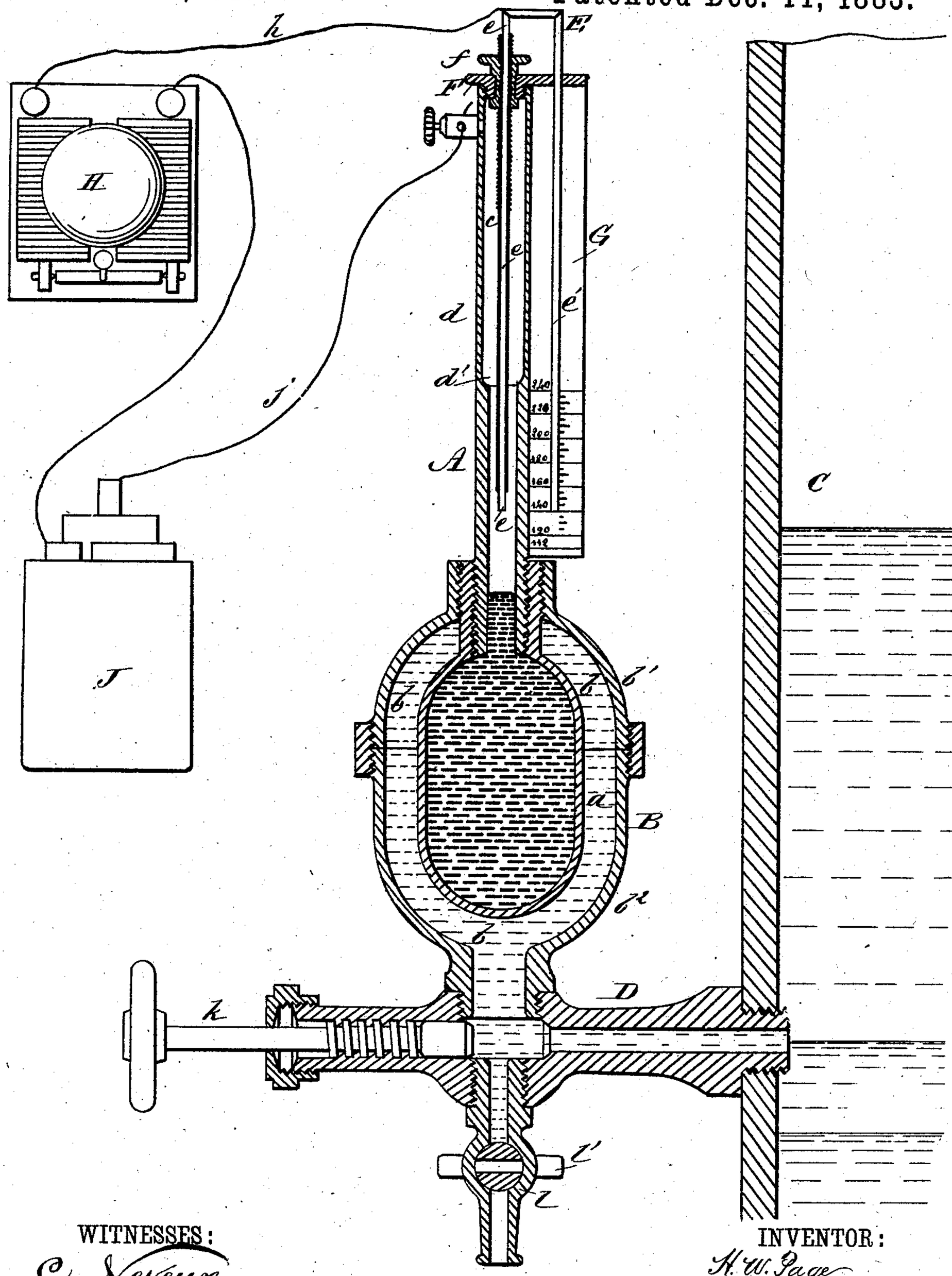
(No Model.)

H. W. PAGE & H. CARLEY.

ELECTRIC ALARM FOR STEAM BOILERS, &c.

No. 290,101. Patented Dec. 11, 1883.



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UNITED STATES PATENT OFFICE.

HARRY WOODBURN PAGE AND HARVEY CARLEY, OF LONG BRANCH, NEW JERSEY; SAID CARLEY ASSIGNOR OF ONE-HALF HIS RIGHT TO THOMAS McKENNA, OF SAME PLACE.

ELECTRIC ALARM FOR STEAM-BOILERS, &c.

SPECIFICATION forming part of Letters Patent No. 290,101, dated December 11, 1883.

Application filed March 24, 1883. (No model.)

To all whom it may concern:

Be it known that we, HARRY W. PAGE and HARVEY CARLEY, both of Long Branch, in the county of Monmouth and State of New Jersey, have invented a new and Improved Electric Alarm for Steam-Boilers, &c., of which the following is a full, clear, and exact description.

The object of our invention is to provide an electric-alarm apparatus more especially intended for use as a low-water indicator for steam-boilers, in which apparatus mercury is used for completing the electric circuit when the alarm should be given. The apparatus is also applicable to ovens, furnaces, and other contrivances where the heat within has need to be regulated. When applied to steam-boilers, the action of the apparatus depends upon the fact that the steam in the boiler is always of a higher temperature than the water.

Reference is to be had to the accompanying drawing, forming part of this specification, in which the figure is a sectional elevation of our invention as it appears when applied to a steam-boiler.

A represents a thermometer-like device, the mercury-bulb *a* of which is inclosed in the sectional globe B, which forms the chamber *b* around the mercury-bulb, as shown. This chamber *b* communicates with the interior of the boiler C through the valve-stem D, to which the globe B is attached, and which stem is screwed into a suitable screw-tap made in the boiler at the low-water line.

In the plate F, which closes the upper end of the tube *d* of the thermometer-like device A, is fitted the thumb-nut *f*, through which passes the insulated arm *e* of the bent rod E; and the insulating material *c* on said arm *e* is screw threaded to match the screw-threads of the nut *f*, so that by turning the said nut *f* the bent rod E may be raised or lowered to suit the temperature at which it is desired to have the alarm given. The arm *e'* of the bent rod E is of the same length as the arm *e*, and reaches down in front of the graduated plate G, attached to the thermometer-tube *d*, and thus serves as an indicator for setting the rod E with reference to the degree-marks on the plate G.

H J represent, respectively, the connected electric alarm and battery, which are connected, respectively, to the bent rods E and the mercury-tube *d* by the wires *h* and *j*.

The action of the device is as follows: When the water in the boiler stands above the low-water line, the water entering the chamber *b* through the stem D will prevent the entrance of steam to the said chamber, and the mercury in the bulb *a* will have the same temperature as the water, causing it to stand in the tube *d* somewhat below the lower end of the arm *e*; but when the water in the boiler falls below the low-water line the steam in the boiler will enter the chamber *b*, and, being of a much higher temperature than the water, will cause the mercury to rise in the tube *d* in contact with the lower end of the arm *e*, (the rod E having been previously properly adjusted,) and thus complete the electric circuit and cause the alarm to be given.

In the spindle D is fitted the screw-plug *k*, for cutting off communication between the chamber *b* and boiler C, in case it should be desired to unscrew the bulb B from the tube D, or to unscrew the upper section, *b'*, from the lower section, b^2, of the bulb for repairs; and to adapt the spindle D to serve also as a test-cock, we provide it with the faucet-sleeve *l* and plug *l'*, as shown clearly in the drawing.

The mercury-tube *d* is enlarged upon the inside at a point above the lower end of the arm *e*, as shown at *d'*, to prevent all danger of overflow of the mercury in case of excessive heat.

Constructed in this manner, the alarm device is reliable and cheap, and by adjusting the rod E it may be applied to a variety of uses.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. The combination, with the boiler C, provided with the tube D, of the globe B, inclosing the water and steam chamber *b*, mercury-bulb *a*, provided with mercury-tube *d*, ad-

justable insulated wire *c e*, projecting into the bulb-tube, alarm H, battery J, and connecting-wires *h j*, substantially as described, and for the purpose set forth.

2. In an electric alarm, the combination, with a mercury-bulb inclosed within a chamber, *a*, and provided with a tube, *d*, and plate F at its upper end, and adapted to be placed in communication with a boiler, C, of the thumb-nut *f*, bent wire E, having adjustable insulated wire *c e*, and graduated plate G, substantially as described, and for the purpose set forth.

3. In an electric alarm, the combination, with the globe B, of the mercury-tube *a*, suspended within said globe, the tube *d*, provided with the thumb-nut *f*, and the insulated threaded wire *c e*, substantially as herein shown and described.

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Witnesses:
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