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[56]

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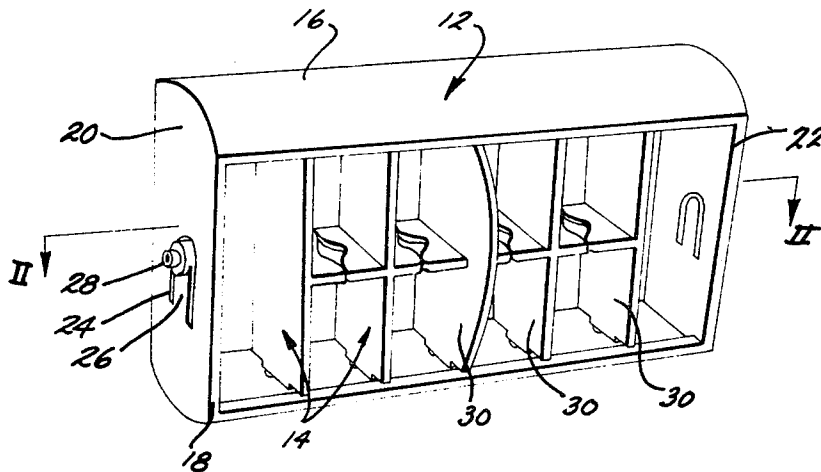
[54] LOUVER ASSEMBLY
13 Claims, 4 Drawing Figs.

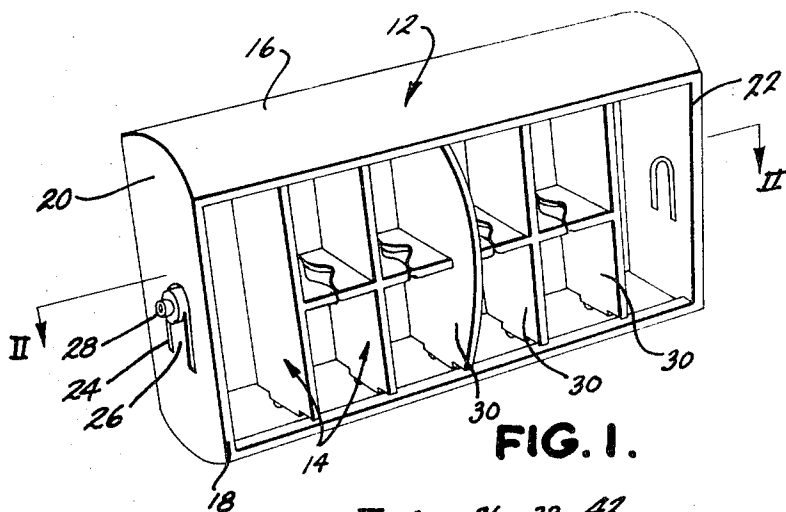
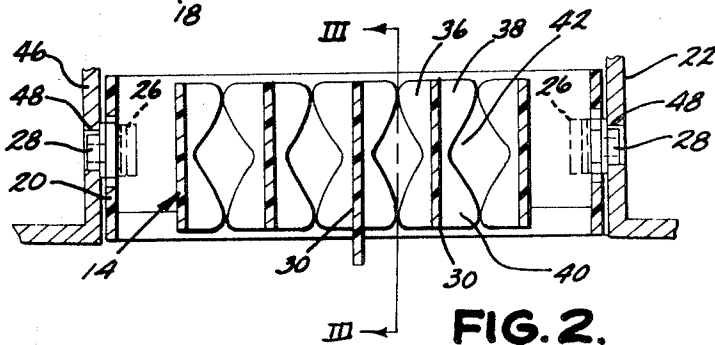
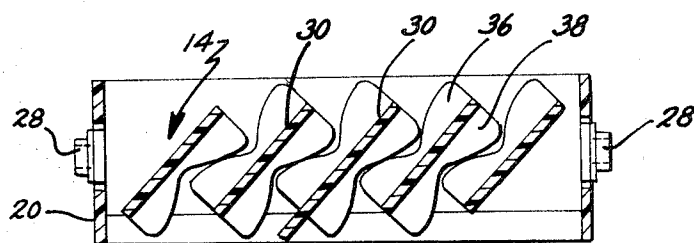
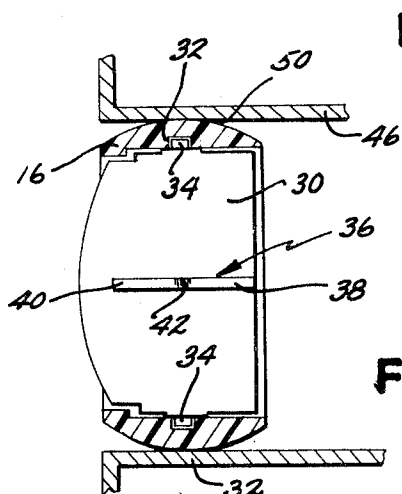
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[50] **Field of Search**..... 98/110,
111, 112, 121, 40

ABSTRACT: The disclosure relates to a louver assembly for air conditioning and the like. The assembly has a housing which rotatably supports a plurality of vanes in parallel alignment. Each vane has a cam surface which abuts against an adjacent cam so that each vane rotates in unison when one of the vanes is moved. The sides of the housing have resiliently mounted journals for rotatably supporting the louver assembly in an end of a duct.





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LOUVER ASSEMBLY

This invention relates to a louver assembly for air conditioning ducts and the like. In one of its aspects, the invention relates to a louver assembly for air conditioning ducts and the like wherein rotatably mounted vanes have cams for controlling the movement of the vanes in unison.

In another of its aspects, the invention relates to a louver assembly wherein a plurality of air directing vanes are rotatably mounted in a housing and the sidewalls of the housing have means for rotatably supporting the housing within an air duct.

Louvers for air conditioning systems control the direction of air flow from the air supply ducts at a final destination. Many louver assemblies have been devised for such a purpose. Wright, 2,959,117, discloses such a louver assembly in which intersecting sets of vanes are rotatably mounted for directing the flow of air therethrough. The movements of each set of louvers is controlled by a link bar at the ends of the vanes so that all of the vanes move in unison. Such an arrangement is complex, expensive, and not particularly durable.

I have now discovered an inexpensive and quickly assembled louver assembly which efficiently operates through abutting cams to control the flow of air through a duct.

By various aspects of this invention, one or more of the following, or other, objects can be obtained.

It is an object of this invention to provide a louver assembly for directing the flow of air through air conditioning ducts and the like, which duct assembly is inexpensively and quickly assembled.

It is another object of this invention to provide a louver assembly for controlling the flow of ducted air along two intersecting planes.

It is a further object of this invention to provide a durable louver assembly which is easily assembled and has strong intermeshing parts.

It is a still further object of this invention to provide a louver assembly for controlling the flow of air through ducts wherein the louver assembly is simple in construction and characterized by ease of operation.

It is yet another object of this invention to provide a louver assembly which is quickly and easily inserted into position in an air duct.

Other aspects, objects, and the several advantages of this invention are apparent to one skilled in the art from a study of this disclosure, the drawings, and the appended claims.

According to the invention, there is provided a louver assembly having a housing member, a plurality of vanes journaled within the housing for rotation within the housing, the vanes being disposed in generally parallel relationship, and cam members on the vanes in abutting relationship to each other, each of the cam members being so shaped as to cause parallel rotation of all of the vanes in unison when one of the vanes is moved.

Further, according to the invention, a louver assembly is provided having a plurality of vanes, a housing having a top, bottom and opposite walls, the vanes having means rotatably engaging the top and bottom walls for movement about axes through the top and bottom walls. Means are formed in the sidewalls for rotatably supporting the housing for rotation about an axis transverse to the axes of rotation of the vanes. In this manner air flow through the louver assembly can be controlled in two directions such as vertically and horizontally.

The invention will now be described with reference to the accompanying drawings in which:

FIG. 1 is a perspective view of a louver assembly according to the invention;

FIG. 2 is a planar view in section of the louver assembly of FIG. 1 positioned within a duct and seen generally along lines 2-2 of FIG. 1;

FIG. 3 is a side elevational view in section seen along lines 3-3 of FIG. 2; and

FIG. 4 is a sectional view similar to FIG. 3 showing the vanes in a second position.

Referring now to the drawings, the louver assembly comprises a housing 12 having a vane assembly 14 rotatably journaled therein. The housing has a rounded top wall 16, a rounded bottom wall 18, and sidewalls 20 and 22. In each sidewall an inverted U-shaped slit 24 forms a resilient tab 26 having journal 28.

The vane assembly comprises a plurality of parallel disposed vanes 30 having tabs 34 which are journaled in holes 32 in the top and bottom walls. Each vane has a cam 36 extending perpendicular to the plane of the vane in abutting relationship with adjacent cams. Each cam has a rear lobe 38 and a front lobe 40 separated by a central valley 42. A projection 44 is formed on the central vane for facilitating the turning of the vane assembly.

The louver assembly is journaled in an air duct 46 having holes 48 for receiving the journals 28. Further, the air ducts 46 preferably have an end 50 for accepting the rounded top and bottom walls 26 and 28 respectively.

The louver assembly is easily snapped into place in the air duct 46 by merely pressing the tabs 26 inwardly as the assembly is pushed into place in the air ducts. The journals 28 snap into the holes 48, being resiliently biased by the tabs 26. Within the air conditioning ducts, the whole louver assembly is rotatable about the journals 28 so as to direct the air downwardly or upwardly as viewed in FIG. 3, the cams 36 also serving as horizontal louvers.

The vanes 30 are separately molded and snapped into place in the top and bottom walls through the holes 32 and tabs 34.

Thus, the louver assembly is quickly assembled and simply manufactured. The housing itself can be integrally molded in one piece. Both the housing and the vanes can be molded from synthetic plastic material such as acrylonitrile-butadiene-styrene (ABS) or other synthetic polymers such as polyethylene, polypropylene, polyvinyl chloride, and other suitable thermoplastic polymers. Thermosetting polymers can also be employed.

The vanes 30 are moved by moving, for example, the projection 44 on the central vane. This will cause the vane to rotate about tabs 34 within the housing 12. The rotation of the central vane, will move the adjacent vanes through the force of the cams 36. For example, when the vanes are rotated in a counterclockwise direction as viewed in FIG. 2, the rear lobe 38 on the cams on the left side of the vanes will move into the valleys 42 on the right-hand cams. Conversely, the front lobes 40 at the cams on the right-hand side of the vane will move into the central valleys 42 of the cams on the left-hand side of the vanes.

Whereas the vane assembly has been described with reference to cams 36 in a center portion of each vane, it is within the scope of the invention to place cams at the top and bottom edges instead of at the central portion of each vane. The operation of the assembly would be the same with such a modified construction.

Reasonable variation and modification are possible within the scope of the foregoing disclosure, the drawings, and the appended claims without departing from the spirit of the invention.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows.

I claim:

1. A louver assembly comprising:

a housing member;

a plurality of vanes journaled within said housing for rotation therein;

said vanes disposed in generally parallel relationship; and cam members mounted on each side of said vanes, said members being indexed in contact with the adjacent cam member of the adjacent vane and so shaped as to cause parallel rotation of all of said vanes in unison when one of said vanes is moved.

2. A louver assembly according to claim 1 wherein each of said vanes is integrally molded from a synthetic plastic material.

3. A louver assembly according to claim 1 wherein said cam members extend perpendicularly to the plane of said vanes so that each of said pair of cam members in contact with each other form an additional louver normal to the plane of said vanes.

4. A louver assembly for controlling the flow of air through ducts, said assembly comprising:

a plurality of vanes;

a housing having a top, bottom and opposite sidewalls;

said vanes having means rotatably engaging said top and bottom walls for movement about axes through said top and bottom walls;

resiliently biased support journals formed in said sidewalls for snap-fit engagement with slots formed in said ducts so that said housing is releasably mounted in said ducts, said journals being rotatable within said slots for rotation about an axis transverse to said axes of rotation of said vanes, whereby airflow through said louver assembly can be controlled in two transverse directions.

5. A louver assembly according to claim 4 wherein said top and bottom walls are rounded to facilitate rotation of said housing about said journals within an air duct.

6. A louver assembly according to claim 5 wherein said housing is integrally molded from a synthetic plastic material.

7. A louver assembly according to claim 4 wherein said journals are supported by tabs formed by cutting U-shaped slots in each sidewall.

8. A louver assembly comprising:

a housing member having sidewalls, said sidewalls having journals formed therein for rotatably supporting said louver assembly;

a plurality of vanes journaled within said housing for rotation therein;

said vanes disposed in generally parallel relationship; and cam members on said vanes in abutting relationship to each other, each of said cam members being so shaped as to cause parallel rotation of all of said vanes in unison when

one of said vanes is moved.

9. A louver assembly according to claim 8 wherein the axis of said journals is transverse to the axes of said vanes whereby the flow of air through said louver assembly can be controlled in two transverse directions.

10. A louver assembly according to claim 8 wherein said journals are fixed on resilient tabs which are cut from said sidewalls.

11. A louver assembly comprising:

a housing member;

a plurality of vanes journaled within said housing for rotation therein;

said vanes disposed in generally parallel relationship; and cam members on said vanes in abutting relationship to each other, each of said cam members having a rear lobe and a front lobe separated by a central valley so shaped as to cause parallel rotation of all of said vanes in unison when one of said vanes is moved.

12. A louver assembly according to claim 11 wherein each of said vanes is integrally molded from a synthetic plastic material.

13. A louver assembly for controlling the flow of air through ducts, said assembly comprising:

a plurality of vanes;

a housing having a top, bottom and opposite sidewalls;

said vanes having means rotatably engaging said top and bottom walls for movement about axes through said top and bottom walls; and

means formed in said sidewalls for rotatably supporting said housing for rotation about an axis transverse to said axes of rotation of said vanes, whereby airflow through said louver assembly can be controlled in two transverse directions, said means formed in said housing including resiliently supported journals for snap-fit engagement with slots on an external support means, said journals being supported by tabs formed by cutting U-shaped slots in each sidewall.

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