J. & W. REAGAN.

CHOPPER.

APPLICATION FILED FEB. 17, 1910.

964,938.

Patented July 19, 1910.

2 SHEETS—SHEET 1.

Fig. 1.

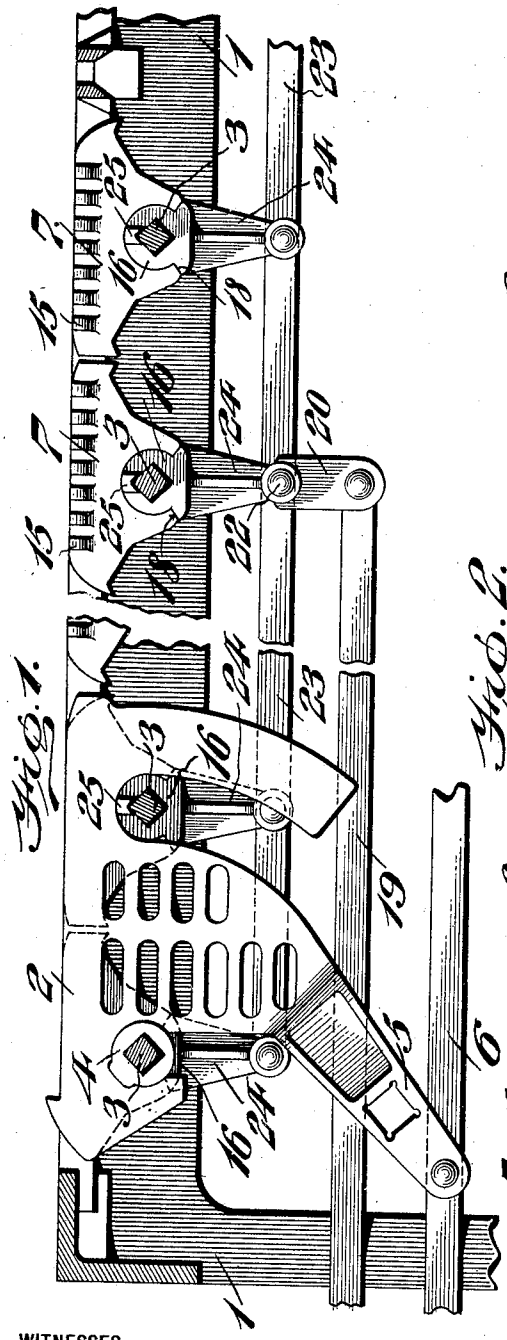
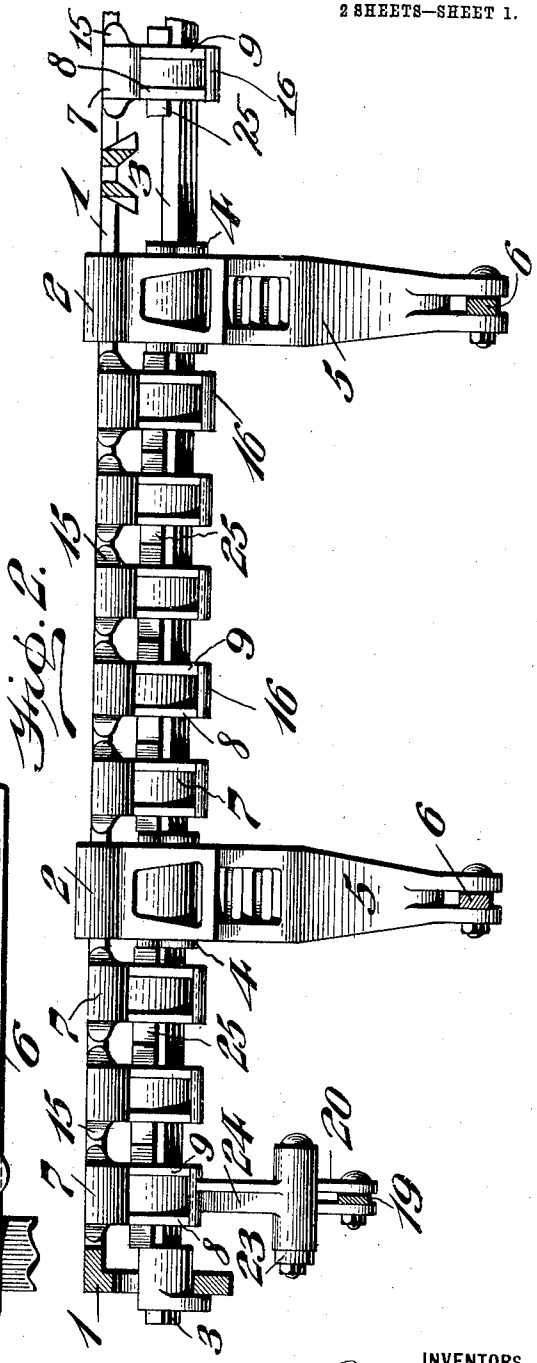


Fig. 2.



WITNESSES

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2 SHEETS—SHEET 2.

Fig. 3.

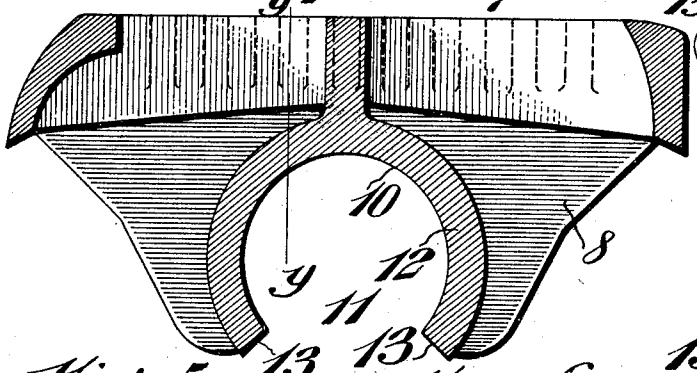


Fig. 4.

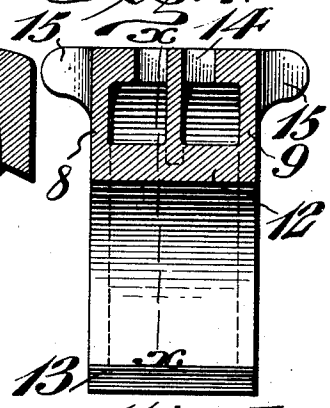


Fig. 5.

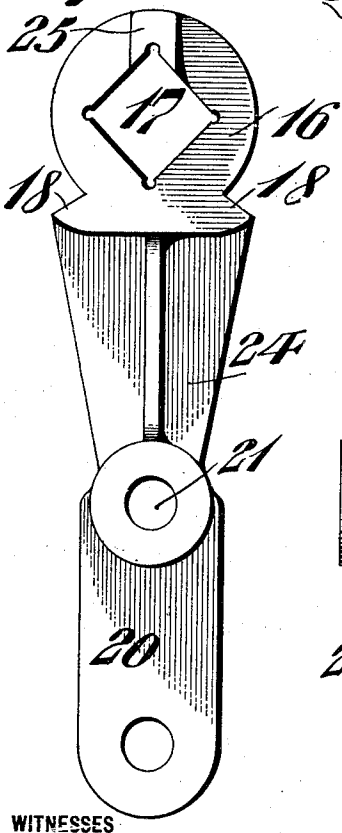


Fig. 6.

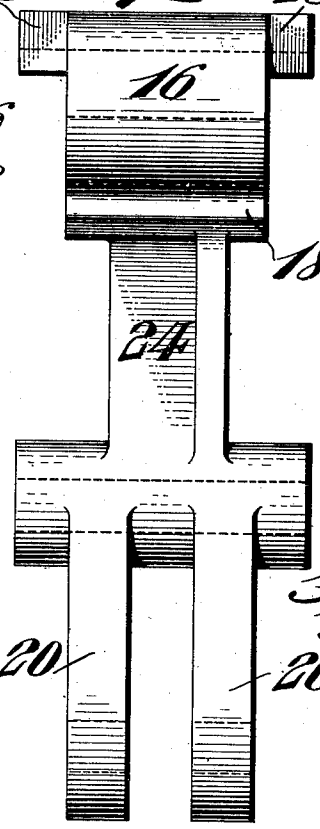


Fig. 7.

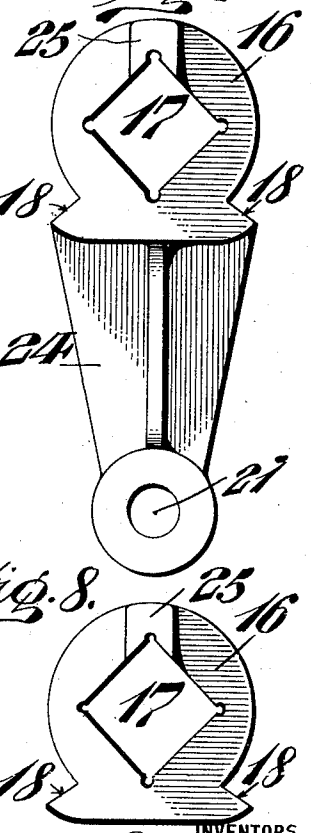


Fig. 8.




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# UNITED STATES PATENT OFFICE.

JAMES REAGAN AND WILLIAM REAGAN, OF PHILADELPHIA, PENNSYLVANIA.

## CHOPPER.

964,938. Specification of Letters Patent. **Patented July 19, 1910.**

Application filed February 17, 1910. Serial No. 544,438.

*To all whom it may concern:*

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

Our invention relates to a new and useful shaking grate which consists in providing choppers which can be used with or without lifting fire bars and each of which choppers is capable of being removed and displaced without disturbing the remainder thereof.

It further consists of novel means of mounting and supporting the choppers.

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 the choppers and lifting fire bar in position, with a portion of the device for operating the same. Fig. 2 represents a sectional view of a portion of the grate, shown in Fig. 1. Fig. 3 represents a sectional view on line *x*—*x*, Fig. 4. Fig. 4 represents a sectional view on line *y*—*y*, Fig. 3. Fig. 5 represents an end elevation of one form of locking device and actuating means for the chopper bars. Fig. 6 represents a side elevation thereof. Figs. 7 and 8 represent end elevations showing forms of locking devices and actuating means which may be employed.

Similar numerals of reference indicate corresponding parts in the figures.

Referring to the drawings: We have found in practice that it is of an advantage to provide a construction wherein the choppers can be independently removed from the grate, without disturbing the remainder of the same, and we have also found that it is of advantage to be able to independently move any of the chopper bars. Our invention is designed to accomplish this result, and in the drawings we have shown a construction which operates successfully in practice, but it will be evident that changes may be made in the construction, the arrangement of the parts may be varied and other instrumentalities may be employed which will come within the scope of our invention, and we do not, therefore, desire to be limited in every instance to the exact form as herein shown and described, but desire to make such changes as may be necessary. We desire it further understood that the choppers can be arranged for use in any suitable grate construction and that we desire to use the same therein in conjunction with lifting fire bars or not, as may be necessary, and further we may, in some instances, alternate the choppers and lifting fire bars and we provide stationary grate bars at suitable points whereby portions of the chopper bars are unoccupied by sleeves to be adjusted longitudinally on said bars for the purpose of permitting the removal of any one of said choppers without disturbing the remaining choppers, the use and arrangement of the parts depending upon conditions.

1 designates a frame or body portion thereof of a shaking grate of any suitable construction, and 2 designates lifting fire bars which are suitably mounted and adapted to be actuated as desired, each of said lifting fire bars, in the present instance, being supported by the bars 3 which are preferably angular and upon which are preferably mounted the sleeves 4, each of which serves as a pivot for a lifting fire bar in its movement, and the lifting fire bars being provided with an extension 5 to which is connected the bar 6 to which is connected a suitable actuating mechanism for the lifting fire bars.

7 designates the choppers which are suitably positioned in the grate, as may be desired, said choppers being similar in construction and consisting of the sides 8 and 9 which are provided with the curved seat 10, the opening 11 leading to which is narrower than the diameter of the said seat and the said sides carrying or having formed integral therewith the bearing wall 12, which extends from side to side, as will best be understood from Fig. 4, the ends of said walls terminating preferably at an angle and forming the shoulders 13.

The upper wall of the choppers is provided with the openings 14 and from opposite sides of the said choppers extend the ears or lugs 15. Each of the choppers is provided with independent means for securing the same to a supporting chopper bar 3, said independent means in the present instance consisting of a sleeve 16 having a squared opening 17 for receiving the chopper bar 3, each of said sleeves being adapted to suitably fit a seat 10 formed in a chopper and being suitably curved for this purpose,

and being further provided with the shoulders 18 on opposite sides adapted to engage with the shoulders 13 on the chopper.

In order to actuate the choppers, we have shown a rod 19, which is adapted to be connected with any suitable means for actuating the same, said rod having connected therewith the extension 20 which is preferably integral with one of the sleeves 16 and which extension is provided with an opening 21, through which passes a suitable pin 22 to connect said extension 20 with a rod 23. The latter extends a suitable distance in the grate and is connected with one of the sleeves 16 on each of the supporting bars 3. In the present instance we have provided legs 24 on one of the sleeves 16, mounted on each of the supporting bars 3, said legs 24 being preferably integral and being adapted to be connected with the rod 23, whereby it will be understood that when the rod 19 is actuated, it will, through the extension 20, actuate the rod 23, which will carry with it the legs 24 so that each supporting bar 3 will be actuated to rock the choppers 7 carried thereby, the effect of which is evident. At any suitable point or points in the grate, we employ stationary grate bars 26 whereby portions of the chopper bars 3 are unoccupied by sleeves 16, permitting said sleeves to be adjusted longitudinally of said bars for the purpose of permitting the removal of any one of said choppers without disturbing the remaining choppers. It will be further understood that the construction shown in Fig. 8 is used to connect a series of the choppers 7 across the grate, this construction being best understood from Fig. 2, when all of these choppers are connected with the same chopper bar 3, as herein shown. From the above it will be seen that the said sleeves 16 are mounted on the proper chopper bar 3 and are laterally movable thereon, so that the said sleeve can be removed from its engagement seat 10 in a chopper bar, and as stationary fire bars are placed at intervals in the grate and as these have no sleeves, spaces are provided at proper intervals in the grate for permitting the longitudinal movement of the sleeves along the supporting bars, and laterally with respect to the choppers, to release any desired chopper, whereupon the said chopper can be removed without disturbing the remainder of the mechanism, whereby it will be seen that each chopper is independently locked to its chopper bar in such a way that the same can be independently removed without disturbing the remainder, and it will be further understood that the locking means are provided with shoulders or in suitable engagement with the choppers in order that by the actuating of the locking means choppers are suitably actuated.

On opposite sides of the sleeve 16, we preferably provide lugs 25 which extend a suitable distance from the sleeve and which are adapted, when in position, to abut the ears of adjoining sleeves so that the sleeves will be normally held for movement and can be moved laterally along the supporting bar 3 to release any of the choppers 7. It will of course be understood that the ears cannot be used in every instance.

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

1. In a device of the character stated, a supporting bar, a series of choppers each having a seat, a sleeve for each of said choppers longitudinally movable on said bar and laterally with respect to said choppers and held against rotation with respect to said bar and seated in a seat, each sleeve locking a chopper to the supporting bar and having means coöperating with a chopper whereby relative rotary movement between the sleeve and chopper is prevented and the latter is actuated when the supporting bar is actuated.

2. In a device of the character stated, a supporting bar, a series of choppers each having a seat, a sleeve for each of said choppers, longitudinally movable on said bar and laterally with respect to said choppers and held against rotation with respect to said bar and seated in a seat, each sleeve locking a chopper to the supporting bar and having means coöperating with a chopper whereby relative rotary movement between the sleeve and the chopper is prevented and the latter are actuated when the supporting bar is actuated, and lugs extending outwardly from said sleeves and abutting the lugs on adjoining sleeves.

3. In a device of the character stated, a chopper having in its side a curved seat and an opening leading thereto, said opening being narrower than the diameter of the curved seat and wider than the supporting bar of the chopper, a supporting bar, and a sleeve longitudinally movable on said supporting bar and laterally with respect to said choppers and held against rotation with respect to said bar and adapted to fit the curved seat for locking the chopper to the supporting bar and said sleeve having shoulders engaging with the chopper whereby relative rotary movement between the sleeve and chopper is prevented and when the supporting bar is actuated the chopper is rocked.

4. In a device of the character stated, a chopper, having in its side a curved seat and an opening communicating therewith, said opening being narrower than the diameter of the curved seat and wider than the supporting bar of the chopper, a supporting bar, a sleeve longitudinally movable on said supporting bar, and laterally with respect to said choppers and held against rotation

with respect to said bar and adapted to fit the curved seat for locking the chopper to the supporting bar and said sleeve having shoulders engaging with the chopper whereby relative rotary movement between the sleeve and chopper is prevented and when the supporting bar is actuated the chopper is rocked, said sleeve having a depending leg for engaging with suitable actuating means.

5. In a device of the character stated, a chopper having in its side a curved seat and an opening communicating therewith, said opening being narrower than the diameter of the curved seat and wider than the supporting bar of the chopper, a supporting bar, a sleeve longitudinally movable on said supporting bar and laterally with respect to said choppers and held against rotation with respect to said bar and adapted to fit the curved seat for locking the chopper to the supporting bar and said sleeve having shoulders engaging with the chopper whereby relative rotary movement between the sleeve and chopper is prevented and when the supporting bar is actuated the chopper is rocked, said sleeve having an extension thereon, and means connected with said extension for actuating said sleeve.

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WILLIAM REAGAN.

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