

M. G. FARMER.
Electric Water-Gage.

No. 25,496.

Patented Sept. 20, 1859.

Fig. 1.

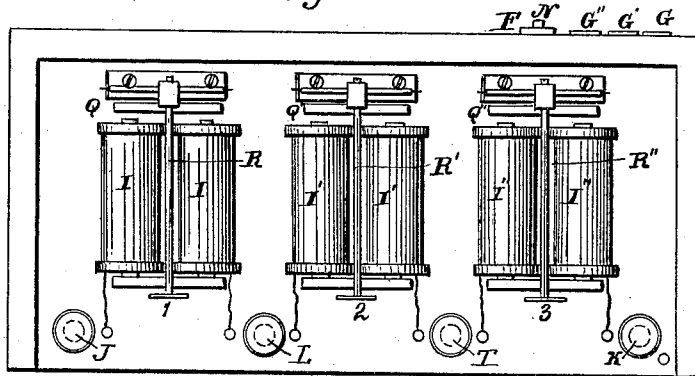


Fig. 2.

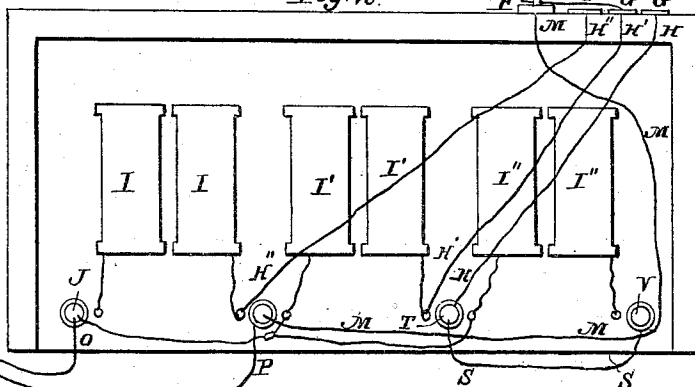


Fig. 3.

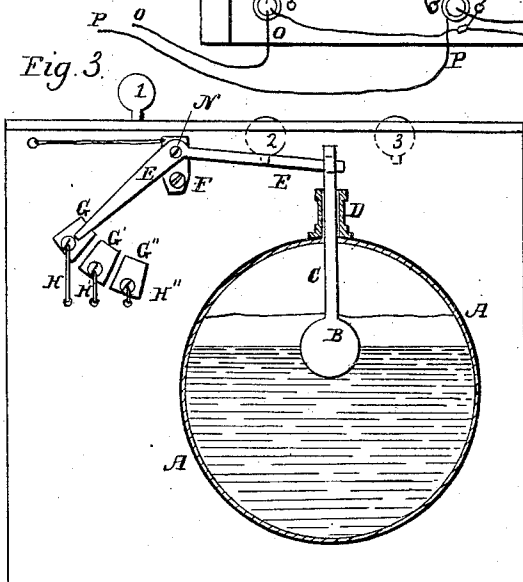
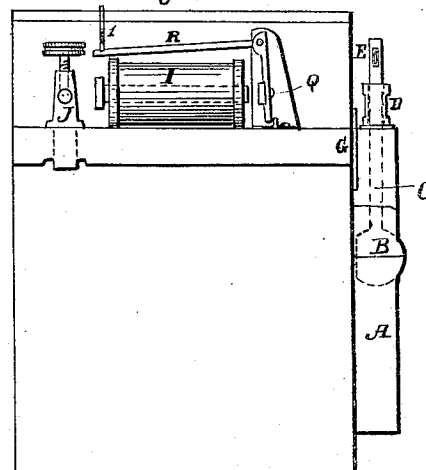


Fig. 4.



Witnesses:
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UNITED STATES PATENT OFFICE.

MOSES G. FARMER, OF SALEM, MASSACHUSETTS.

IMPROVED ELECTRO-MAGNETIC STEAM-BOILER GAGE.

Specification forming part of Letters Patent No. **25,496**, dated September 20, 1859.

To all whom it may concern:

Be it known that I, MOSES GERRISH FARMER, of Salem, in the county of Essex and State of Massachusetts, have invented an Improvement in Steam-Boiler Water-Gages; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters and figures marked thereon.

Figure I is a plan of the indicating apparatus. Fig. II shows the mode of connecting the wires to the electro-magnets and circuit-breakers; Fig. III, view of the float and circuit-breaker; Fig. IV, side view of magnet, armature, and indicator.

This apparatus is designed to show the height of water and other liquids in steam-boilers and reservoirs, the rise and fall of tides, or the position within certain limits of any traversing rod or lever.

I attach to a boiler or other reservoir of water, A, Figs. III and IV, a float, B, connected with a stem, C, working through a stuffing-box, D, and giving motion to a metallic bent lever, E, which turns upon a pivot or center, N, fastened to the metal plate F. To this rod or lever I attach or connect directly or by means of a magnet a circuit-breaker or rheostat, or any suitable means of making and breaking, closing or opening one or more electric circuits outside of the boiler, and so arrange such rheostat or rheotome that the rising or falling of the float B shall open and close different circuits in succession, or the same circuit a different number of times, or shall vary the strength of current in the circuit or circuits in such a manner that the varying strength of current shall show, by suitable and proper electric apparatus, the position of the float. One end of the bent lever E rests and slides upon the circuit-breaker G G' G'', these plates being of such width and so placed with reference to each other as to allow the electric connection of each plate to indicate successive changes of the level of the liquid within the boiler or reservoir to the extent of an inch or any definite measure. These contact-plates G G' G'' are severally connected by the wires H H' H'' with one end of the wire of the electro-magnets I I' I'', while the other

end of the wires of the several magnets is connected with the screw-cup J, into which a wire, O, from one pole of the battery K is inserted, while the wire P, leading from the other pole of the battery, is inserted into the screw-cup L, which is connected by the wire M with the fulcrum N of the arm of the circuit-breaker G G' G''. When any one of the magnets I I' I'' is charged the corresponding armature Q is attracted to the magnet, carrying with it the attached armature-lever R, having at its opposite end a plate or disk, upon the face of which a number is inscribed—as 1, 2, 3—this plate or disk being raised a short distance above a fixed screen by the action of the lever. The figure thus presented to view indicates that the float B within the boiler A is at such a level as to bring the arm E of the circuit-breaker into contact with one of the plates G, G', or G'', and thus cause the current to traverse the proper magnet and make correct indication of the level.

It is obvious that the wire leading from any one or more of the contact-plates, G G' G'', to its respective magnet I I' I'' may in its course pass through an apparatus which shall be capable of giving an alarm by the means, directly or indirectly, of an electro-magnet, which shall set in motion an apparatus for ringing a bell or otherwise attracting attention. When an alarm-bell is thus used it may be placed so that a current traversing the wire S between the screw-cups T and V may pass through it. It is plain, also, that a rheostat and galvanometer-needle may be combined with an electric circuit, so that the rise and fall of the float shall introduce more or less resistance into the electric circuit, and thus indicate the height of the water by the different positions of the needle; but I consider the essential part of my invention to be not the special devices for indicating, but the combination of an indicator, an electric circuit, a circuit-breaker or rheostat with a float, directly or indirectly, which rests in or upon a liquid in such a manner that the height or level of the liquid shall be indicated thereby. The float need not be mechanically attached to the circuit-breaker, but may be connected with it by the intervention of a permanent steel magnet.

The position of the indicating instrument may be remote from the boiler, as in a counting-house, thus showing to parties in charge of any establishment the actual height of water in a boiler or reservoir.

What I claim as my invention, and desire to secure by Letters Patent, is—

The combination of an indicator, an electric

circuit or circuits, one or more circuit-breakers or rheostats with a float, in any manner substantially as herein described.

MOSES G. FARMER. [L. S.]

In presence of—

SAML. BATCHELDER, Jr.,

J. M. BATCHELDER.