

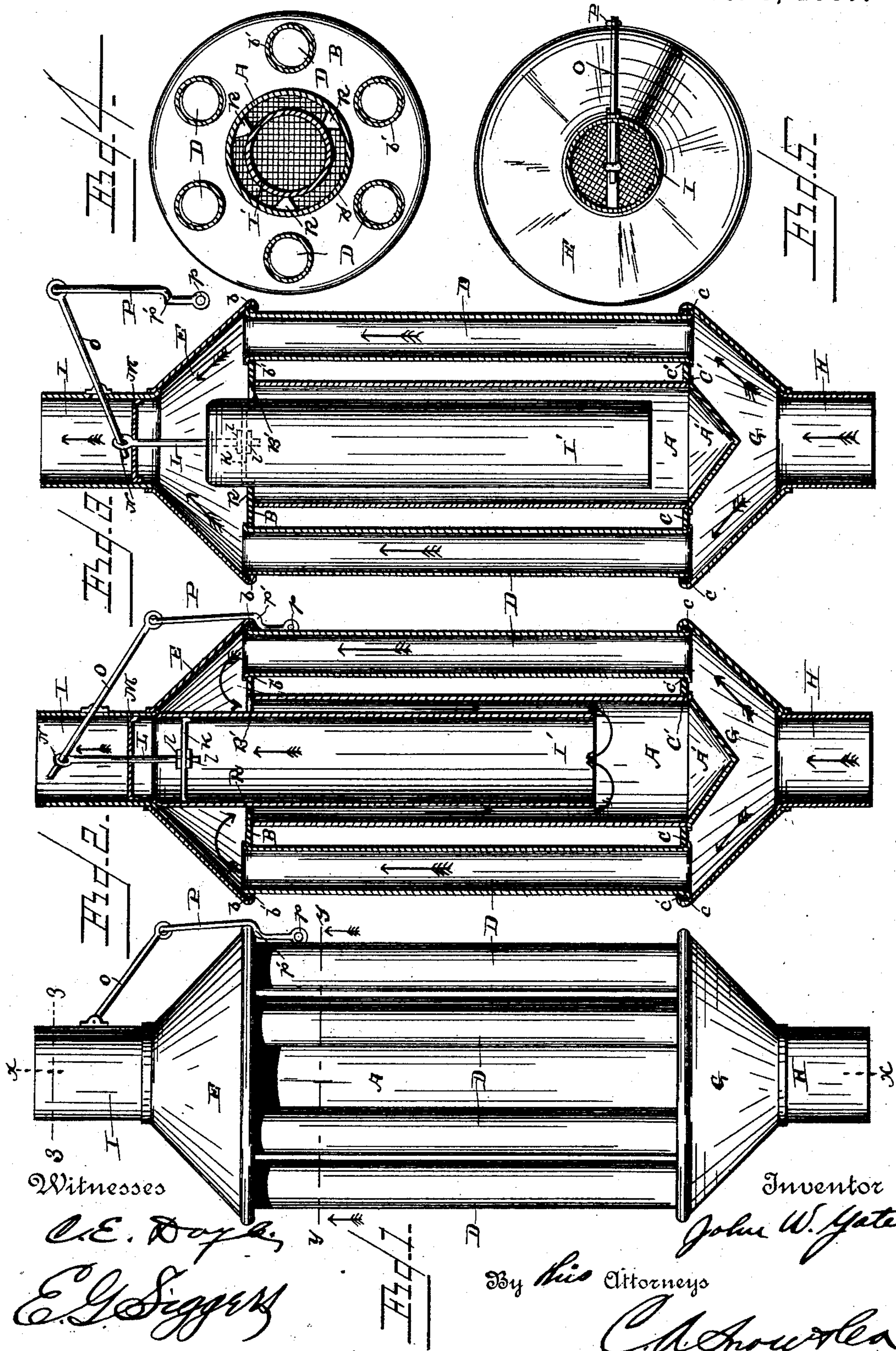
(No Model.)

J. W. YATES.

HEATING DRUM.

No. 374,284.

Patented Dec. 6, 1887.



Witnesses

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HEATING-DRUM.

SPECIFICATION forming part of Letters Patent No. 374,284, dated December 6, 1887.

Application filed March 19, 1887. Serial No. 231,578. (No model.)

To all whom it may concern:

Be it known that I, JOHN W. YATES, a citizen of the United States, residing at Bourbon, in the county of Marshall and State of Indiana, have invented new and useful Improvements in Heating-Drums, of which the following is a specification.

My invention relates to improvements in heating-drums; and it consists in a certain novel construction and arrangement of parts for service, fully set forth hereinafter, and specifically pointed out in the claims.

My object is to provide a heating-drum which will expose more heating-surface for the space occupied than any similar device now in use.

A further object is to provide a drum which will be more economical and throw out more heat for the amount of fuel used than previous inventions of the kind.

In the drawings hereto annexed, Figure 1 is a side elevation of the drum. Fig. 2 is a vertical central section on the line xx of Fig. 1. Fig. 3 is a similar view with the inner pipe lowered to cause a direct draft. Fig. 4 is a horizontal section on the line yy of Fig. 1. Fig. 5 is a similar view on the line zz , Fig. 1.

Referring to the drawings, in which similar letters denote corresponding parts in all the figures, A designates the central body of the drum, preferably cylindrical in form, to the upper and lower ends of which are secured the circular plates B C, which extend laterally beyond the sides of the said body A, thus forming flanges $b c$, which are provided with a series of aligned vertical openings, $b' c'$, respectively. A circular opening, B', is cut in the plate B over the upper end of the body A and corresponding in size to the said body, and the plate C at the lower end of the said body is provided with a similar circular opening, C', which is also adapted to correspond in size to the said body. The lower end of the body A is closed by a conical bottom, A', firmly secured in place by soldering, riveting, or other suitable means, and for a purpose to be hereinafter explained. Small pipes or flues D are passed at the upper and lower ends, respectively, through the aligned openings $b' c'$ in the flanges $b c$, and the ends thereof are swaged on the opposite sides of the said flanges, and thus there is a series of small pipes or flues surrounding the central

body or pipe, A, of the drum. The number of flues in the said series is unimportant and may be varied to suit the requirements of the case.

E and G are conical caps fitted, respectively, on the upper and lower ends of the drum by securing the wide ends of the said caps around the edges of the plates B C. It will then be seen that the plates B C close the inner ends of the caps E G.

H is a stove-pipe secured at the upper end in an opening in the lower end of the cap G and communicating with the interior space thereof, and I is a similar pipe to H, secured at the lower end in an opening in the upper end of the cap E in a similar manner to the pipe H. The said pipes H and I may be secured in the openings in the said conical caps by flaring the ends thereof outwardly around the edges of the said openings, as shown in the drawings, or in any other preferred manner.

I' is a pipe equal in size to the pipes H and I and adapted to fit at the upper end tightly against the lower end of the pipe I, to form a tight joint at that point, and the said pipe I' extends down within the drum A nearly to the bottom thereof.

K is a cross-bar secured at the ends to the sides of the pipe I', near the upper end, by bending the said ends and riveting the same to the pipe, and L is a vertical rod secured at the lower end in a central opening in the said bar K by nuts $l l$, screwed on the rod L on opposite sides of the said bar K. The said rod L passes vertically through a guide-opening in the center of the cross-bar M, placed in the pipe I near the lower end thereof, and is provided at the upper end with a ring, N, for a purpose hereinafter explained.

O designates a lever pivoted in the side of the pipe I and adapted to operate at the inner end in the ring in the upper end of the rod L, and having a locking-arm, P, suspended from the outer end thereof, comprising a bar having a ring or handle, p , on the lower end, and a hook or shoulder, p' , adapted to engage under the edge of the upper plate, B, or a similar projecting edge, when the outer end of the lever-arm is lowered, as shown in Fig. 2.

R represents a series of inwardly-projecting points or ears, three or more in number, formed

integrally with the plate B, and adapted to impinge at the inner ends against the sides of the pipe I', so that when the said pipe is moved vertically up and down by means of the lever O the said projections will guide the motion thereof. It will be readily seen that when the outer end of the lever O is moved the inner pipe, I', will be raised or lowered, and when it is in its raised position the shoulder on the locking-arm P is engaged under the edge of the plate B, and the said pipe is prevented from dropping out of position. The vertical motion of the lifting-rod L is guided by the opening in the guide-bar M, and therefore the motion of the said pipe I' is perfectly vertical, with no lateral play. The upper edge of the pipe I' is slightly bent in, so as to enter the lower end of the pipe I very slightly, and thus form a completely air-tight joint.

The operation of the invention is as follows: If it is desired to have a direct draft, the outer end of the lever-arm O is raised, thus lowering the inner pipe, I', and the heat and smoke from the fire enter the conical cap G at the lower end of the drum, spread and pass up the small flues around the outside of the said drum, escape into the cap E at the upper end of the drum, and thence pass up the pipe I directly through the opening formed between the upper end of the pipe I' and the lower end of the pipe I. (This is clearly shown by the arrows in Fig. 3.) When, however, it is desired to obtain as much heat as possible from the hot air and smoke before they escape up the chimney, lower the outer end of the lever O and fasten it in the said position. The passage of the air is then as shown by the arrows in Fig. 2—namely, into the cap G, up the flues or pipes around the drum, over the upper edge of the said drum, and down within the drum and on the outside of the pipe I' therein, and thence up the pipe I' and out. It will be seen that the function of the conical bottom of the drum A is to direct the heat laterally to the side flues or pipes on the outside and around the said drum, and, also, the effect of the conical cap E at the upper end of the drum is to deflect the heat passing up the side pipes and cause it to pass down the opening between the inner pipe, I', and the sides of the drum. Thus it will be seen that the smoke and hot air, when coming directly from the fire, are carried up the flues D, and, these being very small, the said hot air is brought in direct contact with the sides of the said flues, and then, being deflected down between the pipe I' and the walls of the central body, A, the remaining heat in the air will be utilized to heat the said body. Thus in my device I present a large extent of radiating-surface and convey the heated air first, when it is in its hottest condition, to the small flues which are exposed on all sides to the surrounding air, and as the said flues are small in diameter it will be readily seen that the hot air will be brought into close contact with the sides

thereof and cause the said sides to become heated to a high degree, and thus radiate a large amount of heat. Further, by isolating the side flues, D, as described, the air is allowed to circulate entirely around them and the central drum, and thus there is a great amount of heating-surface exposed to the outside air.

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

1. The combination, in a heating-drum, of the central body, A, plates B C, secured to the ends thereof and having the openings B' C' to receive the body A, and small aligned openings b' c' therein, flues D, secured at the ends in the said aligned openings b' c', conical caps E G, secured to the said plates, pipe H, to enter the lower cap, G, and pipe I, secured at the lower end in the cap E, substantially as described.

2. In a heating-drum, the body A, flues D, and caps E G, having plates B C, the said body A and the flues D being secured at their inner ends in the plates B C, whereby the flues, the body, and the caps are all connected together, the conducting-pipes H I, connected with the said caps, and the vertically-movable pipe I' within the body A and below the pipe I, combined with the vertical rod L, secured to pipe I, and the lever O, pivoted to pipe I' and connected at its inner end to the rod L, as set forth.

3. In a heating-drum, the body A, flues D, and caps E G, having plates B C, the said body A and flues D being secured at their inner ends in the plates B C, whereby the caps, the body, and the flues are all connected together, the conducting-pipes H I, connected to the caps, the movable pipe I' below the pipe I and within the body A, and the bar K, connected to the pipe I', combined with the rod L, attached to the bar K, the guide-bar M, attached to pipe I and adapted to guide the rod L, and the lever O, connected with the rod L to operate the pipe I' from the outside, as set forth.

4. In a heating-drum, the body A, flues D, caps E G, having plates B C, the said body A and flues D being secured at their inner ends in the plates B C, whereby the caps, the body, and the flues are all connected together, the pipes H I, communicating with the caps, and the movable pipe I' within the body A, combined with the lever O, pivoted to pipe I, the rod L, connecting the inner end of the said lever with the movable pipe I', and the swinging handle P on the outer end of the lever O, provided with the shoulder or hook p, adapted when the pipe I' is raised to engage under the lower edge of the cap E or any other suitable projection to hold the lever in the desired position, as set forth.

5. In a heating-drum, the body A, closed at one end, the flues D, the caps E G, having plates B C, the said body and flues D being secured at their inner ends in the plates B C, whereby the caps, the body, and the flues are

all connected together, the conducting-pipes H I, connected to the caps, combined with the movable pipe I', moving in the open end of the body A, and when raised closing communication between the cap E and the pipe I, whereby the smoke and gases escaping from the pipes or flues D into the caps are caused to descend through the body and pass out through the pipe I', as set forth.

10 6. In a heating-drum, the central tubular body, A, combined with the flues D, exposed on all sides and arranged around the central body, the plates B C, connected to the ends of the flues D and the body A, the caps E G, con-

nected to the plates B C, the ends of the flues 15 D being open, so as to communicate with the interior of the caps, the conducting-pipes H I, connected to the caps E G, and the closing device, substantially as described, to close communication between the cap E and its pipe H, 20 substantially as specified.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

JOHN W. YATES.

Witnesses:

L. W. BORTON,
O. F. KETCHAM.