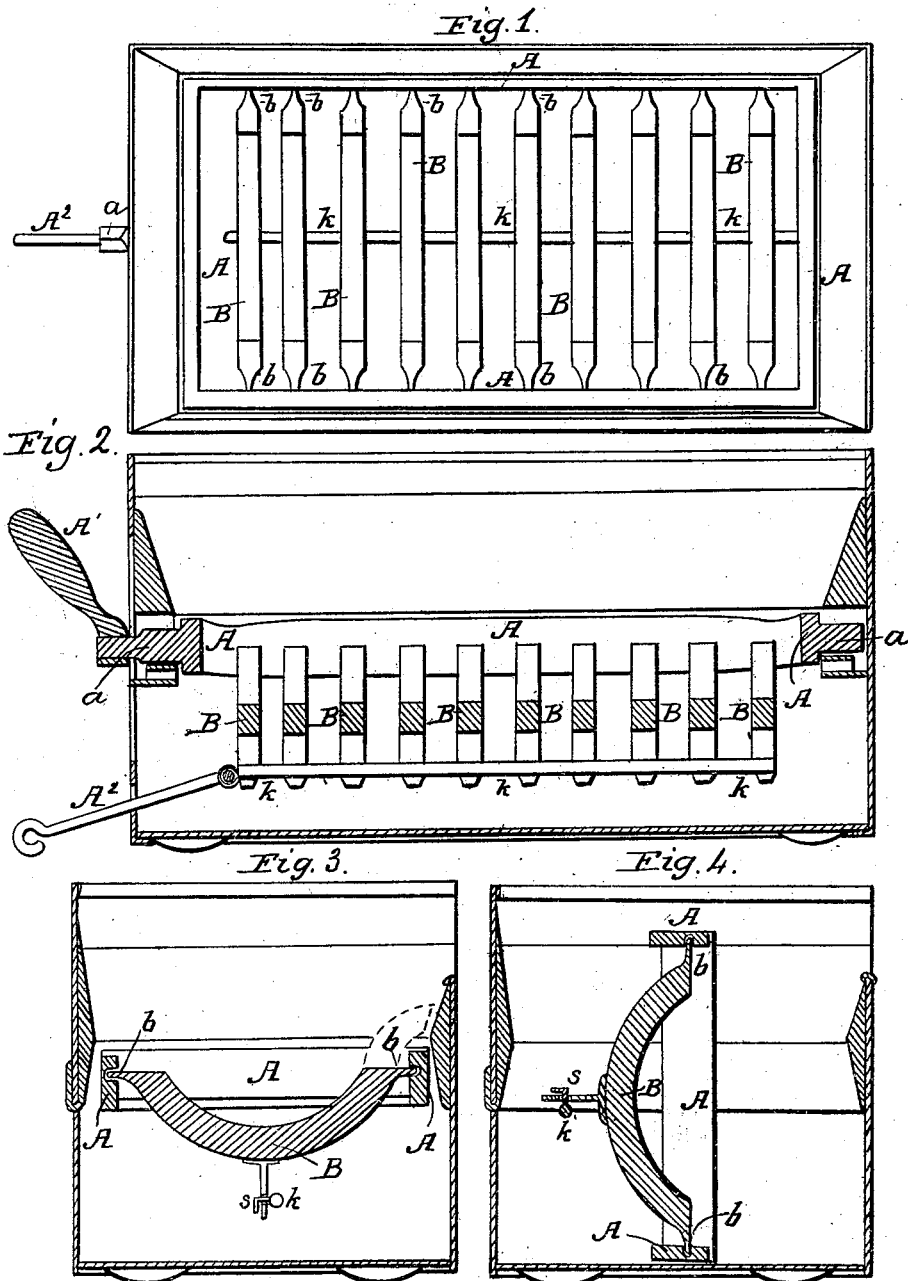


W. B. TREADWELL.

Grate.

No. 53,059.

Patented March 6, 1866.



Witnesses:  
*H. T. Campbell*  
*C. Schaefer*

Inventor:  
*W. B. Treadwell*  
*by his Atty.*  
*Wm. Smith & Son*

# UNITED STATES PATENT OFFICE.

W. B. TREADWELL, OF ALBANY, NEW YORK.

## GRATE AND GRATE-BARS.

Specification forming part of Letters Patent No. 53,059, dated March 6, 1866.

*To all whom it may concern:*

Be it known that I, W. B. TREADWELL, of the city and county of Albany, and State of New York, have invented a new and Improved Grate for Cooking-Stoves, Ranges, and Furnaces; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a top view of my improved grate applied to a fire-chamber. Fig. 2 is a longitudinal section taken in a vertical plane through the center of the grate and fire-chamber, showing the hooked rod and lever for moving the grate. Fig. 3 is a transverse section through the grate and its fire-chamber. Fig. 4 is a similar view representing the grate in a position for discharging its contents into the ash-box.

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

The object of my invention is to construct a grate in such manner that its bars shall all be susceptible of receiving a free vibrating or swinging movement of considerable extent, for the purpose of more thoroughly shaking the body of coals which lie upon them and separating the ashes therefrom, and effecting this object with less expenditure of power than with grates hitherto constructed, as will be hereinafter described.

Another object of my invention is to so construct a grate the bars of which have a side-wise swinging movement that it can be tilted or upset for the purpose of emptying it of its contents, as will be hereinafter described.

To enable others skilled in the art to understand my invention, I will describe its construction and operation.

In the accompanying drawings, A represents an oblong rectangular frame, which is constructed with journals *a a* on its ends, for supporting this frame in suitable bearings in the side walls of the stove. One of the journals *a* projects through the side walls or plate and is adapted to receive the square socket of a lever, *A'*, which is used for oscillating or upsetting said frame when it is desired to empty the grate of its contents, as represented in Fig. 4.

B B represent a number of curved grate-bars, which have journals *b b* formed on their ends, which enter suitable bearings formed in

the longitudinal side bars of the frame A, as clearly shown in Figs. 3 and 4. If desirable, the ends of the grate-bars may be supported upon strips which are suitably secured to the inside surfaces of the longitudinal bars of the frame A, so that when desired the grate-bars can all be removed and others substituted in their stead. Collectively the grate-bars B form a concave upper surface, and their sides are parallel to each other, and preserve this parallelism when they are moved by means of a longitudinal connecting-rod, K, which has pins S S projecting from its side, that enter eyes that are formed on the lower or convex edges of the bars B. If desirable, studs or pins may be formed on the lower edges of the grate-bars and enter perforations which can be made through the connecting-rod K. By this means the grate-bars are all connected together at equal distances apart, and they can all be vibrated simultaneously by giving an endwise movement to the connecting-rod K, a hooked rod or shaker, *A<sup>2</sup>*, being used for this purpose, as shown in Fig. 2.

It will be seen from the above description that I considerably increase the grate-surface laterally by curving the bars, and that I am enabled to give a swinging movement to these bars, the effect of which is to agitate the body of coals by alternately raising and lowering these coals, and at the same time stirring them and sifting the ashes between the bars. In ordinary grates, if a hard cinder wedges itself between the bars, it is sometimes very difficult to move the grate. It is very laborious under any circumstances to move the ordinary grates, as so little leverage is afforded in the grate itself; but with my grate very little power will be required to shake or vibrate it, owing to the curved form of the bars.

In applying my improved grates to fire-chambers of stoves or ranges, I desire to protect the journals of the grate-bars as much as possible from the effects of intense heat, for which purpose I shall extend the back ends of the said bars above the journals, as indicated in Fig. 3 in red lines, and the front ends of the pivoted bars will be protected by allowing the lining of the front part of the fire-chamber to project over the front bar of the frame A.

This will not in any manner change the nature of my invention, nor interfere with the tilting or upsetting of the grate. If desirable,

the vibrating bars B may be applied to a frame which is stationary and not capable of being upset, as above described.

Whether the frame-support for the grate-bars be movable or rigidly fixed within the stove or range, it will not in any manner interfere with the operation of the grate-bars for separating the ashes from the coals. I prefer in all cases to have the supporting-frame of the grate-bars so applied and arranged at the bottom of the fire-chamber that it can be oscillated or upset at pleasure for depositing the contents of the grate into the ash-pit.

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

1. So applying curved or centrally-depressed grate-bars B to a fixed or movable frame, A, and connecting said bars together that they are susceptible of receiving a vibrating motion about their axes, substantially as described.

2. The construction of curved grate-bars with journals on their extremities and projecting eyes, or their equivalents, for receiving a connecting-rod, K, substantially as described.

3. The combination of curved or depressed grate-bars B and a tilting frame, A, substantially as described.

W. B. TREADWELL.

Witnesses:

G. W. PACKARD,  
RICH'D. M. RAND.