J. J. OGILVIE.

WATER LEVEL INDICATOR.

APPLICATION FILED JAN. 12, 1918.

1,372,187.

Patented Mar. 22, 1921.

2 SHEETS—SHEET 1.

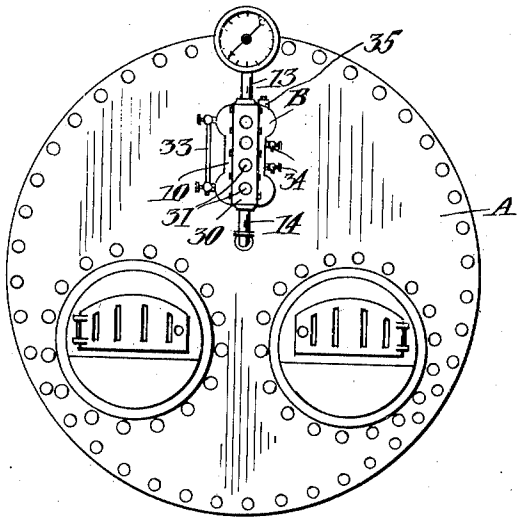


Fig. 1.

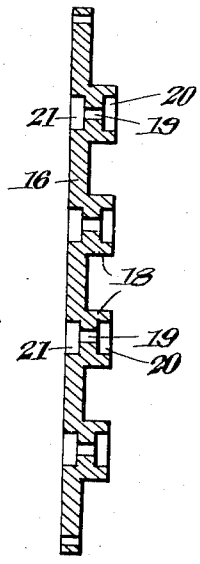


Fig. 4.

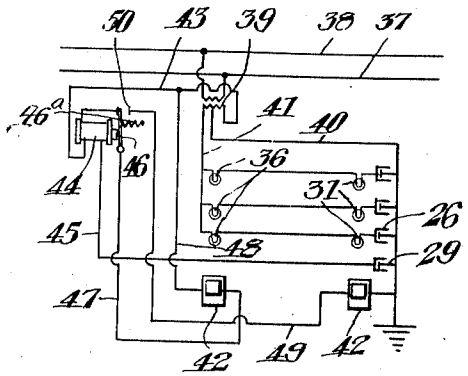


Fig. 5.

WITNESSES

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2 SHEETS—SHEET 2.

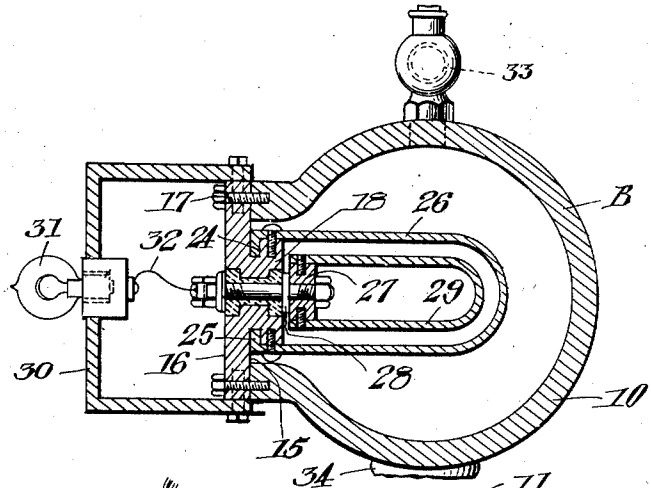


Fig. 3.

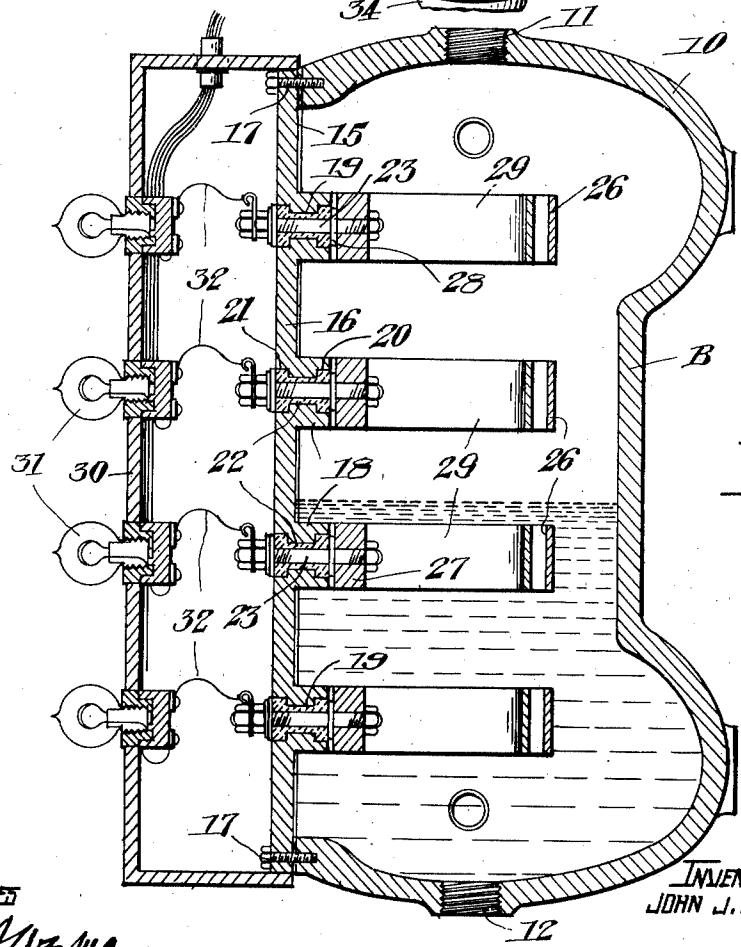


Fig. 2.

Witnesses

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UNITED STATES PATENT OFFICE.

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WATER-LEVEL INDICATOR.

1,372,187. Specification of Letters Patent. Patented Mar. 22, 1921.

Application filed January 12, 1918. Serial No. 211,570.

To all whom it may concern:

Be it known that I, JOHN JAMES OGILVIE, a subject of the King of Great Britain, and resident of the city of Ottawa, in the Province of Ontario and Dominion of Canada, have invented certain new and useful Improvements in Water-Level Indicators, of which the following is a specification.

This invention relates to water level indicators adapted to be utilized on boilers, reservoirs, tanks and the like, and the objects of the invention are to give an audible and visual warning when the level of the water falls below or rises above a predetermined level so forming a low and high water alarm, to permit of the indicator being used on boilers, tanks and the like at present in use, and to provide means whereby the indicator can be kept clean and in a proper condition to assure well-working.

Further objects are to permit of the ready disassembly of the several parts, to prevent the electric terminals, used on the signal being blown off, to protect the visual warning means and generally to adapt the several parts to better perform the functions required of them.

With the above and other objects in view the invention consists essentially of the improved construction and arrangement of parts particularly described and set forth in the following specification and accompanying drawings forming part of the same.

In the drawings:

Figure 1 is a front elevation of a boiler showing the improved indicator mounted thereon.

Fig. 2 is an enlarged vertical section of the indicator.

Fig. 3 is a transverse section of the same.

Fig. 4 is a vertical section of the indicator cover.

Fig. 5 is a diagrammatic view of the wiring.

Like characters of reference refer to like parts in the several figures.

Referring to the drawings, A represents a boiler of any usual construction and B the improved indicator mounted thereon.

The indicator B comprises a column or casing 10 provided with threaded orifices 11 and 12 on the ends thereof whereby the casing is attached to the front plate of the boiler by the pipes 13 and 14 adjacent to the normal water level.

The casing may be provided with bosses on the back thereof so that it can be directly connected to the front plate if such is found necessary or advisable.

The front wall of the casing is provided with a doorway 15 adapted to be normally closed by the cover or door 16 by means of bolts or studs 17.

The cover is provided on its inner face with a plurality of projections 18 arranged in alinement and having orifices 19 therethrough provided with countersunk or enlarged ends 20 and 21 designed to receive insulating sleeves 22 through which the bolts 23 pass.

The projections 18 are somewhat rectangular in shape and the lateral walls are undercut to form recesses 24, designed to engage the offset ends 25 of the U-shaped terminals 26.

In front of the cover 16 a rectangular casing 30 is mounted and secured in position by set screws and this casing carries a plurality of lamps 31, one of the terminals of which is connected by suitable wiring 32 to the adjacent bolt 23.

These lamps and the U-shaped terminals are included in an electric circuit to be explained hereafter.

On one side of the column or casing 10, a water glass 33 is arranged in such a manner that breakage of the same will not interfere with the lamps 31 as it would otherwise do if the glass was on the front of the column, and on the other side of the column pet cocks 34 are mounted.

Provision is also made for washing out the column or casing 10 through the wash plug 35, and the formation of scale on the terminals is thus overcome.

The three uppermost lamps 31 are connected in series with a set of lamps 36 which form a distant signal and may be located in the boiler superintendent's office. The electric circuit includes a pair of main wires 37 and 38 connected to a source of electric energy and these wires are connected to a step down transformer 39 which in turn is connected to the ground wire 40.

The transformer is also connected through the wire 41 with the distant signal lamps 36. In the embodiment illustrated the lowest lamp which forms a low level alarm is colored differently from the other lamps and a buzzer 42 is included in the electric circuit

so that it will sound simultaneously with the lighting of the low level lamp.

The transformer is connected through the wire 43 with an electro-magnet 44 which is electrically connected through the wire 45 with the lowest U-shaped inner terminal 29. The armature 46 is spring controlled and connected through the wire 47 with the low level distant lamp and buzzer 42 and thence by a wire 48 to the wire 43.

The near low level lamp 31 and buzzer is connected to earth and by the wire 49 to the contact 50 with which the armature 46 engages when the electro-magnet is deënergized.

In using the device as the water rises it will complete circuit through adjacent terminals 26 and 29 causing the lamps corresponding to the terminals to be lighted.

As the water falls below the level of adjacent pairs of terminals 26 and 29 the lamp connected with such terminals is extinguished.

This only applies however, to the three upper lamps and not to the lowest.

When the water level is above the lowest terminals 26 and 29 in the column 10 the lowest lamp both near and distant is not lighted as the magnet 44 is then energized and the armature 46 is open so that the auxiliary circuit including the said lowest lamps and buzzers is open.

When the water falls below the lowest pair of terminals the electromagnet 44 is deënergized and the armature 46 engages the contact 50 so completing an auxiliary circuit including the transformer 39, wire 43, wire 48, lowest distant lamp 36 and buzzer 42, wire 47, armature 46, contact 50, wire 49, lowest near lamp 31 and buzzer 42, and wire 40, thus completing the auxiliary circuit and lighting the lowest distant and near lamps and sounding the buzzer, so giving a visual and audible warning that the water has fallen too low in the boiler.

While the device is arranged to indicate a low level it is obvious a slight rearrangement of circuits would enable it to give a high level alarm.

Also in some cases the casing 10 would be dispensed with and the cover 16 bolted to a doorway in the front plate of a boiler, tank or reservoir and the same result could then be obtained.

From this description, it will be seen that I have invented a water level indicator, which can be used on boilers etc., so that a warning is given when the water rises too high or falls too low, and in which a visual signal is always given by the height of water in the boiler.

As many changes could be made in the above construction and many apparently widely different embodiments of my invention within the scope of the claims, constructed without departing from the spirit or scope thereof, it is intended that all matter contained in the accompanying specification and drawings shall be interpreted as illustrative and not in a limiting sense.

What I claim as my invention is:

1. In a device of the class described and in combination, a casing connected to a boiler, a terminal in the casing comprising two parallel U-shaped members, a plate having a projection adapted to engage the ends of one of the U-shaped members, and an insulated bolt extending through the projection and connected to the other U-shaped member.

2. A device comprising a casing in communication with the water in a boiler, a terminal in the casing comprising parallel spaced U-shaped members, the outer U-shaped member having inwardly offset ends, a plate having a projection formed with recesses adapted to engage the offset ends of the outer U-shaped terminal, a bolt extending through the projection, insulating means between the bolt and the projection, and a block carried by the bolt connected to the inner U-shaped member.

3. A device comprising a casing in communication with the water in a boiler, a terminal in the casing comprising parallel U-shaped members, the outer U-shaped member having inwardly offset ends, a plate having a projection formed with recesses adapted to engage the offset ends of the U-shaped terminal, a bolt extending through the projection, insulating means between the bolt and the projection, a block carried by the bolt connected to inner U-shaped member, and a washer spacing the block from the projection.

4. A device comprising a casing in communication with the water in a boiler, a terminal in the casing comprising parallel U-shaped members, the outer U-shaped member having inwardly offset ends, a plate detachably connected to the casing and having a projection formed with recesses adapted to engage the offset ends of the U-shaped terminal, a bolt extending through the projection, an insulated sleeve member between the bolt and the projection, the said insulated sleeve member being formed on either ends with collars engaging recesses formed on a block carried by the bolt connected to the inner U-shaped member, and a washer spacing the block from the projection.

In witness whereof I have hereunto set my hand.

JOHN JAMES OGILVIE.