by which the purposes of the invention are attained will appear or are particularly set forth in the following specification.

The drawings accompanying and forming part of the specification illustrate a present practical embodiment of the invention. The structure however, may be modified and changed all within the true intent and broad scope of the invention, as will be clear from the following specification and claims.

Fig. 1 is a broken plan view illustrating the rotary transmitter.

Fig. 2 is a broken horizontal sectional view taken through the case of the instrument on substantially the plane of line 2—2 of Fig. 4, showing the motor and change speed drive gearing.

Fig. 3 is a wiring diagram.

Fig. 4 is a vertical sectional view as on substantially the plane of line 4—4 of Fig. 2.

Fig. 5 is a broken sectional detail on substantially the plane of line 5—5 of Fig. 2.

Fig. 6 is a broken sectional detail of the rim portion of the wheel illustrating the special interlocking of different signal cards therein.

Fig. 7 is an enlarged broken sectional detail as on substantially the plane of line 7—7 of Fig. 1.

Figs. 8, 9 and 10 are plan views of signal cards constructed for use only in the particular pockets designed to locate them in proper position on the wheel.

The automatic signal transmitting portion of the apparatus is shown in the form of a horizontally disposed turntable 11, on the upper end of a vertical shaft 12, having in its rim arcuately extending pockets at 13, 14, 15, 16, 17, 18, open at the top to receive signal cards 19, 20, 21, 22, 23, 24, respectively, cooperable successively with a circuit controlling feeler or tracer 25.

The card receiving pockets are shown in Figs. 6 and 7 as defined by an annular wall 26, dependent from the flat top portion of the wheel, a narrow bottom wall 27, an outer upwardly extending annular flange 28, and a ring or band of insulating material 29, with slots or windows 30, cut through it to expose the cards in back of it.

The insulating band or shield 29, is shown reinforced at the top by a ring or flange 31, and, as indicated in Fig. 7, this slotted insulating cover for the cards may be removably seated in the annular trough formed by the walls 27, 28 to permit substitution of differently slotted bands.

The various cards are shown as perforated at 32, Figs. 6, 7, 8, 9, to carry the desired code messages, in the illustration, the card 20, being perforated to transmit the SOS call, and cards 21, 22, punched to form messages in degrees and minutes of latitude, etc.

In Figs. 6 and 7, the cards are indicated as wider than the pockets, so as to project up above the top of the pocket and show the particular designation, title or identification 33, of each card.

To assure use of the cards only in the right pockets, the lower edges of the cards may have notches 34, therein spaced or positioned so that they will register only with correspondingly located lugs or projections 35, at the bottoms of the pockets in which the particular cards should be used.

The tracer 25, may be simply a yielding spring finger such as indicated in Fig. 1, having a point to enter the dot and dash perforations and to engage the metallic wall 26, at the back of the same, thus to directly control the transmitting circuit. It is contemplated though that the

movement imparted to the tracer finger by the code markings on the cards may be employed to control a signalling circuit external to the rim of the wheel.

In Fig. 3, a simple wiring diagram is indicated, wherein current from the emergency power supply, represented by storage battery **36**, passes directly through the wheel in accordance with operation of the tracer **25** when circuit is closed through a switch **44**, on the bridge or through a starting switch **45**, the wiring for such purpose being indicated at **38**, **39**, said wiring including in this instance, a relay **40**, controlling a circuit **41**, which is connected across the transmitter key forming part of the ship's radio transmitter.

This automatic signal transmitter can be controlled entirely from the bridge or other control point in the ship by wiring **42**, **43**, connected across the emergency power supply and including the master switch **44**, on the bridge or at other selected point or points on the ship. This signal control circuit at **42**, **43**, **44**, is independent of and in parallel with the motor generator starter switch indicated at **45**, so that the transmitter can be started either from the bridge or through the starter switch **45**. The latter is usually provided for starting the motor generator set operated off the emergency battery to supply the energy to the radio transmitter.

The motor for operating the signal transmitter is indicated in the diagram at **46**, connected directly across the lines **38**, **39**, so as to be cut into operation any time either the bridge switch **44** or the motor generator switch **45** is closed.

For correct signalling purposes, a constant speed motor preferably is employed and the table is geared to transmit the emergency call at proper speed to be picked up by automatic receiving sets on other ships or shore stations and to transmit the SOS and position signals at the usual speed for transmission of such signals.

The present emergency call consists of 12 dashes of four seconds each, spaced by intervals of one second, forming a one minute signal which will operate the receivers at automatic listening stations. The emergency call card is shown in Fig. 1, as extending one-half the diameter of the wheel, so for proper transmitting speed, the wheel should turn for this half revolution at a rate of one-half revolution per minute.

The time for transmission of the SOS and position calls in the illustration, may be taken to be twenty-five seconds. With a short standby interval in that angle of revolution indicated at **47**, Fig. 1, this half of the revolution, assuming a 12 inch diameter wheel may be at the rate of one revolution per minute.

The change in speed from one rate to the other is automatically effected in the illustration, by shifting driving engagement from one friction gear couple to another. These gear couples are shown in Figs. 2, 4 and 5, as comprising friction discs **48**, **49**, on the turntable shaft engageable by friction pinions **50**, **51**, of different diameters, one disc having a mutilated or cutaway portion **52**, to leave engagement with its driving pinion and the other disc having an oppositely disposed mutilated or reduced downward portion **53**, to leave off engagement with its drive pinion.

The drive pinions are shown as made up of spring pressed flanges **54**, slidingly keyed on a shaft **55**, journalled in the arms **56**, **57**, of a sleeve **58**, pivoted at **59**, in a supporting frame **60**.

A spring **61**, is connected with the swinging frame **56**, **57**, **58**, so as to draw the spring gripping pinions into frictional gripping engagement with the respective drive discs.

The pinion shaft **55**, is shown as carrying a spring flange gear **62**, at the lower end engaged by a drive pinion **63**, on a shaft **64**, journalled in line with the pivot center **59**, of the swinging pinion frame, said shaft carrying at its lower end a worm gear **65**, in mesh with a worm **66**, on the motor shaft.

With this construction, the change speed pinions may swing in and out to successively engage and disengage their respective frictional discs while the drive gearing from the motor remains in constant engagement.

The automatic transmitting set, including motor, change speed gearing and turntable may all be assembled in a single case, substantially as illustrated, thus to form a unit which may be installed wherever convenient. Usually this unit would be located on the bridge, together with a complete set of the position indicator cards, message cards and the like. These cards, particularly the position cards, may be conveniently arranged in a rack or cabinet associated with or, if desired, forming part of the instrument case, where they can be quickly slipped into position on the wheel each time an observation is taken, so that the machine will be always in condition for sending out the position of the ship at the last observation. Also the master switch might preferably be located on the bridge, if desired, directly on the transmitting instrument. Thus the entire mechanism may be quickly installed on any ship equipped with a radio transmitter by simply connecting the unit with the emergency power supply and running a parallel circuit to the transmitter key of the radio set. In addition to the master switch on the bridge, other master switches may be connected in parallel relation at different control points on the ship. If the emergency call card is to be always used, this may be mounted as a permanent part of the wheel. The same is true as to the SOS or message card. Such an arrangement would leave it necessary only to furnish a set of replaceable condition indicating cards with the calling instrument.

What is claimed is:

1. An emergency calling set, comprising in combination, a constant speed motor, a rotary turntable, a transmitting circuit controlled thereby and including emergency call means on a portion of said turntable transmissible at one speed, readily replaceable position call means on another portion of said table transmissible at a different speed and a contactor cooperable successively with said first and second mentioned means and change speed gearing between said motor and turntable for driving the latter at the first mentioned transmission speed while said contactor is cooperable with said first mentioned emergency call means and at the second mentioned transmission speed while said contactor is cooperable with said replaceable position call means.

2. An emergency calling set, comprising in combination, a constant speed motor, a rotary turntable, a transmitting circuit controlled thereby and including call means on different portions of said turntable, for transmission at different speeds and a contactor cooperable successively with said first and second mentioned means, change speed gearing between said motor and

turntable for driving the latter at one speed, while said contactor is cooperable with the call means on one portion of said turntable and at a different speed, while said contactor is cooperable with the call means on the other portion of said turntable, said change speed gearing including pinions constantly driven by said motor, gears rotatable with said turntable and engageable one by one pinion and the other by the other pinion and forming driving pairs of different gear ratios, said gears having mutilated portions of less than full diameter and disposed with the mutilated portion of one gear opposite a full diameter portion of the other gear.

3. An emergency calling set, comprising in combination, a constant speed motor, a rotary turntable, a transmitting circuit controlled thereby and including call means on different portions of said turntable, for transmission at different speeds and a contactor cooperable successively with said first and second mentioned means, change speed gearing between said motor and turntable for driving the latter at one speed, while said contactor is cooperable with the call means on one portion of said turntable and at a different speed, while said contactor is cooperable with the call means on the other portion of said turntable, said change speed gearing including pinions constantly driven by said motor, gears rotatable with said turntable and engageable one by one pinion and the other by the other pinion and forming driving pairs of different gear ratios, said gears having mutilated portions of less than full diameter and disposed with the mutilated portion of one gear opposite a full diameter portion of the other gear, said pinions being mounted on a common shaft and a frame carrying said shaft and movable for effecting the coupling of first one gear couple and then the other gear couple.

4. An emergency calling set, comprising a signal wheel having an arcuately extending pocket in the rim portion of the same, said arcuately extending pocket being open longitudinally of the axis of said wheel longitude and latitude position indicating cards freely insertable in and removable from said pocket longitudinally of the wheel axis, said pocket being open about the rim of the wheel to expose portions of the cards so entered in said arcuate pocket and a circuit controlling tracer engageable with cards inserted in said pocket.

5. An emergency calling set, comprising a vertical shaft, a horizontally disposed transmitting wheel on said shaft, said wheel having a peripherally extending pocket open at the top, interchangeable position signalling cards replaceably insertable in said open pocket and having identifications exposed to view when said cards are in said pocket and a circuit controlling tracer engageable with cards in said pocket.

6. An emergency calling set, comprising a shaft, a signal wheel carried by said shaft, a circuit controller cooperable with said wheel, discs of different diameters on said shaft and having reduced mutilated rim portions disposed with the whole portion of one disc opposite a mutilated portion of the other disc, friction pinions engageable with said discs and forming therewith drive couples of different gear ratios and a motor for driving said pinions.

7. An emergency calling set, comprising a motor, a circuit controlling transmitter operated thereby, connections from said transmitter for controlling the radio transmitting set of a ship, means for connecting said motor in on the emergency power supply of the ship and a master control circuit for starting said transmitter from the bridge or other control point.

8. An emergency calling unit, comprising a rotary controller, a signal circuit controlled thereby and provided with means for connecting the same in parallel across the transmitter key of a radio transmitting set, a motor for operating said rotary controller, means for connecting said motor and said rotary controller with a ship's emergency power supply and a circuit for cutting in said emergency power supply including a master switch for location at the bridge or other control point.

9. An emergency calling set, comprising a rotary transmitter having a call initiating portion operable at one transmitting speed and a second call initiating portion operable at a second transmitting speed, pickup means cooperable successively with said call initiating portions and means for driving said transmitter at the speed proper for said first call initiating portion while that portion is in cooperative relation with said pickup means and for driving said transmitter at the speed proper for said second call initiating portion while the latter is in cooperative relation with said pickup means.

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