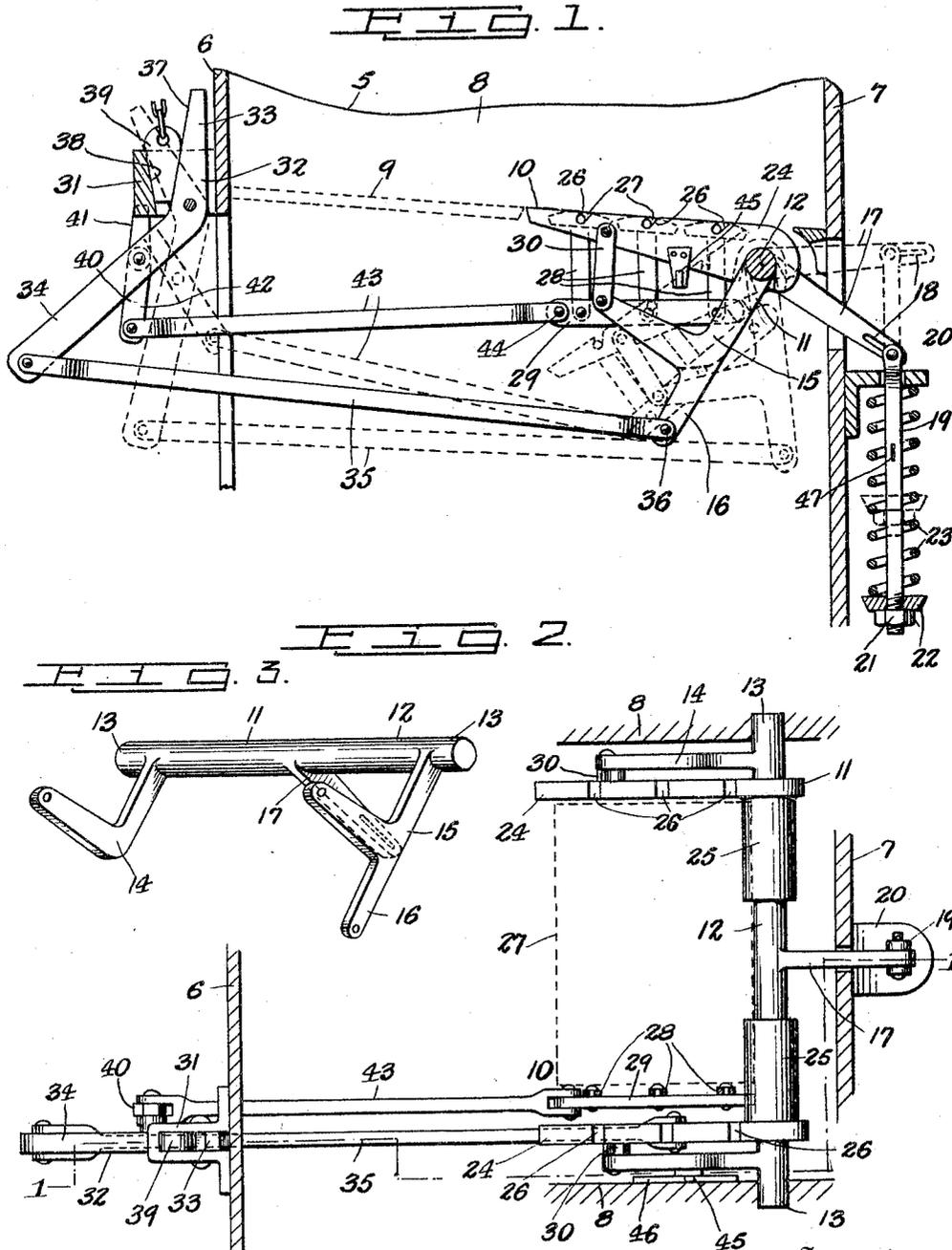


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 FURNACE GRATE.  
 APPLICATION FILED SEPT. 13, 1919.

1,361,925.

Patented Dec. 14, 1920.



Inventor  
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# UNITED STATES PATENT OFFICE.

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## FURNACE-GRATE.

1,361,925.

Specification of Letters Patent.

Patented Dec. 14, 1920.

Application filed September 13, 1919. Serial No. 323,586.

*To all whom it may concern:*

Be it known that I, MICHAEL G. SWEENEY, a citizen of the United States, and residing at Scranton, in the county of Lackawanna and State of Pennsylvania, have invented certain new and useful Improvements in Furnace-Grates, of which the following is a specification, such as will enable those skilled in the art to which it appertains to make and use the same.

This invention relates to furnace grates and particularly to combination grates of this class in which the grate may be used as a rocking or shaking grate, or as a drop grate, and the object of the invention is to provide an apparatus of the class specified which is both manually and tensionally operated or partially automatic in operation; and with this and other objects in view the invention consists in an apparatus of the class and for the purpose specified which is simple in construction and operation and efficient in use.

The invention is fully disclosed in the following specification, of which the accompanying drawing forms a part, in which the separate parts of my improvement are designated by suitable reference characters in each of the views, and in which:—

Figure 1 is a longitudinal vertical section on the line 1—1 of Fig. 2 through a furnace and showing my improved apparatus mounted in connection therewith, and indicating the method of its use;

Fig. 2 a horizontal sectional view of the construction as shown in Fig. 1; and,

Fig. 3 a perspective detail view of a part of the construction which I employ.

In Figs. 1 and 2 of the drawing I have diagrammatically indicated at 5 a furnace of any kind or class and at 6 is shown a part of the front wall of said furnace, at 7 a part of the back wall thereof and at 8 parts of the side walls thereof. At 9 I have indicated in dotted lines the front grate of the furnace which may be of any form and construction, and which forms no part of this invention.

In Figs. 1 and 2 I have shown at 10 my improved combined shaking and drop grate which consists of a rotary oscillatory frame member 11 shown in detail in Fig. 3, said frame member comprising a shaft portion 12, the end trunnions 13 of which are adapted to fit in the side walls 8 of the furnace or any suitable bearings connected

with said walls. Formed on the frame member 11 inwardly of the trunnions 13 are approximately L-shaped arms 14 and 15, the arm 15 being provided with a downwardly directed extension 16. Formed centrally of the frame member 11 is another arm 17 which extends backwardly and the free end of which is provided with an elongated aperture 18, and a rod 19 is movably connected with the free end portion of the arm 17 and passes downwardly through a keeper 20 secured to the back wall 7 of the furnace. Mounted on the lower end portion of the rod 19 is an adjusting nut 21 and washer 22, and mounted on the rod 19 between the keeper 20 and washer 22 is a coil spring the tension of which is adjusted by the nut 21, and this spring serves to hold the grate 10 normally in its raised position as hereinafter described.

Mounted on the frame member 11 inwardly of the arms 14 and 15 are two side arms 24 provided with inwardly directed sleeve portions 25 which fit on and are adapted to oscillate with the shaft portion 12 of the frame 11 to permit of the shaking and dropping of the grate. The arms 24 are approximately wedge shaped in form and the top faces thereof are provided with a plurality of recesses 26, three of which are shown in the accompanying drawing, and in which a plurality of grate sections 27 are mounted to rock. The grate sections 27 are provided with downwardly directed arms 28, the lower end portions of which are pivoted to a forwardly and backwardly directed bar 29. The free end portions of the L-shaped arms 14 and 15 of the frame 11 are connected with the arms 24 by links 30 and serve to support said arms 24 together with the grate sections 27 mounted therein.

Secured to the front wall 6 of the furnace is a box-shaped bracket 31 in which is pivotally mounted a lever 32, one end portion of which extends upwardly through the bracket 31 as shown at 33 and with which a suitable tool may be connected for operating said lever and the other end portion 34 of the lever extends outwardly and downwardly and a drop grate actuating rod 35 is pivoted to the free end portion of said lever and to the lower end portion of the extension 16 of the arm 15 as shown at 36. The outer face of the end portion 33 of the lever 32 is beveled as shown at 37 as is also

the inner face 38 of the outer wall of the box-shaped bracket 31 and a suitable wedge 39 is adapted to be placed between the faces 37 and 38 to hold the grate 10 and the various parts thereof in their raised or operated position.

Pivoted to the lever 32, or the end portion 34 thereof is a supplemental lever 40 comprising an upwardly directed tapered portion 41 adapted to receive a suitable tool for operating said lever and the other end portion 42 of said lever extends downwardly and a grate shaking rod 43 is pivotally connected with said supplemental lever and with the outer end portion of the bar 29 as shown at 44. Mounted on one of the arms 24, or the outer face thereof, is a stop block 45 which is adapted to operate in connection with a suitable strip or projection 46 on the adjacent side wall 8 of the furnace to limit the upward movement of the grate 10.

The position of the various parts of my improved combination shaking and drop grate as shown in full lines in the drawing is their normal position, and when it is desired to manipulate the apparatus as a shaking grate a suitable tool or implement is placed upon the end 41 of the supplemental lever 40, and said lever manipulated back and forth on its pivot, which operation will rock the grate sections 27 in the arms 24 through the rod 43, bar 29 and the downwardly directed extensions 28 of said grate sections. When it is desired to drop the grate 10 into the position indicated in dotted lines in Fig. 1, the plug or wedge 39 is removed and the weight of the coal and ashes upon the grate 10 will probably be sufficient to move the grate downwardly against the tension of the spring 23 and if necessary a tool or implement may be connected with the upwardly directed end portion 33 of the lever 32 to move the grate 10, or the various parts thereof into the position indicated in dotted lines and against the tension of the spring 23. By releasing the lever 32 the spring 23 will operate to automatically return the grate 10 or the various parts thereof into the position shown in full lines, after which the wedge 39 may again be placed in position.

The rod 19 is also preferably provided approximately centrally thereof with an elongated aperture 47 through which a suitable key-pin may be passed for holding the rod 19 in its raised position against the tension of the spring 23 to permit of the detachment of the various parts of the grate apparatus for cleaning, repairing and other purposes without removing the spring 23 from the rod 19.

It will be apparent that while I have shown certain details of construction for carrying my invention into effect, I am not necessarily limited to such details nor to the specific form of grate sections, and va-

rious changes in and modifications of the details of construction herein shown and described may be made, within the scope of the appended claims, without departing from the spirit of my invention or sacrific- ing its advantages.

Having fully described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. A combination shaking and drop grate of the class described comprising an oscillatory frame member, grate supporting arms mounted on said frame member, grate sections mounted in said arms, tensional means for supporting said frame member and said arms normally in an operative position, and means for moving said frame member and said arms into a dropped position against said tensional means whereby when said last named means is released said frame member and said arms will be automatically returned to their normal position by said tensional means.

2. A combination shaking and drop grate of the class described comprising an oscillatory frame member, grate supporting arms mounted on said frame member, tensional means for supporting said frame member and said arms normally in an operative position, means for moving said member and said arms into a dropped position against said tensional means, grate sections mounted in said grate supporting arms, means for actuating said grate sections in said arms, and means for adjusting the tension of said tensional means.

3. A combination shaking and dumping grate comprising an oscillatory frame member provided at the opposite end portions thereof with approximately L-shaped arms, grate supporting arms mounted on said frame member and the free end portions of which are in operative connection with the L-shaped arms of said frame member, a plurality of movable grate sections supported in said grate supporting arms, a lever one end portion of which is connected with one of the L-shaped arms of the frame member and adapted to operate said frame member to drop the grate, and a supplemental lever pivoted to said first named lever and in operative connection with said grate sections.

4. A combination shaking and dumping grate comprising an oscillatory frame member provided at the opposite end portions thereof with approximately L-shaped arms and centrally thereof with another arm, grate supporting arms mounted on said frame member and the free end portions of which are in operative connection with the L-shaped arms of said frame member, a plurality of movable grate sections supported in said grate supporting arms, a lever one end portion of which is connected

with one of the L-shaped arms of the frame member and adapted to operate said frame member to drop the grate, a supplemental lever pivoted to said first named lever and in operative connection with said movable grate sections, a rod pivotally connected with the free end portion of the central arm of the frame member, and a coil spring mounted on said rod and adapted to hold said frame and grate supporting arms in their normal position.

5. A combination shaking and dumping grate comprising an oscillatory frame member provided at the opposite end portions thereof with approximately L-shaped arms and centrally thereof with another arm, grate supporting arms mounted on said frame member and the free end portions of which are in operative connection with the L-shaped arms of said frame member, a plurality of movable grate sections supported in said grate supporting arms, a lever one end portion of which is connected with one of the L-shaped arms of the frame member and adapted to operate said frame member to drop the grate, a supplemental lever pivoted to said first named lever and in operative connection with said movable grate sections, a rod pivotally connected with the free end portion of the central arm of the frame member, a coil spring mounted on said rod and adapted to hold said frame and grate supporting arms in their normal position, and means on said rod for adjusting the tension of said spring.

6. A combination shaking and drop grate apparatus comprising an oscillatory frame member provided at opposite end portions thereof with approximately L-shaped arms and centrally thereof with another arm, grate supporting arms mounted on said frame member, the free end portions of which are in operative connection with the L-shaped arms of said frame member, a plurality of movable grate sections supported in said grate supporting arms, a lever one end portion of which is in operative connection with one of the L-shaped arms of the frame member and adapted to operate said frame member to drop the grate, a supplemental lever pivoted to said first named lever and in operative connection with said movable grate sections, a rod pivotally connected with the free end portion of the central arm of the frame member, a coil spring mounted on said rod and adapted to hold said frame and grate supporting arms in their normal or raised position, means on said rod for adjusting the tension of said spring, and means on one of said grate supporting arms for limiting the upward movement thereof.

In testimony that I claim the foregoing as my invention I have signed my name in presence of the subscribing witnesses this eleventh day of September 1919.

MICHAEL G. SWEENEY.

Witnesses:

JOHN J. RICHARDSON,  
J. F. DUNBAR.