

UNITED STATES PATENT OFFICE.

ARTHUR E. COLGATE, OF NEW YORK, ASSIGNOR TO GEORGE J. SCHOEFFEL,
OF BROOKLYN, NEW YORK.

ELECTRICAL WHISTLE-CONTROLLING DEVICE.

SPECIFICATION forming part of Letters Patent No. 553,900, dated February 4, 1896.

Application filed November 24, 1894. Serial No. 529,790. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR E. COLGATE, a citizen of the United States, and a resident of New York, county of New York, and State of New York, have invented certain new and useful Improvements in Electrical Whistle-Controlling Devices, of which the following is a specification.

This invention relates to apparatus for sounding whistles.

The object of the invention is to provide improved means for sounding whistles automatically at predetermined intervals and for continuously maintaining the system in condition to be operated manually at will. The time or regulated circuit-maker and breaker of the automatic apparatus is driven by a simple electric or an electrically-controlled motor, the circuit of which, as well as the circuit of the whistle-magnet, is controlled by an improved relay or electrically-operated circuit-maker and breaker, as hereinafter described.

In the drawings, Figure 1 is a general view, partly diagrammatic, illustrating the improvement. Fig. 2 is a side view, partly in section, of the magnet-case and its support.

The apparatus to be described is supposed to be on a boat (not shown) which is provided with one or more dynamos, or other electric generators D and an electric-lighting, motor or other circuit E extending therefrom.

The apparatus illustrated consists mainly of the whistle 1, magnets 2, and a valve 3 adapted to be opened by said magnet; an automatic circuit-maker 4, which may consist of a tappet 5 on, but insulated from shaft 6 of a worm-wheel, which is in gear with the worm 7, forming an extension of the armature-shaft of an electric motor 8, connected to circuit E, the circuit extending from the motor to the standard 9 of the electrically-operated circuit-maker. The upper end of the standard carries a contact-screw 10. The other standard 11 supports the pivot of the angle-lever 12, which carries a second angle-lever 13 pivoted to the free end of the horizontal arm or lever 12 at 14. This lever carries the armature, and its downward movement is limited by hook 15. One arm of the lever 13 is adapted to engage with the hook

16 when said lever is raised to the position indicated in dotted lines by the spring 17, the parts being normally in engagement, thereby holding lever 12 away from screw 10 and the motor and automatic whistle-circuit open at that point.

It will be seen that the armature-lever is in two parts 12 13, and these are adjusted so that 13 moves more easily than 12.

18 is a spring connected to lever 12 and tending to raise it against screw 10.

19 is a dash-pot to retard or regulate the movement of lever 12.

20 is a magnet, preferably having a large core and a short winding so as to work at a point considerably below saturation of the core.

From the motor and the electrically-operated circuit-maker circuit connections extend to a distant point, as the bridge of the boat carrying the whistle and apparatus, where are located a circuit-closer 21, preferably adapted to be carried in the hand, called the "at-will closer" and also a circuit-closing key 22 in multiple arc with 21, but having in circuit therewith a resistance R, called the "starting-key." A resistance R' is used to avoid short-circuiting magnet 20 when the automatic closer is in position to close the circuit.

When it is desired to sound the whistle at intervals by the automatic device 4, the key 22 is closed, sending a current, reduced by resistance R, through magnets 20 and 2, as shown by the non-feathered arrows, the circuit being as follows: from the + main E to magnet 20, thence to circuit-closer 22, through resistance R to and through magnet 2 and to the - main. The parts are so adjusted that this current is sufficient to energize magnet 20 sufficiently to move lever 13 from its dotted to its full line position, Fig. 1, in which the apparatus is supposed to be in the process of starting, 22 having been closed and 13 attracted, but spring 18 has not yet acted to raise lever 12. The current through magnet 20 caused by closing key 22 is not sufficiently strong to hold down the horizontal arm of lever 12 against the pull of spring 18. Therefore 12 rises and makes contact with screw 10,

closing the circuit through the motor, causing it to start to rotate the automatic circuit maker and breaker, which at each revolution causes the whistle to sound. This circuit (shown by feathered arrows) does not include the magnet 20, but is as follows: from the + main to lever 12, screw 10, standard 9, motor 8 to the - main. A branch from this circuit extends to the right-hand spring of circuit-maker 4, thence to the left spring, when wiper 5 connects the springs to and through magnet 2, and to the - main E.

It is frequently desirable in cases of emergency to stop the automatic sounding of the whistle and to make a special or at-will signal, and it is important that this should be possible without a moment's delay. This I can do at all times by means of the circuit-closer 21, which instantly stops and throws out of use the automatic circuit-maker and its motor, and also sounds the whistle to give the first blast of the at-will signal, after which other blasts can be sounded, as desired, by simply pressing and releasing button 21. Although magnet 20 is included in the circuit with the stopping and at-will closer 21, the effect is not to close circuit at 10, as when starting-closer 22 is operated, since lever 12 is drawn down by the strong current in magnet 20, the hook 16 is carried below 16' and during the return movement these hooks engage and prevent lever 12 making contact with screw 10. When the circuit is closed through magnet 20, it does not include the resistance R, but otherwise the circuit is traced by the non-feathered arrows. The current is therefore strong enough to draw 13 first to its full-line position and then to draw 12 away from screw 10, opening the motor and automatic-whistle circuits.

The whistle-magnet 2 operates a valve-stem and indirectly opens the main whistle-valve in a manner well understood and which need not be shown in detail. The magnets are in a tightly-closed metal box or case *a*; but it is found that moisture sometimes collects therein from condensation, and in case of poor insulation of the magnet or circuit wires this connects said wires to the case, thence to the whistle pipe or support, and to earth. To obviate this I insulate the box, for example, by a rubber, slate, or other insulating-plate *c* between the box and the bracket *b* which forms the support.

d is a hood extending down from the box, and *e* is insulating material, as paraffine,

partly fitting the hood, and preventing moisture from connecting the box and bracket.

With the box insulated if moisture collects therein it cannot ground the circuit, but will at most cause a short circuit and burn out a fuse.

I claim—

1. The combination of a whistle, a whistle-operating magnet and circuit, an automatic circuit-maker for sounding the whistle at intervals, and means always in condition to act connected to the circuit for both throwing the automatic circuit-maker out of use (when in use) and for sounding the whistle at will.

2. The combination of a whistle, an operating magnet and circuit, an automatic circuit-maker, an electric motor for operating it, a starting-circuit controller at a distance therefrom, and a separate stopping-circuit controller, the latter being an at-will operating device for the whistle.

3. The combination of a whistle, an operating magnet and circuit, an automatic circuit-maker, with means for driving it, a switch for rendering the automatic circuit-maker operative to sound the whistle and for throwing it out of condition to act on the whistle, a magnet for moving the switch in one direction, and a locking device for the switch operated by the same magnet.

4. The combination of a whistle, an operating magnet and circuit, an automatic circuit-maker, a motor for operating it, and a switch with an operating-magnet controlled from a distance for starting and stopping the motor, said switch having a part supported so as to be moved by a comparatively weak current for starting the motor, and a less-easily moved part for stopping it.

5. The combination, in an electrically-operated switch, of a magnet, an armature in two parts, the first part having a catch adapted to engage a fixed hook to hold the second part in its retracted position, said first part requiring only a comparatively weak attraction to move it to disengage the catch, the second part of the armature forming or carrying a circuit-terminal, and requiring a stronger attraction to move it, and a contact in co-operating relation with said terminal.

Signed this 23d day of November, 1894.

ARTHUR E. COLGATE.

Witnesses:

CHARLES M. CATLIN,
G. H. STOCKBRIDGE.