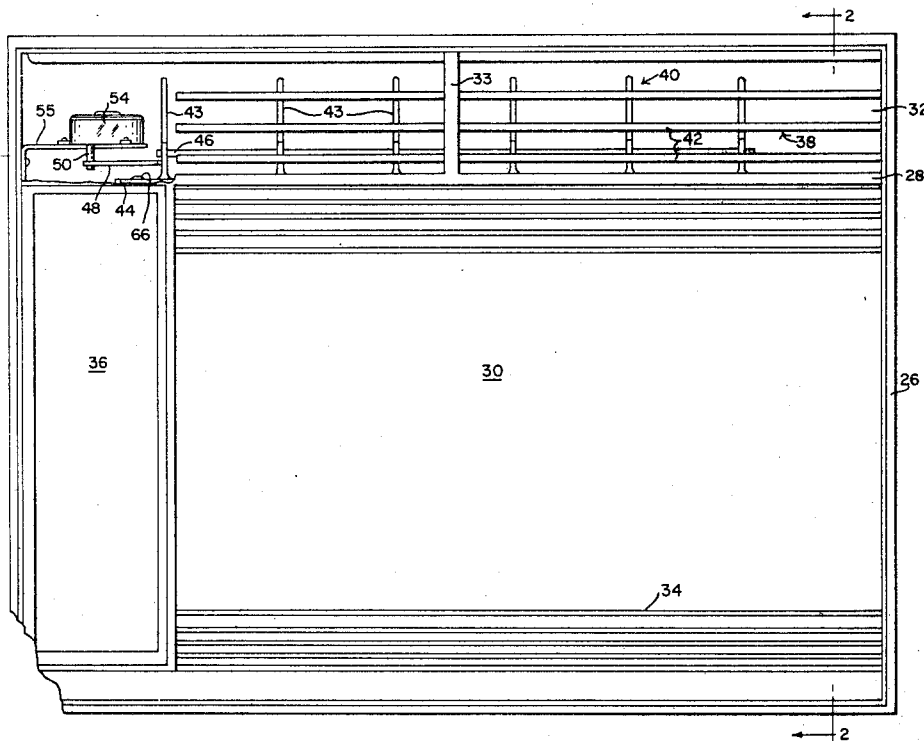


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[22]	Filed	May 19, 1969
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[56]	References Cited		
	UNITED STATES PATENTS		
3,330,202	7/1967	Del Colle.....	98/40
3,472,149	10/1969	Hanson	98/110
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[54]	AIR GUIDE STRUCTURE	
	5 Claims, 7 Drawing Figs.	
[52]	U.S. Cl.	98/94, 98/110
[51]	Int. Cl.	F06b 7/02
[50]	Field of Search	62/262; 98/94, 110, 40

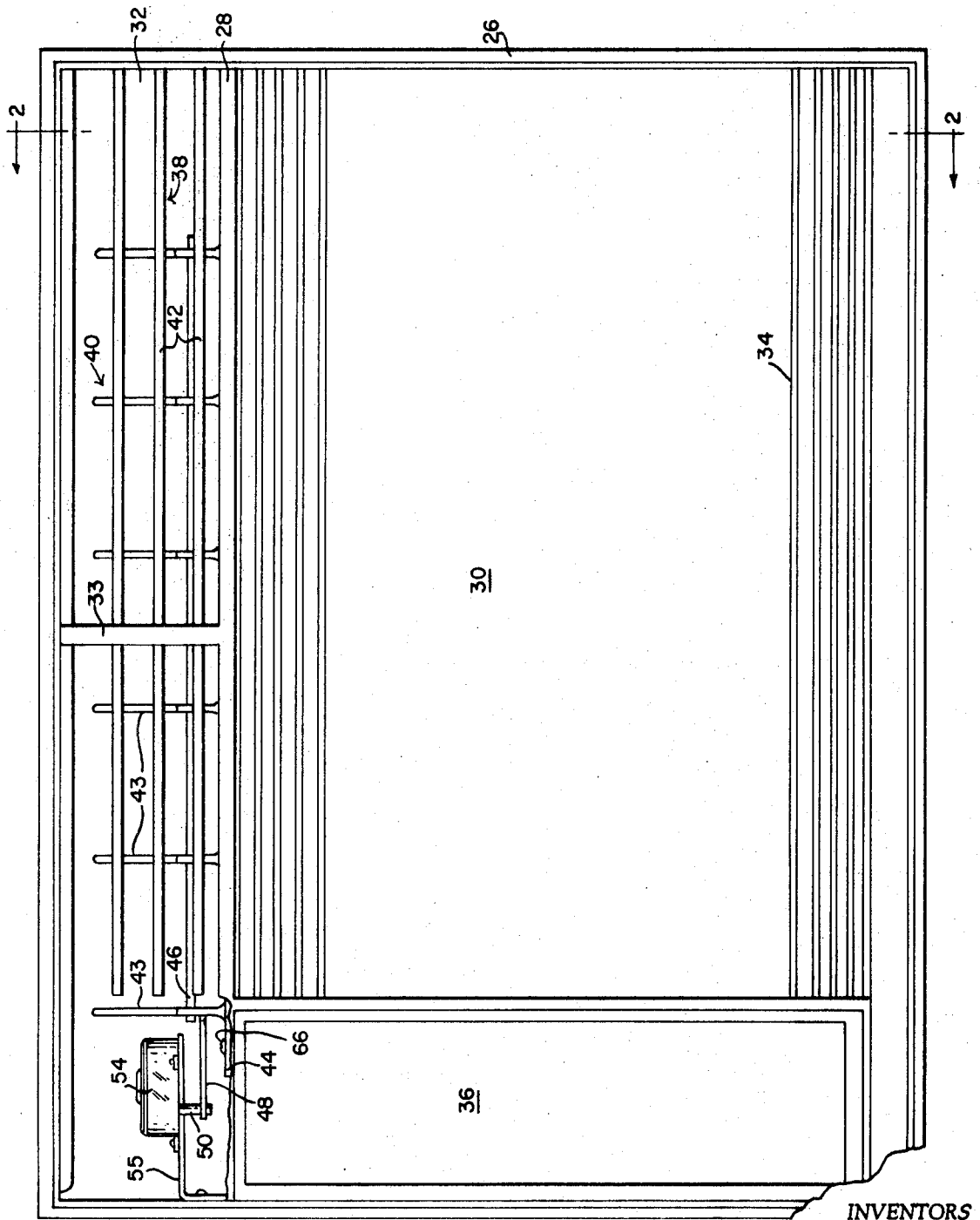
ABSTRACT: Air guide structure for use in air conditioners comprising a plurality of vanes pivotally mounted on a support base extending across the edge of air outlet opening, drive means for oscillating said vanes to sweep the air transversely from the opening into the room conditioned thereby, the support base being adjustably positionable transversely of the opening to alter the drive connection to the vanes and thereby vary the amount of air directed respectively to the right or left of the front of the air conditioner.



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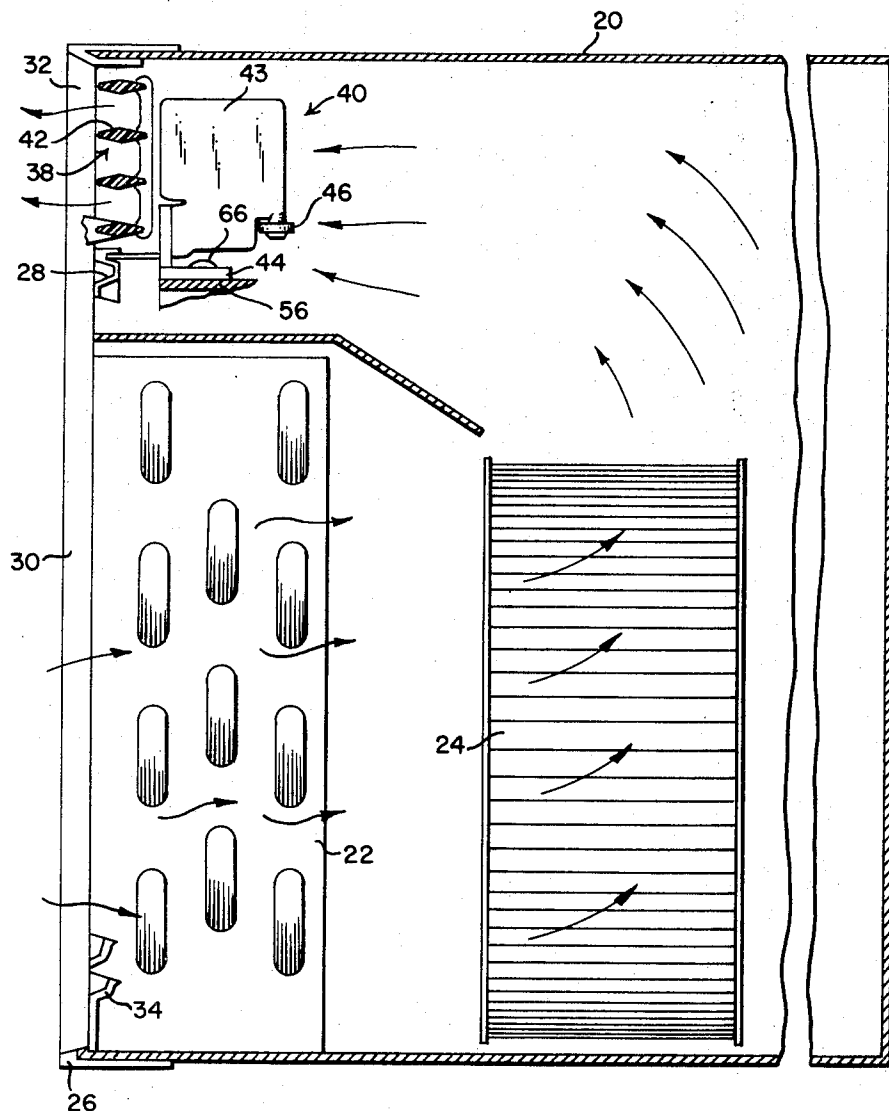


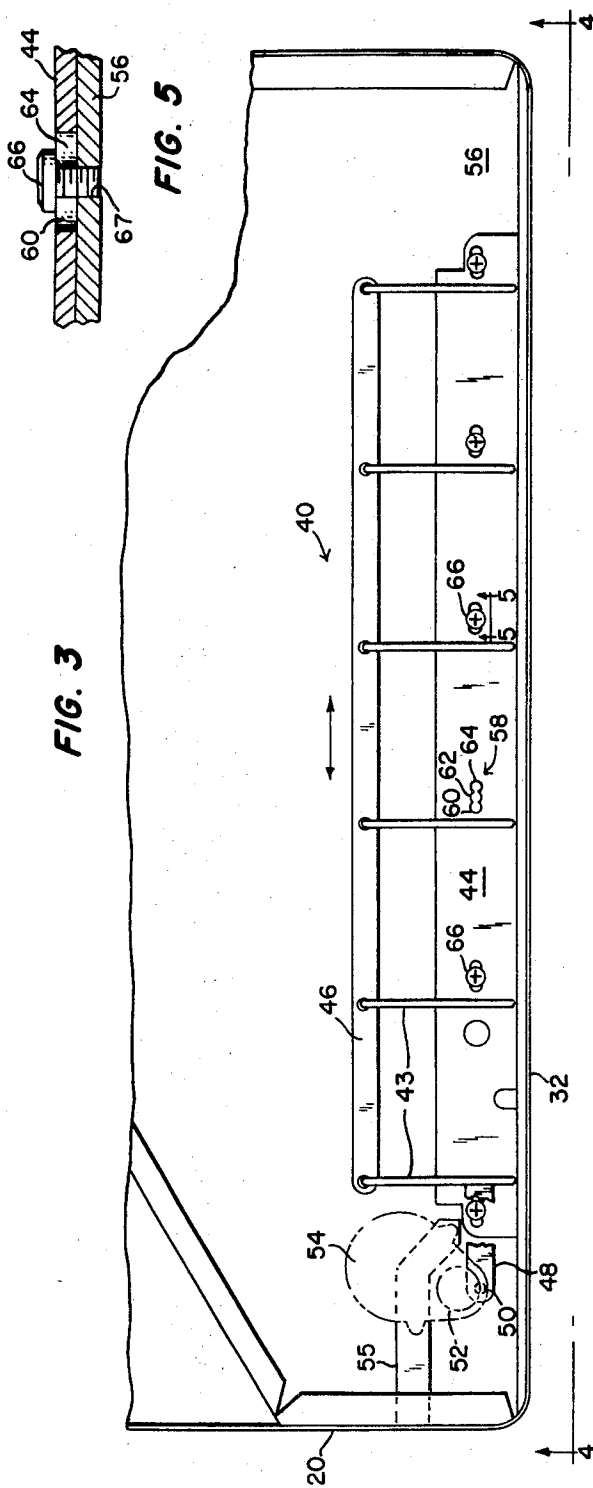
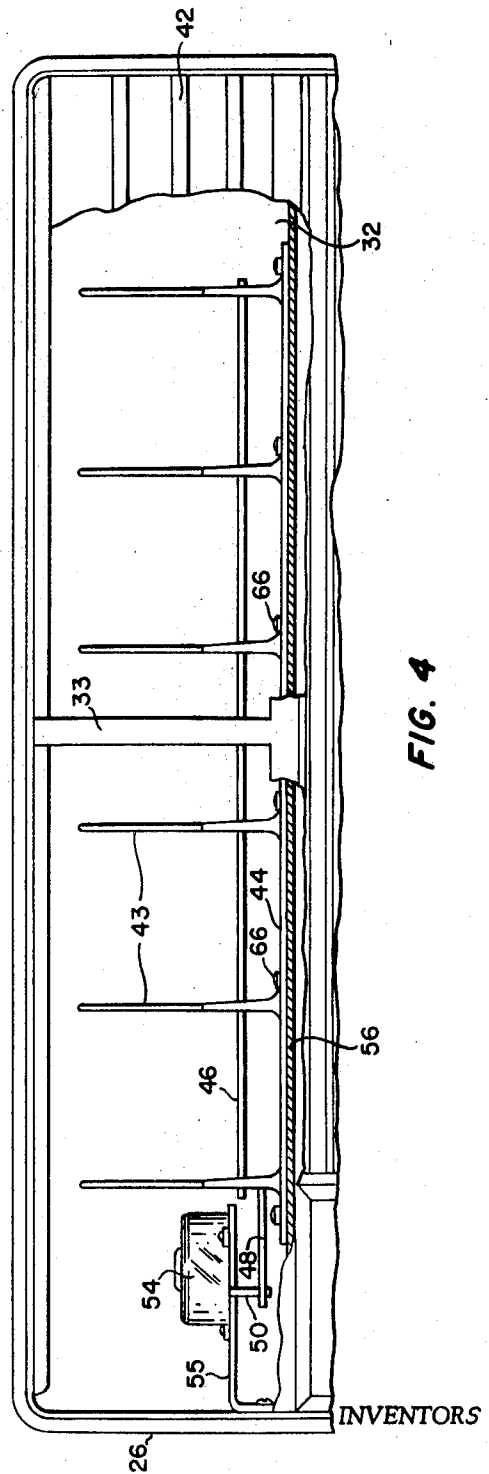
FIG. 2

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AIR GUIDE STRUCTURE

BACKGROUND OF THE INVENTION

This invention relates generally to air conditioners and more particularly to novel air guide structure for directing and guiding the flow of air from such air conditioners.

In window-mounted air conditioner units, the type with which the invention is primarily concerned, the location of the unit in a room is, of course, dependent on the location of the available window space. Hence, it frequently occurs that it is not possible to position the unit in the most desirable location which would produce optimum conditioned air distribution throughout the entire room. This is especially true, for example when a window is located in a corner of the room. As a result, the room frequently is not uniformly cooled, has localized regions therein of varying temperature and humidity, and is susceptible to uncomfortable drafts.

Proposals have been made to overcome these problems by providing oscillating air sweep structure in the air conditioner by which the conditioned air emitting therefrom into the room is swept to the left and right of the front of the unit to cool the room more uniformly. Examples of such prior systems which have enjoyed a large amount of commercial success are illustrated in U.S. Pat. Nos. 2,907,262 and 3,294,007. While such systems have been quite successful, they have not entirely eliminated the problems associated with differentially cooled localized regions and objectionable drafts within the conditioned room.

SUMMARY OF THE INVENTION

Accordingly, the primary object of the invention resides in the provision of a novel air guide and directing structure for an air conditioner which, in addition to sweeping air to the left and right of the front of the conditioner, is capable of varying the amount of air directed respectively to the left and right, thereby overcoming the problems associated with prior art devices.

Another object resides in the provision of a novel oscillating louver air guide structure for an air conditioner unit capable of sweeping the air in a transverse direction across the outlet opening of the unit and being adjustably supported adjacent the opening to alter the amount of air directed to the right or left of the front of the unit into the room being conditioned.

Still another object resides in the provision of a novel air guide and louver structure of the above type mounted on a support base which is adjustably positionable across an edge of the outlet opening of the air conditioner, the louver structure being drive connected to an eccentric drive mechanism to cause oscillation thereof, with the repositioning of the support base altering the drive relationship between the louvers and the drive mechanism to vary the amount of air directed in a respective direction from the outlet opening of the air conditioner.

Further objects and advantages will become apparent from a reading of the below detailed description of the invention with reference to the drawings and from the appended claims.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a front view of an air conditioner incorporating the air guide structure of the present invention;

FIG. 2 is a vertical section taken along lines 2-2 of FIG. 1;

FIG. 3 is a top plan view of the oscillating air guide louvers and their support structure;

FIG. 4 is a fragmented front elevation taken along line 4-4 in FIG. 3;

FIG. 5 is a fragmentary section along line 5-5 of FIG. 3;

FIG. 6 is an enlarged fragmentary view of an end portion of the oscillating louver structure and its associated drive link; and

FIG. 7 is a schematic illustration of the swinging movement of the louver vanes to either side of a plane perpendicular to the front of the air conditioner opening as it would be with the louver base located in its various positions.

DETAILED DESCRIPTION OF THE INVENTION

Referring now particularly to the drawings, the air conditioner assembly shown is of essentially conventional construction apart from the air guide structure. The unit is adapted to be mounted in a window and in accordance with conventional practice includes a sheet metal shell 20 in which all the main operating components are housed. It is understood that the unit includes, in addition to the evaporator 22 and the blower 24 shown in FIG. 2, a compressor, a condenser, and an additional blower for circulating air over the condenser. These components, all of which are conventional, have been omitted for clarity.

The front of the air conditioner, that is the portion of the unit which projects into the room, is covered by a removable front panel indicated generally at 26, fabricated from any suitable material such as plastic or a light gauge metal. The panel 26 is divided by a horizontal strip 28 into a lower intake section 30 and an upper outlet section 32 which is divided by a central vertical strip 33. The air intake section 30 is formed by a plurality of vertically spaced fixed louvers 34 extending across the full width of the panel except for the area occupied by the panel 36 which covers air conditioner controls that are not shown. The velocity and direction of the conditioned air passing through the outlet opening 32 is controlled by a manually adjustable set of horizontal louvers indicated generally at 38 and a motor-driven set of louvers indicated generally at 40.

The louver structure 38 comprises a series of louver members 42 preferably of molded plastic construction and pivotally mounted on panel member 26 and vertical strip 33 in the same manner as that described in the above-mentioned U.S. Pat. No. 3,294,007.

The oscillating louver structure 40 is mounted immediately upstream of the manually adjustable louver structure 38. As illustrated in FIGS. 3 to 5, the louver assembly structure 40 comprises a plurality of vanes 43 pivotally supported from a base strip 44 and connected for comovement by a link 46 as described in greater detail below. The louver assembly is completed by a drive link 48, one end of which is molded integrally with the adjacent end vane 43 and the other end pivotally receives an eccentric crank 50. The crank is rotated by a gear reduction mechanism 52 driven by a small electric motor 54 carried by a support bracket 55 suitably connected to shell 26.

Base strip 44 is adjustably positioned on a support member 56 which forms a portion of the air conditioner fixed duct structure by way of a plurality of elongated slots 58 having three cylindrical-shaped sections 60, 62, and 64. Screws 66 pass through a respective section of slots 58 and thread into cooperating threaded openings 67 in members 56 to fix strip 44 to member 56. In this manner, base strip 44 and the louver structure 40 may be shifted laterally on support strip 56 after loosening screws 66 to place any one of slot sections 60, 62 or 64 into cooperation with its respective screw 66 thereby altering the effective drive relationship between the vanes and drive link 48 and crank 50. Hence, instead of having vanes 43 moving at all times an equal distance to the left and right of a plane perpendicular to the front of the air conditioner, movement thereof may be adjusted so that the travel distance to the left is greater than movement to the right or vice versa so that a greater amount of air will be directed to the left or right as desired.

Referring now to FIG. 6, each of the vanes 43 is supported from base strip 44 by a post 68 to which the vane is pivotally connected by self hinge 70, with the strip 44, posts 68, and vanes 43 being integrally molded together. Each vane 43 includes a downwardly extending lug 72 having an enlarged head 74 which snaps into an appropriate hole in connecting link 46 thereby connecting all the vanes 43 for movement together. Drive link 48 is integrally molded with and pivotally connected to one end vane 43 by a self hinge 76 and has an aperture 78 for receiving crank 50.

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In operation base strip 44 will be fixed in a selected position on support 56 by securing screws 66 in place. Rotation of crank 50 will cause vanes 43 to oscillate and direct the air through outlet opening 32 into the room in a sweeping fashion from left to right and vice versa.

Referring to FIG. 6, if strip 44 is positioned such that the intermediate slot sections 62 receive screws 66, each oscillating vane 43 will move an equal angular distance θ to the left and right of a plane 62a passing through its pivot axis and perpendicular to the front of opening 32 so that an equal amount of air is directed to the left and right from the opening into the room.

However, if strip 44 is positioned on support 56 so that slot sections 60 receive screws 66, each vane 43 will swing through angular distance α to the right of perpendicular plane 60a which is greater than the angular distance β to the left thereof as viewed in FIG. 6, thereby directing a larger amount of the conditioned air from opening 32 in the direction of arrow X.

Similarly, if strip 44 is positioned with slot sections 64 receiving screws 66, vanes 43 will swing through an angular distance β' to the left of perpendicular plane 64a which is greater than the angular distance α' to the right thereof, thereby directing a larger amount of conditioned air from opening 32 in the direction of arrow Y.

Hence, the invention, in addition to providing continuous sweeping movement of the air emitted from opening 32, the proportion of the air emitted in a particular direction to the left or right may be readily adjusted according to the requirements of a particular room or area which is being cooled.

Various modifications may be incorporated into the above-described embodiment without departing from the scope of the invention. For example, instead of using screws 66, a suitable friction-type fastener may be used to connect strip 44 to support 56 and a readily accessible, externally located lever may be connected to strip 44 whereby a user may quickly slidably adjust the position of strip 44 on support 56 to thereby direct the air as desired.

The invention may be embodied in other specific forms without departing from the spirit or essential characteristics thereof. The present embodiment is therefore to be considered in all respects as illustrative and not restrictive, the

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scope of the invention being indicated by the appended claims rather than by the foregoing description, and all changes which come within the meaning and range of equivalency of the claims are therefore intended to be embraced therein.

5 We claim:

1. Louver structure for use in an air conditioner having an opening through which a stream of air passes, comprising vane means, support means support means mounting said vane means adjacent said opening, said vane means being pivotally connected to said support means for swinging movement relative thereto, drive means connected to said vane means for oscillating said vane means, said support means being adjustably positionable across said opening to vary the oscillating drive relationship between said vane means and said drive means, and thereby vary the direction of flow of air from said opening.

2. Louver structure as defined in claim 1, said support means comprising a baseplate having elongated slot means adapted to receive fastener means by which said baseplate is adjustably secured adjacent said opening.

3. Louver structure as defined in claim 1, said vane means comprising a plurality of vanes pivotally connected to said support means, link means connecting said vanes for comovement and said drive means connected to one of said vanes for oscillation thereof.

4. Louver structure as defined in claim 3, said drive means comprising a motor, an eccentric driven by said motor, a drive link pivotally connected to said eccentric and said one of said vanes, said support means including a baseplate having means for adjustably positioning said plate across said opening to vary the positional relationship between said vanes and said eccentric and the amount of swinging movement of each of said vanes to either side of a plane passing through its respective pivot axis and perpendicular to the front of said opening, thereby altering the direction of flow of air from said opening as desired.

5. Louver structure as defined in claim 4, said baseplate comprising elongated slot means adapted to receive fastener means by which said plate is adjustably positioned adjacent said opening.

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