Van Wormer & McGarvey.

Coal Stove.

No 75491 Patented Mar. 10 1868

Fig. 1.

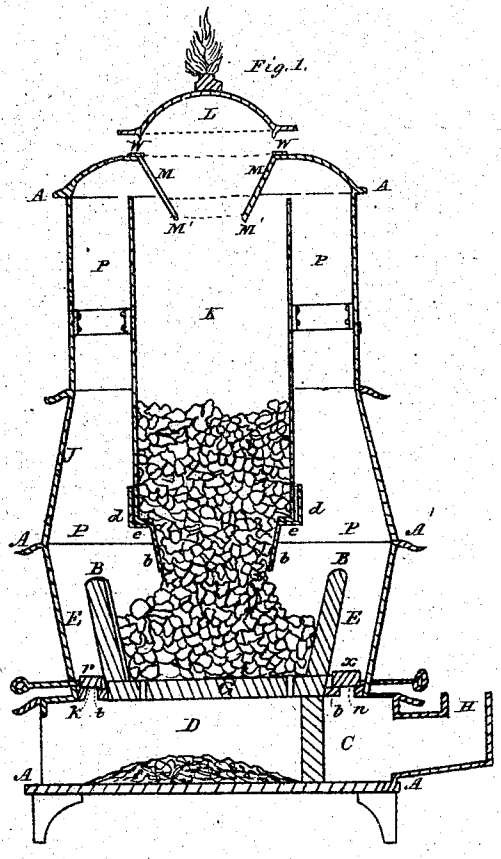


Fig. 2

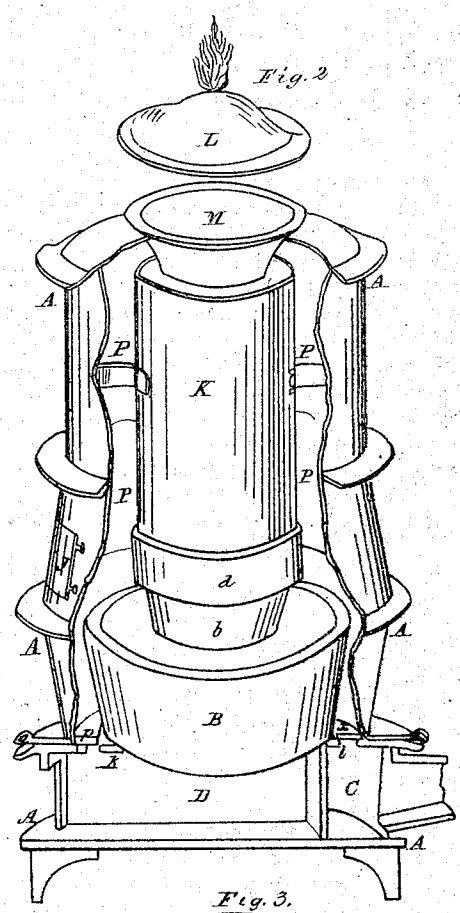


Fig. 4

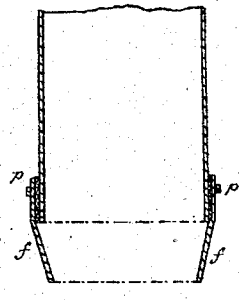
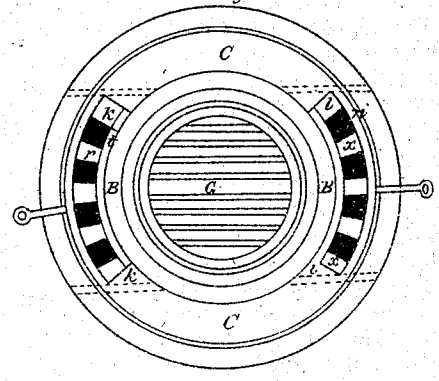


Fig. 3.



Witnesses

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UNITED STATES PATENT OFFICE.

JASPER VAN WORMER AND MICHAEL McGARVEY, OF ALBANY, NEW YORK.

IMPROVEMENT IN COAL-STOVES.

Specification forming part of Letters Patent No. 75,491, dated March 10, 1868.

To all whom it may concern:

Be it known that we, JASPER VAN WORMER and MICHAEL MCGARVEY, of the city of Albany, State of New York, have invented certain new and useful Improvements in the Construction of Magazine or Self-Feeding, Base-Burning, and Return-Flue Coal-Stoves; and we declare the following specification, with the drawings forming part thereof, to be a full and complete description of our invention.

Figure 1 represents the stove in central vertical section; Fig. 2, in perspective, with a portion of its external shell removed to show its interior construction; Fig. 3, a horizontal section in the line of the grate, showing the arrangement of check-plates with their registers; Fig. 4, one of the modes of constructing the mouth-piece of the magazine-cylinder.

Similar letters denote the same parts of the apparatus.

A is the outer shell; B, the fire-pot; D, the ash-pit; E, the downward-draft flue; C, the base-flue; G, the grate; H, the smoke-pipe nozzle; J, the door; K, the magazine, which, as shown, is an interior cylinder suspended within the outer casing or shell of the stove, so as to leave a free space or spaces for the passage of air between its upper edge and the top plate of the stove; W, the opening at the top for the supplying of coal to the magazine.

Our first improvement is for the purpose of preventing the escape of the fumes of the coal or smoke from the stove while the magazine is being supplied with fuel.

It is well known that in all magazine-stoves, whether the magazine be attached closely to the top plate or is detached wholly or partially therefrom, whenever the top opening is uncovered to introduce coal, there is an immediate tendency for the fumes of the coal, which is always more or less heated, to pass out at the top opening of the stove. To obviate or reduce this evil, it has been found necessary to make the top opening of small diameter, so much so that the coal could only be supplied by the use of scuttles, made for the purpose, with funnel-shaped spouts, since the ordinary-shaped scuttle would scatter its contents over a surface much larger than the opening.

To remedy this evil we employ the following device: The opening W, in the top plate of the stove, is made about as large as the diameter of the magazine. Within this opening there is suspended a funnel or hopper, M, whose upper edge is fitted snugly to it. This funnel extends downward a distance about equal to half its top diameter, its lower opening being contracted to such size as will just permit the passage, without clogging, of the coal into the magazine. The upper cover of the stove L fits upon and closes the top of the funnel. This arrangement of the funnel applies equally to stoves in which the magazine is closely fitted to the top plate, or detached partially or wholly, as shown in the drawings.

The practical operation of the apparatus is this: Whenever the cover is removed from the funnel, the tendency of the hot gases generated by the coal and occupying the vacant upper part of the magazine is to rise and pass out of the top opening.

In the case of the detached magazine, the outside air is drawn in through the funnel by the downward draft of the stove, and, as it enters the magazine through the lower contracted opening of the funnel, it meets the gases rising from the coal, or occupying the vacant upper part of the magazine, deflects them, and mingling with them, passes off over the upper edge of the magazine, and so down, by the flue P, into flue E.

Practically it is found that the cover of the stove may be left off without any of the gases escaping up through the funnel. The current of air entering the magazine is not that due to the lower opening of the funnel alone, but is that air which enters into its upper opening, passing through the lower one, as a "*vena contracta*," with increased velocity and power, so that, even in the case of the attached magazines, the current of gases upward is not able to resist the current through the contracted orifice of the funnel.

Further, the size of the upper opening of the funnel permits the passing of coal into the stove from ordinary scuttles, and requires neither specially-formed spouts nor extraordinary care in filling the magazine through a small opening.

Our next improvement is the adaptation of a removable mouth-piece to the magazine.

The body of the magazine being made of

thin metal, it becomes necessary to attach a mouth-piece of thicker material to withstand the heat to which it is exposed. Such mouth-pieces will, after a while, burn out, and must be replaced, which is commonly done by taking off the top plate of the stove, removing the magazine, unriveting the old and riveting on a new mouth-piece—an inconvenient and expensive operation.

We attach to the lower part of the sheet-iron cylinder a narrow cast-iron ring, *a*, with a flange, *e*, formed on its bottom edge, projecting a short distance inward of the cylinder. A mouth-piece, D, of cast-iron, is provided, whose external diameter will permit its passage through the flange *e*, having on its outer upper edge a flange or rim fitted to rest upon *e*. The effect of this arrangement is, that the mouth-piece *b* can at any time be withdrawn, and a new one entered through the magazine, simply by lifting off the funnel, which will leave a free passage for *b*.

Another mode of construction is shown in sectional diagram, Fig. 4. There a ring of metal, like *a*, but without a flange, is employed, and the mouth-piece *f* is fitted over the ring and attached to it by pins, *p* fitting into slots in *f*, like lamp-sockets, or by any convenient, easily-operated fastenings, so that a new mouth-piece can be attached without the use of screws or rivets.

Our last improvement consists in an arrangement to preserve the fire-pot from injury.

In base-burning or return-flue stoves, that part of the side flue E lying between the fire-pot B and above the exit-passage H is occupied by a check-plate placed across it to prevent the flame from converging too suddenly toward the exit. The position of this plate, producing eddies in the draft above it, induces a deposit of ashes upon it, and against the fire-pot, causing a rapid burning out of the spot wherever the ashes lie. To permit the frequent removal of the ashes, without dismantling the stove, the check-plate *l* is pierced by openings *n*, and is covered by a slide register-plate, *x*, operated by a handle projecting through slots in the outer casing of the stove. The shaking of this register will drop the ashes into the bottom of the base-flue C.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. In base-burning or magazine stoves, a funnel or hopper attached to or supported by the top or outside casing of the stove, in combination with the open-top magazine-cylinder K, as and for the purpose set forth.

2. The perforated check-draft plate *l*, in a downward-draft flue, provided with a register, *x*, so arranged as to pass the soot and ashes that collect upon them through the register and plate into the escape-flue, when the register is traversed for that purpose.

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