(No Model.)

G. E. LEONARD.

TUBULAR HEATING DRUM.

No. 417,874. Patented Dec. 24, 1889.

Fig. 1.

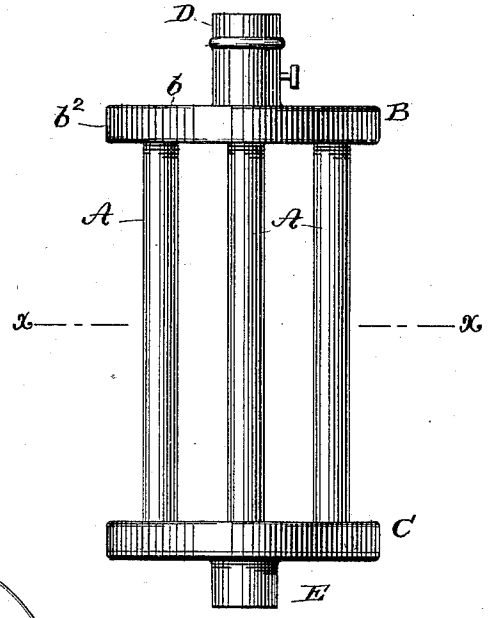


Fig. 3.

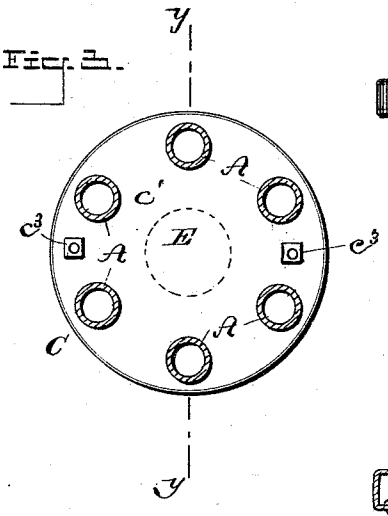
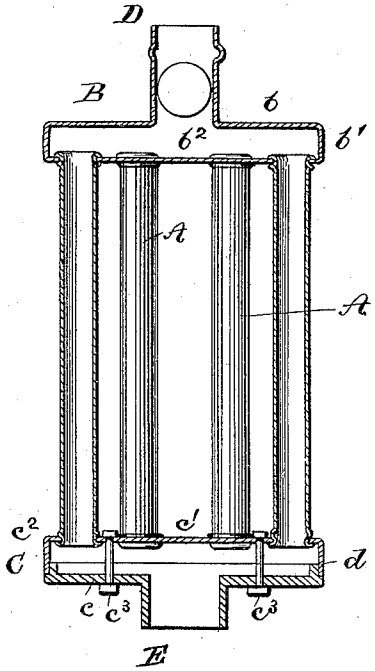


Fig. 2.



WITNESSES:

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UNITED STATES PATENT OFFICE.

GEORGE E. LEONARD, OF FARMINGTON, WAUPACA COUNTY, WISCONSIN.

TUBULAR HEATING-DRUM.

SPECIFICATION forming part of Letters Patent No. 417,874, dated December 24, 1889.

Application filed May 11, 1889. Serial No. 310,413. (No model.)

To all whom it may concern:

Be it known that I, GEORGE E. LEONARD, of Farmington township, (Sheridan P. O.,) in the county of Waupaca and State of Wisconsin, have invented a new and Improved Tubular Heating-Drum, of which the following is a full, clear, and exact description.

My invention relates to heating-drums designed to be used as an upper section of a heating-stove or as a section of a stove-pipe; and the invention consists of the construction, arrangement, and combination of parts, all as hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a front elevation of my new and improved heating-drum. Fig. 2 is a sectional elevation of the same on line *y y* of Fig. 3, and Fig. 3 is sectional plan view on line *x x* of Fig. 1.

The heating-drum here shown is provided at its ends with connections of different sizes—that is, the connection D at its top is five inches in diameter to receive a five-inch pipe, and the connection E at its bottom is six inches in diameter to receive a six-inch pipe; and the tubes A are in two sizes—say one and one-half inch in diameter and one and three-quarter inch in diameter—and the said tubes will be of such number relatively to their size and the size of the draft-pipes for which they are designed that the sum of the areas of the tubes will be equal to the area of the draft-pipe. The diameter of the drum-head B will be fourteen inches, or thereabout, if one-and-three-quarter-inch tubes are used. The upper ends of the tubes A unite with the upper head B and the lower ends with the lower head C. The upper drum-head B is formed of the annular plate *b*, formed with the rim *b'* and the bottom plate b^2, in which the ends of the tubes A are set. At the center of the plate *b* is secured the short pipe or pipe-connection D, in which a damper may be fitted. The lower head C is composed of the annular plate *c* and the upper plate *c'*, having the rim c^2. The lower ends of the tubes A are fitted in the plate *c'*, as shown, and this plate is connected to the plate *c* by bolts c^3, so that by removing these bolts the plate *c* may be detached for readily cleaning the drum. The plate *c* is provided at its center with the short pipe or pipe-connection E, to which the draft or drum pipe is connected. The upper surface of the plate *c* is formed with a shoulder or offset *d* to prevent the displacement of the plate when applied to the rim c^2 and held by the bolts c^3. When desirable, the upper head is also similarly made.

By the use of this drum the heat, entering the hollow lower head C at E, will find its way to all the pipes or tubes A, and will ascend these tubes to the upper hollow head B, from which it will pass to the chimney through the pipe D. The heat thus entering and ascending the pipes heats them, and a large quantity of heat is caused by radiation from their surfaces, and the hollow heads B C become heated and become large radiating-surfaces, so that much economy is effected.

The pipes A should bear such a relation to the connections D and E that their combined diametrical area will exceed the area of the connection E, so that the tubes will not interfere with the draft—that is, in making No. 6 heater one size of tubes is used, viz: one and three-fourths inch in diameter, and there are fourteen tubes, the diameter of the drum-heads varying from fourteen and one-half inches to fifteen and one-half inches; while in making No. 5 heater two sizes of tubes are used, viz: one and three-fourths inch and one and one-half inch in diameter, there being ten tubes of one and three-fourths inch in diameter and thirteen tubes of one and one-half inch in diameter, the diameter of the drum-heads varying from eleven and one-half inches to fourteen inches.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

The heating-drum constructed substantially as herein shown and described, the same consisting of the upper drum formed of a flanged annular plate *b*, having a pipe-connection D and a bottom plate b^2, in combination with the system of pipes A and the bottom drum C, formed of the annular plate *c*, having pipe-connection E and shoulder or offset *d*, and the plate *c'*, having rim c^2 and the bolts c^3, which connect plate *c'* with the annular plate *c*, whereby the latter may be removed for cleaning, substantially as described.

GEORGE E. LEONARD.

Witnesses:

WINFIELD SCOTT,

HERBERT CORMICAN.