(No Model.) 2 Sheets—Sheet 1.

N. RUGER.

FUEL CUT-OFF FOR GRATES.

No. 373,685. Patented Nov. 22, 1887.

Fig. 1.

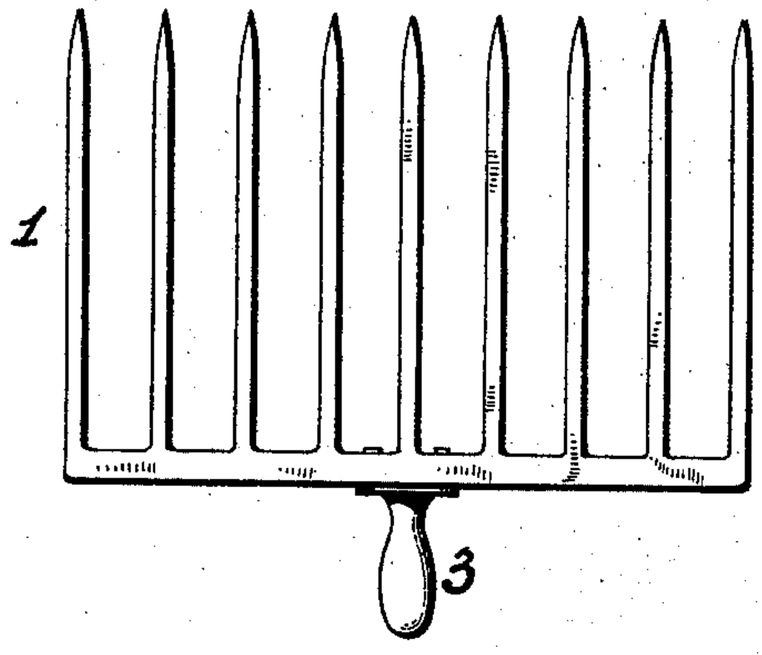


Fig. 2.

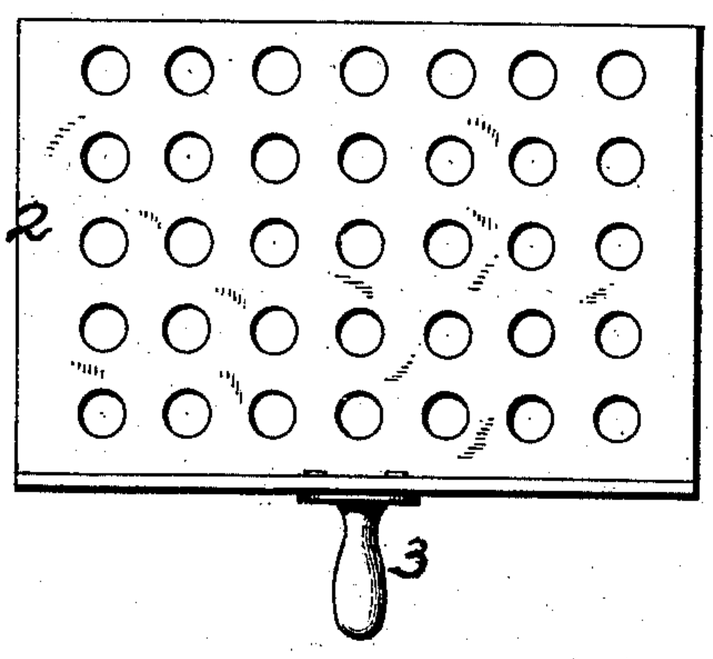


Fig. 3.

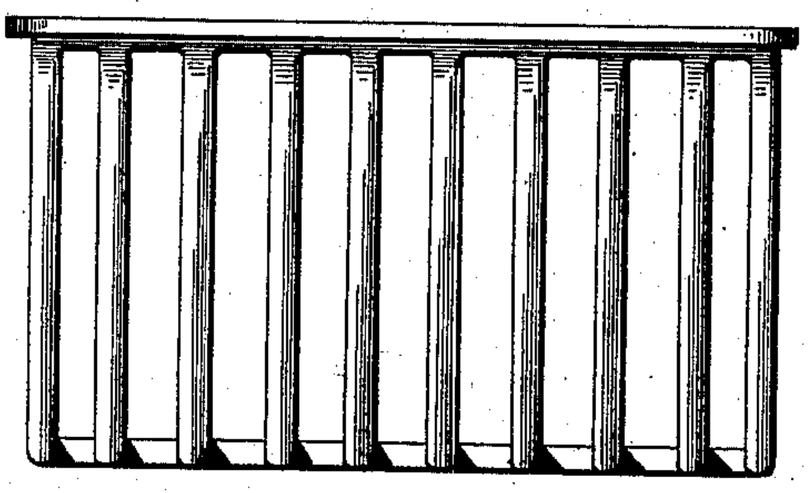


Fig. 5.

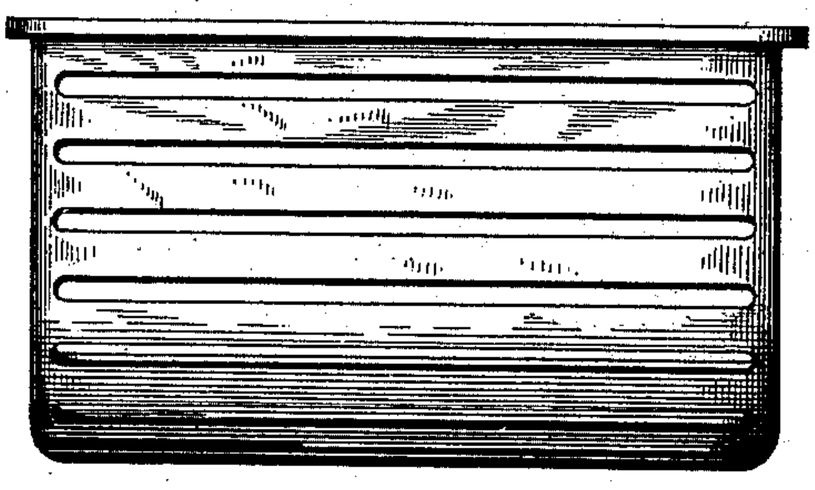


Fig. 4.

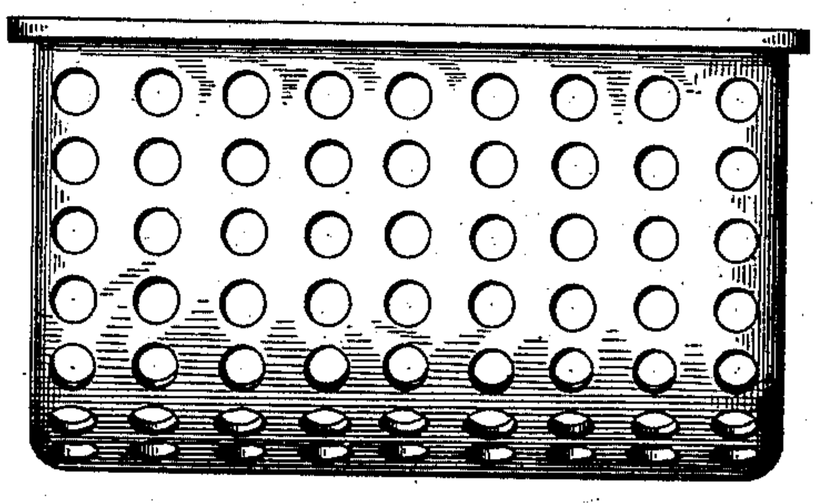
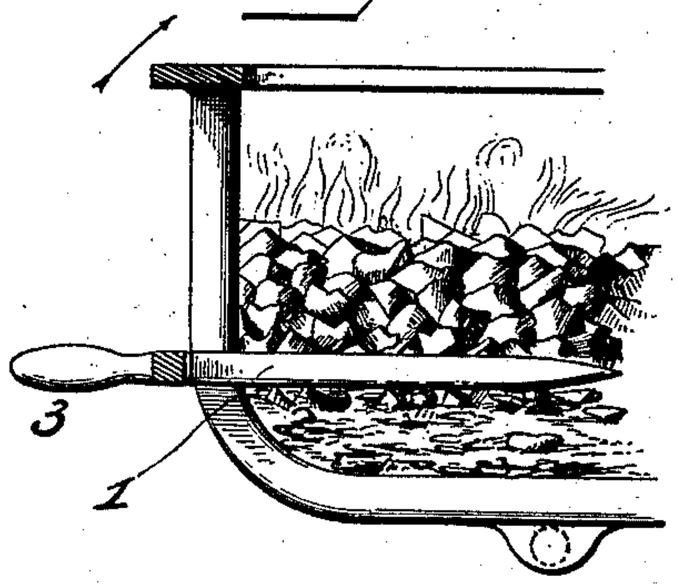


Fig. 6.



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(No Model.) 2 Sheets—Sheet 2.

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FUEL CUT-OFF FOR GRATES.

No. 373,685. Patented Nov. 22, 1887.

Fig. 7.

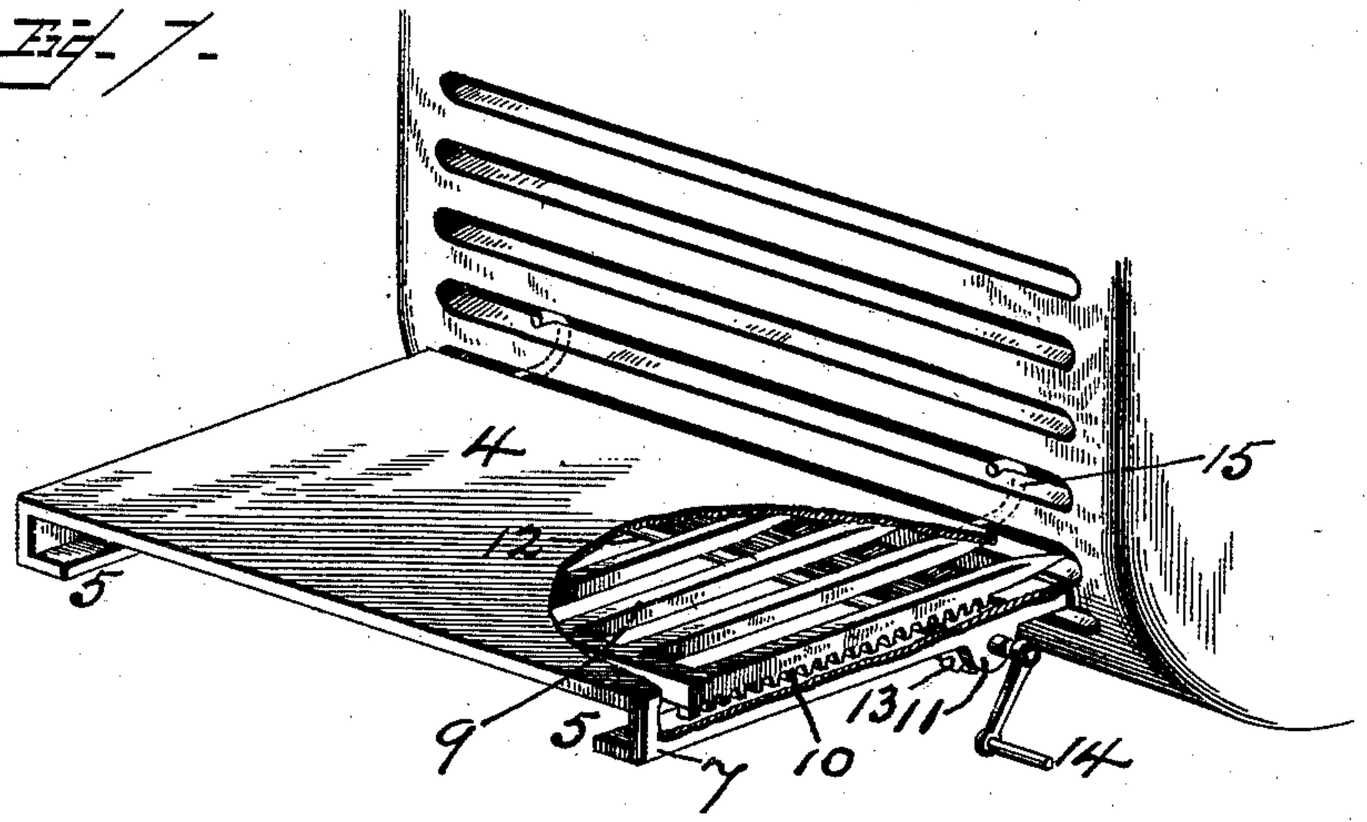
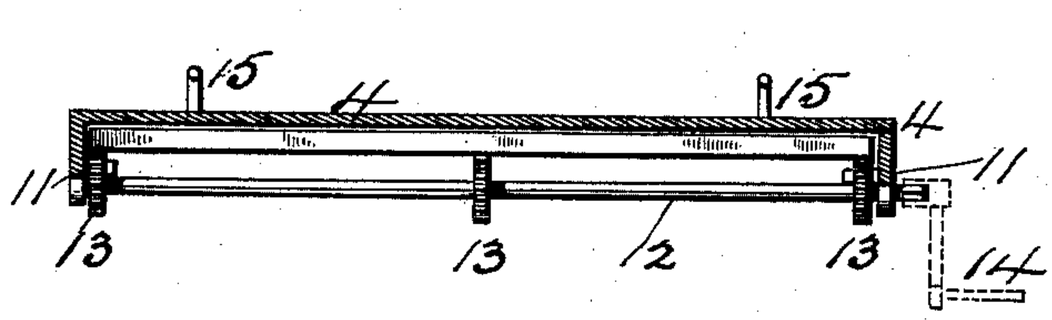


Fig. 9.



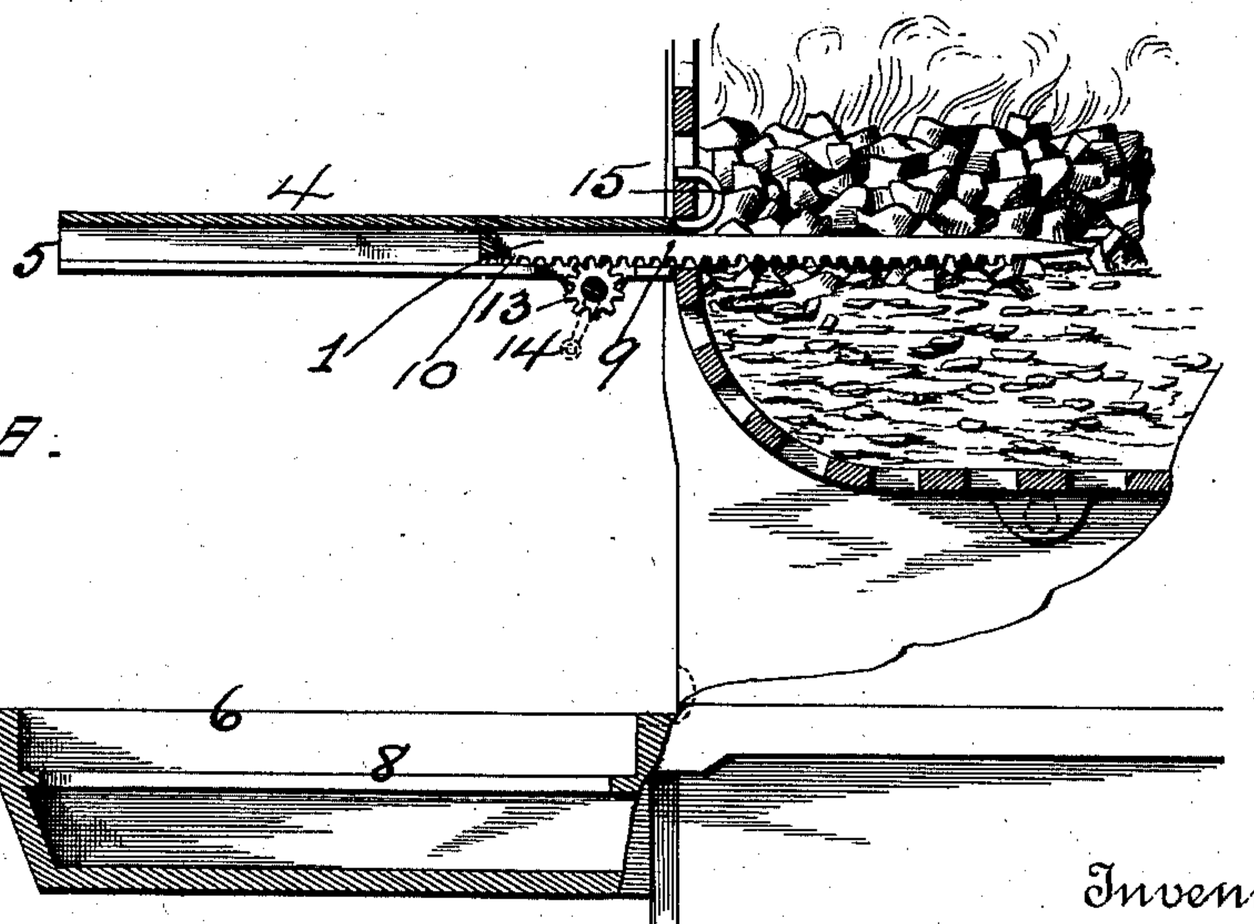


Fig. 8.

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UNITED STATES PATENT OFFICE.

NELSON RUGER, OF WILKES-BARRÉ, PENNSYLVANIA.

FUEL CUT-OFF FOR GRATES.

SPECIFICATION forming part of Letters Patent No. 373,685, dated November 22, 1887

Application filed September 30, 1886. Serial No. 214,999. (No model.)

To all whom it may concern:

Be it known that I, NELSON RUGER, a citizen of the United States, residing at Wilkes-Barré, in the county of Luzerne and State of Pennsylvania, have invented certain new and useful Improvements in Fuel Cut-Offs; 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 appertains to make and use the same.

This invention relates to improvements, as hereinafter described, in cut-offs for fire-places and grates for cutting off or dividing the burned from the live fuel.

In the accompanying drawings, Figure 1 represents a top plan view of one form of cut-off constructed according to my invention. Fig. 2 represents a similar view of a modified form of cut-off. Fig. 3 represents a front elevation of a fire-place or grate with vertical grate-bars. Fig. 4 represents a front elevation of the front plate of a grate provided with perforations therein; Fig. 5, a similar view of a grate with horizontal bars, or with horizontal slots formed in the front plate. Fig. 6 represents a vertical transverse section of a portion of a grate, showing the cut-off in operation. Fig. 7 represents a perspective view of a portion of a grate with the hearth-plate suspended in position thereon and with the cut-off in readiness to be projected within the grate. Fig. 8 represents a vertical transverse section of a portion of a stove with the hearth-plate in position and with the cut-off in operation. Fig. 9 represents in section the hearth-plate with the cog-shaft and cogs in position therein.

Heretofore in practice, where grates are provided with dumping-bottoms, upon the bottom being turned to remove the spent fuel the whole of the contents of the grate—spent and unspent fuel—are dumped into the ash-pit in a commingled state, necessitating much labor in sifting the unused from the used fuel. Where a grate is at its bottom clogged by ashes and spent fuel and live fuel is on the top thereof, either much raking has to be done to remove such ashes, and the live fuel is thereby allowed to fall down to the bottom of the grate, and its utility thereby lost, except as a means for kindling fresh fuel placed thereon, or else the whole is withdrawn from the grate and an entirely new fire made. In either case not only is much time lost in securing an operative fire, but the utility of the live fuel is impaired and the economical use of fuel is prevented.

By the employment of my improved cut-off the live fuel can be readily cut off from the spent fuel and held suspended upon said cut-off in the top portion of the grate and the spent fuel dumped into the ash-pit without disturbing the live fuel at the upper portion of the grate. Then by the operation of the customary drafts the live fuel can be quickly blown up and revivified and utilized to its fullest possible extent without necessitating the application of fresh fuel thereto and waiting until that has brightened up. The economical feature of this arrangement will be readily apparent, as by reason of the support afforded the live fuel superposed on the ashes, the cut-off practically acting while it remains inserted within the grate as a grate-bottom, said unburned fuel will be held at its highest position until its entire heating capacity is exhausted.

The improved cut-off may be constructed in either of two forms, as represented in the drawings—viz., of fork shape, as shown at 1, Fig. 1, which construction is adapted for use with grates having their front faces provided with either vertical or horizontal slots or bars, as represented in Figs. 3 and 5, or with holes or perforations, as shown at Fig. 4, or in the form of a perforated shovel, as represented at 2, Fig. 2, which latter construction is especially adapted for use with those grates having horizontal slots or bars in the front portion, as represented at Fig. 5.

The cut-offs, as represented in Figs. 1 and 2, are adapted to be pushed in and drawn out from between the grate-bars and within and from the fuel in the grate by hand, a handle, 3, serving as a grasp by which the cut-off can be operated. In this initial form it is designed that when the cut-off is not needed in position within the grate it may be rested against the stove, or in any other convenient position or place within ready reach for reuse.

While my improved cut-off proper is thus capable of being used, as above indicated and

as shown in Fig. 6 of the drawings, especially in connection with fire-places and those stoves and ranges having no front hearth and hearth-plate, in such stoves, &c., as have hearths and hearth-plates I construct the hearth-plate 4 on its side edges with depending and inturned flanges 5, or with grooves formed in its depending sides, the cut-off 2 being supported by and resting and sliding within said flanges or grooves in the manner represented in Figs. 7 and 8 of the drawings. When the cut-off is out of use, the hearth-plate is placed in its customary position to cover the hearth 6, with the depending side portions, 7, of said hearth-plate resting upon and being supported by the ledges or flanges 8 on the inner side walls of the hearth. The mode of application and operation of the hearth-plate and cut-off according to this part of my invention are clearly represented in Figs. 7 and 8 of the drawings. The cut-off in the arrangement therein shown is provided on the under faces of two, three, or more of its tines 9 when a fork-shaped cut-off is employed, and at suitable positions on the under face, usually at or near each side edge and center, where a cut-off of perforated-shovel form—such as is represented in Fig. 2—is used, with a depending rack or series of teeth, 10. From each side edge of the hearth-plate 4 depend ears 11, which serve as bearings for a transverse shaft, 12, upon which are keyed or otherwise secured pinions 13, which engage with the teeth 10 on the under side of the cut-off.

14 represents a crank or handle removably connected to one end of said shaft 12, upon turning which crank in one direction the cut-off will be projected into the grate, as represented in Fig. 8, while by turning said crank in the opposite direction said cut-off will be retracted from the grate and drawn within the hearth-plate, as represented in Fig. 7. When it is desired to remove the hearth-plate and place it in position to cover the hearth, the crank is removed from the shaft 12, by which means the plate can rest snugly within the hearth.

15 represents swivel-hooks attached to the front edge of the hearth-plate for the purpose of securing the connection of said hearth-plate to and suspension from the grate-bars in the manner represented in Figs. 7 and 8. When it is desired to insert the cut-off within the grate for the purpose of cutting the burned fuel off from the unburned fuel, the hearth-plate, with its accompanying cut-off, is lifted off the hearth 6, the swivel-hooks 15 turned with their points upward, and the hearth-plate then tilted or held at a suitable angle to permit of the insertion between the bars and the hooking around the same of said hooks. When said hooks are thus engaged with the appropriate grate-bar, the hearth-plate is then lowered to a horizontal position, in which it will be securely held by said hooks. Then the crank 14 is applied to the end of the shaft 12, and said crank turned so as to force the cut-off, through the medium of the pinions 13 and the teeth 10, into the grate, and thus support the live fuel and permit the grate-bottom to be rocked or shaken to remove the dead fuel, or said dead fuel otherwise removed without disturbing the live fuel.

The cut-off, when inserted within a grate in the manner herein referred to, acts practically as a grate-bottom. It can remain in position until the fuel in the grate has entirely burned out. The spaces between the prongs or in the shovel-form of cut-off permit of air readily passing up to the superincumbent fuel.

When the hearth-plate and cut-off are suspended from a grate, after the manner represented in Figs. 7 and 8, said hearth-plate can readily be used as a shelf or rest on which saucepans or other articles may rest, the hooks 15 firmly gripping the grate-bars, and, in connection with the support afforded by the pressure against the grate of the front edge of the hearth-plate, insuring the steady support of said hearth-plate in the position shown in the drawings. By using swivel-hooks the hooks can be reversed from the position in which they are shown in the drawings, and so as to have their points hook over the top edge of the grate-bar. This position is secured when it is desired to hang the hearth-plate vertically from a grate-bar, which position may sometimes be desired, as said hearth-plate will then be more handy than when covering the hearth, and in that vertical position the plate can be utilized as a damper to shut off under draft and prevent air passing up through the bottom of the grate.

In the case of stoves not having a hearth-plate I construct a plate with flanges 5, ears 10, and hooks 15, and journal the pinion-shaft therein and rest the cut-off upon the flanges 5, all in the same manner as represented in the drawings. In order to adapt the plate carrying the cut-off to those grates having vertical bars in their front face, all that is necessary is to simply lengthen the hooks 15 to adapt them to engage with the top front edge of the grate.

Having thus described my invention, what I claim is—

1. The combination, with a grate having suitable openings in its front face, of a fuel cut-off independent of and disconnected from the grate, and consisting of a fork having tines disconnected at their pointed ends and a handle or hand-grasp by means of which said cut-off may be inserted within and removed from the grate, as set forth, and a plate having a flat upper surface, transverse and inwardly-extending lugs or flanges depending from its respective ends to receive and support the cut-off, and upwardly-extending hooks at its inner edge adapted to pass between and grip the grate-bars and removably support said plate in position, substantially as shown and described.

2. In combination with a fire-grate, a plate

having at one edge devices for connecting said plate with and supporting it from the grate, and on its under side suitable grooves or flanges, a fuel cut-off resting at its sides within said flanges or grooves and having on its under side suitable teeth or rack bars, a shaft journaled transversely within said plate and having toothed pinions to engage with the teeth on the cut-off, and a crank or handle for rotating said shaft.

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

NELSON RUGER.

Witnesses:
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JOHN G. MCASKIE.