(Model.) 2 Sheets—Sheet 1.

G. PERKINS.

GRATE FOR STOVES.

No. 250,389. Patented Dec. 6, 1881.

Fig. 1.

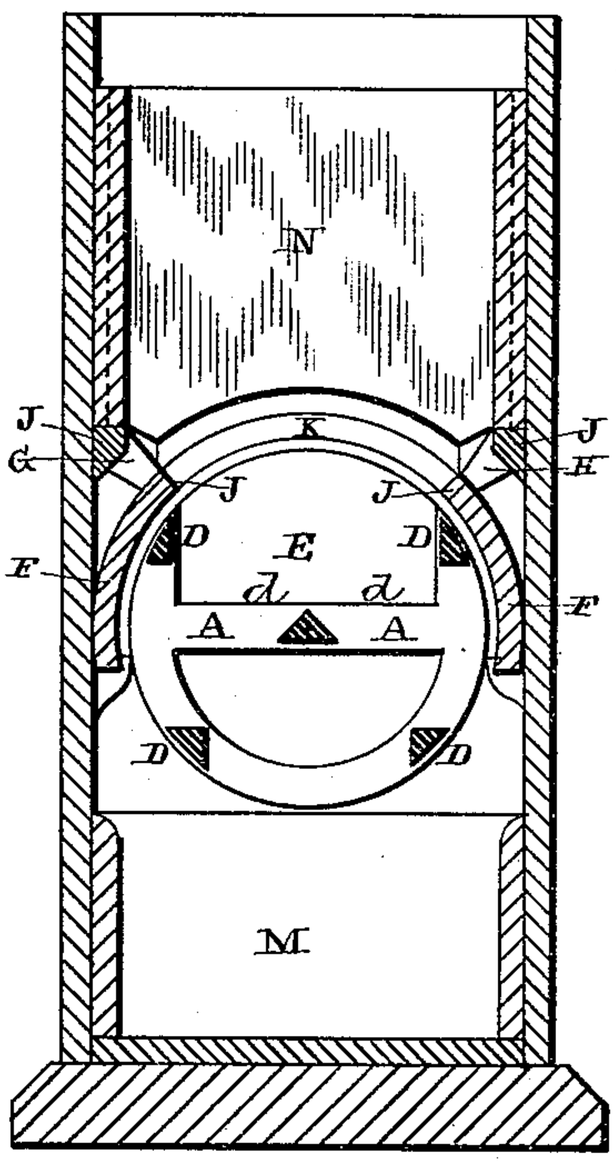
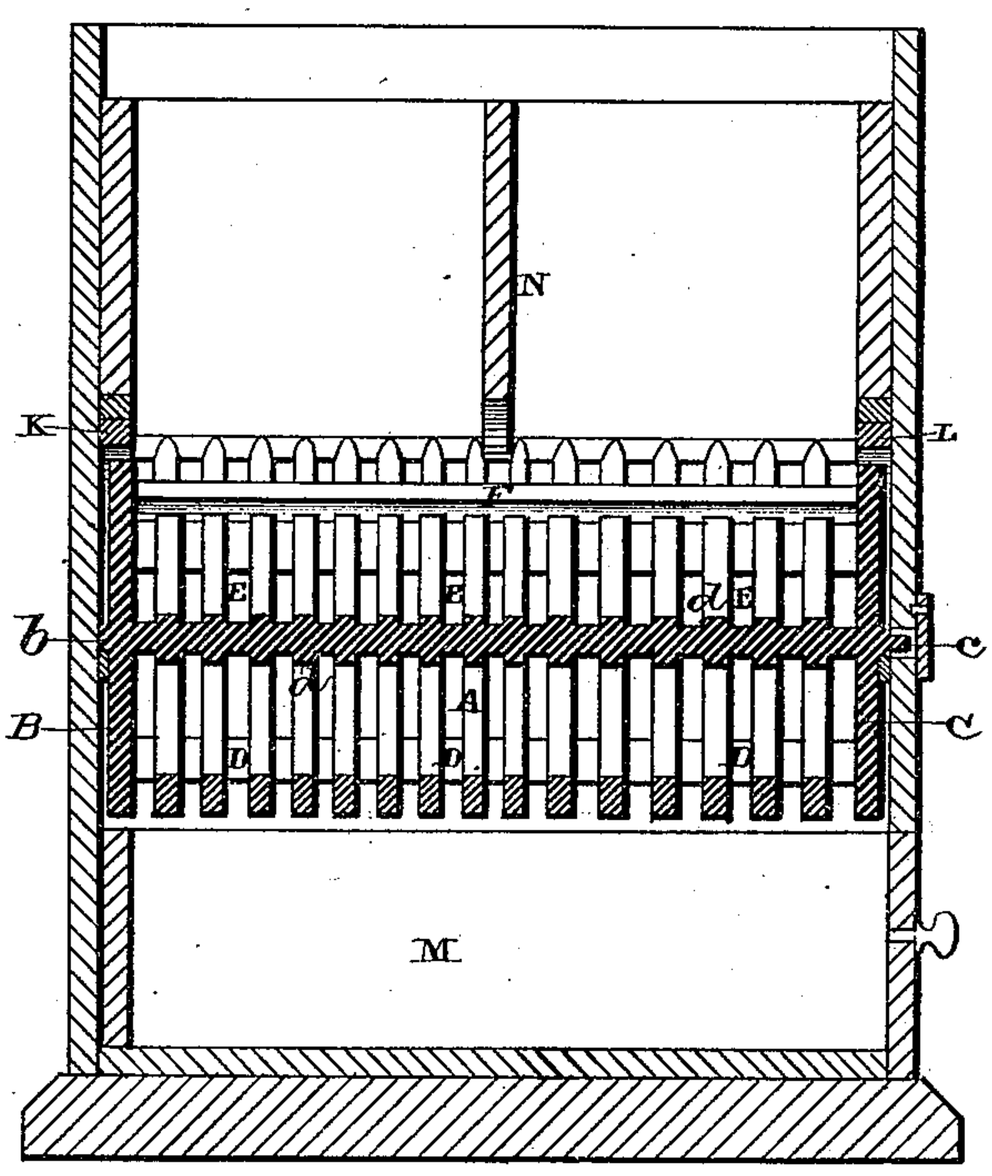


Fig. 2.



Witnesses.
W. A. Mortimer.
A. B. Huskadden.

Inventor.
G. Perkins,
per
C. E. Allen,
Atty.

(Model.) 2 Sheets—Sheet 2.

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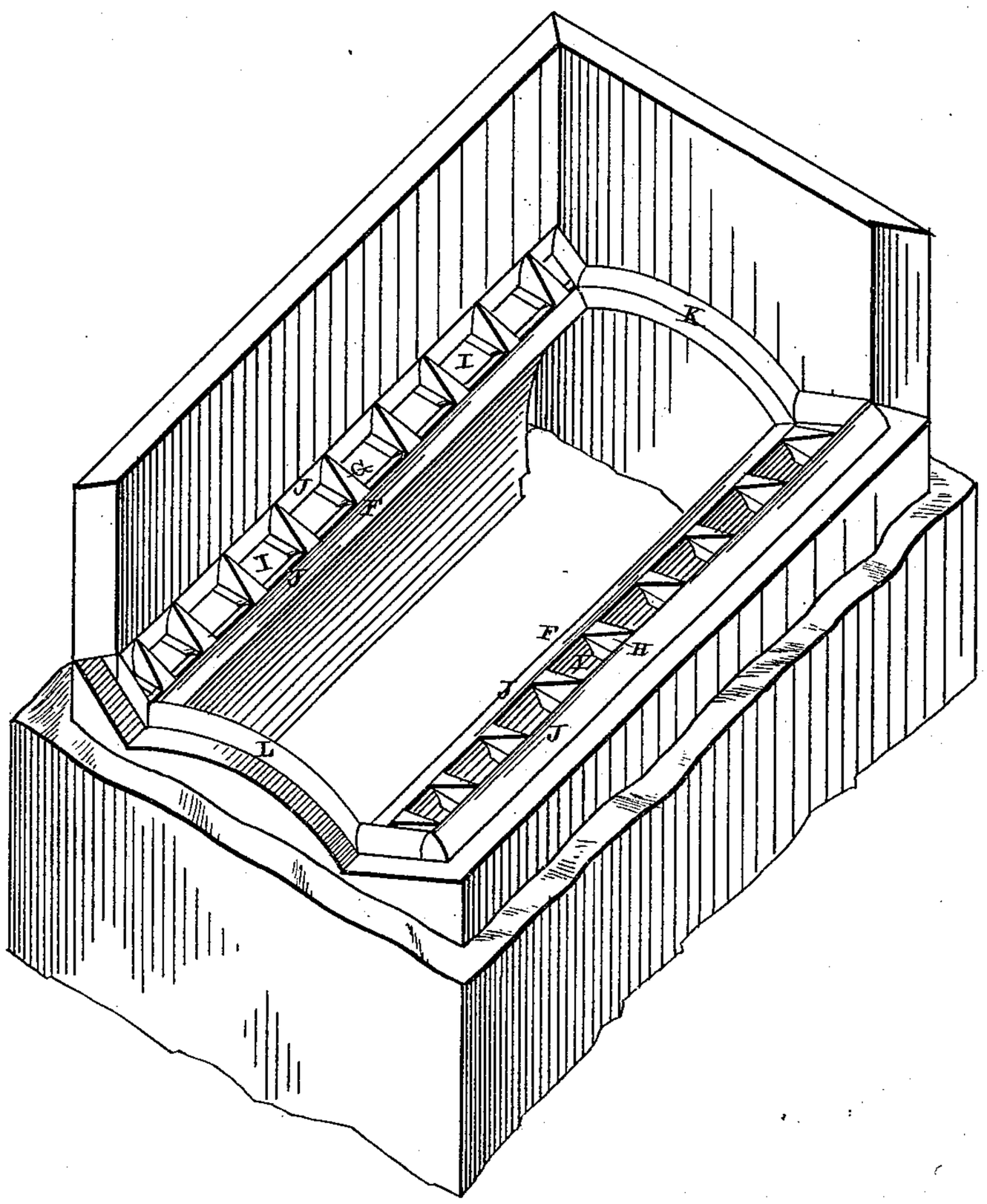
Fig. 3.



Witnesses.
W. M. Mortimer.
A. C. Kiskadden.

Inventor.
G. Perkins,
per
C. E. Allen, atty

UNITED STATES PATENT OFFICE.

GUSTAVUS PERKINS, OF BURLINGTON, VERMONT.

GRATE FOR STOVES.

SPECIFICATION forming part of Letters Patent No. 250,389, dated December 6, 1881.

Application filed March 14, 1881. (Model.)

To all whom it may concern:

Be it known that I, GUSTAVUS PERKINS, a citizen of the United States, residing at Burlington, in the county of Chittenden and State of Vermont, have invented certain new and useful Improvements in Grates and Fire-Pots for Stoves and other Heating Apparatus; 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, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in grates and fire-pots which are adapted to all kinds of cooking or heating apparatus wherein coal or wood is used. The grate is cylindrical in form, one side or portion being depressed to form a pocket. It is easily operated and simple in construction. It revolves within a guard or apron, the top of which is flanged to support the brick lining of the fire-box. This box is so arranged that by means of a portable partition or slide its size may be reduced.

The objects of my improvements are, first, to afford abundant facilities for sifting and complete separation of the ash, clinkers, and worthless material during combustion without the aid of any instruments, or practically disturbing the bed of live coals; second, to provide a continuous and reliable draft to the coals exterior to and independent of the grate; and, third, to supply a larger radiating-surface than is possible with the grates now in use. I attain these objects by the mechanism illustrated in the accompanying drawings, in which similar letters indicate like parts.

Figure 1 is a vertical cross-section of my grate. Fig. 2 is a vertical longitudinal section of the same. Fig. 3 is an enlarged detail view in perspective.

A is a pocket cylinder-grate, revolving upon the gudgeons *b* and *c*, which project outward from the center of the circular end pieces, B and C, at either end, and turn upon supports at each end of the fire-box. It is revolved by means of a crank, lever, or key adjusted on the end of the gudgeon *c*, which projects for that purpose through the side of the stove. The grate A is composed of several parallel and similar sections, D, which are separated from each other for the purposes of draft and sifting or clearing by the intervening braces *d*. These sections may be bolted together and to the end pieces, B and C, by rods extending horizontally through the braces and sections; or, if preferred, the grate may be formed of a single casting.

E is what I term the "pocket" in the grate A. It is formed by the cutting away of about one-fourth of each section, the sides being vertical to the plane formed by the bottom, its depth being one-half of the diameter of the cylinder.

The circular pieces B and C constitute the ends of the pocket. The sides and ends of the grate A are protected by the circular guard or apron F, in the top of which is an opening which corresponds in size with that of the pocket E. From the opposite sides of this opening, and extending diagonally upward to the sides of the fire-box, are ribbed flanges G and H.

The spaces I between the ribs J open into the hollow space between the sides of the guard and the sides of the fire-chamber, for the purpose of a draft exterior to and above the grate. These flanges are connected at either end by the circular braces K and L, which pass over the end pieces, B and C, so that when the grate and guard are in position the interior form of the guard F corresponds with that of the cylindrical grate A, which revolves below and within it.

The brick lining of the fire-box rests upon the outer edges of the flanges G and H and the braces K and L, which are properly rabbeted to receive it.

I prefer to support the guard F by projections or nubs especially cast upon the sides of the fire-chamber. It may, however, rest upon the bed-plate used for the ordinary flat grate, provided sufficient space is left for a free draft in the fire-chamber exterior to the guard.

M is the ash pan or drawer, placed immediately below the grate, to readily receive the siftings from the grate or the contents of the pocket E. This pocket extends from one end piece, B, to the other one, C, and the bottom of the pocket is formed by the horizontal braces *d*.

N is a removable partition or separator, de-

signed to divide the combustion-chamber crosswise for the purpose of materially reducing the size of the box whenever it may be desired to economize in the use of coal or to modify the degree of heat. By the use of this partition, when the fire is made in one end of the grate, the heat will be guided directly upward against the vessel which is placed over the top of the fire, instead of being diffused in all directions, as is the case where no partition is used.

The practical advantages of my improved grate are its simplicity, the ease with which it is worked, the saving in fuel, the possibility of maintaining a strong reliable fire for a great length of time, inasmuch as three-quarters of its surface constitutes a thorough sifter, clearing itself, while the gradual worthless accumulation at the bottom of the bed of coals can be readily dumped whenever desired without disturbing the reliable fire at its upper surface. This dumping is effected by turning the grate upon its pivots, and as the mouth of the pocket E is moved around the side of the grate moves under the bed of coals above the grate, and forms a support for the solid coals while the ashes are being emptied out of the pocket. The coal is thus entirely consumed, and none is wasted with the ashes.

The circular form in cross-section of the grate also furnishes at least three times as large a radiating-surface as the ordinary flat grate. At the same time its revolving motion renders it more durable, as it is less liable to be warped or unfavorably affected by heat. Its convenience is apparent in its being able to present any portion of its surface to the fire, while the depth of the pot can be changed to suit the character of the fuel used, or the amount of the fire required, by means of a single turn of the crank or lever.

Where a large fire is needed the pocket E is kept at the top of the grate, so that it can become filled with a solid bed of fire; but where but a small fire is needed the pocket will turned downward, and then the circular bottom part of the grate will have the fire built upon its top. As this circular bottom part of the grate fills the lower part of the fire-pot, there is not as much room left for the fire as when the pocket is on top, and hence such a large fire cannot be made.

By means of the open space provided outside of and through the open flange of the guard, a reliable independent draft is obtained should the pocket become choked with useless material.

The grate is applicable to any heating apparatus by adapting its shape to the form of the fire-pot.

To enable the operator to regulate the size of the fire-pot, especially for cooking purposes, the removable partition or separator is both convenient and desirable.

I am aware that a cylindrical revolving grate is not new, and that a revolving grate having a recess or pocket in one side, but no end pieces, is not new, and this I disclaim.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination of the revolving grate A, provided with the pocket E, with the guards F, flanges G H, ribs J, and suitable openings for the passage of air, substantially as shown.

2. The combination, with the fire-pot of a stove or heating apparatus, of the revolving cylinder-grate, constructed with a pocket, and the guard or apron, constructed for an exterior draft through open flanges on its upper side, and a removable partition, N, placed in the combustion-chamber, substantially as described.

3. A revolving cylinder-grate, A, having the pocket E, and end pieces to keep the fire from contact with the sides of the stove, in combination with the guards F, flanges G H, and ribs J, substantially as set forth.

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

GUSTAVUS PERKINS.

Witnesses:
CHARLES E. ALLEN,
CHAS. F. LEWIS.