(No Model.)

F. P. FULLER.

GRATE BAR.

No. 516,888. Patented Mar. 20, 1894

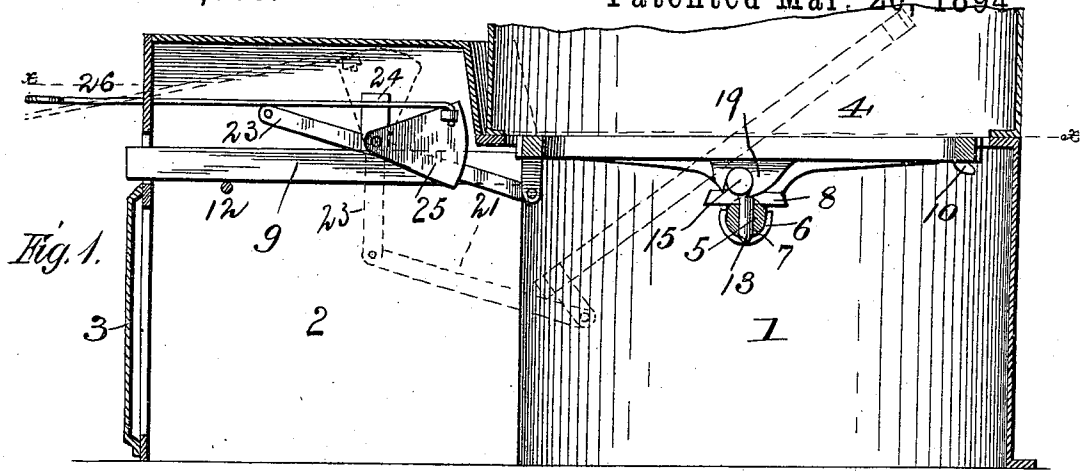

Fig. 1.

Fig. 2.

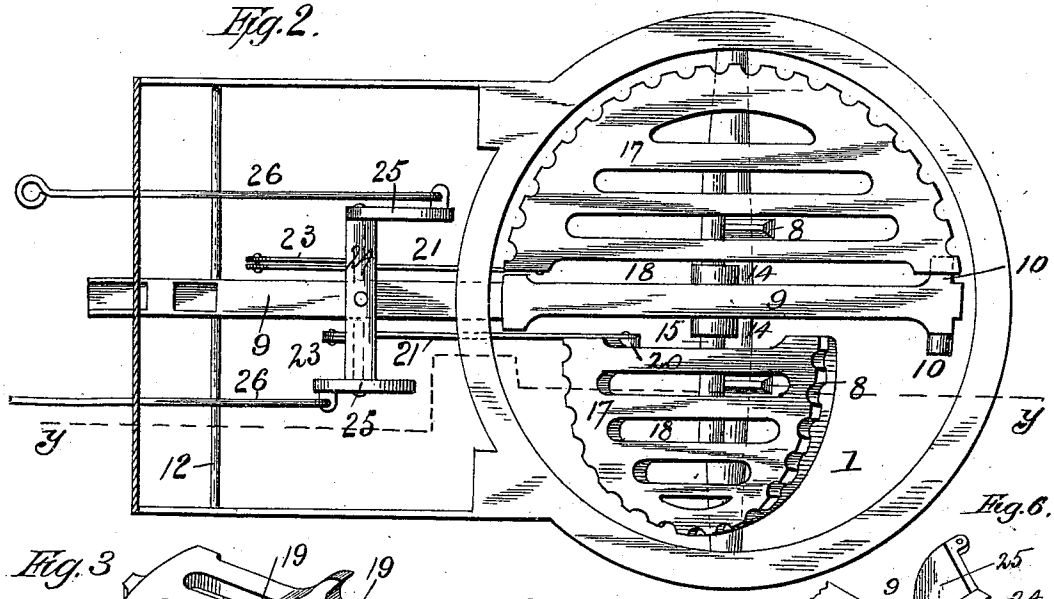

Fig. 6.

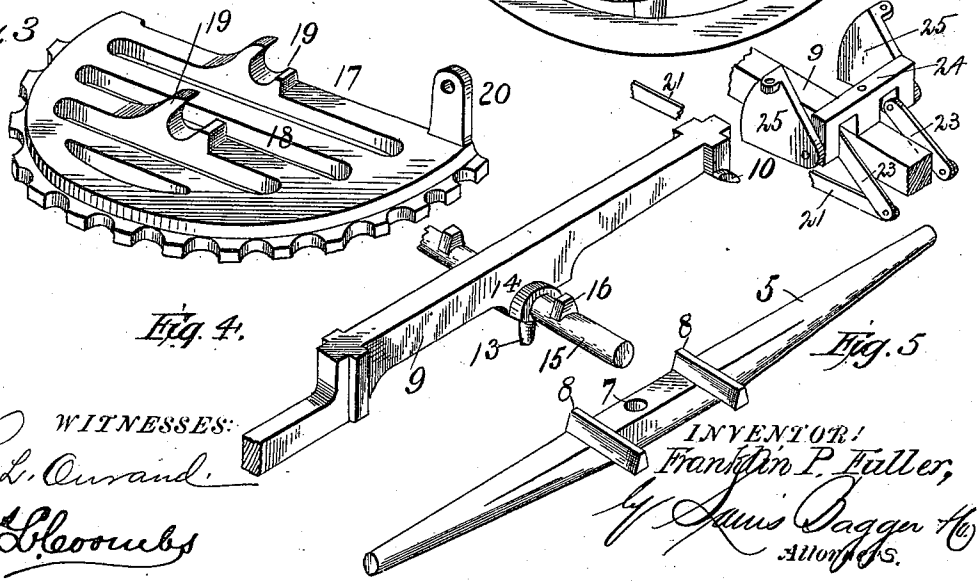

Fig. 3

Fig. 4.

Fig. 5

WITNESSES:

F. L. Ourand.

W. L. Coombs

INVENTOR:

Franklin P. Fuller,

by Louis Bagger & Co.

Attorneys.

THE NATIONAL LITHOGRAPHING COMPANY,
WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

FRANKLIN PIERCE FULLER, OF MOUNT VERNON, OHIO, ASSIGNOR OF THREE-FOURTHS TO HERBERT C. FOWLER, LYMAN W. ARMENTROUT, AND FREEMAN GRANT PORTER, OF SAME PLACE.

GRATE-BAR.

SPECIFICATION forming part of Letters Patent No. 516,888, dated March 20, 1894.

Application filed October 16, 1893. Serial No. 488,290. (No model.)

To all whom it may concern:

Be it known that I, FRANKLIN PIERCE FULLER, a citizen of the United States, and a resident of Mount Vernon, in the county of Knox and State of Ohio, have invented certain new and useful Improvements in Grate-Bars; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to improvements in dumping and shaking grates for furnaces and heaters of every description, but is more especially applicable to steam boiler furnaces.

The object of the invention is to provide an improved construction of grate made in two or more sections whereby either of the sections may be dumped independently of the other, or all the sections simultaneously; and whereby also all the sections may be shaken or oscillated at the same time to remove the ashes. The purpose of dumping one section independently of the other is to allow clinkers and ashes to be dumped without moving the live coals or allowing the fire to burn down or go out, as will be hereinafter set forth.

The invention consists in the novel construction and combination of parts hereinafter fully described and claimed.

In the accompanying drawings: Figure 1 is a longitudinal section of a portion of a furnace constructed in accordance with my invention on the line *y—y* Fig. 2. Fig. 2 is a horizontal section on the line *x—x*, Fig. 1, one of the grate sections being dumped. Fig. 3 is a perspective view of one of the grate sections detached, looking from the under side. Figs. 4 and 5 are perspective views of the cross-bar, and the trunnion bar which supports the grate sections. Fig. 6 is a detail perspective view of one of the weights, its shaft and connections for dumping the grate.

In the said drawings, the reference numeral 1 designates the ash-pit, having front extension 2, provided with a door 3. Located above the ash-pit is the fire-pot or chamber 4. Near the upper end of the ash-pit is a cross-bar 5, the ends of which are supported in lugs 6, secured to the ash-pit. At its center the shaft is formed with an aperture or hole 7, and intermediate of its ends is provided with two short bars or lugs 8, one on each side of said hole.

The numeral 9 designates a horizontal shaker-bar having its rear end formed with lateral lugs 10, with which the rear ends of the grate sections, hereinafter described, engage. The front end of this shaker bar rests on a cross-rod 12, and is formed in the ordinary manner to receive a shaker by which it may be vibrated or moved back and forth. On its under side, the bar 9 is provided with a lug 13, which engages with the hole in the cross-bar 5, and forms a pivot or journal therefor. The shaker bar is also formed with a hub 14 and a trunnion bar 15 having a lug 16. This trunnion bar rests upon and is supported by the bars 8 of cross-bar 5.

The numeral 17 designates the grate-sections, each consisting of a semicircular plate having a series of parallel openings 18 for the escape of ashes. These sections on their under sides are provided with a series of curved lugs 19, which engage with the trunnion bar 15, between the hub 14 and lugs 16, thus enabling said sections to oscillate on said bar. At the front end each section is provided with a downwardly depending lug 20, to which is pivoted a forwardly extending rod 21, pivoted to a crank arm 23, which is rigidly secured to a short shaft or pin journaled in a bearing 24, secured to the shaker-rod. The other end of this shaft or pin is provided with a weight 25 which is rigidly secured thereto having an operating rod 26, passing through the front of the extension 2 of the ash-pit.

The operation is as follows: When it is desired to shake the grate for the purpose of removing the ashes, the shaker-rod is vibrated in the usual manner, when the trunnion bar secured thereto and the grate sections supported by said trunnion bar will be oscillated, causing the contents of the fire-pot to be agitated and the ashes to escape through the openings in the said sections into the ash-pit below. When it is desired to clear the fire-pot from clinkers and ashes, and at the same

time keep up the fire, the live coals on one section are raked over onto the other section, thereby leaving the clinkers and other obstructions which always accumulate at the bottom of the fire on said first-named section. This section is now dumped by pulling upon its operating rod, which through the connections, will turn it on the trunnion bar, and precipitate the clinkers and ashes into the ash-pit. The section is then returned to normal position by pushing in the operating rod, when the same performance is gone through with the other section, resulting in the clinkers being removed without the necessity of allowing the fire to burn down or get low, thus not only effecting a great economy in the fuel, but also keeping up the heat continuously.

It will be obvious that the shape and number of the grate sections may be changed or varied, without departing from the principle of my invention.

Having thus described my invention, what I claim is—

1. In a furnace or other heater, the combination with the independent vertically oscillating grate sections, of the forwardly extending arms pivoted to said grate sections, the crank arms to which the outer ends of said arms are pivoted, the shafts to which said crank arms are secured, the weights secured to said shafts, and the operating rods pivotally connected with said weights, substantially as described.

2. In a furnace or other heater, the combination with the fire-pot, the ash-pit provided with horizontal bars or lugs, the shaker bar pivoted thereto, and the trunnion bar secured to said shaker bar, having a hub and lugs, of the grate sections having curved lugs engaging with said trunnion bar, and means for dumping said sections, substantially as described.

3. In a furnace or other heater, the combination with the fire-pot, the ash-pit, the cross-bar secured thereto having horizontal bars or lugs, of the shaker-bar pivoted to said cross-bar and provided with a trunnion-bar having a hub and lugs intermediate its ends, the grate sections having curved lugs engaging with said trunnion-bar and with a lug at their front ends, the rods pivoted to said lugs, the crank and weight and operating rods, substantially as described.

In testimony that I claim the foregoing as my own I have hereunto affixed my signature in presence of two witnesses.

FRANKLIN PIERCE FULLER.

Witnesses:

DONN C. MITCHELL,

HARRY J. SANDERSON.