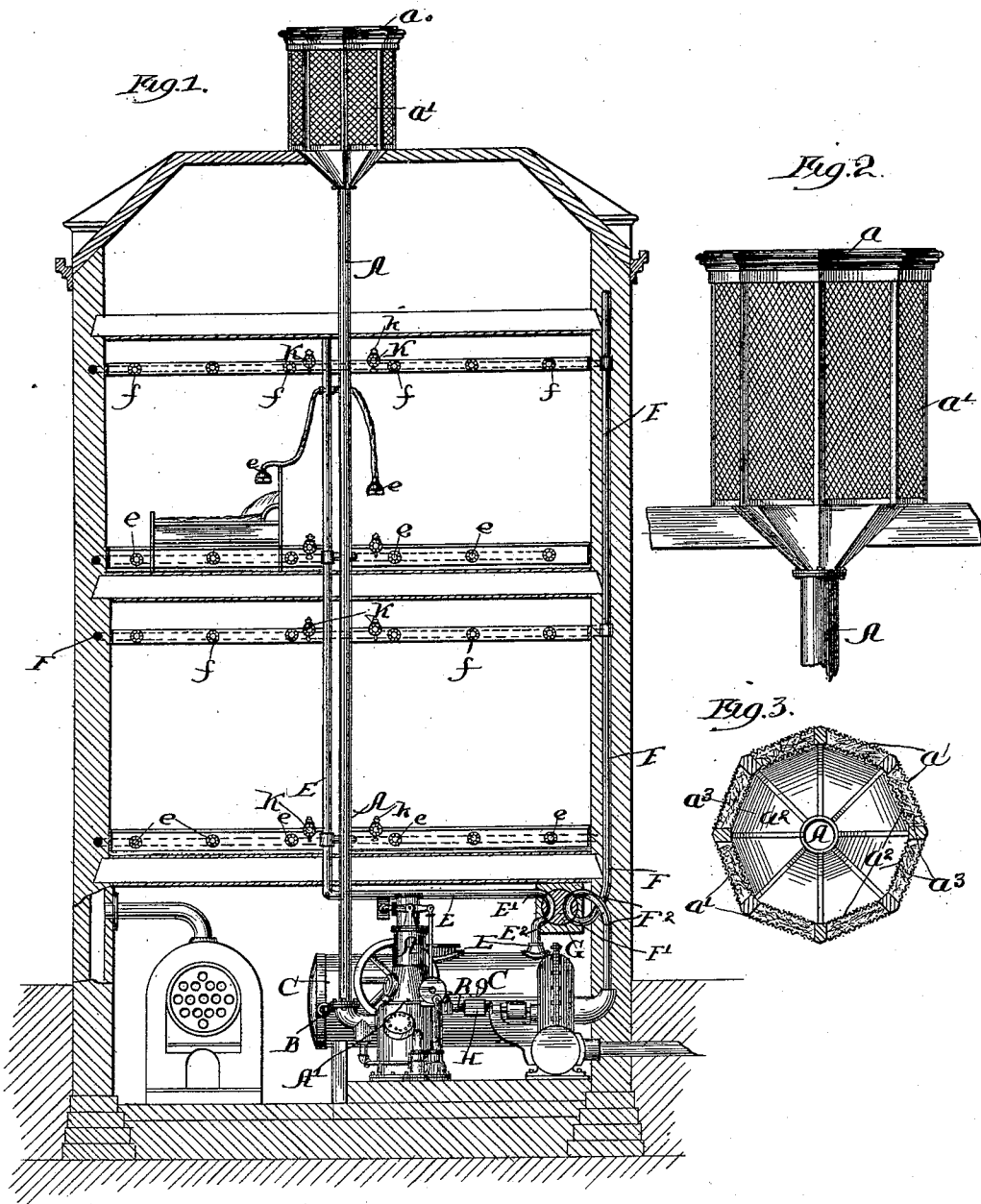


J. F. DUFFY.
SYSTEM OF VENTILATION.

No. 472,163.

Patented Apr. 5, 1892.



Witnesses:

Chas. Shaver
G. Neil

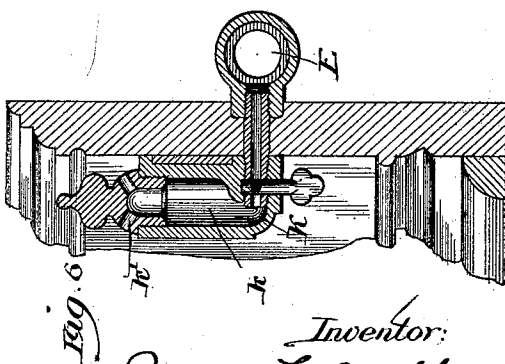
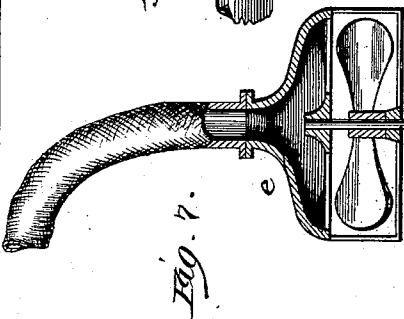
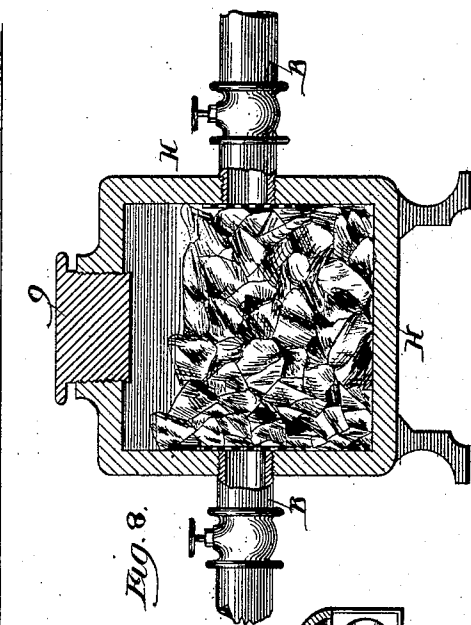
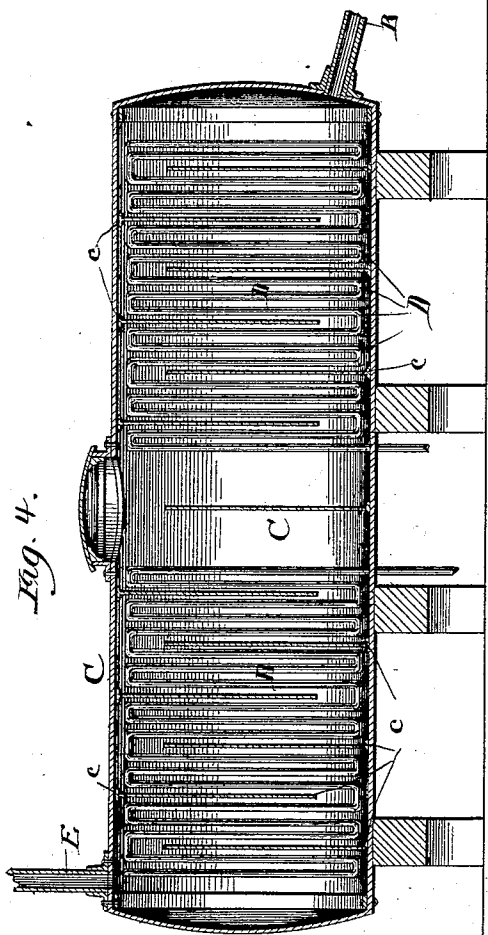
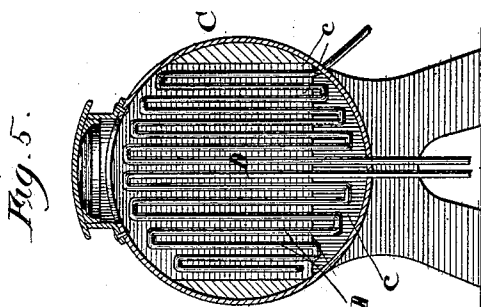
Inventor:

James F. Duffy
By Miles, Mann & Pitner,
Attys.

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Witnesses:
Charles O. Sherry
S. Keib.

Inventor:
James F. Duffy
By Miles, Crane & Bitner,
Attys.

UNITED STATES PATENT OFFICE.

JAMES FRANKLIN DUFFY, OF CHICAGO, ILLINOIS.

SYSTEM OF VENTILATION.

SPECIFICATION forming part of Letters Patent No. 472,163, dated April 5, 1892.

Application filed August 29, 1891. Serial No. 404,057. (No model.)

To all whom it may concern:

Be it known that I, JAMES FRANKLIN DUFFY, a citizen of the United States of America, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Systems of Ventilation, of which the following is a specification.

My invention relates to a system of ventilation designed for the purpose of, first, supplying pure air to the interior of dwellings, offices, and other structures; second, imparting to such air a proper temperature for comfort, either warming or cooling it, as may be necessary, and, third, providing means for disinfecting or medicating the air, when desired. In addition to these general purposes others which are incidental thereto and tend to the comfort of the occupants have been considered in the production of the preferred form of apparatus in which my invention has been embodied.

To such ends my invention consists in certain improvements, the essential features of which are clearly pointed out in the appended claim.

Said preferred form of apparatus is illustrated in the drawings by means of eight figures, in which—

Figure 1 is a skeleton view showing the general arrangement of the apparatus within a house. Fig. 2 is a detail view showing the inlet for fresh air in side elevation. Fig. 3 is a horizontal section of the same. Fig. 4 is a vertical longitudinal section of a reservoir for compressed air. Fig. 5 is a cross-section of the same. Fig. 6 is a detail central section of an improved inlet-valve through which fresh air may be admitted to any apartment. Fig. 7 is a detail section of another inlet device, and Fig. 8 is a detail section of a medicating-chamber, the use of which will be hereinafter set forth.

To obtain, in the first place, the purest air available in the neighborhood of the house which is to be ventilated, I locate my air-inlet in the highest portion thereof which is suitable for the reception of the same, and I surround said inlet by means of a hollow box. (Shown in Figs. 2 and 3.) Said box is preferably made with a water-tight top or roof a and sides composed of two thicknesses of wire-

gauze a' a^2 , separated by a slight space, which is packed with cotton or other suitable material a^3 for removing the impurities of the air as it passes through. The inlet-pipe A leads from this box to suitable mechanism for compressing the air, (represented here by a steam air-pump A'.) Such mechanism may of course consist of fans or any other well-known means of attaining the required pressure. From here the air passes through a pipe B to a reservoir C. This reservoir is of considerable size and contains a system of pipes D doubled back and forth within it, which pipes are adapted for the reception of steam for the purpose of heating the air or of refrigerant salts, ammonia, or other freezing or cooling mixture to lower the temperature of the same. The interior of the reservoir is provided with a number of partitions c , extending downward from the top and upward from the bottom alternately, and the pipes D wind in and out between these partitions, so that the air as it passes from one end of the reservoir to the other is compelled to follow a tortuous path and remain in contact with the surface of the pipes containing the mixture for heating or cooling the air for a considerable length of time. From the opposite end of the reservoir from that at which the pipe B enters it a pipe E is led, extending through the house and branching so as to reach all of the apartments thereof, and empties into said apartments by means of a series of openings e , arranged near the floors of the same. From the same apartments a series of openings f , located near the ceiling, are connected with a series of pipes, all leading to a main F, which extends to a suitable point for discharging foul air. If thought necessary, an exhaust-fan may be arranged in this pipe, although the same is not essential to my invention. The pipes E and F are led into close proximity at some point, and there provided with a common coupling, in which is located a valve G, separating each of the two pipes into two parts lettered, respectively, E' E^2 and F' F^2 , F^2 being the exhaust end of the pipe F and E^2 being the induction end of the pipe E. The valve G may be of any ordinary form and should be adapted to place the two portions of each of the pipes in connection with each other when set in one

position, and when turned into another to connect the pipe E' with the pipe F² and the pipe F' with the pipe E². This is to enable the same system of pipes to be used either
 5 when the air in the reservoir is cooler or when it is warmer than the temperature of the apartments to be ventilated.

When the fresh air is cooled before use, it should be admitted to the different apartments through the pipes E² F', which lead to the openings arranged near the ceilings, and escapes through the pipes E' F², in order that the circulation may be aided by the greater weight of the cooler air. On the other hand,
 15 when the fresh air is warmer than the surrounding atmosphere it should be admitted through the pipes E² E', leading to the openings near the floors, and exhausted through the pipes F' F², in order that its buoyancy
 20 may aid its movement in the right direction.

It will often be desirable in sleeping-apartments to locate the outlets through which air is supplied above the beds or couches, in order that the fresh air may reach the sleepers
 25 as soon as it enters the room. For this purpose I have devised an attachment (shown in Fig. 7) in which a loose fan is interposed in the path of the escaping air to spread the same and prevent it from creating a draft
 30 upon the person occupying the bed.

Under a great many circumstances it is desirable to treat the air which is supplied to a house so as to mix it with a medicated vapor, and for this purpose I have shown two devices, one of which is seen at H, Fig. 1, where
 35 it is interposed in the pipe B, and consists of

a single box provided with a screw-plug *g*, by means of which any suitable medicament may be inserted. This of course medicates all the air that enters the reservoir, and consequently
 40 affects the entire house or any number of houses that are supplied from said reservoir. To treat only the air in a single chamber or in a portion of a single chamber, I have devised an outlet-valve (shown in Fig. 6, and
 45 lettered K,) said valve having a cup *k*, provided with a perforated cover *k'*. Whatever remedy is desired is placed within the cup, either in a solid form or by means of cotton or other suitable substance saturated with a
 50 liquid, and the air passing through the cup vaporizes the medicine therein and carries it out into the room to be treated.

I claim as new and desire to secure by Letters Patent—

In a system of ventilation, the combination
 55 of a fresh-air-supply pipe provided with means for heating or cooling the air, as may be desired, an exhaust-pipe, two series of pipes leading to openings in the upper and lower portions, respectively, of the apartments to be ventilated,
 60 and suitable connections between said two series of pipes and the fresh-air and exhaust pipes, whereby either of said series of pipes may be connected with either the fresh-air
 65 pipe or the exhaust-pipe, as may be desired, substantially as described.

JAMES FRANKLIN DUFFY.

Witnesses:

JOHN I. HILTY,
 C. P. SMITH.