C. H. HARRISON.

Furnace-Grate.

No. 162,064. Patented April 13, 1875.

Fig. 1.

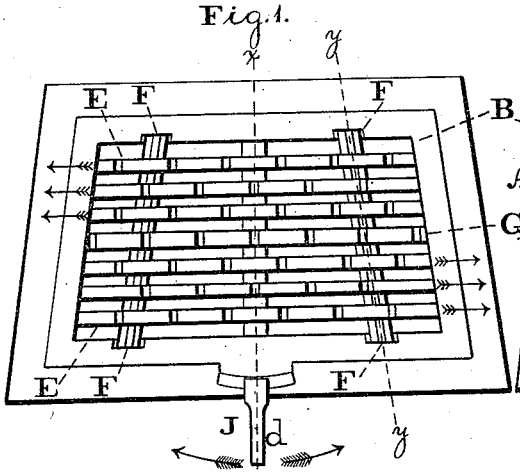


Fig. 2.

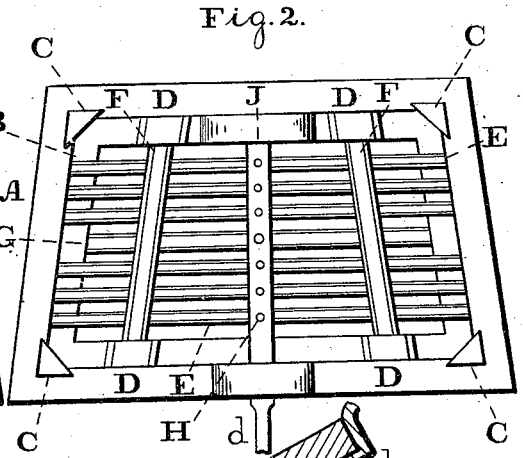


Fig. 6.

Fig. 3.

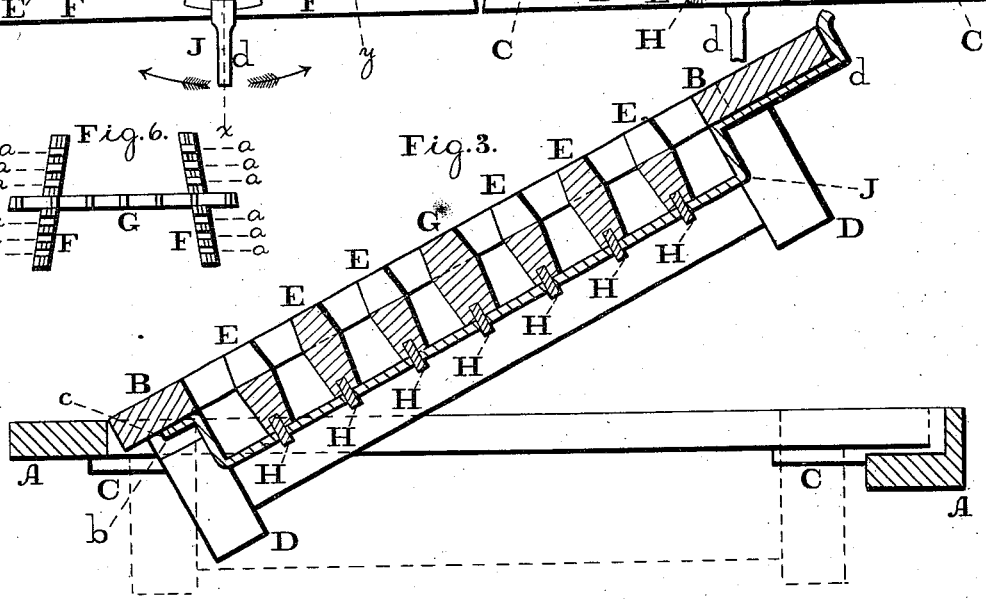
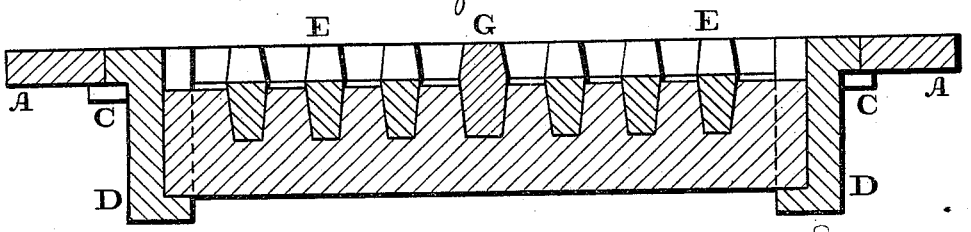


Fig. 4.



Witnesses:

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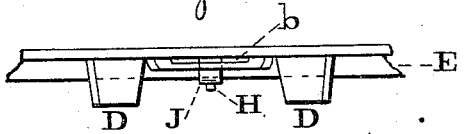
Fig. 5.



Inventor:

Charles H. Harrison

by John A. Rodenheim

Atty.

UNITED STATES PATENT OFFICE.

CHARLES H. HARRISON, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF ONE-HALF HIS RIGHT TO WILLIAM H. HARRISON, OF SAME PLACE.

IMPROVEMENT IN FURNACE-GRATES.

Specification forming part of Letters Patent No. **162,064**, dated April 13, 1875; application filed March 30, 1875.

To all whom it may concern:

Be it known that I, CHARLES H. HARRISON, of the city and county of Philadelphia, and State of Pennsylvania, have invented a new and useful Improvement in Grates; and I do hereby declare the following to be a full, clear, and exact description of the nature thereof, sufficient to enable others skilled in the art to which my invention appertains to fully understand, make, and use the same, reference being had to the accompanying drawings making part of this specification, in which—

Figure 1 is a top or plan view of the device embodying my invention. Fig. 2 is a bottom view thereof. Fig. 3 is a transverse section in line *x x*, Fig. 1. Fig. 4 is a similar view in line *y y*, Fig. 1. Fig. 5 is a rear-end view thereof. Fig. 6 is a top view of a detached part.

Similar letters of reference indicate corresponding parts in the several figures.

My invention relates to a grate which is more especially adapted to what is known as the low-down and half low-down Philadelphia grate; and it consists in a series of longitudinally-sliding bars, which receive motion by a transversely-arranged oscillating lever, whose operating end is in front of the fire. It also consists in a double bed-plate, the inner section of which carries the grate-bars and operating-lever thereof, and is formed with pendent sockets, in which are suspended guiding-supports for said bars. It further consists in forming together the guiding-supports of the bars and the center stationary bar, which constitutes the fulcrum of the operating-lever. It also consists in the construction of the lever of the grate-bars so that it easily operates said bars, and may be readily removed therefrom.

Referring to the drawings, A represents a bed-plate, which consists of an open frame to be set in desired position. Within said bed-plate is arranged another bed-plate, B, which rests on ledges C, formed on the corners or inner sides of the outer plate A. From the front and rear sides of the inner plate B there depend sockets D D, whose openings face each other, and access being had thereinto from the top of the plate B. E represents a series of longitudinally-arranged grate-bars, which are fitted in openings or grooves *a* of transversely-extending supports F, whose ends enter the depending sockets D of the plate B, so that said supports are suspended from and sustained by the inner plate B. The center grate-bar G is formed with the supports F, and thus made stationary thereon; but the other bars, E, have a sliding motion on the supports F, and on their under sides there are downwardly-projecting studs or pivots, H, which enter openings in a transversely-extending lever, J, whose axis is on the center bar G, and has its rear end *c* project and play in a longitudinal slot, *b*, in the rear side of the plate B, and the other end, *d*, extends upwardly in a space between the inner and outer plates A B, and then forward, so as to come in front of the plates, and consequently in front of the fire.

The operation is as follows: When the grate requires shaking, the end *d* of the lever J is grasped and reciprocated, so that sliding motions are imparted to the series of bars E, of which those on one side of the central bar G will move in a contrary direction to those on the other side thereof, whereby the fire will be more easily and fully raked.

When the bars require removal for application of new bars, cleansing of the grate, or otherwise, the lever J will be brought to the center, as shown in Fig. 1, and then elevated, so that the inner bed-plate B will be raised, in which motion it carries the several bars E G, supports F, and lever J, the rear ledges C constituting the fulcrum of the bed-plate. The lever J may be easily disengaged from the studs of the bars by simply removing it therefrom, and the bars can then be displaced without difficulty. The supports F are now withdrawn from the pendent sockets D, and thus all parts are detached. The replacement of the parts is accomplished in the order reversely to that stated.

It will be seen that the lever will be supported at both ends, and thus render unnecessary pins, keys, or other fastenings for the bars and said lever. It will also be noticed that in low-down and half-down grates the shaking or raking can be readily accomplished from below the fire—a characteristic of great

service, inasmuch as poking or raking from above is objectionable and incomplete in its operation.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The series of longitudinally-sliding grate-bars E and stationary bar G, in combination with the transversely-arranged operating-lever J, substantially as and for the purpose set forth.

2. The outer bed-plate A, in combination with the inner bed-plate B, formed with pendent sockets D, the supports F, suspended in said sockets, and sliding grate-bars E, removably fitted to said supports, substantially as and for the purpose set forth.

3. The combination, with the grate bars E and bed-plate B, of the grooved supports F and center bar G, cast together and made removable, said center bar forming the axis of the operating-lever J, substantially as and for the purpose set forth.

4. The lever J, jointed to the sliding bars E, fitted at its rear end *c* in the slot *b* of the inner bed-plate, and projecting at its forward end *d* between the outer and inner plates, and in front of said plates, substantially as and for the purpose set forth.

5. The grate consisting of the outer bed-plate A, with ledges C, the inner bed-plate B, with grooved supports F, sliding grate-bars E, center bar G, and oscillating lever J, substantially as and for the purpose set forth.

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Witnesses:
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