L. R. COMSTOCK.

Improvement in Heating-Stoves and Drums.

No. 132,635. Patented Oct. 29, 1872.

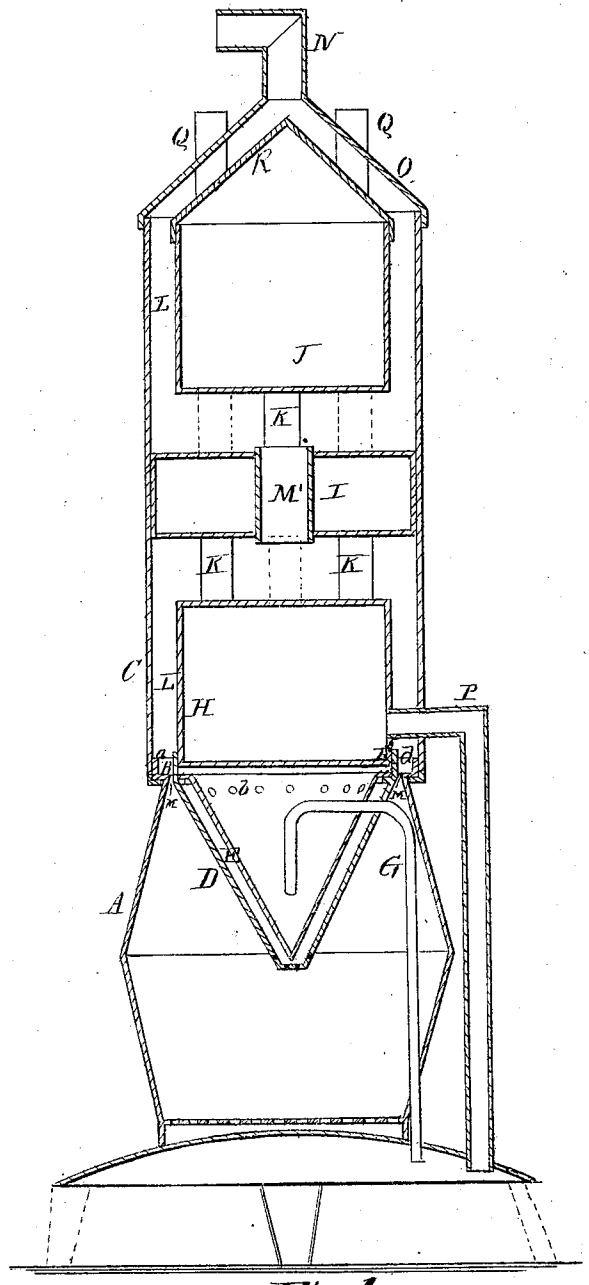


Fig. 1.

Witnesses.
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AM. PHOTO-LITHOGRAPHIC CO. N.Y. (OSBORNE'S PROCESS.)

# UNITED STATES PATENT OFFICE.

LEVI R. COMSTOCK, OF PHILADELPHIA, PENNSYLVANIA.

## IMPROVEMENT IN HEATING STOVES AND DRUMS.

Specification forming part of Letters Patent No. **132,635**, dated October 29, 1872.

*To all whom it may concern:*

Be it known that I, LEVI R. COMSTOCK, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a new and valuable Improvement in Portable Heater and Furnace; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawing making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawing is a representation of a vertical section of my invention; Fig. 2 is a vertical section of modification of my invention; and Fig. 3 is a detail view of my invention.

My invention has relation to gas-burning and hot-air stoves; and the novelty consists in the construction and novel arrangement of communicating hot-air drums and heat or flame passages and flues, whereby fresh air admitted to said drums above the fire-pot is heated and its temperature increased as it ascends to its escape-tubes, all substantially as hereinafter more fully described.

Referring to Figure 1 of the drawing, A designates the lower part or body of my improved stove, having a wide upright rim, *a*, bent up or formed at the outer part of a horizontal annular flange or shoulder, B, as shown. C represents a large cylindrical casing which fits down over the rim *a*, and thus surmounts the stove body. D represents a double walled inverted cone, arranged above the fire-place, and supported upon the flange B by means of ears *d*. This cone may sometimes be supported by vertical rods passing through the cap of the casing C, and furnished with nuts, by the proper adjustment of which the cone may be raised or lowered to any required distance from the fire. The two walls of the cone have an air-space, E, between them. The outer wall is open or perforated at its lower end or apex, while the inner wall is closed at the same place, but is perforated around its upper edge, as shown. The inner wall has a flange turned on its edge to rest on a corresponding flange projecting from the inner surface of the outer wall, as shown. F denotes a cylindrical rim encircling the upper part of the cone D. I usually cast the outer wall of the cone with its supporting-lugs, internal flange, and cylindrical rim complete, but construct the inner wall of sheet iron. G represents a pipe open at both ends and leading from underneath the stove upward through the side thereof; thence through both walls of the cone to the center, and there carried down toward the point of the inner wall. This pipe is designed for the purpose of conducting fresh air to the cone, and may be otherwise arranged than as shown, so as to produce the required result. When the fire is burning in the stove air rushes through the pipe G, becoming heated and rarefied as it ascends. Passing through the upper and horizontal branch of the pipe the air then necessarily descends to find an escape, which is provided at the lower end of the short vertical arm of the pipe. Leaving said pipe the air comes in contact with the inner surface of the inner wall of the cone, which, being heated by the fire, further increases the temperature of the air, which raises and expands, and, being prevented from passing beyond the top of the cone by the air-drums hereinafter described, enters the air-space between the walls of the cone through the perforations *b*, and still continuing to increase in temperature, descends upon the fire through the openings or perforations in the lower part of the outer wall. At this point the air is intensely heated, and in this condition mixing with the gas arising from the fire, causes said gas to be consumed. H I J designate the hot-air drums incased within the cylinder C and communicating with each other by means of short tubes or flues K. The drum I exactly fits the interior of the cylinder at the place where it is located, while the drums H J are separated by annular spaces L through which the heat and flame passing from the fire through the space M, which is between the upper part of the cone and the flange B, may circulate. After the heat and flame pass through the space encircling the drum H they are deflected by the drum I and are thus spread over its under surface and over the upper surface of the drum H. They then ascend through a tube, M′, in the center of the drum I, and thence spread out so as to circulate around the drum J. Finally the heat, together with the smoke, escapes through a pipe, N, at the apex of a conical cap, O, placed over the cyl

under C. By this arrangement of the drums the heat is brought in contact with every portion of their surfaces and of the surfaces of the hot-air tubes. The air to be heated by this means enters the lower drum by a pipe, P, and after passing through all the drums and becoming heated as it ascends passes off through tubes Q, leading from the conical cap R surmounting the drum J. The drum H is connected to the outer wall of the cone by being inserted within the rim F.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The air-drums H I J, and tubes K M P Q, in combination with C, substantially as specified.

2. The double-walled inverted cone D, having its outer wall perforated at the bottom and the inner wall perforated around its upper edge and provided with the air-space *e*, substantially as specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

LEVI RICHARDSON COMSTOCK.

Witnesses:

GEO. I. KREIS,

H. A. THOMAN.