P. MIHAN.

Steam Heat Radiator, &c.

No. 205,664. Patented July 2, 1878.

Fig. 1.

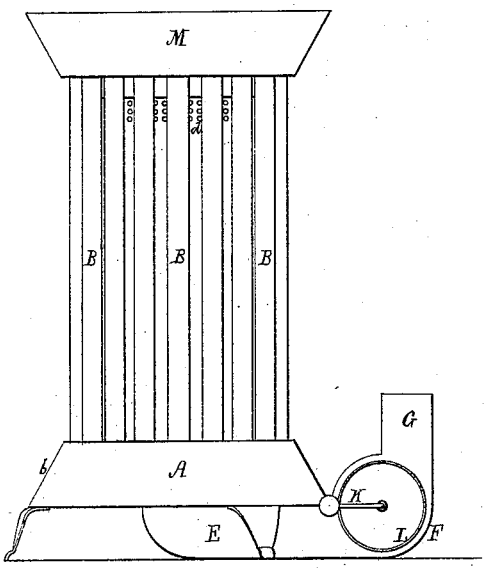


Fig. 2.

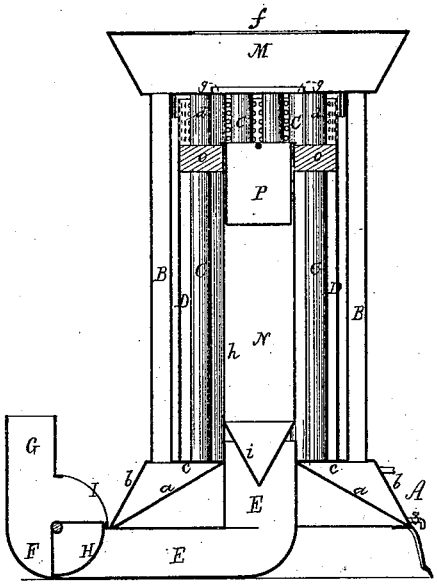
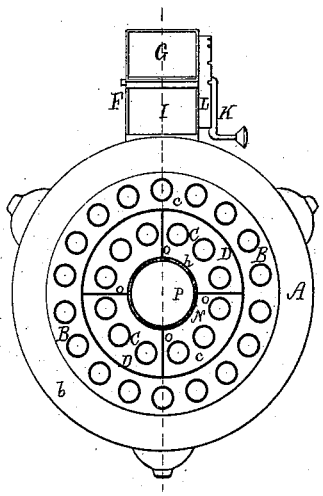


Fig. 3.



Witnesses.

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PATRICK MIHAN, OF CAMBRIDGEPORT, MASSACHUSETTS.

IMPROVEMENT IN STEAM-HEAT RADIATORS, &c.

Specification forming part of Letters Patent No. **205,664**, dated July 2, 1878; application filed June 3, 1878.

To all whom it may concern:

Be it known that I, PATRICK MIHAN, of Cambridgeport, of the county of Middlesex and State of Massachusetts, have invented a new and useful Improvement in Apparatus for Heating and Ventilating an Apartment of a Building; and do hereby declare the same to be described in the following specification and represented in the accompanying drawings, of which—

Figure 1 is a side elevation, Fig. 2 a vertical and longitudinal section, and Fig. 3 a horizontal section, of a heat-radiator provided with my invention or improvements.

It is to heat air within an apartment by radiation, and also to effect the introduction of fresh air therein, and the heating of it while it may be passing through the apparatus, the heat being applied to the base and radiating members by means of steam let into them, and the ingress of air being regulated to great advantage by devices to be hereinafter explained, such enabling the air to be introduced into the apartment without first going through the radiator, or by going wholly or in part through it, as may be desirable.

In such drawings, A denotes a chambered circular annulus or base, composed of two hollow conic frusta, *a b*, and a flat ring, *c*, all being made of sheet metal. The frustum *b* encompasses the frustum *a*, they being united at their lower edges, and to the ring *c* at their upper edges and the inner and outer peripheries of the ring. On the said ring, and opening into the base, there are erected two concentric ranges of vertical pipes, B C. Between these ranges, and concentric with them, is a drum, D, open at top or made foraminous in its upper part, as shown at *d*. This drum, having its lower end resting on and fixed to the base ring *c*, surrounds the inner range, and is encompassed by the outer range of pipes, and constitutes or forms a chamber for receiving air and heating it by means of the pipes C, which, with the outer range of pipes B, are to be supplied with steam from the base A, into which it is to be introduced by a pipe from a boiler. The pipes of each of the ranges B and C being closed at their upper ends, no steam can pass from them into the cap M, situated over them.

A ventiduct, E, arranged in the base in manner as shown, opens into the lower part of the drum D, and leads out of the periphery of a cylindrical case, F. This case F is provided with an air-induct, G, which, opening through the periphery of the case, is arranged at or about at a right angle with the duct E, and is to communicate with the external atmosphere, so as to lead air into the case F. Within the said case F is a cylindro-sectoral valve, H, the chord of whose arcal surface equals or is a little greater than the chord of the opening of each of the ducts G and E into the case F.

The drawings represent the valve as the quadrant of a cylinder, it being pivoted to the case at the center of each of its heads, so as to be revoluble within the case, its radius being equal to or a little less than that of the inner periphery of the case. When between the two ducts, the periphery of the case is represented as open, as shown at I.

To one of the journals of the quadrantal valve a crank, K, or other proper device may be fixed for effecting the rotary movement of the valve within the case. There may be a ring or flange, L, to one end of the case, and such flange may be provided with notches made in it to receive the crank, in order to set the valve in different positions for regulating the ingress of cool air to the interior of the drum D, or into the room through the intervening opening or educt I, or both into the room and the drum, as occasion may require.

Instead of the single opening I, there may be a series of openings between the main induct and educt of the case. By turning the damper entirely across the mouth of the ventiduct E, all the air delivered through the induct G may be caused to pass out of the case F through its educt I. So, by turning the damper entirely across the said educt I, all the entering air will pass through the ventiduct into the drum.

The several heating-pipes are covered by a hollow frusto-conical cap, M, constructed to close the upper ends of such pipes and to open out of the drum, as shown at *f g*, whereby air passing up through the drum will escape therefrom through such openings *f* and *g*.

Furthermore, within the inner circular range

of pipes is a deflector and air-distributer, N, composed of a hollow cylinder, *h*, and an inverted cone, *i*, arranged as shown, it being supported in position concentric with the drum, as represented, by means of a series of arms, O, extending from it to the drum, and fastened thereto. This deflector and air-distributer, open at top, may be used to hold water to be evaporated from it into the atmosphere of the apartment, or within the upper part of such deflector and air-distributer there may be applied or suspended an evaporating pan or vessel, P, for such purpose. The cone *i* deflects the entering current of air into and between the pipes of the inner range, while the cylinder *h* distributes such air evenly among the pipes. After the air has been heated, it will flow or be discharged into the apartment through the openings of the cap, and also through those in the upper part of the drum, such air being deflected through the openings in the upper part of the drum by the bottom of the cap.

From the above it will be seen that the air received in the drum derives little, if any, heat directly from the outer range of pipes, which radiate most of their heat immediately into the apartment, and are intended to heat it either independently of or in connection with the inner range, as circumstances may require.

This construction of a heat-radiator not only enables introduced external air to be heated to advantage, but is especially useful for warming persons when standing or sitting directly in front or by the side of the radiator.

I claim as of my invention as follows:

1. The combination of an air-receiving chamber or drum, D, the hollow base A, cap M, and the internal and external ranges of steam-pipes B C, arranged therewith and to operate substantially as set forth.

2. The combination of the cylindro-conical air deflector and distributer N, hollow base A, cap M, drum D, and the internal and external ranges of steam-pipes B C, arranged as set forth.

3. The cylindro-sectoral damper H, in combination, and arranged substantially as described, with its cylindrical case F, having one air-inlet, G, and one air-outlet pipe, E, and one or more intervening openings or educts, I, all being arranged and to operate essentially as and for the purpose or purposes as specified.

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Witnesses:
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