

T. C. PURVES.
Water-Gage.

No. 226,418.

Patented April 13, 1880.

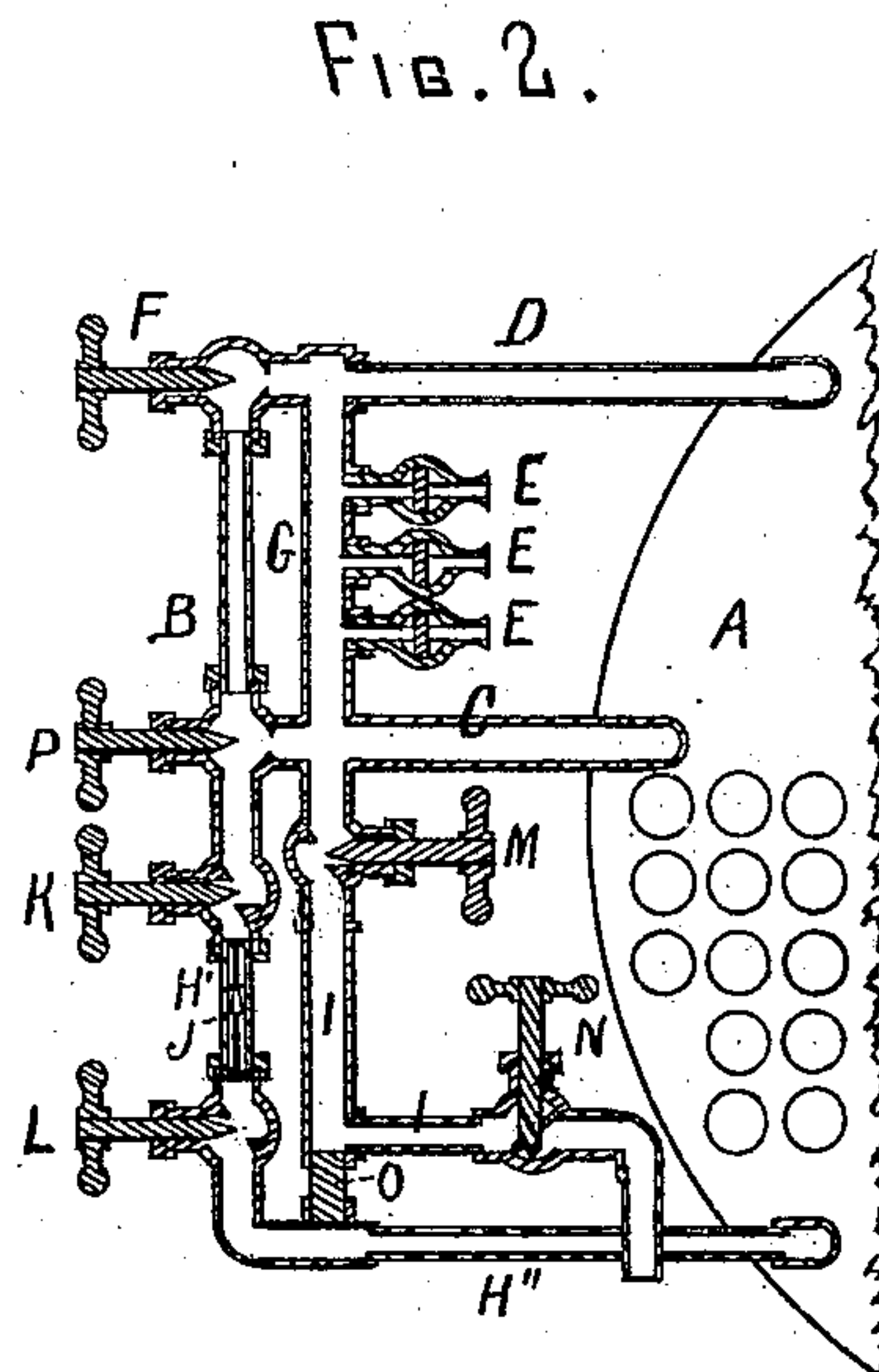
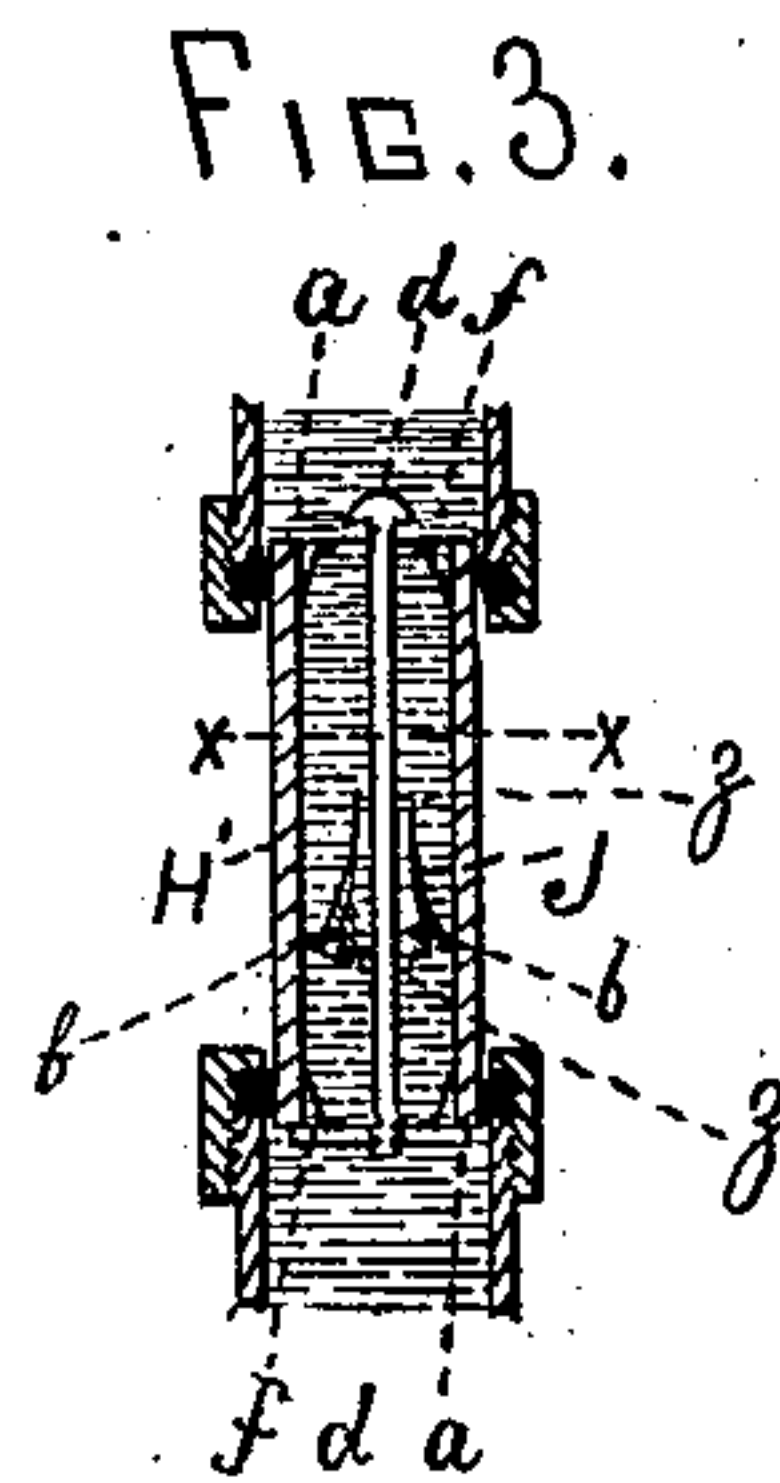
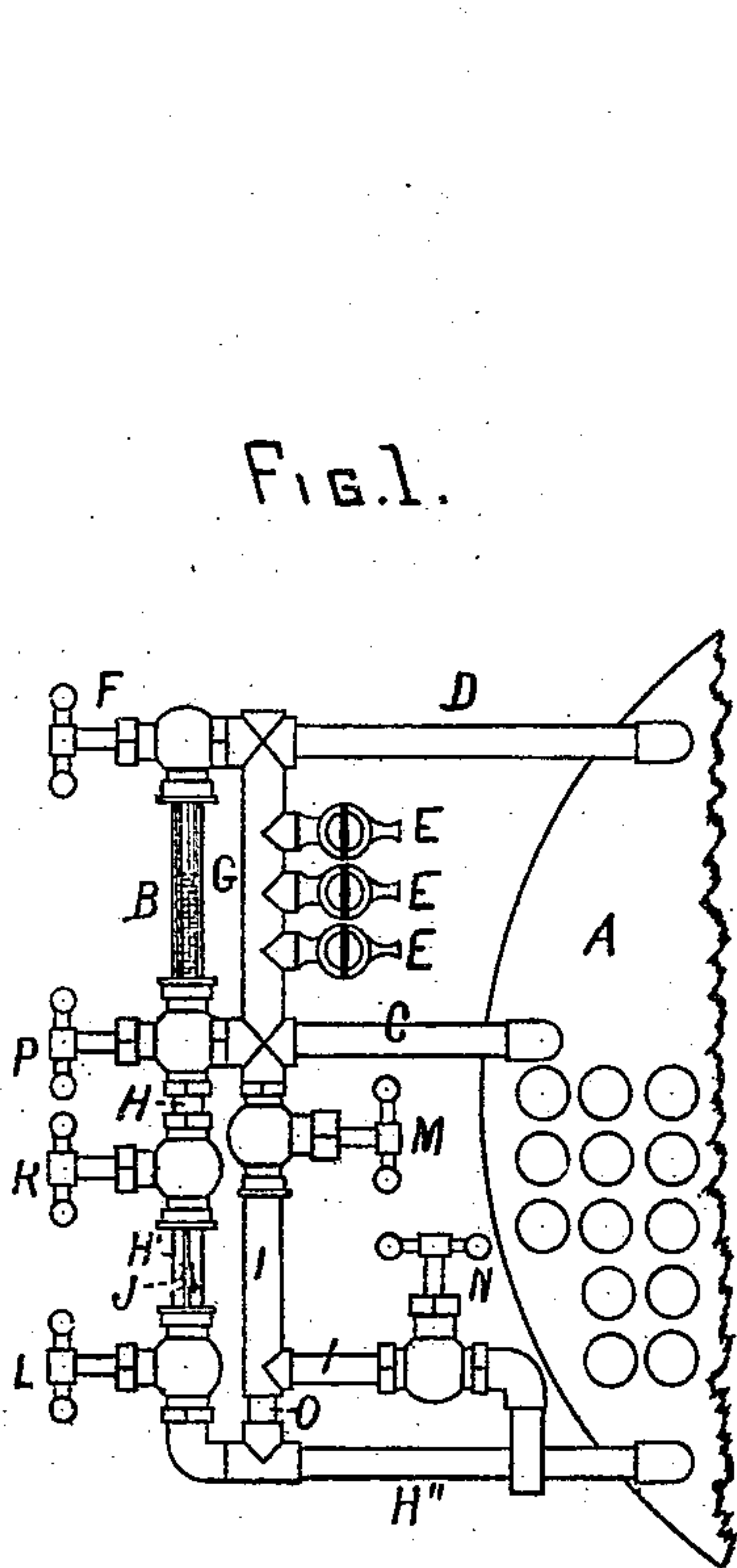
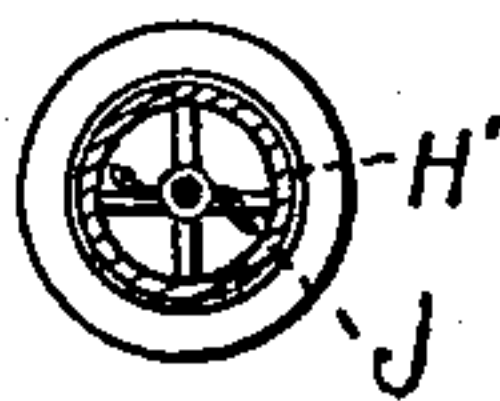


FIG. 4.



WITNESSES.

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UNITED STATES PATENT OFFICE.

THOMAS C. PURVES, OF CHICAGO, ILLINOIS.

WATER-GAGE.

SPECIFICATION forming part of Letters Patent No. 226,418, dated April 13, 1880.

Application filed January 2, 1880.

To all whom it may concern:

Be it known that I, THOMAS C. PURVES, of the city of Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Water-Gages for Steam-Boilers, of which the following is a specification, reference being had to the accompanying drawings, illustrating the improvement.

Figure 1 is a side elevation of a water-gage embodying my improvement; Fig. 2, a vertical central section thereof; Fig. 3, an enlarged vertical central section of the current-indicator and the mode of attaching it to the glass tube; Fig. 4, a horizontal section of Fig. 3 on line *x x*.

The nature of the present invention consists, first, in a glass tube and a water-indicator placed therein, in combination with the return-pipe of a water-gage, whereby the flow of water from the gage back to the boiler may be shown; second, in a pipe combined with the water-gage for the convenience of removing the sediment, as the whole is hereinafter fully shown and described.

In Figs. 1 and 2, C and all the parts above it are old, and compose what is known as the ordinary water-gage for steam-boilers, and therefore need no particular description.

A pipe, H H' H'', connects with the water-gage B at its upper end and communicates with the boiler A at the lower end, by means of which a current of water constantly flows from the pipe C to the boiler A, keeping the pipes free from sediment, and prevents sediment from entering the gage B and blow-pipe G. By this means a stand of water in the gage will be of the same height as the water in the boiler.

If the pipe C becomes filled with sediment or other substance, the steam from pipe D will condense and the water therefrom will fill the gage and indicate a "water-safety" in the boiler, when, in fact, the water in the boiler may be below the upper flues, or stand at any other point not indicated by the gage.

By means of my improvement this serious objection to the uncertainty of steam water-gages is obviated, and any defect in the working of the gage is detected at once, and be-

fore there could be an unsafe stand of water in the boiler; also, the condition of the water is readily seen.

To perfect the means to enable the engineer to know the height and condition of water, as above stated, a glass tube, H', is made to form a part of the return-pipe H H' H'', and in it is placed an indicator, J, with screw-flanges *b* attached vertically to it, so as to be rotated by the downward current of water, so that when the indicator rotates, water is known to flow through the return-pipe, showing the pipe C to be open.

The means for supporting the indicator J in the tube H' consists of cross-bars *a a*, Fig. 3, provided with spring-projections *f f f f*, which extend onto the inside of the tube H', and a rod, *d*, with a head at one end and a screw-thread at the other, passes through the centers of the cross-bars *a a*, and holds them in position on the ends of the glass tube H'. Rings or shoulders *z* are formed on this rod *d* to support the indicator, which is provided with a hole for the rod to pass through, and has screw-flanges *b b* on opposite sides of its lower end, so a current of water will give to it a rotary motion.

To dispose of the sediment coming through the pipe C before it reaches the gage B and return-pipe H H' H'', a pipe, I, connects with the pipe C, and is provided with cocks M N for the discharge of the sediment. By opening the cock N and partially closing the cock M the force of water from the boiler blows the sediment out.

It will be seen that the pipe I connects with the pipe H'' by a nipple-stand, O. This is so that in case of the breaking of the glasses the parts will not otherwise become misplaced.

To operate the device the cocks F P K M L are to be open. This will admit water to the pipe C and return-pipe H H' H'' and water and steam to the gage B, and also permit sediment to pass into pipe I. If, however, the sediment in pipe I be not removed, the current will not be checked in pipe H H' H'', but will be more liable to be than if the accumulating sediment be removed.

I am aware that return-pipes have been em-

ployed in boiler-cleaners; but I have no knowledge that such pipes were before connected with water-gages.

I claim and desire to secure by Letters Patent of the United States—

1. The return H H'', formed in part of a glass tube, H', and combined with an indicator, J, as specified, and for the purpose set forth.

2. The combination of the gage B, return-pipe H H' H'', and sediment-pipe I, as and for the purposes specified and shown.

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Witnesses:

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