Nov. 9, 1948. J. WOLFF 2,453,561

WINDOW AIR VANE DEVICE

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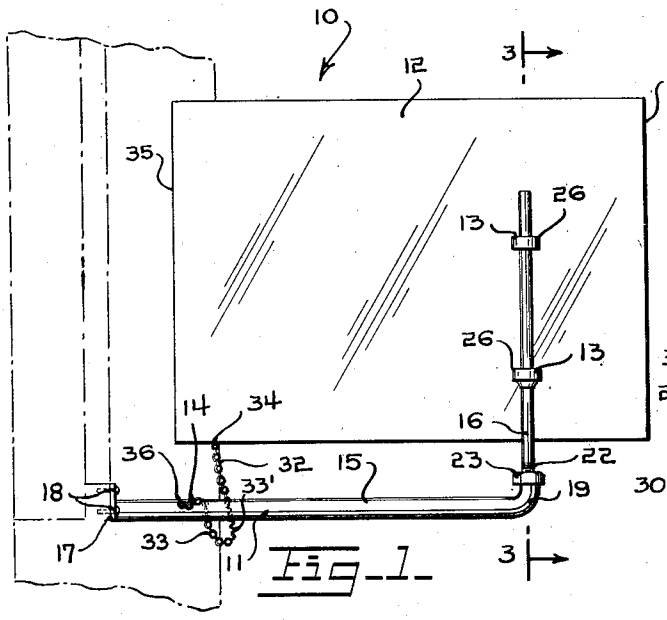



Fig. 1.

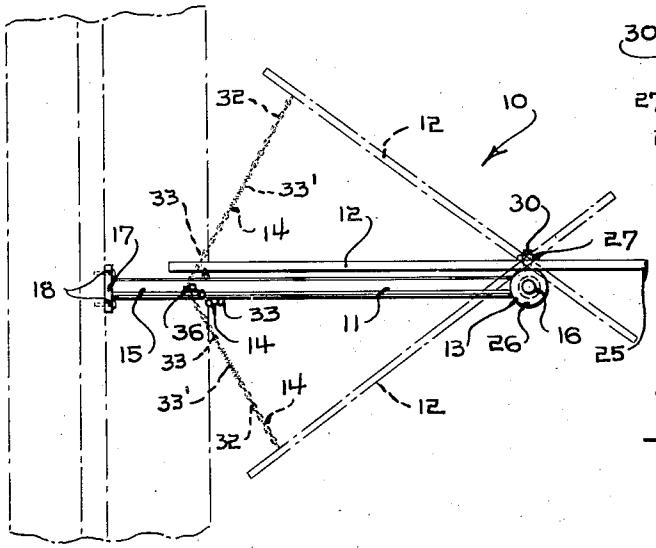



Fig. 4.

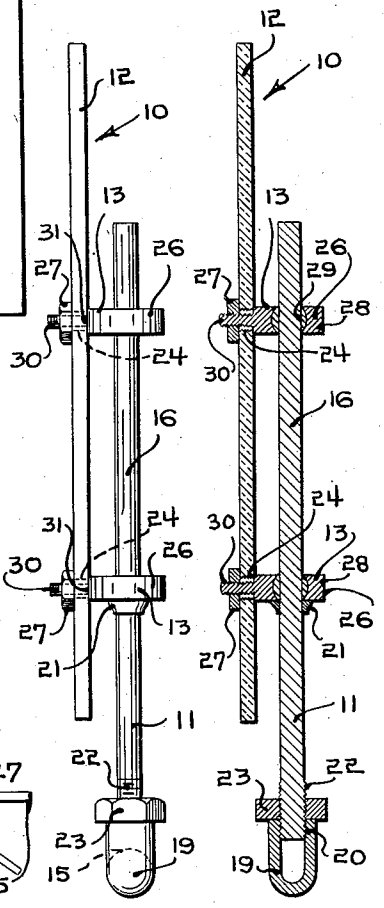



Fig. 2.




Fig. 3.

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WINDOW AIR VANE DEVICE

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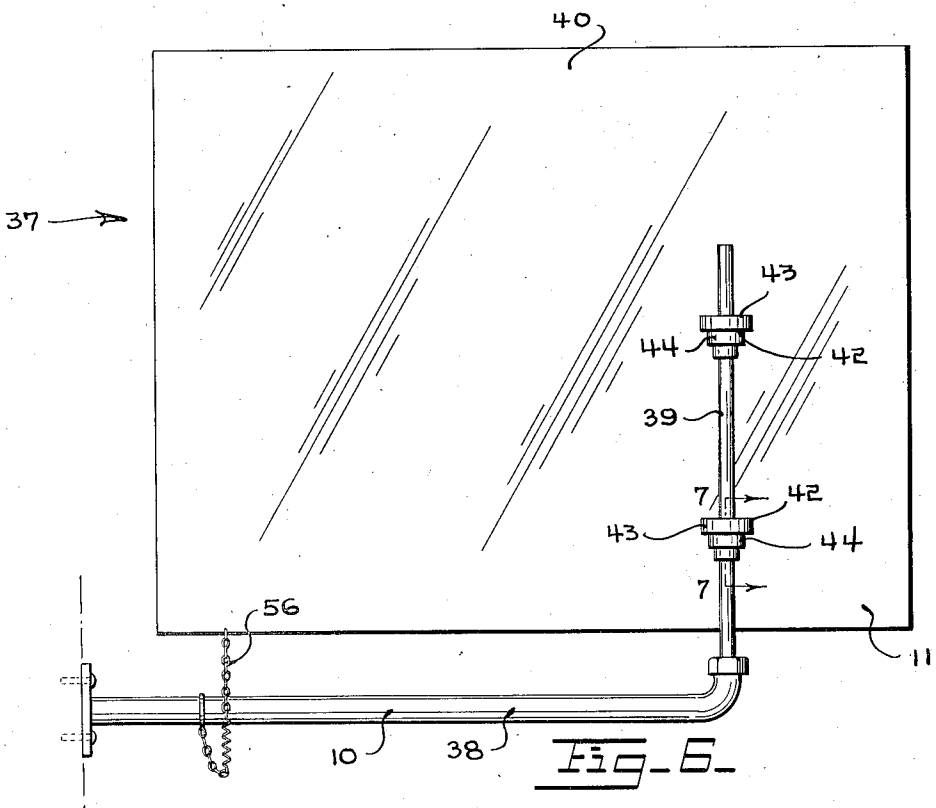



Fig_6_

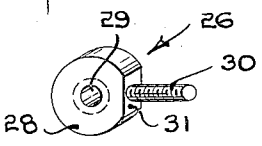



Fig_5_

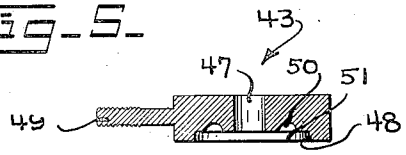



Fig_8_

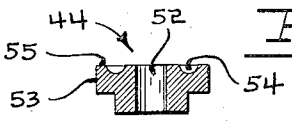



Fig_9_

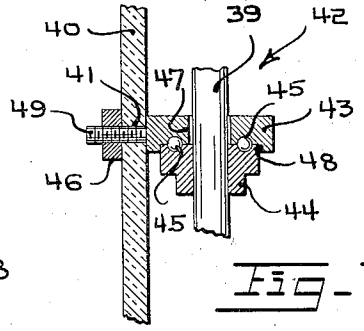



Fig_7_

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# UNITED STATES PATENT OFFICE

2,453,561

## WINDOW AIR VANE DEVICE

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4 Claims. (Cl. 98—44)

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This invention relates to ventilating devices, and more specifically to new and useful improvements in a window air vane device made of Lucite or other plastic material, that can deflect moving air through a window into a building.

It is a common experience, particularly with city dwellers, to emerge from their homes and discover for the first time that a heat wave has broken and that the temperature in the streets is considerably lower than that in the house. This occurs most frequently when a room or apartment has only one exposure, and the breeze passes by the windows without entering them.

It is therefore an object of this invention to provide a device capable of deflecting outside air currents into a room.

Another object is to provide a window air vane device that is easily installed and operates quietly and automatically.

A further object is to form a device with a resilient control to retain a freely rotating air vane in functioning position.

Still another object is to provide a device that is strong, can be made and assembled cheaply and is attractive in appearance.

These and other objects are accomplished by forming a window air vane device of a bracket, a vane, means to attach the vane rotatably to the bracket and control means to retain the vane resiliently in functioning position. In one form of the invention, the attaching means joining the vane and bracket consists of two bearings which permit the vane to rotate in relation to the bracket. In the other form the attaching means consist of two collars fixed to a vertical bracket rod, and two eyebolt-shaped elements rotating freely on the rod, and supported by and turning on ball bearings rolling in a race in the collars, the threaded shanks of the eyebolt elements and coacting nuts retaining the vane rotatably on the bracket.

For further comprehension of the invention, and of the objects and advantages thereof, reference will be had to the following description and accompanying drawings, and to the appended claims in which the various novel features of the invention are more particularly set forth.

In the accompanying drawing forming a material part of this disclosure:

Fig. 1 is a front elevational view of a window air vane device secured to a window frame shown in dot-dash lines.

Fig. 2 is a side elevational view of the air vane device shown in Fig. 1.

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Fig. 3 vertical sectional view along the line 3—3 of Fig. 1.

Fig. 4 is a plan view of the device with dot-dash lines for the vanes showing the limits to which the vane can be rotated.

Fig. 5 is a perspective view of one of the elements of the attaching means joining the vane to the bracket.

Fig. 6 is a front elevational view of a variation of the invention.

Fig. 7 is a partial vertical sectional view taken along the line 7—7 of Fig. 6.

Fig. 8 is a detailed sectional view of one of the elements of the attaching means joining the vane and bracket.

Fig. 9 is a detailed sectional view of another of the elements of the attaching means.

In the drawings and in the specification, in which like reference numbers designate similar parts, a window air vane device 10 shown in Figs. 1 to 5 inclusive, is comprised of a bracket 11, a vane 12, attaching means 13 joining the vane rotatably to the bracket, and control means 14 resiliently holding the vane in functioning position and limiting its angle of rotation about the bracket.

The bracket 11 consists of a tubular arm 15 and a rod 16. The tubular arm 15 has a flange 17 at one end and is secured to the window frame by screws 18 extending through the flange and into the frame. The other end of the tubular arm is bent to form an elbow 19 having internal threads 20. The rod 16 has a positioning stop or transverse flange 21 intermediate its ends and external threads 22 on its lower end engaging the internal threads 20 of the elbow 19 to form an L shaped bracket. A hexagonal nut 23 threaded on the rod threads 22 locks the tubular arm 15 and rod 16 firmly in position.

The vane 12 consists of a rectangular plate made of a transparent and light material such as Lucite, and is provided with two holes 24 aligned parallel to the shorter sides of the vane and positioned nearer to a shorter side 25.

The attaching means 13 rotatably joining the vane to the bracket consists of two bearings 26 (see Fig. 5) and two nuts 27.

Each bearing 26 has a circular head 28 with a hole 29 extending therethrough at right angles to its threaded shank 30 which extends through the hole 24 of the vane, and is clamped by one of the nuts 27. A portion 31 of the head where the shank joins it, is flat and normal to the shank axis. The holes 29 of the bearing 26 can admit the bracket rod 16 in a sliding fit that permits

the bolt to turn freely on the rod but cannot pass the positioning stop or flange 21 on the rod.

The circular head 28 engages a spherical member 28a, snugly fitted on the vertical bracket rod 11, and provides a self centering bearing therefor.

In assembling the vane and bracket, the bearings 26 are first extended through the holes 24 in the vane until the flat portion 31 of the bearing head is flush with the face of the vane and the holes 29 are aligned one above the other. The unthreaded end of the rod 16 is then inserted in the holes of the bearing until the lower bearing rests against the stop or flange 21. The nuts 27 can be threaded on the bearing shanks 30 to lock the vane in position on the bolts, the vane and bolts being capable of turning freely on the rod 16.

The control means 14 resiliently holding the vane in functioning position comprises a pair of end aligned chains 32 and 33 having their adjacent inner ends connected to opposite ends of an interposed coil spring 33'. The outer free end 34 of the chain 32 is secured to the bottom of the vane 12 near its other shorter side 35, and the free end 36 of the chain 33 is secured to the tubular bracket arm 15 near its flange 17. The spring 31 enables the control to be resilient thus reducing the risk of damage in high winds or gales. The length of the control means 14 can be varied and depends on the size of the vane, the size of the window, and the positioning of the window air vane device within the window frame.

By means of this device, a breeze which is moving outside a window but does not enter it, can turn the vane 12 until it is held by the control means 14 when the vane will deflect the moving air through the open window. Since the vane can rotate freely on the rod 16, changes in direction of the breeze will turn the vane automatically to permit maximum deflection of the air currents into a room.

In the variation of the invention shown in Figs. 6 to 9 inclusive a window air vane device 37 has a bracket 38 similar to the bracket 11 except that its bracket rod 39 does not have the flange 21 that is on the bracket rod 16. The device has a vane 40, similar to the vane 12 except that holes 41 in the vane 40 are not threaded, and attaching means 42 joining the vane rotatably to the bracket.

The attaching means 42 consists of two eyebolt shaped elements 43, two supporting collars 44, ball bearings 45, and two nuts 46. Each eyebolt element 43 has an opening 47 therethrough capable of admitting the rod 39 in a loose fit, a flange 48 about the opening, and a threaded shank or pin 49 extending at right angles to the opening 47. The threaded pins 49 fit snugly in the holes 41 of the vane 40 and are adapted to mate with the nuts 46 to lock the vane to the eyebolts. A circular raceway 50 concentric with the opening 47 extends around a recess 51 formed by the flange 48.

Each collar 44 has an opening 52 therethrough capable of admitting the rod 39 in a tight fit, a top portion 53 capable of fitting in the recess 51 in the eyebolt element 43 and a circular raceway 54 concentric with the opening 52 and cut into a face 55 of the top portion of the collar. The raceways 50 and 54 are formed and positioned to receive ball bearings 45 to permit free rotational movements of the eyebolt elements 43 relative to the collar 44.

The device 37 is assembled by fitting the collars 44 and the eyebolt elements 43 on the rod 39, the collars being stationary and fixed, and the eyebolts rotating freely thereon and being spaced so that their pins 49 can be inserted in the vane holes 41. The nuts 46 are then threaded on the pins 49 locking them together so that the vane 40 can rotate freely about the bracket rod.

As before, a resilient control means 56 limits the angle of rotation of the vane and holds it in functioning position resiliently.

While I have illustrated and described the preferred embodiments of my invention, it is to be understood that I do not limit myself to the precise constructions herein disclosed and the right is reserved to all changes and modifications coming within the scope of the invention as defined in the appended claims.

Having thus described my invention, what I claim as new, and desire to secure by United States Letters Patent is:

1. The combination with a bracket arm for attachment at one end to a window frame and having its other end bent upward, a vertical rod secured at its lower end to the upper portion of the upturned end of the bracket arm, collars fixedly mounted on said vertical rod in spaced relation to each other, eyebolt elements rotatively engaged on said rod and retained in spaced relation thereon by having their bottom faces resting on the top faces of said collars, said eyebolt elements being formed with vertically aligned flat sides, screw threaded shanks projecting from the flat sides of said eyebolt elements, a flat vertical vane formed with spaced holes adjacent one vertical edge thereof and through which the free ends of said threaded shanks pass, and nuts threadedly engaged on the free ends of said threaded shanks to be tightened against the adjacent face of said vane and clamp the opposite face thereof against the flat sides of said eyebolt elements.

2. The combination with a bracket arm for attachment at one end to a window frame and having its other end bent upward, a vertical rod secured at its lower end to the upper portion of the upturned end of the bracket arm, collars fixedly mounted on said vertical rod in spaced relation to each other, eyebolt elements rotatively engaged on said rod and retained in spaced relation thereon by having their bottom faces resting on the top faces of said collars, said eyebolt elements being formed with vertically aligned flat sides, screw threaded shanks projecting from the flat sides of said eyebolt elements, a flat vertical vane formed with spaced holes adjacent one vertical edge thereof and through which the free ends of said threaded shanks pass, and nuts threadedly engaged on the free ends of said threaded shanks to be tightened against the adjacent face of said vane and clamp the opposite face thereof against the flat sides of said eyebolt elements, said eyebolt elements having their bottom faces formed with circular recesses of a diameter corresponding to that of said collars to rotatively receive the upper portions of said collars.

3. The combination with a bracket arm for attachment at one end to a window frame and having its other end bent upward, a vertical rod secured at its lower end to the upper portion of the upturned end of the bracket arm, collars fixedly mounted on said vertical rod in spaced relation to each other, eyebolt elements rotatively engaged on said rod and retained in spaced relation thereon by having their bottom faces rest-

ing on the top faces of said collars, said eyebolt elements being formed with vertically aligned flat sides, screw threaded shanks projecting from the flat sides of said eyebolt elements, a flat vertical vane formed with spaced holes adjacent one vertical edge thereof and through which the free ends of said threaded shanks pass, and nuts threadedly engaged on the free ends of said threaded shanks to be tightened against the adjacent face of said vane and clamp the opposite face thereof against the flat sides of said eyebolt elements, said eyebolt elements having their bottom faces formed with circular recesses of a diameter corresponding to that of said collars to rotatively receive the upper portions of said collars, aligned raceways formed in the top faces of said collars and the base walls of said circular recesses, and ball bearings in said raceways.

4. The combination with a bracket arm for attachment at one end to a window frame and having its other end bent upward, a vertical rod secured at its lower end to the upper portion of the upturned end of the bracket arm, collars fixedly mounted on said vertical rod in spaced relation to each other, eyebolt elements rotatively engaged on said rod and retained in spaced relation thereon by having their bottom faces resting on the top faces of said collars, said eyebolt elements being formed with vertically aligned flat sides, screw threaded shanks projecting from the flat sides of said eyebolt elements, a flat vertical vane formed with spaced holes adjacent one vertical edge thereof and through which the free ends of said threaded shanks pass, and nuts threadedly engaged on the free ends of said threaded shanks to be tightened against the adjacent face of said vane and clamp the opposite face thereof against the flat sides of said eyebolt elements, aligned raceways formed in the adjacent faces of said eyebolt elements and said collars, and ball bearings in said raceways.

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