A. H. Walker,

Steam-Boiler Water-Heater.

No. 79,523. Patented June 30, 1868.

Fig. 1

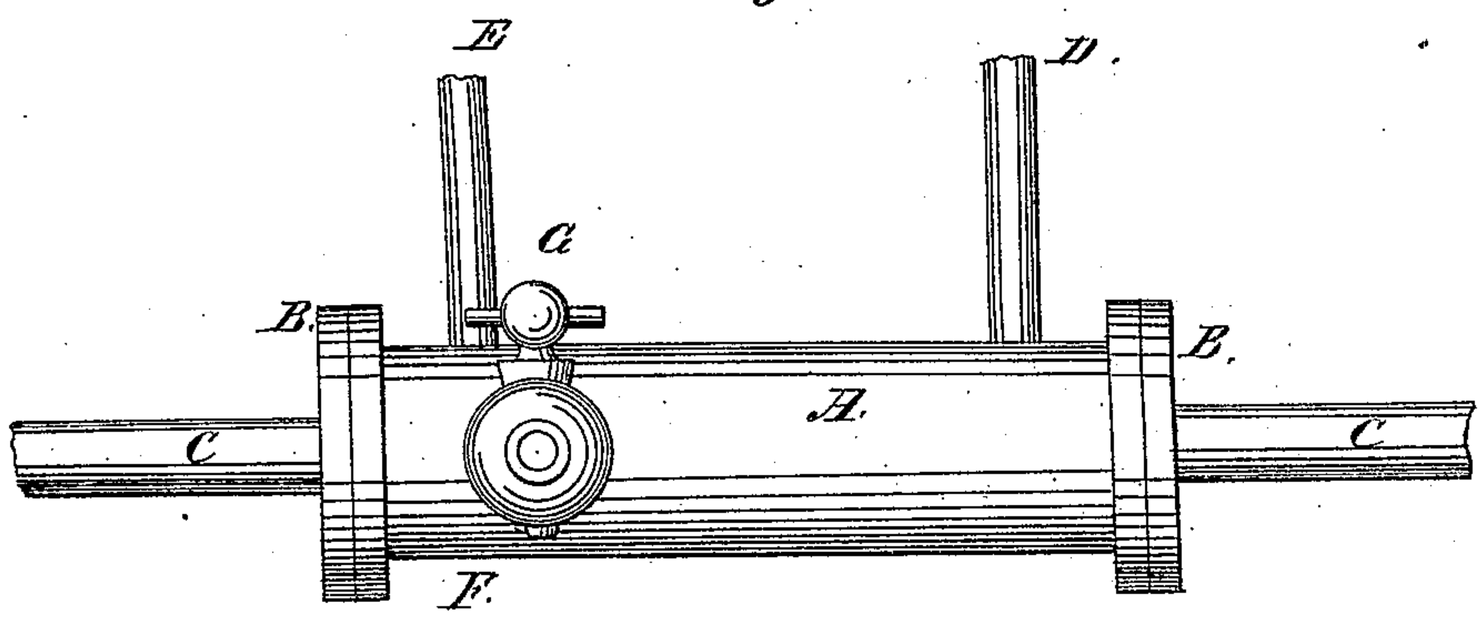
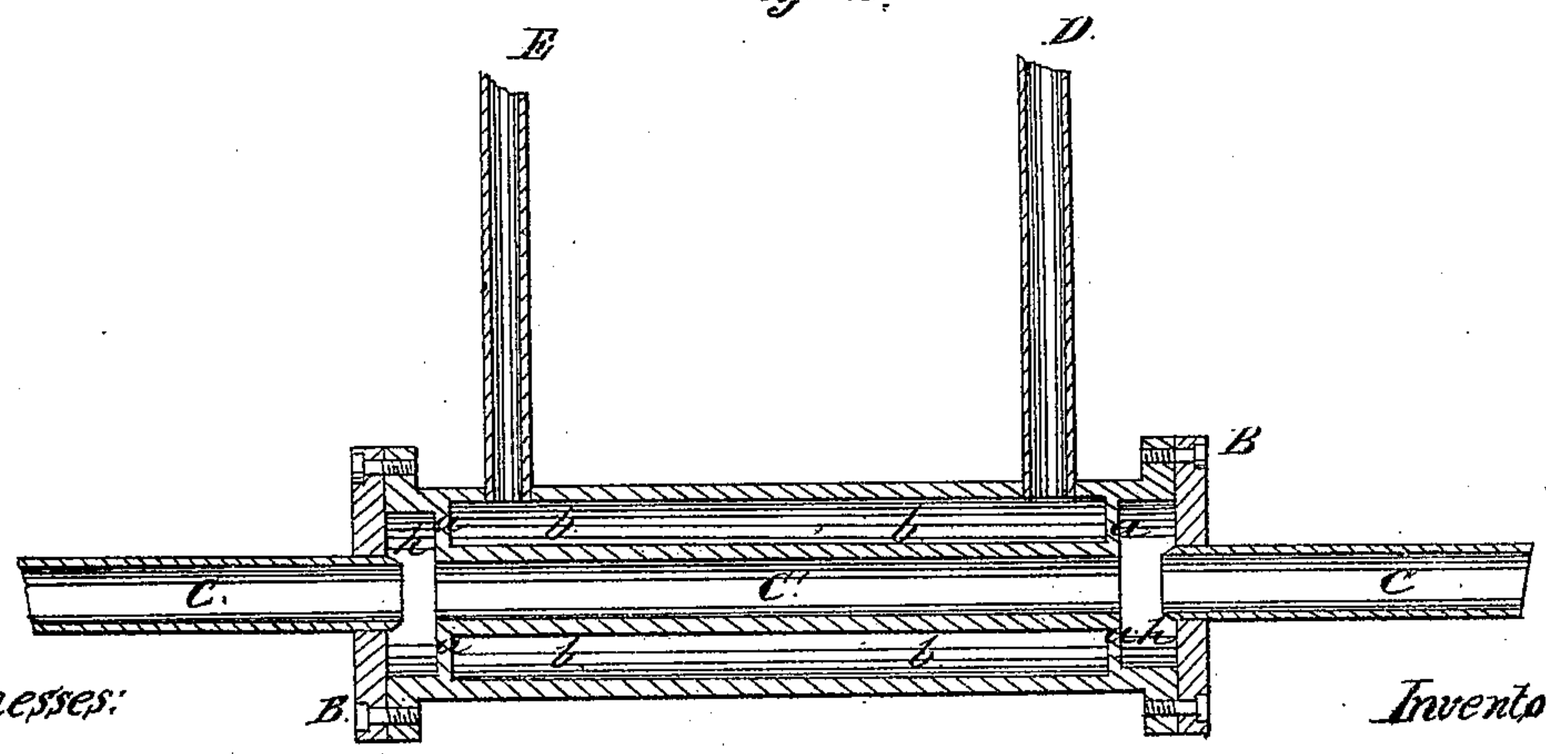


Fig. 2.



Witnesses:

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A. H. WALKER, OF OSWEGO, NEW YORK.

Letters Patent No. 79,523, *dated June* 30, 1868.

IMPROVEMENT IN WATER-HEATER FOR STEAM-BOILERS.

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, A. H. WALKER, of Oswego, in the county of Oswego, and State of New York, have invented a new and improved Water-Heater; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

Figure 1 is a side elevation of my heater.

Figure 2 is a transverse section of the same, through *x x'*, fig. 1.

Similar letters of reference indicate corresponding parts.

This invention relates to the heating of water for steam-boilers, by means of exhaust or other steam.

The invention consists in providing a drum with an internal annular water-space, which is connected by pipes to the steam-boiler, and also to the reservoir, so that the water from the reservoir can be repeatedly passed through the water-chamber, which is heated by exhaust steam from the boiler, in the manner hereinafter more fully described.

A is the drum, B B the heads or ends of same, C C′ C pipes conveying the exhausted or other steam for imparting its heat to the water.

The pipe C′ is screwed into or otherwise securely fastened into vertical plates or diaphragms, which are shown in section at *a a a a*, thus forming a water-space, *b b b b*, which receives the water to be heated. A pipe, D, opening into this water-space, connects with any suitable tank or reservoir. Another pipe, E, also opening into the said water-space, connects with the supply-pipe of the boiler.

A return-pipe, F, opening into the water-space *b b b b*, at some point remote from the pipe D, also connects with the said tank or reservoir, for a purpose to be shown.

When in operation, the exhaust steam passing through the pipe C C′ C, imparts, by conduction, a portion of its heat to the water within the space *b b b b*, and the water thus heated is conveyed, by means of the pipe F, back to the said tank or reservoir, from whence it is reconveyed through the pipe D back to the water-space *b b b b*, and this operation repeated until it is brought to any desired degree of temperature, when it can then be supplied to the boiler by means of the pipe E, or another pipe leading from the said tank directly to the boiler.

By means of the pipes D and F connecting with the tank and the space *b b b b*, the water can be forced to pass repeatedly through the heater, as before shown, until raised to the boiling-point.

This reflux of the water is regulated by the cock G, placed in the pipe F, as shown, and by closing the cock the water can be cut off from the repeated circulation above described, and conveyed to the boiler at the temperature acquired by one passage through the heater. Any suitable forcing-pump may be used for forcing the water through the heater and back into the tank.

The steam-chambers *h* assist in bringing the steam in contact with the diaphragms *a a a a*, thus assisting to heat the water within the space *b b b b*.

This heater combines the qualities of simplicity, cheapness, and durability with that of effective and rapid heating.

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

The arrangement of the pipes C, C, and C′, chambers *h h*, partitions *a*, annular chamber *b*, drum A, and pipes E and D, substantially as herein set forth.

A. H. WALKER.

Witnesses:

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G. J. CORNISH.