

(No Model.)

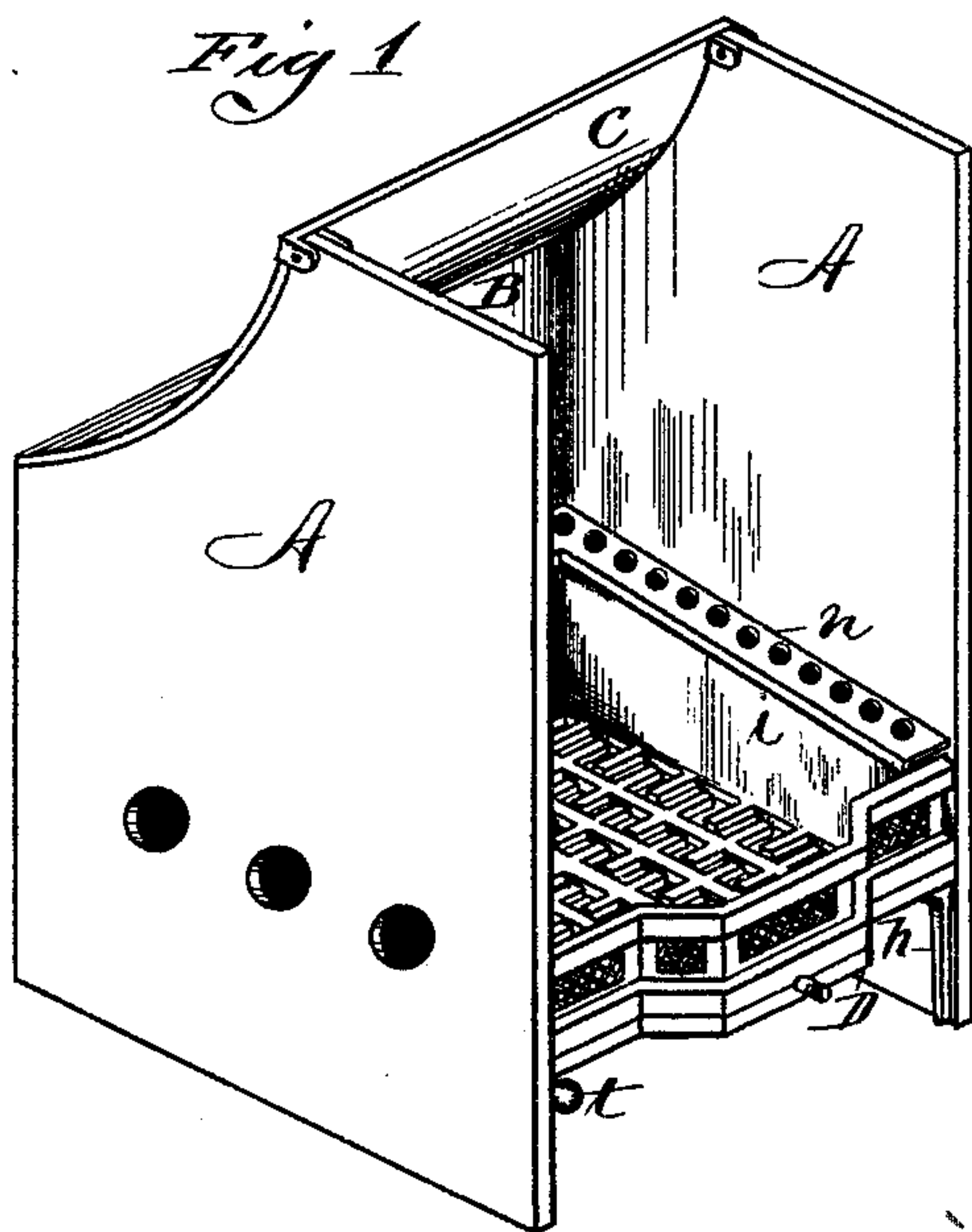
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J. BROWN & P. MILLER.

Fire Place Grates.

No. 231,206.

Patented Aug. 17, 1880.



Witnesses
Wm N Chapin.
Chas. Bill

Inventors
John Brown and Peter Miller
By Henry A Chapin
Attorney.

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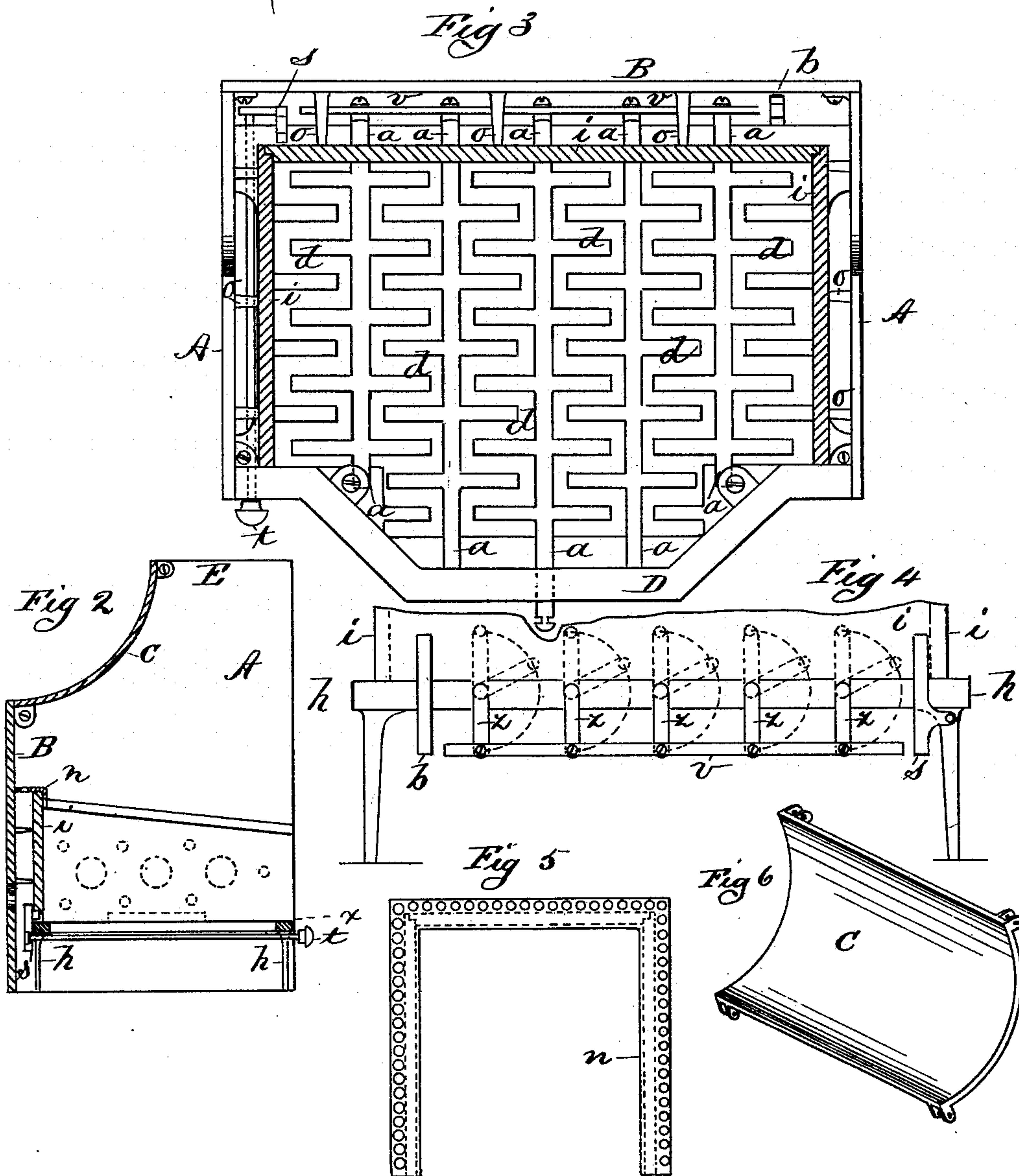
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UNITED STATES PATENT OFFICE.

JOHN BROWN AND PETER MILLER, OF SPRINGFIELD, MASSACHUSETTS.

FIRE-PLACE GRATE.

SPECIFICATION forming part of Letters Patent No. 231,206, dated August 17, 1880.

Application filed May 31, 1880. (No model.)

To all whom it may concern:

Be it known that we, JOHN BROWN and PETER MILLER, citizens of the United States, residing at Springfield, in the county of Hampden and State of Massachusetts, have jointly invented new and useful Improvements in Parlor Fire-Place Grates, of which the following is a specification.

Our invention relates to open coal-grates, and particularly to that class of such grates as are permanently set, as parlor-grates for burning coal; and the object thereof is to provide a novel shaking, dumping, and reversible grate for use in the aforesaid parlor-grates and in analogous constructions. We attain the above-named objects by the construction illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view of our complete grate. Fig. 2 is an end view of the same with the end plate removed. Fig. 3 is a plan view about at line *x*, Fig. 2, showing the lower section of the grate. Fig. 4 is a rear elevation of the grate-supporting frame and grate proper, showing its connecting-rod and stops. Fig. 5 is a plan view of the perforated flue-cover, and Fig. 6 is a curved smoke-deflector.

Like letters refer to like parts in the several figures.

In our improved open grate the construction of the grate-bars is such that the proper shaking of the fire and dumping of cinders is facilitated, and their warping into inconvenient shapes is prevented.

The exterior portion of the open grate consists of the end plates, A A, the back plate, B, and the curved smoke-deflector C, and an ornamental front plate, D, all of iron.

A fire-grate frame, *h*, is fitted to the interior of said plates A A B, provided with legs, as shown, and adapted to serve as a support for the grate-bars *a*, front plate, D, and the fire-bricks *i*, surrounding the three sides of the fire-grate. The aforesaid frame *h* is adapted to the form of the space inclosed on three sides by the plates A A B, but is so constructed as to leave an open air-passage between it and said plates and between the latter and the fire-bricks *i* supports, as seen in Figs. 2 and 3, and studs *o* are fixed on that portion of said plates opposite to the said frame and bricks to bring the latter and the plates into proper relative position when the grate is set up.

The fire-bricks *i* are fixed edgewise upon frame *h*, as seen in Figs. 1, 2, 3, and 4, setting away from the surrounding plates A B.

It will be seen by the above-described construction that an air-passage is provided from beneath the fire-grate, up around three sides thereof, between it and the side and back plates, A A B.

It is obvious that more or less difficulty would be encountered in endeavoring to maintain a proper combustion of fuel if the air-space above named around the grate were not sufficiently contracted to cause the requisite amount of draft to pass up through the fire. Therefore, to properly gage the area of said side air-passage and yet permit a certain amount of air to flow that way, and to cover the air-space and prevent coals from being accidentally thrown into it, we place over it the perforated flue-cover *n*, as seen in Figs. 1 and 2.

Our fire-grate bars consist, as shown in Figs. 3 and 4, of a series of long bars, *a*, reaching from the front to the rear edge of frame *h*, the rear end of each one terminating in the form of a crank, *z*, and having a series of arms, *d*, projecting at right angles from their sides. The central one of the said bars *a* is longer than the others, its front end projecting out beyond the face of plate D and being adapted to have a wrench applied thereto for shaking and dumping. The rear crank ends of said bars *a* are all connected to a common connecting-rod, *v*, and the extremities of said cranks are all pivoted to said rod. The bars *a* and their arms *d* are of uniform thickness and of the same general form on both their upper and under sides, and are adapted to have either of said sides exposed to the fire, and said bars *a* are arranged to rotate on the top of frame *h*.

A stop, *b*, is fixed to the rear edge of frame *h*, Fig. 4, and a movable stop, *s*, is secured to the rear end of a rod, *t*, operating through frame *h*, and adapted to be set before or away from the end of rod *v*, and both of the stops *b* and *s* are of such length vertically as to reach to or beyond the horizontal line of rod *v*, whether in the position shown in Fig. 4 or elevated by having the crank ends of bars *a* turned up.

A series of short arms is fixed on each side of frame *h*, as seen in Fig. 3, and adapted to project between the arms *d* of the adjacent bars *a*.

The operation of our grate and grate-bars is as follows, viz: The grate-bars *a* and *d* may have either side turned upward when a fire is made, stop-rod *t* being pushed in to cause
 5 stop *s* to stand before the end of the connecting-rod *v*. The fire having been kindled in the usual manner, the hard coal put on, and the blower placed upon plate D to cover the
 10 front of the fire-place, it will be found that, in addition to the usual flow of air up through the grate-bars and the coals direct, a current of air is passing up around three sides of the frame *h*, between it and the fire-bricks and the plates A A B, and, supplying oxygen to the
 15 space on top of the coals, greatly assists in starting quickly a good fire, causing, as it does, the combustion of the gases generated by the action of the fire upon the under side of the bed of coal not yet ignited upon the top.
 20 The fire having become kindled the blower is removed, and the deflector C, causing the draft which is toward the outlet at E, Fig. 2, to be in the direction of the front of the grate, operates to make the heat from the fire more effective to warm the room than it would be if al-
 25 lowed to escape rearwardly instead.

When it becomes desirable to shake the fire-grates the blower is applied to shut up the fire-place, care is taken that the stop-rod *t* is pushed
 30 quite back, and applying a wrench to the outer end of bar *a*, Fig. 3, a quick oscillating motion is given to it, and, through its connection with all the bars *a* by their cranks and connecting-rod *v*, the entire grate is simultane-
 35 ously shaken, the ends of rod *r* alternately

striking stops *b* and *s*, and preventing the operator from turning the grate-bars too far over. While the grate is being thus shaken no dust from the ashes can escape into the room, for the draft up through the air-space, around the
 40 three sides of frame *h*, as above described, causes all dust to be drawn up and away from the ash-pit.

When it becomes necessary to dump the grate, stop-rod *t* is drawn out, the blower put
 45 up as in shaking, the wrench is applied as before, and all of the bars and grates connected therewith are turned quite over the other side up, cranks and connecting-rod all moving to-
 50 gether, and the grate may now be used with its opposite side exposed to the fire. Thus each side thereof is alternately heated from time to time, the result of which is, that the grate is exposed to such an even, gradual wear from
 55 the fire that warping is prevented and the durability of it is much increased. In thus dumping the grate no ashes have escaped into the room, for reasons heretofore given.

What we claim as our invention is—

The combination, with frame *h*, of the bars
 60 *a*, provided with the arms *d* and the cranks *z*, the connecting-rod *v*, the fixed stop *b*, and the movable stop *s*, said bars and arms being of uniform thickness, substantially as and for the purpose set forth.

JOHN BROWN.
 PETER MILLER.

In presence of—

L. W. COLE, M. D.,
 H. A. CHAPIN.