March 11, 1952 J. L. FOURTIER 2,588,626

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Filed April 29, 1946 2 SHEETS--SHEET 1

Fig. 1

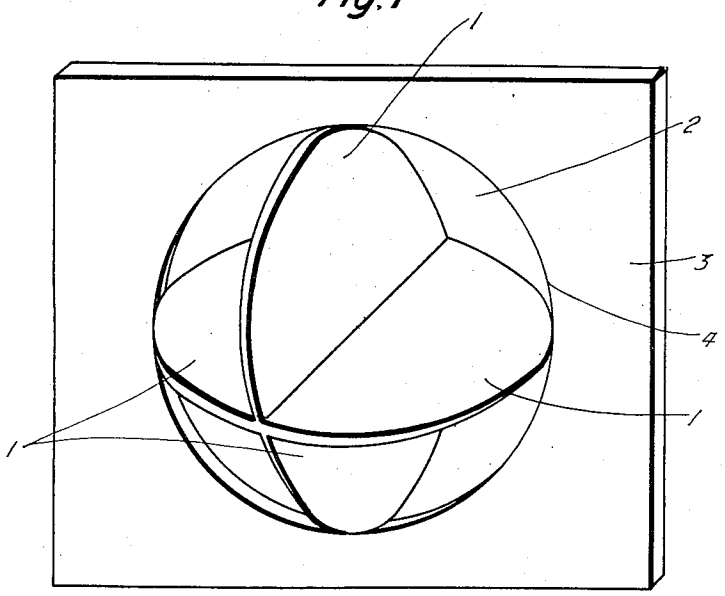


Fig. 2

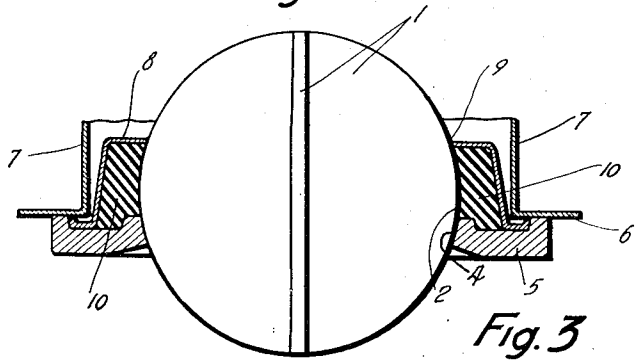
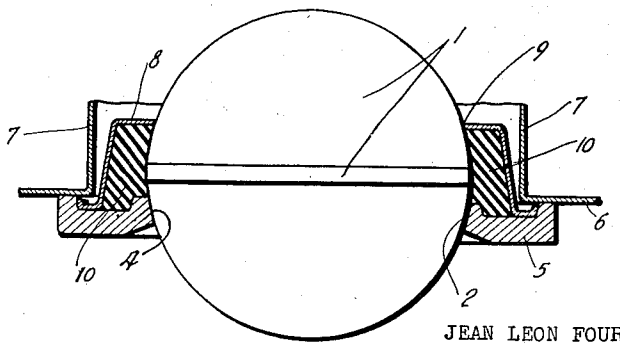


Fig. 3



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Fig. 4

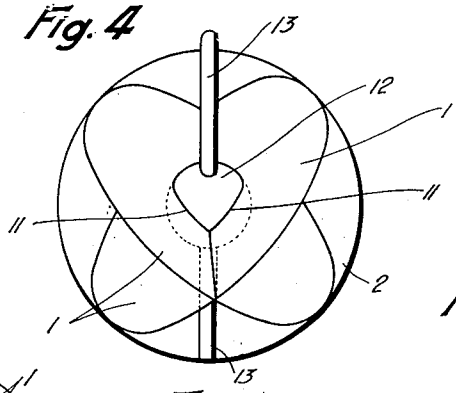


Fig. 9

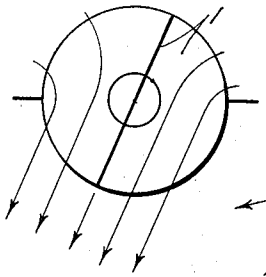


Fig. 10

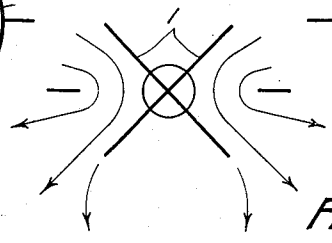


Fig. 11

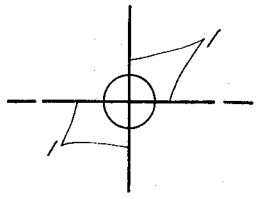


Fig. 5

Fig. 6

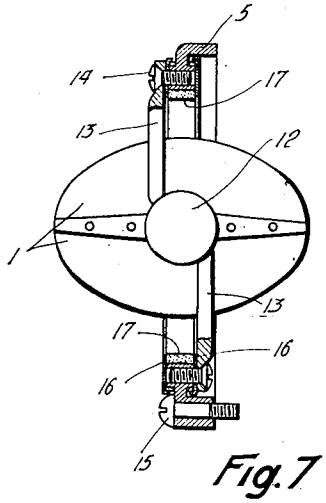
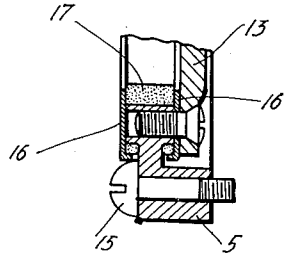


Fig. 7



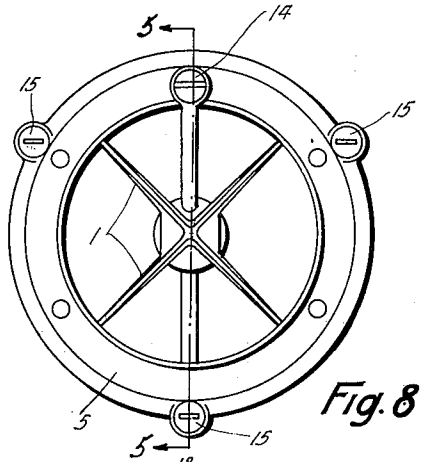
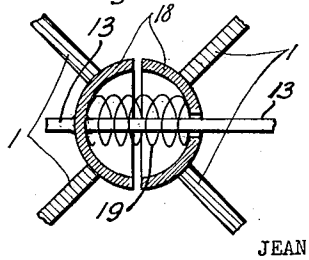


Fig. 8



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In France November 3, 1944

5 Claims. (Cl. 98—40)

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The present invention refers to a device for guiding, in a room to be ventilated, an air stream blown through a ventilation outlet.

In air distributors of prior and actual manufacture aiming at the same object the direction of the air flow is controlled by directing a portion of pipe fastened either inside a sphere revolving as a swivel assembly or to an intricate system allowing an omnidirectional position of the device.

In the device according to the invention the direction of the air flow is obtained by fins movable in all directions and located inside the ventilation opening itself.

These fins consist preferably of half circular plates assembled along a same diameter—for instance four half circular plates assembled substantially at right angles—which can be moved in all directions inside a circular aperture of substantially the same diameter as the said plates and forming the ventilation outlet proper.

The articulation of the fins in the above mentioned circular aperture may be obtained by forming the edges of this opening either by two flat rings of a slightly smaller diameter than the fins and located in parallel planes, one in front and the other at the back of the center of the set of fins, or in the shape of a spherical ring of substantially the same diameter as the fins, said fins being frictionally clasped by their periphery in these rings. According to another embodiment of the invention, each fin may be provided in its center with a half circular hole, said holes being of the same diameter for all the fins and enclosing a same central spherical core fastened by radial members to the edges of the ventilation outlet.

According to an additional characteristic of the invention, the edges of the aperture figuring the outlet are advantageously, at least partially resilient so as to provide a tight fitting in cooperation with the fins.

The annexed drawings show two embodiments of a device according to the invention. In these drawings:

Figure 1 is a somewhat diagrammatic perspective view of a first type of such a device,

Figures 2 and 3 are two horizontal diametrical cross-sections of a practical embodiment of said device, for two different positions of the fins,

Figure 4 is a diagrammatical front view of another type of device according to the invention,

Figure 5 is a diametrical cross-section of a practical embodiment of the device according to Fig. 4, taken on the line 5—5 of Figure 6,

Figure 6 is a front view as seen from the left side of Fig. 5,

Figure 7 is a detail of Fig. 5 on a larger scale,

Figure 8 is a diagrammatical view of the central articulation of the fins,

Figures 9, 10 and 11 are diagrams showing various possible fin positions with the corresponding course of the air flow.

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Such as shown in Fig. 1, the device consists of four half circular fins 1 of the same diameter assembled crosswise at right angles, that can be directed in a circular aperture 2 of the same diameter as fins 1, provided in the wall 3 of the room to be ventilated, and forming, in a known manner, the opening of an air duct not shown in this figure, the edges 4 of the opening 2 being shaped as a spherical ring.

In the device shown in Figures 2 and 3, the opening 2, of a slightly smaller diameter than the fins 1 is provided in a plate 5 simultaneously used to secure the device on the wall (not shown) of the room to be ventilated or on a collar 6 formed at the end of the air duct 7. On this plate 5 is fastened a ring 8 the cross-section of which is approximately Z shaped, said ring leaving a central opening 9 of a slightly smaller diameter than that of the fins 1, the openings 2 and 9 enclosing said fins. A rubber ring 10 is located inside ring 8.

According to Figure 4, the center of each of the fins 1 is provided with a half circular recess 11 concentric to said fins. The edges of these recesses enclose a spherical core 12 the center of which is in coincidence with the center of opening 2, the core 12 being fastened in the opening 2 by radial arms 13.

In the construction shown in Figs. 5 and 6 of the type of device according to Fig. 4, the arms 13 of the spherical core 12 are fastened by screws 14 to the plate 5, said plate being fastened by screws 15, either to the wall of the room to be ventilated, or at the end of the air duct. The screws 14 are also used to secure two metallic rings 16 forming opening 2, a ring shaped rubber gasket 17 being clasped between said rings.

The spherical core may be either constructed as a one piece unit and, preferably, in a resilient material that can be compressed by the fins, or made of two stiff caps 18 (Fig. 8) one of them linked to both of the arms 13, the other being free of fastening, a spring 19 keeping these two caps apart from one another.

In the latter type of construction, the whole set of fins 1 consists of at least two parts assembled by any known means, as for instance, by soldering, by rivets or by screws, but not fastened to the spherical core which serves only as a central bearing for the fins.

In both the arrangements shown in Figs. 1 or 4, it is possible to give any desired direction to the fins, so as to direct, to control and even to stop the flow of air used for ventilation. If a central swivel is used for controlling purposes the said swivel focusses the air flow on the fins.

The said air flow is directed along the axis figured by the intersection of the four fins when said axis crosses the plane of the ventilation outlet as shown in Figs. 2 and 9. When said axis

is located in the plane of the outlet and if the fins do not shut the latter, the air is brought into the room in two streams the speed of which decreases rapidly, see Fig. 10. Last of all, in setting the fins assembly in such a manner that two opposite fins find themselves in the plane of the outlet **2**, the ventilation outlet is obstructed, as shown in Figs. 3 and 11. These three characteristics positions which each of them set the requirements of one only of the three functions that may be expected from a ventilation outlet, are obtained by the simple axial rotation of the fins assembly, either in the outward articulation formed by the edges of opening **2**, or around the central spherical core **12**.

The whole set of fins is maintained in the position which is given to it, owing to the resilient properties either of the edges of the opening **2**, or of the spherical core **12**. The resilient gasket provided on the edges, which may consist either of a rubber gasket or of one or more metallic extensible gaskets, insures further the tightness of the device if the opening **2** is shut, as shown in Figs. 3 and 11.

What I claim is:

1. A device for guiding a stream of air emerging from a ventilation outlet in a wall having a circular opening comprising a plurality of pairs of fins, each fin consisting of a semi-circular, plane, rigid plate of substantially the same size as one-half of said circular opening, said fins being assembled together on a common diameter with pairs of fins in common planes, and spherical means supported from said wall in said opening and having the same center as said fins and secured to said fins for rotatively supporting said assembled fins, whereby said fins may be swivelled about their common center in all directions thus allowing said opening to be obturated.

2. A device for guiding a stream of air emerging from a ventilation outlet in a wall having a circular opening, comprising two pairs of fins, each fin consisting of a semi-circular, plane, rigid plate of substantially the same size as one-half of said circular opening, means for assembling said fins together in a common diameter with each pair of fins in a common plane and with the plane of the first pair at right angles to the plane of the second pair, and spherical means supported from said wall in said opening and having the same center as said fins and secured to said fins for rotatively supporting said assembled fins, whereby said fins may be swivelled about their common center in all directions thus allowing said outlet opening to be obturated.

3. A device for guiding a stream of air emerging from a ventilation outlet in a wall having a circular opening, comprising a plurality of pairs of similar fins, each fin consisting of a semi-circular, plane, rigid plate of substantially the same size as one-half of said circular opening and having its center provided with a semi-circular notch, means for assembling said fins together on a common diameter with pairs of fins in common planes and with said semi-circular notches forming a spherical cage, a spherical core in the center of said opening having substantially the same diameter as the circles constituted by coplanar pairs of said semi-circular notches and enclosed by said cage, and radial arms in parallel planes for fastening said core to said wall adjacent the edges of said opening, whereby said assembled fins may be swivelled about said core in all directions and to any extent thus allowing said outlet opening to be obturated.

4. A device for guiding a stream of air emerging from a ventilation outlet in a wall having a circular opening, comprising two pairs of similar fins, each fin consisting of a semi-circular, plane, rigid plate of substantially the same size as one-half of said circular opening and having its center provided with a semi-circular notch, means for assembling said fins together on a common diameter with each pair of fins in a common plane, with the plane of the first pair of fins at right angles to the plane of the second pair and with said semi-circular notches forming a cage, a spherical core in the center of said opening having substantially the same diameter as the circles constituted by coplanar pairs of said semi-circular notches and enclosed by said cage, and radial arms in parallel planes for fastening said core to said wall adjacent the edges of said opening whereby said assembled fins may be swivelled about said core in all directions and to any extent thus allowing said outlet opening to be obturated.

5. A device for guiding a stream of air emerging from a ventilation outlet in a wall having a circular opening, comprising two pairs of similar fins, each fin consisting of a semi-circular, plane, rigid plate of substantially the same size as one-half of said circular opening, and having its center provided with a semi-circular notch, means for assembling said fins together on a common diameter with each pair of fins in a common plane, with the plane of the first pair of fins at right angles to the plane of the second pair and with said semi-circular notches forming a cage, a pair of annular plates having an internal diameter slightly smaller than the outlet opening diameter and arranged parallel with respect to one another on each side of said opening, a resilient gasket between said annular plates, said fins engaging said annular plates and said gaskets by their outer rims, a spherical core in the center of said opening having substantially the same diameter as the circles constituted by coplanar pairs of said semi-circular notches and enclosed by said cage, and radial parallel arms respectively secured to each of said annular plates before and behind said plates with respect to said opening, for fastening said core to the wall adjacent the edges of said opening, whereby said assembled fins may be rotatively swivelled in said annular plates and about said core in all directions and to any extent, thus allowing said outlet opening to be obturated.

JEAN LÉON FOURTIER.

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