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J. L. WRIGHT ET AL

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LOUVER VANE ASSEMBLY

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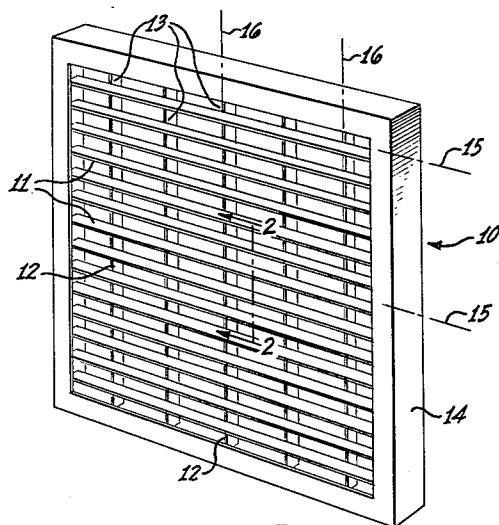


FIG. 1

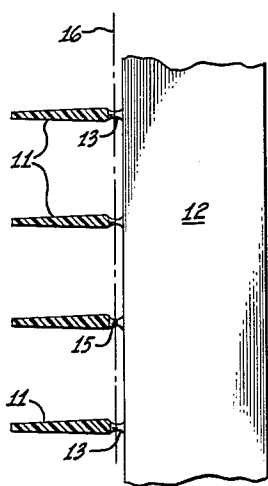


FIG. 2

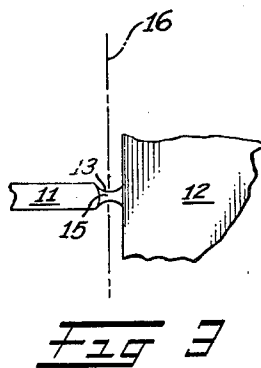


FIG. 3

INVENTORS:
JAY L. WRIGHT
BY GORDON D. PETRIE
Mellin and Hanscom
ATTORNEYS

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LOUVER VANE ASSEMBLY

Jay L. Wright and Gordon D. Petrie, Phoenix, Ariz., assignors, by mesne assignments, to Midland-Ross Corporation, Cleveland, Ohio, a corporation of Ohio
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This invention relates to louver assemblies and the like, especially those which may be used with air conditioners. More particularly, the invention hereinafter described involves a novel louver construction having two intersecting sets of vanes that may be selectively adjusted to vary their respective angles of inclination, thereby controlling the directional discharge of air or gases from a blower unit.

The use of adjustable louver vane assemblies is commonly employed by manufacturers of air coolers and conditioners. And it is conventional practice to provide an angular adjustment for both of two sets of intersecting vanes. It has been further recognized that sufficient provision must be built into these structures to inhibit and eliminate the noise of vane flutter, and for this purpose frictional surface engagements are normally provided. One exemplary type of prior art structure is clearly set forth in the application of Wright et al., Serial No. 789,114 now Patent No. 2,959,117, and assigned to the assignee of the instant application. This invention, however, is more especially directed to louver grille assemblies having intersecting vanes which are integrally formed, such a structure being disclosed in United States Patent No. 2,735,351. Although these structures also possess the desirable features of a flutter-proof and completely adjustable louver vane assembly, the manner in which they have been previously constructed, i.e. by overlapping proximate edge portions of the interacting vanes, made angular adjustment difficult. Moreover, such vane assemblies were used conjunctively with a notched bracket for training the vanes in a deformed position without which the intersecting vanes would spring back to an unstrained perpendicular and parallel relationship.

The present invention does not require or use frictional surface engagements, and for this reason it lends itself to an inexpensive but dependable construction; and yet, because of a unique integral construction of intersecting vanes and highly flexible stem members which join adjacent edges of intersecting vanes, the invention is markedly different in its operation from the integrally formed louver grilles of the prior art.

In brief, this invention comprises first and second sets of louver vanes that are interconnected near adjacent edges by flexible stems, said stems allowing each set of vanes to be pivoted about the other with a minimum distortion of the vanes themselves. Moreover, it has been discovered that both sets of intersecting louver vanes, joined by flexible stems, may be integrally formed of a material such as polypropylene and by the use of conventional molding procedures. Inasmuch as the manufacturing costs of this structure are substantially below those louver assemblies that provide frictional surface engagements, and is more easily adjusted than known integral louver constructions it is to be recognized that this invention is of distinct benefit and utility, having many objects and advantages.

Accordingly, one object of this invention is to provide a louver vane assembly including first and second louver vanes that are interconnected along adjacent edges by a flexible stem.

A second object is to provide a louver vane assembly including first and second intersecting louver vanes that are integrally formed by conventional molding processes.

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Another object of this invention is to provide a louver vane assembly including integrally formed intersecting vane members, said vane members being joined by stems and made from a flexible and sufficiently tenacious substance, such as polypropylene.

It is a further object to provide a louver vane assembly comprised of intersecting sets of vane members that are integrally formed and joined by flexible stems between adjacent and intersecting vane edges.

Other objects of this invention will become apparent in view of the following detailed description, and especially in view of the accompanying drawings.

In the drawings, forming a part of this application, and in which like parts are identified by like reference numerals throughout the same,

FIG. 1 is a perspective view of one embodiment of the invention in louver vane assemblies; and

FIG. 2 is a side section, taken on lines 2—2 of FIG. 1; and FIG 3 is an enlarged detail of a portion of the side section shown in FIG. 2.

Referring to the drawings, there is illustrated a louver vane assembly 10 such as might be incorporated in a small air conditioning unit. Assembly 10 comprises a first set of parallel vane members 11 and a second set of parallel vane members, 12, said first and second sets of vanes being intersecting and substantially normal to one another. Intersecting vane members 11 and 12 are interconnected by flexible stems 13, as most clearly shown in FIG. 2. And, although not fully illustrated, vanes 11 and 12 are pivotally mounted on frame 14 with the pivot axes 15 and 16, respectively, lying in a common plane that passes through stems 13.

This invention is most particularly concerned with the novel manner of interconnecting each pair of intersecting vanes with a flexible stem 13. It has been found that under normal operating conditions such stem connections will impart sufficient rigidity to the vane assembly and effectively inhibit "vane flutter". Moreover, it was discovered that the entire louver vane assembly could be formed by conventional molding processes, using a suitable substance that possesses a necessary degree of flexibility and toughness. As a consequence of this discovery, and from further work and development, it has been found that the substance known as polypropylene is extremely well suited for the intended purpose. Polypropylene may be flexed numerous times without fracturing, yet is exceedingly tenacious. Moreover, its character for flexure and strength is apparent in even relatively small diameter strands. For example, the illustrated connecting stems 13 may be only $\frac{1}{32}$ " in diameter.

As indicated above, the vane members are pivoted at their ends in a conventional manner. Also, in a preferred arrangement, it may be desirable to provide parallel linkages for each set of vanes, thereby enabling the vanes of each set to be maintained in parallelism and to be controlled in unison. Since the use of parallel linkage mechanisms is well known for this purpose, no attempt has been made to illustrate or claim such conventional structures. However, it is to be realized that the louver vane assembly shown may be adapted for use with such linkage structures, or may be used in other louver assemblies that allow individual vane adjustments.

While a preferred embodiment of this invention has been illustrated and described, it is apparent that various changes may be made in the size, shape or arrangement of vane members without departing from the spirit of this invention or the scope of the attached claims, and each of those changes is contemplated.

Having thus described our invention, what we claim and desire to secure by Letters Patent is:

1. In a louver vane assembly, a first louver vane, a

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second louver vane extending substantially transverse to said first louver vane, the leading edge of one vane disposed in a spaced adjacent relation to the trailing edge of the other vane, a flexible stem joining said edges, said louvers and stems being integrally formed of plastic material, whereby said first and second vanes may be pivoted about the other without fracturing said stem.

2. In a louver vane assembly as set forth in claim 1, wherein said vanes and stem are made of polypropylene.

3. A louver vane assembly comprising: a plurality of first louver vanes pivotally mounted upon first parallel and coplanar axes, a plurality of second louver vanes pivotally mounted upon second parallel and coplanar axes extending substantially transverse to said first parallel axes, the leading edges of said first louver vanes being

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disposed in a spaced adjacent relation to the trailing edges of said second louver vanes, and a plurality of flexible stems joining adjacent leading and trailing edges, said louvers and stems being integrally formed of plastic material, whereby said first and second vanes may be pivoted upon their respective axes without fracturing said stems.

4. A louver vane assembly as set forth in claim 3 wherein said vanes and stems are made of polypropylene.

References Cited in the file of this patent

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