J. & W. REAGAN.

GRATE BAR.

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952,215. Patented Mar. 15, 1910.

Fig. 1.

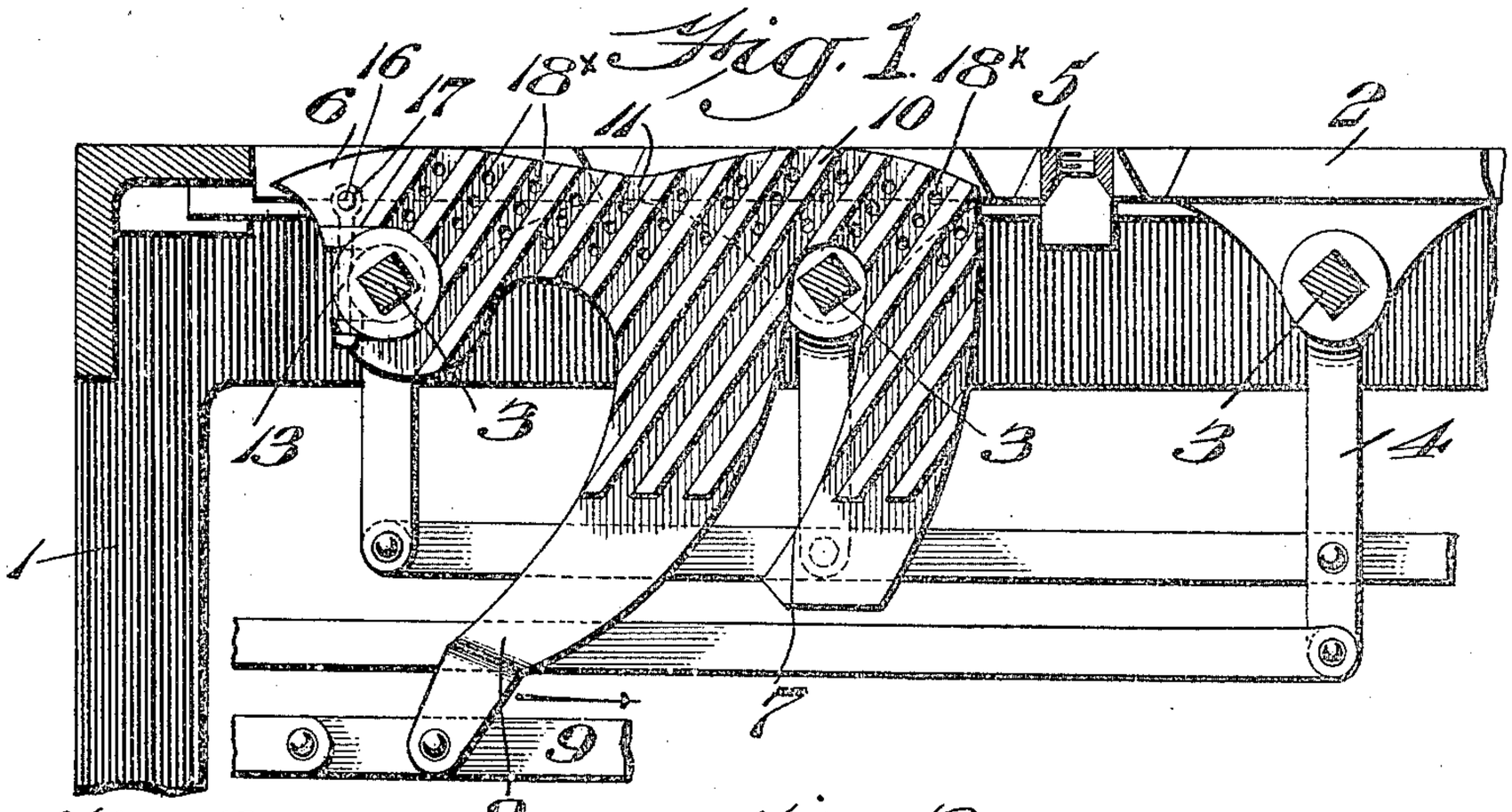


Fig. 3.

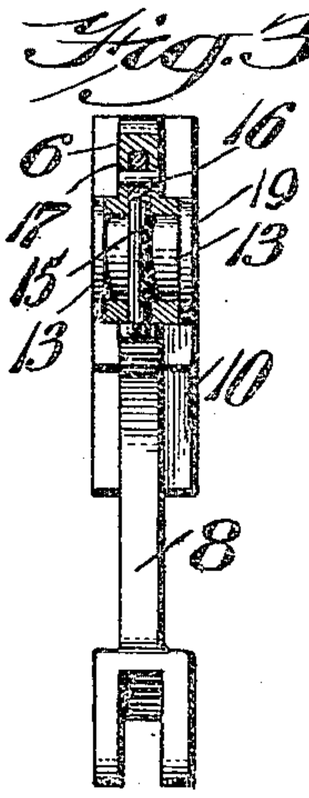


Fig. 2.

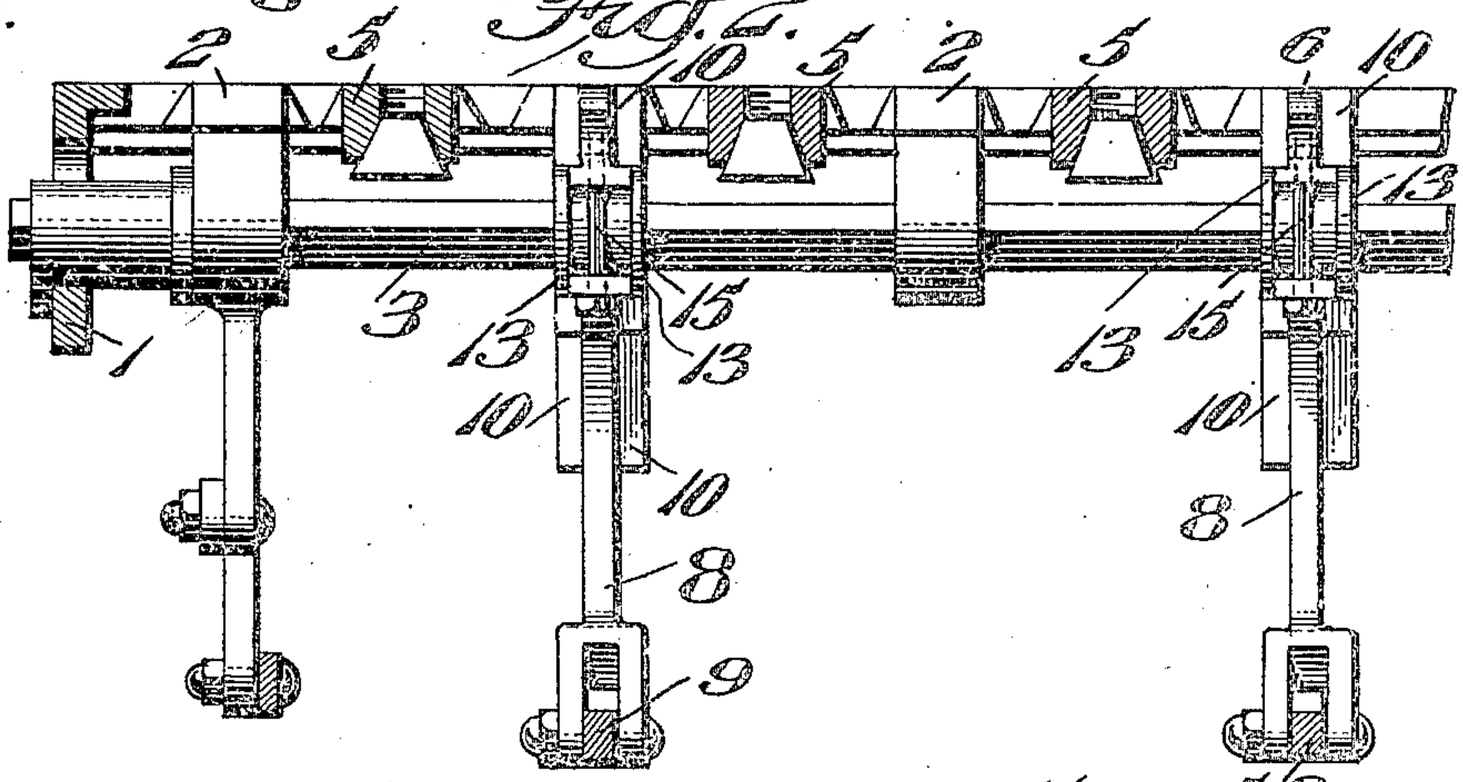


Fig. 4.

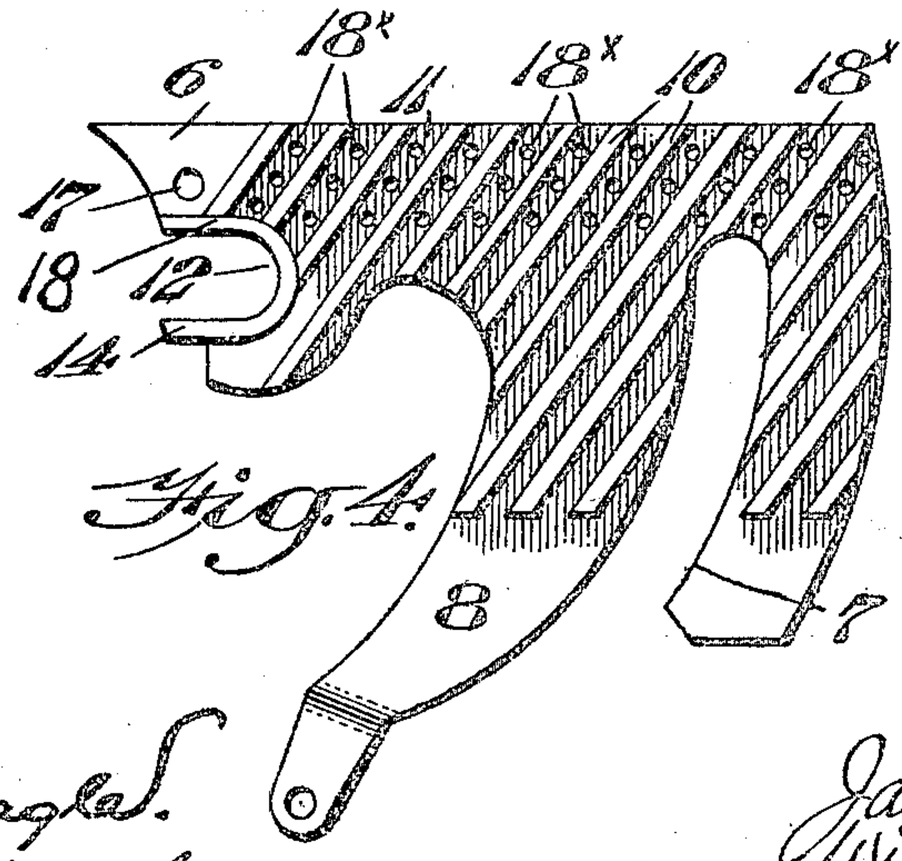
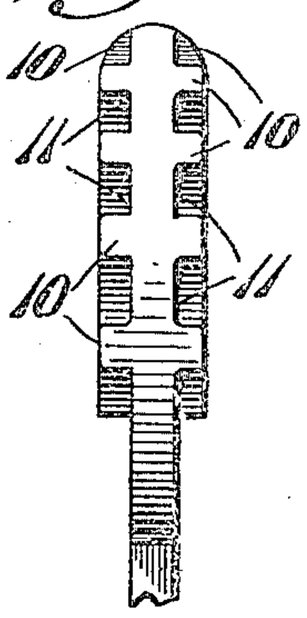


Fig. 5.



Witnesses

W. F. Nagel.

H. G. Dieterich

Inventors

James Reagan.

William Reagan.

By Wiedersheim & Fairbanks.

Attorneys

UNITED STATES PATENT OFFICE.

JAMES REAGAN AND WILLIAM REAGAN, OF PHILADELPHIA, PENNSYLVANIA; SAID WILLIAM REAGAN ASSIGNOR TO SAID JAMES REAGAN.

GRATE-BAR.

952,215. Specification of Letters Patent. Patented Mar. 15, 1910.

Application filed October 27, 1908. Serial No. 459,685.

To all whom it may concern:

Be it known that we, JAMES REAGAN and WILLIAM REAGAN, citizens of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Grate-Bar, of which the following is a specification.

Our invention relates to a new and useful shaking grate and consists in providing solid lifting fire bars which can be used with or without choppers, each of which lifting fire bars are capable of being removed and replaced without disturbing the remainder and each of which is provided with means for permitting air to suitably reach the fire.

It further consists of a novel means of mounting and rocking the lifting fire bars.

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

Figure 1 represents a sectional view of a portion of a grate showing a lifting fire bar in position with a portion of the device for operating the same. Fig. 2 represents a sectional view showing the lifting bars in position alternating with choppers and a stationary fire bar. Fig. 3 represents a partial sectional view and partial rear elevation of a lifting bar showing the locking means. Fig. 4 represents a side elevation of a modified form of solid lifting fire bar in detached position and showing a straight fuel supporting surface in place of the curved or depressed surface shown in Fig. 1. Fig. 5 represents an end elevation showing a modified form of fire bar with a curved upper face.

Similar numerals of reference indicate corresponding parts in the figures.

Referring to the drawings:—We have found in shaking grates that it is necessary to provide a construction wherein there are no dead points in the fire and in which free passage of air is permitted and caused in order that a suitable draft is provided.

Our invention is designed to accomplish these results and in the drawings we have shown a construction for carrying out our invention, but it will be evident that various changes may be made which will come within the scope of our invention and we do not therefore desire to be limited in every instance to the exact construction as herein shown and described but desire to make such changes as may be necessary.

We desire it understood that the lifting fire bar can be arranged for use on any suitable grate construction and we desire to use the same in conjunction with rocking choppers or not or suitable fire bars, as may be necessary. In some instances we might alternate the lifting fire bars with choppers or we may make one section entirely of the lifting fire bars, the use and arrangement of the parts depending upon the conditions.

1 designates a frame or portion thereof of a shaking grate of suitable construction and 2 designates choppers which are suitably mounted in order to be rocked, each of said choppers in the present instance, being mounted upon bars 3 which are angular and one or more of the choppers being provided with the depending portion 4 to which the rocking mechanism can be attached in any suitable manner.

It will be understood that we may mount our solid lifting fire bars directly between the choppers, or as we have shown in the drawings, we may provide the stationary fire bars 5, which are suitably supported in any desired manner and which are adapted to rest preferably upon a suitable portion of the frame 1 and can be lifted from position or returned thereto by hand. Between the fire bars 5 are placed solid lifting fire bars 6, each of which is provided with the slot 7 adapted to receive one of the bars 3 and a suitable portion of which bar 6 is extended downwardly as at 8 and connected with suitable means, such as the rod 9 for actuating the solid lifting fire bar and any suitable means for accomplishing this may be employed.

10 designates extensions from each side of the solid lifting fire bar forming passages 11 therebetween, it being noted that said extensions 10 extend at an angle with respect to the vertical in order that the air which will pass through the passage 11 will be directed angularly to the bed of the fire.

12 designates a curved bearing situated at the rear of the solid lifting fire bar, the opening in the bar which leads to said bearing being of the same width in order to

freely pass a drum or spool 13, upon which is adapted to be seated the bearing 12, whereby the same serves as the pivotal support and the bar can be rotated thereupon, as may be necessary.

14 designates an extension in which is an opening adapted for the reception of a bolt or pin 15 which extends upwardly into an opening formed in that portion of the bar 6 directly above the extension 14, said pin being provided with a suitable opening through which passes a cotter pin 16, which also passes through openings 17 provided at a suitable point in the solid lifting fire bar therefor, it being noted from this that the drum 13 being placed on the bar 3 the solid lifting fire bar can be easily placed on the drum by reason of the passage leading to the circular bearing being of the same size and the lifting fire bar can be dropped into place, after which the pin 15 is passed through the extension 14 upwardly and the cotter pin 16 through the opening 17, thus locking the pin 15 in position. By reason of this construction it will be understood that any one of the solid lifting fire bars can be removed without disturbing the remainder, this being accomplished by removing the pin 15, as before described.

It will be noted that the extensions 10 at their upper portion are preferably substantially level with the upper ledge and extend downwardly on the sides a suitable distance in order to accomplish the desired result.

If desired we may provide a flange 18 around the bearing 12 which will increase the thickness of the solid bar at this point and provide a better bearing for the flanges 19 of the spool or drum 13 as will best be understood from Fig. 3, it being further noted that we preferably provide that the ends of the spool are in the same plane as the edges of the extensions 10.

We may make the upper face of our bars flat or square as shown in Fig. 4, or we may round the same as shown in Fig. 5, in which event the upper ends of the extensions which run to the top of the bar are also rounded.

We desire to call particular attention to the fact that the solid lifting fire bar acts as a stoking bar and when raised or elevated extends up into the body of the fuel, cracking the fire from top to bottom and breaking the clinkers and making the bed porous, at the same time the passages provide that a suitable draft be directed into the fire at all times whether the bar is in elevated or in its lower position.

If desired, we may provide at suitable points in the bar, openings 18^{x}, which will prevent cracking and burning out of the bar. Any number of these openings may be employed and at any desired place in the body, for the passage of air.

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

1. In a shaking grate, a series of solid lifting fire bars each having a circular bearing at the rear thereof and an opening leading thereto, means for actuating the fire bars, a supporting bar for the lifting fire bars, a drum for each of said fire bars seated in said bearing and movably mounted on said supporting bar, and means removably carried by each fire bar for detachably holding the same upon said drum, said drum serving as the pivot, and said holding means serving as part of the bearings of the lifting fire bars in their movement.

2. In a shaking grate, a series of solid lifting fire bars, means for actuating the same, a bar for supporting the lifting fire bars, said fire bars having curved bearings and means on the supporting bar coöperating with said bearings forming pivots for the lifting fire bars and upon which the fire bars may be rotated, and means carried by the lifting fire bars for detachably holding the pivotal means with respect to the lifting fire bars.

3. In a shaking grate, a series of solid lifting fire bars, means for actuating the same, an angular supporting bar, spools on said bar serving as bearing sleeves and supports for the lifting fire bars, and a pin carried by each of said lifting fire bars and detachably holding each spool in position with respect to its fire bar.

4. In a shaking grate, a solid lifting fire bar having a circular bearing at the rear thereof, and an opening leading thereto, a supporting bar for said fire bar, a drum for said fire bar seated in said bearing and movably mounted on said supporting bar, means removably carried by said fire bar for detachably holding the same upon said drum, the latter serving as the pivot, and the holding means as part of the bearings of the fire bar in its movement, and extensions on said fire bar situated at an angle to the vertical and forming angularly extending air passages.

5. In a shaking grate, a series of solid lifting fire bars each having a circular bearing at the rear thereof and an opening leading thereto, means for actuating the fire bars, a supporting bar for the lifting fire bars, a drum for each of said fire bars seated in each circular bearing and mounted on said supporting bar, and means removably carried by each fire bar for detachably holding the same upon said drum, said drum serving as the pivot and the holding means as part of the bearings for the lifting fire bars in their movement.

6. In a solid lifting fire bar for grates having a fuel bearing surface and a down-

wardly extending front portion, a circular bearing in the rear portion thereof, and a downwardly extending portion intermediate said front portion and said bearing, combined with a supporting bar, a sleeve thereon detachably connected with the fire bar, actuating means secured to said intermediate portion, and extensions on each side forming air passages.

JAMES REAGAN.
WILLIAM REAGAN.

Witnesses:
LEWIS G. NOGEL,
GEO WHOLEY.