

L. Foote,

Boiler Feeder.

No. 101,992.

Patented Apr. 19. 1870.

Fig 1.

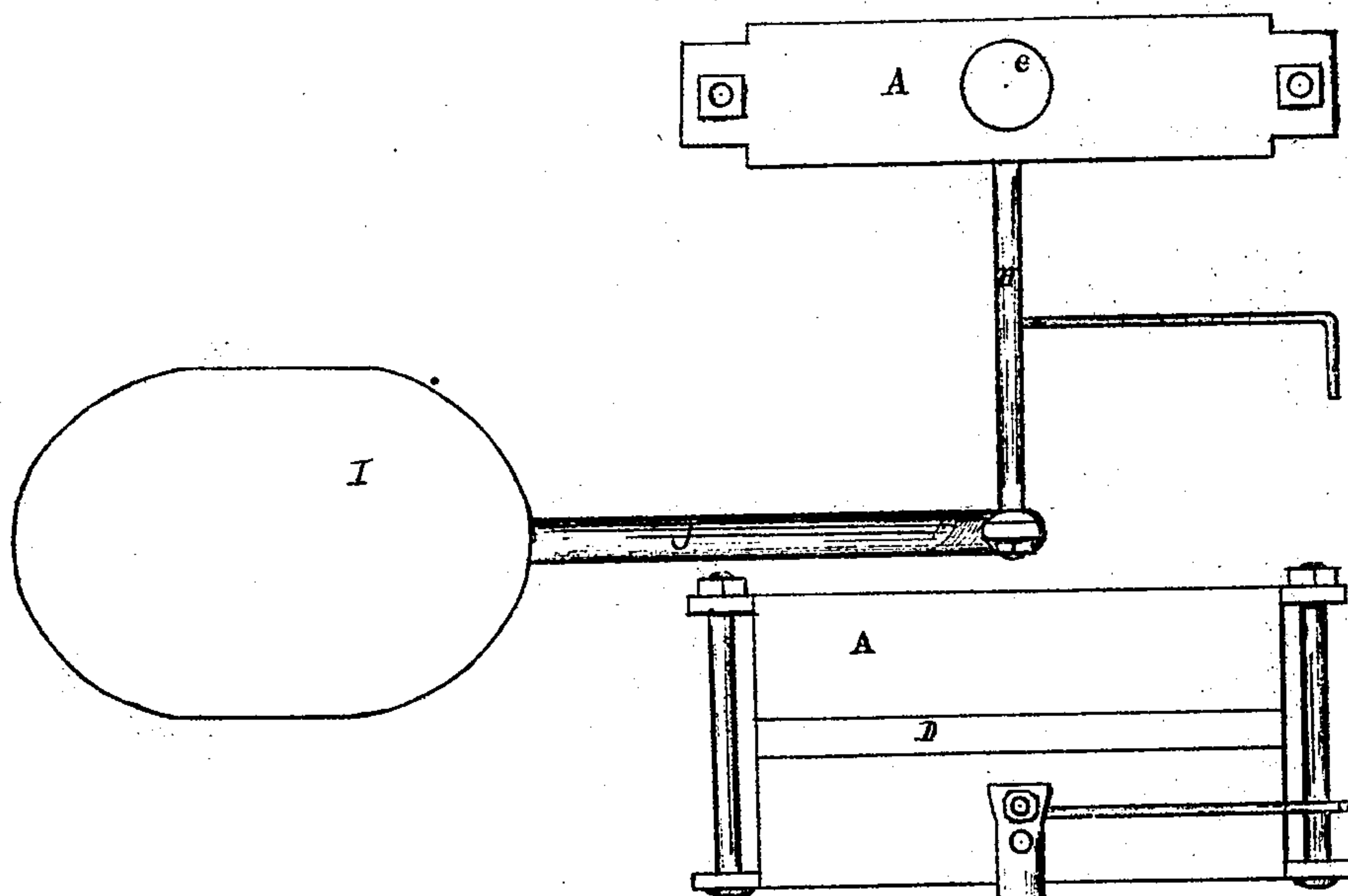


Fig 2.

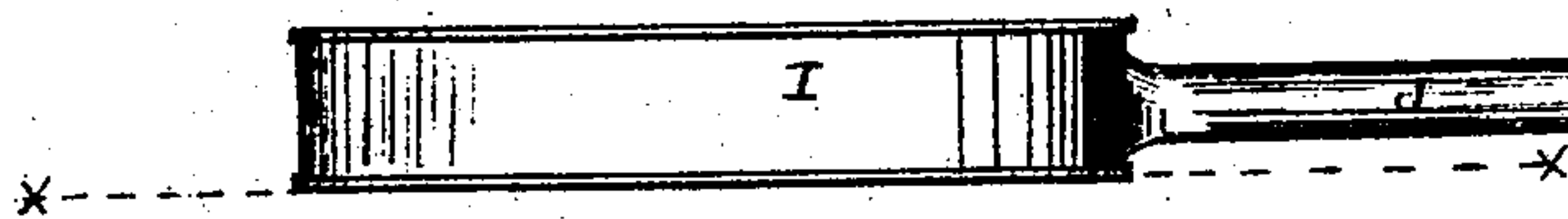


Fig 3.

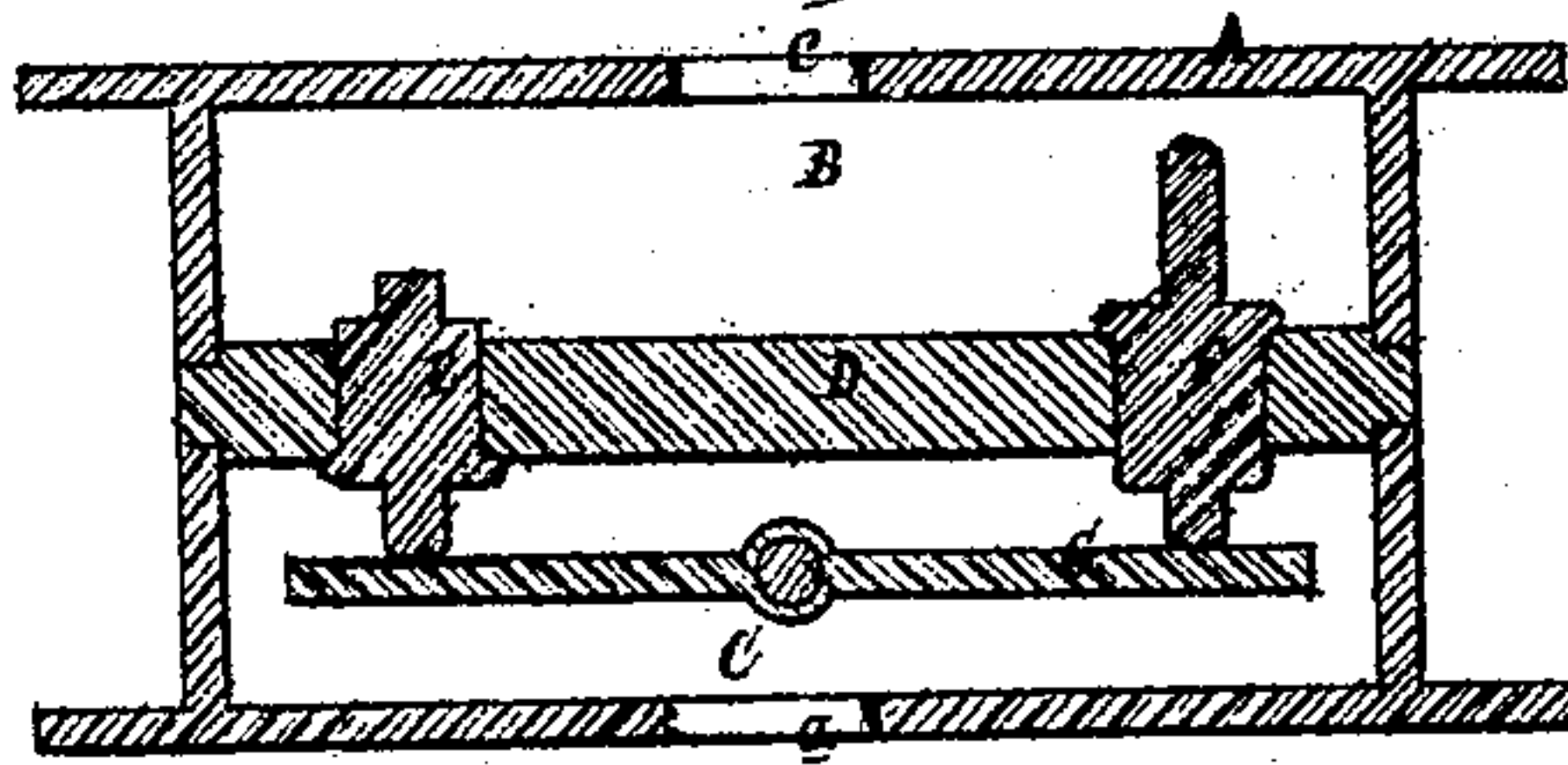


Fig 5.

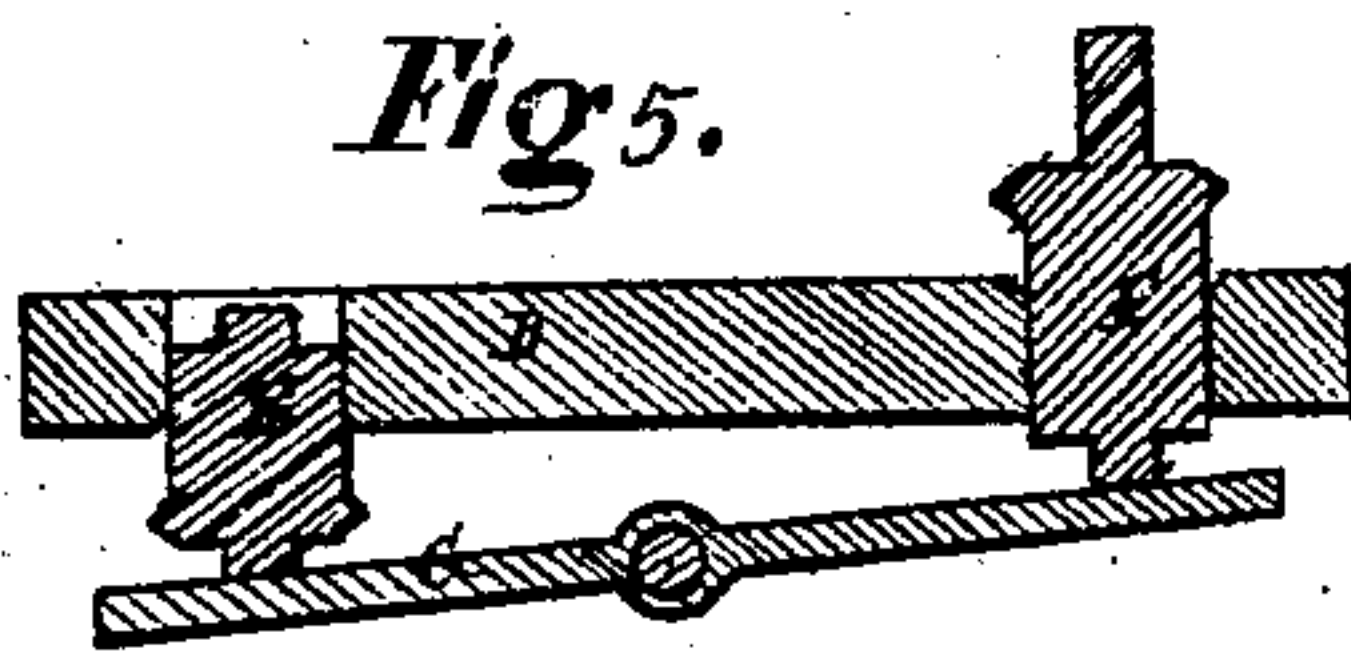
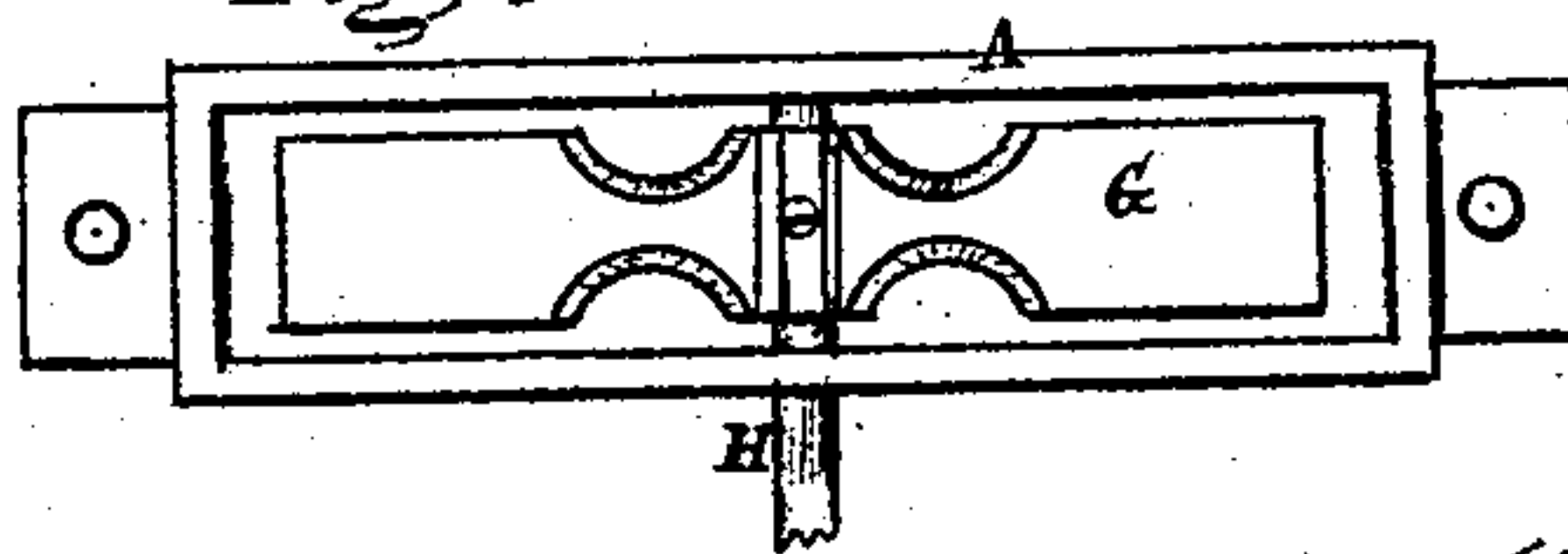


Fig 4.



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Witnesses.
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United States Patent Office.

LUCUS FOOTE, OF FAIRFIELD, OHIO.

Letters Patent No. 101,992, dated April 19, 1870.

IMPROVEMENT IN BOILER-FEEDERS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, LUCUS FOOTE, of Fairfield, county of Huron and State of Ohio, have invented a certain new and improved Steam-boiler Water-Gauge; and I do hereby declare that the following is a full, clear, and complete description, reference being had to the accompanying drawings, making part of this specification, in which drawings—

Figure 1 is a top view of the gauge and float.

Figure 2 is a side view.

Figure 3, a longitudinal vertical section of valves and the lever, whereby said valves are operated.

Figure 4, a side view of the lever.

Figure 5, a detached section to which reference will be made.

Like letters of reference refer to like parts.

This invention relates to a water-gauge for steam-boilers which is constructed with a float having a tubular arm extending from it, and connected to a shaft in communication with valves, so as to operate them in supplying the boiler with water.

The tubular arm prevents also the collapsing of the float, by admitting steam through the arm into said float, so that the pressure will be the same on all sides of the float.

I do not claim either of the parts described, separately considered, but what distinguishes my invention is the construction and arrangement as hereinafter claimed.

In fig. 1—

A represents a chamber.

Said chamber is divided into two compartments B C by a diaphragm, D, fig. 3, and are put into communication with each other by two ports, provided each with a valve, E F.

The valve E opens below the diaphragm, whereas the valve F opens above, as shown in the drawing.

Immediately below the diaphragm and valves is a vibrating lever, G, a side view of which is shown in fig. 4, whereby the valves are operated as will hereinafter be shown.

Said lever is hung upon the shaft H, and thereby vibrated by means of the float I attached to the extreme end of the shaft by the tubular curved arm J, which communicates with the inside of the float.

The chamber is attached to the boiler at any convenient place, and in such way that the float and tubular arm will be on the inside, the shaft being secured in the boiler by a close stuffing-box joint, permitting to it a vibratory movement.

The chamber is put in communication with the boiler by a pipe attached to the hole *a* in the bottom of the compartment O, and in connection with the pump by a pipe attached to the hole *c* at the top of

the compartment B, establishing by this means a direct communication between the pump and boiler.

The relative position of the float to the high water-line of the boiler is such that when the boiler is full to said line of safety, the float will be horizontal therewith; the line *x x* indicates said line.

In this position of the float, resting upon the water, the two valves E F will be closed as shown in fig. 3, thereby preventing any flow of water through the chamber into the boiler. Now, as the water may lower in the boiler, the float will fall with it, and in so doing will cause the lever to vibrate, and thereby open the valves more or less, according to the fall of the float and consequent movement of the lever.

Fig. 5 shows the changed position of the lever and the valves open, allowing a free flow of water into the boiler, which, as it rises therein, the float ascends, closing the valves more and more until the boiler is full to the water-line, at which time the float is horizontal therewith, and the valves thereby closed, and the inflowing water shut off.

By this means an immediate and regular supply of water is admitted to the boiler whenever it may fall below the water-line, so that at all times the water is kept at the proper height, and cannot rise above it, in consequence of the closing of the valve.

Floats used in connection with water-gauges are liable to collapse in consequence of the pressure of steam upon their outside. To prevent this, some are supported within by braces of iron, or a frame-work which greatly adds to their weight and consequent inefficiency, as the float, to be fully effective, should be as light as possible.

To prevent this collapsing tendency, I connect the float to the shaft by a tubular arm which opens into the float.

At the upper end a small hole, *c*, is bored into the arm for the admission of steam, which flows therein and fills the float, thereby producing an equal pressure upon the inside as upon the outside, hence no collapsing of the float can take place, and at the same time securing to it the quality of lightness, and therefore greater efficiency.

Claim.

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

The arrangement of the float I and tubular arm, J, directly attached to and in combination with the shaft H, when employed for the purposes and in the manner substantially as described.

Witnesses:

W. H. BURRIDGE,
J. H. BURRIDGE.

LUCUS FOOTE.