J. REYNOLDS.

FURNACE-GRATE.

No. 179,348. Patented June 27, 1876.

Fig. 4

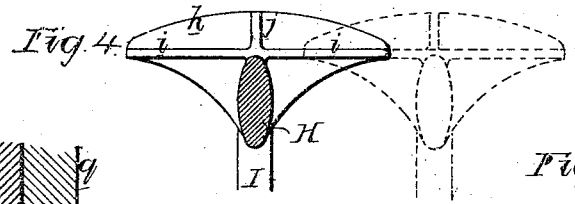



Fig. 5.

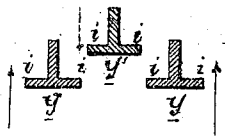



Fig. 1




Fig. 2.

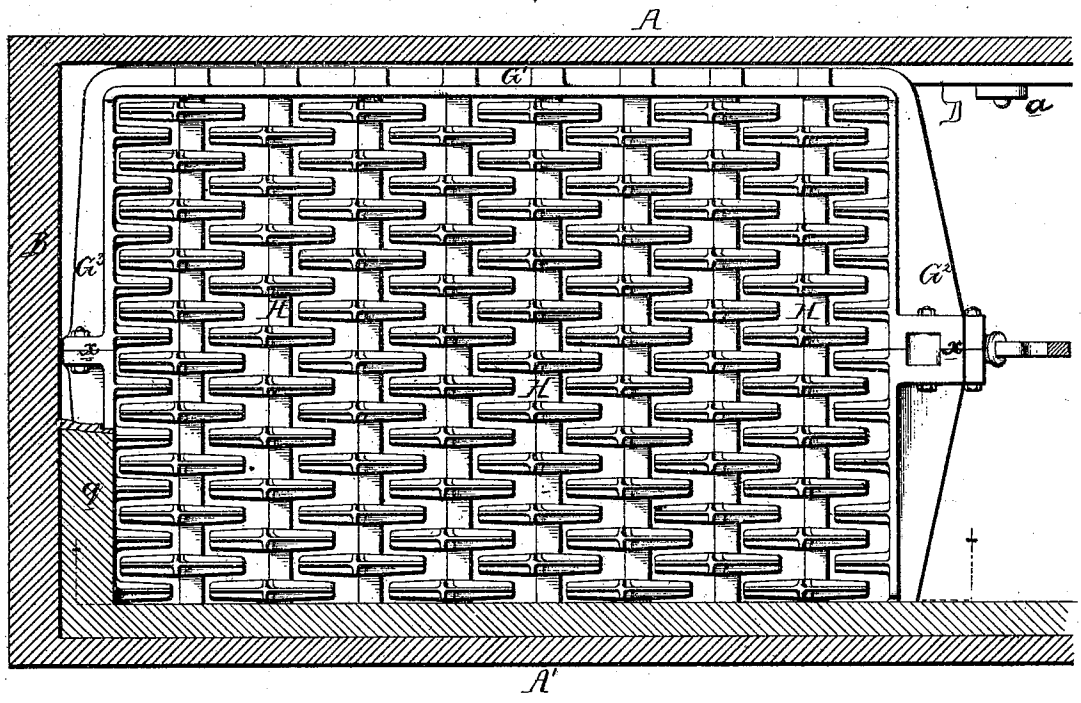
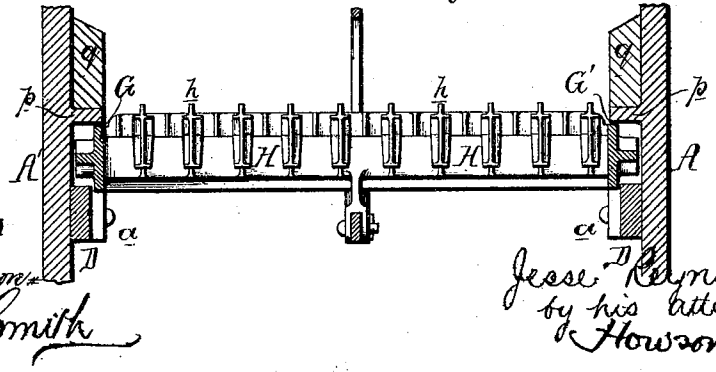



Fig 3




Witnesses
J. F. Skidmore
Harry Smith

Jesse Reynolds
by his attorneys
Howson and Son

# UNITED STATES PATENT OFFICE.

JESSE REYNOLDS, OF PHILADELPHIA, PENNSYLVANIA.

## IMPROVEMENT IN FURNACE-GRATES.

Specification forming part of Letters Patent No. **179,348**, dated June 27, 1876; application filed May 24, 1876.

*To all whom it may concern:*

Be it known that I, JESSE REYNOLDS, of Philadelphia, Pennsylvania, have invented certain Improvements in Furnace-Grates, of which the following is a specification:

The main object of my invention is to so construct a grate with rocking bars that it will serve as an effective medium for the ready withdrawal from the fuel of superfluous ashes and cinders.

In the accompanying drawing, Figure 1 is a side view of my improved grate; Fig. 2, a plan view; Fig. 3, a transverse section; and Figs. 4 and 5, detached views.

A and A′ represent the opposite sides, and B the rear, of a furnace or fire-place, and to each of the opposite sides is secured a bar, D, carrying a series of rollers, *a*, which support the grate-frame, the latter consisting of the opposite sides G $G^1$, the front end $G^2$, and rear end $G^3$, and the whole being made in two parts, secured together at the points *x x*.

A series of shafts, H, of the form best observed in the enlarged view, Fig. 4, have their bearings in the opposite sides G $G^1$ of the grate-frame, and on each shaft is cast a series of comparatively thin bars, *h*, strengthened by ribs *i i* and *j*.

From the middle of each shaft H depends an arm, I, the arms of the several bars being connected together by a rod, K, and the outer end of the latter being connected to one arm of a lever, L, which is pivoted at *m* to the grate-frame, and which has a socket, *n*, for the reception of a bar, M, on operating which the several shafts H will be rocked to and fro simultaneously in contrary directions.

The relations of the bars of the several rock-shafts to each other will be best understood by reference to Fig. 2 of the drawing, where it will be observed that the bars project so as to form teeth on opposite sides of the shaft, the teeth of one shaft projecting into the spaces between the teeth of the adjoining shafts.

The action of the rocking bars on the superincumbent ashes and cinders which tend to choke the grate will be best understood by reference to Figs. 4 and 5, the latter figure representing the adjoining teeth of two adjacent rock-shafts.

As the lever M is vibrated the teeth *y* of one shaft rise, and the teeth *y′* of the adjoining shaft descend, as indicated by the arrows, so that any cinders caught between the teeth during this movement will be disintegrated by the ribs *i* as they approach each other, and when it is remembered that this operation takes place throughout the entire grate on operating the rock-shafts the efficacy of my invention in withdrawing from the fuel superfluous ashes and cinders will be understood.

The rock-shafts H are elongated, as shown in Figs. 1 and 4, so that when the teeth on one side of the shaft are elevated, and the adjoining teeth on the adjacent shaft depressed, the elongated shafts will close the ends of the spaces thus formed and prevent the escape of fuel at these points.

As the grate-frame is supported on the rollers *a* it can be readily drawn outward when the fuel has to be dumped into the ash-pit, or when the entire grate has to be removed for repairs or other purposes.

On each side A and A′ of the fire-place, and at the rear of the same, there is a ledge, *p*, which prevents the grate-frame from rising, and serves as a support for a lining, *q*, of fire-brick or other equivalent material, which prevents the fuel from gaining access to the grate-frame.

I claim as my invention—

1. The combination, in a grate, of rock-shafts H, provided with bars *h*, having ribs *i i*, said bars being so arranged on the shafts as to form teeth for crushing and grinding the cinders, as the said shafts are rocked simultaneously and in the same direction, all substantially as set forth.

2. The combination of the bars *h* and their ribs *i* with rock-shafts H, elongated as specified.

3. The combination of the series of rock-shafts H and their bars with the frame G, $G^1$, $G^2$, and $G^3$, formed in two sections joined together, substantially as described.

4. The combination of the frame and its rock-shafts with the supporting-rollers *a*, to permit the withdrawal of said frame, as described.

5. The combination of the frame and its rock-shafts with the ledges *p* on the sides and rear of the fire-place, as and for the purpose set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JESSE REYNOLDS.

Witnesses:
HARRY HOWSON, Jr.,
HARRY SMITH.