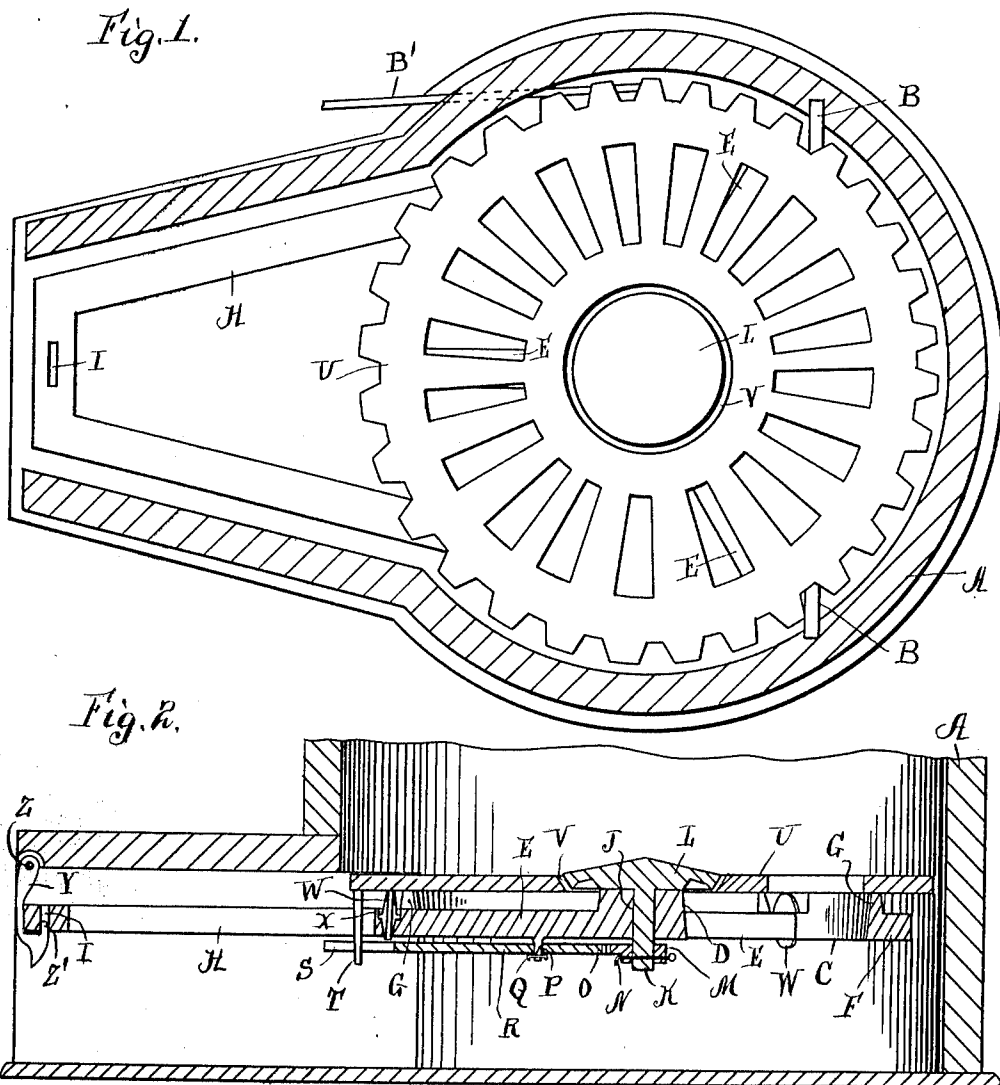


A. V. DAVIDSON.
 GRATE.
 APPLICATION FILED FEB. 3, 1910.

1,001,361.

Patented Aug. 22, 1911.
 2 SHEETS—SHEET 1.



WITNESSES

W. W. Williamson
S. M. Gallagher

INVENTOR

Ambrose V. Davidson

BY

W. W. Williamson

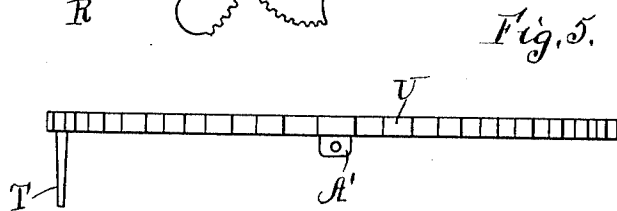
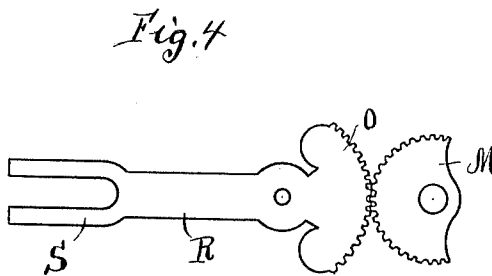
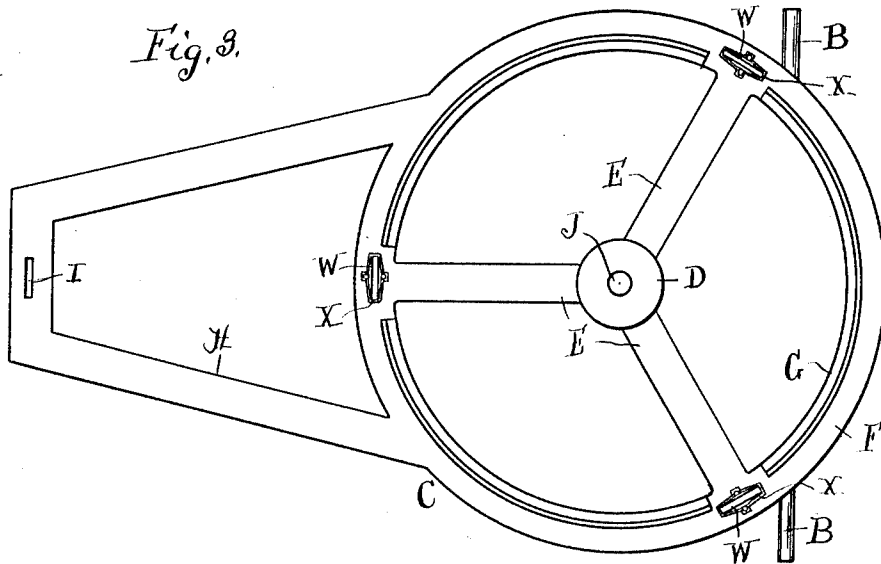
ATTORNEY

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UNITED STATES PATENT OFFICE.

AMBROSE V. DAVIDSON, OF CANTON, OHIO.

GRATE.

1,001,361.

Specification of Letters Patent.

Patented Aug. 22, 1911.

Application filed February 3, 1910. Serial No. 541,686.

To all whom it may concern:

Be it known that I, AMBROSE V. DAVIDSON, a citizen of the United States, residing at Canton, in the county of Stark and State of Ohio, have invented a certain new and useful Improvement in Grates, of which the following is a specification.

My invention relates to a new and useful improvement in grates for furnaces and stoves, and has for its object to provide an exceedingly simple and effective device of this character whereby said grate may be readily and quickly shaken and thoroughly cleaned without shaking fuel through the same.

Another object of the invention is to construct the grate proper of two separate parts which will revolve in different directions, when being shaken for removing the ashes therefrom.

In a grate of the ordinary construction which revolves in but one direction at the same time, the outer edge is traveling many times faster than that portion near the center therefore when the grate has been shaken sufficiently to remove the ashes from the center a considerable amount of fuel has passed between the meshes thereof near its periphery, and these are the movements which I desire to neutralize.

With these ends in view, this invention consists in the details of construction and combination of elements hereinafter set forth and then specifically designated by the claims.

In order that those skilled in the art to which this invention appertains may understand how to make and use the same, I will describe its construction in detail, referring by letter to the accompanying drawing forming a part of this specification, in which—

Figure 1 is a longitudinal sectional view of a furnace embodying my improvement, said section being just above the grate line. Fig. 2, a vertical sectional view thereof. Fig. 3, a plan view of the grate rest. Fig. 4, a similar view of the segmental gears showing their relation to one another, and Fig. 5, an edge view of the grate ring.

In carrying out my invention as here embodied, A represents the walls of the furnace, in which are formed bearings for the trunnions B of the grate rest C, composed of a center bearing D, having spokes E radiating therefrom, with which is formed the ring F, having an internal upwardly ex-

tending flange G. With this ring is formed the forwardly extending frame H, having a slot I for the reception of the holding hook to be hereinafter described.

The center bearing D has a hole J therein through which passes the shaft K of the conical grate central fuel support L, and on the shaft K below the grate rest is mounted the segmental gear M, which is held in its proper position by the pin N or its equivalent, with the teeth of which mesh the segmental gear O, which is pivoted to the lug P formed with the under surface of the grate rest, and held in place by the pin Q or its equivalent. With this segmental gear is formed the shank R, having a bifurcated portion S, between the members of which operates the extension T formed integral with the under surface of the grate ring U, said grate ring having a central opening V through which passes the conical central fuel support L; said grate ring has its bearing upon a number of small wheels W, which are placed at suitable intervals in sockets X formed in the grate rest. The grate rest is held in its horizontal or normal position by a hook Y, which is pivoted at Z to the roof of the ash pit, the nose Z' of said hook engaging the slot I in the frame H of the grate rest. By disengaging this hook the front portion of the grate rest is allowed to move downward until it rests upon the base, which will bring the grate to a sufficient angle to allow the clinkers, fuel or foreign matter to be raked therefrom. On the grate ring is also formed an ear A', to which is fastened one end of the shaker rod B', the free end of said rod passing through the walls of the heater to the front of the same, whereby it may be taken hold of by the operator for shaking the grate.

The operation of the device is as follows:—By moving the shaker rod B' backward and forward, the grate ring U will be rotated, causing the bifurcated end of the shank R of the segmental gear O to oscillate through the medium of the extension T, and since the segmental gear is pivoted to the lug P and is meshing with the segmental gear M, the last named segmental gear will rotate in the opposite direction, carrying with it the conical central fuel support L, because of it being securely mounted upon the shaft K.

From this description it will be seen that when the grate is shaken, the two parts

thereof will move in opposite directions, and the fuel or ashes thereon will have a tendency to grind against one another, causing the ashes to fall downward through the grate.

Of course I do not wish to be limited to the exact details of construction here shown, as these may be varied within the limits of the appended claims without departing from the spirit of my invention.

Having thus fully described my invention what I claim as new and useful, is—

1. In a device of the character described, the combination with a heating device, of a grate rest composed of a center bearing having a vertical hole therein, a number of radiating arms, an integral ring, said ring being provided with an internal flange and a frame provided with a slot formed with the rings, trunnions formed with said rest mounted in bearings in the walls of the heating device, wheels mounted upon the rest, a grate ring having an extension and an ear formed therewith and provided with a central opening adapted to rest upon the wheels, a conical central fuel support, a shaft formed therewith passing through the hole in the bearing of the rest, a shaking rod, one end of which is connected to the ear and the opposite end passing through the walls of the heating device, a segmental gear securely mounted upon the lower end of the shaft, and another segmental gear pivoted to the grate rest and provided with a shank with which engages the extension of the grate ring so that the central fuel support and grate ring will move in opposite directions during the shaking operation.

2. In a device of the character described, the combination with a heating device, of a grate rest composed of a center bearing having a vertical hole therein, a number of radiating arms, an integral ring, said ring being provided with an internal flange and a frame provided with a slot formed with the ring, trunnions formed with said rest mounted in bearings in the walls of the heating device, wheels mounted upon the rest, a grate ring having an extension and an ear formed therewith and provided with a central opening adapted to rest upon the wheels, a conical central fuel support, a shaft formed therewith passing through the hole in the bearing of the rest, a shaking rod, one end of which is connected to the ear and the opposite end passing through the walls of the heating device, a segmental gear mounted upon the lower end of the shaft below the grate rest, means for

securely holding it in position, a projection formed with the under side of the rest, another segmental gear mounted on said projection, means for holding it in place upon said projection, a shank formed with said segmental gear provided with a bifurcated outer end, between the members of which operates the extension from the grate ring, and a hook pivoted to the walls of the ash pit, the nose of which engages the slot in the frame for holding the parts in a horizontal position.

3. A heating device of cylindrical form at the grate level, a grate rest cylindrical in shape mounted within the body of the heating device, a forwardly extending frame formed integral with said grate rest, means engaging said frame for holding the latter and the grate rest in a horizontal position, a grate ring having a central opening rotatably mounted upon the grate rest, a depending extension formed with said grate ring, a conical central fuel support having a shaft formed therewith, said shaft journaled in a portion of the grate rest when the central fuel support lies in the central opening of the grate ring, a segmental gear carried by the shaft, another segmental gear pivoted to the grate support and meshing with the former, and a shank formed with the last named segmental gear, the free end of which engages the depending extension formed with the grate ring.

4. A heating device comprising a body, a grate rest having a central bearing support within the body, a grate ring having a central aperture rotatably mounted upon the grate rest, a central fuel support provided with an integral shaft, said central fuel support lying within the central aperture of the grate ring and journaled in the bearing of the grate rest, a segmental gear having a shank formed therewith pivoted to the grate support, means carried by the grate ring for engaging the shank of the segmental gear to oscillate said gear when the grate ring is rotated, and another segmental gear mounted upon the shaft of the central fuel support, meshing with the former to cause the central fuel support to oscillate in a direction opposite to that of the grate ring.

In testimony whereof, I have hereunto affixed my signature in the presence of two subscribing witnesses.

AMBROSE V. DAVIDSON.

Witnesses:

JOHN H. SPONSELLER,
JOHN WILLYARD.