

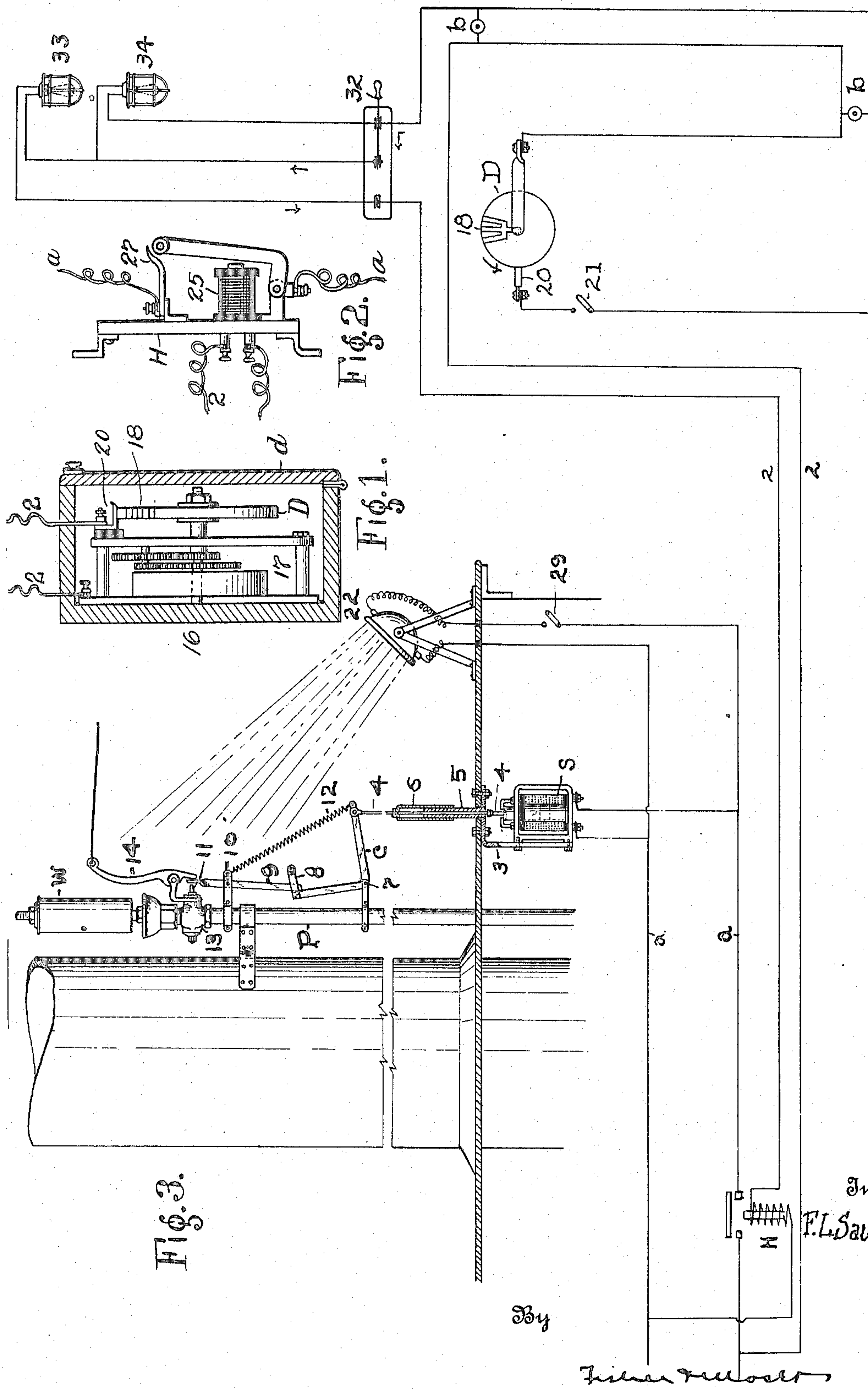
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F. L. SAUNDERS

ELECTRICAL STEAM WHISTLE INSTALLATION FOR BOATS

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UNITED STATES PATENT OFFICE.

FRANK L. SAUNDERS, OF ASHTABULA, OHIO.

ELECTRICAL STEAM-WHISTLE INSTALLATION FOR BOATS.

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To all whom it may concern:

Be it known that I, FRANK L. SAUNDERS, a citizen of the United States, residing at Ashtabula, in the county of Ashtabula and State of Ohio, have invented certain new and useful Improvements in an Electrical Steam-Whistle Installation for Boats, of which the following is a specification.

The object of the invention herein is to provide electrically operated means for blowing the main whistle of steam vessels of all classes wherein electricity is installed, and the several parts are adapted to be so arranged and connected up as to operate any make of whistle valve without interfering in any way with the hand blowing mechanism. In detail, the invention comprises means whereby the whistle may be made to blow any length of blasts and in any number, as may be required, by simply pressing a push button in the pilot house, the same as anyone would do to ring an electric bell, or, in case a ship is navigating in fog, the switch may be thrown onto what is termed the "automatic" and the whistle will continue to blow the fog signals as required by the U. S. Steamboat Inspection Service until the switch is snapped off. In thick fog a vessel under way is required by law to sound three distinct blasts of her whistle at intervals of not more than one minute, for the Great Lakes. On the ocean they are required to sound one distinct blast of not less than five seconds duration at intervals of not more than one minute. This device will operate the same on ocean vessels as on the Great Lakes by using only a single contact bar in the contact wheel of the proper length instead of the three bars used in contact wheels for Great Lakes service.

There is also an electric light in the installation which is connected up in series with a relay switch coil, and will light whenever the whistle starts to blow and will go out automatically as soon as the whistle ceases blowing. This light is an aid to boats navigating at night when it is too dark to see the steam from the whistle of another boat when it is being blown. Whenever a boat equipped with this device is in company with other boats at night which are meeting still more boats it is easy for the boats you are meeting to know when your passing signals have been blown and by which boat they were blown, thus perhaps avoiding collision.

Fig. 1 is a sectional elevation of the contact wheel by which the time blasts above referred to are determined and of the housing and turning mechanism therewith. Fig. 2 is an elevation of the magnetic switch adapted to be connected up in series with the light or lamps on the pilot house. Fig. 3 is an elevation of the complete invention largely diagrammatic but showing the electric whistle controlling mechanism in detail in operating relations and including a solenoid, the magnetic switch disclosed in the contact wheel shown in detail in Fig. 1, and the lights on the pilot house, with the electrical wires, switches, push buttons and other parts of a complete outfit, substantially as hereinafter fully described.

Having reference first to the means for blowing the whistle under ordinary or normal running conditions, we have the wire connections or pilot circuit 2 extending from one or more conveniently located push buttons *b* in the pilot house to the means at or near the stern of the boat for blowing the whistle *w*. Thus wires 2 connect with a magnetic relay switch *H* which is adapted to switch on the electric current in full to a solenoid *s* over a main line circuit *a*. Solenoid *S* is built for heavy duty and has a pull of 60 pounds, more or less, and as shown herein is supported by a bracket 3 on the inside of the boiler house. An actuated rod 4 extends from the solenoid through the floor above and connects with the horizontal arm of bell crank *c*. The said connecting rod is projected through a fixed tube 5 and has a close fitting sleeve 6 threaded thereon and slidable upon said tube and adapted to exclude water. The bell crank *c* is pivoted at 7 in an angle on the steam whistle steam pipe *P* and is loosely connected by means of a loop 8 with a lever 9 pivoted in bracket 10 on pipe *P* and adapted to engage the stem 11 of the valve 13 in said pipe which controls the steam to the whistle. The said valve remains closed normally as shown in Fig. 5, and lever 9 is held normally out of engagement with stem 11 and the spiral retracting spring 12 is stretched between the end of the bell crank *c* and the bracket 10 and its tension opposes the downward pull of the solenoid when energized to actuate the whistle or whistle valve. This, however, leaves the said valve free to be operated by the pilot by direct mechanical connection, say

a wire running to the arm 14, which is on a bracket pivoted from the housing of said valve and has a finger adapted to press the valve stem 11 inwardly by bearing against the extremity of the lever 9 intervening said finger and stem.

Incident to the electrical push-button operation from the pilot house to the whistle through the solenoid and as a precaution in operating in fog or the like, I provide an automatic fog signal blowing device seen in diagram Fig. 3, and in detail Fig. 1. This device is enclosed in a suitable casing or housing 16 with a door *d* at its front and comprises a contact wheel D and clock work 17 which is electrically connected up in series with electric wires 2. The wheel D is adapted to rotate at a predetermined rate, say one revolution per minute, and when the switch 21 is closed, the whistle will operate automatically. Thus wheel D is of fibre or other non-conducting material and mounted on the spindle or arbor of the clock, and the wheel is equipped with three radially-disposed copper contact bars 18 adapted to be engaged successively by the brush 20. Three distinct blasts of the whistle will then be blown at the requisite intervals as the said wheel revolves, and one or more of such contact bars 18 can be employed according to the service desired, and of any desired width according to the length of blast required. On the Great Lakes, three distinct successive blasts of not less than five seconds each are required at intervals of not more than one minute, while on the ocean one blast of not less than five seconds duration at intervals of not more than one minute is required. The push buttons *b* and switch 21 are all located within convenient reach of the pilot, and manual or automatic control may be exercised independently.

A further element or medium adapted to be used at night when the blowing of the whistle may not be heard or when several whistles are being blown and confusion exists is the electric flash light 22, which is connected in parallel with solenoid S and dependent for its illumination upon magnetic switch H. This flash light is placed in any suitable position to direct its rays upon the escaping steam when the whistle is blown so that the operation of blowing the whistle can be seen, if not heard, by the pilots of other vessels.

The magnetic switch is of a well known type used to switch a heavy current by means of a pilot circuit carrying a compara-

tively small current. As shown this switch comprises a coil 25, and contacts 27 through which the current flows and closes the circuit —*a*—. A separate switch 29 may be used to place light 22 in the circuit, or to turn it off in the day time.

Finally, there are two electric lights 33 and 34 shown in circuit 2 positioned one above the other on a shaft or column 30 adapted to be placed on the pilot house and so arranged that one or the other will light according to the position of the knife switch 32 in the pilot house. If this switch is thrown to the right it will cut in the upper lamp or light 33, and if thrown to the left the lower light 34 will be in circuit. Thus, if one light would be burned out the other can be immediately placed in circuit, so that whenever the whistle blows a light will flash from the pilot house for the same interval of time and produce a visible signal as well as an audible one.

What I claim is:

1. In an electrical steam whistle installation for vessels, a solenoid having an operating rod, a protecting housing for said solenoid having a tubular guide for said rod, said guide rod extending to the outside of said housing, a member secured to said rod enclosing said guide, and a steam whistle contiguous to said housing having a valve and means for connecting said rod to said valve.

2. In an electrical steam whistle installation for vessels, a steam whistle and a valve having a stem, a pivoted arm and a pivoted lever having overlapping extremities opposite said stem and co-acting to open said valve, a bell crank adapted to actuate said lever and having loose operable connection with said lever to permit said arm to be operated independently of said levers, and electrical means adapted to operate said bell crank.

3. In an electrical steam whistle for vessels, a steam whistle and valve therefor having an exposed stem, a pivoted lever and a pivoted arm adapted to co-operate in actuating said stem, a bell crank having a loop connection with said lever, and a solenoid and spring, said solenoid adapted to operate said bell crank and said spring adapted to return the bell crank to its original position.

Signed at Cleveland, in the county of Cuyahoga, and State of Ohio, this 12th day of February, 1920.

FRANK L. SAUNDERS.