D. BOIES & J. A. WADDELL, Jr.

GRATE.

APPLICATION FILED AUG. 18, 1909.

968,830.

Patented Aug. 30, 1910.

Fig. 1.

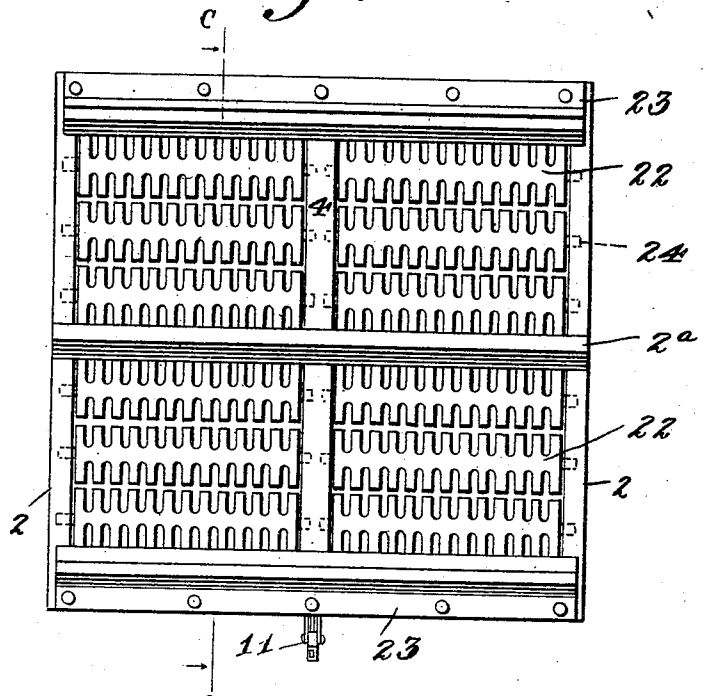
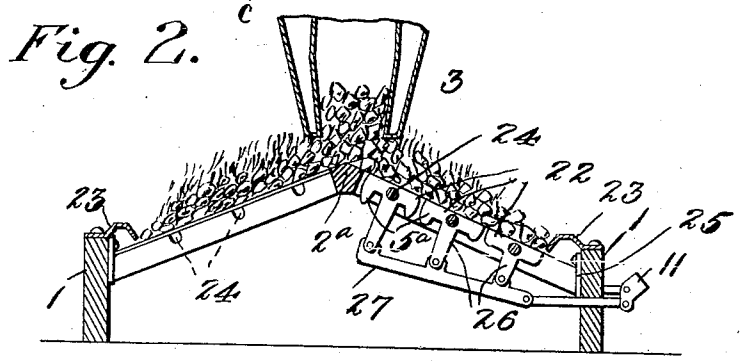


Fig. 2.



Witnesses

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UNITED STATES PATENT OFFICE.

DAVID BOIES AND JOSEPH A. WADDELL, JR., OF SCRANTON, PENNSYLVANIA, ASSIGNORS TO SPENCER HEATER COMPANY, OF SCRANTON, PENNSYLVANIA.

GRATE.

968,830. Specification of Letters Patent. **Patented Aug. 30, 1910.**

Original application filed April 27, 1909, Serial No. 492,523. Divided and this application filed August 18, 1909. Serial No. 513,513.

To all whom it may concern:

Be it known that we, DAVID BOIES and JOSEPH A. WADDELL, JR., both citizens of the United States, and residents of Scranton, in the county of Lackawanna, State of Pennsylvania, have invented certain new and useful Improvements in Grates, of which the following is a specification.

The present invention relates to grates of that general type disclosed in our prior Patents Nos. 399,443, 346,646 and 348,806, and has for its object to provide a grate of the type in question wherein the fuel is distributed thereon in a manner commensurate with its subsequent burning whereby to effect a more uniform than perfect heating of the boiler.

The invention is particularly applicable to grates of the inclined or ridged type wherein the fuel is fed from a hopper or magazine located above and intermediate of the grate and its construction is such that the several grate bars are caused to be actuated in such a manner that the degree of their movement is increased from the fuel feeding point and thus avoids shaking the fine fuel through the grate and yet agitating the same sufficiently to cause the fuel to be fed from the hopper or magazine and distribute it evenly throughout the surface thereof.

The invention is designed as a further improved or modified type of grate to that disclosed in our co-pending application bearing the Serial No. 492,523 under date of April 27, 1909, and of which application the present structure forms a divisional case.

The invention is shown by way of example in the accompanying drawing wherein,

Figure 1 is a top plan view thereof without the hopper, and Fig. 2 is a transverse section of the same taken along the line C—C.

Referring to the figures more in detail and wherein like reference characters indicate corresponding parts in both views, the structure comprises a plurality of grate bars 22 suitably mounted on trunnions 24 to oscillate within a fireplace comprising sections 1, and end members 2, which end members slope upwardly to an intermediate point on which is supported a ridge or bar 2^a whose upper faces incline within the plane of the slant of the grate bars 22. Said grate bars are trunnioned at their opposite ends within the side sections 2 and intermediate supporting bars 4 which extend transversely of the fireplace in substantially the manner shown.

The fuel hopper or magazine 3 is disposed above the grate bars and precisely over the central or upper ridge 2^a whereby the fuel is evenly distributed upon the said grate bars and which by reason of the peculiar disposition of the bars and their manner of operation the fuel is caused to travel in substantially the proportions of feeding across the entire surface of the grate.

Each of the bars 22 is substantially level on its upper surface as shown in Fig. 2 and is provided on its under side with a depending flange or plurality of depending portions 5^a whose function is, when coöperating with the same members on the next adjacent bar, to effect a varied opening between them which opening is of course dependent upon the degree of oscillation of the bars 22. And to provide for an increase in these openings proportionate to the position of the bars with respect to the point of feeding the fuel, the degree or dimension of the flanges or fingers 5^a is greatest on the bars at the center of the grate, or immediately adjacent the ridge 2^a, and gradually decreases toward the sides 25 of the base as shown. In order to guard against the possibility of the fuel being fed over the side sections 1 of the grate frame each of the sections 1 is provided with a guarding plate 23 secured on the upper edge of said sections 1 and coextensive therewith.

The means for oscillating the several grate bars whereby to attain the variation of their degree of amplitude, which as stated increases from the fuel feeding point, consists in providing each of the bars 22 with an integral and depending arm 26, which arms are of increasing length toward the center most of the grate bars as will be obvious. The several arms of the adjacent bars are pivotally connected in series to a common reciprocating bar 27 that is in turn connected to a suitable means for agitation which in the present instance comprises that mechanism indicated by the reference character 11.

From the foregoing it will readily be seen that by reason of the increasing length of the fulcrum levers 26 toward the center of the grate there is effected a proportionate increase in the tilting or rocking of the

grate bars from the fuel feeding point, which effects the result stated.

Having thus described the invention, what we claim as new therein and desire to secure by Letters Patent, is:—

1. In combination with a grate comprising a plurality of bars mounted to be rocked therein, of means for actuating the same to shake the grate, said bars being each provided with depending portions of uniform dimension throughout the length of the bar, the depending portions of the several bars being of increased dimension toward the fuel feeding point of the grate, said depending portions adapted to coöperate with the sides of the adjacent bars and effect variable openings therebetween from the fuel feeding point of the grate when the bars are actuated, and depending levers on each of said bars connected with said actuating means.

2. In combination with a grate comprising a plurality of bars mounted to rock therein and disposed to provide downwardly inclined fuel supporting beds of a fuel feeding hopper disposed above and centrally of the grate, a means for actuating said grate bars to shake the grate, said bars having each depending portions of uniform dimension throughout the length of each bar, said depending portions of the several bars being of increased depth toward the fuel feeding point, and a fulcrum lever on each bar connected with said actuating means, said levers being of unequal length whereby to effect an increase of opening between said bars from the fuel feeding point, to the base of the grate when the bars are oscillated.

3. In combination with a grate comprising a plurality of bars disposed to provide inclined fuel supporting beds, of a ridge-bar located intermediate of said beds and lying parallel with the axes of the grate bars, a fuel feeding hopper disposed above and parallel with the ridge bar, a means for actuating said grate bars to shake the grate, said bars having each depending portions of uniform dimension throughout the length of each bar, said depending portions of the several bars being of increased depth toward the fuel feeding point, and a fulcrum lever on each bar connected with said actuating means, said levers being of unequal length whereby to effect an increase of opening between said bars from the fuel feeding point to the base of the grate when the grate bars are oscillated.

The foregoing specification signed at Scranton, Pa. this 27th day of July, 1909.

DAVID BOIES.
JOSEPH A. WADDELL, Jr.

In presence of two witnesses:
Victor E. Wenzel,
Louis La Fontaine.