C. F. HUTCHINSON.

SHAKING AND DUMPING GRATE.

APPLICATION FILED JAN. 13, 1910.

978,589. Patented Dec. 13, 1910.

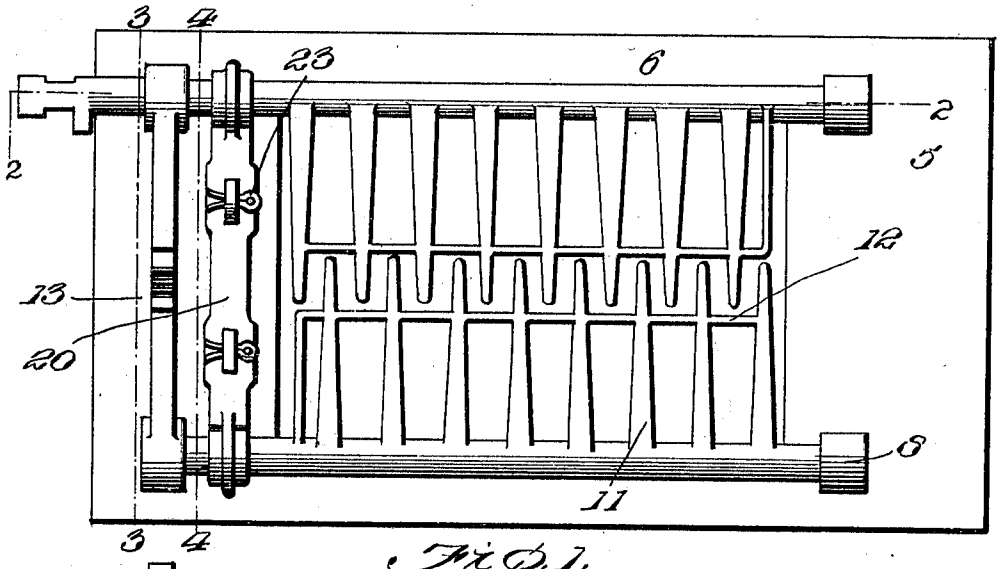

Fig. 1.

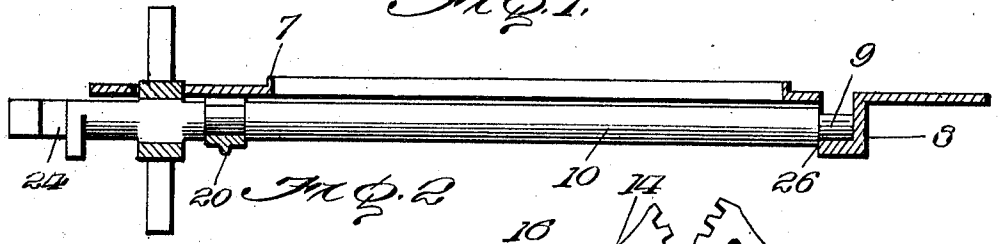

Fig. 2.

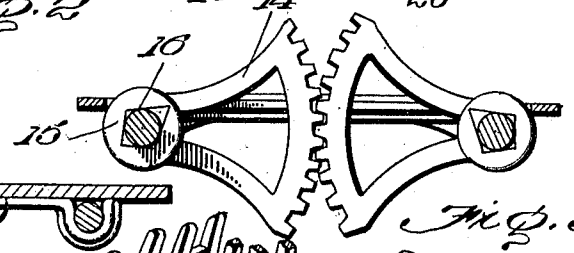

Fig. 3.

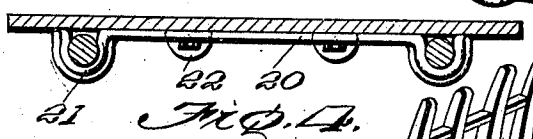

Fig. 4.

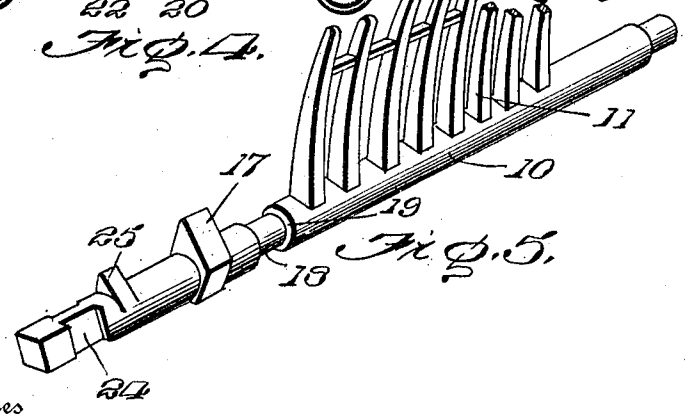

Fig. 5.

Witnesses

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UNITED STATES PATENT OFFICE.

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SHAKING AND DUMPING GRATE.

978,589. Specification of Letters Patent. **Patented Dec. 13, 1910.**

Application filed January 13, 1910. Serial No. 537,914.

To all whom it may concern:

Be it known that I, CHARLES F. HUTCHINSON, citizen of the United States, residing at Kingsville, in Baltimore county and State of Maryland, have invented certain new and useful Improvements in Shaking and Dumping Grates, of which the following is a specification.

This invention relates to stove or furnace grates of that general class shown and described in United States Letters Patent issued to me on the 21st day of November 1893, under No. 509,224.

The object of the invention is generally to improve and simplify the construction of the grate and to mount the latter on the bed plate in such a manner as to permit the grate to be readily detached from said bed plate without the necessity of first removing the bolts, rivets and similar securing devices.

A further object is to provide the grate shafts or spindles with angular portions adapted to fit into correspondingly shaped sockets formed in the toothed grate segments, thus to prevent accidental turning movement of the grate segments on said spindles.

Further objects and advantages will appear in the following description, it being understood that various changes in form, proportions and minor details of construction may be resorted to within the scope of the appended claims.

For a full understanding of the invention and the merits thereof and also to acquire a knowledge of the details of construction and the means for effecting the result, reference is to be had to the following description and accompanying drawings, in which:

Figure 1 is a bottom plan view of a grate constructed in accordance with my invention; Fig. 2 is a longitudinal sectional view taken on the line 2—2 of Fig. 1; Fig. 3 is a transverse sectional view taken on the line 3—3 of Fig. 1; Fig. 4 is a similar view taken on the line 4—4 of Fig. 1; Fig. 5 is a detail perspective view of one of the grate shafts or spindles detached.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

The improved grate forming the subject matter of the present invention comprises a flat bed plate 5 having a grate receiving opening 6, the metal surrounding said opening being extended vertically to form a marginal flange 7 adapted to bear against the fire brick, (not shown.)

The rear end of the bed plate 5 is provided with spaced depending sockets 8 opening through the top of the bed plate and in which are seated the reduced extensions 9 of the grate shafts or spindles 10. The grate shafts or spindles 10 are mounted for oscillation beneath the bed plate and are provided with curved interlocking grate bars or fingers 11 normally closing the grate receiving opening 6, as best shown in Fig. 1 of the drawings. The inner ends of the grate bars or fingers 11 are connected by longitudinally disposed reinforcing webs 12, preferably terminating short of the free ends of the fingers so as to permit tilting movement of the grate sections when it is desired to effect the dumping of the grate.

The forward portion of the bed plate 5 is provided with a transversely disposed slot 13 for the reception of toothed segments 14, the latter being provided with hubs 15 having substantially pyramidal shaped sockets 16 formed therein and adapted to receive correspondingly shaped lugs or projections 17 formed on the adjacent shafts or spindles 10, thus to permit accidental rotation of the segments on said grate shafts without the employment of set screws and similar fastening devices.

Each shaft 10 is provided with a circumferential groove 18 defining oppositely disposed stop shoulders 19 adapted to bear against a tie bar or strap 20. The tie bar or strap 20 extends transversely across the bottom of the bed plate 5 at the forward end thereof and is provided with spaced depressions or sockets 21 which fit in the grooves 18 of the adjacent grate shafts and form bearings for the latter.

Depending from the bottom of the bed plate 5 are spaced lugs 22 which extend through correspondingly shaped openings in the tie bar or strap 20 and are provided with transverse apertures for the reception of cotter pins 23. Thus it will be seen that by removing the cotter pins 23, the tie bar or strap 20 may be detached from the bed plate 5 and the grate bars readily removed when it is desired to clean the same or effect any necessary repairs thereto.

The forward end of one of the shafts or spindles 10 is extended longitudinally beyond the front end of the bed plate 5 and is provided with a squared portion 24 adapted to receive a lever (not shown), there being a tapered lug 25 formed on the shaft or spindle adjacent the squared portion 24 to assist in preventing longitudinal movement of said lever during the shaking operation.

Attention is here called to the fact that shoulders 26 are formed on the shafts or spindles 10 at the reduced portions 9 thereof, said shoulders being adapted to bear against the forward edges of the sockets 8 so as to form an additional bearing for the shafts. It will also be noted that by having the sockets opening through the top of the bed plate 5, a chisel or other suitable tool may be introduced through the open ends of the sockets and positioned back of the reduced portions 9 of the shafts so as to assist in disengaging the shafts from the sockets 8 when removing the grate sections.

Having thus described the invention, what is claimed as new is:

1. A grate including a bed plate having a substantially rectangular opening formed therein and provided with spaced depending sockets arranged at one end of the bed plate, and opening through the top of said plate, there being a transverse opening formed in the other end of the plate, spaced shafts having reduced portions journaled in said sockets and provided with annular grooves defining stop shoulders, said shafts being formed with angular portions and provided with inwardly extending overlapping fingers, toothed segments seated in the transverse opening and having angular openings adapted to receive the angular portions of the shafts, perforated lugs depending from the bottom of the plate at the rear of said transverse opening, a detachable tie bar bearing against the shoulders on the shaft and provided with depressions forming bearings for said shaft, there being spaced perforations formed in the tie bar between said depressions to permit the passage of the lugs, and removable fastening devices extending through the perforations in the lugs and bearing against the lower face of the tie bar for detachably securing said tie bar to the bottom of the bed plate.

2. A grate including a bed plate having an opening formed therein and provided with an upstanding flange surrounding said opening, there being depending sockets formed on the bottom of the plate at one end thereof and opening through the top of said plate and a transverse opening formed in the other end of the plate, spaced shafts having reduced portions journaled in said sockets and provided with annular grooves defining stop shoulders, said shafts being formed with angular portions and provided with inwardly extending overlapping fingers, toothed segments seated in the transverse opening and having angular openings adapted to receive the angular portions of the shafts, perforated lugs depending from the bottom of the bed plate at the rear of the transverse opening, a detachable tie bar bearing against the bottom of the bed plate between the transverse opening and the adjacent wall of the opening in said bed plate, said tie bar being provided with spaced depressions adapted to receive the shafts between said shoulders and having perforations formed therein between the depressions to permit the passage of the lugs, and removable fastening devices extending through the perforations in the lugs and bearing against the lower face of the tie bar for detachably securing said tie bar to the bottom of the bed plate, one of the shafts being extended longitudinally beyond the adjacent end of the bed plate and provided with a lug for engagement with an operating handle.

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

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Witnesses:

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