

J. W. BELL.
HEATING STOVE.

No. 183,744.

Patented Oct. 31, 1876.

Fig. 1.

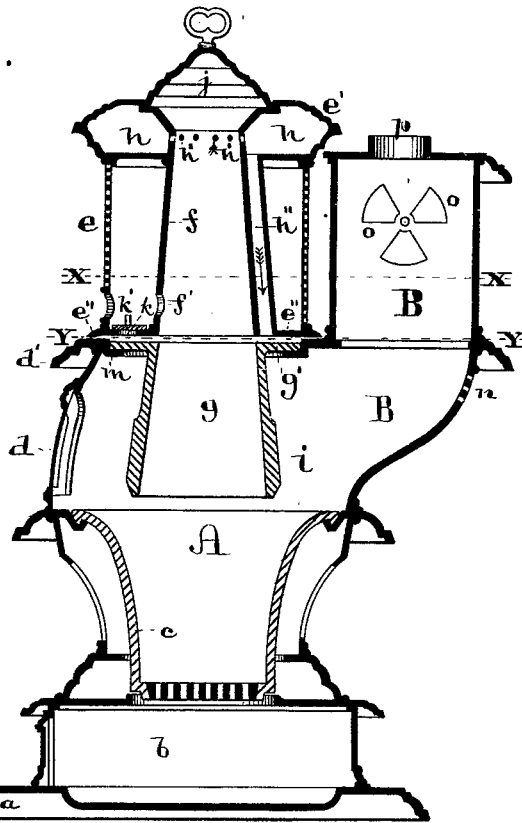
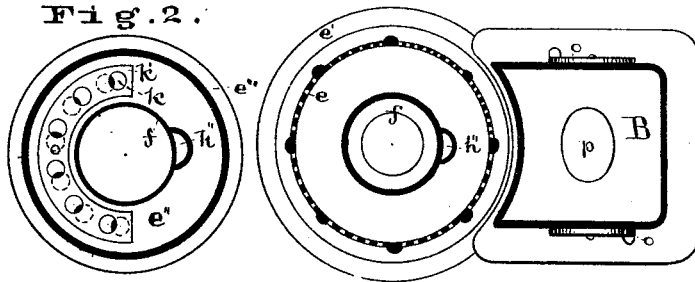


Fig. 3.

Fig. 2.



WITNESSES.

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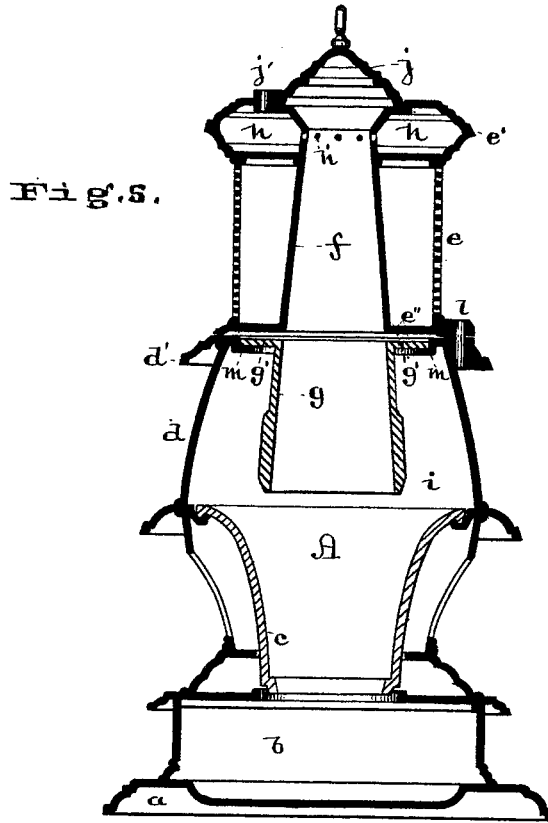


Fig. 3.

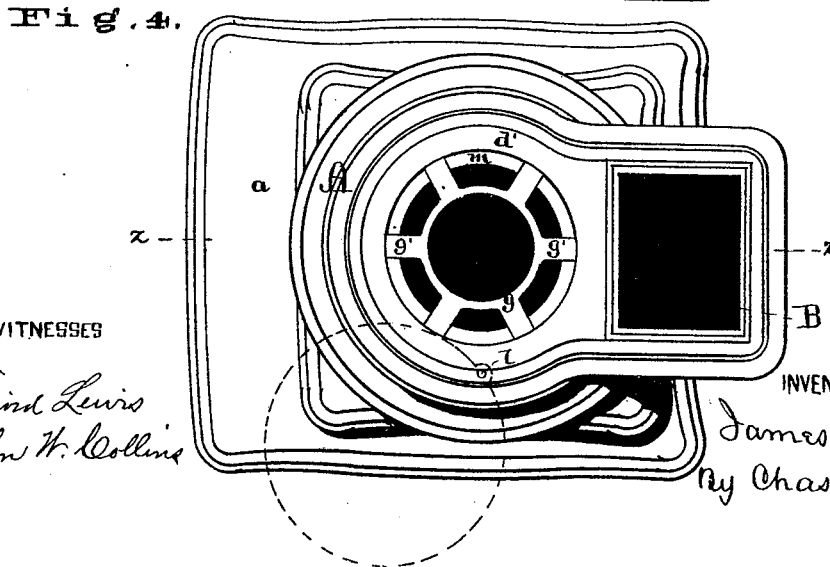


Fig. 4.

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UNITED STATES PATENT OFFICE.

JAMES W. BELL, OF ST. LOUIS, MISSOURI.

IMPROVEMENT IN HEATING-STOVES.

Specification forming part of Letters Patent No. 183,744, dated October 31, 1876; application filed August 5, 1876.

To all whom it may concern:

Be it known that I, JAMES W. BELL, a resident of the city of St. Louis, State of Missouri, have invented new and useful Improvements in Heating-Stoves, of which the following is a full, clear, and exact description, reference being had to the annexed drawing, making part of this specification, in which—

Figure 1 is a vertical section taken on the line *z z* of Fig. 4; Fig. 2, a plan of the base of the upper movable section of the stove; Fig. 3, a horizontal section taken on the line *x x* of Fig. 1 and looking upward; Fig. 4, a horizontal section taken on the line *y y* of Fig. 1; and Fig. 5 a vertical section taken in a plane at right angles to that of Fig. 1.

Similar letters refer to similar parts.

The present invention relates to improvements in that class of heating-stoves known as base-burners; and the aim thereof is mainly twofold: to furnish means by which that part of the magazine that is most exposed to the fire, and in consequence soonest worn out, can be readily and inexpensively renewed; and, secondly, to provide means which are valuable not only in supplying a larger heating-surface and in enabling the fuel to be burnt more economically, but also in controlling and directing the course of the products of combustion away from the magazine, and so as to prevent their escape through the magazine into the apartment, even when the stove is being replenished with fuel.

Referring to the annexed drawing, A represents a base-burning stove embodying my improvements. The lower portion thereof, including the base *a*, ash-pit *b*, fire-pot *c*, and body *d* is of the usual form. The upper portion, including the drum *e* and magazine *f g*, in its general outline, is also of the customary shape, but it is made to be removable from the lower portion of the stove, and the magazine is made in two sections, an upper one, *f*, and a lower one, *g*, the line of its division being at the level of the top of the body *d* of the stove. The drum is, preferably, an open-work construction, and is provided with a closed top, *e'*, and a base-ring, *e''*, which, when the upper portion of the stove is in position, rests upon the body-ring *d'*. The upper section *f* of the magazine, at its upper end, is

connected with the top *e'* of the drum, and at its lower end with the base-ring *e''*, at the inner edge thereof. If desired, the drum proper *e* and its top *e'* may be dispensed with and the base-ring *e''* be made the sole support for the upper section of the magazine. I prefer, however, the construction as shown. The upper portion *h* of the space within the drum is inclosed, forming an annular ventilating-chamber. By means of perforations *h' h'*, &c., this chamber *h* is connected with the upper part of the section *f* of the magazine, and, by means of a flue, *h''*, (arranged against the magazine and preferably at the rear thereof,) with the fire-chamber *i* below. The magazine is furnished with the usual cover, *j*, which swings upon a pivot at *j'*. The base-ring *e''*, as shown more distinctly in Fig. 2, is provided with a series of openings, *k k*, &c., extending around the front half thereof, and for the purpose of admitting air into the fire-chamber. They can be closed by a suitable damper, *k'*. There may be the usual opening *f'* into the magazine to admit a poker. The upper portion of the stove, as above stated, is made to be detachable, and to that end the base-ring *e''* simply rests upon the body-ring *d'*. To steady the upper portion, however, in position, suitable bolts or pins *l*, one or more, are passed through the rings *e''* and *d'*, as shown in Figs. 4 and 5. The lower section *g* of the magazine, at its upper end, and extending horizontally outward therefrom, is provided with lugs *g' g'*, &c., and the section is supported in position by means of the lugs resting upon a ledge, *m*, with which the body *d* or body-ring *d'* on its inner side is provided. The spaces between the lugs provide openings for air to pass down to the fire-chamber.

It is well known that in base-burning stoves the lower end of the magazine wears out rapidly while the upper portion remains uninjured. By the present improvement the advantage is obtained of being able to renew this lower portion independently of the remainder of the magazine; but hitherto, in repairing the magazine of a base-burner, it has been necessary to take a large part of the stove apart in order to reach the magazine, involving considerable time and labor. In making the upper portion of the stove detach-

able this difficulty is almost entirely removed, and the operation of the invention as thus far described is as follows: To reach the magazine, the upper portion of the stove, including the drum and upper part of the magazine, is, after suitably loosening the bolts *l*, either lifted off the lower portion or swung aside, as indicated by the dotted lines in Fig. 4. The lower section *g* can then be removed at once by simply lifting it from its bearing upon the ledge *m*. A new lower section can be dropped into the bearing, and the stove made ready for use by replacing the drum and the parts connected with it. The operation, in fact, is capable of being performed so readily as to enable the fire to be maintained in the stove meanwhile.

The second prominent feature of the invention is what I term a "combustion-chamber," B. It is arranged, preferably, at the rear of the stove, and, leading out of the fire-chamber *i*, extends from the top of the fire-pot, or thereabout, upward to about the level of the top of the magazine, and, in cross-section, is about as large as, if not larger than, the bottom of the magazine. In this manner an extension of the fire-chamber is formed of such size as not merely to provide a large additional heating-surface, but also to contain a large amount of heat, so much as to cause it to become much hotter than all that portion of the stove with which the magazine is immediately connected. In consequence a draft into the chamber B is generated of sufficient strength and steadiness to effectually overcome any tendency of the products of combustion to pass upward into the magazine, even when the magazine is uncovered, and also to suck down through the flue *h''*, from the chamber *h*, any gas that may have accumulated in the upper part of the upper section of the magazine. The chamber B is provided with perforations *n*, for the admission of air. It is also furnished with dampers *o o*, at either side toward its upper end, for the purpose of regulating the draft. The usual exit-pipe *p* is attached to the chamber B at its upper end.

It will be noticed that there is an entire absence of any damper, or other construction, at the point where the chamber B leads out of the chamber *i*, and also throughout the chamber B. In consequence, no obstacle is interposed in the course of the products of combustion, and there is no tendency of soot to accumulate at any point and clog the draft. The opening into the combustion-chamber being large, the fire escapes easily into it without

being forced, and, by reason of the large capacity of the combustion-chamber, the products of combustion have opportunity for being thoroughly consumed before reaching the final exit.

What I claim is—

1. The combination, in a base-burning stove, of the upper section *f* of the magazine, the base-ring *e''*, body-ring *d'*, lower section *g*, lugs *g' g'*, and ledge *m*, substantially as shown and specified.

2. The combination of the section *f* and base-ring *e''*, having the openings *k k*, and damper *k'*, substantially as described.

3. The combination of the section *f*, drum *e*, top *e'*, and base-ring *e''*, substantially as described.

4. The combination of the section *f*, having the perforations *h' h'*, &c., drum *e*, top *e'*, base-ring *e''*, chamber *h*, and flue *h''*, substantially as described.

5. The combination of the section *f*, having the perforations *h' h'*, &c., chamber *h*, flue *h''*, base-ring *e''*, section *g*, lugs *g' g'*, and chamber *i*, substantially as shown and specified.

6. The combination of the chamber B, chamber *i*, magazine *f g*, having the perforations *h' h'*, &c., chamber *h*, and flue *h''*, substantially as shown and specified.

7. The combination of the magazine *f g*, base-ring *e''*, having the openings *k k*, chamber *i*, and chamber B, for the purpose of inducing a flow of cooler air into the stove and against the magazine.

8. In a base-burning stove, a combustion-chamber, B, having the perforations *n*, substantially as shown and specified.

9. In a base-burning stove, a combustion-chamber, B, extending upward to the level of the top of the magazine, or thereabout, and whose cross-sectional area is equal, or nearly so, to that of the magazine, for the purpose of containing heat at the proper level, and in sufficient amount to insure a draft from the magazine into the said chamber.

10. In a base-burning stove, the combination of the upper section *f* of the magazine, base-ring, *e''*, and body-ring *d'*, as and for the purpose of enabling the upper section of the magazine to be removed by swinging it horizontally aside, substantially as described and shown.

JAS. W. BELL.

Witnesses:

CHAS. D. MOODY,
DANL. T. POTTER.