

No. 829,103.

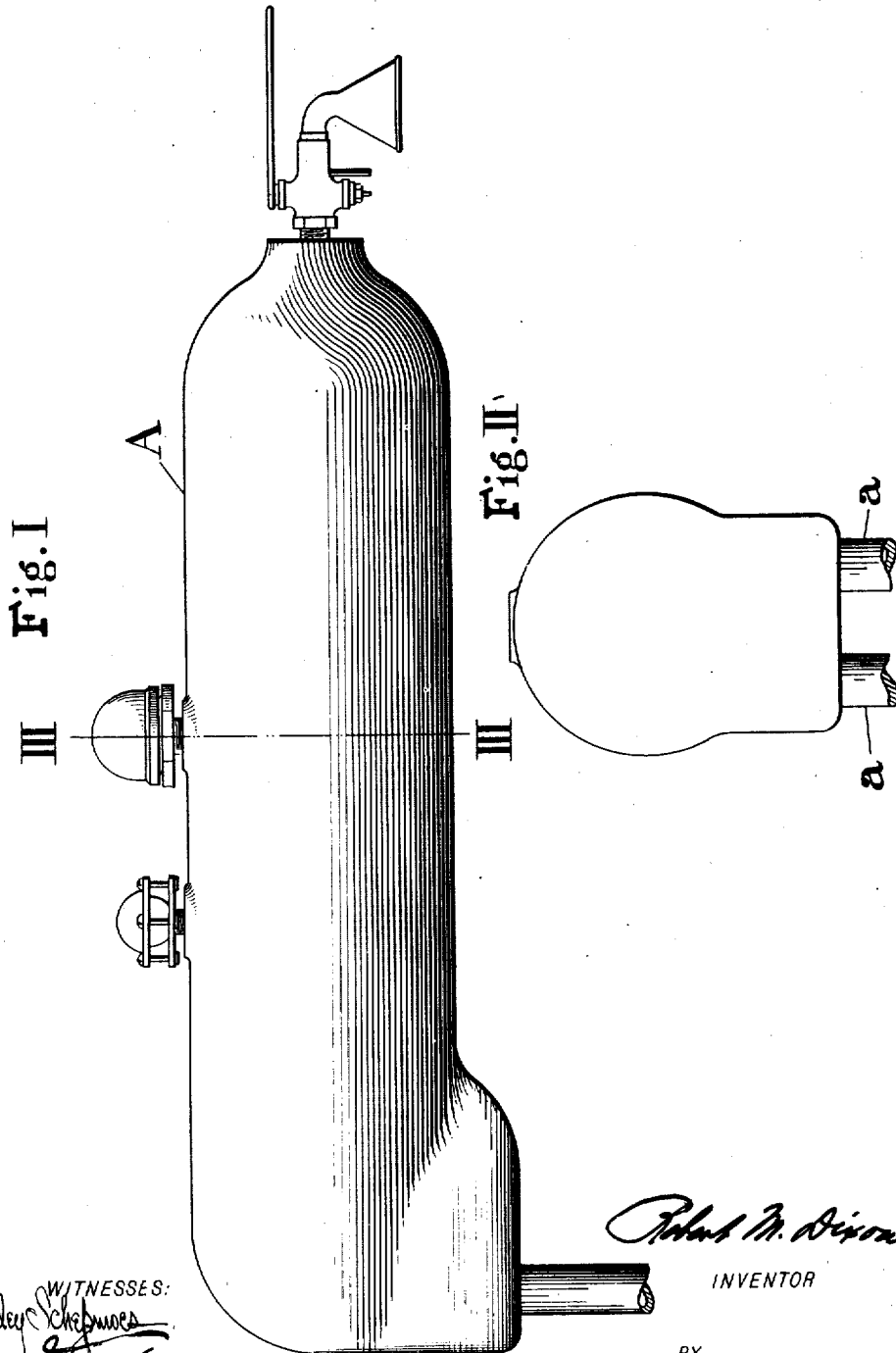
R. M. DIXON.

PATENTED AUG. 21, 1906.

WATER LEVEL ALARM FOR EXPANSION DRUMS OF HOT WATER HEATING SYSTEMS.

APPLICATION FILED NOV. 10, 1903.

2 SHEETS—SHEET 1.



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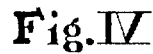
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2 SHEETS—SHEET 2.



Robert M. Dixon
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UNITED STATES PATENT OFFICE.

ROBERT M. DIXON, OF EAST ORANGE, NEW JERSEY, ASSIGNOR TO THE
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WATER-LEVEL ALARM FOR EXPANSION-DRUMS OF HOT-WATER HEATING SYSTEMS.

No. 829,103.

Specification of Letters Patent.

Patented Aug. 21, 1906.

Application filed November 19, 1903. Serial No. 181,752.

To all whom it may concern:

Be it known that I, ROBERT M. DIXON, a citizen of the United States, residing at East Orange, county of Essex, State of New Jersey, have invented certain new and useful Improvements in Water-Level Alarms for Expansion-Drums of Hot-Water Heating Systems, of which the following is a specification.

My invention relates to hot-water heating systems, and has for its particular object to produce a water-level alarm for indicating the water-level in expansion-drums of hot-water heating systems.

To these ends my invention consists in the construction hereinafter set forth and claimed.

In the accompanying drawings I have shown one system of which my invention is embodied and have shown the alarm as operating to indicate the extreme limit of low water, although it will be understood that the construction may be varied to indicate other water-levels.

In the drawings, in Figure I, I have shown a side elevation of an expansion-tank in which my invention is embodied; in Fig. II, I have shown an end view thereof looking from the left of Fig. I. Fig. III shows an enlarged sectional detail view, the section being taken on line III III of Fig. I. This figure also shows in diagram electric-circuit connections suitable for giving an indication and alarm, and Fig. IV is a section on line IV IV of Fig. III.

In the drawings, A represents the expansion tank or drum of a hot-water heating system, a part of which is shown at *a a*. This expansion-drum is shown in Fig. III as provided with a float *b*, shown in the present instance as a metallic cylindrical structure filled with cork or other buoyant material. A rod *c* is hinged at its lower end to the said float and extends upward through the side of the expansion-tank and is provided with a cross-head *d*, located in a chamber *e*. The rod *c* is provided with insulating materials at *c'* at the places where it passes through the wall of the chamber *e*. The chamber *e* is formed integral with a plate *f*, which is fastened to but insulated from a sput *g*, screw-threaded into the expansion-drum. A screw *h* forms one of the terminals of the electric circuit and is

screw-threaded into the expansion-drum. Another screw *i* forms the other terminal of the electric circuit and is electrically connected with the plate *f*, which is also provided with pins *j*, with which the cross-head *d* is adapted to contact. The plate *f* is, as stated, insulated from the sput *g* and from the expansion-drum *h*. Leading from the screw *i* is one of the legs *l* of the electric circuit, which is connected to one of the terminals *m* of the bell *o*, the other terminal *p* being connected by a wire *q* to the switch *r*, from which the circuit leads by a wire *s* to the battery *t* and back to the screw *h*. An annunciator *u* may be sprung across the legs of the circuit by connecting wires *v* and *w*. When the switch *r* is closed, the bell is put in circuit in addition to the annunciator, and it is preferable that both the bell and the annunciator be included in the circuit in order that both a visible and audible signal may be transmitted.

It will be understood that as the water-level in the expansion-drum lowers to a predetermined point the cross-head *d* will be brought into contact with the pin *j*, thereby closing the circuit through the water in the drum and giving an alarm. It will also be observed that by pivoting the rod *c* to the float *b* at the point *e'* in a longitudinally-extending recess *e''* in the said float the float may be folded against the rod, which will lie in the recess and the float and rod may be readily passed through a restricted orifice or opening in the drum. It will further be observed that the form of drum shown is that used in railway-cars and which preferably extend longitudinally of the cars in order that the vibration will have the least possible effect on the body of water and that by reason of the pivoting the float will adjust itself to the movements of the car.

As many changes could be made in the above construction and many apparently widely different embodiments of my invention could be made without departing from the scope thereof, I intend that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

Having described my invention, what I

claim, and desire to secure by Letters Patent, is—

1. In a water-level alarm apparatus, the combination of an expansion-drum adapted to be carried upon a railway-car, a float located within the drum, an operating-rod pivotally connected to the float, circuit-terminal supported from the expansion-drum and a circuit-terminal supported by the operating-rod and means for guiding the operating-rod in its movement.

2. In an alarm, the combination of the drum of a hot-water heating system adapted to be carried upon a railway-car, a freely-moving float carried within the drum, a suitable guided operating-rod pivoted to the float, an electrical alarm apparatus comprised in part by a circuit-closer under the control of the operating-rod.

3. In an alarm apparatus, the combination of a tank, a float therein, a suitable guided operating-rod and an alarm apparatus, one leg of whose circuit is electrically connected to the float and the other leg of whose circuit is mechanically connected to but insulated from a sput or head, a circuit-terminal carried by the sput or head and insulated therefrom and in electrical connection with the

last-mentioned circuit-terminal and a circuit-terminal carried by the operating-rod and adapted to coact with the circuit-terminal carried by the sput or head.

4. The combination of a drum or inclosure having a restricted opening therein, a head or sput mounted in the opening and a recessed float adapted to pass through such opening for insertion into the drum, an operating-rod pivotally connected to the float in the recess thereof, the said recess being adapted to receive the said rod when the float is being inserted into the drum or inclosure and circuit-terminals under control of the operating-rod.

5. In a water-level alarm apparatus, the combination of an expansion-drum adapted to be carried upon a railway-car, a float located within said drum, an operating-rod having a jointed connection with said float, circuit-terminals supported from the expansion-drum, a circuit-terminal supported by said operating-rod, and means whereby said operating-rod is guided in its movements.

ROBERT M. DIXON.

Witnesses:

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