

J. Johnson.

Steam Heater.

N^o 85,176.

Patented Dec. 22, 1868.

Fig. 1.

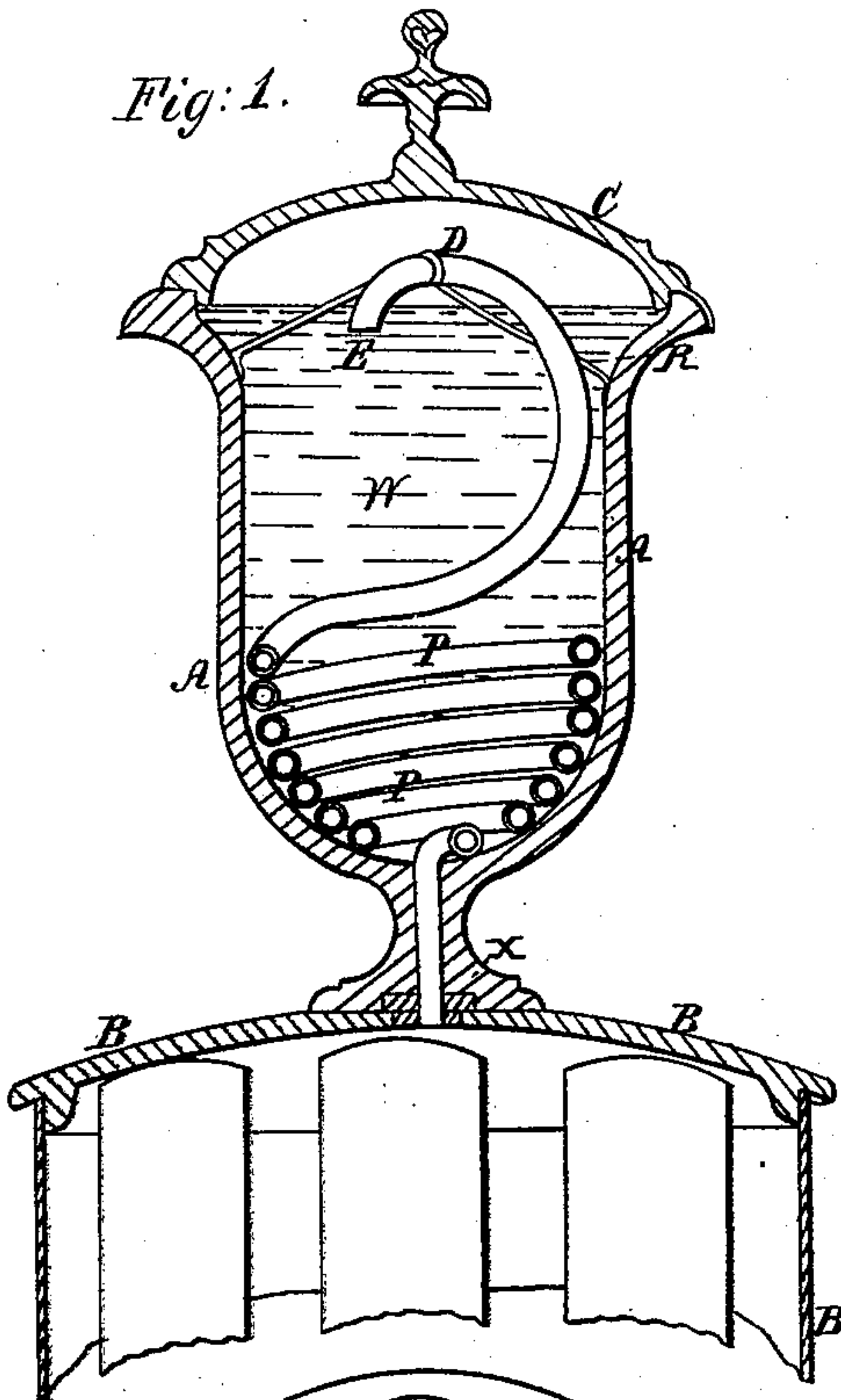


Fig. 3.

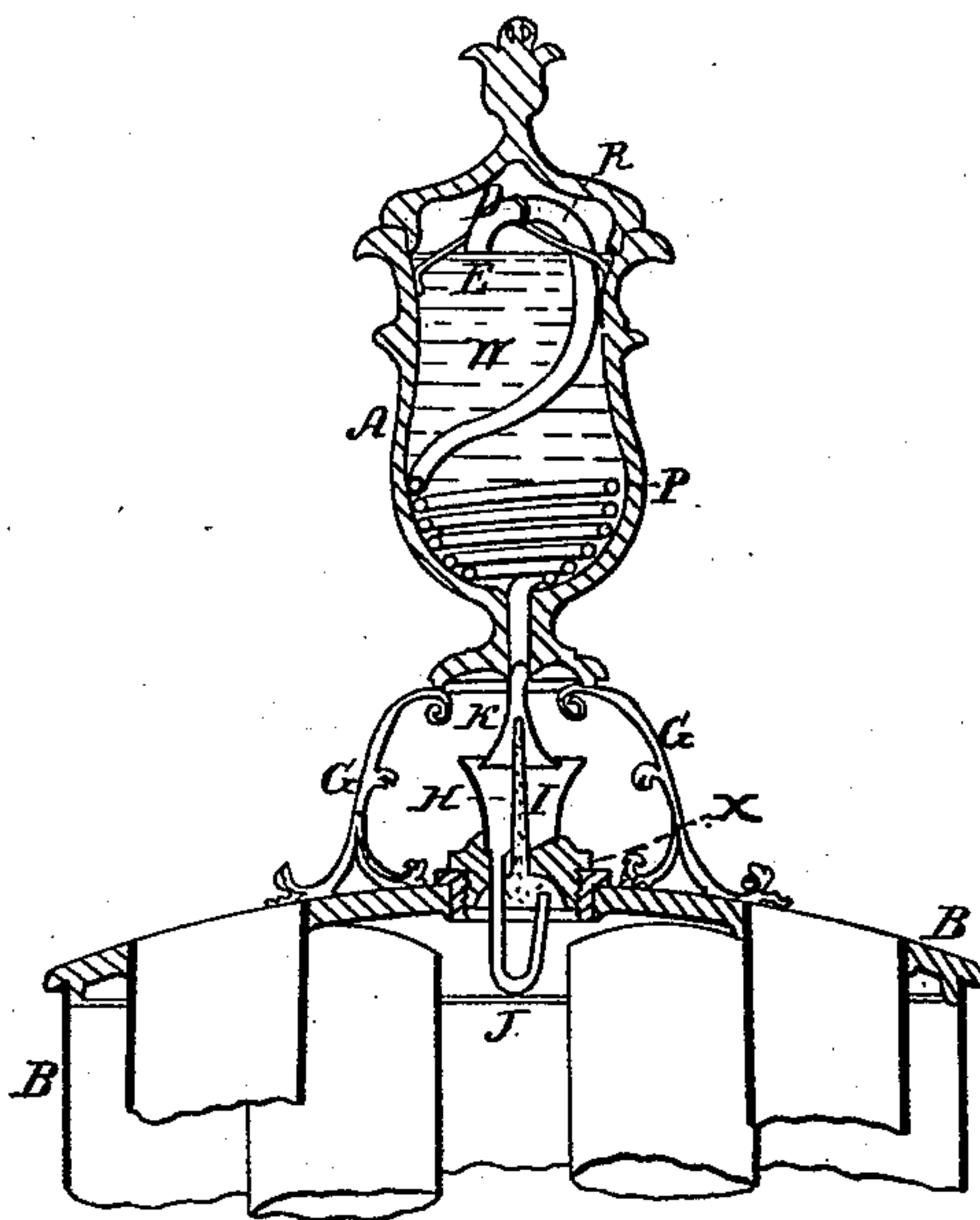


Fig. 2.

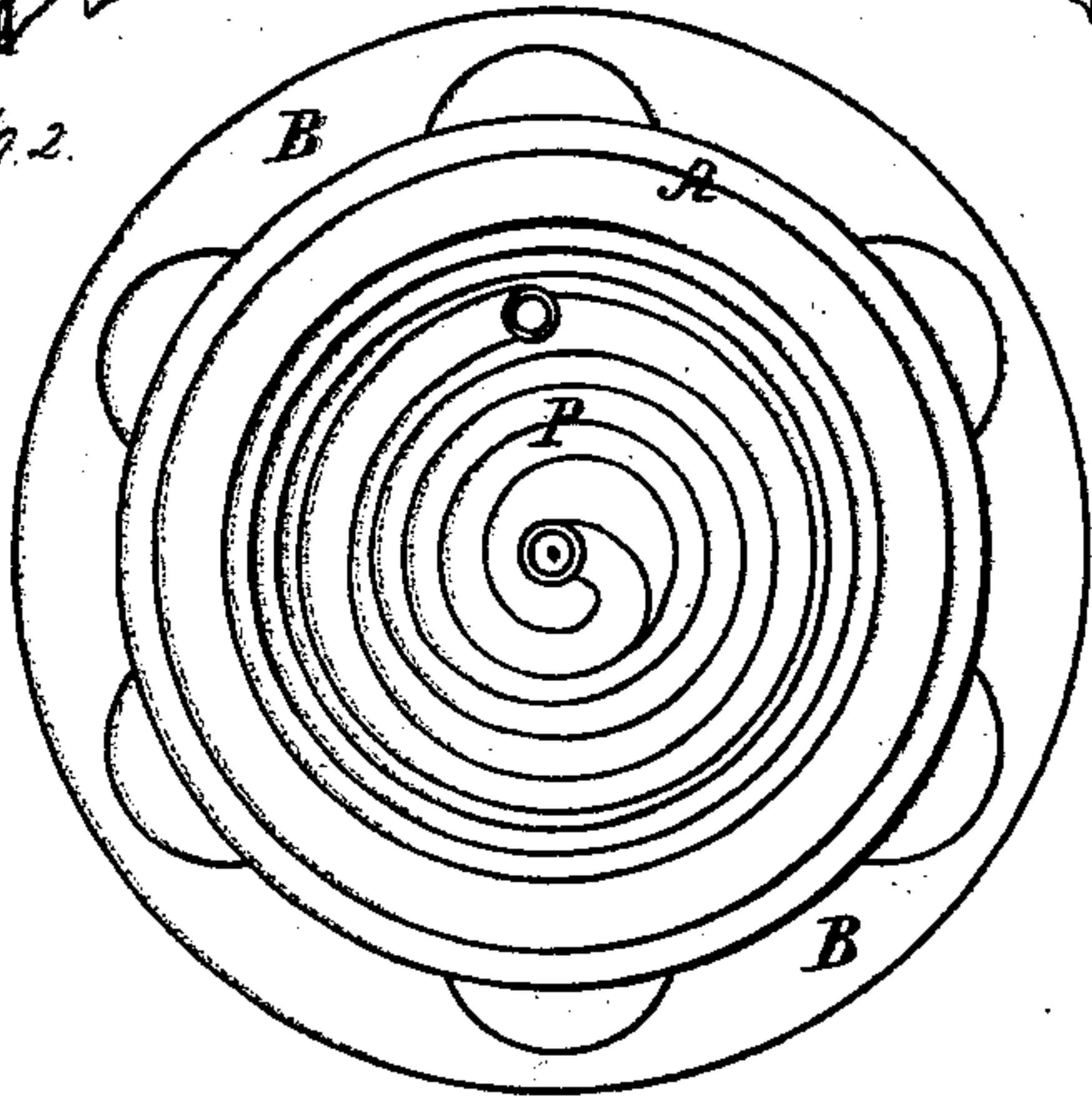
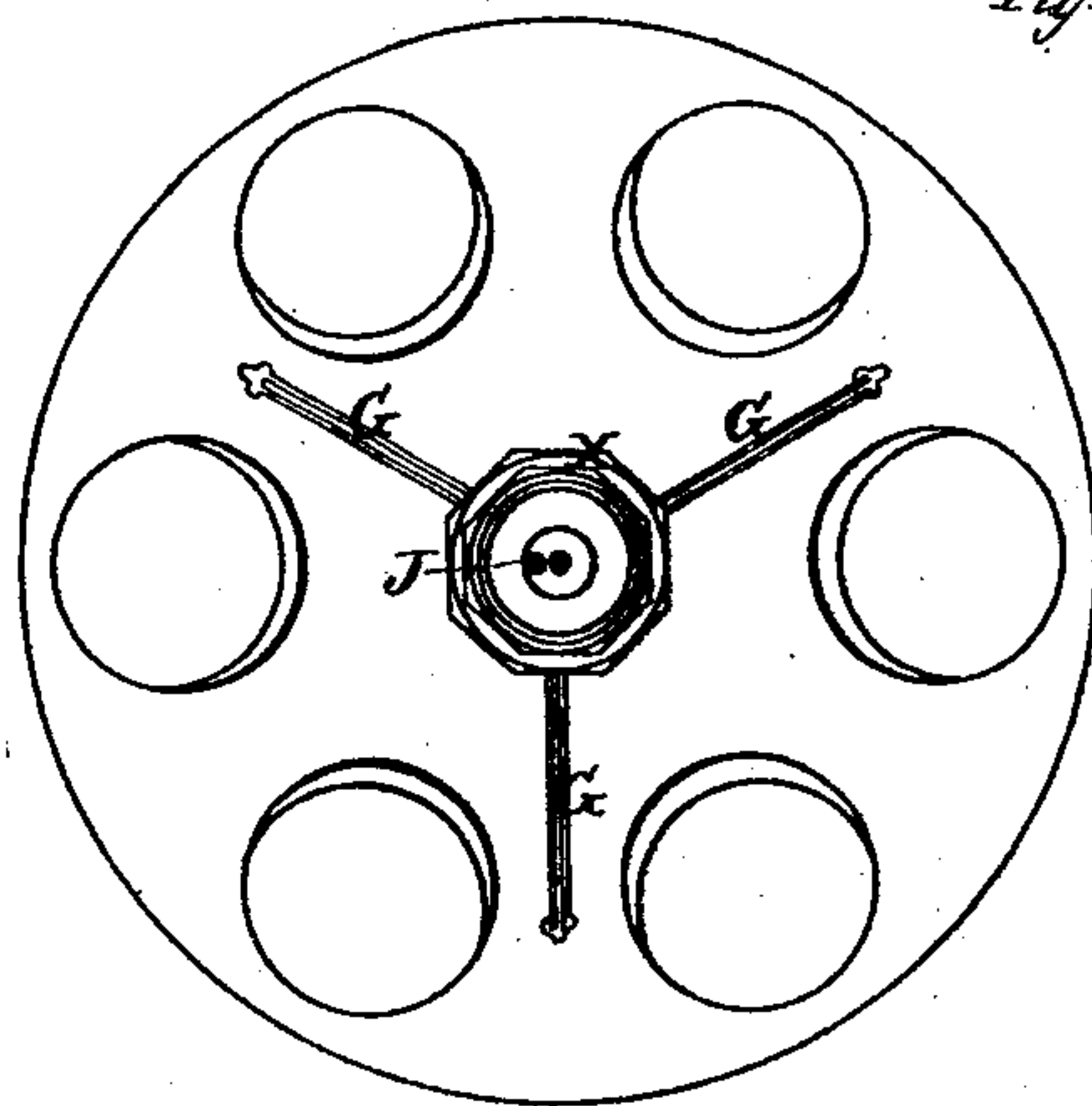


Fig. 4.



Witnesses;
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JOHN JOHNSON, OF SACO, MAINE, ASSIGNOR TO NEW ENGLAND
STEAM-HEATING COMPANY, OF BOSTON, MASSACHUSETTS.

Letters Patent No. 85,176, dated December 22, 1868.

IMPROVEMENT IN STEAM-HEATERS.

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, JOHN JOHNSON, of Saco, in the county of York, and State of Maine, have invented a new and useful Improvement in Regulating-Apparatus for Steam-Heaters; and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawings, and to the letters and figures marked thereon.

Figure I is an elevation of the apparatus.

Figure II, top view of the same.

Figure III is an elevation.

Figure IV, top view of the same.

The nature of my invention consists in the application of a means of rendering latent heat sensible, and avoiding excess of pressure in the steam-chamber, its action being such as to control or regulate both the internal pressure of steam, and the external pressure of the atmosphere.

It is desirable that the heating-apparatus, for which Letters Patent were granted to me, on the 7th day of April, 1868, (No. 76,329,) should be made of light sheet-iron, instead of heavy plates; and by the use of the several parts herein described, I am able to regulate the heat and pressure, as above mentioned, and prevent injury to the steam-heater or chamber.

Fig. I represents an open-mouthed vessel, in the form of an urn, A, placed upon the top of a steam-heating apparatus, B, in which a very small quantity of water is used. The lower part of the urn is fitted, steam-tight, to the top of the heater, as shown at X.

In this urn I place a coil of metal pipe, P, of small diameter. This pipe is soldered to the urn, near its base, making it tight at this point, and forming a reservoir for containing the water W.

A movable cover, C, rests upon the top of the urn.

I purposely make the urn of greater depth than width, and construct the coil in such a manner that it shall occupy the lower part of the urn. The end is brought upward, secured to the rod R, and then turned downward in the form of a siphon.

The curved portion, D, rises about level with the top of the urn; and, on filling the urn with water, the end, E, of the pipe or coil is just beneath the surface, while the bend D is a little above the water-line. In this position water cannot rise to fill the neck or bend of the tube, and consequently cannot, on filling the urn, act as a siphon.

The urn-condenser is placed on the heater B, and is filled with water. A small quantity of water is put into the heater, (about two cubic inches, more or less, to one foot of space,) and, on applying heat, the air in the heater is rarefied, and passes out through the coiled tube at E, and continues so to do until the heater is filled with steam of atmospheric tension.

If the temperature of the apartment be such that the steam is not condensed as rapidly as it is formed at the surfaces in contact with the external air, the excess of steam, in passing into the coil, loses its latent

heat, and the water produced thereby gravitates to the bottom or boiling part of the heater. The coil of pipe or condenser receiving heat, and imparting it to the water at the lower part of the urn; causes the water to rise and be replaced by the cooler water from the top.

As the condensing water becomes gradually warmer, a small percentage of the water of the heater will occupy the urn, and close up the end, E, of the condenser-pipe, but on a very slight change of temperature of the heater, the pressure or tension within the heater will be reduced, and this water will quickly re-enter the heater, and air follow, thereby keeping up the original quantity of water that was placed within it.

The cover C has a large surface, and is made of suitable metal for radiating heat, and any vapor condensed thereon trickles down and falls within the urn.

As it is desirable that a small quantity of water be used for condensation, the urn may be constructed as in Fig. III. In this drawing, the urn is set upon the heater B, supported on the legs G G.

The steam-plug, X, of this heater has an open pipe, H, for the escape of steam. Surrounding it is a cup, I. A bent pipe, J, is inserted below the plug, and forms a trap or seal, being partially filled with water, to prevent the escape of steam.

The lower end of the condenser-pipe P is made trumpet-shaped, as represented at K.

As the steam issues out of the pipe H into the air, it loses heat, the condensed water falls into the cup I, and from thence, through the water-sealed pipe J, back to the heater B, ready to be again converted into steam.

By means of this arrangement, less steam enters the coil P, in the urn, and, as the condensation takes place in part at the cup and funnel I K, less condensing-water is required in the urn.

A moderate degree of tension may be produced within the heater or steam-generator, by bending one of the coils of pipe, P, in the form of an inverted siphon, so that it may fill with water, but as steam of 212° Fahrenheit contains the greatest amount of latent heat, and as this is the requisite in steam-heating, it is found that but little tension is required for the greatest efficiency.

By the application and use of the device herein set forth, the steam, air, and water are regulated automatically, and I am able to construct steam-heaters of very thin metal, not liable to collapse or explosion, and that are light enough to be moved readily from place to place, as required.

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

The automatic condenser and regulator, attached to steam-heating apparatus, constructed substantially as herein described, and for the purpose set forth.

JOHN JOHNSON. [L. s.]

Witnesses:

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