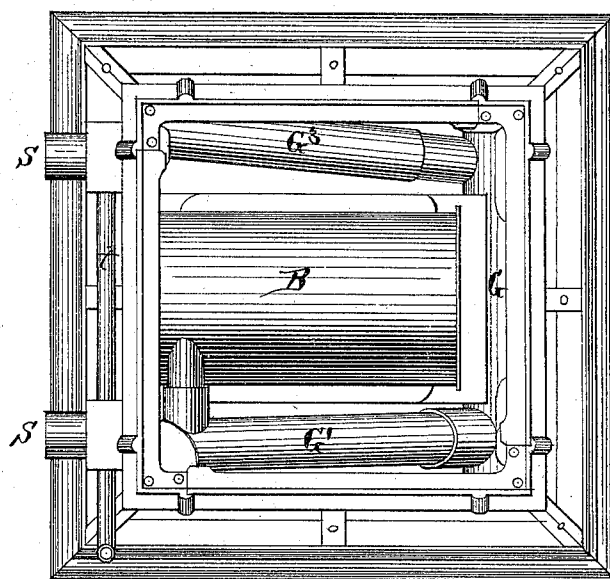
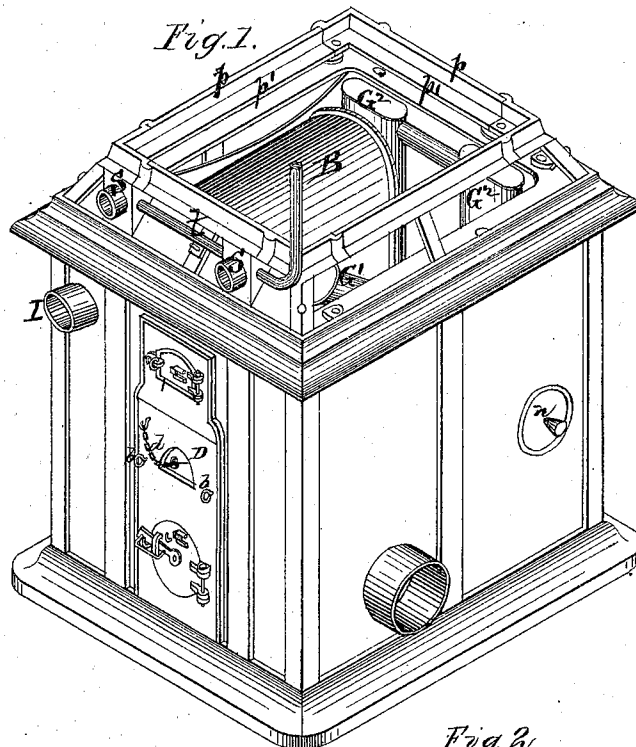


JAMES H. MEARNS.

Improvement in Hot Air Furnaces.

No. 124,842.

Patented March 19, 1872.



Witnesses
Jno. H. Ellis
J. P. White

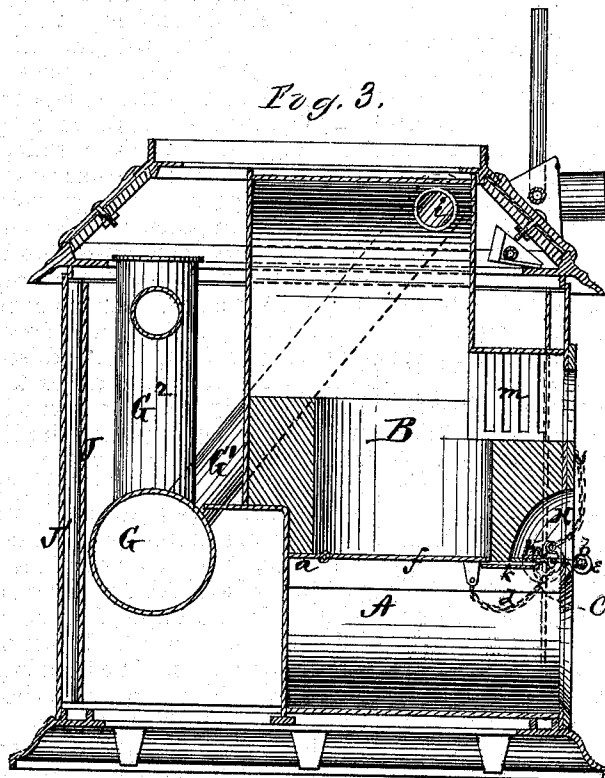
Inventor
James H. Mearns,
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J. F. Alexander
Att'y.

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UNITED STATES PATENT OFFICE.

JAMES H. MEARNs, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO HIMSELF, JOB BARTLETT, JOSEPH D. BARTLETT, CHARLES F. BARTLETT, AND J. C. BARTLETT, OF SAME PLACE.

IMPROVEMENT IN HOT-AIR FURNACES.

Specification forming part of Letters Patent No. 124,842, dated March 19, 1872.

SPECIFICATION.

To all whom it may concern:

Be it known that I, JAMES H. MEARNs, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Warm-Air Furnaces; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing, and to the letters of reference marked thereon, which form a part of this specification.

The nature of my invention consists in the construction and arrangement of a "portable heater," as will be hereinafter more fully set forth.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the annexed drawing, in which—

Figure 1 is a perspective view of my heater. Fig. 2 is a plan view; and Fig. 3, a longitudinal vertical section of the same.

My heater is made of heavy wrought iron, riveted together, one-half, A, forming the ash-pit, and the other, B, the furnace, for the purpose of getting and securing a large radiating surface. On the inside of the ash-pit A are shelves or rests *a a*, secured to the ash-pit by means of rivets or bolts, for the purpose of supporting bricks, whereby a saving of a great amount of labor is obtained over the old plan of bending or offsetting the iron. On the front of the heater is a bed-plate, C, in which there are two openings, one on each side of the door D, with dampers *b*, forming a flue from the ash-pit to the top of the fire, for the purpose of carrying off the dust made in raking the fire. There are also two other openings in the center of the bed-plate. One of these is for the purpose of attaching a chain, *d*, to the grate *f* of the furnace to raise or lower the same without opening the lower door of the furnace. This chain is provided with a stopper, *e*, which fits in the opening of the bed-plate to make it air-tight. The other opening is provided with a slide, *h*, with a lip running through and connecting with the draw-bar *k*, which, when drawn out, allows the grate to fall, and, when

in, supports the grate to its proper position, and completely closes the opening in the bed-plate so as to make it air-tight. The two openings in the center of the bed-plate are surrounded and covered by a niche, H, coming out to the front of the heater, so as to give access for working the chain and slide. The neck or mouth-piece of the furnace connecting the fire with the upper door is provided with shields or protection plates *m m*, which have openings for the purpose of allowing the draught to operate on the flue through perforations, thus carrying the dust over the top of the fire, through the drums to the flue, and preventing the coal or fuel from filling up the dust-flue. It is not intended to carry the ashes to the top of the fire, but only the finer particles of dust that usually escape from the ash-pit when the lower door is opened for raking. These shields also protect the mouth or neck from burning out, which is very essential, practical experience having demonstrated that it is the top and sides, not the bottom, of the neck or mouth-pieces that are liable to burn out, as the force of heat in its natural tendency is upward. The furnace is provided with a number of radiators or drums. The inlet is placed near the front end of the furnace, as shown at *i*, Fig. 3, the drum *G*¹ running toward the back on an incline, connecting with a lower drum or radiator, *G*, which lies in a horizontal position, and the ends of which project through the casing provided with caps or doors *n n*, for the purpose of cleaning out. On the horizontal drum or radiator *G* are placed two oval drums or radiators, *G*² *G*², connected at or near the top, as shown. On the other end of said horizontal drum is placed another inclined drum, *G*³, connecting with gas-pipe or flue I. The bottoms of these drums or radiators are intended to be made of galvanized iron, to prevent rust and soot from eating the same.

The draught first rises from the fire to the top of the furnace; then it enters the inclined drum *G*¹ to the horizontal drum *G*; thence to one of the drums *G*², up to the collar, through the other drum, back to the horizontal drum, and along the other inclined drum *G*³ to the flue.

The furnace is intended to be incased in an outside casing, *J*'. It is intended that the in-

side casing J be bowed or sprung, so as to form a flue between it and the outside casing, so as to allow cold air to pass between the two casings, thus preventing the radiation of heat to the cellar. The frame upon which the casings are placed is made of cast-iron and in sections, intended to be put together by bolts and rivets or their equivalents, having a bottom, middle, and top frame, with inside and outside upright pieces. They can be made in such a manner that the outside piece can be taken off and the iron placed against the inside, and the cap or outside upright put to its place, thus clamping the iron, making a substantial job. The top frame is made smaller than the other frames in order to secure a slant or pitch for the purpose of attaching hot-air pipes. On the top frame there is a flange, *p*, extending upward, also a flange, *p'*, extending in to support a sheet-iron top, which is intended to be filled with cement or sand, for the purpose of preventing radiation of heat to the cellar. Through the top of the hot-air pipes *s s* there is a water-pipe, *t*, running, with openings, so as to

allow water to sprinkle the hot air as it passes from the furnace.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The bed-plate C, provided with suitable openings, so as to work the draw-bar *k* and chain *d* from the top of or through the same, substantially as set forth.

2. The perforated shields or protection-plates *m m*, arranged in the neck or mouth-piece of the furnace, substantially as and for the purposes herein set forth.

3. The arrangement of the drums or radiators G G' G'' G''', substantially as herein set forth.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

JAMES H. MEARNS.

Witnesses:

T. H. ALEXANDER,
JNO. A. ELLIS.