

Feb. 25, 1936.

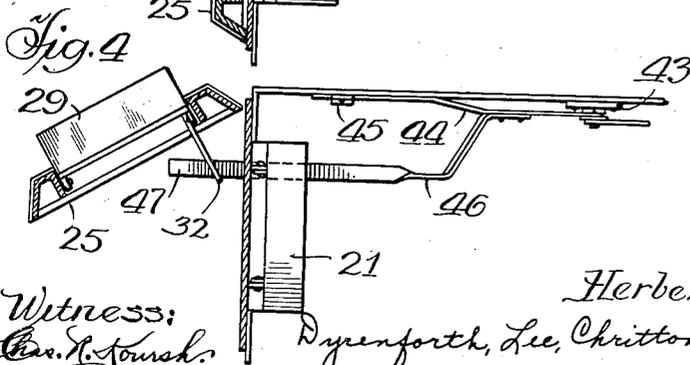
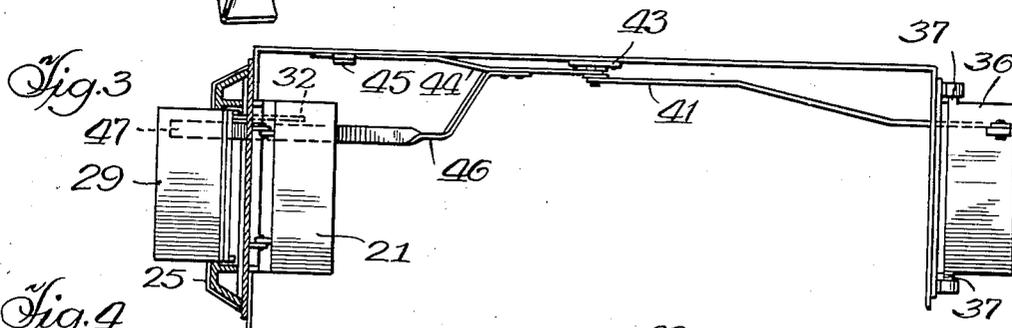
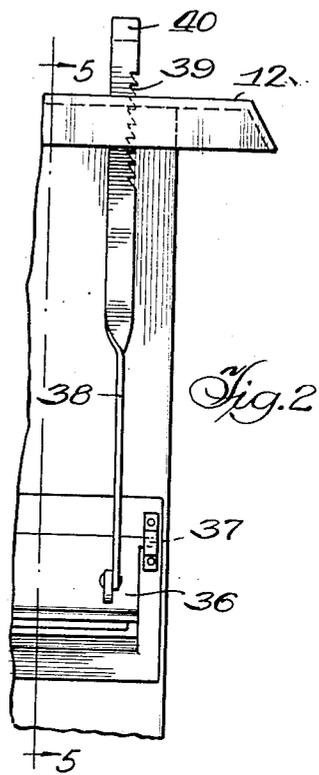
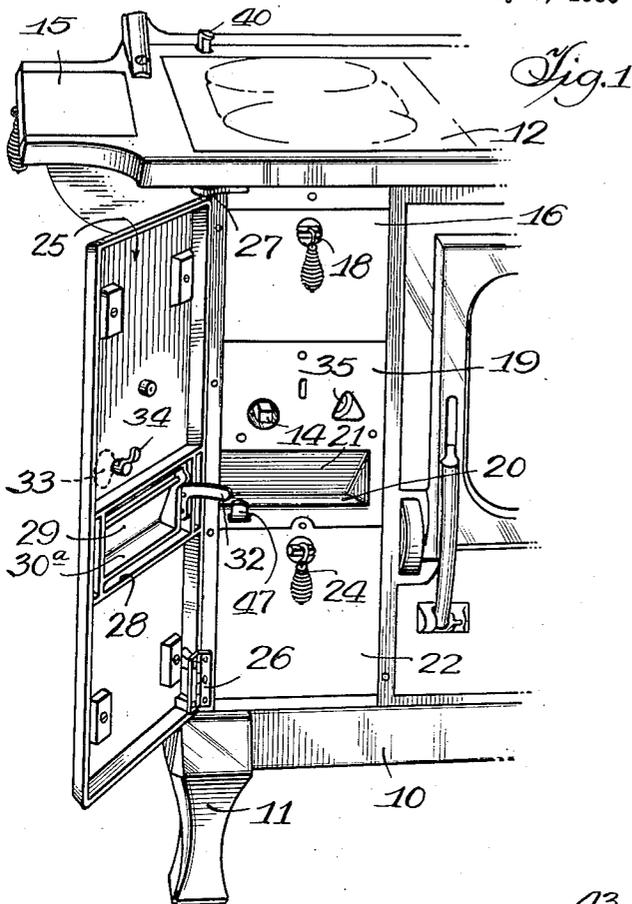
H. T. BURROW

2,032,252

RANGE

Filed May 9, 1935

2 Sheets-Sheet 1



Witness:
C. S. Trench

Inventor,
Herbert T. Burrow,
Dyrenforth, Lee, Crittton & Miles, Attys

Feb. 25, 1936.

H. T. BURROW

2,032,252

RANGE

Filed May 9, 1935

2 Sheets-Sheet 2

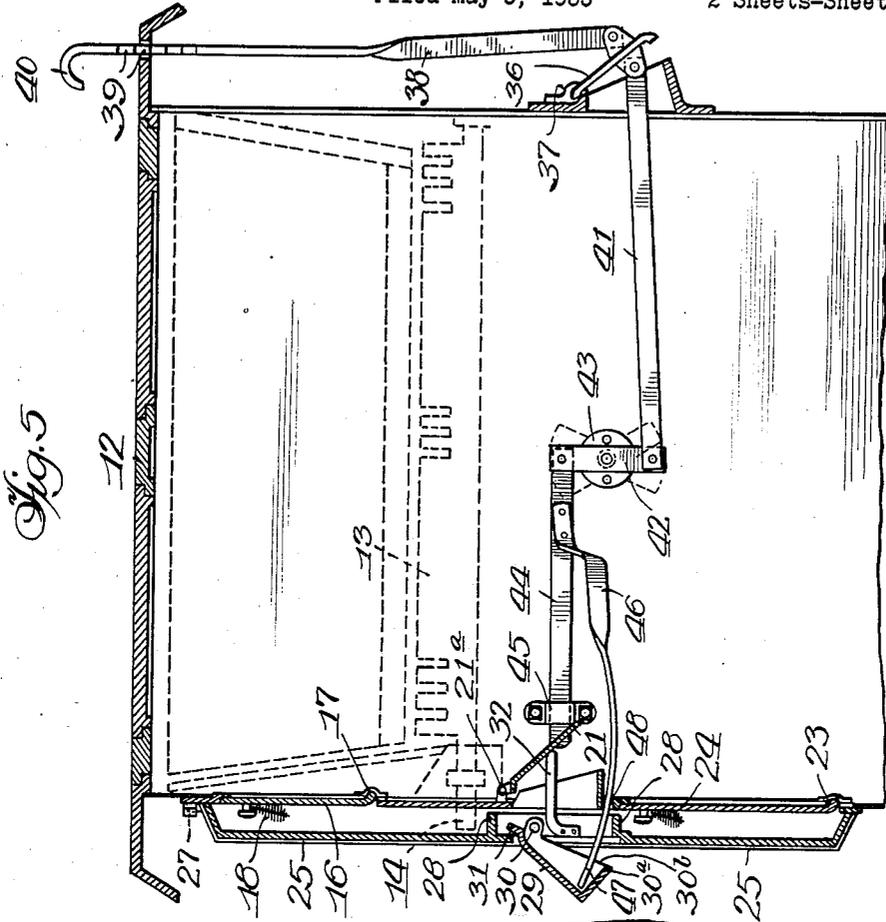


Fig. 5

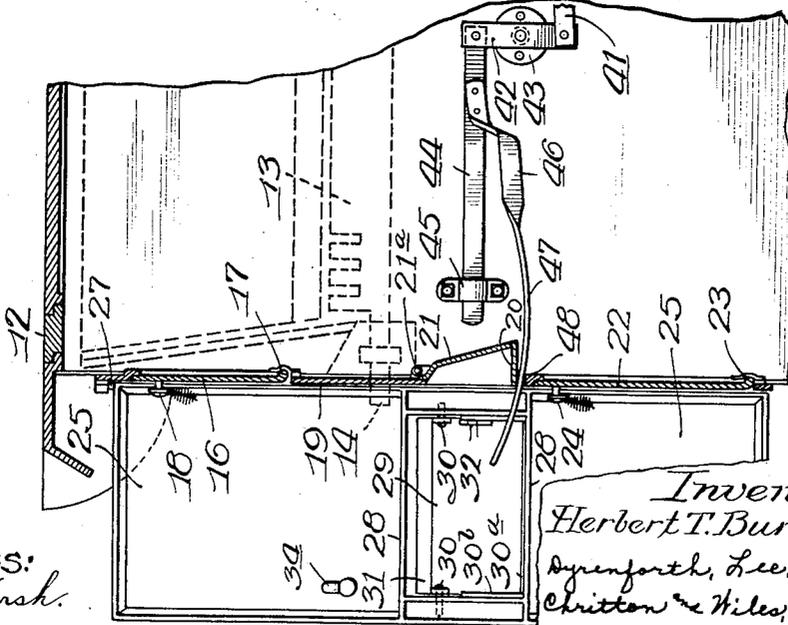


Fig. 6

Witness:
Chas. H. Housh

Inventor,
Herbert T. Burrow,
Syracuse, N. Y.
Christon & Hiles, Attys

UNITED STATES PATENT OFFICE

2,032,252

RANGE

Herbert T. Burrow, Beaver Dam, Wis., assignor to
Malleable Iron Range Company, Beaver Dam,
Wis., a corporation of Wisconsin

Application May 9, 1935, Serial No. 20,661

12 Claims. (Cl. 126—15)

This invention relates to improvements in ranges, and more particularly to the type of range in which solid fuel is used, for example coal or wood.

Such ranges were made formerly with several doors on the front, used in adding fuel, adjusting the draft, removing ashes, or were otherwise useful in building up and maintaining the desired bed of burning fuel in the fire box. These doors, usually arranged one over the other in a vertical row, were provided in addition to the larger oven door and in some cases certain other doors as well.

The tendency at the present time is toward smooth, enameled surfaces for the outer walls of stoves and ranges and is away from the less pleasing appearance presented by a large number of projecting parts on the front of the structure such as are in evidence where the older type of door with side flanges, outside hinges and conspicuous handles are used, where the end of a shaker bar is prominent, and where the operating end of a draft regulator protrudes in a position near the fire door.

One object of the present invention is to provide a range of improved appearance in which the usual fire door, ash door and other parts are concealed by a single larger door or auxiliary door having a comparatively smooth exterior surface.

Another object of the invention is to provide a construction in which the draft door is mounted in the auxiliary door and in such a way that when said draft door is closed it does not protrude beyond the plane of such auxiliary door to such an extent as to be objectionable.

Another object is to provide two draft doors for the draft chamber adjacent the fire box, one of which doors is located in the front auxiliary door and the other of which is elsewhere located in a wall of the draft chamber, with means for adjusting both doors simultaneously.

A further object is to provide such draft doors with an operating handle accessible at the rear at the top of the stove or range, in an inconspicuous position.

An additional object is to provide a range having an ornamental, concealing door mounted at one side of the oven door and concealing the fire box door, the ash pan door and an intermediate and inner draft door which serves also as an ash shed.

Another object is to provide a range of this character in which the end of the shaker bar is concealed but is rendered accessible by opening the auxiliary door, which opening movement au-

tomatically closes the combined inner draft door and ash shed to prevent the escape of ashes and dust while shaking the grate bar.

An additional object is to provide a range having an inside draft door in the front wall thereof and an outside draft door in an auxiliary door, which latter normally conceals said front wall, said auxiliary door and said inside draft door having cooperating means whereby said inside door is always open when the outside or auxiliary door is shut, and vice versa.

A further object is to provide concealed means for adjusting the opening of the outside draft door.

In the accompanying drawings in which a commercial embodiment of the invention is illustrated:

Fig. 1 is a perspective view of the left hand side of a range with the auxiliary front door open;

Fig. 2 is a rear elevation of the same side of the range;

Fig. 3 is a top plan view of the same side of the range with the upper part removed and the auxiliary door closed;

Fig. 4 is a similar view with the auxiliary door open;

Fig. 5 is a sectional view on the line 5—5 of Fig. 2; and

Fig. 6 is a similar view with the auxiliary front door open.

The range is provided with a suitable base supported on feet 11 and is provided with the usual top 12. As shown in Figs. 5 and 6, the fuel is supported on a suitable grate, including a rocking grate bar 13 which has a shaker bar accessible at the front of the range.

Where coal is the fuel it is introduced through the removable cover 15 and where wood is used as the fuel it is introduced through the inner fire door 16 which is hinged inside at the bottom at 17, as shown in Fig. 6, whereby it may be swung downwardly by the handle 18. This door is always closed during operation.

Beneath this drop door 16 is a metal plate or closure 19 having an opening therein with a rearwardly extending horizontal shelf 20 at the bottom of said opening and an inner draft door 21, hinged at the upper end 21^a, closing said opening, and normally somewhat inclined, as shown in Fig. 6. This draft door tends by its weight to remain in closed position but has means for opening it as hereinafter described. When open, it projects farther inwardly, as shown in Fig. 5. By virtue of its inclination it acts as an ash shed to guide

ashes into the ash pan, and when closed it serves also to prevent dust and ashes from escaping.

Beneath the closure plate 19 is another dust tight drop door 22 which is hinged at the bottom on the inside at 23 and may be pulled down by a handle 24 when it is desired to remove the ashes. At other times this door remains closed.

The upper and lower drop doors and the middle inner draft door just described and which are shown in front elevation in Fig. 1, are normally concealed from view by the auxiliary door or closure 25. This door, which is shown in open position in Fig. 1, is mounted on suitable hinges such as 26, near the bottom and a rotatably mounted pin 27 at the top. This door has an opening therein lined by a rectangular frame 28 on the inside within which the front draft door 29 is mounted. Said door is preferably hinged at the top at 30, having a horizontal flange 30^a at the bottom and connecting side flanges 30^b, as shown in Fig. 5. It also has a substantially vertical flange 31 at the top to provide an effective closure above the hinged support.

The front door 25 has a rearwardly projecting member 32, preferably of angle form, riveted to one of the vertical side members of the frame 28, as shown in Fig. 1. When the door is closed this inward projection engages the inner draft door 21 and holds the same open, as shown in Fig. 5. When the door 25 is open, said draft door closes of its own weight, being then in the position shown in Figs. 1, 3 and 6. The door 25 is provided with any suitable form of handle 33 on the outside, which operates an inner locking bar 34, arranged to pass through the opening 35 in the cover plate 19 and engage the rear wall to hold the door shut.

In addition to the front draft door 29, there is also a second or rear draft door 36, shown in Figs. 2, 3 and 4. This door also is preferably hinged at the top as at 37 in Fig. 2. It may be conveniently opened and held in any desired position of adjustment by means of a vertical link 38 having notches or ratchet teeth 39 near the top thereof where the link passes through an opening in the top 12 of the range. The top of the link is bent over to form a handle 40 whereby the rear draft may be conveniently adjusted.

One of the features of the improved range is the auxiliary hinged door for concealing the various drop doors, previously described, and another feature is the simultaneous adjustment of the front and rear draft doors to provide for an even flow of air upwardly through the grate. The arrangement for simultaneously operating the draft doors in this instance is shown in Figs. 5 and 6. The rear door 36 has a link 41 pivoted to the inside thereof and connected to another link 42 which is pivotally mounted on a support 43 carried on the end wall of the range. The upper end of the link 42 is connected to a further link 44, the front end of which slides in a strap 45. The link 44 has a bar of metal 46 riveted thereto with its forward end 47 curved and projecting through an opening 48 in the front cover plate 19, as shown in Fig. 1. As shown in Fig. 5, the arc shaped forward extension 47 of the bar or kicker arm is of such length as to engage the door 29 when the link mechanism is moved toward what might be called mid-position, as shown in Fig. 5, i. e. with the rear handle 40 raised slightly and the rear door open slightly. The links 41 and 46 move in opposite directions when the handle 40 is moved up or down and thus both doors are opened and closed simultaneously, to any desired angle, provided the auxiliary front door 25 is closed, as is the case during

the normal operation of the range, and, of course, the rear draft door 36 may be adjusted without reference to the front draft door 29, if desired, when the auxiliary front door 25 is open. It will be seen that the front door 25 can be opened while the two draft doors are in either open or closed position. The bar 46 is sufficiently flexible and is so mounted as to permit its curved, forward portion 47 to slide back and forth in the opening 48, in which it has a loose fit, without binding. The forward extremity of said bar engages the inner surface of the door 29 substantially at right angles thereto when said door is somewhat inclined as it is in closed position and it remains more or less at right angles to said surface as the door is opened, and, furthermore, it is prevented from slipping or springing down too far by the transverse flange 30^a at the bottom.

The auxiliary front door 25 is in effect an ornamental hinged cover plate extending from the top to the bottom of the range at one side of the oven door and in nearly the same plane therewith. By providing an opening in said cover plate, to give access to the end of the shaker bar, said door may be left shut when shaking the grate and under these conditions the fire door 16 and ash door 22 may be omitted and most of the advantages of the construction heretofore described, including the advantage of a smooth, enameled, pleasing outer surface of the range, may be retained. With this simplified construction the ash deflector need not be hinged but fixed in position since the cover plate is closed when the ashes are shaken down. However, the preferred construction is one in which this shaker bar opening is omitted, making it necessary to open the hinged cover plate to gain access to the shaker bar and with this construction a tightly closed front such as provided by the fire door, the ash door and the intervening fixed plate with its hinged ash deflector, is essential to prevent dust and ashes from escaping.

The arrangement of the auxiliary door or cover plate in combination with the other features described not only provides the necessary improved appearance but removes the draft handle from the front of the range where it was formerly located and provides a different type of handle at the top of the range where it is easily operated without stooping. This draft handle also is self-latching. When there is a good fire in the stove this handle will be warm but is designed to be raised and lowered with a lid lifter. In order to close the draft, the lid lifter is used to push the draft handle a little to the right to disengage, whereupon the draft doors will drop of their own weight. Also, the new design allows the fire door to be opened without disturbing the draft assembly. With the old arrangement of draft handle in front, it was impossible to open the fire door fully without being interfered with by said handle. The fact that both draft doors at the front and rear open simultaneously and are hinged at the top, insures a more even fire from front to rear, a better and even bed of ashes, better and more complete combustion, more even distribution of heat to the top of the stove and around the oven and permits of the use of a smaller and lower fuel bed, thus resulting in fuel economy and longer life of the range.

I claim as my invention:

1. A range having a fire box, a draft chamber adjacent the same and in communication therewith, said chamber having a draft opening in the front thereof, a door normally concealing the

front of said fire box and of said draft chamber, a draft door in said first mentioned door, a draft door in another wall of said draft chamber and means within said chamber connecting said draft doors, whereby the opening of one of said doors will cause the other door to open simultaneously to admit air to said draft chamber.

2. A range having a fire box, a draft chamber adjacent the same and in communication therewith, said chamber having a draft opening in the front thereof, a door normally concealing the front of said fire box and of said draft chamber, a draft door in said first mentioned door, a draft door in another wall of said draft chamber, means within said chamber connecting said draft doors, whereby the opening of one of said doors will cause the other door to open simultaneously to admit air to said draft chamber and an operating handle extending upwardly from said other draft door above the top of said range.

3. A range comprising front, rear, side walls and a top, enclosing a combustion chamber, vertically arranged doors covering openings in the front wall of said range giving access to said chamber, said front wall having also a draft opening therein, a hinged cover plate concealing said doors when closed, and having a draft opening therein, a draft door for said opening in the cover plate, adjustable links movably mounted on the inner surface of one of said side walls one of which links projects through an opening in the front of said range whereby it may engage the rear of said draft door and open it variable amounts, dependent upon the adjustment of said links, when said cover plate is closed but not when it is open.

4. A range having a combustion chamber, a pair of vertical end walls for said chamber each having an opening therein, a draft door mounted in an opening in one of said walls, a hinged cover plate spaced from the other of said walls and having a draft opening therein registering with the opening in said wall, a draft door mounted in said cover plate opening, a link pivoted intermediate its ends and mounted within said range, a substantially horizontal link connected to an end of said first link and to said first mentioned draft door, a second substantially horizontal link connected at one end to the other end of said first link, a guide through which the other end of said horizontal link may slide, an extension on said second link passing through said other wall opening and engaging the draft door mounted in said hinged cover plate, when the latter is in closed position, whereby movement of said links will actuate both of said draft doors simultaneously, and manually operable means for moving said links.

5. A range as in claim 4, in which the draft door in said hinged cover plate is hinged at the top and is in inclined position when closed and in which said link extension is curved to engage the rear of said door substantially at right angles thereto.

6. A range having a combustion chamber with an opening in the vertical front wall thereof, a grate in said chamber higher than said opening, an inclined ash deflector immediately to the rear of said opening, a door hinged to the front of said range about a vertical axis and normally concealing said front wall and ash deflector, and a draft door mounted in said first door to regulate the flow of air through said opening.

7. A range having a combustion chamber with an opening in the vertical front wall thereof, a

grate in said chamber higher than said opening, an ash deflector behind said opening, a door hinged to the front of said range about a vertical axis and normally concealing said front wall and ash deflector, and a draft door mounted in said first door to regulate the flow of air through said opening, said ash deflector being hinged near the top of said opening to serve also as a door therefor, whereby it may be closed to prevent the escape of ashes or dust from said combustion chamber when said first door is open and whereby it may be partly opened to deflect ashes when in inclined position.

8. A range having a combustion chamber with an opening in the front wall thereof, a grate in said chamber higher than said opening, an inclined ash deflector to the rear of said opening, a door hinged to the front of said range about a vertical axis and normally concealing said front wall and ash deflector, and a draft door mounted in said first door to regulate the flow of air through said opening, said ash deflector being hinged to serve also as a door, whereby it may be closed to prevent the escape of ashes or dust when said first door is open and a rearward projection on said first door to move said ash deflector to open position, when said first door is closed.

9. A range having a combustion chamber with an opening in the front wall thereof, a grate in said chamber higher than said opening, an inclined ash deflector to the rear of said opening, a door hinged to the front of said range about a vertical axis and normally concealing said front wall and ash deflector, a draft door mounted in said first door to regulate the flow of air through said opening, said ash deflector being hinged to serve also as a door, whereby it may be closed to prevent the escape of ashes or dust when said first door is open, a rearward projection on said first door to move said ash deflector to open position, when said first door is closed and a bar passing through said front wall and adjustable from the top of said range to vary the position of said draft door.

10. A range having a fire box with a closed front end, a draft chamber adjacent said fire box and in communication therewith, said chamber having an opening in the front thereof permitting air to be supplied to said fire box through said draft chamber, a door normally concealing the front of said fire box and of said draft chamber, a draft door in said first mentioned door, and means within said draft chamber for opening said draft door variable amounts to regulate the flow of air to said draft chamber.

11. A range having a pair of vertical walls each with an opening therein, a draft door mounted in one of said openings, a hinged cover plate spaced from the other of said walls and having a draft opening therein registering with the opening in said other wall, a draft door mounted in said cover plate opening, a series of interconnected links connected at one end to said first mentioned draft door, the other end thereof passing through said other wall and engaging the draft door in said hinged cover plate when the latter is in closed position, whereby movement of said links will actuate both of said draft doors simultaneously, and manually operable means for moving said links.

12. A range having a combustion chamber with vertical walls, a grate in said chamber, a draft opening in one of said walls below said grate, a closure plate for said opening hinged at the top behind said opening, a door hinged to said wall

and normally concealing said draft opening, a draft door pivotally mounted in said hinged door in substantial registration with said draft opening, and means carried by said hinged door for engaging said closure plate when said hinged door is shut, to swing said closure plate to inclined position and hold it therein, whereby said plate may deflect ashes falling from said grate, the movement of said hinged door to open position permitting the return of said closure plate to a position obstructing said draft opening.

HERBERT T. BURROW.