

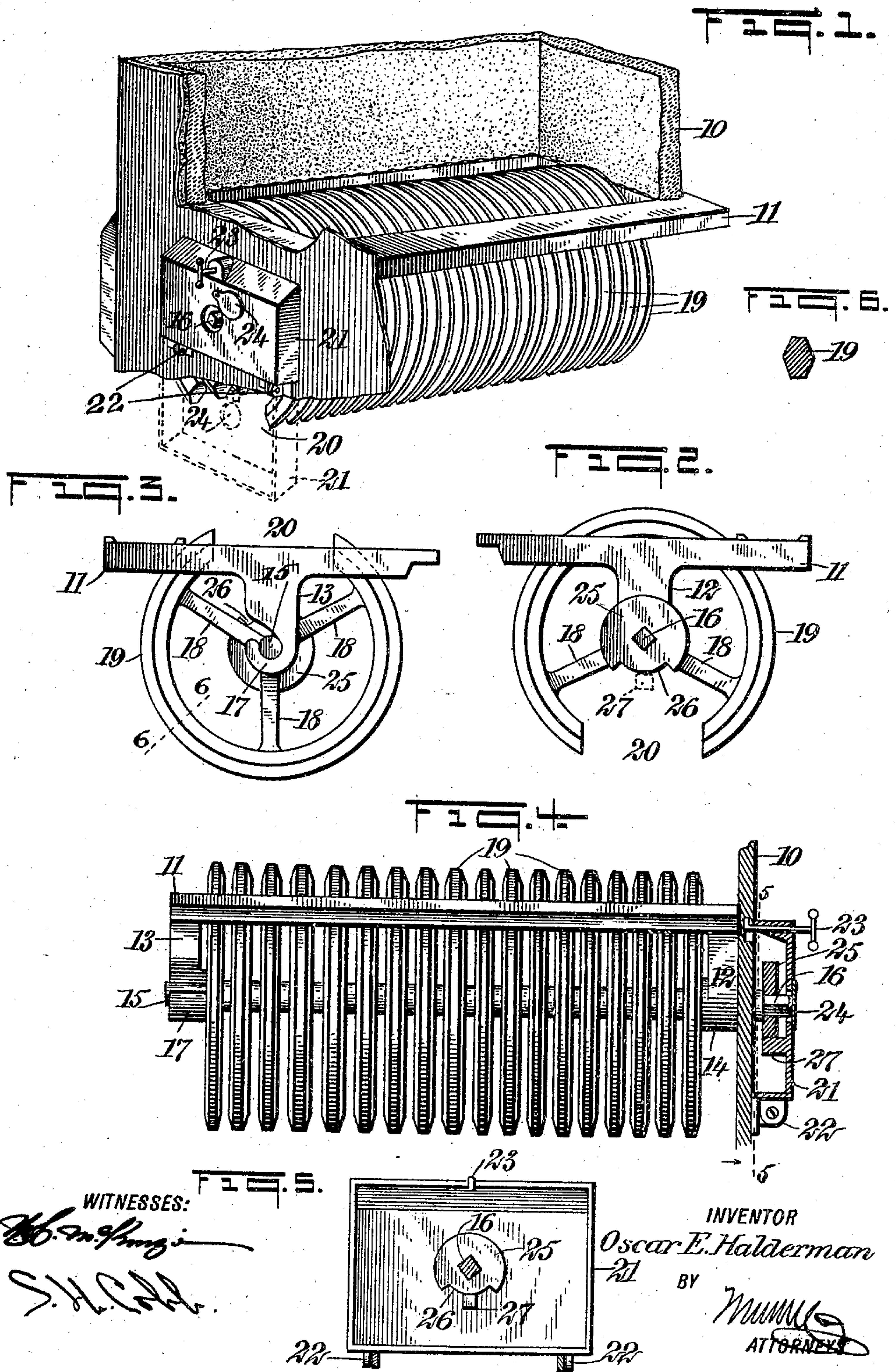
No. 814,956.

PATENTED MAR. 13, 1906.

O. E. HALDERMAN.

GRATE.

APPLICATION FILED FEB. 3, 1905.





# UNITED STATES PATENT OFFICE.

OSCAR EUGENE HALDERMAN, OF MARION, INDIANA.

## GRATE.

No. 814,956.

Specification of Letters Patent.

Patented March 13, 1906.

Application filed February 3, 1905. Serial No. 243,972.

*To all whom it may concern:*

Be it known that I, OSCAR EUGENE HALDERMAN, a citizen of the United States, and a resident of Marion, in the county of Grant and State of Indiana, have invented a new and Improved Grate, of which the following is a full, clear, and exact description.

My invention relates to grates, and has for its principal objects the provision of a strong and durable device of this character, which may be efficiently operated.

It consists in the various features and combinations hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a perspective view of a fire-box with one embodiment of my invention inserted therein, parts being broken away. Fig. 2 is an end elevation looking from the left in Fig. 1, with the fire-box removed. Fig. 3 is a similar view looking at the opposite end. Fig. 4 is a side elevation of the fire-box and grate, parts being in section. Fig. 5 is a transverse sectional detail on the line 5 5 of Fig. 4, and Fig. 6 is a sectional detail of one of the grate-bars on the line 6 6 of Fig. 3.

In the walls of a fire-box 10, which is here shown as of a form adapted for use in connection with a range, is set a grate-frame 11, having depending from its opposite ends hangers 12 and 13. At the lower extremity of the hanger 12 is a boss 14, in which is a bore or opening to receive a grate-shaft 15, which extends through said opening and has a squared end 16 outside the hanger to receive an operating crank or wrench. The hanger 13 has a hooked end portion 17, the opening in which extends through the side to permit the lateral introduction and removal of the grate-shaft. From the grate-shaft radiate arms 18, which in the present instance are shown as separated from one another by angles of substantially one hundred and twenty degrees. These arms support at their outer extremities curved grate-bars 19, having separated ends between which is a space 20 of less width than that of the frame-opening, it being conveniently two-thirds thereof. Each grate-bar is shown as of somewhat elongated hexagonal section, the major dimension lying in a radius from the shaft and the apices of the lateral angles being in proximity to one another in the adjacent bars, the sides thus diverging outwardly to form flaring air-spaces. The dimen-

sions of the frame, hangers, and bars are such that said bars project upwardly through the frame-opening, lying close to it at each side, and having their curved portions projecting into the fire-box. The number of bars is such as to fill the frame longitudinally, with suitable spaces between the successive bars.

Upon the wall of the fire-box, over the squared end of the grate-shaft, is mounted a door 21, preferably by hinges 22, and having a securing device 23, by which it may be fastened to the box. Through this door is an opening registering with the end of the shaft and serving to allow the application of the wrench. It may be closed by a pivoted cover 24. Fixed upon the shaft adjacent to the inner side of the door is a locking member which is shown in the form of a disk 25 and has a peripheral recess 26. Into this recess enters a projection or lug 27, extending from the inner face of the door when the same is closed, the position of this projection being such that when it is in coaction with the recess, the grate will be locked with the spaces in its bars below the grate-frame. While in this relation, it will prevent the turning of the grate to bring the spaces above the frame, thus normally furnishing a proper support for the fuel.

When it is desired to shake the grate, this may be done by applying a wrench to the grate-shaft through the door-opening, the length of the recess in the locking member being sufficient to enable this to be done and allowing the bars to be oscillated without bringing their spaces above the frame. If one wishes to remove a portion of the exhausted fuel, ash, or incombustible material from the bottom of the fire, the door is opened, thus withdrawing the projection from coaction with the locking member. Then, upon applying a wrench to the grate-shaft the grate may be completely rotated, bringing the spaces in its bars beneath the fire and letting the lower portion of the contents of the fire-box drop within the bars. When the spaces reach positions below the frame, this material falls into the ash-pan. The relatively narrow spaces in the bars allows this separation to be effected by a more or less continuous rotary movement without disturbing the unconsumed fuel. When the grate reaches its proper position for the normal support of the fuel, and not before, it may be locked in place by closing the door. If the fire is to be completely dumped, the grate-bar spaces are left upper-



most until the contents of the fire-box enters the grate, whereupon it is reversed and emptied in the manner just described.

It should be noted that the spaces between  
5 the successive bars are entirely unobstructed and that the supporting shaft and arms are so located as not to be subjected to extreme heat, therefore rendering the structure more durable.

10 Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination with a fire-box, of a shaft rotatably supported thereon, a member  
15 having a recess and being fixed upon the shaft, curved grate-bars carried by the shaft, and a door movable over the end of the shaft

and coöperating with the recess to limit the rotation of the shaft.

2. The combination with a fire-box, of a 20 shaft rotatably supported thereon, a member having a recess and being fixed upon the end of the shaft outside the fire-box, curved grate-bars carried by the shaft, and a door hinged upon the fire-box and having a projection to 25 enter the recess.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

OSCAR EUGENE HALDERMAN.

Witnesses:

W. H. CARROLL,

EDITH ESTHER EGBERT.