E. Y. ROBBINS.

Devices for Retaining Fire in Stoves.

No. 144,357. Patented Nov. 4, 1873.

FIG. 1.

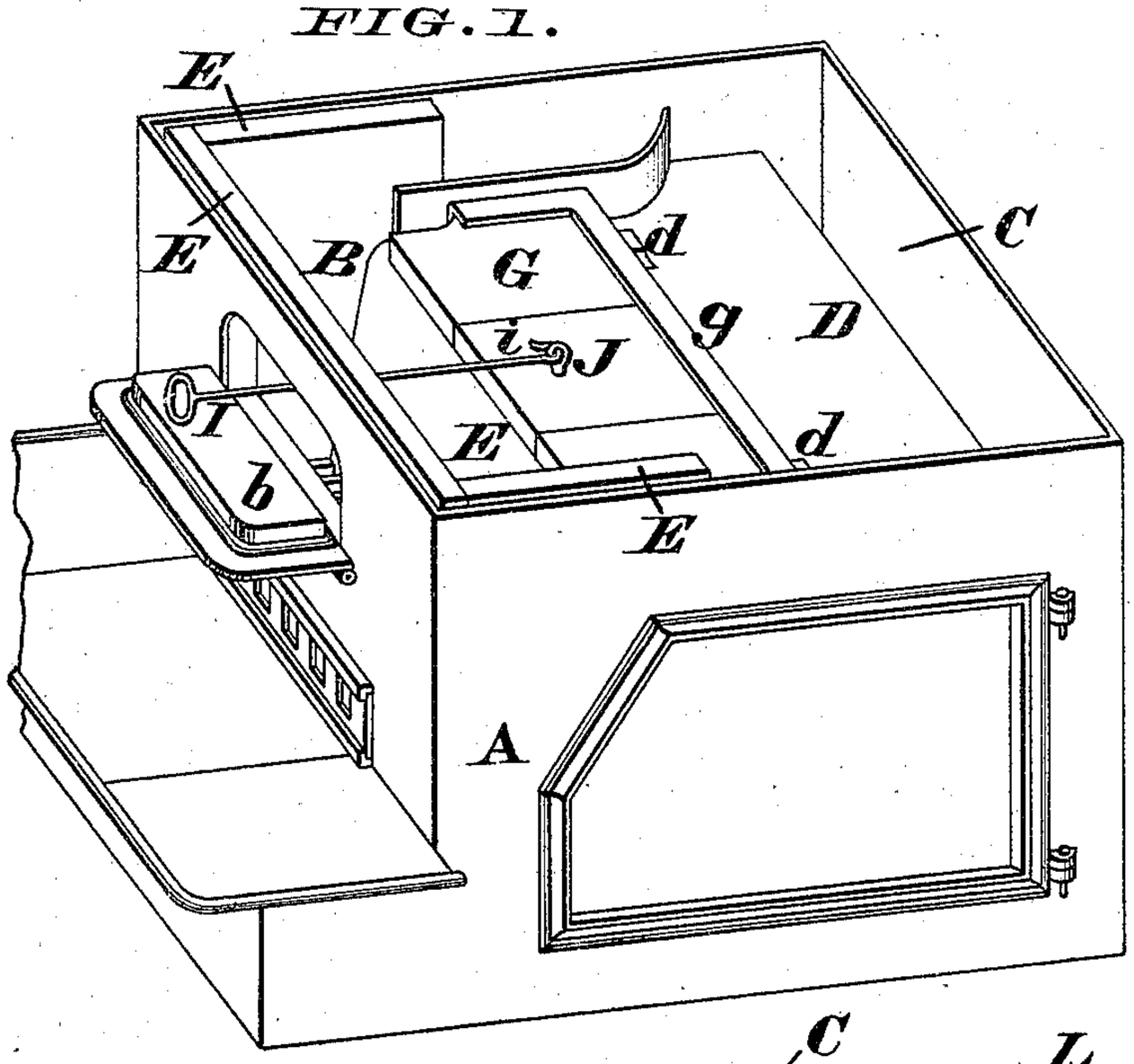


FIG. 2.

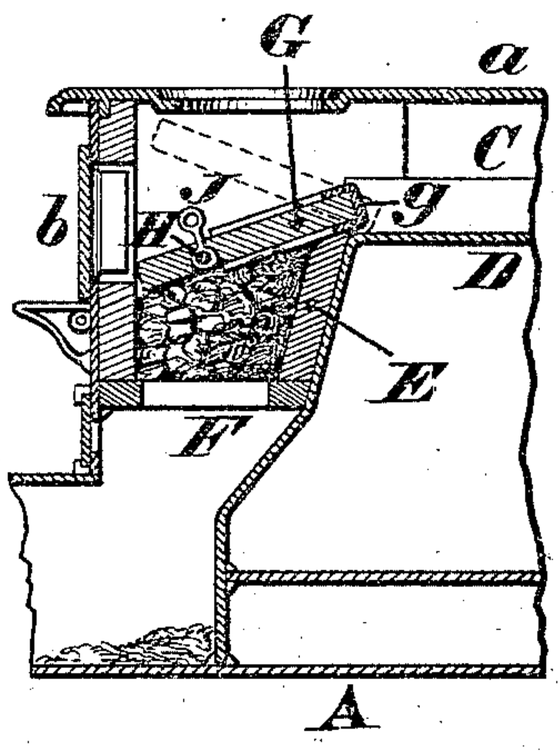


FIG. 3.

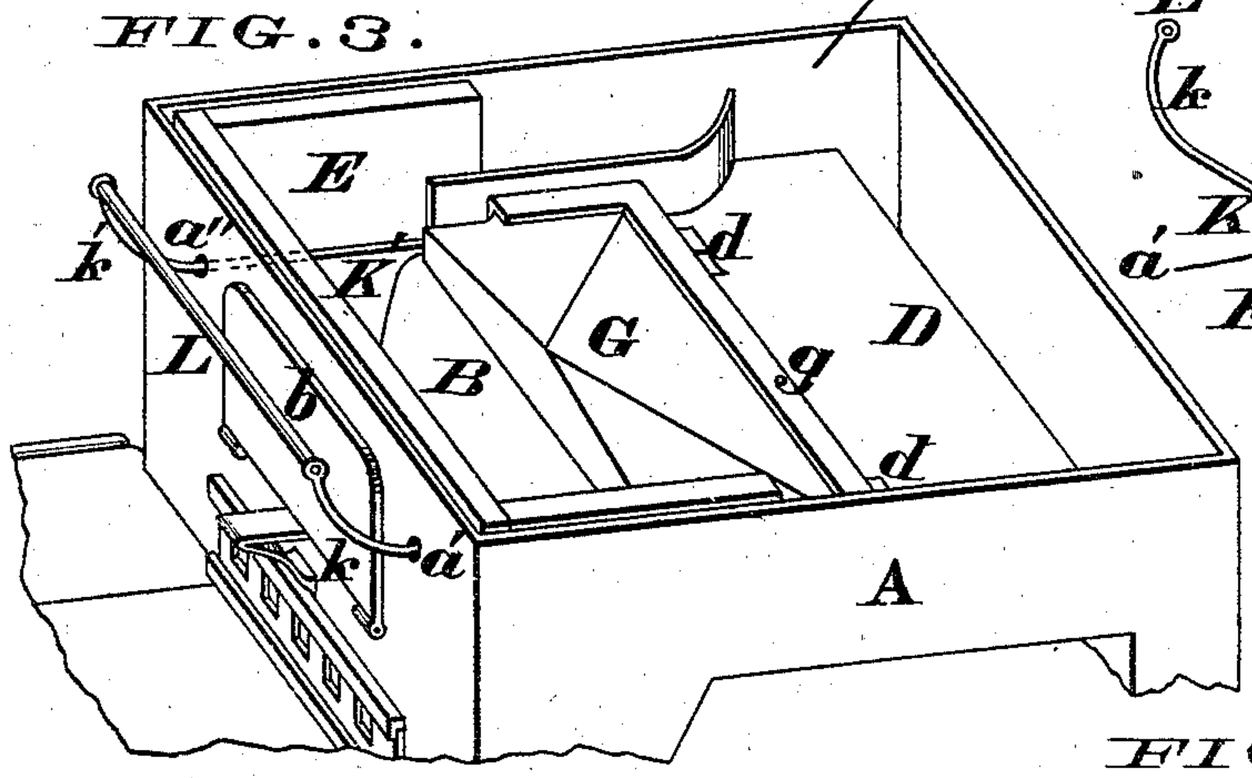


FIG. 4.

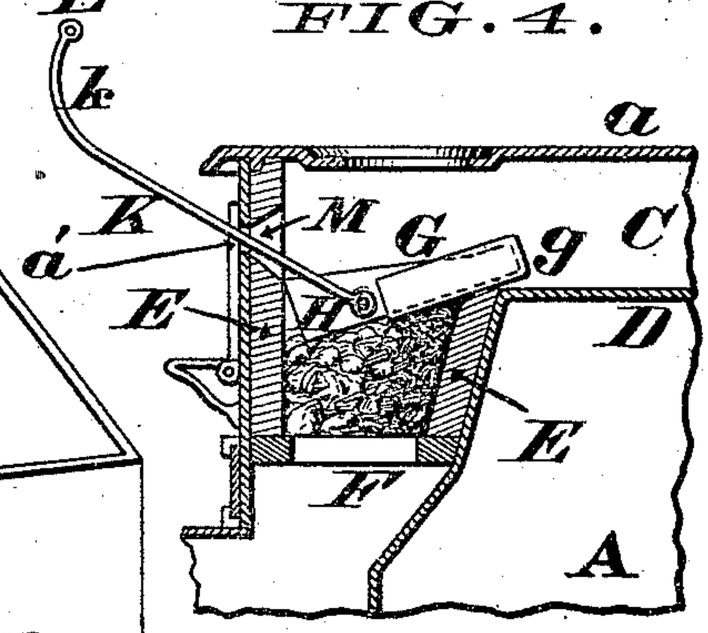


FIG. 5.

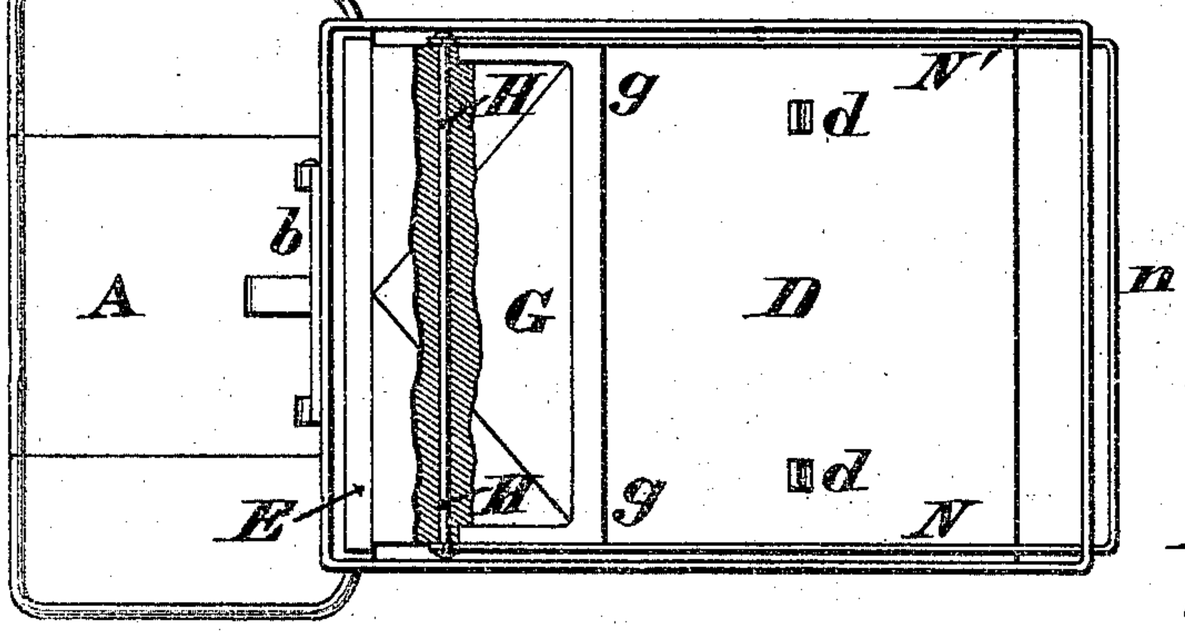
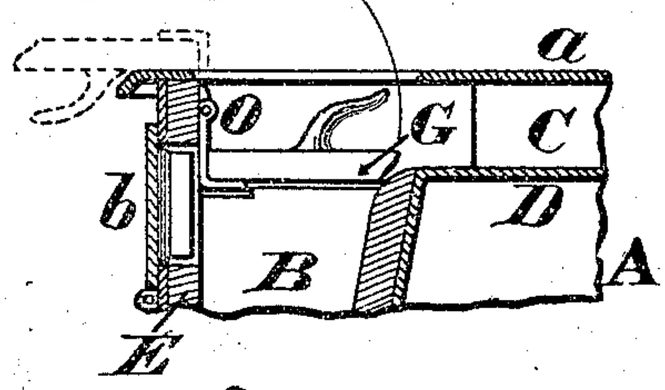


FIG. 6.



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AM. PHOTO-LITHOGRAPHIC Co. N.Y. OSBORNE'S PROCESS

UNITED STATES PATENT OFFICE.

EDWARD Y. ROBBINS, OF CINCINNATI, OHIO.

IMPROVEMENT IN DEVICES FOR RETAINING FIRE IN STOVES.

Specification forming part of Letters Patent No. **144,357**, dated November 4, 1873; application filed September 18, 1873.

To all whom it may concern:

Be it known that I, EDWARD Y. ROBBINS, of Cincinnati, Hamilton county, Ohio, have invented a new and useful Device for Retaining Fire in Cooking Ranges and Stoves, of which the following is a specification:

The object of this invention is to provide stoves and cooking-ranges with an appliance for insuring a slow and gradual combustion of fuel during the night, or at any other time, so as to economize heat and fuel, and to avoid the necessity of kindling the fire every morning; and consists of a slab of non-conducting material, which may be composed of one or more pieces strengthened by a rod running lengthwise of the slab. When not in use the slab rests upon the top plate of the oven, and when it is to be used it is merely pulled forward onto the surface of the fire by any suitable means. The tile, in the most approved form, not being fixed rigidly to either the stove or grate, is at liberty to descend as the fuel is consumed, and, as it rests upon the upper surface of the coals, very little air can enter directly beneath it, and consequently combustion is slow and gradual, while the heat is prevented from radiating upward and being dissipated and lost. This slow combustion continues as long as the tile rests upon the fuel; but as soon as it is removed therefrom, so as to allow a free access of air to the coals, active combustion immediately ensues without the necessity of kindling the fire in the usual manner; also, the heat which has accumulated immediately beneath the tile, by reason of its non-conducting qualities, is at once brought into use. In stoves or ranges designed for burning soft coals, it may be found advisable not to allow the tile or cover to descend into the fire-pot; and it may accordingly be arrested at a horizontal position by sliding or resting on the lining of the fuel-chamber, or on flanges, lugs, or other stops projecting into the same. The tile, whether arranged to descend a greater or less distance into the fire-chamber, or to rest upon or near the top of the same, must be applied to the stove or range in such a manner as to be readily displaced from off the fire, which removal can be accomplished either by lifting it up bodily, sliding it back upon suitable ways or bearings, or turning it upon hinges or pivots. There must also, in connection with this improvement, be the usual provision for shutting out all access of air from below to the fire-chamber when the tile is on the fire.

Figure 1 is a perspective view, showing my tile or slat applied to a cooking-stove, the top-plate of the latter being removed. Fig. 2 is a vertical section through the fire-box of the stove, with the tile shown resting upon the fuel. Fig. 3 is a perspective view, showing a modification of the devices for shifting the tile. Fig. 4 is a vertical section through the fire-pot of the stove, showing the position the aforesaid shifting devices assume when the tile rests upon the fuel. Fig. 5 is a plan showing another form of shifting devices, and Fig. 6 represents a method of hinging the tile or slab to the stove.

A represents a cooking-stove, of any approved form, having the customary fire pot or chamber B, communicating with which is the customary flue C between the top-plate *a* of the stove and the upper plate D of the oven. The fire-pot may be surrounded with the usual linings E of non-conducting materials. F is the grate, and *b* the door through which fuel is introduced into the fire-box. G is my movable tile cover, which consists of a slab or slabs of fire-clay, soap-stone, or other suitable refractory and non-conducting material. This slab or plate may be composed of several separate pieces, as shown in Fig. 1, or it may be formed of a single piece, as represented in Figs. 3 and 5; but in either case it is desired to bind it together, and to protect the edges thereof by a metallic frame, *g*, which may wholly or partially surround it. The non-conducting slab or cover may be traversed longitudinally by a rod, H, which not only unites the tile when it is composed of several pieces, but said rod may also afford a means of attaching any suitable handle or shifting instrumentality to the cover. The most simple method of shifting the tile, and the one that interferes the least with the interior arrangement of the stove, is represented in Figs. 1 and 2; and it will be seen, by referring to these illustrations, that the slab is provided with an eye, J, with which the hooked end *i* of a poker, I, is capable of being engaged. This poker is inserted through the door *b* of the stove or range, or

through one of the top lid-holes. The cover, when not in use, rests upon the top plate D of the oven, which plate is provided with flanges, lugs, or other stops *d*, that prevent the tile being shoved back too far within the flue C. The eye J is attached to the tile by having the rod or bar H passed through a perforation in its lower end, as seen in Fig. 2. The form of this eye may be such as to fit it to receive the point of the lid-lifter. This eye may, however, be dispensed with, and the tile be shifted by rods K K′, whose inner ends are pivoted to the extremities of the bar H. The outer or exposed ends of these rods are curved upwardly at *k k′*, and are united by a bar or rail, L, which rail may be composed of wood, if desired, and may do duty as a rack for drying clothes. The rods K K′ project through apertures *a′ a″* in the front plate of the stove or range. The lining of the fire-pot may be slotted in the rear of these apertures, as shown at M, so as to allow considerable vertical play for the rods K K′, according as the tile is elevated or depressed. These forwardly-projecting and up-turned bars may be dispensed with, and rearwardly-projecting ones, N N′, may be substituted for them, as seen in Fig. 5. These bars are carried through openings in the back plate of the stove, and have their rear ends united by a rod, *n*.

Another modification is shown in Fig. 6, in which the tile is represented hinged to the stove at O, supported upon the linings of the fire-pot, and capable of being turned over to the horizontal position shown by dotted lines when not by use, and may be provided with a handle, O, for its convenient manipulation.

The device may be further modified by suspending the tile from one end of a chain or wire rope, which, after passing over a sheave, should have a counter-balance applied to its outer end. This arrangement will be especially applicable to heating-stoves, as it will allow the tile to descend bodily into the fire-pot and to be lifted clear of the lining of the same in the most expeditious manner, and without danger of burning the attendant or scattering soot and ashes over the floor.

When not in use, the tile G is shifted back upon the plate D as far as the stops *d* will allow it to go, and in this position it serves to prevent the intense heating of said plate, and thereby diminishes the chances of burning articles that are placed in the upper part of the oven. But, while preventing over-heating of the upper part of the oven, the tile does not interfere in the least with the baking or cooking qualities of the other parts of the stove or range, but rather aids the same, by conserving the heat and distributing it to the cooler parts.

During the night, or whenever it is desired to discontinue the use of the stove, the attendant has simply to engage the hook *i* of the poker I with the eye J, and then draw the tile forward and allow it to rest upon the upper surface of the fire; after which the poker is withdrawn, the doors *b b′* closed, and no air allowed to enter beneath the grate.

The weight of the tile has a tendency to compact the fuel together, and, resting as closely upon the coal as it does, the air is excluded to a great extent, and combustion is nearly suppressed and confined within the chamber B, while the heat is also shut down and prevented from radiating away from the top of the fire. It will be seen that, in this (the preferred) form of my invention, as the fuel is consumed and gradually settles down toward the grate F, the slab G follows it, and permits only a slow combustion to take place.

In the morning, or at any other time when it is desired to start up the fire, the door *b* is again opened, the hook *i* reinserted in the staple or eye J, and the tile is elevated from its depressed position and forced back upon the oven-plate. The fuel being thus relieved of the weight of the tile, and air being allowed to enter chamber B, the result is that the coals instantly ignite and burn briskly without the aid of kindling. If the fire-pot B should be too full when the slab is applied to the fuel, the front edge of said tile can be elevated, as shown by dotted lines in Fig. 2, and then allowed to descend gradually, and accommodate itself to the upper surface of the coal.

The tile can be shifted and handled as readily by the bars L or *n* as with the poker I, and whichever of these devices is employed, there will be no necessity for detaching any portion of the stove; but in case the hinged tile is used, as shown in Fig. 6, both of the front lids and also the "short center" must be removed before it can be turned up to the horizontal inverted position indicated by dotted lines. When brought to this horizontal position, the tile will answer admirably for a hot shelf for placing articles upon that are to be kept warm.

In the drawing my removable tile is shown as applied to a cook-stove, which is the situation where it will be most useful; but it is evident that, by being properly modified, it can be fitted to heating stoves and ranges.

I claim as my invention—

The fire-cover G, composed of a piece or pieces of non-conducting material, strengthened by the rod H, and provided with the metallic frame *g* and eye J, said cover being adapted to rest on the surface of the fire, in combination with the oven-plate D of a cooking range or stove, all as herein set forth, for the purpose specified.

In testimony of which invention I hereunto set my hand.

EDWARD Y. ROBBINS.

Attest:

GEO. H. KNIGHT,

S. B. SPEAR.