

(No Model.)

H. J. SCHNEIDER.
GRATE.

No. 536,158.

Patented Mar. 19, 1895.

Fig. 1.

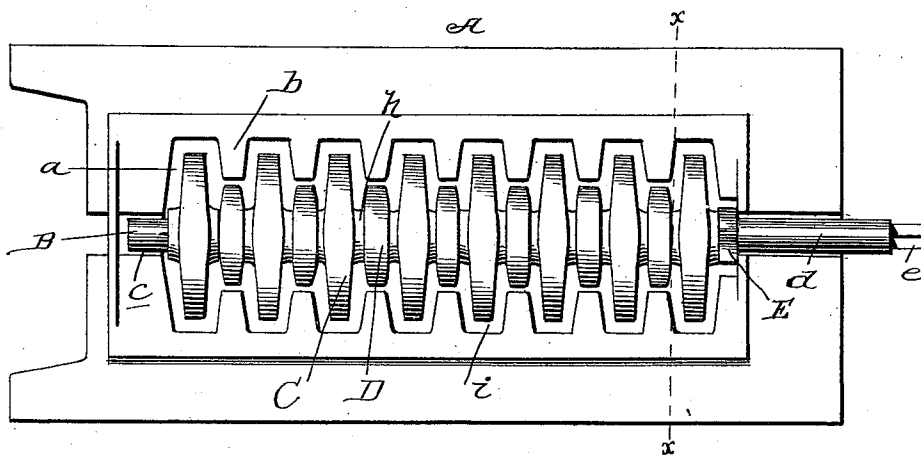


Fig. 2.

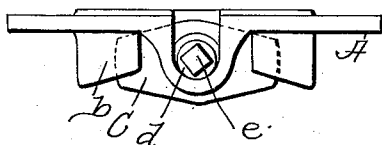


Fig. 3.

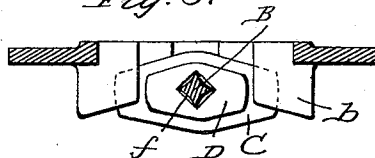


Fig. 4.

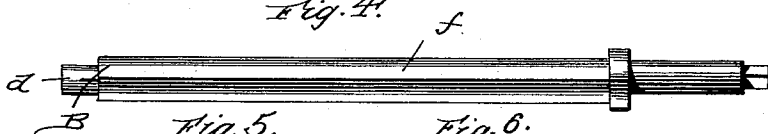


Fig. 5.

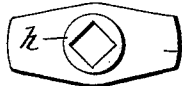
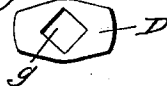


Fig. 6.



Witnesses:

H. J. Schneider
H. H. Matthews.

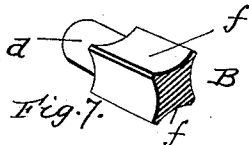


Fig. 7.

Inventor

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UNITED STATES PATENT OFFICE.

HERMANN J. SCHNEIDER, OF CLEVELAND, OHIO, ASSIGNOR TO THE H. FRANKE STEEL RANGE COMPANY, OF SAME PLACE.

GRATE.

SPECIFICATION forming part of Letters Patent No. 536,158, dated March 19, 1895.

Application filed July 7, 1894. Serial No. 516,842. (No model.)

To all whom it may concern:

Be it known that I, HERMANN J. SCHNEIDER, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Grates; and I do 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 appertains to make and use the same.

My invention relates to improvements in that class of cooking-stove or range grates, which comprises a stationary frame or plate having an opening and teeth or projections extending inwardly from opposite sides of said opening, and a single rocking bar arranged in the opening of the frame or plate and having teeth at intermediate points of its length alternating with the teeth of said frame or plate; and it consists in such a grate comprising a frame or plate having an opening and teeth or projections extending inwardly from opposite sides of the opening, which teeth or projections are short so that they will not enter too far into the center of the fire where they would be likely to be burned off, and a single rock shaft journaled in the frame or plate and having within the opening thereof, alternately arranged long and short teeth; the long teeth being arranged in alignment with the spaces between the teeth of the frame, and the short teeth; the provision of which admits of the teeth of the frame being made short, being arranged in alignment with said teeth of the frame, and the said short and long teeth being of such a size with respect to the opening in the frame or plate that but slight or narrow spaces will be formed between the different parts of the frame or plate, and the different parts of the teeth on the rock shaft so that while an almost unbroken bed is afforded for the fuel, yet the narrow spaces give in the aggregate, a large draft space, which is a desideratum.

The invention also consists in providing the stationary frame or plate at opposite ends with journal recesses to receive the opposite ends of the rock shaft, and removably keying the teeth on said shaft, so that by raising one end of the shaft without removing the other from its journal recess and turning the shaft

so as to bring the ends of the teeth uppermost, said teeth may be readily removed from the shaft and new teeth may be placed in position without removing the shaft from the frame.

With the foregoing end in view, the invention will be fully understood from the following description and claim when taken in connection with the annexed drawings, in which—

Figure 1, is a plan view of my improved grate. Fig. 2, is an end view of the same. Fig. 3, is a cross-sectional view taken in the plane indicated by the dotted line x, x , on Fig. 1. Fig. 4, is a side view of the shaft of the movable part of the grate. Fig. 5, is a side view of one of the large teeth removed from the shaft. Fig. 6, is a side view of one of the small alternating teeth removed; and Fig. 7, is a perspective, sectional, detail view of said shaft.

Before describing the details of construction, I desire to say that I am well aware that it is old in cooking stove or range grates as distinguishable from furnace grates, to provide a stationary frame with an opening and teeth or projections extending inwardly from opposite sides of said opening, and a rock shaft journaled in the frame and having teeth arranged alternately with respect to the teeth of the frame, but the construction is objectionable for the reason that unless the teeth of the frame are made long, large spaces are formed between the teeth and the rock shaft, which are not desirable for obvious reasons, and if the teeth are made long, they extend into the center of the fire and are liable to be burned off, rendering the grate practically worthless.

I am also aware that it is old in furnace grates in which a great number of rock shafts carrying teeth are employed, to provide a frame with short teeth or projections extending inwardly from opposite sides and rock shafts having alternately arranged long and short teeth; the short teeth of the rock shafts adjacent to the sides of the frame being arranged in alignment with the teeth of the frame while the long teeth of the rock shafts are arranged in alignment with the spaces between the said teeth of the frame; and I

therefore do not desire to be understood as seeking protection upon the broad idea of providing a rock shaft with alternate long and short teeth and arranging such short teeth opposite to or in alignment with teeth on a stationary frame.

In carrying out my invention, I provide the stationary frame or plate A, of the grate, which is here shown as of an elongated rectangular form in outline, (although it is obvious that the shape or configuration may be changed according to the fancy or dictation of the mechanic), with a central opening *a*, which is of a comparatively great width. On opposite sides of this central opening and at suitable intervals and also at corresponding points, I provide inwardly-directed teeth or projections *b*, which taper from their bases to their free ends and these teeth or projections are also of a comparatively short length so that they will be strong and durable and will not extend too far into the center of the fire where they would be likely to be burned off. The grate is furthermore provided at its opposite ends in its longitudinal center, with bearing recesses *c*, designed to receive and support the journal ends of the shaft, which will be presently described.

The movable part of the grate comprises a rock shaft B, having the journal ends or portions *d*, and one end is provided with a key or wrench seat *e*, which may receive a crank arm or other implement for turning or rocking it. The shaft is of an angular form in cross-section between the journal ends, and as better seen in Fig. 7, this shaft is provided in its sides with longitudinal passages *f*, which passages are designed to form air channels so as to more effectively cool the parts and thereby prevent unnecessary warping. The shaft is shown as of fluted configuration, but it is obvious that the shape of the channels might be varied.

C, indicates large teeth, and D, small teeth, which are arranged alternately upon the shaft. These teeth are respectively formed with a central, angular aperture *g*, and the large teeth are furthermore preferably formed on opposite sides in the center with integral collars *h*, although in some cases, the teeth which are designed to project from the shaft, may be formed integral therewith, but it is preferable to have them formed separately so that they might be removed and replaced by others when impaired or injured. The shaft is preferably provided with a fixed collar E, near one end, so as to prevent any undue longitudinal movement, and the air passage of the shaft is designed to extend through the collar so as to serve more effectively in admitting air and ventilating the parts.

The large teeth are placed upon the shaft so that they will enter the tapering recesses *i*, of the stationary part of the grate, and the small teeth D, are placed so as to come opposite to or in alignment with the fixed teeth or projections *b*, so that there may be no un-

ecessary space left between such parts; the fixed collars *h*, of the teeth C, being designed to fix the position of the small teeth so as to bring them in the plane of the fixed teeth *b*. These teeth taper on their sides from their centers to opposite ends and the top and bottom longitudinal sides are similar, so that either side may be used up or down.

The provision of the short teeth D, admits of the teeth *b*, of the frame or plate, being made short for the reason stated, without the formation of large spaces which would permit the fuel to drop through and would also allow a too great proportion of the fire to remain undisturbed when the grate is rocked; and the said long and short teeth being of such a size with respect to the opening in the frame or plate A, that but slight or narrow spaces will be formed between the different parts of the frame or plate and the different parts of the teeth on the rock shaft, and an almost unbroken bed is afforded for the fuel and in the aggregate a large draft space is formed, which is a desideratum.

The journal ends *d*, of the rock shaft B, being simply seated in the bearing recesses *c*, of the frame or plate A, and the teeth C, D, being removably keyed on the rock shaft, it will be seen that when it is decided to remove any of the teeth, it is simply necessary to turn the rock shaft so as to bring the ends of the teeth uppermost and then press downwardly upon the outer end of the rock shaft, when the outer end of the frame or plate will serve as a fulcrum, and the inner end of the rock shaft will be raised when any one or all of the teeth may be removed, and if necessary, new ones placed in position, after which the pressure on the outer end of the rock shaft is removed to permit the inner end thereof to resume its seat in the inner bearing recess *c*.

With a grate thus constructed, ashes and cinders can be quickly and easily removed without any material loss of fuel and as both sides of the movable part are similar, should it become necessary to turn the center part in order to remove a clinker or prevent the same from choking the grate, this can be done, or the movable part can be entirely rotated, without creating any unnecessarily large opening so as to lose the fuel.

Having described my invention, what I claim is—

The herein described stove or range grate, consisting essentially of the frame or plate A, having the central, longitudinal opening *a*, and the bearing recesses *c*, at opposite ends of the opening and also having the short teeth *b*, extending inwardly from opposite sides of said opening *a*, at intervals in the length thereof, the single rock shaft B, arranged in the bearing recesses *c*, of the frame so as to permit of its being tilted, and the alternate long and short teeth C, D, removably keyed on the rock shaft so that they may be removed from said shaft when the same has been tilted; the long teeth C, extending into the spaces

between the frame teeth *b*, on opposite sides
of the opening *a*, and the short teeth *D*; the
provision of which admits of the teeth *b*, of
the frame being made short, being arranged
5 in alignment with said teeth of the frame, and
the said short and long teeth being of such a
size with respect to the opening in the frame
or plate that but slight or narrow spaces will
be formed between the different parts of the

stationary frame or plate and the different 10
parts of the teeth on the rock shaft, all sub-
stantially as and for the purpose set forth.

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

HERMANN J. SCHNEIDER.

Witnesses:

P. KNAPPENBERGER,
C. H. RAEDER.