C. R. KLINE.

ROCKING GRATE BAR.

APPLICATION FILED MAY 17, 1909.

957,690. Patented May 10, 1910.

Fig. 1.

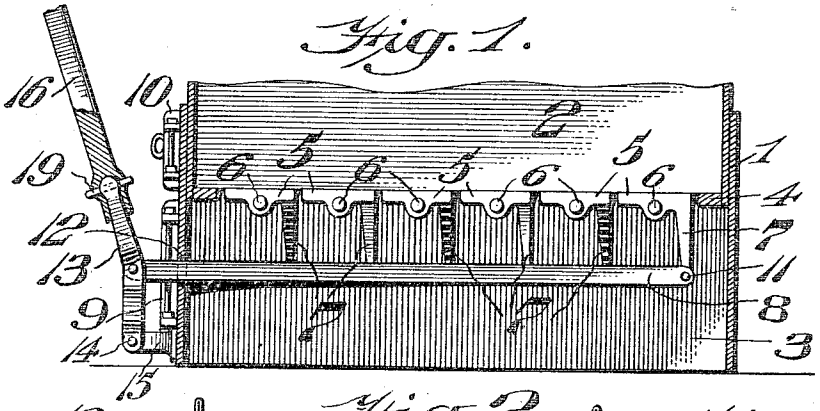


Fig. 3.

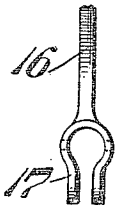


Fig. 2.

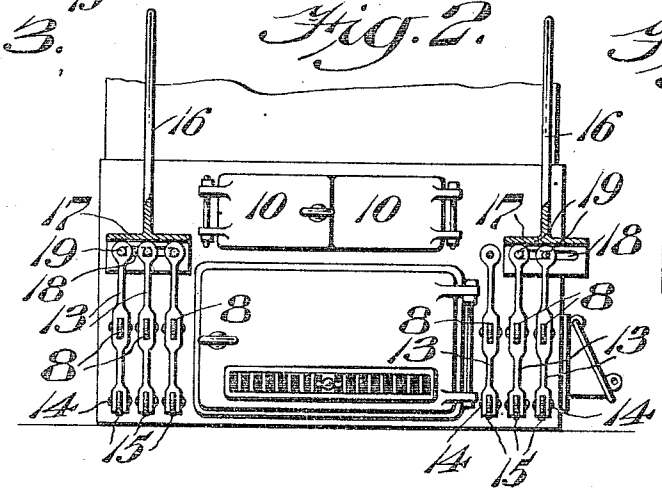
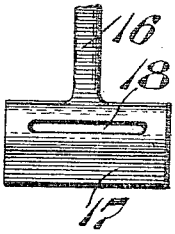


Fig. 4.



WITNESSES

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ROCKING GRATE-BAR.

957,690. Specification of Letters Patent. Patented May 10, 1910.

Application filed May 17, 1909. Serial No. 496,485.

To all whom it may concern:

Be it known that I, CHARLES R. KLINE, a citizen of the United States, residing at Beechwood, Cameron county, State of Pennsylvania, have invented a new and useful Rocking Grate-Bar, of which the following is a specification.

This invention relates to grates and grate bars and more particularly to an improved construction of shaking grate and has for an object to provide a grate wherein any one or any combination of the several sections or grate bars forming the grate may be operated as desired.

In grates as heretofore constructed, it has been impossible to control and regulate certain portions of the grate exclusive of others and thereby it becomes necessary at all times to maintain a full bed of coal and the same size of fire. In my present invention, I have devised a novel construction wherein varying atmospheric conditions may be met with and taken care of by varying the size of the fire upon the grate. That is to say, in the spring and fall it becomes necessary to maintain a fire to reduce the chill incident to the cool nights or sudden changes of weather and yet the warmer days do not require a full fire and a consequent waste of coal. By my arrangement I am enabled to bring into service any number of grate bars and thus accurately proportion the fire to the climatic conditions existing and thus save a large per cent. of coal.

It further consists of other novel features of construction, all as will be hereinafter fully set forth.

Figure 1 represents a section through the grate portion of a furnace disclosing a grate embodying my invention. Fig. 2 represents a front elevation of a portion of the same furnace. Fig. 3 represents a detail of an end of an operating lever. Fig. 4 represents a side elevation of the same.

For the purpose of illustrating my invention, I have shown in the accompanying drawings one form thereof which is at present preferred by me, since the same has been found in practice to give satisfactory and reliable results, although it is to be understood that the various instrumentalities of which my invention consists can be variously arranged and organized and that my invention is not limited to the precise arrangement and organization of these instrumentalities as herein shown and described.

1 designates the casing of a furnace of the usual construction inclosing a combustion chamber 2 and ash pit 3 between which is located a shaking grate 4 composed of a plurality of sections 5 mounted respectively on bars 6 for oscillating movement as is usual in this type of grate. As here shown, each grate section is provided with a depending lug 7 preferably integral with the grate bar proper, the said depending lugs forming attaching means respectively for a plurality of operating arms 8 suitably located in the ash pit 3 in such a position as to allow plenty of room for the ashes and their removal.

Attention is directed to the arrangement of the lugs 7 on the respective grate bars as it will be apparent that each lug must be so positioned relatively to the depending lug as to provide operating room for the arm 8 controlling the same. Furthermore, in some types of furnaces, the grate bars project exterior of the casing and it will be understood that where this is the case, the operating arms 8 will of course be located exterior of the ash pit and suitably arranged to operate the grate bars in a similar manner as when located, as above described, within the ash pit.

Of course it will be understood that the casing 1 is provided with an exterior door 9 permitting communication with the ash pit 3 as necessary and the usual fire doors 10, allowing access to the combustion chamber.

It will be noted that each arm 8 is connected to its respective depending lug 7 by means of a suitable pivot 11 in order to allow proper oscillating movement thereof. Each of these arms 8 passes through a suitable opening 12 in the front of the casing 1 where it is attached to an operating lever 13 which latter is pivoted at 14 to a suitable bracket 15 secured to the casing 1. It will be apparent that the bracket forms a fulcrum about which the lever 13 is operated to produce a reciprocating movement of the arm 8 and thereby rock the grate bar 5 controlled by that particular arm. Attention is directed to the novel construction whereby each bar 8 controls but a single grate bar and therein resides one of the main features of my invention, since it is apparent that by this independent connection, I am enabled to operate a single grate bar or any number as desired and in any location of the grate. Thus, if a portion of the grate is to be put

out of commission temporarily, such as the rear portion thereof, say the last two grate bars 5, at the right as shown in Fig. 1, and it becomes necessary to shake the remaining bars to maintain the fire in proper shape the four levers 13 controlling the bars 8 of the first four lugs 7 from the left, as shown in Fig. 1, will be the ones operated to perform the necessary shaking action.

It will of course be clear that a considerable number of combinations are made possible by my novel arrangement of levers and arms, since each lever is connected to a separate bar 8 and each bar 8 controls its own individual rocking bar 5.

16 designates an operating member by which I control the operation of the levers 13 and in the present instance this consists of an inverted U-shaped head 17 provided on each side with a slot 18 adapted to receive connecting pins 19 of the levers 13. The pins 19 are preferably detachably arranged with respect to the parts they control and therefore it is an easy matter to connect one, two or three of the levers 13 to the operating member 16 according to the number of grate bars it is desired to oscillate.

As shown in Fig. 2, at the right, it will be seen that the operating member 16 is connected for the operation of two of the grate bar arms 8 leaving a third inoperative, while at the left of Fig. 2 the operating member is connected to all of the levers and thereby controls movement of all the grate bars attached to that side of the furnace.

It will now be apparent that I have devised a novel and useful construction which embodies the features of advantages enumerated as desirable in the statement of the invention and the above description, and while I have in the present instance shown and described the preferred embodiment thereof which has been found in practice to give satisfactory and reliable results, it is to be understood that the same is susceptible of modification in various particulars without departing from the spirit or scope of the invention or sacrificing any of its advantages.

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

1. The combination of a series of rocking grate bars having a lug integral with each bar, of a plurality of arms each connected to one of said lugs, each arm connected to control but a single grate bar, a plurality of pivotally mounted levers each lever being connected to one of said arms, and an operating member having a slot therein, and means coöperating with said slot to connect said levers independently or all together to said operating member.

2. A furnace casing, a series of rocking grate bars mounted in said casing and forming therewith an ash pit, a lug on each grate bar, an arm secured to each lug and extending exterior of said casing, each arm connected to control but a single grate bar, a plurality of brackets secured to said casing in alinement with said arms, a lever pivotally mounted on each bracket, connections between the respective arms and levers, an operating member having depending sides each side having a slot therein, and detachable connections between said operating member and said pivoted lever coöperating with said slots, whereby all or any number of said grate bars may be rocked.

CHARLES R. KLINE.

Witnesses:
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