

Nov. 25, 1930.

A. W. STEWART

1,783,005

VENTILATING APPARATUS

Filed May 13, 1929

2 Sheets-Sheet 1

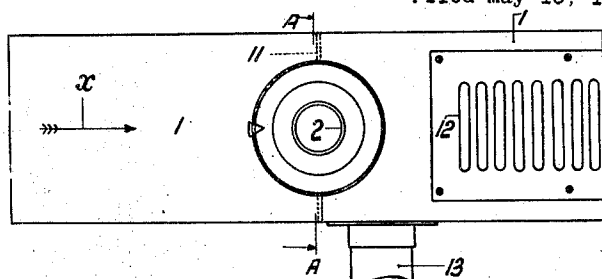


FIG. 1.

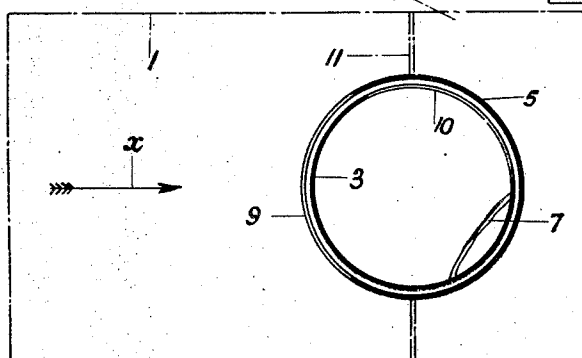
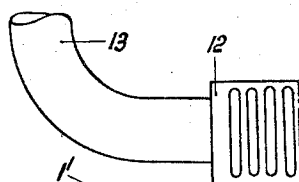


FIG. 3.

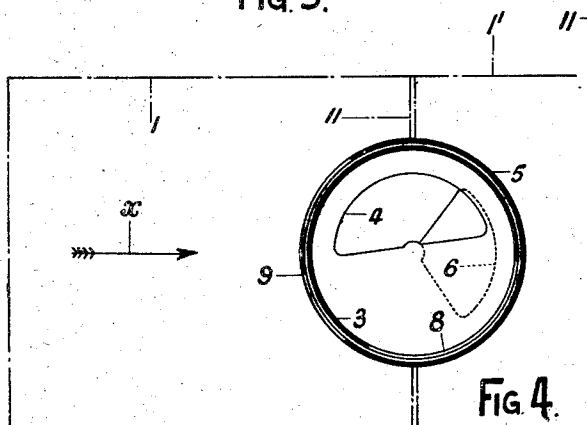


FIG. 4.

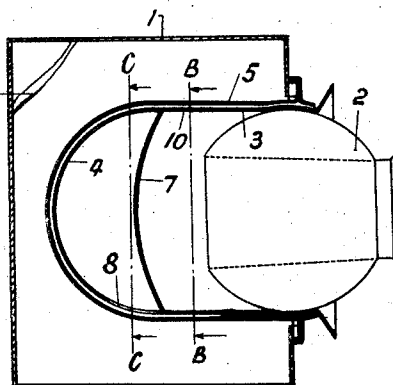


FIG. 2.

Inventor:
Alexander William Stewart
By
Bernie Davis Marion & Edmonds
attorneys

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2 Sheets-Sheet 2

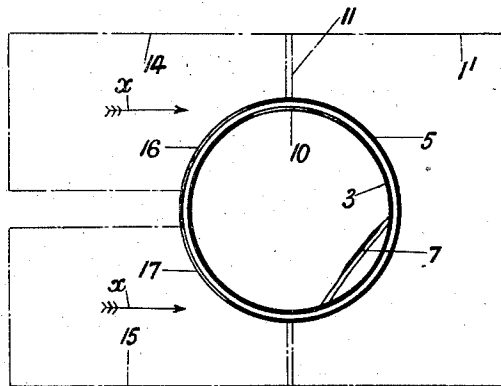


FIG. 5.

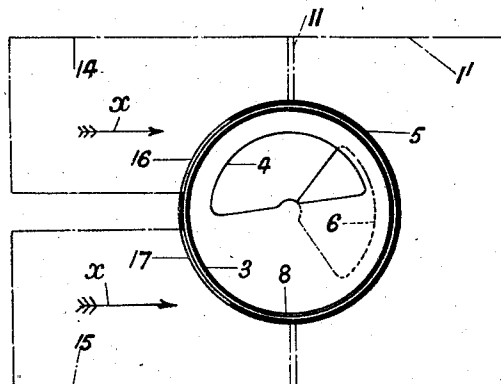


FIG. 6.

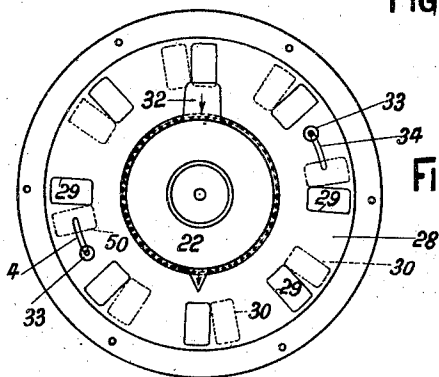


FIG. 8.

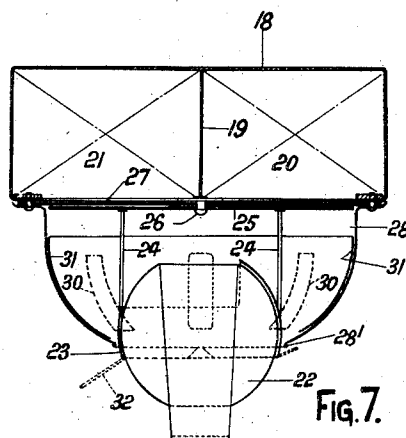


FIG. 7.

Inventor:
Alexander William Stewart
By
Pennie Davis Martin & Edmonds
attorneys

UNITED STATES PATENT OFFICE

ALEXANDER WILLIAM STEWART, OF GLASGOW, SCOTLAND

VENTILATING APPARATUS

Application filed May 13, 1929, Serial No. 362,739, and in Great Britain May 29, 1928.

It is frequently required of modern ventilating installations that there shall be provision for effecting vigorous circulation of air in very warm weather, involving the delivery of air at high velocity into the apartment to be ventilated, and also provision for delivery of air at low velocity in cooler weather when the delivery of high velocity ventilating air might occasion discomfort.

The present invention has for an object to provide improved apparatus satisfying this requirement.

A common objection to the use of heated air for heating and ventilating purposes is that different compartments supplied with heating and ventilating air from the same source are all treated similarly and no allowance made for individual requirements.

This objection is obviated by the present invention.

A fitting constructed in accordance with the invention is illustrated in Figs. 1 to 4 of the accompanying drawings in which Fig. 1 is a front view, Fig. 2 a section substantially on the line A—A of Fig. 1, Fig. 3 a section on the line B—B of Fig. 2 and Fig. 4 a section on the line C—C of Fig. 2; Figs. 5 and 6 may be regarded as sections on the lines B—B and C—C, respectively, of Fig. 2 showing a modified construction adapted for use with parallel air trunks; Figs. 7 and 8 show yet another modification, Fig. 7 being an axial section and Fig. 8 a view at right angles thereto.

Referring to the construction shown in Figs. 1 to 4, 1 denotes a main air trunk or duct into which is fitted a high velocity directional louvre or ventilator 2 adapted to discharge a current of air in any desired direction, such as described in the specification of Letters Patent No. 1,559,057 issued October 27, 1925, said louvre 2 being carried by a rotatable socket 3 formed in the hemispherical base of which is an outlet port 4. Surrounding and coaxial with the socket 3 is a stationary socket or shell 5 formed in the hemispherical base of which is an outlet port 6 co-operative with the port 4 and adapted to be masked and unmasked by rotation of the socket 3. 7 denotes a partition located within the socket 3 and separating the hemispherical base por-

tion thereof from the front portion containing the louvre or ventilator 2. Formed in the hemispherical base portion of the socket 3, on the same side of the partition 7 as the port 4, is an inlet port 8 co-operative with an inlet port 9 formed in the socket 5 and open to the interior of the main air trunk 1. Formed in the lateral wall of the socket 3 on the side adjacent to the louvre or ventilator 2, is an inlet port 10 angularly displaced relatively to the port 8 and also co-operative with the port 9 in the socket 5. The sockets 3, 5 constitute a lantern type valve regulatable by rotating the socket 3. Radiating from the socket 5 is a partition 11 extending transversely of the air trunk 1 and separating the inlet side of the lantern valve from an extension 1' of the trunk 1 to which is fitted a low velocity louvre or ventilator 12, herein shown as being of the grid type though it may be of any other type. Alternatively, the louvre or ventilator 12 may be located at a distance from the louvre or ventilator 2, the louvre 12 being in this event connected to the extension 1' by way of a pipe 13 (Fig. 1).

In operation, if the inlet ports 9, 10 of the lantern valve are in register, air is delivered at high velocity through the louvre or ventilator 2 by way of said ports and the chamber on the front side of the partition 7; the ports 4, 6 and 8 to the rear side of the partition 7 being masked in this position of the valve. If the socket 3 is rotated so that the inlet ports 8, 9 and the outlet ports 4, 6, respectively, are brought into register, air is delivered at low velocity through the louvre 12 by way of the ports 8, 9, the chamber on the rear side of the partition 7, the ports 4, 6 and the extension 1'; the ports 9, 10 on the front side of the partition 7 being masked.

In the modification shown in Figs. 5 and 6 there are provided adjoined air ducts, namely a hot air duct 14 and a cold air duct 15, interposed between which is a high velocity directional louvre or ventilator of the type described with reference to Figs. 1 to 4. The base portion of the rotatable socket 3 of the lantern valve is formed with an outlet port 4 co-operative with an outlet port 6 formed in the base portion of the stationary

socket 5. 7 denotes a partition located as before within the socket 3. Formed in the socket 5 are inlet ports 16, 17 providing communication respectively, with the hot air duct 14 and with the cold air duct 15. Formed in the socket 3, on the same side of the partition 7 as the port 4, is an inlet port 8 adapted to cooperate with the ports 16, 17. Formed in the socket 3, on the other side of the partition 7, i. e., on the side adjacent to the high velocity louver, is an inlet port 10 angularly displaced relatively to the port 8 and adapted also to cooperate with the ports 16, 17. 11 denotes the partition which separates the hot and cold air ducts 14, 15 from the common extension 1' of the said air ducts. The low velocity louver 12 may be connected directly or indirectly to the extension 1' as in the construction shown in Fig. 1. It will be understood that, in operation, depending on the angular position of the socket 3, air from one or from both ducts 14, 15 is delivered through the high velocity louver or ventilator or through the low velocity louver, the construction affording complete control of temperature, pressure and volume, and obviating objectional draughts.

The direction of air flow is indicated by the arrow α .

In the modification shown in Figs. 7 and 8 a main air trunk 18 is divided centrally by a partition 19 into a cold air duct 20 and a hot air duct 21. 22 denotes a high velocity directional louver or ventilator fitted in a rotatable socket 23 connected by rods 24 to a sectoral shutter plate 25 located adjacent to the underside of the trunk 18 and rotatable on a pin 26. Interposed between the ducts 20, 21 and the shutter plate 25 and secured to the trunk 18 is a disc 27 formed with two ports (not shown), opening one from each of the ducts 20, 21. 28 denotes an outer part spherical shell secured to the trunk 18 and having a beaded lower edge 28' surrounding the socket 23. Formed in the shell 28 are ports 29 which cooperate with ports 30 formed in a part spherical shell 31 coaxial with and rotatable within the shell 28.

The socket 23 and therewith the shutter plate 25 are rotatable by means of a handle 32. The shell 31 is rotatable by means of handles 33 penetrating slots 34 formed in the shell 28.

It will be understood that, with this construction, hot or cold air may be discharged from the ventilator 22 alone, or air may be discharged at low velocity regulated in volume and temperature through the ports 29, 30 of the low velocity louver-forming shells 28, 31.

The term "louver" is here employed as it is used by ventilating engineers to denote

an air delivery device having an opening or openings for passage of ventilating air.

I claim:—

1. Ventilating apparatus comprising in combination with separate passages for hot air and cold air, respectively, a ventilator adapted to discharge a current of hot or cold air in any desired direction in communication with said passages, means controlling the proportions of hot and cold air passing from said passages through said ventilator, and a louver for discharging air cut off from said ventilator by said means.

2. Ventilating apparatus comprising in combination with separate passages for hot air and cold air, respectively, a ported socket extending into said passages, a second ported socket within said first socket, said sockets being relatively adjustable, a ventilator universally adjustable in said second socket, and a second ventilator for discharge of hot or cold air cut off from said first ventilator.

3. Ventilating apparatus comprising in combination with passages for hot and cold air, a ported socket of part spherical form extending into said passages, the spherical portion having a port open to each passage, a second ported socket also of part spherical form, mating with the first socket, the spherical portion of said second socket having a port co-operative with the ports of the first socket, a ventilator universally adjustable in said second socket, and means for effecting adjustment of the second socket relatively to the first socket to control the relation of the ports in said sockets and thereby to regulate delivery of hot or cold air from said passages through said ventilator.

4. Ventilating apparatus comprising, in combination, an air trunk, two ventilators adapted to be put in communication with said trunk, one of said ventilators being constructed to deliver air at low velocity and the other of said ventilators comprising a nozzle adapted to deliver air in any desired direction at high velocity, a rotatable socket including a ported part in which said second ventilator is mounted, and a stationary ported part co-operative with said first named ported part, said ported parts constituting a valve so contrived that in one position of said rotatable socket air may pass from said trunk to one ventilator and in another position of said socket air may pass from said trunk to the other ventilator.

5. Ventilating apparatus comprising, in combination, separate passages for hot and cold air, respectively, a ventilator comprising a nozzle mounted for universal movement and adapted to deliver air in any desired direction at high velocity, a rotatable socket in which said ventilator is mounted, a valve connected to said socket for controlling flow of air from said passages to said ventilator, and a second ventilator coaxial with said first

named ventilator and comprising elements having ports adapted in the position of register of said ports to discharge air from either or both of said passages at low velocity.

5 In testimony whereof I have signed my name to this specification.

ALEXANDER WILLIAM STEWART.

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