

(No Model.)

P. H. GRIMM & F. J. WILLIARD.  
HEATING DRUM.

No. 476,794.

Patented June 14, 1892.

Fig. 1.

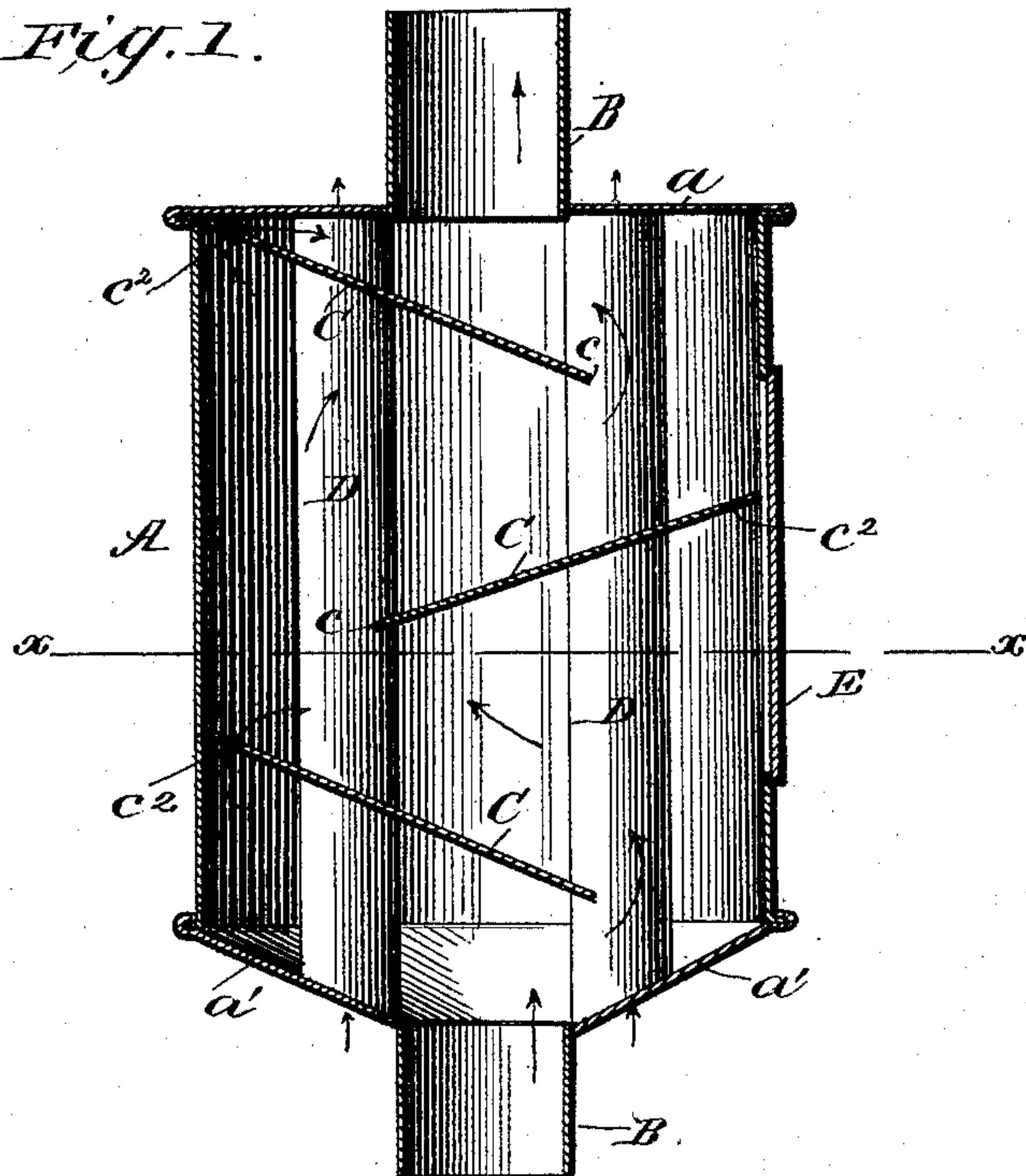
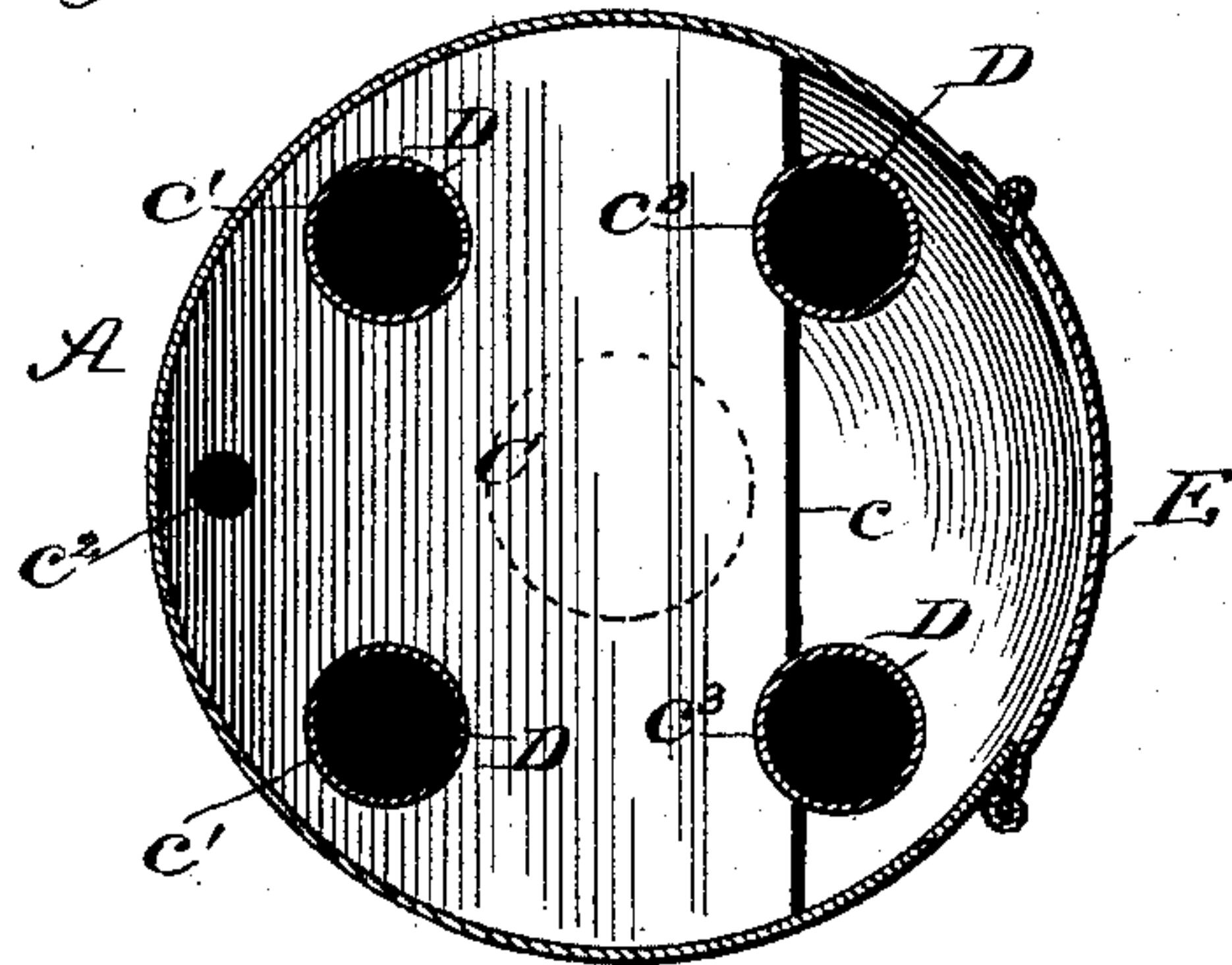


Fig. 2.



Witnesses  
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# UNITED STATES PATENT OFFICE.

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## HEATING-DRUM.

SPECIFICATION forming part of Letters Patent No. 476,794, dated June 14, 1892.

Application filed January 28, 1892. Serial No. 419,493. (No model.)

*To all whom it may concern:*

Be it known that we, PHILIP H. GRIMM and FRANK J. WILLIARD, citizens of the United States, residing at Ashland, in the county of Ashland and State of Wisconsin, have invented certain new and useful Improvements in Heating-Drums, and we 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.

Our invention relates to certain new and useful improvements in heating-drums, and has for its object the production of a heating-drum provided with inclined deflector-plates, whereby the passage therethrough of the heat and products of combustion is facilitated and the accumulation of soot and ashes in the drum prevented; and to these ends our invention consists in the novel construction, arrangement, and combination of parts hereinafter fully described and afterward definitely pointed out in the claims, due reference being had to the accompanying drawings, forming a part of this specification, wherein—

Figure 1 is a vertical central section of our improved heating-drum; and Fig. 2, a horizontal section on line *x x*, Fig. 1.

Referring to the drawings, the letter A indicates the outer cylindrical casing of the heater, which is preferably closed at the top by means of a flat head *a* and at its bottom by an inverted-cone-shaped head *a'*, both of said heads being provided centrally with short tubes or pipes B to enable the drum to be connected to two sections of stovepipe or other conduit of heat and products of combustion.

Within the casing A at suitable distances apart are arranged reversely-inclined deflector-plates C, which are cut away at their opposite lower edges, as at *c*, to afford a passage for the heat and products of combustion, and said plates are each provided with perforations *c'* *c'*, for the purpose hereinafter described. The deflector-plates at their opposite upper portions and near the edges are each provided with a perforation *c''*, which serve as additional passage-ways for heat and the products of combustion.

Secured within the heads *a* and *a'* of the casing A and passing vertically through said casing are air-flues D D, which are open at

top and bottom and communicate with the atmosphere without the casing. Said flues pass through the perforations *c'* *c'* in the deflector-plates C, and are preferably arranged in circular form and near the wall of the casing A. As thus arranged the lower portion of the inclined deflector-plates C do not entirely embrace or surround the flues D, and in order to permit of the passage of the flues D therethrough it is only necessary to provide said portions of the deflector-plates with semi-circular or arc-shaped recesses *c''*, as clearly shown in Fig. 3 of the drawings.

The casing A upon one side is provided with a door E, which affords access to the interior of the casing for the purpose of cleaning the drum, making any needed repairs, or for cooling the drum.

In operation the drum is disposed between two sections of stovepipe or other conduit of heat. The heat and products of combustion pass into the bottom of the drum and strike the lowermost of the deflector-plates C and then pass over to one side of the drum and up around the lower cut-away portion of said plate, thence across to the other side of the drum and up around the lower cut-away portion of the second deflector-plate, and thus continue to pass from side to side of the drum and under and around the deflector-plates until they arrive at the top of the drum from whence they escape through the pipe B. The more highly-heated products of combustion are apt to collect under the upper lower portions of the deflector-plates, and to afford an exit for such we provide said portions of the deflector-plates with the perforations *c''*, which are very much smaller than the passages formed by the cut-away portions of the deflector-plates. The perforations *c''* form direct exits for the highly-heated vapors and gases that collect under the deflector-plates. As the heated vapors and gases pass through the drum they pass entirely around the air-flues D and heat the air which circulates upwardly therethrough. Owing to the inclination of the deflector-plates, the heat is deflected downward, which tends to retard its passage through the drum and thus utilize the maximum amount thereof to heat the air of the room. The inclination of the deflector-plates also tends to prevent the accumulation of soot



and ashes on the sides of said plates, and the soot and ashes drop upon the upper sides of the plates. They fall down from one plate to another until they reach the inverted-cone-shaped bottom  $a'$ , by which they are directed down the pipe into the stove.

What we claim is—

1. In a heating-drum, the combination, with the casing having an inverted-cone-shaped bottom, substantially as shown, and for the purpose set forth, of fixed inclined deflector-plates having their opposite lower portions cut away, as set forth.

2. In a heating-drum, the combination, with the casing provided with the vertical air-flues, of the inclined deflector-plates having their opposite lower portions cut away, as shown, and perforated at their opposite upper portions, for the purpose specified.

3. In a heating-drum, the combination, with the casing, of the reversely-inclined deflector-plates having their opposite lower portions

cut away, as shown, and perforated at their opposite upper portions, and vertical air-flues passing through the top and bottom of the casing and through the deflector-plates, substantially as described.

4. In a heating-drum, the combination of the casing A, having an inverted-cone-shaped bottom  $a'$  and the inlet and outlet B B, the inclined deflector-plates C, having their opposite lower portions cut away and their opposite upper portions perforated at  $c'$ , and the air-flues D, passing through the top and bottom of the casing and through the deflector-plates, substantially as shown and described.

In testimony whereof we affix our signatures in presence of two witnesses.

PHILIP H. GRIMM.  
FRANK J. WILLIARD.

Witnesses:

E. F. GLEASON,  
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