

(No Model.)

2 Sheets—Sheet 1.

H. N. HEMINGWAY.
GRATE.

No. 439,006.

Patented Oct. 21, 1890.

Fig. 1.

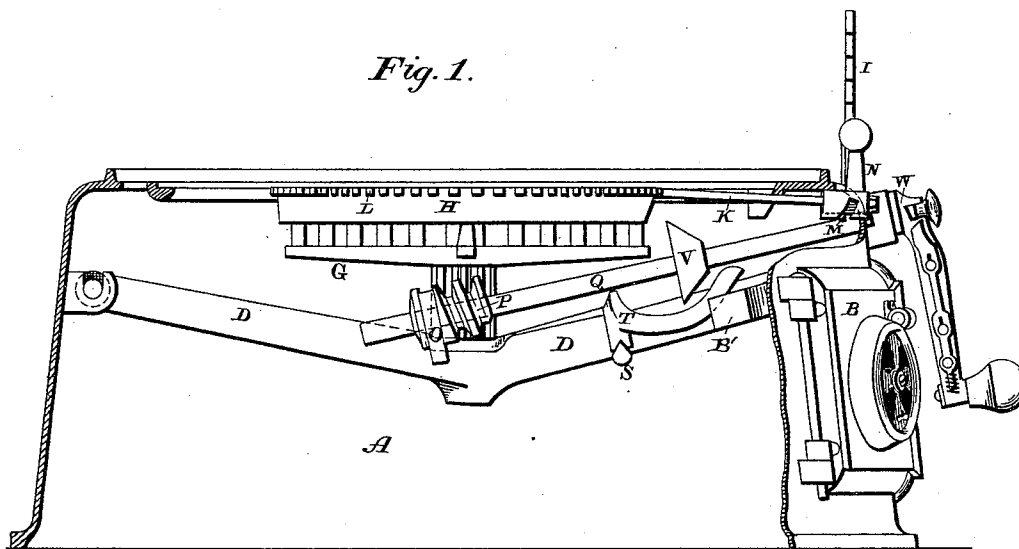
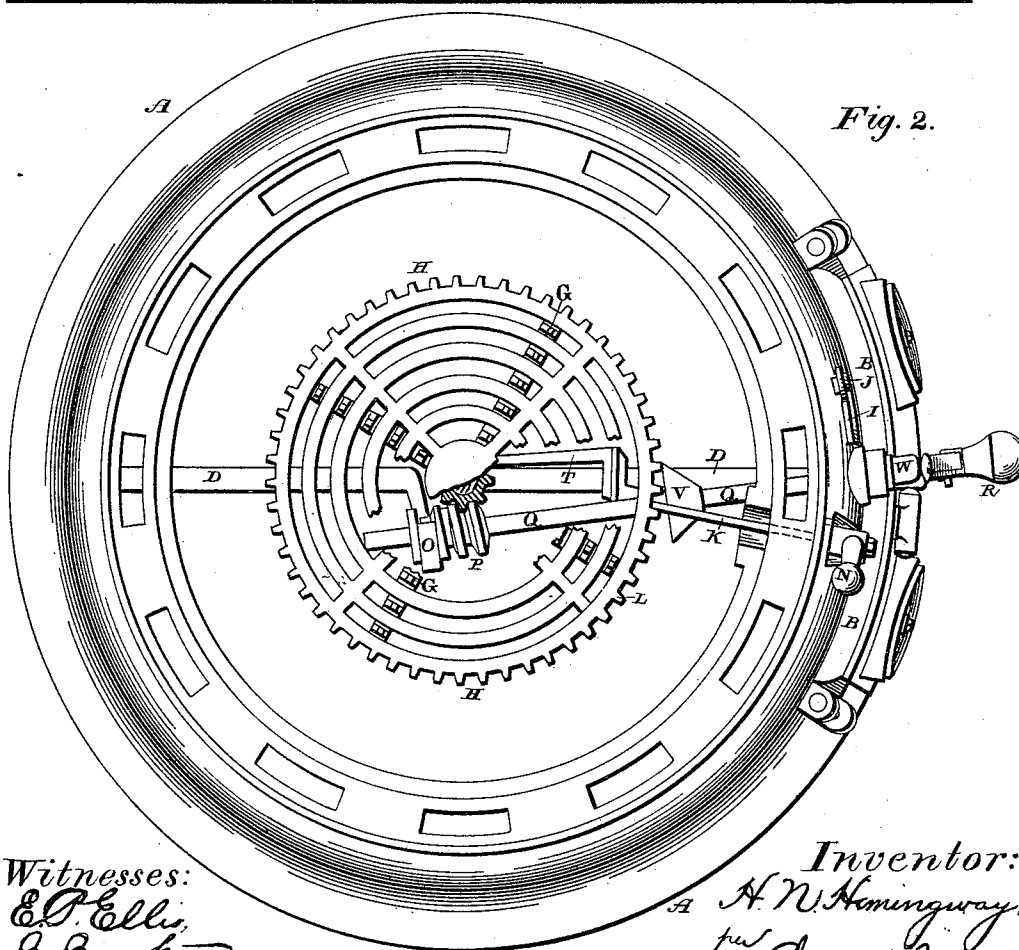


Fig. 2.



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B. Brockell,

Inventor:
H. N. Hemingway,
per
Lehmann & Patterson,
attys.

(No Model.)

H. N. HEMINGWAY.
GRATE.

2 Sheets—Sheet 2.

No. 439,006.

Patented Oct. 21, 1890.

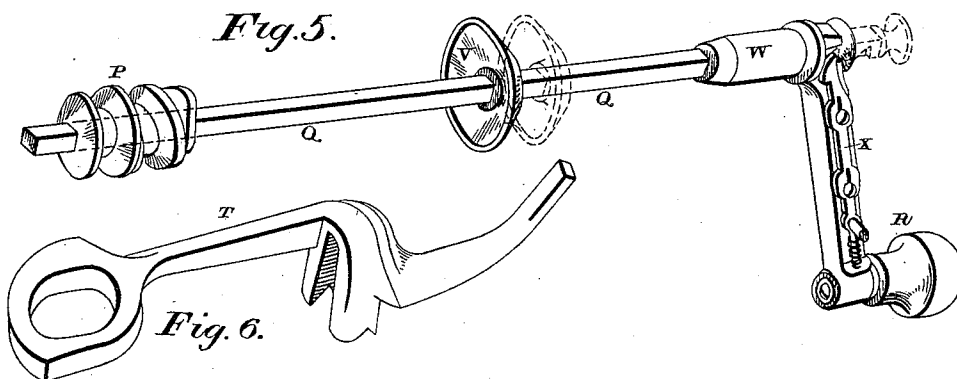
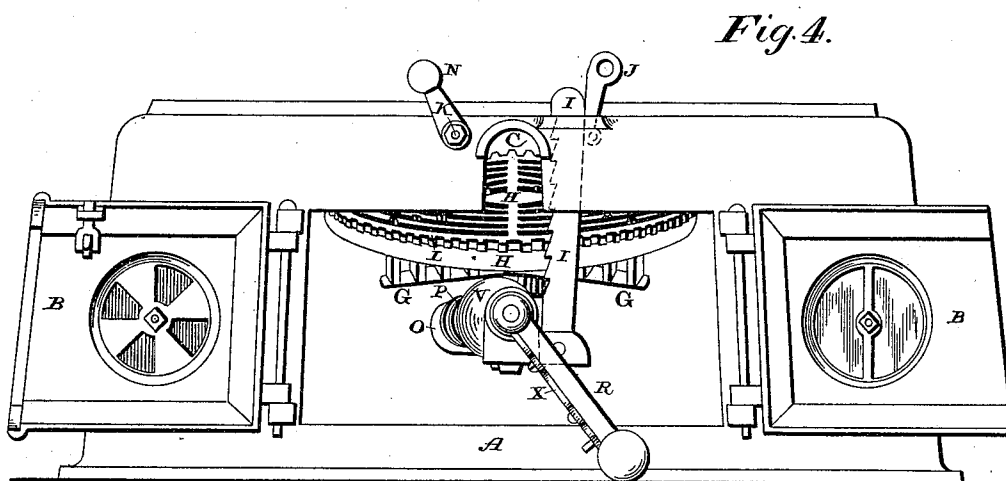
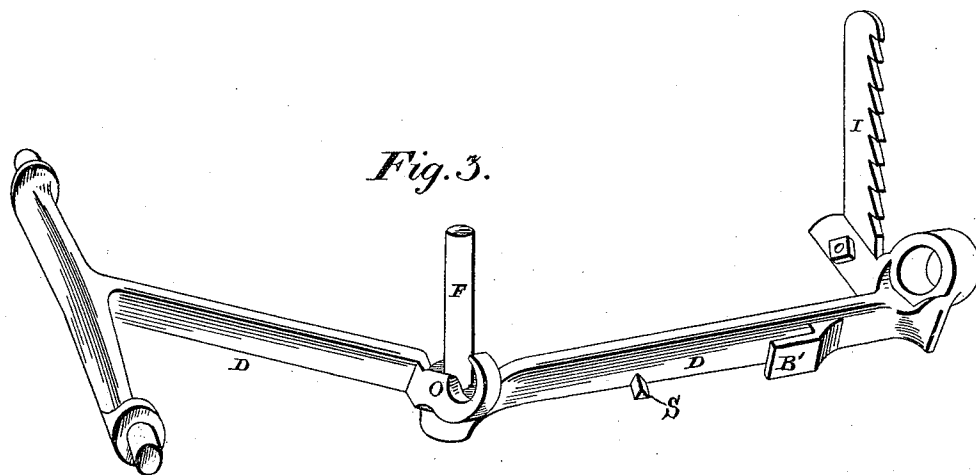


Fig. 6.

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UNITED STATES PATENT OFFICE.

HENRY N. HEMINGWAY, OF AUBURN, NEW YORK.

GRATE.

SPECIFICATION forming part of Letters Patent No. 439,006, dated October 21, 1890.

Application filed May 20, 1890. Serial No. 352,534. (No model.)

To all whom it may concern:

Be it known that I, HENRY N. HEMINGWAY, of Auburn, in the county of Cayuga and State of New York, have invented certain new and useful Improvements in Grates; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to an improvement in grates; and it consists in the combination and arrangement of parts, which will be more fully described hereinafter, whereby the grate and the revolving stirrer connected therewith can be made to revolve in either direction by the mere turning of a handle, and the parts can be lowered to allow the clinkers and pieces of slate to be removed, as will be more fully described hereinafter.

The object of my invention is to provide a grate for furnaces and base-burner stoves, and which is adapted to be raised and lowered at one side without displacing any of the parts, in which the stirrer is made vertically adjustable by moving the revolving shaft endwise, and to provide a simple apparatus by means of which the coal can be evenly distributed over the fire-surface or the ashes shaken out at the will of the operator.

Figure 1 is a side elevation, partly in section, of a grate which embodies my invention. Fig. 2 is a plan view, also partly in section. Fig. 3 is a detail view of the bridge alone. Fig. 4 is a front view showing the doors opened and the grate lowered so as to allow the clinkers to be cleaned out. Fig. 5 is a detail view of the handle and the operating-rod. Fig. 6 is a perspective of the lever T.

A represents the base of the stove or furnace, which is provided with the doors B. Extending upward from the top edge of the opening through the base A, and which is controlled by the doors B, is an opening C, through which the front end of the bridge D extends. When this bridge is in the position shown in Fig. 1, this opening C is closed by the front end of the bridge; but if the bridge carrying the parts connected thereto

is lowered, as shown in Fig. 4, this opening is left exposed. Before the bridge can be lowered at its front end the doors must be opened, so as to leave the front end of the bridge free to drop.

The inner end of the bridge is pivoted in suitable ears provided for it upon the inner side of the base, on the side opposite the doors B, and this bridge is preferably bent downward at its center, as shown, and provided with the pivot F, which extends through the center of the stirrer G and into the socket on the under side of the center of the revolving grate H. Loosely connected to the front end of this bridge D is a ratchet rod or plate I, which projects up through a slot in the top edge of the base, and which rod or plate is controlled by a wedge-shaped key J, which also projects through the same slot. When the key J is raised so that only its narrowest portion extends down through the slot, the ratchet rod or plate I can be moved laterally far enough to disengage its teeth from the base, and then the front end of the bridge can be dropped any desired distance for the purpose of lowering and inclining the grate H at its front edge sufficiently far to allow the clinkers and pieces of slate to be freely removed, the doors having been first opened. When the doors are closed, they prevent the front end of the bridge from being lowered, because the projecting collar or portion upon its front end strikes against the top edges of the door.

The stirrer G consists of a toothed hub and four radiating-arms provided with projections upon their upper edges, and which projections extend through the slots in the grate. The grate being loosely placed upon the pivot F is free to be turned in whichever direction the stirrer G is operated, unless the locking-rod K, which extends through the top edge of the base, is brought into play.

Upon the outer edge of the grate are formed teeth or projections L, and when the inner end of the rod is forced inward, so as to engage with the teeth, the grate is prevented from revolving. This rod K is provided with a projection M on its under side, and this projection M bears against an inclined sur-

face formed upon the inner side of the base A, and the mere turning of the rod K by its handle N will cause the rod K to move endwise for the purpose of engaging with or disengaging from the grate.

Formed as a part of the bridge is the bearing O, in which the worm P is loosely held, and through which worm the endwise-moving operating-rod Q passes. This rod Q is provided with a handle R at its outer end, and when the rod Q is caused to revolve the worm P revolves with it, and meshing with the teeth upon the hub of the stirrer causes the stirrer to turn either back and forth independent of the grate or continuously around in either direction and carry the grate with it.

Pivoted upon the projections S, which extend horizontally outward from opposite sides of the bridge D, is the lever T, which has its inner end to form the bearing upon which the hub of the stirrer G rests, and which has its inner end to project between the guide B' and the adjacent outer side of the bridge D, and is thus guided in its movements and prevented from having any lateral play. Secured rigidly to the operating-rod Q is the cone V, which engages with the outer end of this lever T, and when the rod Q is drawn outward the cone strikes against the outer end of the lever T and causes it to tilt upon its bearings S, and thus causes the projections upon the stirrer to rise above the top edge of the grate any desired distance. When the rod Q is revolved by its handle R, the shaker is made to clean out the ashes and cinders lying upon the top of the grate. As long as the rod Q is forced inward, so that the cone does not come in contact with the outer end of the lever T, the projections upon the stirrer do not extend above the top edge of the grate, and hence when the grate is caused to revolve by turning the rod Q the revolving movement of the grate simply causes the coal fed in the stove or furnace to spread out evenly over the fire-surface.

The handle R is not secured rigidly to the rod Q, so as to form a part thereof, but the rod Q passes back and forth through the sleeve W, which is secured to the inner end of the lever R, and which revolves freely in the tubular portion of the outer end of the bridge D. In the side of one of the edges of the outer end of the rod Q are formed a number of ratchets or teeth, with which the spring-actuated endwise-moving catch, loosely connected to the side of the lever, engages. When the catch is forced backward by the pressure of the hand, the end of the operating-rod Q can be drawn out or forced inward for the purpose of operating the cone, and through the cone operating the shaker.

If it is not desired to force the projections upon the stirrer above the top of the grate, the rod Q is not drawn outward; but if it is desired to bring the stirrer into play the catch X is moved back by the fingers of one hand

and the rod Q is drawn out by the fingers of the other.

This invention is adapted either for furnaces or base-burner stoves.

Having thus described my invention, I claim—

1. The base, the bridge extending across the base and provided with a pivot, the grate placed upon the pivot, and the stirrer provided with teeth upon its hub and projections upon its arms, and a means for raising the stirrer, combined with the worm, which engages with the hub, and an endwise-moving revolving operating-rod, substantially as described.

2. The base, the bridge extending across inside of the base and provided with a pivot, a lever pivoted upon the bridge, the revolving stirrer supported by the inner end of the lever and provided with teeth upon its hub and projections upon its arms, and the grate, combined with the worm for revolving the stirrer, the endwise-moving revolving rod which passes the worm, and the cone for engaging with the outer end of the lever for raising the stirrer, substantially as set forth.

3. The revolving endwise-moving operating-rod provided with ratchets at its outer end, the cone secured to the rod, the bridge pivoted inside of the base and extending across it, the grates, the stirrer, and the lever for raising the stirrer, the handle provided with a sleeve journaled in the outer tubular portion or end of the bridge, the lever for revolving the rod, and a spring-actuated catch for engaging with the ratchets upon the rod, all combined and arranged to operate substantially as specified.

4. The base, the bridge pivoted in the base and provided with the pivot, the projections S and a guide, the lever pivoted upon the bridge and having its outer end to catch inside of the guide, the stirrer placed upon the inner end of the lever, the grate placed upon the pivot, the worm for revolving the stirrer and the grate, the endwise-moving rod which extends through the worm, the cone which engages with the outer end of the lever, and a handle for revolving the rod, all combined and arranged to operate substantially as shown.

5. The grate having teeth or projections upon its outer edge, combined with the partially-revolving locking-rod which extends through the top of the base and which is provided with a projection to engage with the curved surface upon the base, substantially as described.

6. In a rotary grate, the combination, with the base of a bridge extending across it having a pivot at its center and bearings, of a shaft journaled in the bearings, a worm, and a stirrer journaled upon the said central pivot and provided with teeth which engage the said worm, substantially as set forth.

7. In a revolving grate, the combination,

with the base, of a bridge which extends across
the base, a grate upon the bridge, a stirrer
having a cog-wheel, a lever for raising the
stirrer, and an endwise-moving shaft having
5 a cone for engaging the said lever and a worm
for engaging the cog-wheel upon the stirrer,
substantially as described.

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

HENRY N. HEMINGWAY.

Witnesses:

A. G. TREAT,
D. W. ADAMS.