

June 23, 1931.

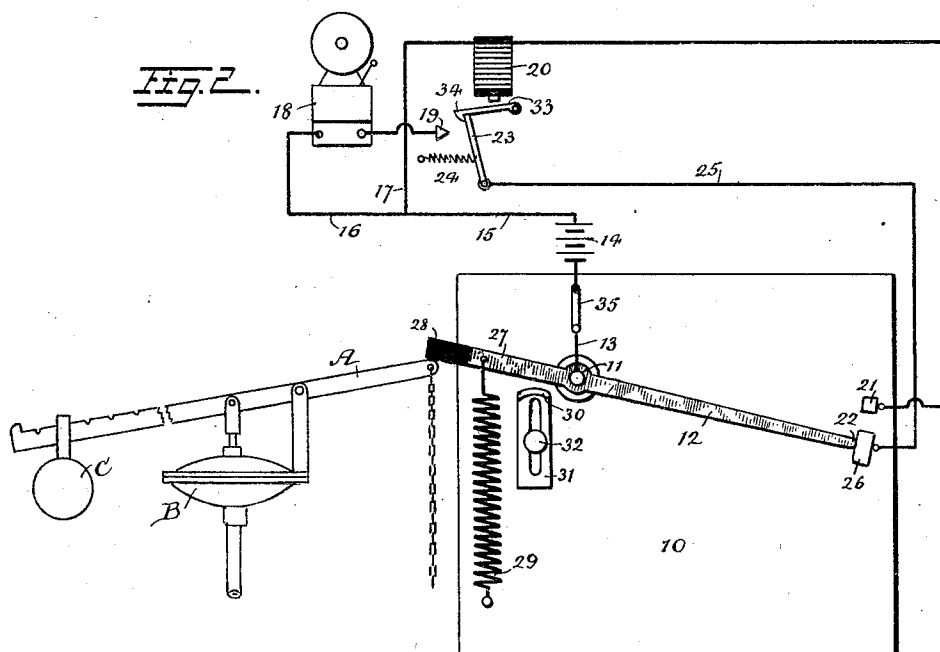
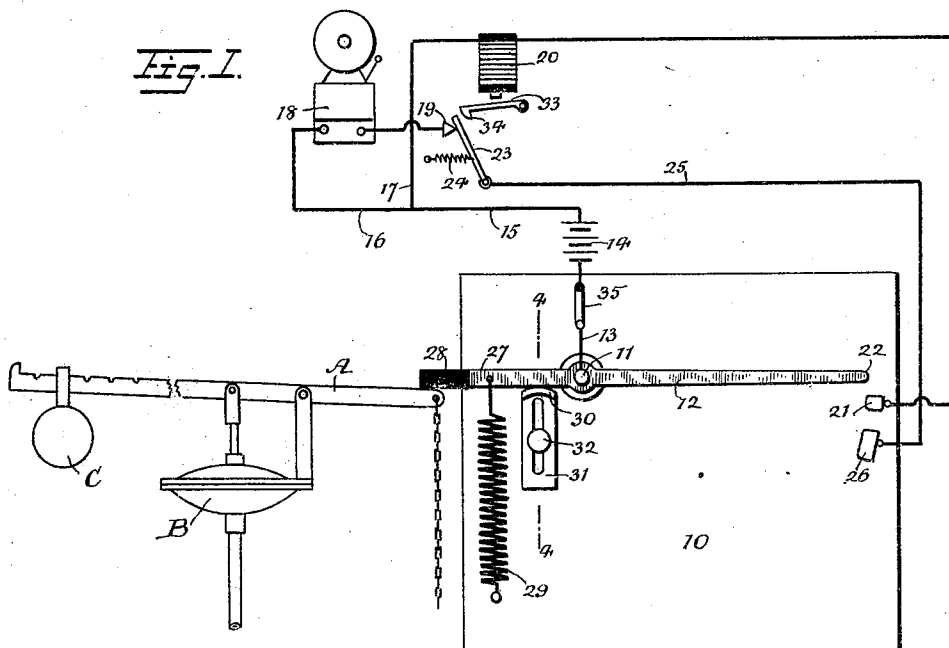
F. J. MILDENBERGER

1,811,800

ALARM OR SIGNAL FOR BOILERS

Filed Dec. 28, 1927

2 Sheets-Sheet 1



WITNESSES

H. T. Walker
Hugh H. Oly

~~Aug 24, 1944~~

INVENTOR

F. J. Mildenberger

BY

Мини-до.

ATTORNEY

June 23, 1931.

F. J. MILDENBERGER

1,811,800

ALARM OR SIGNAL FOR BOILERS

Filed Dec. 28, 1927

2 Sheets-Sheet 2

Fig. 3.

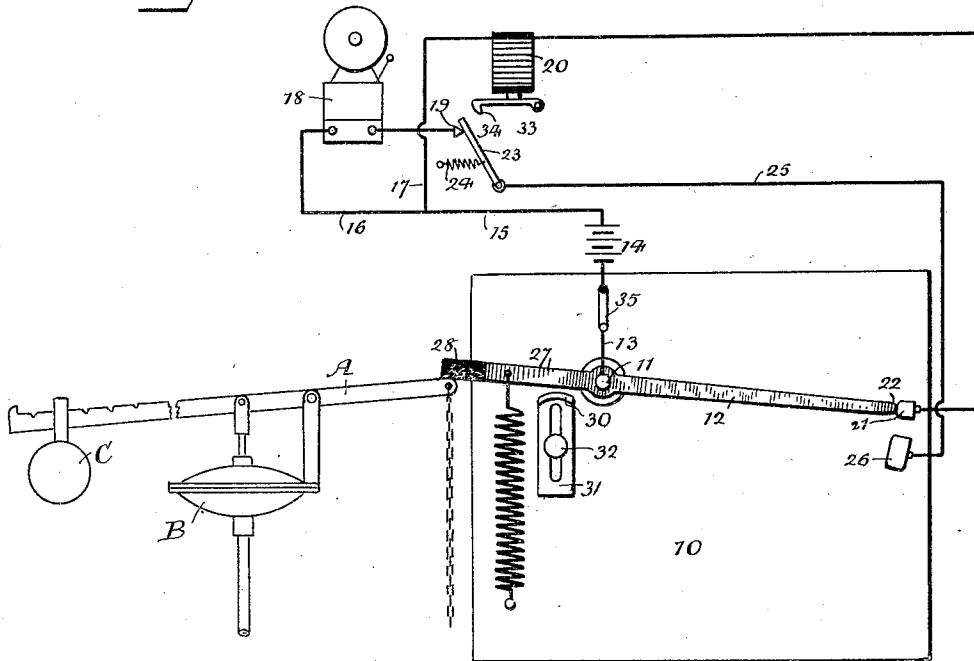
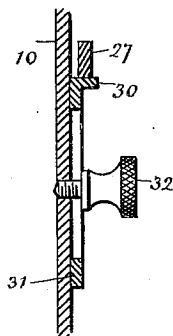


Fig. 4.



WITNESSES

H. T. Walker

Hugh H. Ott

INVENTOR

F. J. Mildenberger

BY

Munn & Co.

ATTORNEY

UNITED STATES PATENT OFFICE

FREDERICK J. MILDENBERGER, OF PASSAIC, NEW JERSEY

ALARM OR SIGNAL FOR BOILERS

Application filed December 28, 1927. Serial No. 242,936.

This invention relates to an alarm or signaling apparatus which while not necessarily limited to such use, is particularly designed for giving a warning signal when the pressure in a steam boiler drops below that which it is desired to maintain for indicating the necessity of refueling the boiler furnace.

Primarily the invention comprehends an improved alarm or signaling device for household use which is operable in connection with a diaphragm pressure valve and by virtue of which a drop in the pressure closes a circuit including an alarm or signaling element.

The invention further comprehends in connection with a device of the character set forth, which includes a bell or other similar audible alarm or signaling element, means for manually breaking the circuit after the signal or warning is received, together with means for automatically re-establishing the circuit at the manually broken point when the alarm is again rendered inactive.

Other objects of the invention reside in the comparative simplicity of the signaling apparatus, the economy with which the same may be produced and installed and the general efficiency derived therefrom.

With the above recited and other objects in view, reference is had to the following description and accompanying drawings in which there is exhibited one example or embodiment of the invention, while the appended claims define the actual scope of the invention.

In the drawings—

Figure 1 is a diagrammatic view illustrating the apparatus in normal condition prior to the drop or decrease in the pressure desired;

Fig. 2 is a similar view illustrating the position of the parts when the pressure is dropped, the alarm has been given and the circuit has been manually broken;

Fig. 3 is a similar view illustrating the position of parts immediately following the automatic re-establishment of the circuit at the manually broken point when the pressure has increased;

Fig. 4 is a detail sectional view taken ap-

proximately on the line 4—4 of Fig. 1 illustrating the adjustable stop.

Referring to the drawings by characters of reference, the apparatus includes a suitable base 10 upon which is mounted a suitable fulcrum 11, an arm 12 which is connected by a circuit wire 13 to one pole of a battery or other source of electrical energy 14, from the opposite pole of which battery or source of supply a circuit wire 15 extends to branch wires 16 and 17, the former leading through a bell or signaling device 18 and thence to a stationary contact 19, and the latter leading through the windings of an electromagnet 20, thence to a contact element 21 which is disposed in the path of movement of the terminal 22 of the arm 12. A movable contact element 23 normally engaged by a spring 24 with the contact element 19, is connected by a circuit wire 25 to a contact element 26 also disposed in the path of movement of the terminal 22 of the arm 12 and spaced from the contact element 21. The contact elements 21 and 26 are mounted upon the base 10. The opposite terminal 27 of the arm 12 is provided with an insulated extremity 28, while said terminal 27 is normally moved by a spring or equivalent means 29 against an abutment or stop element 30, having a slotted base 31 attached by a set screw 32 to the base 10 for relative adjustments with respect to the arm terminal 27. The electromagnet 20 is provided with a pivoted armature 33 having a latch terminal 34 positioned with respect to the movable contact 23 in such a manner that said movable contact may be manually engaged therewith to hold the circuit in an open condition at this point.

In its principal use in connection with a steam boiler, the insulated extremity 28 is engaged to raise the arm extremity 27 against the action of the spring 29 by the pivoted arm A of a diaphragm pressure valve B. It thus follows that when the pressure drops the weight C at the opposite end of the arm A causes said opposite end to engage under the insulated extremity 28 of the arm terminal 27, causing the extremity 22 of the arm 12 to engage with the contact 26. With the movable contact element 23 in its normal engage-

ment with the stationary contact 19, it is obvious that the circuit is closed to the signaling device 18, causing the sounding of the alarm or warning signal while the pressure has dropped.

In order to shut off the alarm while the pressure is being raised, the movable contact element 23 is engaged behind the latching terminal 34 of the armature 33 to open the circuit. In order to automatically re-establish the circuit at this point when the terminal 22 is moved from the contact 26 to its normal position, the terminal 22 of the arm 12 moving over the contact 21, establishes the circuit from the battery or source of supply 14 through the wire 15 and wire 17 to the electromagnet, thence through the contact 21, arm 12 and circuit wire 13, so that the electromagnet is energized. This raises the armature 33, releases the movable contact element 23, and permits the spring 24 to re-engage the contact 23 with the stationary contact 19.

In order to render the apparatus inactive as, for instance, is essential at night when the fires are banked and the pressure is dropped, a switch 35 is arranged in the circuit wire 13 for opening the circuit at this point. The adjustable stop 30 is provided to compensate for variations in the throw of the arm A or for different uses to which the device may be put.

From the foregoing it will thus be seen that an alarm or signaling apparatus has been designed, which is effective and foolproof, and which performs its function in an efficient manner.

What is claimed is:

1. A device for signaling the reduction of pressure in a steam boiler equipped with a pressure responsive element, said device including a signal, means operable by said pressure responsive element upon a predetermined pressure reduction for actuating said signal, a member manually movable to render the signal inactive, a detent for retaining said member in an inactive position and means automatically operable by a predetermined increase in pressure above said predetermined reduction for releasing said detent to permit of a subsequent functioning of said member to actuate the signal.

2. In a device for signaling a predetermined pressure reduction in a steam boiler, a normally open electric circuit including a signal, a switch arm operable in response to a predetermined pressure reduction for closing said circuit to energize the signal, a second switch arm normally moved to the circuit closing position and manually movable to open said circuit for deenergizing the signal when the circuit is closed by said first arm, a detent engaging with said second arm for retaining the same in a circuit breaking condition and means automatically operable by a

predetermined increase in pressure exceeding said predetermined pressure reduction for causing said detent to release said second arm for normal movement thereof to a circuit closing condition.

3. The combination with a steam boiler having a pressure responsive element, of an apparatus for signaling a predetermined pressure reduction comprising an electric signaling circuit including a signal and means operable by said pressure responsive element upon a predetermined pressure reduction to close the circuit for energizing the signal, means for manually opening the circuit independent of the first means to discontinue the signal, means for retaining said manual circuit opening means in circuit opening condition and means operable by said first mentioned means in response to movement of said element by a pressure increase exceeding said predetermined reduction for reestablishing said circuit by said independent circuit opening means.

Signed at New York, in the county of New York and State of New York, this 27th day of December A. D. 1927.

FREDERICK J. MILDENBERGER.