

(No Model.)

L. C. BAILEY & W. S. ALEXANDER.

AUTOMATIC WATER GAGE.

No. 319,052.

Patented June 2, 1885.

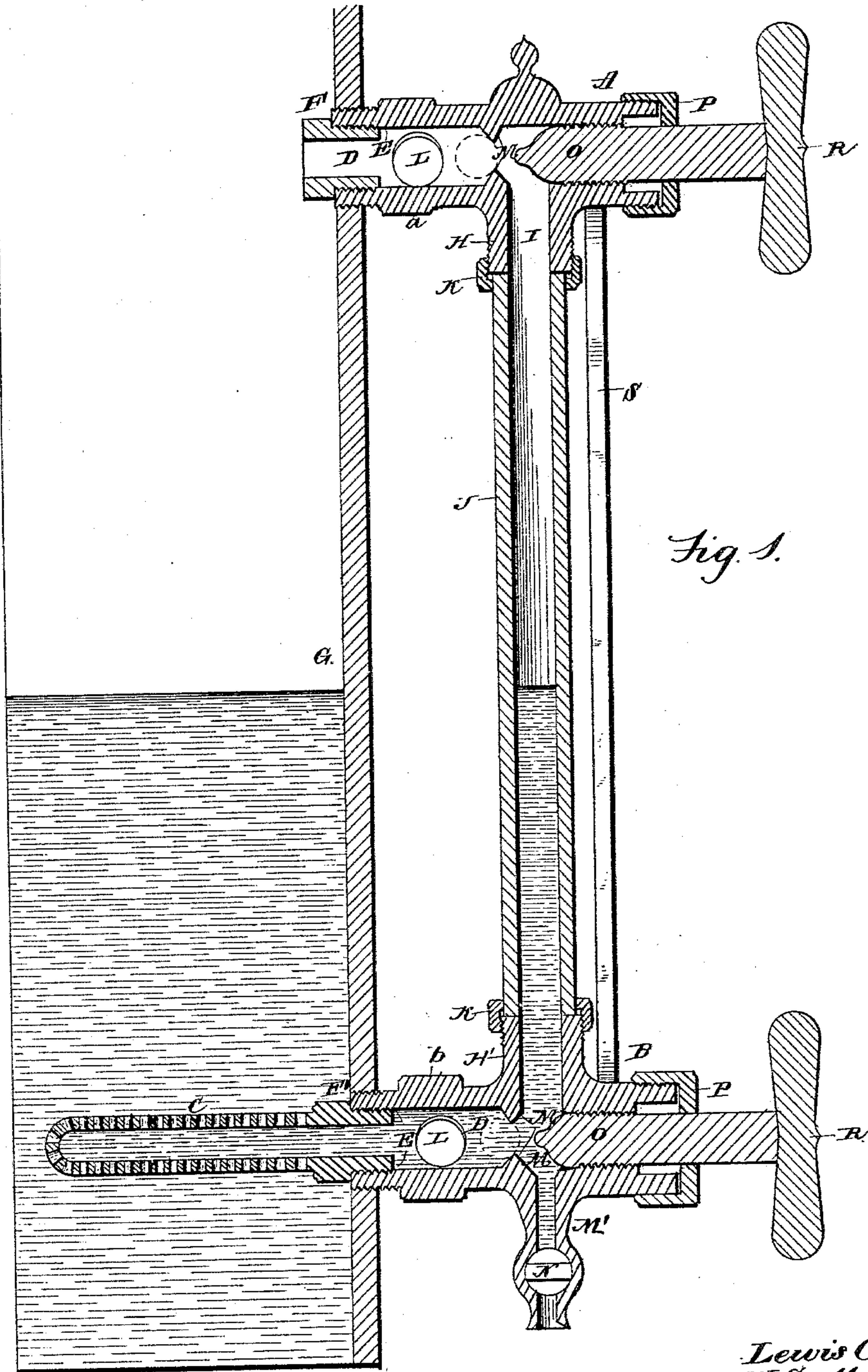
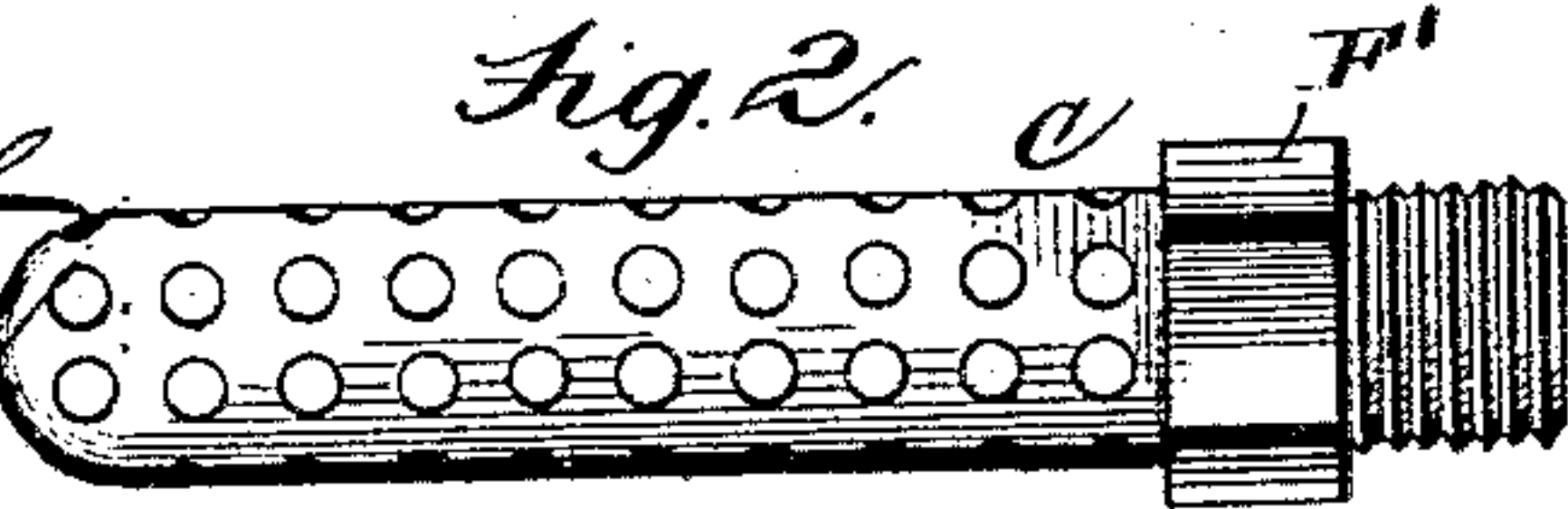


Fig. 1.

WITNESSES
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Fig. 2.



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AUTOMATIC WATER-GAGE.

SPECIFICATION forming part of Letters Patent No. 319,052, dated June 2, 1885.

Application filed August 21, 1884. (No model.)

To all whom it may concern:

Be it known that we, LEWIS C. BAILEY and W. SCOTT ALEXANDER, citizens of the United States, residing at McConnellsburg, in the county of Fulton and State of Pennsylvania, have invented a new and useful Improvement in Automatic Water-Gages, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to water-gages; and it has for its object to provide a device of this character which will act automatically to close both the water and steam tubes of the gage should the glass indicating-tube be accidentally broken while the boiler is in operation. In the old form of water-gage if the glass tube be accidentally broken from any cause whatever, the steam and water will be forced out, so as to scald the engineer or other attendants before they can reach the cocks or valves to close or cut off the connection.

Our invention obviates this most serious objection; and to this end it consists in certain details of construction and combination of parts, as hereinafter set forth, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a longitudinal section of the water-gage and a portion of the boiler, illustrating the attachment. Fig. 2 is a detail view of the strainer.

Referring to the drawings, A B designate two gage-cocks having their inner ends exteriorly threaded to screw into suitable openings at the upper and lower portions of the boiler G, so that said cocks will communicate, respectively, with the steam and water spaces of the same. The cocks A B have hexagon projections *a b* on their inner ends forward of the exterior threads to receive a wrench or other instrument in attaching them to the boiler, and are interiorly threaded at E E to receive the threaded ends of thimbles F F', the latter, F', having a cylindrical-shaped strainer, C, formed therewith and projecting through the water of the boiler, so as to exclude dirt and other matter from passing into the cock, and yet permit the free circulation of water into the cock B.

The cocks A B are each provided with a longitudinal passage, D, extending through the same from the inner to the outer end, and a transverse passage, I, extending through ex-

tensions H H', projecting, respectively, downward and upward from the cocks A B. The glass tube J is attached to the said extensions H H', which are threaded to receive stuffing-boxes K K, forming a water and air tight connection therein. It will be seen that the longitudinal passages D and transverse passages I form a means of communication with the glass indicating-tube, so that the water from the boiler will enter the passage D of the cock B, pass through the transverse passage I, and enter the glass tube to show the true depth of water in the boiler.

Arranged within the passages D of the cocks A B at their inner ends are balls L L, adapted to work in the passage, the thimbles F F' preventing the balls from passing out into the boiler, pointed lugs M M extending inwardly into the passage D from the sides and at the forward ends thereof, and serving to limit the forward movement of the said balls.

A branch pipe, M', extends downwardly from the cock B, and is provided with a valve or cock, N, through which to draw off the water from the glass tube to prevent freezing when not in use.

O designates a stem or spindle threaded at one end to screw through the outer ends of the cocks A B, a stuffing-box, P, being fitted over the ends around the stem to preserve a water-tight connection. The inner ends of the stem O are rounded and project forward sufficiently, so that when screwed inward they will force the balls L L backward or inward through the passage D, for the purpose hereinafter explained. The outer ends of the stems O are provided with hand-wheels R for convenience in operation.

Guard-rods S S, two in number, one of which is not shown, are attached to the outer ends of the cocks A B, and serve to guard the glass tube from breakage.

The operation of our invention will be readily understood from the foregoing description, taken in connection with the annexed drawings. The cock A is attached to the upper portion of the boiler, and allows the passage of steam, and the cock B is attached to the lower portion thereof, and permits the free circulation of water, the glass tube connecting the two cocks in the manner well known. As will be seen, the water from the boiler passes

through the cock B into the glass tube, so as to show the true depth of water therein, since the balls L L do not interfere with the free passage of water and steam while the boiler is in operation. Should the glass tube be accidentally broken, the force of the steam and water will force it into the position shown in dotted lines, Fig. 1, the balls closing the outlet of the passage D, and thus preventing the escape of hot water and steam. In this manner a safety-gage will be provided which will be automatic in its action to prevent the scalding of the engineer should the glass tube be accidentally broken while the boiler is in operation. After a new glass tube has been replaced, the wheel R is turned to cause the inner end of the stem O to come in contact with the ball L in the cock B to force it back a slight distance until the water fills the glass tube, the same operation being repeated with upper cock, A, to admit steam, when both balls L will assume their natural positions, as seen in full lines, Fig. 1.

If at any time the boiler is empty and the glass tube is broken, and yet it is desired to fill the boiler to obtain a sufficient amount of steam, it is only necessary to screw the stem O inward and against the lugs M to close the passage D and there let it remain, since both balls will occupy the position shown in full lines when there is no water in the boiler. When the boiler is filled and in operation, there will be no force on the balls unless the glass tube should be broken. It will be seen that the balls will be allowed to move freely in the passages D, the thimbles F F' limiting their movement inward, while the pointed lugs M M provide a seat and hold them from forward movement. The strainer will exclude the passage of dirt into the cock B, and yet allow the free

circulation of water to the glass tube. The balls act automatically to prevent, upon the breakage of the glass tube, the passage of water or steam outward to do injury to the attendants, and when the glass tube has been replaced by a new one the stems O are operated to restore the parts to their original positions.

The device is simple in construction, automatic in action, inexpensive to manufacture, and of great utility for the purposes intended.

Having described our invention, we claim—

1. The combination, with the steam and water gage cocks and connecting glass tube, of the herein-described detachable strainer comprising the hollow body open at one end, which end is provided with a threaded extension screwing into the inner end of the water-gage cock and securing the ball-valve therein and having a squared or angular portion thereon beyond the extension, the remaining portion of the body being perforated, as and for the purpose set forth.

2. The combination, with the steam and water gage cocks and connecting glass tube, of balls moving in the passage of the same, thimbles F F', formed with a nut portion, and a threaded extension so as to project a short distance within the inner end of the passage and form stops for the balls, the lower thimble, F', for the water-gage cock having a perforated strainer formed therewith, arranged and operating as set forth.

In testimony that we claim the foregoing as our own we have hereto affixed our signatures in presence of two witnesses.

LEWIS C. BAILEY.

W. SCOTT ALEXANDER.

Witnesses:

WM. H. NELSON,

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