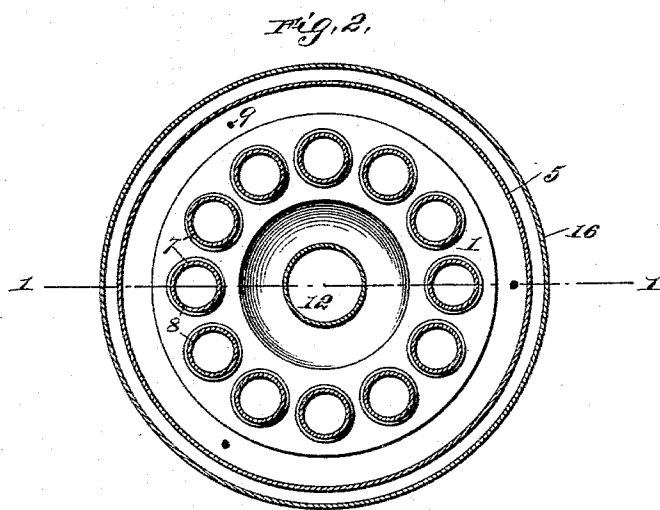
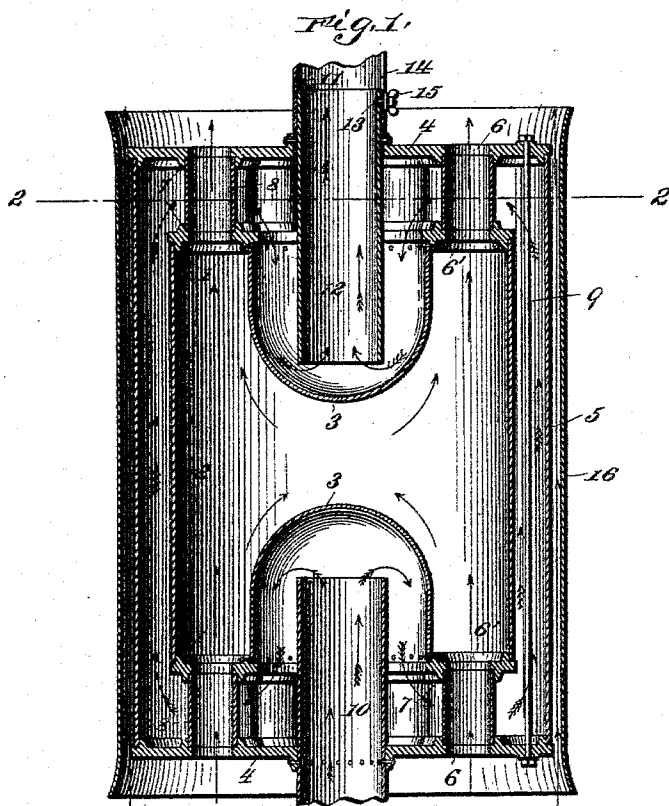


(No Model.)

C. J. LINBERG.
HEATING DRUM.

No. 494,963.

Patented Apr. 4, 1893.



Witnesses:
Charles L. Thompson
James Allen.

Inventor:
Charles J. Linberg.

UNITED STATES PATENT OFFICE.

CHARLES J. LINBERG, OF ST. LOUIS, MISSOURI, ASSIGNOR TO THE CONTINENTAL GAS STOVE COMPANY, OF SAME PLACE.

HEATING-DRUM.

SPECIFICATION forming part of Letters Patent No. 494,963, dated April 4, 1893.

Application filed March 8, 1892. Serial No. 424,237. (No model.)

To all whom it may concern:

Be it known that I, CHARLES J. LINBERG, a citizen of the United States, residing in the city of St. Louis, State of Missouri, have invented certain new and useful Improvements in Heating-Drums, of which the following is a specification.

My invention relates to improvements in heating drums and has for its objects to provide an extensive heating surface, and to secure rapid circulation of the air and a convenient draft regulation, and generally to provide a more efficient and economical heating drum.

My invention consists of the construction herein described.

In the accompanying drawings forming part of this specification, Figure 1 is a vertical central section of the drum, along the line 1—1. Fig. 2 is a horizontal section along the line 2—2 of Fig. 1.

The air box is made of annular end pieces 1, 1, connected together at their outer rims by a cylindrical shell 2, and each provided with a hemispherical piece, 3, secured to the inner edge thereof so as to extend into the interior of the cylindrical shell 2. Circular end plates, 4, 4, connected together at their outer rims by a cylinder, 5, constitute the smoke box, within which the air box above described is inclosed, concentrically. The circular end plates, 4, 4, are provided with openings, 6, and the annular end plates 1, 1, are provided with openings, 6'. The openings, 6, in each circular end plate, 4, are arranged to register with the openings, 6', in the corresponding annular end plate, 1, and circular ribs, 7, are provided around each opening. Short tubes or thimbles, 8, held in position by these ribs, connect the two pairs of end plates and form passages from the air chamber to the outside air. The parts are held in place by ordinary stove belts, 9, which pass through the smoke chamber and clamp the circular end plates together. The circular end plates are provided with openings in the center, to which smoke pipe sections, 10, 11, connect respectively. Said pipe section 10 extends through the opening in the corresponding end plate nearly to the hemispheri-

cal portion of the air box, but for the purposes of draft regulation, it is preferable to make these sections, or one of them adjustable. As shown in the drawings, the section, 11, proper terminates at the end plate, 4, and a separate joint of pipe, 12, of smaller diameter than the section, 11, and telescoping therewith, extends into the smoke chamber. Any suitable means of fastening the telescoping section in position may be used, as for instance, a bolt, 13, fast to the telescoping section. This bolt passing through a longitudinal slot, 14, in the pipe section 11, and a clamping nut, 15, screwing on the end thereof, permit easy adjustment of the section. The like arrangement may be adopted for the section, 10. A cylindrical casing, 16, surrounds the smoke cylinder, 5, at a slight distance therefrom.

The operation of the device is as follows: The drum is supported by the pipe section, 10, in a vertical position, the telescoping pipe-joint, 12, being at the top. The products of combustion passing through the smoke pipe, 10, impinge against the under side of the hemispherical dome, or arched bottom, 3, are deflected downward passing under the lower annular ring, 1, between the several short tubes or thimbles, 8, thence passing through the narrow annular flue formed by the cylindrical casings of the smoke chamber and the air chamber, thence between the upper tubes or thimbles, 8, thence to the lower end of the telescoping section, 12, and into the smoke pipe, 11. The air in the air chamber is heated by the products of combustion and rises, issuing into the air of the room through the upper tubes, 8, fresh air enters at the lower tubes, 8, to take its place, and the circulation of air is established. The cool air entering at the lower tubes is heated by the products of combustion which have had part of their heat abstracted in the dome. The air thus partially heated rises and is further heated by the hotter products under the upper portion of the dome. Enough heat is retained by the products of combustion to insure a proper draft; while the annular flue and the position of the lower end of the exit section tend to equalize the temperature of the products and the air. By lowering the telescoping section, 100

12, into the bowl-shaped top of the air chamber, the draft is checked; by raising the section, the draft is increased. The thin sheet of air in the outer annular air passage receives heat from the partially exhausted products of combustion as they rise in the annular flue; and circulation follows.

The principal advantage of this drum is its symmetrical construction. Large heating areas are obtained in a small space; because the draft is approximately equal at all points in the annular flues, whereby the whole surface of the flues is available for heating. The air is heated in thin sheets instead of in volume so that a rapid circulation is effected. The end plates also are interchangeable. This heating drum is susceptible of obvious changes. For instance, a burner of any kind may replace the smoke pipe, 10, proper provision, of course, being made to supply air thereto and the drum being supported so as to admit the air to the lower tubes.

What I claim is—

1. A heating drum comprising an air-box having an arched bottom, a plate with holes therein connecting said arched bottom and the side of said air-box, said air-box having an outlet for heated air, a smoke box, inclosing said air-box, and having holes therein, connecting the holes in said air box and said smoke box respectively, and a source of heat under said arched bottom, substantially as described.

2. A heating drum consisting of a cylindrical air-box having an annular bottom plate with holes therein, an inwardly extending

hemispherical piece for said annular plate, said air-box having an outlet for heated air, a smoke box inclosing said air-box and having holes in its underside, and tubes connecting the holes in said bottom plates and the holes in the under side of said smoke box, substantially as described.

3. A heating drum consisting of a cylindrical air box having an arched bottom, and a bowl-shaped top, a cylindrical smoke box, a source of heat close under the arched bottom, and an open exit pipe above the lower part of the top of said air box.

4. A heating drum consisting of a cylindrical air box having an arched bottom, and a bowl-shaped top, a cylindrical smoke box, a source of heat close under the arched bottom, and an adjustable exit pipe above the lower part of the top of said air box.

5. A heating drum having a cylindrical air box, annular end plates therefor having holes therein, and inwardly extending hemispherical pieces for said annular plates, a cylindrical smoke box, inclosing said air box, having holes in its end plates, tubes connecting the holes in adjacent end plates, a pipe extending through one end plate of the smoke box close to the corresponding hemispherical piece, and a pipe connecting to an opening in the center of the other end plate of said smoke box.

CHARLES J. LINBERG.

Witnesses:

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