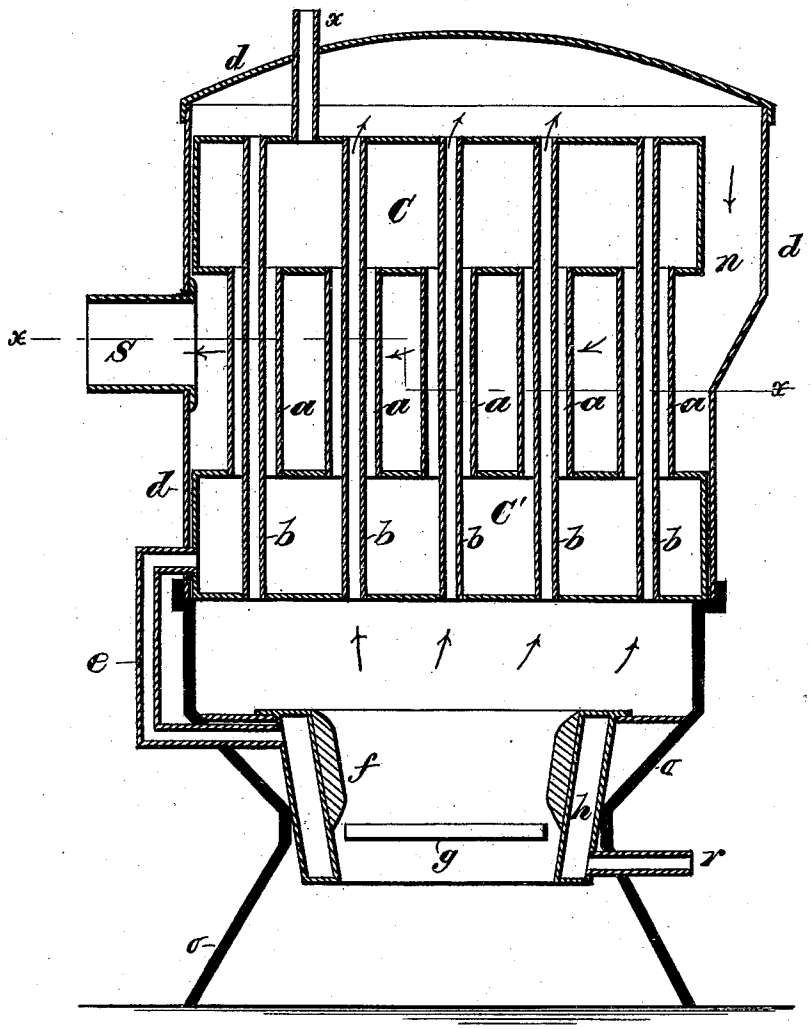
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J. M. BABBITT & P. F. WOOD.

HEATING APPARATUS.

No. 358,423. Patented Mar. 1, 1887.

Fig. 1.



Witnesses.
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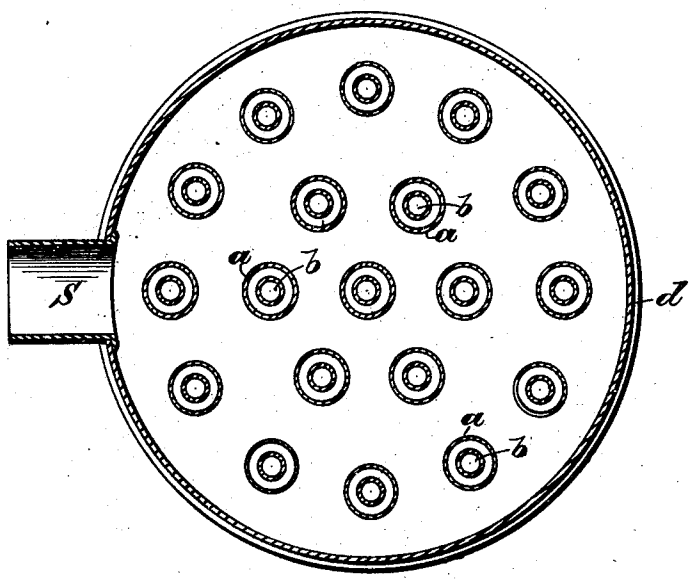
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Fig 2.



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UNITED STATES PATENT OFFICE.

JOSEPH M. BABBITT AND PATRICK F. WOOD, OF NEW BEDFORD, MASS.

HEATING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 358,423, dated March 1, 1887.

Application filed April 30, 1886. Serial No. 200,753. (No model.)

To all whom it may concern:

Be it known that we, JOSEPH M. BABBITT and PATRICK F. WOOD, citizens of the United States, residing a New Bedford, in the county of Bristol and State of Massachusetts, have invented a new and useful Improvement in Heating Apparatus, of which the following is a specification.

Our invention relates to an improvement in apparatus for heating buildings by steam; and it consists in two circular drums connected together by a series of tubes for holding the water, and provided with another series of smaller tubes, which pass from the outside of the drums through the larger or water tubes, for the purpose of conducting the products of combustion.

It further consists in the peculiar construction of the outside casing in such a manner that the heat, after passing through the smaller tubes, is conducted among and on the outside of the water-tubes which connect the two drums, thereby heating the water contained in them on both sides at once and utilizing to the greatest extent possible the products of combustion.

It further consists in the combination, with the drums, connected as aforesaid, of a fire-pot arranged beneath the lower drum, having a water-chamber surrounding it, and connected with the lower drum by means of a pipe or pipes passing from said water-chamber through the casing outward and upward, and through the casing again into the lower drum.

Figure 1 illustrates a vertical central section of our improved heating apparatus, and Fig. 2 is a transverse sectional view taken on the line *x x* of Fig. 1.

o is the base, in which is suspended the fire-pot *f*, which is provided with a grate, *g*, and surrounded with the water-chamber *h*.

C and C′ are drums, connected together by the pipes *a* and having tubes *b*, passing completely through both drums and inside of the tubes *a*. The drums thus connected are mounted upon the base *o*, resting upon the shoulders *m* of said base.

The water-chamber *h* is provided with a feed-pipe, *r*, and is connected to the lower drum, C′, by means of a pipe or pipes, E, which pass outside of the casing, in order to prevent their being injured by the fire, and also in order to enable them to be gotten at handily for connecting and disconnecting.

The casing *d* is made to fit closely the sides of the drums C and C′, except in one place, where there is an offset, *n*. The casing extends a short distance above the top drum, C, in order to allow the heat and smoke to pass over the top of the upper drum, C, downward through the offset in the casing *n*, and among and on the outside of the tubes *a* to the flue S, which opens at the rear of casing *d*, between the drums C and C′, where it receives the heated products of combustion after they pass down the offset *n* and around the series of pipes *a*, connecting the drums C and C′. The upper drum, C, is provided with the steam-pipe *x*, designed to be connected with the pipes which lead to the radiators.

By means of the construction shown it will be clearly seen that the products of combustion are utilized to the greatest possible extent. As the under side of drum C′ is exposed to the direct action of the fire, the heat thus passes through the tubes *b* in the direction of the arrows to the space between the top of the drum C and casing, where it is caused to flow to one side and downward through the offset *n* between the two drums C and C′, and among the tubes *a* to the flue S.

Having thus described our invention, what we claim, and desire to secure by Letters Patent, is—

In a heating apparatus, the combination, with the fire-pot having a water-jacket, *h*, and supply-tube *r*, of a connecting-pipe, E, a drum, C′, supplied by said pipe, a drum, C, connected with drum C′, a series of tubes, *b*, passing through the tube *a* and extending wholly through both drums, the casing *d*, having an offset, *n*; the tubes *a*, intermediate of the cylinders C C′, and the flue S, arranged as shown, opening at the rear of the casing *d* and between the drums C and C′, whereby the products of combustion pass from the fire-pot up through the tubes *b*, thence down by way of offset *n* and between the drums C and C′, around and among the tubes *a* to the flue S, substantially as described.

JOSEPH M. BABBITT.
PATRICK F. WOOD.

Witnesses:
THOS. M. JAMES,
H. M. WATSON.