

(No Model.)

2 Sheets—Sheet 1.

E. D. NELLIS.
STOVE GRATE.

No. 478,042.

Patented June 28, 1892.

Fig. 1

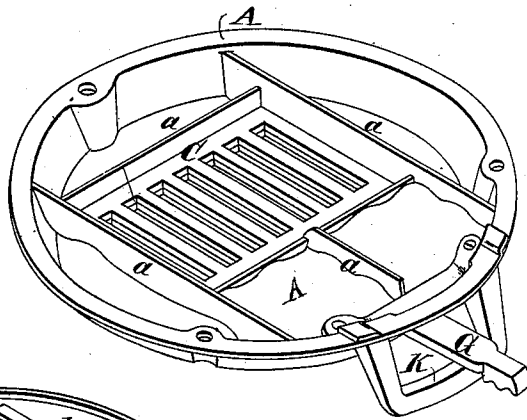


Fig. 2.

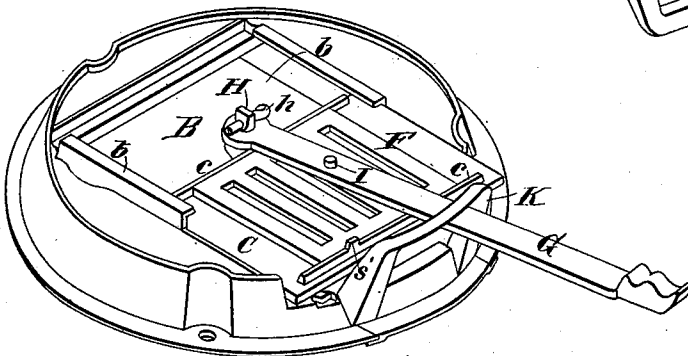


Fig. 3.

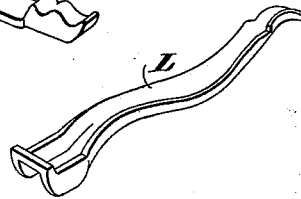
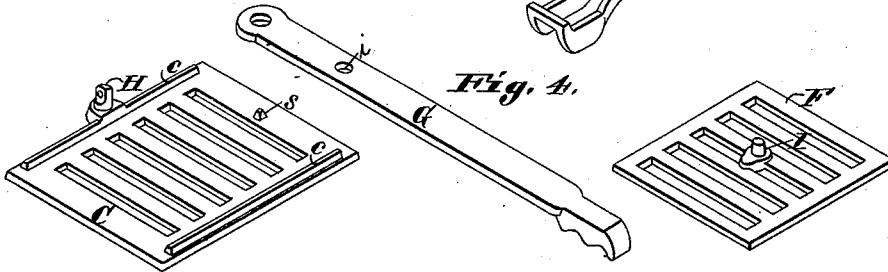
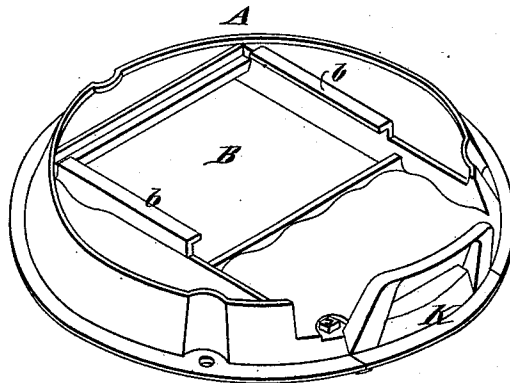


Fig. 4.



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J. W. Crocker.



Inventor:
Emery D. Nellis by
Paul Bakewell
his attorney

(No Model.)

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Fig. 5

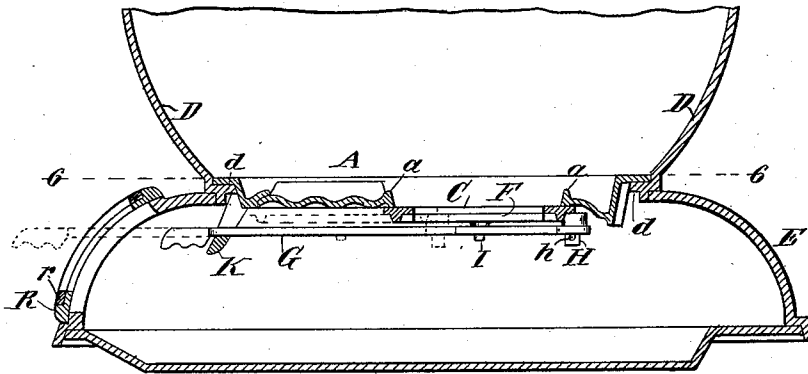
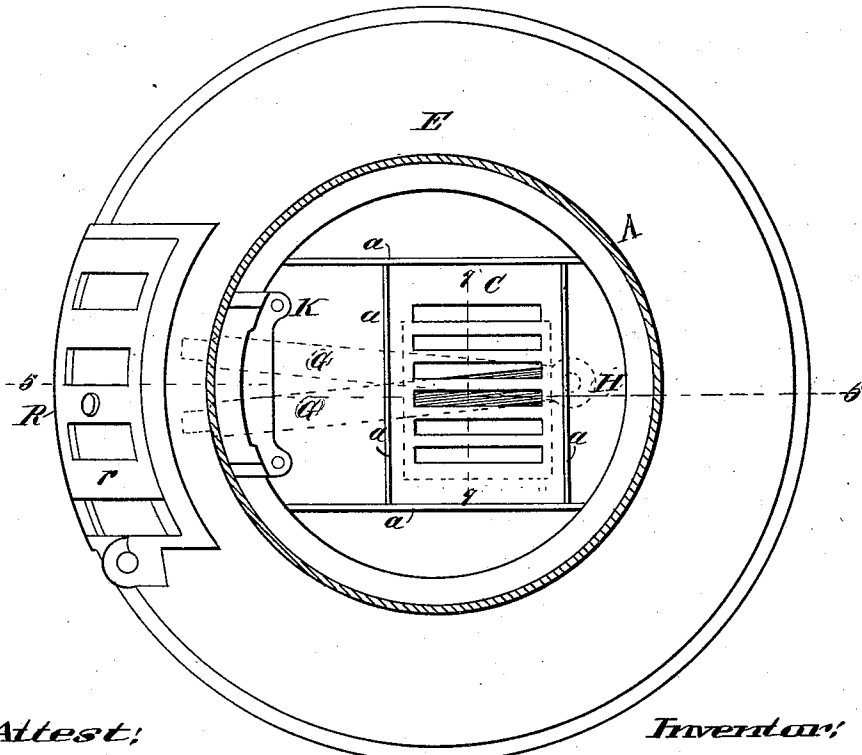


Fig. 6



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Paul Bakewell
his attorney.



UNITED STATES PATENT OFFICE.

EMERY D. NELLIS, OF ST. LOUIS, MISSOURI.

STOVE-GRATE.

SPECIFICATION forming part of Letters Patent No. 478,042, dated June 28, 1892.

Application filed August 18, 1891. Serial No. 402,998. (No model.)

To all whom it may concern:

Be it known that I, EMERY D. NELLIS, a citizen of the United States, residing in the city of St. Louis and State of Missouri, have invented certain new and useful Improvements in Stove-Grates, of which the following is a full, clear, and exact description.

My invention relates to grates formed in the bottom plate of the fire-boxes of stoves for admitting air to the fire and for withdrawing the ashes, &c., and has for its object to make of such grate a draft-regulator capable of being made practically air-tight and to make of the whole a center-draw dumping-plate.

It consists in the novel features in the construction of the fire-box bottom plate of stoves hereinafter described.

In the accompanying drawings, in which like letters of reference denote like parts in the several figures, I have illustrated my improved grate as adapted to an upright cylinder heating-stove, which will serve to show its application as well to other forms of stoves.

Figure 1 is a perspective top view of the fire-box bottom plate as constructed to accommodate my improved grate. Fig. 2 is a view, as in Fig. 1, of the bottom of the same. Fig. 3 is a perspective view of the handle for operating the grate. Fig. 4 is a detail perspective view of the separate parts of my improved grate and consequent construction of the fire-box bottom plate. Fig. 5 is a vertical section, taken as on the line 5 5 in Fig. 6, of the lower portion of a heating-stove with my improved grate attached. Fig. 6 is a horizontal section of the same, taken as on the line 6 6 in Fig. 5; and Figs. 7 and 8 are sections, taken as on the line 7 7 in Fig. 6, of the grate-bars, showing, in Fig. 7, the full draft open, and in Fig. 8, the draft closed.

As illustrated in Figs. 2 and 4, I construct the fire-box bottom plate A with an open space B, which is normally covered by the open grate-plate C, the forward part of said bottom plate being imperforate, so as to form a dead-plate beneath which the grate C moves when withdrawn to close the opening B of the bottom plate. Lips b are formed in the sides of the opening B to support the sliding grate C in such manner as to adapt the grate-plate to be given a longitudinal movement uncover-

ing the opening, as illustrated in dotted lines in Fig. 5, and as shown in the two positions of the grate-plate C in Figs. 1 and 2, respectively. This movement is preferably a forward-and-backward movement, as illustrated in Figs. 2 and 5, forming a center-draw, conveniently operated from the front of the stove through the ash-box door R.

The stove illustrated in the drawings is designed for burning wood, and for this reason the bottom plate A is formed with raised ribs a to hold the fuel away from the grate, enabling a full draft to the fire, the transverse back one acting as a stop to the longitudinal movement of the grate-plate C in that direction. As shown in Fig. 5, the bottom plate A is fitted to the interior of the bottom of the fire-box, a flange d being formed in the lower edge of the fire-box casting D to support the same, the whole resting on the casting E, which forms the ash-box and supporting frame-work of the stove. Preferably in the front portion of the ash-box casting is formed an opening closed by the door R, which door is formed with a sliding open front r, by which air is admitted and regulated to the interior of the ash-box D. The forward and back edges of the grate-plate C are formed with the raised lips c, between which is fitted the grid of movable grate-bars E, adapting the grid F to be given a longitudinal movement by the lever-bar G, the back end of which is pivotally secured by the split spring-pin h on the pivot pin or stud H, secured to or formed in the back edge of the grate-plate C. The amount of this lateral play of the grid F sliding in between the guides c is regulated by stops, as s, Fig. 4, secured to the grate-plate C for the grid F to strike against, or s', Fig. 2, for the operating-bar G to abut against. As shown in the detail view in Fig. 4 of the grid F, it is formed with a projecting pin I, which engages with the lever-bar G in a perforation i formed in the bar therefor.

As shown in Figs. 1 and 5, the normal relative position of the fire-box bottom plate A and the parts of the grate is with the grate below and dependently supported by the lips b, formed in the bottom-plate casting A. As between the grate-plate C and the grid F, the grid is below and is supported in position by the lever-bar G, the bar itself being sup-

ported at its back end by the pin *h*, which secures it to the stud *H*, the forward end being supported by the yoke extension *K*, which is formed in or secured to the bottom plate *A*. (See Figs. 1, 2, and 5.) The projecting end of the lever-bar *G* is formed with a shoulder forming a hook with parallel sides, which is fitted to a stirrup-formed end of the removable handle *L*, adapting the bar *G* to be given by the handle *L* a sidewise oscillating movement, as in operating the grid *F* relative to the grate-plate *C*, as hereinafter described, and a backward-and-forward movement of the grate as a whole, as in covering and uncovering the opening *B* in the bottom plate *A*, as hereinafter described. The grate-plate *C* is preferably made with parallel bars and intermediate openings between the bars, as illustrated, the openings between the bars being of a width corresponding to the width of the bars for this reason, that when the grid *F*, which is constructed similar to the plate *C*, is secured to the under side thereof, it is adapted to either fully cover the intermediate openings between the bars in the plate *C*, as shown in Fig. 8, or, as shown in Fig. 7, to fully open the same. In this way the grate as a draft-regulator is adapted to be made practically air-tight, or to be made to operate as an ordinary congeries of grate-bars when in their normal position, as shown in Fig. 7, as covering the opening *B* in the bottom plate *A*. In this way—that is, by the application of my improved grate to the bottom plate of the stove—the bottom framing of the stove can be made air-tight, enabling fire to be kept alive for a much longer time without attention than would be possible otherwise, thereby obviating the necessary care in constructing straight draft-stoves to make the portion thereof below the fire-box air-tight.

In operation the principles of my improved grate are as follows: When it is desired to dump the ashes into the ash-box, the grate as a whole is drawn forward by applying the handle *L* to the end of the lever-bar *G*, uncovering the opening *B* in the bottom plate *A* to the position shown in Fig. 2 and in dotted lines in Fig. 5. When it is desired to regulate the draft to the fire, the sliding front of the door *R* being opened, the lever-bar *G* is thrown more or less to one side (the right,

as shown in the drawings) until the desired amount of opening is effected through the grate-bars. When it is desired to wholly shut off the draft, the lever *G* is thrown all the way to the left, arranging the relative position of the bars of the plate *C* and the grid *F* so as to close the openings therethrough, or, as shown in Fig. 8, the lever *G* being in the upper position shown in dotted lines in Fig. 6. When it is desired to merely “shake” the grate, the lever *G* is oscillated from side to side, opening and closing the openings through the grate-plate *C*.

I claim—

1. The combination, with a fire-box bottom plate having a grate-opening, of a reciprocating grate adapted to close the opening in the bottom plate, a grid arranged to reciprocate transversely of the grate and adapted to close the grate, and means for actuating the grate and the grid, substantially as and for the purposes specified.

2. The combination, with a fire-box bottom plate having a grate-opening, of a reciprocating grate adapted to close the opening in the bottom plate, a grid mounted on the grate and arranged to reciprocate transversely thereof, and a bar or lever mounted on the grate and adapted to actuate both the grate and grid, substantially as and for the purposes specified.

3. The combination, with a fire-box bottom plate having a grate-opening and provided on its upper surface with ribs to support the fuel, of a sliding grate adapted to close the grate-opening of the bottom plate and a movable grid adapted to close the grate-openings, substantially as and for the purposes specified.

4. In a stove, fire-box bottom plate *A*, formed with opening *B* and lips *b*, grate-plate *C*, formed with lips *c* and pivotal stud *H*, grate-plate *F*, formed with pivotal stud *I*, lever-bar *G*, pin *h*, and handle *L*, combined and operating substantially as described, and for the purposes specified.

In testimony whereof I have affixed my signature, in presence of two witnesses, this 30th day of July, 1891.

EMERY D. NELLIS.

Witnesses:

A. RAMEL,
J. W. CROOKES.