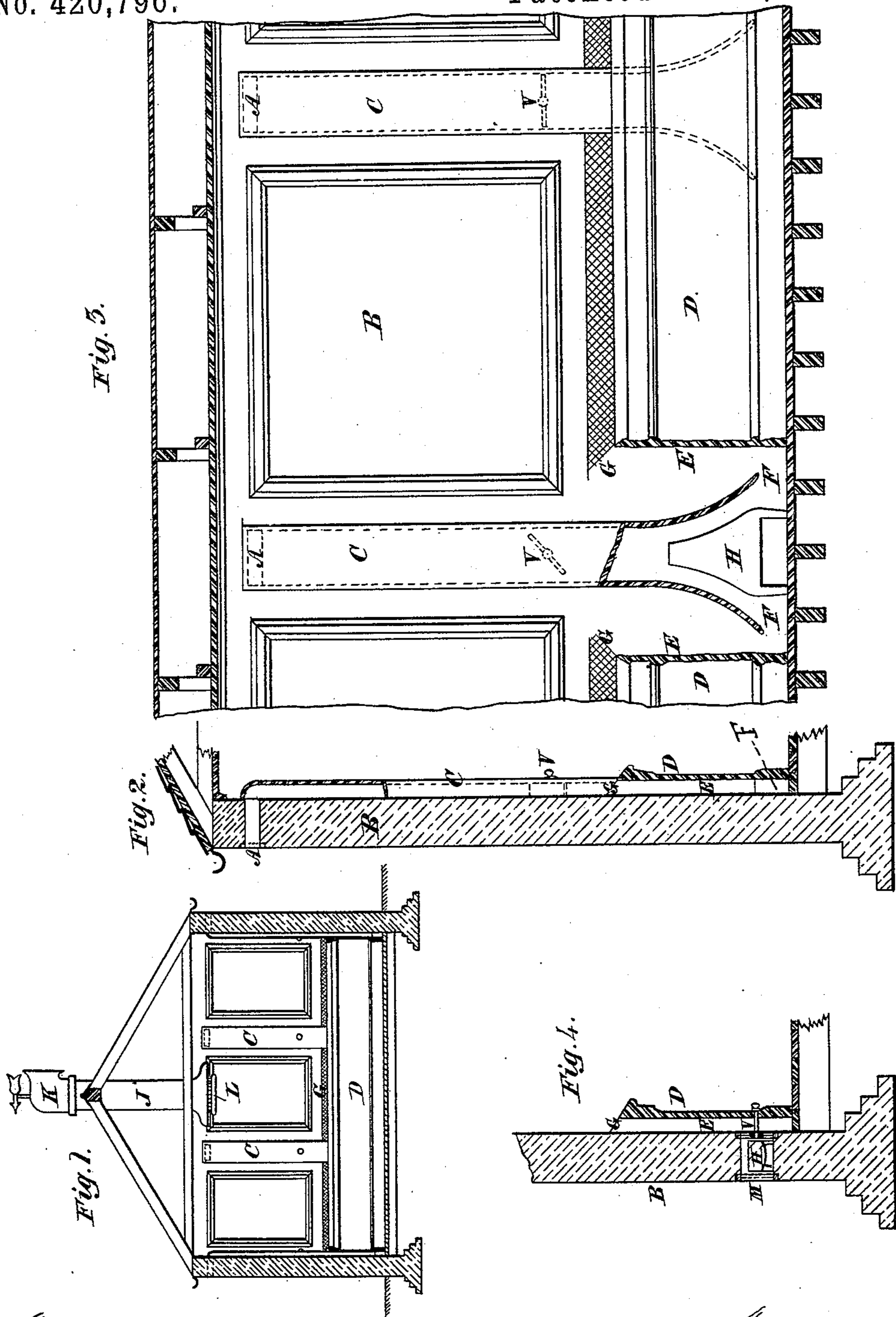


(No Model.)

D. G. HOEY.  
APPARATUS FOR VENTILATING HALLS, ROOMS, OR OTHER INTERIORS.  
No. 420,796. Patented Feb. 4, 1890.



Attest:  
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# UNITED STATES PATENT OFFICE.

DAVID GEORGE HOEY, OF GLASGOW, COUNTY OF LANARK, SCOTLAND.

APPARATUS FOR VENTILATING HALLS, ROOMS, OR OTHER INTERIORS.

SPECIFICATION forming part of Letters Patent No. 420,796, dated February 4, 1890.

Application filed January 31, 1889. Serial No. 298,158. (No model.) Patented in England April 21, 1888, No. 5,931, and in France August 20, 1888, No. 192,489.

*To all whom it may concern:*

Be it known that I, DAVID GEORGE HOEY, a subject of the Queen of Great Britain, and a resident of the city of Glasgow, Scotland, have invented certain new and useful Improvements in Arrangements or Apparatus for Ventilating Halls, Rooms, or other Interiors, (for which I have obtained Letters Patent in Great Britain, No. 5,931, dated April 21, 1888, and in France, No. 192,489, dated August 20, 1888,) of which the following is a specification.

My said invention has for its object, by means of improved arrangements or apparatus, to secure in halls, rooms, or other interiors satisfactory ventilation or a continuous thorough change or renewal of air without drafts and without the interference of fresh entering air with outgoing heated or vitiated air.

In carrying out my invention I arrange one or more outlets for the vitiated air at or near the top of the hall or other interior or otherwise with the outer exit at a high level, and if necessary I apply a gas-light or other heating apparatus in or near each outlet to heat and rarefy the air and thereby promote its outward flow.

For the entrance of the fresh air without currents or drafts, I fix a dado at all conveniently-available parts round the hall or other interior, with a narrow space between the dado and the wall, and at the top of the dado I fix wire-gauze or perforated metal or other material, placing it, by preference, in an inclined position, so that articles may not be placed on it to impede the passage of the air through it.

Fresh air is admitted into the dado-space through one or a number of inlets, and finds its way through the wire-gauze or perforated metal or other material into the hall or interior. The inlet or inlets into the dado-space is or are preferably at the lower part of it. I, by preference, make a number of inlets and so distribute them as to cause throughout the upper part of the dado-space a uniform pressure without unequal currents. The dado-space thus becomes a reservoir of fresh air, which enters the hall or interior in a uniform manner from the top of all parts of the dado and without drafts or irregular

currents, and its motion will be scarcely perceptible, although it may enter in quantity sufficient to change or renew the entire bulk of air in the hall or interior in a short time.

If convenient, the inlets into the dado-space may communicate directly with the outer atmosphere; but in many cases it will be more convenient to have such inlets at the bottom or inner ends of ducts, which may be of oblong section horizontally, extending vertically up the walls of the hall or interior and communicating at the tops or outer ends or at any other convenient point with the outer atmosphere. Instead of the ducts being vertical, they may be in any other convenient direction.

The admission of the fresh air may be regulated by valves applied to the inlets and by adjusting the heating apparatus at the outlet or outlets. The entering fresh air may be warmed when desired by steam or hot-water pipes arranged in the dado-space or by other means. Similarly, in hot weather or in a hot climate appliances for cooling the entering air may be provided in the dado-space or in ducts, passages, or spaces through which the air passes on its way to the dado-space.

The precise forms and proportions of the several structural details employed in practically carrying out my improved system of ventilation will obviously require to be modified to suit the peculiarities of different cases and to meet various conditions and requirements. In order, however, that my invention and the manner of performing the same may be properly understood, I hereunto append a sheet of explanatory drawings, to be hereinafter referred to, and representing by way of example one convenient arrangement of my improved apparatus.

Figure 1 of the drawings is a transverse vertical section, on a small scale, of a hall or room provided with the ventilating apparatus. Figs. 2 and 3 are enlarged transverse and longitudinal vertical sections, and Fig. 4 is a section showing a different modification of parts of the apparatus.

In the drawings the same reference-letters are used to mark the same or like parts wherever they are repeated.

In the arrangement shown in Figs. 1, 2, and 3 of the drawings the fresh air has in-

gress through ports A, (or a single port may be used,) near the top of the walls B, into vertical ducts C, which may be ornamentally treated as pilasters dividing the walls into panels. Along the lower parts of the inner sides of the walls B a dado D is fixed, so as to have a narrow space E between it and the walls. The vertical ducts C extend down nearly to the bottom of the dado-space E and communicate with that space by lateral openings F. The top of the dado is covered with wiregauze or perforated metal or other material G, placed in an inclined position, and the dado-space so covered forms a reservoir for fresh air of very large capacity relatively to the area of the primary inlets A, while the aggregate area of the entrance for air into the room from the top G of the dado is considerably greater than that of the inlets A. With these arrangements, although the velocity of the air entering the inlets A may be great, that of the air issuing from the top G of the dado-space E is so small as to occasion neither gusts, drafts, nor irregular currents, notwithstanding that the bulk of air entering the hall or interior from the whole of the dado-spaces at different parts may be large and amply sufficient for thorough and complete ventilation.

When it is wished to cool the entering air, this may be done by placing within the lower part of each vertical duct C a vessel H, containing a frigorific mixture or other cooling agent; or the cooling vessel or apparatus H may be placed in any suitable space, so that the entering air may pass in contact with the cooling surface, one example of which is shown at Fig. 4, where the air enters through the aperture M direct from the outer atmosphere into the dado-space and the cooling-vessel H is placed in the passage between the outer atmosphere and the dado-space.

When it is wished to warm the air, pipes for steam or hot water or any other suitable air-heating apparatus or appliance may be arranged in the dado-spaces E. The quantity of air admitted may be at any time regulated by means of throttle-valves V, or valves of any other suitable kind.

One or more outlets for vitiated, used, or heated air from the hall or interior may be provided in various ways, and should always be proportioned to suit the ingress area provided for fresh air, and so as to be adequate, the expansion of air by heat being taken into account.

The outlet apparatus in the example shown in the accompanying drawings comprises a vertical shaft or duct J, extending from the middle of the ceiling of the hall or interior up above the roof, this shaft being surmounted by a hood K, turning from the wind, and there being at the bottom of it a ring L of gas-jets.

The gas-jets may be used when required for illumination, or they may be turned down low, or be of smaller size when used to merely

produce some heat to rarefy the air passing up the shaft J, and thus promote or assist the upward current and outflow of the vitiated or used air.

In the case of comparatively small interiors or apartments, or in large interiors when more convenient, the outlet for the vitiated or used air may be by an ordinary chimney, there being an opening into such chimney at or near the top of the interior or apartment.

The chimney may be that of an ordinary fire-place, or it may be distinct and separate from such a chimney, or it may communicate with such chimney by a flue descending from the opening at the top of the interior or apartment.

In the modification of air-admission apparatus shown in Fig. 4 the vertical ducts C are dispensed with, and one or more inlets M is or are formed through the lower parts of the walls B to lead air from the outside directly into the bottom of the dado-space E. Each opening in the wall may be made large enough to contain a vessel H for a frigorific mixture or other cooling agent for cooling the air.

A valve V is provided for regulating the quantity of air admitted.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

The combination, with the room or hall having an air-chamber with an open top surrounding one or more sides thereof near the floor, of air-flues extending from a point near the ceiling or roof and opening into the open air and the lower portion of said air-chamber at their upper and lower ends, respectively, for the ingress of fresh air to said air-chamber, the inlets to said flues being greatly smaller than the open top of said air-chamber, the boxes H, arranged in the discharge ends of said flues, the said discharge ends of the flues being flared and opening downwardly, and the upper sides of said boxes being inclined outwardly, whereby the current of air will be deflected outward from both sides of each flue and strike the floor in a diagonal direction, thereby losing its force and becoming dissipated in said chamber, an exit-flue leading from the ceiling of said room or hall, and a row of gas-jets arranged near said exit-flue for the purpose of creating a draft to draw off the vitiated air, substantially as set forth.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 8th day of January, 1889.

DAVID GEORGE HOEY.

Witnesses:

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