

(No Model.)

H. BORN.
ROTATIVE FIRE GRATE.

No. 421,378.

Patented Feb. 18, 1890.

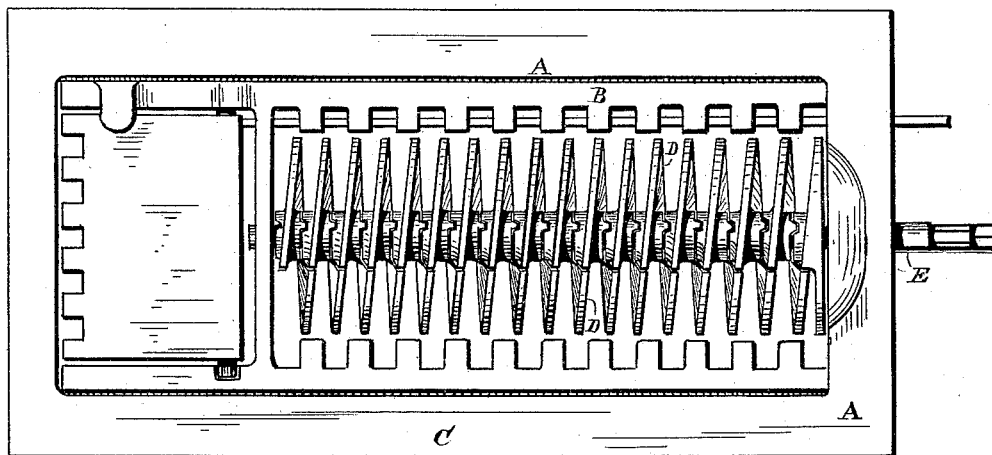


Fig. 1

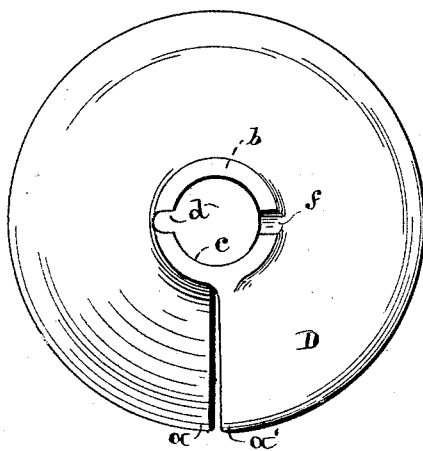


Fig. 2

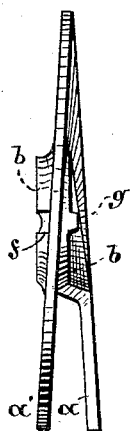


Fig. 3

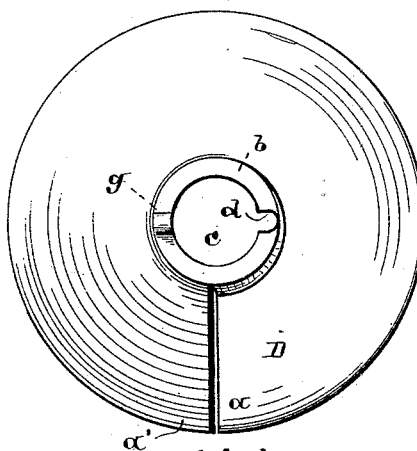


Fig. 4

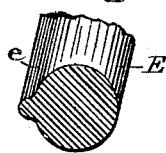


Fig. 5

WITNESSES

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ROTATIVE FIRE-GRATE.

SPECIFICATION forming part of Letters Patent No. 421,378, dated February 18, 1890.

Application filed September 10, 1889. Serial No. 323,574. (No model.)

To all whom it may concern:

Be it known that I, HENRY BORN, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented an Improved Rotative
5 Fire-Grate; and I do hereby declare that the following is a full, clear, and true description thereof.

My improvement relates to that class of grates which are turned by means of a crank
10 for the purpose of cleaning and freeing the fire-place of clinkers, &c.

The invention consists in the peculiar construction and arrangement of the several parts which constitute said grate.

15 That the invention may be fully understood, reference will be had to the annexed specification, and the accompanying drawings, in which—

Figure 1 illustrates a plan view of said grate
20 and the frame in connection with which it is used in a stove or range. Figs. 2 and 4 are face views of the grate plates or disks. Fig. 3 is a side or edge view thereof, a series of which are used for forming parts of the entire grate; and Fig. 5 is a section of the shaft
25 upon which said plates are mounted and rotated.

Like letters of reference denote like parts in the drawings and specification.

30 In Fig. 1 A indicates the grate as an entirety, and B the frame, in and upon which the shaft and plates revolve.

C is a casing which surrounds said frame for the purpose of properly adjusting said
35 grates within stoves or ranges in position.

The parts which constitute the rotatable sections of the grate are the circular spiral plates or disks D and the shaft E, which carries said plates D, with reference to which they form
40 angular or spiral faces or sides, as seen in Figs. 1 and 3—that is, the relative distance of the edges *a* and *a'* thereof represents the pitch of the helix, which is formed by the "multus" application of said plates carried upon the
45 shaft E, forming a continuous screw, as seen in Fig. 1.

The hubs *b* are made of corresponding thickness to insure a uniform continuation of the helical line when the plates are joined or
50 mounted on the shaft, as shown in Fig. 1. The bore *c* admits the mounting of a series of plates upon the shaft E, with the rib *e*, Fig.

5, thereof extending through grooves *d* in a straight line along said shaft, Fig. 1.

Fig. 5 illustrates a section of said shaft with
55 its rib *e*, which rib extends uniformly along the length thereof between the frame B to receive the requisite number of plates in close proximity, whereby the helical part of the grate is formed. In addition to the engagement of the grooves *d* and rib *e*, each plate
60 has a depression *f*, and a corresponding lug *g* in and on the opposite sides of the hub *b*. The lugs *g* on one side of said plates engage in the depressions *f* of the other, as seen in Fig.
65 1. Thus the plates are interlocked one with the other, and each one is separately secured to the shaft. The shaft-rib *e*, in extending through the grooves *d* of the plates, prevents them from slipping when rotated.

From the above description it will be seen
70 and understood that this form of a rotative grate represents a comparatively light, but durable, and easily-adjustable construction. The spiral plates work freely among the clinkers and the grate is rendered durable, as in
75 case a plate is worn out or injured it can readily be removed and a new one substituted with less expense than renewing an entire grate, and any length of grate can be made
80 by the adaptation of the shaft and number of plates to the fire-place. The series of spiral plates D are arranged upon the shaft to be rotated thereby, as before described, and also
85 so loosely as to oscillate thereon, the said shaft E forming the axis of the oscillation. By means of this movement of the plates with the shaft, clinkers, ashes, and cinders are readily discharged from the grate without choking,
90 thus preventing the plates from being broken by forcing clinkers, &c., between the spiral plate on rotation thereof. All the plates yield more or less and give space for the passage and discharge of such obstruction from the fire-place to the ash-box.

What I claim is—

1. A grate consisting of a suitable framework, a rotating shaft, and a spiral body for supporting the coals, made up of a series of
100 plates or disks, each of said plates having a radial division, the parts of the plates on each side of the division being bent outwardly from each other to approximate a spiral form, substantially as described.

2. The disks D, having a helical split face or side, a hub *b* with bore *c* and groove *d*, and a lug *g* and depression *f* at opposite sides of said hub, in combination with the shaft E, 5 having a rib *e*, for the purpose as shown and set forth.

3. In combination with a suitable framework, a rotating shaft having a rib *e*, formed lengthwise thereon, and a series of spiral 10 plates or disks, each having a groove adapted to the rib on the shaft, and each provided with a stud and recess adapted to a corresponding recess and stud on the adjacent plates, substantially as described.

4. In combination with a fire-grate, a series 15 of helical plates or disks D, having a central bore and a groove *d*, a shaft upon which the said plates are carried and having a rib in the line of said shaft to register in the grooves of the plates when mounted thereon, constructed and arranged in the manner and for 20 the purpose set forth.

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

HENRY BORN.

Witnesses:

W. H. BURRIDGE,
B. F. EIBLER.