

T. S. DOWNHAM.
SHAKING AND DUMPING GRATE.
APPLICATION FILED JULY 13, 1910.

1,001,741.

Patented Aug. 29, 1911.

Fig. 1.

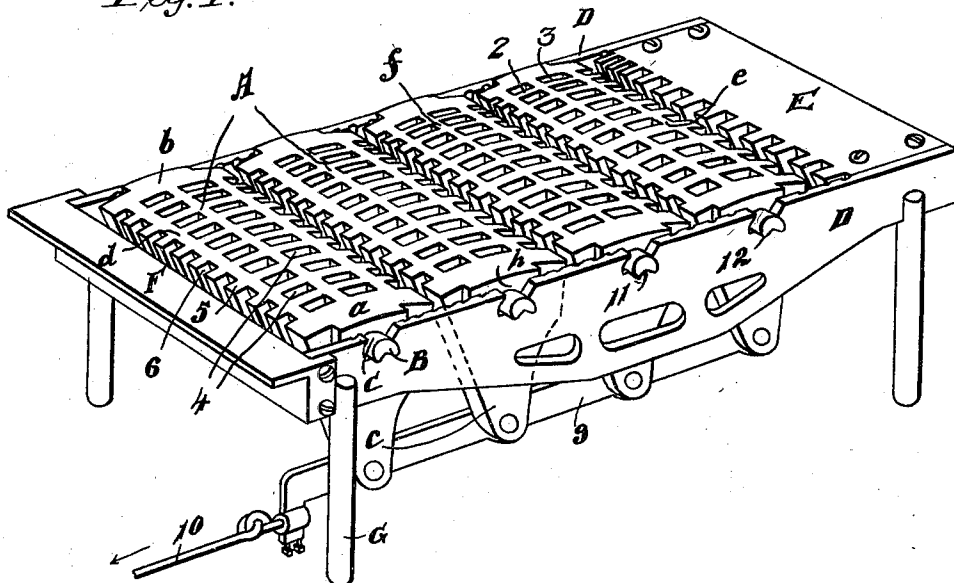


Fig. 3.

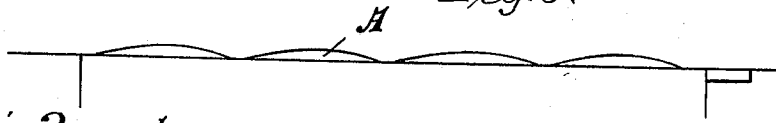
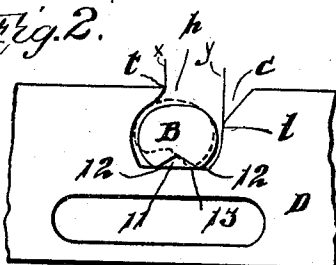


Fig. 2.



Witnesses

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UNITED STATES PATENT OFFICE.

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SHAKING AND DUMPING GRATE.

1,001,741.

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Application filed July 13, 1910. Serial No. 571,828.

To all whom it may concern:

Be it known that I, THOMAS SIDLEY DOWNHAM, a subject of the King of Great Britain, residing in the city of Toronto, county of York, Province of Ontario, Canada, foreman, have invented certain new and useful Improvements in Shaking and Dumping Grates, of which the following is a specification.

My invention relates to improvements in shaking and dumping grates, and the principal object of my invention is to mount each grate-bar section, in the side bars, in such a manner that when they are shaken, each will be given a jarring movement on its axis simultaneous with the changes in position of this axis eccentric to its normal position, thereby positively removing all clinkers and ashes from the middle or center of the crowned top of the said section.

Another object of my invention is to construct the trunnions on which each grate-bar section is mounted so that they will, when in normal position, be locked in their bearings in the side bars so that they will not be displaced when the grate-bar sections are shaken, and the construction of my invention will be hereinafter particularly set forth, and the parts I claim as new will be pointed out in the claims forming part of this specification.

Figure 1 is a perspective view of my shaking and dumping grate. Fig. 2 is an end elevation of one of the trunnions carried by the grate-bar sections, showing the manner in which the same is held in its bearing formed in the side bars, and Fig. 3 is a diagrammatic side elevation of my shaking and dumping grate, showing that the tops of the grate-bar sections lie normally in the same plane, and above the frame.

In the drawings, like characters of reference indicate corresponding parts in each figure.

In installing my grate, two or more grate-bar sections A are used, and the same are integrally provided at each end with trunnions B which rest in the bearing slots C formed in the said bars D.

E is the usual bridge-wall rack, and F the dead front-plate. The legs G are usually used to support the front of the grate, and the back of the grate is usually supported in

the bridge-wall (not shown), by means of the bridge wall rack E built thereinto. The grate-bar sections A are crowned, as shown particularly in Fig. 3, and when in normal position the tops of the same are in the same plane.

Each grate-bar section is of course integrally formed, and the same is composed of end members *a* and *b*, and depending from the end members *a* are lugs *c*.

d and *e* are side walls for each grate-bar section.

f is a center or middle wall formed at the apex of the crowned top of each of the said sections, and this said wall extends from end to end of the said sections. Integrally formed with the walls *d*, *e* and *f*, are transverse bearer sections 2 and 3 which are spaced apart as shown so as to provide draft holes 4. The transverse bearer-sections 2 and 3 are continued beyond the side walls *d* and *e*, so as to provide clinker-breakers which are spaced apart to provide draft spaces 6.

The lugs *c* are pivoted each to the equalizing-bar 9, and this equalizing-bar 9 is operated by the usual shaker-bar 10 suitably coupled thereto in order to manipulate the sections A.

In various makes of shaking and dumping grates, the trunnions supporting the same are so constructed and mounted that when the grate-bar sections are moved they will rock substantially on their axis, held in a fixed position, and consequently the clinker and ashes carried by the apex of the crowned top of each section will not be removed therefrom, with resulting disadvantages.

Now it is one of the objects of my invention to insure each grate-bar section having a jarring movement on its axis simultaneous with the changes in position of this axis eccentric to its normal position, and so positively insure the removal of the ashes and clinker from the crowned top thereof. In order to do this, the under side of each trunnion B is provided with a longitudinal groove 11, thus providing two parallel shoulders 12 positioned on opposite sides of the axis of each trunnion, and which normally rest on the sill 13 of the bearing-slot C, and on which the grate-bar sections A alternately rock. In the normal position of

each trunnion in this slot C, it will be noticed that there is a clearance between the trunnion and the walls of said slot. This clearance is utilized when rocking the grate-bar sections A. When the shaker-bar 10 is quickly pulled in the direction indicated by arrow, the trunnions B are shifted bodily so as to bring the left hand side thereof in contact with the left hand side of the slot C, and this side of each trunnion is elevated through the further movement thereof into the dotted position shown in Fig. 2, the right hand shoulder 12 resting upon the sill 13. Comparing the dotted position of this trunnion with the position of the same shown in full lines in this figure, it will be clearly seen that each grate-bar section has been rocked on its axis simultaneous with the changes in position of this axis eccentric to its normal position. As the shaker-rod 10 is moved inward the left hand shoulder 12 of each trunnion B will contact with its associated sill 13 in due course, and will give a jarring movement to each of the said sections, and each trunnion will occupy the position opposite to that shown in dotted lines in Fig. 2.

Upon referring particularly to Fig. 2, it will be seen that the transverse diameter of the trunnions B is greater than the horizontal distance between the vertical lines x and y which are projected from the shoulders t and l of the bearing-slot C. Therefore it is clear that the grate-bar sections A cannot be removed from their bearings when being shaken. In order that a trunnion B may be removed from its bearing-slot, it must be turned into the proper angle, as will be understood. In order to get the construction just described, it is of course evident that the mouth h of the bearing-slot C is off to one side thereof, as illustrated, that is, the mouth does not open vertically into the bearing-slot.

I do not confine myself to the details of construction herein shown and described, except in so far as that may be rendered necessary by the prior state of the art and the terms of my claims.

What I claim as my invention is:

1. In a shaking and dumping grate, the combination with the side bars thereof provided with open-mouthed bearing slots each having a horizontal flat sill, and upward-inward curved walls formed at each end of said sill, of a grate bar section provided at each end with a trunnion resting in one of said slots, each trunnion being provided in its underside with a recess or groove forming two shoulders positioned on opposite sides of the axis of said trunnions, and each normally resting upon said sill, the sides of each trunnion being rounded and extending upward from said shoulders; the horizontal diameter of said trunnions being less than

the horizontal diameter of said slots thereby normally providing a clearance so that as the grate bar section is rocked on its axis there will be a simultaneous change in position of this axis eccentric to its normal position by reason of each trunnion being bodily shifted and adapted to alternately contact with either side of the slot.

2. In a shaking and dumping grate, the combination with the side bars thereof provided with open-mouthed bearing slots each having a horizontal flat sill, and upward-inward curved walls formed at each end of said sill, the mouth of each slot opening off to one side thereof, so as to provide an overhanging shoulder which constricts the mouth of said slot, the opposite corners of said slot being cut off at an angle, of a grate section provided at each end with a trunnion resting in one of said slots, each trunnion being provided in its under side with a recess or groove forming two shoulders positioned on opposite sides of the axis of said trunnion, and each normally resting upon said sill, the sides of each trunnion being rounded and extending upward from said shoulders; the horizontal diameter of said trunnions being less than the horizontal diameter of said slots thereby normally providing a clearance so that as the grate-bar section is rocked on its axis, there will be a simultaneous change in position of this axis eccentric to its normal position by reason of each trunnion being bodily shifted and adapted to alternately contact with either side of the slot.

3. In a shaking and dumping grate, the combination with the side bars thereof provided with open-mouthed bearing slots each having a horizontal flat sill, and upward-inward curved walls formed at each end of said sill, of a grate-bar section provided at each end with a trunnion resting in one of said slots, each trunnion being provided with rounded sides, and being further provided each on its under side with two supporting elements positioned on opposite sides of the axis of said trunnions, and each normally resting upon said sill; a clearance being normally provided between the walls of said slots, and the sides of said trunnions so that as the grate bar section is rocked on its axis there will be a simultaneous change in position of this axis eccentric to its normal position by reason of each trunnion being bodily shifted and adapted to alternately contact with either side of the slot.

4. In a shaking and dumping grate, the combination with the side walls thereof provided with open-mouthed bearing slots, each provided with a sill, of a grate-bar section provided at each end with a trunnion resting in one of said slots, each trunnion being provided on its under side with two supporting elements positioned on opposite

sides of the axis of each trunnion, and each normally resting on said sill, a clearance being normally provided between the walls of said slots and the sides of said trunnions so that as the grate bar section is rocked on its axis, there will be a simultaneous change in position of this axis eccentric to its normal position by reason of each trunnion being

bodily shifted and adapted to alternately contact with either side of the slot.

In testimony whereof I have affixed my signature in presence of two witnesses.

THOMAS SIDLEY DOWNHAM.

Witnesses:

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."