

(No Model.)

N. N. HORTON.

HEATING, COOLING, AND VENTILATING APPARATUS.

No. 245,379.

Patented Aug. 9, 1881.

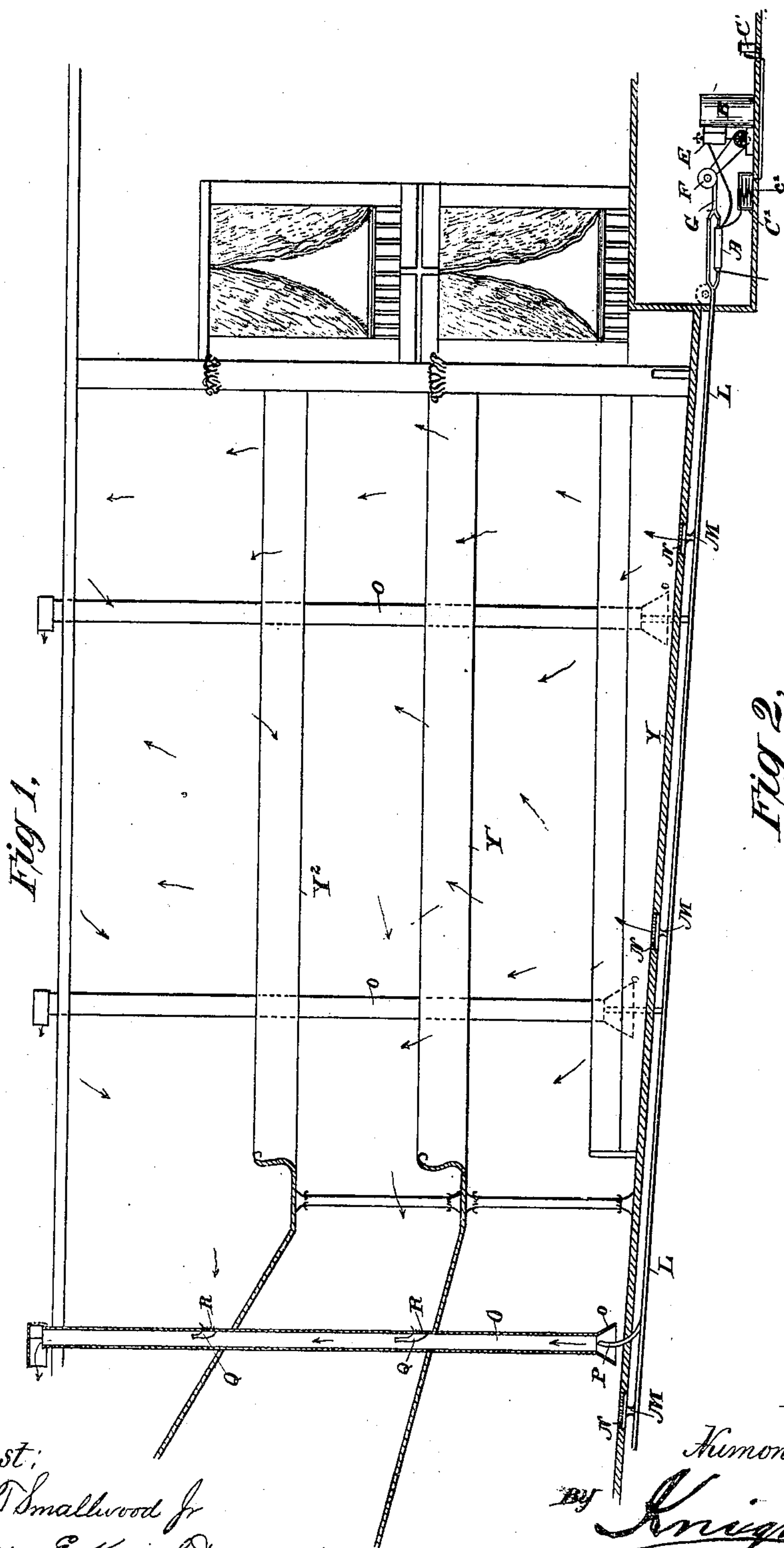
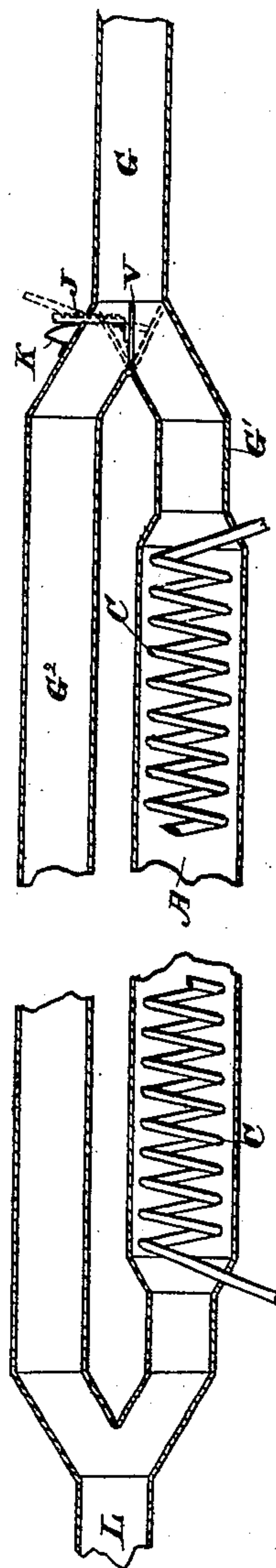


Fig 2.



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# UNITED STATES PATENT OFFICE.

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## HEATING, COOLING, AND VENTILATING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 245,379, dated August 9, 1881.

Application filed February 15, 1881. (No model.)

*To all whom it may concern:*

Be it known that I, NUMON N. HORTON, a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented Improvements in Heating, Cooling, and Ventilating Buildings, of which the following is a specification.

My invention relates to a system by which air supplied to the interior of a building of any description may be artificially cooled or heated, as the state of the atmosphere or the requirements of the place may demand, and its circulation throughout an apartment or entire building is greatly facilitated. To this end I employ for heating or cooling the air a drum or coil, through or in contact with which the air or any desirable proportion of it may be carried, a branch pipe under control of a valve being employed to carry the air or any desired part of it around the coil or drum, so as to avoid the same; and I further employ a forced exhaust consisting of pipes and an injector or induction-nozzle contained therein for carrying off vitiated air from all parts of a building or apartment to be ventilated, so as to facilitate and insure the circulation and supply of fresh air in all parts.

In order that my invention may be fully understood, I will proceed to describe it with reference to the accompanying drawings, in which—

Figure 1 is a vertical sectional view of a theater illustrating the application of the invention. Fig. 2 is a longitudinal section of the heating or cooling drum and its accessories on a larger scale.

In this illustration, Y represents the lower floor or parquette of a theater, and Y' Y<sup>2</sup> successive floors or galleries to be heated or cooled and ventilated.

A is a drum, containing a coil, C, through which either steam or cold water may be passed for the purpose of either warming or cooling the air passed through the drum A, accordingly as the temperature of the atmosphere may require.

The cooling is effected by the simple connection of the coil C with a hydrant, as shown at C', by which I have found it practicable to reduce the temperature of the air ten degrees or more in hot weather; or, if this is insufficient, I employ an ice-tank, C<sup>2</sup>, through which the

water is passed in a coil, c<sup>2</sup>, and thence to the coil C within the drum A.

For heating the air, steam is passed through the coil, either by direct connection with the boiler B or (as in the present illustration) by connecting it with the exhaust of a steam-engine, E, employed to drive the air-fan F through the medium of belts and pulleys or any suitable connections. The air forced by the fan F is conducted through a pipe, G, separating into two branches, G' G<sup>2</sup>, the former of which connects with the drum A, while the second branch, G<sup>2</sup>, extends around and clear of the drum and unites with the delivery end of the drum in a conducting pipe or trunk, L, common to both. In the bifurcation of the pipe G is a hinged valve, V, controlled by a notched rod, J, pressed forward by a spring K, so as to hold the valve securely in any position in which it may be set by the engagement of either of the notches of the rod J with the side of the aperture in which it works. By these means I am enabled to control with great nicety the proportionate quantities of air passed through the heating or cooling drum A, or through the pipe G<sup>2</sup> around and clear of said drum, so as to regulate the temperature of the air supplied to the building or apartment.

The trunk L is carried around the lower portion of the building or apartment or on different levels and in various branches, if required, and delivers the air through discharge-pipes M and any necessary number of registers N, of usual or suitable construction, located as required.

In order to insure an effective supply and circulation of the fresh heated or cooled air in all parts of the house, I employ discharge-pipes O O, of ample capacity, suitably located, having funnel-shaped mouths o, in which are upturned nozzles P, connected with the air-forcing trunk L, so as to cause jets in said discharge-pipes O, causing forcible induced upward currents therein, by which the vitiated air is constantly removed and discharged from the lower part of the building.

On the upper floors I employ funnel-shaped nozzles Q, extending upward within the pipes O to a sufficient distance to cause induced currents in said nozzles, and having registers R, by which the current of air taken by them

from any floor or apartment may be regulated at will.

Having thus described my invention, the following is what I claim as new therein and  
5 desire to secure by Letters Patent:

1. A heating, cooling, and ventilating apparatus constructed with an air-draft appliance, a drum or coil having connection with both heating and cooling sources, and branched  
10 passages to conduct the air either through or around the drum, said passages being valved to regulate the relative amount of air passing through the respective passages, as explained.

2. The combination of the drum A, having  
15 coil C connected with both heating and cool-

ing sources, pipes G G' G<sup>2</sup> L, and regulating valve V, substantially as and for the purposes set forth.

3. The combination of a series of air-education pipes, O O O, arranged to carry off vi-  
20 tiated air from different parts of a theater or other edifice, and provided with internal nozzles for inducing currents of air, with suitable air-pipe, L, and inlets M N, substantially as set forth.

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Witnesses:

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HARRY E. KNIGHT.