(No Model.)

I. N. MILLS.

HEATING, COOLING, AND VENTILATING APPARATUS.

No. 283,637. Patented Aug. 21, 1883.

Fig. 1.

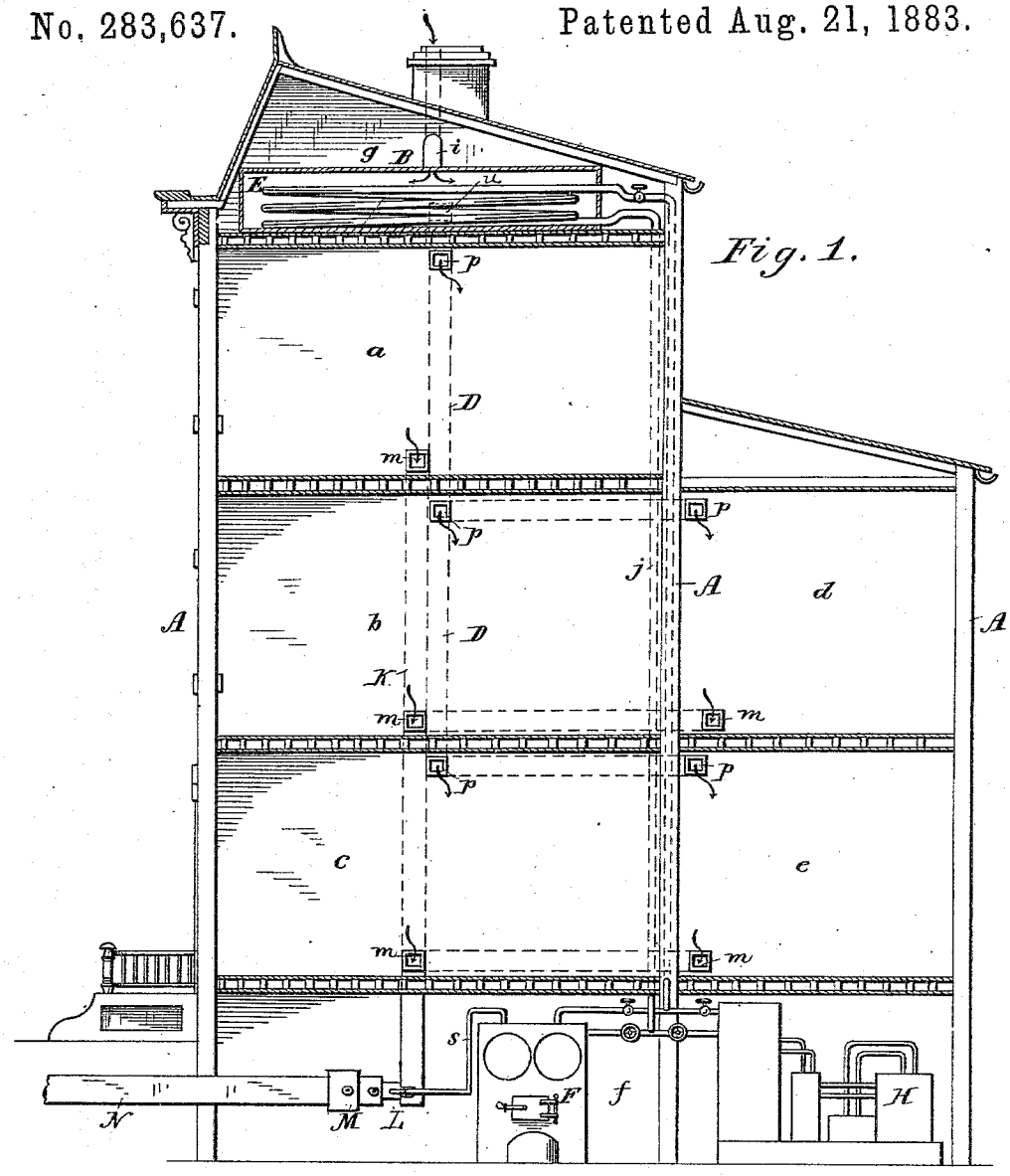
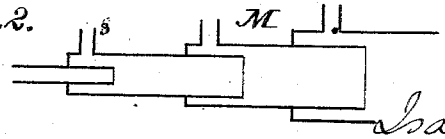


Fig. 2.



Witnesses:
William Caton
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UNITED STATES PATENT OFFICE.

ISAAC N. MILLS, OF DOVER, ASSIGNOR OF TWO-THIRDS TO WILLIAM HUSTON AND HENRY N. WICKERSHAM, BOTH OF WILMINGTON, DELAWARE.

HEATING, COOLING, AND VENTILATING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 283,637, dated August 21, 1883.

Application filed March 2, 1883. (No model.)

To all whom it may concern:

Be it known that I, ISAAC N. MILLS, of Dover, Kent county, Delaware, have invented certain Improvements in Heating, Ventilating, and Cooling Apparatus, of which the following is a specification.

The object of my invention is to more effectually ventilate, heat, or cool dwellings and other buildings, vessels, cars, &c., than can be effected by appliances ordinarily employed for that purpose; and to this end I combine with the structure intended to be ventilated, heated, or cooled certain conduits, heating or cooling appliances, or both, and an ejector, which may be operated to exhaust the air from the chambers without the use of engines.

The drawings represent, in Figure 1, a sectional elevation of a dwelling-house and appliances to carry out my invention, and Fig. 2 a plan section of the ejector device used.

I have represented at A the walls of a house, inclosing several chambers, *a b c d e f g*, arranged as in an ordinary three-story and back-building edifice. In the upper chamber, *g*, preferably a loft or other unoccupied room, I place a casing or tank, B, which communicates through a tube, *i*, with a flue, whereby fresh air may be introduced into the tank. The tank communicates through an opening, *u*, (shown in dotted lines,) with a conduit, D, consisting of a main tube and laterals or branches as may be necessary, all so arranged that openings *p* may be made between said conduit and the upper portion of each room. Within the tank B may be arranged a coil, E, of pipe, connecting with a pipe, *j*, leading to the boiler of a furnace, F, from which steam or water may be passed to the coil to heat the air introduced into the chambers; or a connection may be made between the pipe *j* and a refrigerating apparatus, H, so that a cold fluid may be circulated through the coil E to cool the air passing through the tank B. By this means fresh air from a high point, where it will not be vitiated by sewer-gas or other impurities, may be taken to the tank B and there cooled or heated, and then distributed to the various chambers of the house.

In order to insure positively a flow of air through the chambers, and also remove those gases generally heavier than air, which are so detrimental, I employ a second conduit, K, provided with suitable lateral conduits for communication with openings *m*, near the floors of the different chambers, and this conduit K, I extend to a chamber, L, containing an ejector, M, of any suitable character, to create an exhaust that will insure the flow of air from the different chambers into said opening *m*, and through the ejector to a discharge-flue, N, which may lead to a sewer or elsewhere. To avoid the use of an engine to create this down-draft I use an ejector which will operate effectively under the action of a fluid jet, (for instance, such an ejector as is described in the patent to Wickersham and Huston, dated February 20, 1883,) a steam-pipe, *s*, leading from the boiler of the furnace to the ejector, and supplying the motor-power. By this means I am enabled not only to supply fresh air, either warm or cold, to the various chambers, but I can also withdraw the foul air, and by such withdrawal also facilitate the entrance of that which is is uncontaminated; and I secure the advantages resulting from passing cold air downward into the chambers, and avoid the loss of heat which results when warm air is drawn from the upper portions of the rooms.

It will be also seen that by the use of an ejector I am enabled to secure the desired draft without the use of any mechanical motors, which, in the majority of cases, cannot be employed in private dwellings.

I claim—

1. The within-described improvement in apparatus for heating, cooling, and ventilatng structures, the same consisting in the combination of a tank, B, arranged in an upper chamber and communicating with an external flue, conduits D, leading from said tank to openings *p*, near the ceiling of each chamber, a conduit, K, communicating with openings *m*, near the floor of each chamber, and with an ejector, M, all substantially as described.

2. The combination, with a structure, of the tank B, conduits D K, communicating with openings *p m*, ejector M, and heating and cooling apparatus arranged to heat or cool the air in the tank B, substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

I. N. MILLS.

Witnesses:
CHARLES E. FOSTER,
H. E. HAUSMANN.