

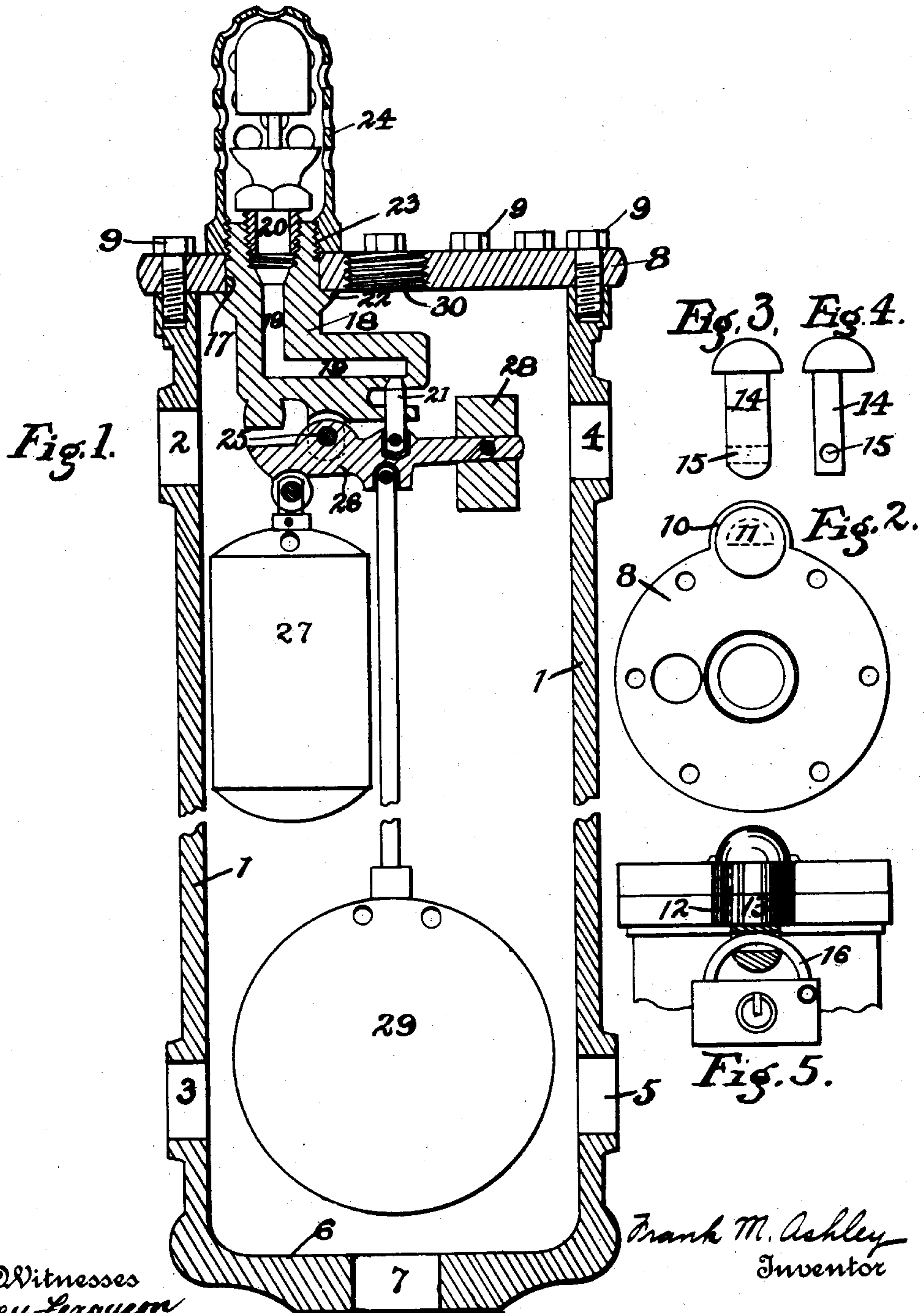
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F. M. ASHLEY.
BOILER ALARM.

(Application filed Apr. 27, 1899.)

(No Model.)



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UNITED STATES PATENT OFFICE.

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BOILER-ALARM.

SPECIFICATION forming part of Letters Patent No. 684,400, dated October 15, 1901.

Application filed April 27, 1899. Serial No. 714,690. (No model.)

To all whom it may concern:

Be it known that I, FRANK M. ASHLEY, a citizen of the United States, residing at New York, in the county of Kings and State of New York, have invented certain new and useful Improvements in Boiler-Alarms, of which the following is a full, clear, and exact specification.

This invention relates to boiler-alarms; and its object is to provide a boiler-alarm which cannot be removed or tampered with by the attendant or other person except in such manner that it will give evidence of having been tampered with. It often happens that where boilers are provided with devices for indicating the condition of the water in the boiler the attendants thereof endeavor to adjust or interfere with the alarms in such manner that they cannot operate in order that the operation of the alarm may not call the attention of their superiors to the fact that they have been remiss in their duties. I therefore propose to provide an apparatus which cannot be tampered with without at once putting the apparatus in such condition that it will be apparent that it has been tampered with.

A further object of the invention is to provide an alarm which shall call attention to both abnormally high conditions and abnormally low conditions of the water in the boiler and shall operate in an accurate and positive manner.

The invention will be more particularly described hereinafter with reference to the accompanying drawings, in which I have illustrated a form which the invention may take in practice.

In the drawings, Figure 1 is a sectional view of a boiler-alarm constructed in accordance with my invention. Fig. 2 is a detail plan view illustrating a method of attaching the cover of the casing to its cylinder. Figs. 3 and 4 are respectively detail, side, and front views of the pin shown in Fig. 2; and Fig. 5 is a side view, partly in section, showing the manner of locking the pin in position.

Referring more particularly to the draw-

ings, 1 represents the cylinder of a casing adapted to contain the alarm apparatus and communicating with the boiler to which the device is to be attached by means of passages 2 3 or 4 5. The cylinder is shown as being broken away, in the drawings, to indicate that in practice the cylinder will ordinarily be longer proportionately than the one shown in the drawings. The wall 6 closes the lower end of the cylinder and may be provided with a drain-passage 7, normally closed by a suitable valve or other closure. The top 8 of the casing is bolted to the cylinder by means of a number of bolts 9 9 or other suitable means. In order that this cover may not be removed without proper authorization, I propose to provide at one edge thereof a lip 10, (shown in Fig. 2,) having a semicircular opening 11 therein or an opening of the shape of any desirable polygon. A similar lip 12, provided with a similar opening 13, is formed on the cylinder 1, and a bolt having a stem 14 of the same shape as the openings 11 and 13 is adapted to fit into said openings, the end of the bolt being provided with an eye 15, through which a lock 16 is adapted to be passed. This will prevent the cover from being removed or from being swung around on the casing after the bolts 9 9, &c., have been removed, unless the lock 16 be first unlocked and the bolt 14 be withdrawn. At a suitable place in the cover 8 is cut an opening 17, through which a portion of a body 18 is adapted to pass. The body 18 contains a passage 19, leading to a whistle 20 or other suitable alarm, and communication between the interior of the cylinder 1 and the passage 19 is permitted through a valve 21. The body 18 is provided with a flange 22, adapted to rest against the inside of the cover 8, and is also provided with a screw-thread 23, adapted to be engaged by a similar thread on the inside of a protecting cover 24 for the whistle. The cover may be perforated, as shown in the drawings, or otherwise suitably arranged to prevent access to the whistle without interfering with its operation. By screwing down the cover 24 the shoulder 22 will be brought into contact with the in-

ner side of the cover and the body portion 18 will be held tightly in place. At a suitable point 25 upon the body 18 is fulcrumed a lever 26, carrying at one end a tank 27 and at the other end a weight 28, adapted to be moved upon the lever to adjust the apparatus. The stem of the valve 21 is also connected with the lever 26 in such manner that the valve will be operated by the movement of the lever. A tank 29 is also suspended upon the lever 26 upon the end thereof opposite to that carrying the tank 27. Both of the tanks 27 and 29 normally contain water. For the purpose of conveniently getting at the apparatus in order to adjust the same a screw-cap 30 may be provided in the cover and adapted to be unscrewed therefrom. This may, if preferred, be provided with a lock to prevent access to the valve without proper authorization.

In operation, assuming the water in the boiler to be at a normal level, which will be at some point between the two tanks 27 and 29, the tank 29 will be surrounded with water and will therefore not exert any appreciable pull upon the lever 26. The tank 27, however, being full of water and not being surrounded by water will overcome the weight 28 and hold the valve 21 tightly against its seat. If the water rises in the boiler to above its normal level, it will begin to surround the tank 27 and the weight of the tank 27 will gradually diminish as the water rises around it, thus allowing it to be overcome by the weight 28, which will draw the valve 21 away from its seat and allow the steam to rush through passage 19 into the whistle 20. If the water drops to a point below its normal level, it will recede from around the tank 29 and the weight of the latter will be gradually thrown upon the lever 26 and overcome the weight of the tank 27, opening the valve 21 and sounding the alarm. The weight of the respective tanks and the weight 28 will of course be adjusted in the devices to conform to individual conditions.

It will be observed that the only available ways open to the attendant to remove the alarm or interfere with its working will be to unscrew the cover 24 or remove the cover 8. The latter being locked cannot be removed without the knowledge of the holder of the key. It will be impossible for the attendant to loosen the nuts 9 and swing the cover around, owing to the pin 11. If the cover 24 is unscrewed, the weight of the tanks will immediately pull the body 18, and the alarm, through the opening 17, allowing an escape of steam through the latter opening and placing the apparatus in such condition that it will be apparent at a glance that it has been tampered with.

Having thus described my invention, I de-

clare that what I claim as new, and desire to secure by Letters Patent, is—

1. In a boiler-alarm, the combination of a casing, an opening thereto, an alarm, an exterior protecting-cover for said alarm, and an alarm-operating mechanism in said casing suspended through said opening from said cover alone, whereby said alarm-operating mechanism will drop from its operating position when said cover is removed, substantially as described.

2. The combination with the alarm, of a protecting-cover for the same and means for operating said alarm, said means being operative only while held in operative position by said cover and becoming inoperative when said cover is removed, as set forth.

3. The combination of an alarm, a valve controlling the passage of steam thereto, two counterbalanced weights, one of which tends to open said valve and the other to close the same, and a third weight tending to open said valve but normally unable to operate the same, but which upon a rise of water beyond the second-named weight becomes sufficiently powerful to open said valve, substantially as described.

4. The combination of an alarm, a valve controlling the passage of steam thereto, two counterbalanced weights, one of which tends to open said valve and the other to close the same, and a third weight, tending to open said valve but normally inoperative upon the same, but which becomes sufficiently powerful to open the same when both of said first-named weights are submerged, substantially as described.

5. The combination of an alarm, a valve controlling the passage of steam thereto, two counterbalanced weights, one of which tends to open said valve and the other to close the same, and a third weight, tending to open said valve, but of insufficient power to do so except when both of said first two named weights are submerged or both uncovered, substantially as described.

6. In a boiler-alarm, the combination of an alarm, a valve controlling the passage of steam thereto, a lever balanced intermediate its ends and to which said valve is connected, a weight connected to one end of said lever and tending to open said valve, a weight connected to the other end of said lever and tending to close said valve, and a third weight carried by said lever and adapted to augment the weight of one of said first-named weights upon an abnormal rise or fall of the water in the boiler, substantially as described.

7. The combination of an alarm, a valve controlling the passage of steam thereto, two counterbalanced weights one of which tends to open said valve and the other to close the same, and one of which is normally submerged

in the water, and a third weight tending to
operate said valve against the unsubmerged
weight and operative therefor only when said
weight becomes submerged, substantially as
5 described.

8. The combination of an alarm, of means
for operating the same, a casing within which
said operating means are contained, a cover
for said casing, securing means for attaching
10 the same to the casing, and a bolt passing

through said cover and casing, said bolt hav-
ing a polygonal-shaped cross-section and
locking means for securing said bolt in posi-
tion, substantially as described.

In testimony whereof I have affixed my sig- 15
nature in presence of two witnesses.

FRANK M. ASHLEY.

Witnesses:

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