J. MORRISON, Jr.

Heating Stove.

No. 46,483. Patented Feb. 21, 1865.

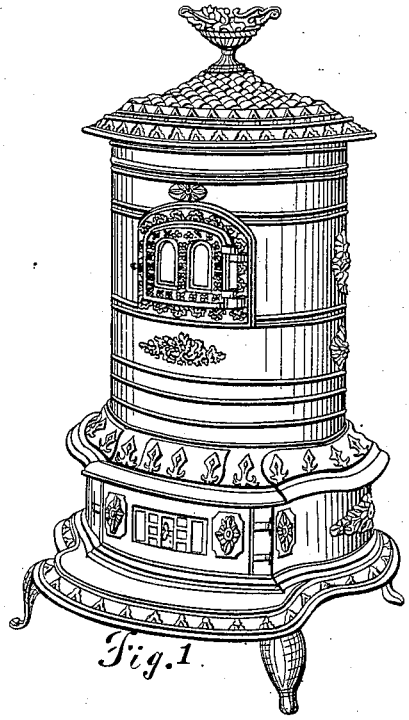

Fig. 1

Fig. 2

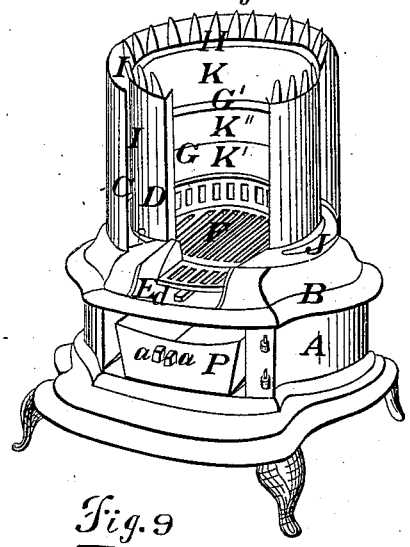

Fig. 9

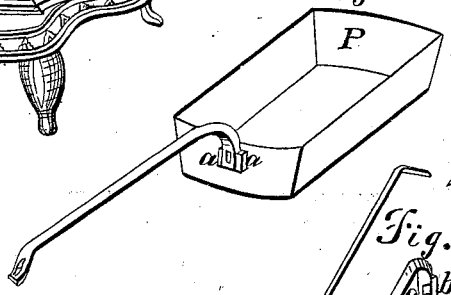

Fig. 4

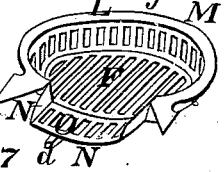

Fig. 7

Fig. 3

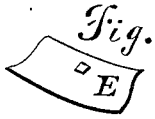

Fig. 8

Fig. 5

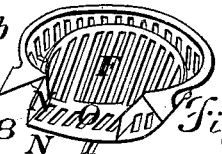

Fig. 6

Witnesses

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JAMES MORRISON, JR., OF TROY, NEW YORK.

IMPROVEMENT IN COAL-STOVES.

Specification forming part of Letters Patent No. **46,483**, dated February 21, 1865.

To all whom it may concern:

Be it known that I, JAMES MORRISON, Jr., of the city of Troy, county of Rensselaer, State of New York, have invented certain new and useful Improvements in Coal-Burning Stoves; and I do hereby declare the following to be a full, clear, and exact description of the construction and operation thereof, reference being hereby had to the accompanying drawings, and to the letters of reference marked thereon, which said drawings make a part of this specification.

Like letters represent and refer to like or corresponding parts.

Figure 1 is a front perspective view of the stove hereinafter described and set forth. Fig. 2 is a sectional view showing the various improvements or invention herein described and set forth. Fig. 3 is the first or outside plate, which corresponds to the opening leading to the fire-grate from the front of the stove or outside cylinder and hereinafter more fully described. Fig. 4 shows the fire-grate and the frame or vertical grate receiving and holding said fire-grate for the purposes hereinafter set forth. Fig. 5 represents the same device as Fig. 4, with the exception that this figure shows the fire-grate in a dumped position. Fig. 6 shows the inside plate, which corresponds to an opening in the plate surrounding the fire-grate and leading to the surface-grate fire-chamber from the hot-air-radiating chamber, hereinafter more fully described. Fig. 7 shows the hook or iron for operating upon the fire at or near the bottom of the fire-chamber and just above the fire-grate. Fig. 8 shows the handle used for the purpose of shaking the fire-grate, for lifting from the ash pit or chamber the ash pan or box, and for the purpose of removing from its place the device shown at Fig. 6. Fig. 9 shows the ash pan or box, which is placed in the ash pit or chamber directly underneath the fire-grate.

The nature of my said invention and improvements consists in the construction and employment of a lateral vibrating and dumping fire-grate in combination with a vertical grate-frame so constructed as to permit or allow ashes, cinders, or any other material which would obstruct the draft or prevent the coal on the fire-grate from burning freely to be removed therefrom through a recess, hereinafter described, or its equivalent, without the necessity of dumping the fire-grate, as well as to prevent thereby the rekindling or restarting of the fire upon said grate in said stove, and allow the said fire to continue burning above and upon the said grate while the cinders or other obstructing material is being removed therefrom just above and upon the immediate upper surface of such vibrating or other fire-grate, by the means and in the manner substantially as herein described and set forth.

It also consists in the employment of a cast-iron or fire-brick ring with an air-chamber therein, and located at or near the center of the fire-chamber from the bottom to the top thereof, and perforated with numerous small apertures leading from such air-chamber to the fire-chamber, so as to admit atmospheric air to the combustible material in the fire-chamber at the side thereof, about halfway between the burning surface of the coal and the top of the fire-grate, and being limited to the specified air-chamber ring, or means herein described, and set forth in said drawings at Fig. 2 thereof.

Having thus described the nature of my said invention and improvements, I will here proceed to describe the construction and operation of the same in order to enable any person skilled in the art to which my said invention relates to make and use the same, which are as follows, to wit:

A is the base, constructed in the usual manner, and of any size, style, or shape desirable. This base rests on legs or supports in the usual manner. B is the cap or upper plate of the said base, and is made to correspond with the upper portion of the said base as to size or shape. It receives the outer cylinder, C, and the inner cylinder, D, Fig. 2, at their lower ends, and has an opening, E, leading from the outside of the stove into the fire-chamber at or near the immediate surface of the fire-grate F, Fig. 2. The said inner cylinder, D, is made of cast-iron, and of any shape, size, or height deemed best, and is lined upon its inside with fire-brick in the usual manner, with the exception of the air-chamber ring G, Fig. 2. At the top of this inner cylinder, I, construct a guard or grate, H, Fig. 2, so as to prevent any coal from falling into the flue or heating-chamber I, between said outer and inner cylinder. This guard may be in a conical grate form, or as shown in the drawings, and is just above the upper end of the said fire-brick and fire-chamber. The outer cylinder, C, should be made of sheet Russia or other good iron, and may extend to any desired distance above the top of the fire-chamber. The said flue or heating-chamber I opens into or communi-

cates by means of the openings J J, Fig. 2, down and through which the heated air or products of combustion pass into flues, which pass into an opening or pipe in the back part of the said base leading into an exit-pipe passing upward near the back of the stove and uniting with a short pipe leading from and above the fire-chamber to the exit-pipe leading to the chimney, in the well-known and usual manner. This short pipe will contain the usual damper for the purpose of regulating the direct or downward and circulating draft. In the back and lower part of the said vertical pipe connecting with said exit flue or pipe at the base, and also with the said short pipe leading from the upper part of the fire-chamber, I construct a ventilating-damper in the usual manner. The said iron ring G may be of any capacity desired. I make it in thickness to correspond with the thickness of the said fire-brick K and of any height deemed best. The air-chamber within this ring will be made as large as convenient. The said ring G′ may be made in two or more parts or sections. This ring rests upon the top edge of the first or second tier of fire-brick K′ and K″. The next adjoining tier of fire-brick will rest upon its lower end, at the upper part of the said iron ring G′; as shown at Fig. 2. This ring will contain upon its inner side numerous small apertures leading from the said air-chamber G, Fig. 2, into the fire or chamber of combustion, for the purpose of admitting to the side of the burning fuel therein atmospheric air, to aid in the more perfect combustion of such fuel. The said air-chamber G receives the atmospheric air from the room or place where such stove is used by means of a small pipe or tube of sufficient capacity at the rear part of the stove, which extends from the outside of the cylinder C through the heating-chamber I, and through the inner cylinder, D, and then opens into the said air-chamber G, thereby admitting said atmospheric air to the fire-chamber in as cold a state as possible.

I construct the fire-grate F in a frame, as shown at Figs. 4 and 5. The said grate-frame is so constructed as to fit to or correspond with the base of the stove and the fire chamber and cylinders resting thereon. This frame will contain a vertical grate, M, Figs. 4 and 5, which will be of any desired capacity. The lower part of this inner recess will contain a horizontal grate, O, Figs. 4 and 5. This horizontal grate will be at its top part or surface upon a line with the top part of the dumping and vibrating grate F, same figures, so that cinders or any obstructing material to the draft or free burning of the fuel upon said grate F may be removed therefrom through said recess into the ash pan or box P, Figs. 2 and 9, through and over the said horizontal grate O, Figs. 2, 4, and 5, by means of the hook-iron shown at Fig. 7. This will obviate the necessity of dumping the fire-grate, and, of course, the rekindling of the fire, when obstructed by means of cinders or any like substance, permitting thereby the fire to continue unobstructed by such means or material. The draft is admitted to the fire through said grate F in the usual manner by means of a sliding damper shown at Fig. 1, which is in the ash pan or chamber door shown at Figs. 1 and 2. This stove is durable in its construction and most economical in fuel used therein, while it has great capacity for the radiation of heat. It gives out a great amount of heat from a small quantity of coal consumed in a given time.

Having thus described my invention and improvements in coal-stoves, what I claim, and desire to secure by Letters Patent, is—

1. The employment of a vertical grate and frame, I, with the downward recess E and horizontal grate O therein in combination with the dumping and vibrating grate F, in the manner and for the purposes substantially as herein described and set forth.

2. In combination with a stove, a grate so constructed and arranged that the clinkers or like draft-obstructing material may be removed from any point or place at or just above its surface without dumping said grate, in the manner substantially as herein described and set forth.

3. The special arrangement and combination of the iron ring G′, containing the air-chamber G, and communicating with the fire at the sides of the fire-chamber by means of numerous small apertures, with the tiers of fire-brick K and K′ surrounding the fire-chamber above and below the said iron ring, in the manner substantially as herein described and set forth.

In testimony whereof I have hereunto set my hand.

JAMES MORRISON, JR.

Witnesses:

CHARLES D. KELLUM,

R. H. REILLE.