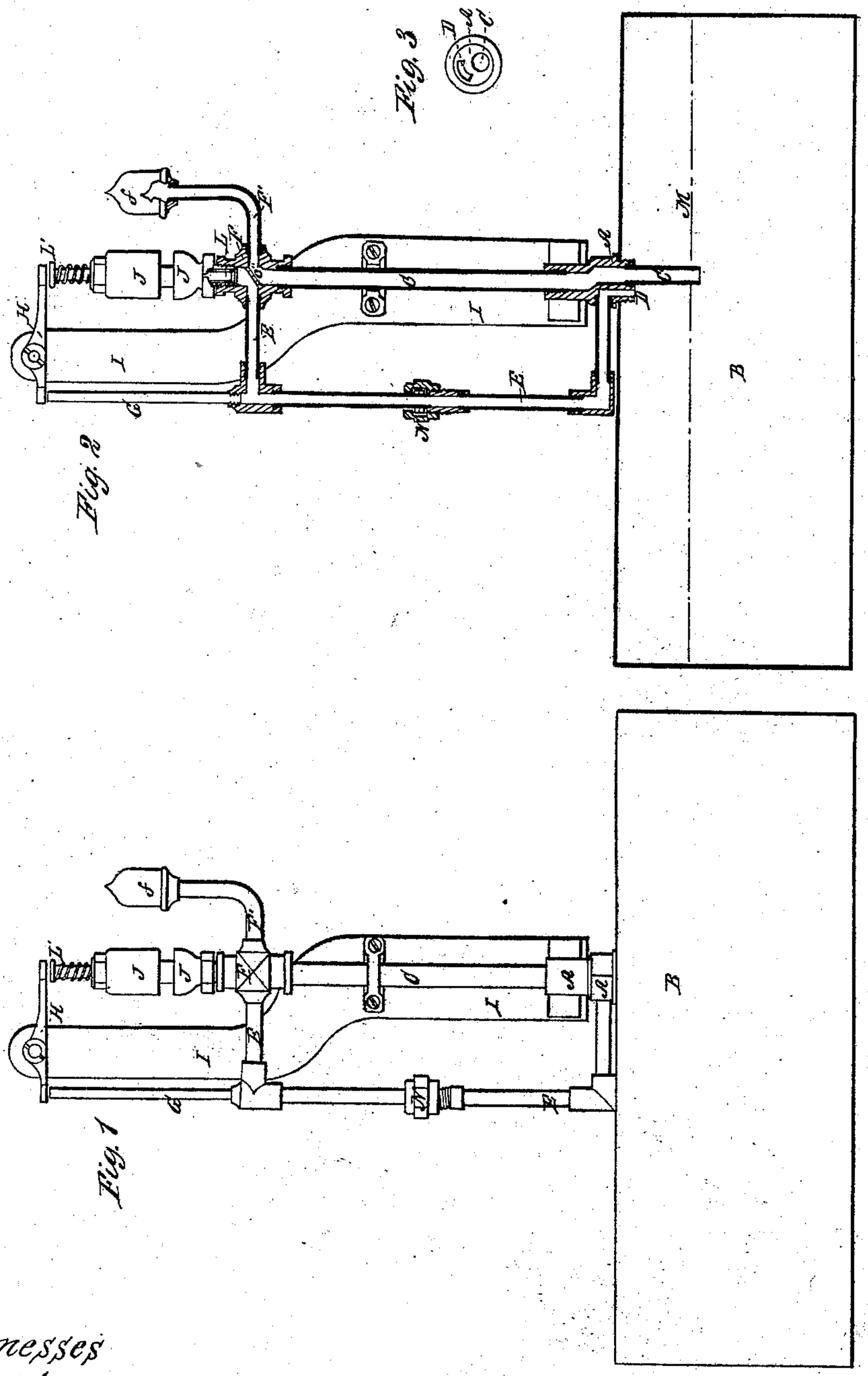
A. Carr,

Steam-Boiler Indicator.

No. 32,045. Patented Apr. 16, 1861.



Witnesses
Geo. W. Hunt
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UNITED STATES PATENT OFFICE.

ADAM CARR, OF PATERSON, NEW JERSEY.

INPROVED LOW-WATER ALARM FOR STEAM-BOILERS.

Specification forming part of Letters Patent No. **32,045**, dated April 16, 1861.

To all whom it may concern:

Be it known that I, ADAM CARR, of Paterson, Passaic county, and State of New Jersey, have invented, made, and applied to use certain new and useful Improvements in the Construction and Operation of Water-Alarms or Low-Water Detectors for Steam-Boilers; and I do declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, and to the letters of reference marked thereon, in which—

Figure I is an upright view of my improved water-alarm or low-water detector for steam-boilers; Fig. II, a sectional view of the same; Fig. III, an end view of nipple A A.

In the drawings like parts of the invention are indicated by the same letters of reference.

The nature of the invention made by me consists in the construction and operation of a water-alarm or low-water detector for steam-boilers, as hereinafter described.

To enable those skilled in the art to make and use my invention, I will speak of its construction and operation.

A A shows a nipple screwed into the steam-boiler B, into which nipple the gage-pipe C′ and expansion-pipe C are screwed. This nipple A A is provided with an opening or aperture, D, below its point of insertion in the boiler B, passing through and connecting with the supply-pipe E E.

E E shows the supply-pipe by which steam is communicated to operate the whistle, and which is connected with the boiler, as shown above.

F is a cross screwed upon the top of the expansion-pipe C, having a partition, C″, cast in it, serving to divide the expansion-pipe C from the whistle supply-pipe E E, and having an air-chamber, *f*, upon it, which connects with the expansion-pipe C.

J J shows a whistle screwed to the top of the cross F.

G shows a rod of solid iron, inserted at one end in the whistle supply-pipe E E, while its other end rests directly beneath the lever H, by which the whistle is operated.

I I shows a board, to which the nipple A A is attached, as well as the lever-fulcrum.

L′ shows a valve-spindle, by which the valve L is operated; M, the water-line in steam-boiler; N, an expansion-joint.

My invention is particularly intended to indicate the fall of water in the steam-boiler B below the water-line M, and its operation may be thus set forth: When the water in the boiler B falls below the mouth of the gage-pipe C′, steam enters through the mouth of the gage-pipe C′, passes through the same and into the expansion-pipe C, evaporating the water contained in both the gage and expansion pipes as it progresses. By the increased temperature thus created the expansion-pipe C is caused to expand, thus raising the rod G and the whistle J J toward the lever H, the pressure of rod G upon one end of which causes the other end to descend upon the valve-spindle L′, thus opening the valve L and permitting dry steam to flow from the boiler B through the aperture D in nipple A A, and by means of pipe E E it is conducted to blow the whistle J J, thus giving the alarm and indicating the lowness of the water in boiler B. When water is pumped into the boiler B and covers the mouth of the gage-pipe C′, the gage and expansion pipes C′ and C are again filled with water, thus contracting the expansion-pipe C and stopping the blowing of the whistle J J.

The advantage of the air-chamber *f* is that whenever steam is got up in the boiler B the air in pipe C is expelled therefrom and enters the air-chamber *f*, thus allowing water to rise. In many cases, instead of connecting the whistle supply-pipe E E with the boiler B, as herein set forth, it may be preferable to merely drill a hole in boiler B and insert end of pipe E E therein.

It will be observed that when the water in the boiler falls below the mouth of the gage-pipe C′ there is no relief of pressure at that point to cause foaming or a change of level in the water. The water in pipe *a* is replaced by steam, and it is the expansion of that pipe alone which operates the whistle, not the joint expansion of the two pipes *a* and E. The pipe E being always full of steam, its length is not modified by the change of level of the water in the boiler.

I am fully aware that low-water detectors

have been constructed so that by the expansion of a pipe a whistle might be operated. I lay no claim to such a device.

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

1. The nipple A A, provided with the aperture D, into which the gage-pipe C′, expansion-pipe C, and supply-pipe E E are inserted and connected with boiler B, arranged and operated as set forth.

2. The cross F, constructed as described, in combination with the expansion-pipe C and the supply-pipe E, for the purpose set forth.

ADAM CARR.

In presence of—
JNO. BENSEN,
NATHL. LANE.