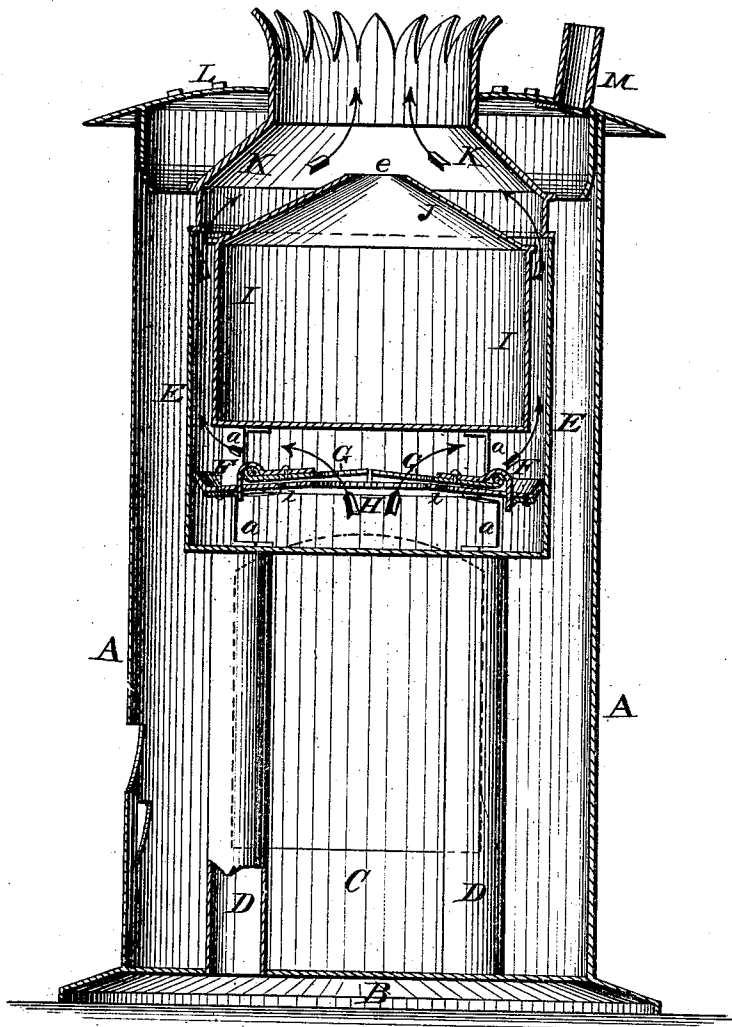


J. E. GRIDLEY.
HEATER.

No. 178,764.

Patented June 13, 1876.

Fig 1



WITNESSES
Frank L. Ourand.
Henry V. Miller

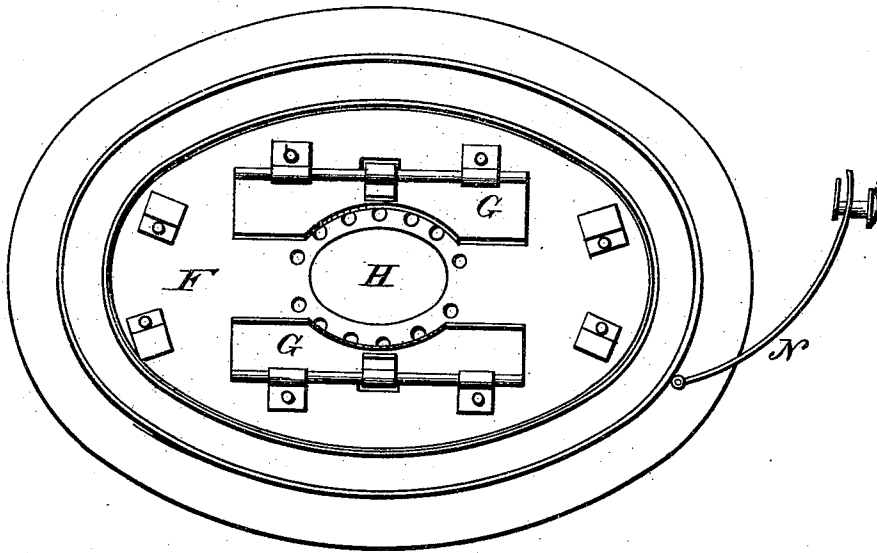
INVENTOR
James G. Gridley
By Alexander T. Mason
Attorneys

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HEATER.

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Fig 2



WITNESSES

Frank L. Ourand
Henry N. Miller

INVENTOR

James E. Gridley
By *Alexander & Mason*
Attorneys

UNITED STATES PATENT OFFICE.

JAMES E. GRIDLEY, OF ST. PAUL, MINNESOTA, ASSIGNOR OF ONE-EIGHTH
HIS RIGHT TO FREDERICK W. FROHUE, OF SAME PLACE.

IMPROVEMENT IN HEATERS.

Specification forming part of Letters Patent No. **178,764**, dated June 13, 1876; application filed
May 24, 1876.

To all whom it may concern:

Be it known that I, JAMES E. GRIDLEY, of St. Paul, in the county of Ramsey, and in the State of Minnesota, have invented certain new and useful Improvements in Heaters; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification.

The nature of my invention consists in the construction and arrangement of the internal portions of a stove or heater, the peculiarities of which will be hereinafter set forth.

In the accompanying drawings, making part of this specification, Figure 1 represents a section, and Fig. 2 a plan view, with the top of the stove removed, as also an inside drum.

In the figures, A represents the shell of the stove, which may be made either of sheet or cast metal, and of any suitable size and shape, although I prefer that in shape it should be cylindrical. B is the base of the stove. D D represent air-flues, and in this case I use four. At bottom these flues pass through the base B, and at top they enter a hot-air chamber or reservoir, E, for the purpose of conveying cold air from beneath the stove through the fire-chamber C and into the reservoir E. Within the reservoir is placed a diaphragm, F, which is provided with feet *a* upon both its upper side and under side. The feet upon the under side rest upon the bottom of the reservoir, and keep it a suitable distance from it. The feet upon the upper side support a hot-air drum, I. An opening, H, is made through the center of the diaphragm, and upon each side of this hole are a series of smaller holes, which are covered by the flaps or valves G G. The diameter of the drum I is smaller than that of the reservoir, so that hot air can pass up between the two. The drum I culminates in a dome, J, which has in its apex an air opening, *e*. The drum may be closed at its bottom, or may have smaller openings in the bottom than in the top, so that a hot-air cushion may be formed in said drum for radiating as well as retaining heat.

K represents a capping-dome, the lower end of which rests upon or against the upper end of the reservoir E, and serves to convey the

hot air into the room to be heated, its upper end being open.

The products of combustion pass up and around the reservoir, and out at the smoke-pipe M.

Air may be introduced into the flues D D either from the room in which the stove is placed, or from the open air.

When the air passes into these flues it commences to be heated, as they are in direct contact with the fire. It passes up and strikes the under side of the diaphragm, and passes to its center, and through the hole H; then strikes the under side of the drum I, passes around it, and then up through the dome-cap K and into the room.

When the air becomes very hot beneath the diaphragm the flaps G G are raised by expansion of a small brass plate, which is secured to its under side, and the end of which works or presses against an arm attached to the flap. I may or may not use these flaps as a general thing, as in many instances they can be dispensed with.

The several parts of the stove may be readily removed for the purpose of cleansing them, and the construction is simple, and, consequently, cheap.

When the valves are used it will be seen that cold air is brought through the fire-box into a hot-air generator or reservoir, and there retained by the wing-valves until heated, when, by its expansion, it will open the valves and pass out in a heated state at the top.

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

The shell A, inclosing the flues D D and reservoir E, and in combination therewith the diaphragm F, the drum I, and the dome-cap K, for forming a heating apparatus, the several parts being constructed substantially as and arranged to operate in the manner set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 23d day of May, 1876.

JAMES E. GRIDLEY.

Witnesses:

J. M. MASON,
M. L. STOWELL.