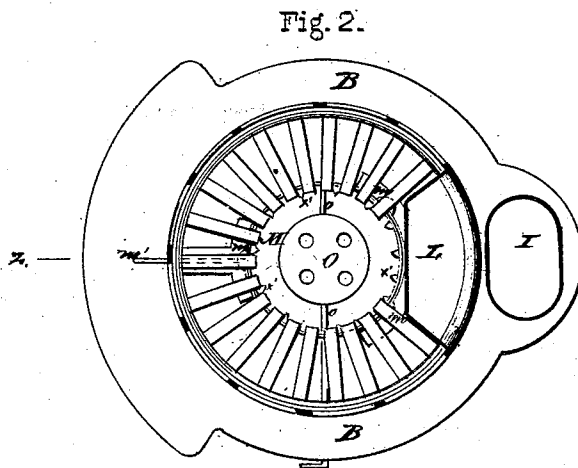
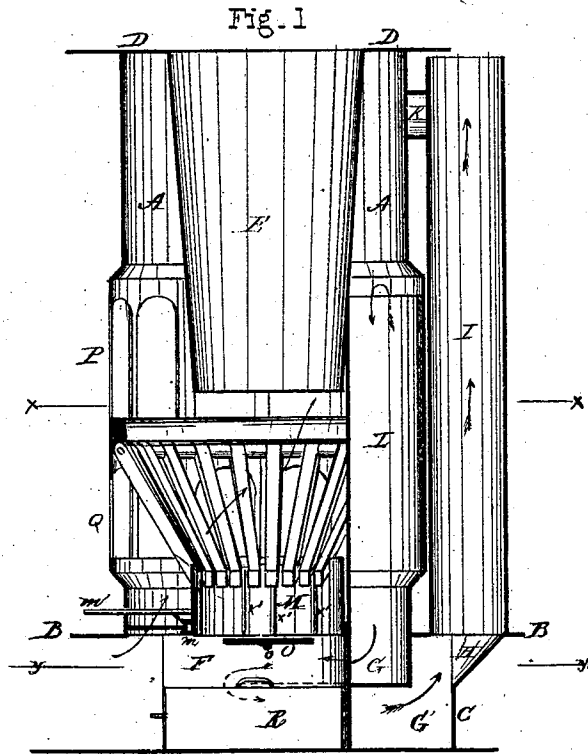


W. J. KEEP.

Base Burning Stove.

No. 101,368.

Patented Mar. 29, 1870.



Witnesses.

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Fig. 3.

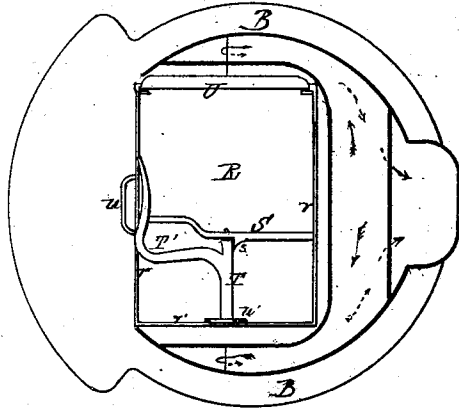


Fig. 6.

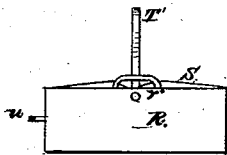


Fig. 4.

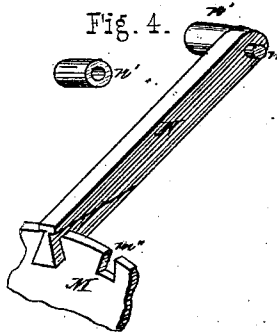


Fig. 5.

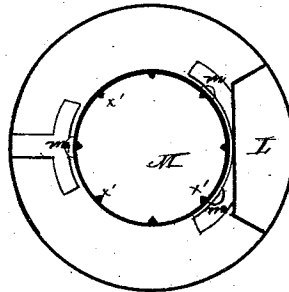


Fig. 8.

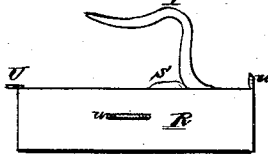
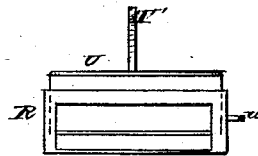


Fig. 7.



Witnesses.

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United States Patent Office.

WILLIAM J. KEEP, OF TROY, NEW YORK.

Letters Patent No. 101,368, dated March 29, 1870.

BASE-BURNING STOVE.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, WILLIAM J. KEEP, of Troy, in the county of Rensselaer and in the State of New York, have invented certain new and useful Improvements in Base-burning Stoves; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings making a part of this specification, in which—

Figure 1 is a vertical central section of my stove;

Figures 2 and 3 are horizontal sections of the same on the lines *x* and *y*, respectively of fig. 1;

Figure 4 is a perspective view of one of the auxiliary grate-bars, showing its manner of attachment;

Figure 5 is a plan view of the fire-pot, showing the means employed for suspending the same.

Figures 6 and 7 are end elevations of the ash-drawer; and

Figure 8 is a side elevation of the same.

Letters of like name and kind refer to like parts in each of the figures.

In base-burning stoves, as ordinarily constructed, the weight of coal in the magazine tends to press the contents of the fire-pot into so compact a mass as to prevent the free entrance of air, and thereby render it very difficult to secure a bright, lively fire.

Another serious objection arises from the difficulty that exists in securing a sufficient supply of air to such coal as is upon the outside or in immediate contact with the fire-pot; as when the grate is shaken or raked, the friction upon the sides of said fire-pot, is sufficient to cause the ashes to remain thereon, and not only obstruct the passage of air, but, also, being non-conductors of heat, prevent the radiation of the same through the walls of said fire-pot.

To obviate these and other objections is the design of my invention, which consists principally in the employment of an auxiliary grate above the fire-pot, substantially as and for the purpose hereinafter specified.

It further consists in the employment of a fire-pot, so constructed as to permit its sides to move in a horizontal or other plane, substantially as hereinafter set forth.

It further consists in so combining said fire-pot and auxiliary grate, as that motion given to one shall be communicated to the other, as is hereinafter shown and described.

It further consists in the employment of a diving-flue at the rear of the fire-pot and auxiliary grate, and within the outer casing of the stove, substantially as herein shown and for the purpose specified.

It further consists in the employment upon an ash-drawer of a bail-handle, pivoted to or within one end thereof, and to or within a cross-bar or brace extend-

ing transversely between and secured to the sides of said drawer; substantially as shown and for the purpose hereinafter set forth.

It further consists in the employment of a stop or lug upon the hereinbefore-named cross-bar or brace, for the purpose of arresting the bail when it has reached a vertical position, as is hereinafter shown.

It finally consists in the employment of a sliding or swinging end to an ash-drawer, substantially as and for the purpose hereinafter specified.

In the annexed drawings—

A represents the outer casing or shell of the stove, cylindrical in form, and resting upon and secured to a horizontal plate, B, which covers the upper side of the base C.

The upper end of the shell A is covered by means of a top-plate, D, to which is attached the upper end of a cylindrical magazine, E, having a diameter equal to about two-thirds that of the cylinder.

An opening, corresponding in size with the interior of the magazine at its point of union with the top-plate D, is provided in and through the latter, while the former tapers slightly inward toward its lower end, which is open.

The height and diameter of the base C are sufficient to furnish room for the necessary ash-pit F, and for an upper and a lower side-bottom flue, G and G', respectively, while from an offset, H, at the rear, extends upward the back-pipe I, which has a direct connection with the interior of the casing A near its upper end, by means of a short pipe, K.

A vertical flue, L, having the form transversely shown in fig. 2, is placed within and against the rear side of the casing A, with its upper end opening into the interior of said casing, while its lower end connects with the upper side-bottom flue G.

The fire-pot M, consisting of a short cylinder, is loosely secured in place vertically and radially by means of three lugs, *m*, attached to and projecting inward from the lower end of the casing A; their inner ends being curved to correspond with the shape of said fire-pot, upon the latter of which is provided a suitable groove for their reception.

As thus suspended, the fire-pot may be rotated back and forth in a horizontal plane, by means of a rod, *m'*, secured to and projecting outward from the same.

If desired, a series of ribs, *x*, may be placed vertically at equidistant points around the inside of the fire-pot for the purpose of strengthening the same, and, also, to more thoroughly agitate its contents when shaken.

Secured loosely within corresponding slots *m''* in the upper edge of the fire-pot M, are the lower dove-tailed ends of a series of grate-bars, N, the upper

ends of which are suspended from and secured loosely upon a rod, *n*, passing around the interior of the casing *A*, the relative positions of said bars upon said rod being secured by means of intervening thimbles *n'*.

I do not confine myself to the particular means shown for securing the grate-bars in position, but claim any combination and arrangement of parts by means of which said bars may be permitted to move laterally and expand longitudinally.

This arrangement of the grate-bars permits their lower ends to conform to the position of the fire-pot, by means of which, when the latter is partially rotated in either direction, a corresponding movement of said bars is produced.

A supporting-grate, *O*, having about one half the diameter of the fire-pot, is held in position at the center, radially, of the lower end of the latter, by means of a rod, *o*, passing through the walls of the base *O*, and fixed to said grate.

As thus suspended, the grate *O* may be dumped, but not rotated, but, if desired, it may be so constructed as to permit of the latter motion.

As thus constructed, the operation of this device is as follows:

Fire being kindled in the fire-pot, and the magazine being filled with coal, the weight of the column is principally supported upon and by the lower grate, so as to leave such coal as rolls out of said magazine into the auxiliary grate, comparatively free from pressure and in condition to burn freely.

The air enters at the lower end of the fire-pot and through the auxiliary grate, and supplies the wants of combustion, until after two or three days, the ashes, slate, and slag accumulate upon the lower grate sufficiently to fill the fire-pot, and prevent the passage of air through the same.

The air is now compelled to pass around the outside of the fire-pot and through the auxiliary grate, by which means the air becomes highly heated, so that when brought in contact with the thin stratum of loose coal resting upon said grate, said coal is caused to burn rapidly and freely.

Of the ashes formed, the principal portion falls through the auxiliary grate, while the remainder, together with the slate and slag, may be caused to pass downward into the fire-pot by shaking the latter, the annular space between the lower grate and the fire-pot being sufficient for the passage from said fire-pot of any surplus slate or ashes, by which means said auxiliary grate is at all times kept free, so as to permit the entire heat of the fire to be radiated outward.

It is found that while a thin layer of coal next to the auxiliary grate is rapidly consumed, the central portion of the column burns with extreme slowness, and thus furnishes a certain support to the coal in the magazine, and being heated to a dull red color, said central portion serves as a reservoir of heat, which prevents the fire from going out when the supply of air is cut off.

The position of the back or diving flue within the outer casing much improves the appearance of the stove, and being interposed between the fire and the rear side of said stove by the removal of a portion of the auxiliary grate, prevents in a great degree the radiation of heat from the rear of said fire, and thus equalizes the amount of heat thrown off from the front and rear of said stove.

It is intended to insert two rows of mica lights, *P* and *Q*, within the casing of the stove, the first row *P* being placed opposite the auxiliary grate, so as to show the bright under surface of the burning coal, while the second row, *Q*, is placed above said grate, and gives a view of the brilliant flame from the gas.

The current of air passes inward through the auxiliary grate at such an angle as to cause the heated escaping products of combustion to pass upward near the magazine until above the upper row of mica windows, by which means said windows are kept clear, after which the current spreads outward against the casing, from thence passes to the rear into and down the diving-flue *L*, forward through the upper side-bottom flue *G*, into the lower flue *G'*, and through the same into and through the back pipe *I*.

It will be observed that the auxiliary grate is made up of separate bars, having their lower ends unconfined longitudinally, so as to allow of their expansion and contraction in such direction without interfering with their position or with that of the fire-pot, and when burned out, said bars may be removed and others substituted at a slight expenditure of time or money.

The ash-drawer *R*, shown in figs. 3, 6, 7, and 8, has the usual rectangular form, and corresponds in size with the interior of the ash-pit.

Secured to and extending between the upper edges of the sides *r* is a cross-bar, *S*, which serves as a bearing for one end of a short shaft, *T*, the opposite end of which is pivoted within the end *r'* of the drawer.

An arm, *T'*, extending outward and forward from the shaft *T*, and forming a part of the same, furnishes a handle, by means of which the drawer is lifted, which handle, when in use, assumes a vertical position, and at other times turns downward and rests upon the upper edge of the drawer.

A lug, *s*, is provided upon the side of the cross-bar *S*, and so adjusted as to arrest said handle when it has attained the desired angle, and thus prevent it from passing beyond a perpendicular line.

The forward end of the ash-drawer is provided with a slide, *U*, which may be raised so as to permit the ashes to slide out, but if desired said end may be pivoted so as to swing outward when the drawer is lifted up.

A handle, *u*, provided upon the front of the ash drawer, and another, *u'*, upon its end, completes the device, the operation of which is as follows:

The drawer being removed from the stove is lifted, by means of the handle, with one hand, while, with the other, the slide at the end is raised, so that, by elevating the opposite end, the ashes will be caused to pass out of the drawer beneath said slide, by which means all soiling of the hands is prevented, and much of the usual annoyance incident to the employment of ash-drawers of usual construction is avoided.

From the peculiar construction of the handle, and from the manner in which it is connected with the drawer, no obstruction is caused to the free passage of the ashes from the latter, and much less dust is consequently raised than would otherwise be the case.

Having thus fully set forth the nature and merits of my invention,

What I claim as new, and desire to secure by Letters Patent, is—

The employment of an auxiliary grate above, and in combination with the fire-pot, substantially as and for the purpose specified.

Also, the employment of a fire-pot, so constructed as to permit the sides thereof to be moved or shaken, substantially as described, and for the purpose set forth.

Also, in so combining a fire-pot with an auxiliary grate as that motion given to one shall be communicated to the other, substantially as and for the purpose shown.

Also, the grate-bars *N*, loosely pivoted at their upper ends, and so held in position laterally at their lower ends as to have a free longitudinal movement, substantially as shown and set forth.

Also, the diving-flue L, situated immediately in rear of the fire-pot and forming a back for the auxiliary grate and beginning above the lower end of the magazine, substantially as shown and for the purpose specified.

Also, the handle T, pivoted with the end *r'* of the drawer R, and within the cross-bar S, extending transversely across said drawer, substantially as shown and for the purpose described.

Also, the employment of a sliding or swinging end

to an ash-drawer, substantially as shown and for the purpose specified.

In testimony that I claim the foregoing, I have hereunto set my hand this 29th day of January, 1870.

WILLIAM J. KEEP.

Witnesses:

WILLIAM KELLY,
B. MACGREGOR.