

(No Model.)

R. F. SAXTON.
HEATING DRUM.

No. 550,804.

Patented Dec. 3, 1895.

Fig. 1.

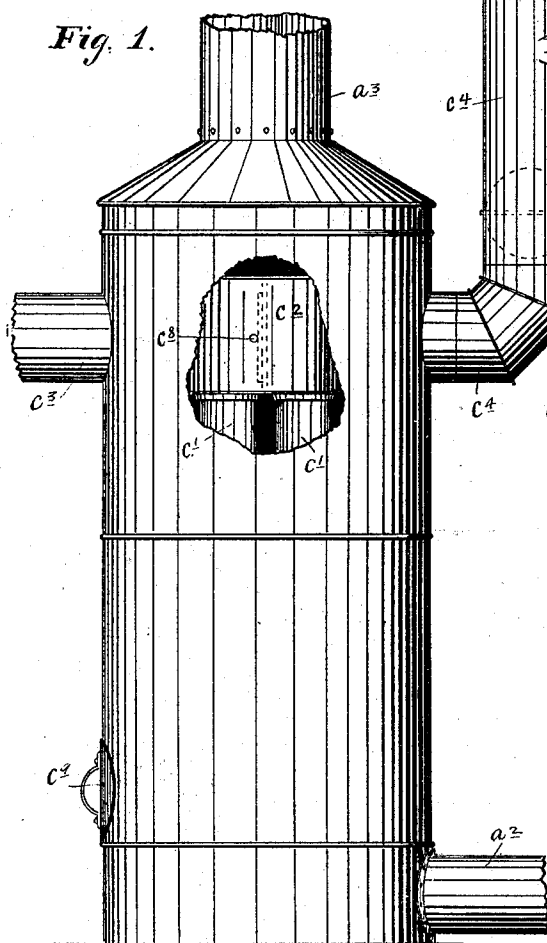


Fig. 3.

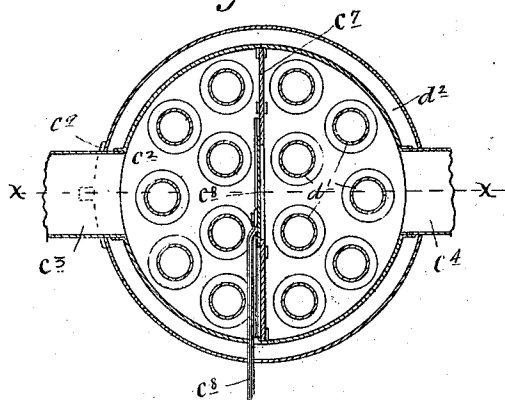


Fig. 2.

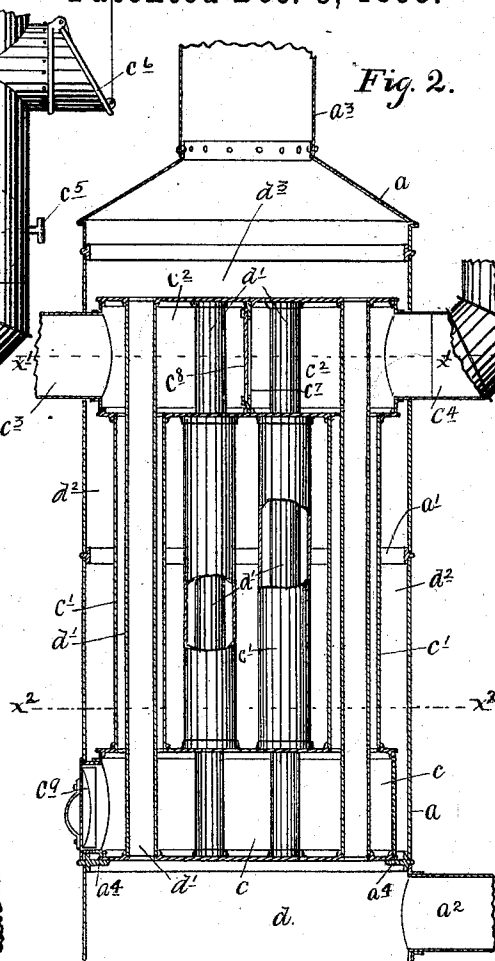
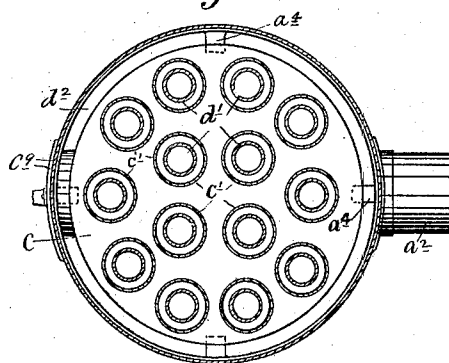


Fig. 4.



Witnesses:

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Inventor:
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By his Attorney,
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UNITED STATES PATENT OFFICE.

ROMAINE F. SAXTON, OF MINNEAPOLIS, MINNESOTA.

HEATING-DRUM.

SPECIFICATION forming part of Letters Patent No. 550,804, dated December 3, 1895.

Application filed February 26, 1895. Serial No. 539,728. (No model.)

To all whom it may concern:

Be it known that I, ROMAINE F. SAXTON, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Heating-Drums; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention has for its object to provide an improved heating-drum especially designed for use with furnaces, but also capable of use with other forms of heaters.

To this end my invention consists of the novel features of construction hereinafter described, and defined in the claim.

The accompanying drawings illustrate my invention, wherein, like letters referring to like parts throughout the several views—

Figure 1 is a side elevation of the drum with some parts broken away. Fig. 2 is a vertical central section of the same on the line $x x$ of Fig. 3 with some parts broken away. Fig. 3 is a horizontal section on the line $x' x'$ of Fig. 2, and Fig. 4 is a horizontal section on the line $x^2 x^2$ of Fig. 2.

$a a'$ represent, respectively, the sheeting and annular joint-ribs, constituting together the outside casing or shell of the drum. The said casing is provided with a fresh-air-inlet supply pipe or opening a^2 at its lower end and with a hot-air-discharge pipe a^3 at its upper end. The hot-air-discharge pipe would be provided with the necessary branch pipes (not shown) for distributing the heated air to the rooms to be heated or other points desired.

The lower end of the casing $a a'$ is shown as open and is adapted to rest on the floor b or any other suitable support.

The lower member of the joint-ribs a' is provided with inwardly-projecting radial lugs a^4 , on which rests a closed drum-head c of smaller diameter than the outside shell $a a'$. To the upper plate of the drum-head c are fixed open-ended tubes c' . To the upper ends of the tubes c' is secured the lower plate of a closed drum-head c^2 . Open-ended tubes d' of smaller diameter than the tubes c' extend through the said tubes c' and the body portions of the drum-heads c and c^2 and have their lower and

upper ends secured to the lower and upper plates, respectively, of the said drum-heads c and c^2 and opening from the same into the circulating-chambers below and above the drum-heads. For convenience the chamber d below the lower drum-head c may be called the "fresh-air chamber," as it communicates directly with the fresh-air-supply pipe a^2 . The chamber d^3 above the upper drum-head c^2 may be called the "hot-air chamber," and the circulating space or chamber d^2 between the two drum-heads c and c^2 may be called the "intermediate air-chamber." The outlet-flue or discharge-pipe c^3 from the furnace or other heater passes through the casing $a a'$ and enters the upper drum-head c^2 , and at a point directly opposite the furnace-pipe c^3 the said drum-head c^2 is provided with an outlet or discharge flue c^4 , leading to the chimney. (Not shown.) The outlet-flue c^4 is shown as provided with a damper c^5 and a check-draft c^6 of the ordinary construction.

The drum-head c^2 is divided into two compartments by a vertical cross-partition c^7 , which is provided with a sliding damper c^8 , as shown in Figs. 2 and 3. The lower drum-head c is shown as provided with a clean-out thimble and plug c^9 .

Having regard to the action of the parts, supposing the damper c^8 in the upper drum-head c^2 to be closed or as shown in Fig. 3 the heater would be operated with the indirect draft, and if the said damper c^8 be thrown open the heater will be operated with a direct draft.

If set for indirect draft, the products of combustion from the furnace as supplied through the furnace flue-pipe c^3 will enter the adjacent compartment of the upper drum-head c^2 and will pass down through the flue-tubes c' in that compartment to the lower drum-head c and through the same into the other flue-tubes c' , which terminate above in the other compartment of the upper drum-head c^2 , and thence into the outlet or chimney flue c^4 . Otherwise stated, the products of combustion from the furnace will pass from one compartment of the upper drum-head c^2 through the downtake members of the flue-tubes c' into the lower drum-head c , and from the said drum-head c the said products of combustion will pass through the uptake members of said flue-

tubes c' into the other compartment of the upper drum-head and out through the chimney-flue c^4 . The fresh air supplied to the chamber d from the intake or supply-pipe a^2 will be divided up into a series of columns, which will pass upward through the air-tubes d' and the intermediate chamber or spaces d^2 outside of the flue-tubes c' and the drum-heads c c^2 into the upper or hot-air chamber d^3 , and thence into the distributing pipe or hood a^3 . In this progress of the fresh air from the chamber d to the chamber d^3 it will be brought into contact with or get the benefit of the radiation from the drum-heads c c^2 and the flue-tubes c' and be thereby thoroughly heated. It is obvious that this arrangement for circulating the products of combustion and the air to be heated renders available a large amount of radiating-surface in comparatively small compass and that the air to be heated must circulate about the said radiating-surfaces in a way to receive the full effects of the heat.

When the partition-damper c^8 is in its open position, it is, of course, obvious that the products of combustion will pass from the pipe

c^3 directly through the upper drum-head c^2 into the outlet or chimney flue pipe c^4 .

What I claim, and desire to secure by Letters Patent of the United States, is as follows:

The combination with the casing having the air intake a^2 and air discharge pipe a^3 , of the drum-heads c c^2 of less diameter than the casing and connected by the flue tubes c' , the air tubes d' of less diameter than the flue tubes c' passing through said flue tubes and drum-heads and connecting the fresh and hot air chambers d d^3 , the partition c^7 in the upper drum head c^2 having the damper c^8 , the furnace flue pipe c^3 , tapping one compartment of the drum head c^2 and the outlet flue pipe c^4 leading from the other compartment of said drum-head c^2 , all arranged and operating substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

ROMAINE F. SAXTON.

Witnesses:

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FRANK. D. MERCHANT.