(No Model.)

E. T. JOHNSON.

HEATING AND VENTILATING APPARATUS.

No. 376,745. Patented Jan. 24, 1888.

Fig. 1.

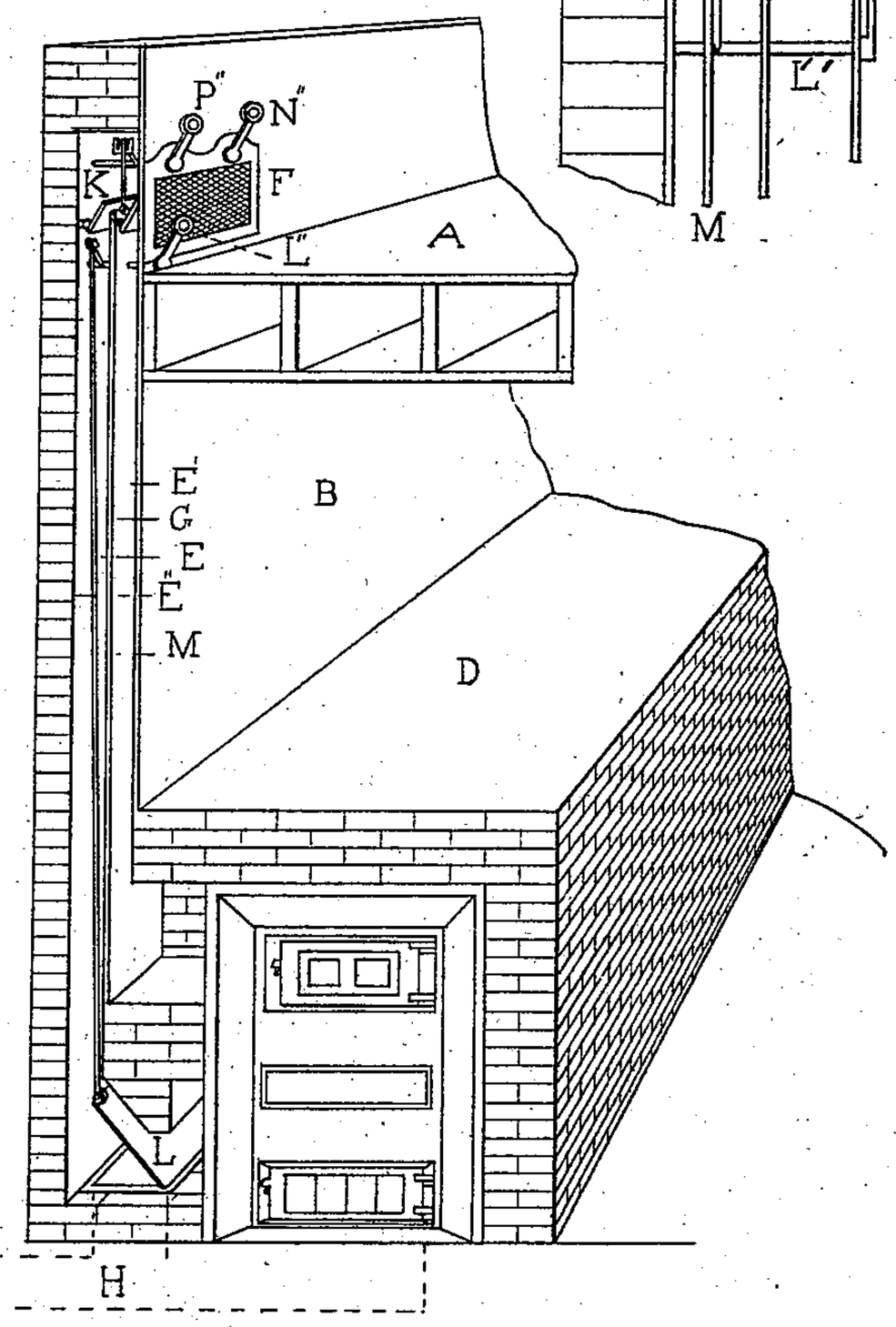
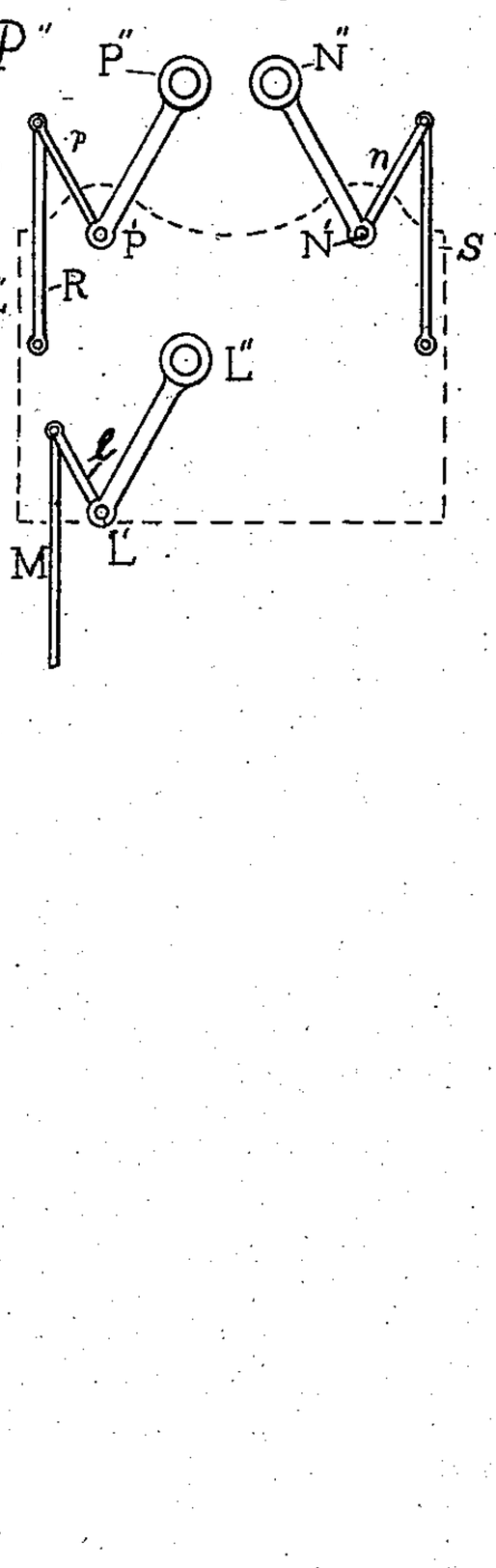


Fig. 2

Fig. 3.



WITNESSES:

G. H. Warren.
Emma F. Elmore.

INVENTOR
Edwin T. Johnson
BY Jas. F. Williamson
ATTORNEY

UNITED STATES PATENT OFFICE.

EDWIN T. JOHNSON, OF MINNEAPOLIS, MINNESOTA, ASSIGNOR OF ONE-HALF TO SAXTON & PHILLIPS, OF SAME PLACE.

HEATING AND VENTILATING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 376,745, dated January 24, 1888.

Application filed March 15, 1887. Serial No. 230,945. (No model.)

To all whom it may concern:

Be it known that I, EDWIN T. JOHNSON, a citizen of the United States, residing at Minneapolis, county of Hennepin, and State of Minnesota, have invented certain new and useful Improvements in Heating and Ventilating Apparatus, of which the following is a specification, reference being had to the accompanying drawings.

The object of my invention is to supply air of any desired temperature to the living-rooms of buildings; and it consists in the construction shown in the drawings, and hereinafter fully described and particularly claimed.

In the systems of furnace-heating now in general use the hot air is taken from the top of the heating-chamber only, and through a single hot-air flue is discharged into the living-room. This is oftentimes too hot, and difficulty is experienced in reducing the temperature of the living-room without destroying the ventilation or producing cold drafts. By my invention I overcome this defect and am able to take the air at several different temperatures from the same furnace, thus keeping up the ventilation and lowering and raising the temperature in the living-room at will.

In the drawings, like letters referring to like parts throughout, Figure 1 is a perspective view of the interior of a building with my invention in working position. Fig. 2 is a vertical section of a part of the air-conduits and the register, showing the mechanism for operating the dampers; and Fig. 3 is a side elevation or front view of the register-space and the mechanism placed therein with the register removed.

A is a living-room, and B is a furnace-chamber within the interior of a building.

D is a furnace within the chamber B.

E is an air-conduit leading from the bottom of the furnace to the register F, which is located at any convenient point, preferably in the side wall near the floor, in the living-room. The air-conduit E is divided into two flues or vertical sections, E′ and E″, by the vertical division-plate G, which is composed of galvanized iron or other suitable heat-radiating material. The section or flue E′ connects with the heating-chamber of the furnace near the top of the same. The section or flue E″ connects with the heating-chamber of the furnace near the bottom of the same, and also with the intake-flue H, which supplies fresh air from the exterior of the building to the heating-chamber of the furnace.

The flues E′ and E″ both terminate at their upper extremities in the common register-space K. At the bottom of the flue E″, within the space which connects it both with the intake H and the heating-chamber of the furnace, is placed a damper, L. When this damper is down or in its horizontal position, the flue E″ is connected to the bottom of the heating-chamber of the furnace and cut off from the intake H. When it is in its raised position, the flue E″ is connected with the intake and cut off from the furnace.

To the free end of the damper L is pivotally attached an operating-rod, M, which is extended up the flue to the level of the bottom of the register F, where it is attached by a crank-arm, *l*, to a rock-shaft, L′. This rock-shaft L′ rests in bearings in the front and rear walls of the air-conduit E, and its forward end extends through the front wall to a convenient point, preferably under the face of the register, and is provided with a crank-lever handle, L″, for operating the same.

In the upper extremities of the sections E′ and E″ are placed the independent dampers N and P, which close the flues when in their horizontal position.

From the free end of the damper P extends an operating-rod, R, which is pivotally attached to a crank-arm, *p*, on a transverse rock-shaft, P′. This shaft P′ rests in bearings in the rear and front walls of the register-space K, near the top of the same, and its forward end extends through the front wall, preferably directly over the register, and is provided with a crank-lever handle, P″. From the free end of the damper N extends a similar rod, S, to a similar crank-arm, *n*, on a similar rock-shaft, N′, which extends in like manner through the front wall of the register-space, and is provided with a similar operating-lever, N″.

Any suitable means may be provided for drawing off the foul air from the various rooms; but I prefer to employ for the purpose the con-

struction shown in my application for patent of date March 15, 1887, under application No. 230,946.

The operation is as follows: Supposing the "fire to be up" in the furnace, if the damper N be closed and the damper P be raised, air from the top of the heating-chamber, the hottest air in the furnace, will pass up the flue E′ and be admitted through the register into the living-room. If this should be too hot, but only slightly so, the dampers P and L may be closed into their horizontal positions, and then warm air will be taken from the bottom of the heating-chamber, which will be of a considerably lower temperature, through flue E″, and discharged into the living-room. If this be still too hot, the damper L may be raised, shutting off the heating chamber entirely and the fresh cool or cold air be taken directly from the intake H through flue E″ into the room A. The occupant can thus always temper the air of his room to suit himself, and at the same time maintain perfect ventilation.

A material feature of my invention is the partition-plate G in the air-conduit E. This partition I make of galvanized iron or other heat-radiating material; hence, when the flue E″ is connected with the intake H and the damper P is closed, the partition-plate G will heat the air sufficiently (though slightly) to cause it to pass upward into the living-room.

What I claim, and desire to secure by Letters Patent of the United States, is as follows:

1. In combination, for heating and ventilating buildings, a furnace, independent warm-air flues connected one to the top and the other to the bottom of the heating-chamber of the furnace and leading to the room to be heated, and means for forcing the air from the furnace solely through one or the other at will, substantially as and for purpose set forth.

2. In combination, for tempering the air of living-rooms, a heating-furnace, a register-space provided with a register opening into the living-room, an air-conduit from said register-space to the top of said furnace, an independent air-conduit from said register-space to the bottom of said furnace and to the fresh-air-intake pipe, and provided with a damper for connecting it to the bottom of the furnace or to the intake-pipe at will, and dampers suitably placed in said conduits for disconnecting either of them from said register-space, substantially as described, whereby hot air, warm air, or cold air may be supplied to said living-room, as desired.

3. In combination, for heating and tempering the air of living-rooms, a heating-furnace, a fresh-air-intake pipe to said furnace, two parallel and adjacent air-conduits from said living-room, one communicating with said furnace and constituting a hot-air conduit and the other communicating with said intake-pipe and constituting a cold-air conduit, said hot and cold air conduits having for the whole or a part of their length a common partition composed of iron or similar heat-radiating material, substantially as described, whereby a forced draft is produced in the cold-air conduit by the heat radiated into the same from the adjacent hot-air conduit.

4. In combination, for heating and tempering the air of living-rooms, a fresh-air-intake pipe, a heating-furnace, air-conduits from said living-room to said furnace and intake-pipe, respectively, having a common division-plate composed of iron or similar heat-radiating material, and a damper placed in the hot-air conduit above said metallic division or radiating plate, whereby the hot-air conduit may be used to produce a draft in the cold-air conduit without conducting its hot air to the living-room, as set forth.

5. In combination, heating-furnace D, fresh-air-intake pipe H, register-space K, provided with a register opening into the living-room, the air-flue E″, communicating with said register-space at one end and with said intake-pipe and the lower part of said furnace at the other end, the damper L, provided with operating-lever mechanism M *l* L′ L″, for connecting the lower part of said air-flue with the intake-pipe and shutting it off from the furnace, or reversely, as described, and the damper N, provided with the operating-lever mechanism N′ *n* S N″, as described, for connecting or disconnecting said air-flue with said register-space, substantially as and for the purpose set forth.

EDWIN T. JOHNSON.

In presence of—
B. PHILLIPS, Jr.,
EMMA ELMORE.