

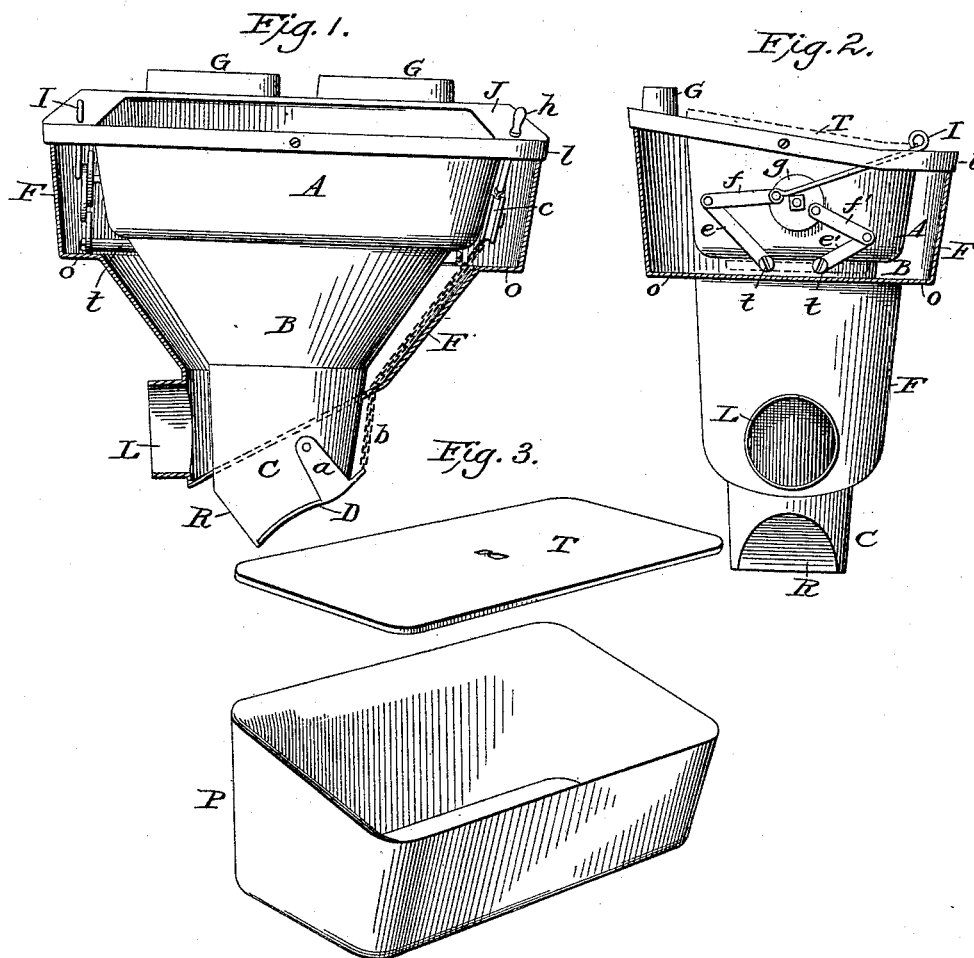
(No Model.)

E. A. JACKSON.
VENTILATING GRATE.

2 Sheets—Sheet 1.

No. 418,184.

Patented Dec. 31, 1889.



Witnesses:

James F. Duhamel
Horace A. Dodge.

Inventor:

E. A. Jackson,
by Dodge & Sons
Attys

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Fig. 4.

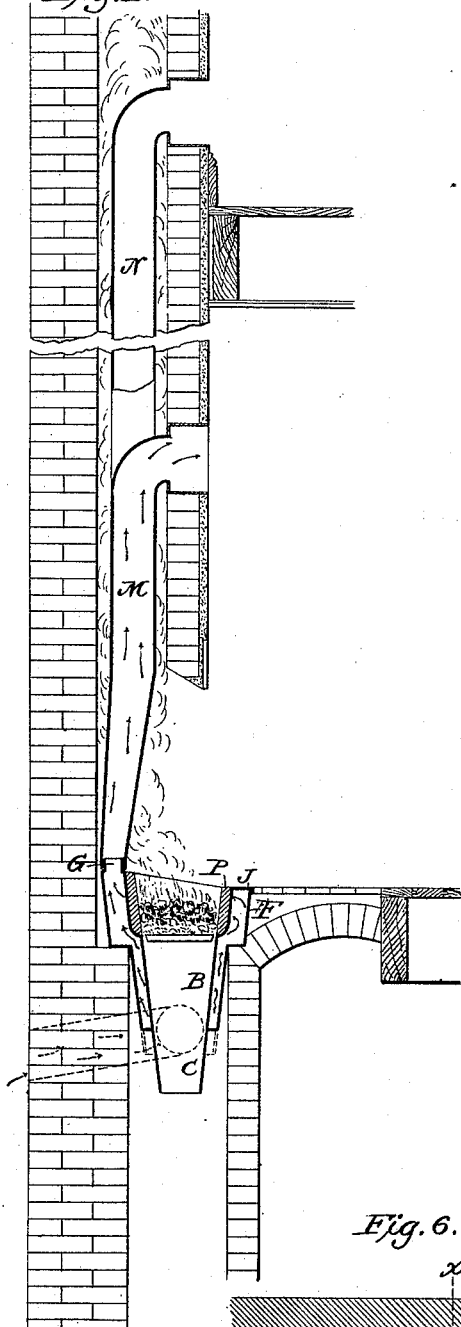


Fig. 5.

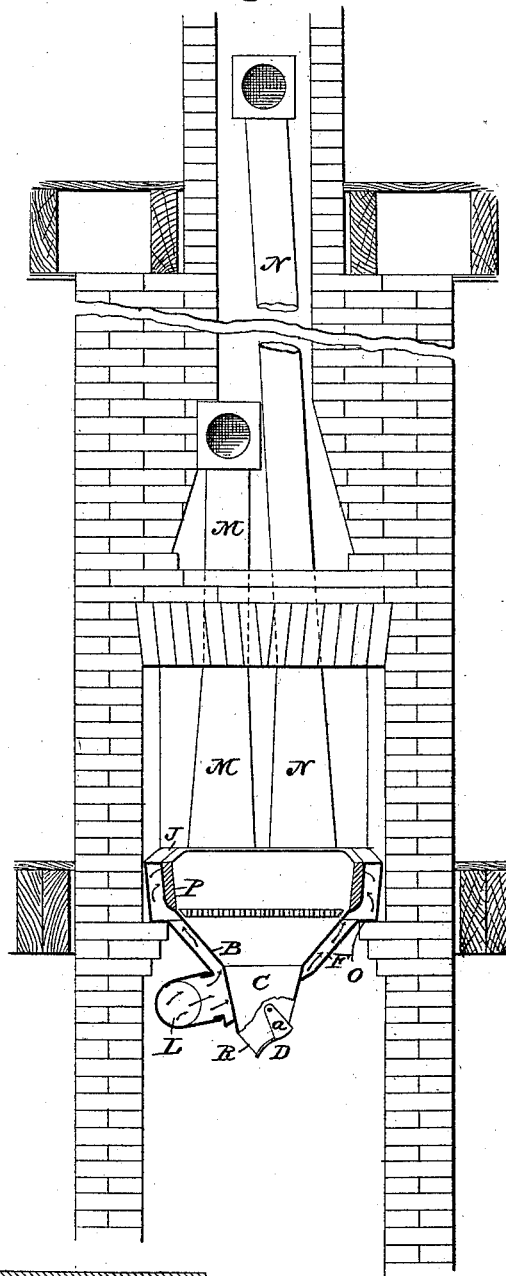
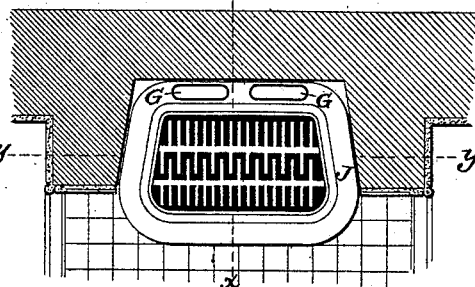


Fig. 6.

x

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UNITED STATES PATENT OFFICE.

EDWIN A. JACKSON, OF NEW-YORK, N. Y.

VENTILATING-GRATE.

SPECIFICATION forming part of Letters Patent No. 418,184, dated December 31, 1889.

Application filed July 16, 1889. Serial No. 317,698. (No model.)

To all whom it may concern:

Be it known that I, EDWIN A. JACKSON, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Ventilating-Grates, of which the following is a specification.

My invention relates to heating-grates of that class known as "ventilating-grates;" and the invention consists in certain novel features of construction, as hereinafter more fully set forth.

In the accompanying drawings, Figure 1 is a front elevation with the front wall of the outer shell broken away. Fig. 2 is an end elevation with a portion of the outer shell shown in section. Fig. 3 is a perspective view of the fire-pot or lining, shown detached. Fig. 4 is an end elevation of the grate and its air-pipes in position in a building, the grate being shown in section. Fig. 5 is a front elevation of the same, and Fig. 6 is a top plan view of the grate as set ready for use.

The object of this invention is to produce a grate that shall be simple and cheap in construction, that will be an efficient air-heater, and that can be set with its top on a level with the hearth, or practically so.

To accomplish these objects, I make a shell or body consisting of the oblong box-shaped upper portion A, the inclined or funnel-shaped portion B, with its lower portion C in the form of a spout, as shown in Fig. 1, and with a laterally-projecting flange or rim J, the outer edge of which is made to project downward and form a flange *l*, as shown in Figs. 1 and 2, this preferably being all cast in a single piece.

About on a line with the bottom of the part B, I arrange two rocking grate-bars, of the style shown in Fig. 6, the journals *t* of which project through holes at one end, as shown in Fig. 1. To the ends of these journals I secure rigidly crank arms or levers *e e'*, as shown in Fig. 2, and these are connected by links or rods *f* and *f'* to a disk or rocking-bar pivoted at its center to the outer wall of the part B, as shown in Fig. 2, there being a rod *I* pivoted at one end to the rocking-disk *g* and having its opposite end projecting up through a hole in the flange J and

formed into a handle, as shown clearly in Fig. 2. By this arrangement the grate can be shaken or the bars rocked whenever desired. The lower portion or spout C of this shell or body is made V-shaped at its lower end, or substantially so, as shown in Fig. 1, the shorter face R being closed, while the opposite side or face is left open and has fitted over it a valve D, as shown in Fig. 1, this valve being pivoted to the sides of the spout, by means of arms *a*, in such a manner as to render it self-closing. This valve is opened by means of a chain *b*, connected at one end to the heel or rear end of the valve, as shown in Fig. 1, and extends thence over a pulley or guide *c*, secured to the outer wall of the part A, where it is connected to the end of a short rod, which projects up through a hole in the flange J and terminates in a handle *h*, which for convenience of assemblage is made detachable, it screwing onto the rod. It is, however, obvious that the rod may be dispensed with by extending the chain and connecting it direct to the handle *h*. The rod, however, works smoother, makes a neater finish, and is therefore preferred.

The lateral flange J at the rear and sides of the grate is provided with one or more collars G, as shown in Figs. 1 and 2, for the attachment of warm-air pipes to conduct the heated air to one or more rooms above, as hereinafter explained, the number of said collars depending on the number of stories or rooms above which it is desired to heat by means of the air from the grate. In order to warm the air for this purpose, I surround the shell or body A B C by another shell F, of substantially the same form, but of greater diameter, this outer shell F being secured to the depending flange *l* by screws or in any suitable manner, thus leaving a space all around between the inner and outer shells for the air to circulate in, as shown in Figs. 1 and 2. At or near its lower end this outer shell F is provided with an opening L, surrounded by a collar for the attachment of an air-pipe which extends to the outer air at any suitable or convenient point, so as to bring a constant supply of air into the space between the shells, as indicated by the arrows in Figs. 4 and 5. This outer shell F is made with a shoulder O, by which the grate

as a whole can be supported on the brick-work, as shown in Figs. 4 and 5, and at its bottom it is provided with a hole of the proper size to permit the spout C of the inner shell to project through and below the bottom of the outer shell, as shown in Figs. 1, 2, 4, and 5, so as to permit the ashes from the grate to pass and also admit air to support combustion, the parts being fitted and put together so as to make the joint where the spout c projects through the shell F air-tight to prevent the entrance of dust, ashes, or gas into the air-chamber, cement or other known means being used for that purpose. These parts, thus constructed and united, constitute the grate or heater.

The part A, which forms the fire-box, is provided with a lining P, which, if made of cast-iron, may be cast in a single piece, as shown in Fig. 3. It may be made of fire-brick or soapstone, in which case it will be composed of pieces to fit each of the four sides. As the fire-box and the lining are both made slightly conical, the latter can be replaced at any time without trouble and without detaching any of the other parts.

The manner of setting and using the grate is shown in Figs. 4, 5, and 6. As shown in Figs. 4 and 5, an opening is made of the proper size in the fire-place, and the grate is set therein with the top of its front edge on a level with the hearth, or nearly so, it being supported by the shoulder O, resting on the brick-work, as shown, while the portion below the shoulder projects down into the opening or vault below. As shown in Fig. 2, the rear edge is slightly higher than the front edge, thus making its top incline somewhat toward the front, this being done to cause the heat from the fire to be thrown or radiated more effectually into the room in which the grate is set, and which is warmed in part by direct radiation from the fire. Pipes M and N are fitted on the collars G and carried up inside of the chimney, as shown in Figs. 4 and 5, the pipe M being arranged to deliver its air into the room in which the grate is set a short distance below the ceiling, thus supplying the room with a constant current of warm fresh air, while the pipe N is arranged to deliver its air into the room above, as shown. It is, however, obvious that these pipes may be arranged to conduct the warm fresh air wherever desired.

The advantages of this construction are many. In the first place, the two shells having their sides all around more or less inclined enables each shell to be cast complete, thus avoiding all joints through which gases or fine ashes might escape into the air-chamber. So, too, the lining P can be cast complete, and owing to their form each of these parts can be cast in the ordinary sand mold without the use of dry cores, thus enabling the thing as a whole to be made very cheaply.

By setting the grate down flush with the

hearth the danger or possibility of accidental fires is greatly lessened, as it is not possible for live coals to fall out upon the floor, and as the body of fire is so low down there is much better opportunity for the heat to be radiated into the room before reaching the chimney, the fire-place being open from the hearth to the breast above.

Another and very important advantage is that as the fuel does not at any point come in contact with the walls of the fire-place the latter can be lined with ornamental tiles, thus adding greatly to the ornamental appearance.

Still another advantage is that the fire in the grate can be kept alive through the night much better, as by closing the valve D and shaking a little of the fine ashes down upon it the joint will be sealed, so as to effectually shut off the supply of air, which cannot be effectually done in ordinary grates. In addition to this, the top may be closed by a plate T, (shown detached in Fig. 3 and in position by dotted lines in Fig. 2,) this plate also serving to support andirons whenever it may be desired to have a wood fire in the fire-place. Any suitable fender will be used with the sunken grate to prevent anything from rolling or falling into the fire.

It will be seen that the air which enters at the bottom of the air-chamber is first brought into contact with that portion which is least heated, and as it ascends is brought in contact with the more highly-heated portion, and that there is nothing to obstruct its flow; that it has no reverse or downward current, but passes freely all around the inner shell, and thence out at the top through the pipes, thus utilizing the heat to the best possible advantage.

Having thus fully described my invention and the manner of using the same, what I claim is—

1. A heating-grate adapted to be set with its top level with the hearth, or practically so, and consisting of an inner oblong fire-box A, having a depending body below the same terminating in a spout C, with an air-inlet L, and a surrounding shell or case F, having an opening in its bottom for the spout C to project through, substantially as shown and described.

2. A depressed ventilating-grate consisting of an inner oblong fire-box A, having its lower end terminating in a spout with a valve for closing the same, and an outer shell or casing F, secured to the inner shell or fire-box at top and bottom, substantially as shown, to form an air-chamber between the two, with an air-inlet near the bottom and one or more collars G at the top for the attachment of warm-air pipes, substantially as and for the purpose set forth.

3. A heating and ventilating grate consisting of an oblong fire-box surrounded by a correspondingly-shaped shell or casing, pro-

5 vided with an opening for the admission of air at its lower portion, and having pipes connected at the top of the air-chamber for converging the warm fresh air to the rooms to be warmed and ventilated, the construction and arrangement being substantially such as shown and described, whereby the apparatus is adapted to be set in an ordinary fire-place with its top on a level with the hearth, or

substantially so, and be made to convey heat to different points, as may be desired.

In witness whereof I hereunto set my hand in the presence of two witnesses.

EDWIN A. JACKSON.

Witnesses:

WM. M. JACKSON,
SAML. K. J. THOMPSON.