

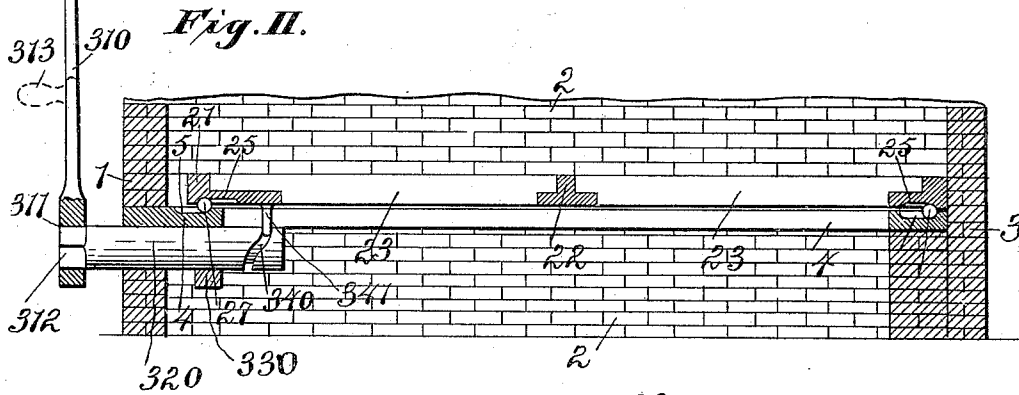
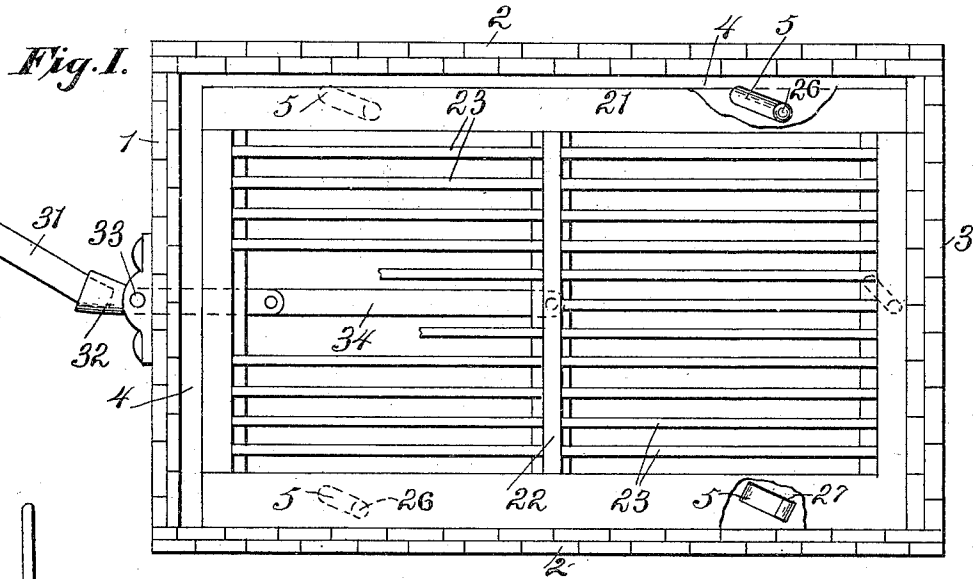
No. 691,004.

Patented Jan. 14, 1902.

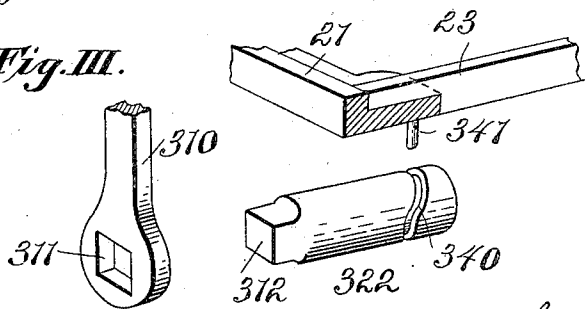
G. SAYLOR.  
GRATE.

(Application filed May 23, 1901.)

(No Model.)



**Fig. III.**



Witnesses

*L. E. French*

*F. R. Pitton*

Inventor:

*George Saylor*

By

*Collamer & Co.* Attorneys

# UNITED STATES PATENT OFFICE.

GEORGE SAYLOR, OF MATTAWANA, PENNSYLVANIA.

## GRATE.

SPECIFICATION forming part of Letters Patent No. 691,004, dated January 14, 1902.

Application filed May 23, 1901. Serial No. 61,569. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE SAYLOR, a citizen of the United States, and a resident of Mattawana, Mifflin county, State of Pennsylvania, have invented certain new and useful Improvements in Grates; and my preferred manner of carrying out the invention is set forth in the following full, clear, and exact description, terminating with claims particularly specifying the novelty.

This invention relates to stoves and furnaces, and more particularly to the grates employed in furnaces which generally are used for the heating of boilers; and the object of the same is to produce improved means for shaking or agitating such grates.

To this end the invention consists, primarily, in devices whereby the grate is given a compound movement when it is shaken, a movement oblique to the length and breadth of the fire-pot; secondarily, in mechanism for agitating a grate so supported and in such manner that it will be moved twice for each single manipulation of the shaker, and, thirdly, in the generic and specific arrangement of devices for carrying out this idea.

The following specification describes my invention as illustrated in the accompanying drawings, wherein—

Figure I is a plan view of a grate, partly broken away to show its support, this view illustrating one form of agitating mechanism. Fig. II is a longitudinal sectional view through the fire-pot and grate, the latter being here illustrated in connection with another form of agitating mechanism. Fig. III is a detail of the parts of the mechanism illustrated in Fig. II.

In the drawings, 1 is the front, 2 the sides, and 3 the rear, of the casing (usually of brick) which incloses the ash-pit. In the present instance this casing is rectangular in contour and carries at its top a plate 4, in whose upper face are formed at suitable points grooves 5, standing diagonally to the casing, so that they will be oblique to its length and breadth. These grooves are used by preference whether ball-bearings or roller-bearings are employed, as described below, for they keep the bearings in place in the nature of a track, and yet they are prevented from filling with cinders by the frame of the grate, which

stands vertically above the plate 4. Said grate comprises a surrounding frame 21, preferably having a cross-bar 22 at its center, and grate-bars 23 extend the length of this frame, as is usual. These bars are fixedly or removably mounted in the frame and are of any approved type, these matters forming no part of the present invention. The brick casing of the ash-pot rises above the plate and the grate, as best seen in Fig. II, and it is to be understood that this casing incloses the fire-pot and supports the boiler above the latter. However, the casing is sufficiently remote from the grate proper to permit the latter to have the movements described below. In the lower face of the frame 21 are cut grooves 25, corresponding with those lettered 5 in the plate 4 and also standing oblique to the grate, and in each pair of registering grooves is located a ball 26 or a roller 27. The former is illustrated in Fig. I and the latter in Fig. II; but I do not specifically limit myself to either, as other forms of bearings might be employed. It is essential to the present invention, however, that whatever form of support for the grate is used it be set oblique to the length and breadth of the grate and preferably operate in conjunction with tracks or grooves of some character, the object being that when the grate is agitated it will have a compound movement—*i. e.*, a movement diagonal to its normal position, which is above the plate 4.

The shaker preferably used in connection with a grate of this character comprises a handle 31, detachably connected with an oscillating member 32, mounted on a bearing 33, which is carried by the front wall of the ash-pit casing beneath the grate and preferably beneath the plate 4, and said member 32 by its movement as the handle is moved shakes the grate through the instrumentality of connections 34. In Fig. I the latter comprises a link pivoted at one end to the member 32 and at the other end to the cross-bar 22 beneath the grate, and hence when the lever 31 is swung from side to side on its pivot 33 the link works like a toggle, and each movement of the lever in either direction first pushes the grate inward and then draws it outward.

In Fig. II the handle 31 has a squared hole 311 at its inner end, which fits over a squared head 312 at the outer end of the oscillating

member 320, and the latter in this instance is a rock-shaft journaled in bearings 330, supported by and beneath the plate 4. Here the connections consist of a cam-groove 340 in said rock-shaft and a pin or stud 341, depending from the frame 21 of the grate. The handle 310 may be swung from side to side, or by having a handpiece, as shown at 313, it could be made a crank. In either instance the cam-groove 340 is so shaped by preference as to give the stud 341 an inward and an outward motion with each movement of the handle.

Other forms of operating mechanism might be employed; but I illustrate and describe only these two, because either will answer in carrying out the broad principle of my idea, which is that the shaking mechanism shall be such as to impart a two-way movement to the grate at each single movement of the handle or lever. With such mechanism I combine means for causing the grate to move obliquely to its normal position, and the combination of these two agencies results in an agitation of the grate, which my experience has proven to be highly advantageous in this connection.

I do not limit myself to the precise details of construction further than as set forth in the claims appended.

What is claimed as new is—

1. In a grate, the combination with the ash-pit casing, and a rectangular plate carried thereby and having oblique grooves in its upper face; of the grate proper comprising a rectangular frame containing the grate-bars, said frame having oblique grooves in its under face normally registering with those in the plate, rolling bearings in said registering grooves, and means for agitating the grate.

2. In a grate, the combination with a rec-

tangular support, the grate proper having a rectangular frame and grate-bars, the support and the frame having normally registering grooves which stand at an angle to both the length and breadth of the grate, and rolling bearings in said registering grooves; of shaking mechanism adapted to impart a direct inward and outward movement to the grate in the direction of its longitudinal axis.

3. In a grate, the combination with the support, the grate-frame registering therewith and containing the grate-bars, said support and frame having registering grooves oblique to the longitudinal axis of the grate, and roller-bearings in said grooves; of shaking mechanism comprising an oscillating member, a bearing for supporting the same, a handle therefor, and connections between such member and the grate whereby the latter is given two movements for each complete movement of the handle.

4. The combination with a grate and its support having registering grooves oblique to the longitudinal axis of the grate, roller-bearings within said grooves, and the ash-pit casing by which said support is carried; of a bearing attached to the support, an oscillating member carried by such bearing, a handle removably attached to this member, and connections between the inner portion of the member and the grate whereby the latter is given two movements for each complete movement of the handle.

In testimony whereof I have hereunto subscribed my signature this the 7th day of May, A. D. 1901.

GEORGE SAYLOR.

Witnesses:

S. H. POSTLETHWAITE,  
J. R. WIRT.