

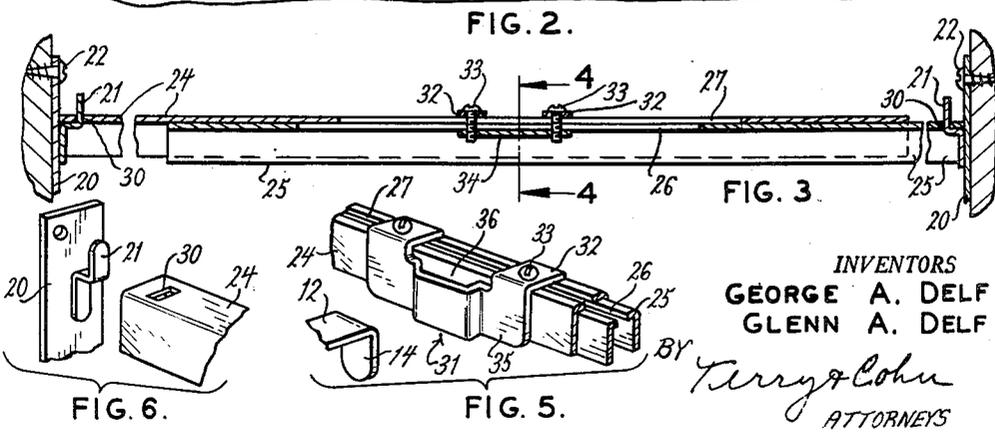
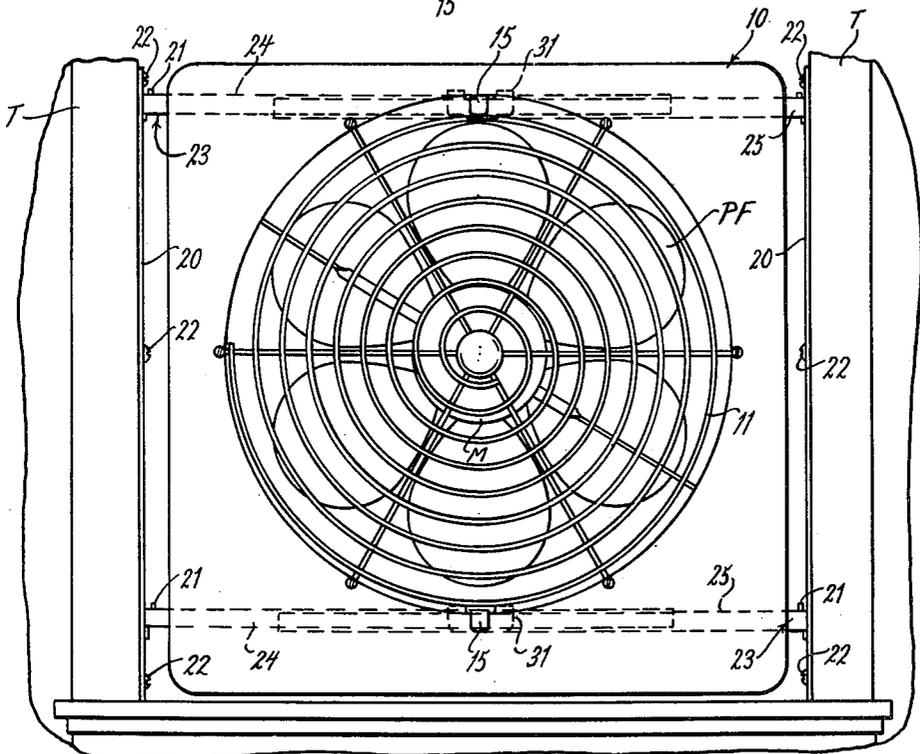
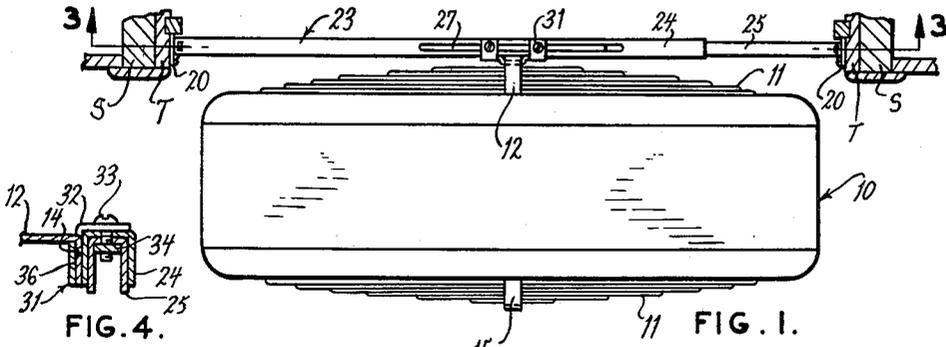
Sept. 3, 1957

G. A. DELF ET AL

2,804,817

DETACHABLE SUPPORTING PROVISIONS FOR WINDOW FANS

Filed Nov. 6, 1953



INVENTORS  
GEORGE A. DELF  
GLENN A. DELF  
BY *Terry & Cohn*  
ATTORNEYS

1

2,804,817

**DETACHABLE SUPPORTING PROVISIONS FOR WINDOW FANS**

George A. Delf and Glenn A. Delf, St. Louis, Mo.

Application November 6, 1953, Serial No. 390,459

4 Claims. (Cl. 98—94)

This invention relates to improvements in detachable supporting provisions for window fans, and more particularly to an improved, low-cost, easily installed arrangement for the detachable retention of a portable window fan in the window opening served thereby, while permitting easy physical transposition of the assembly for conversion from intake to exhaust usage, as well as facilitating the usage of the fan assembly at any time, as a free-air or circulating fan within a room or other space.

The present applicants have heretofore designed a highly satisfactory and efficient assembly for similar purposes, identified with improvements disclosed and claimed in Patent No. 2,644,390 issued July 7, 1953, and entitled "Reversible-flow Window Fan." However, such an assembly requires more or less specially formed, inwardly projecting side supports mounted in the window opening served by the fan assembly, together with certain other adjunctive parts and equipment which enhance the cost of units of the kind covered by the patent. Further, such earlier facilities as are known to us for enabling a physical transposition of a fan assembly, involve various pivotal arrangements for rotation of a fan-motor unit about either a horizontal or a vertical axis, all of which result in substantial production cost, liability to resulting shunt air paths, requirement of considerable time and at least a moderate degree of skill in effecting physical transposition of the assembly, and other difficulties. With a realization of the difficulties referred to, it is a principal objective of the present invention to provide a structurally simple, easily manipulated, low cost mounting means permitting the physical reversal of the fan motor unit to provide a selection between intake and exhaust usage with respect to the rooms served, and to facilitate manual removal of the fan from the window when desired.

Further objectives and advantages of the present development include an improved lug and socket connection of novel form and of novel location, the improved connection being such that the weight of the fan motor assembly and housing aids in maintaining the supported and supporting parts firmly in assembly.

The foregoing and many other objects will become more readily apparent from the following detailed description of a presently preferred commercial embodiment of the improvements, particularly when the description is considered in connection with the accompanying drawing, in which:

Fig. 1 is a top or plan view of a window fan assembly and appurtenant parts, embodying the present improvements;

Fig. 2 is an elevational view of the assembly as seen from the inside or room side of the assembly when mounted in a window opening to be served thereby;

Fig. 3 is a sectional view taken along a vertical median plane longitudinally of an improved form of telescopic supporting bar, showing also in section, window-mounted means for assembling the bar to the framing elements of a window;

2

Fig. 4 is a fragmentary sectional view taken transversely of the supporting bar of Fig. 3, this section being located by line 4—4 of Fig. 3;

Fig. 5 is an exploded view, with parts shown in perspective, of a fragmentary intermediate portion of one of the mounting bars, together with a socket member constituting a fan hanger, further showing a fragmentary part of a tongue or lug normally engaging the socket of such member, and

Fig. 6 is an exploded view showing a portion of a fixed window-mounted strip and an end portion of a supporting bar, illustrating in further detail a hook and slot connection between these parts as same would be related just prior to assembly.

Referring now by characters of reference to the drawing, and first to Figs. 1 and 2, the assembly in operative form will of course include a fan, exemplified as a propeller type fan PF direct-connected to and operatively driven by a motor M. The fan and motor may, solely for brevity of present description, be considered as conventional and may be of any suitable types. The fan and motor are operatively disposed within and externally supported by a partial enclosure referred to as a frame generally indicated at 10, the structure 10 including front and rear wire guard portions 11.

Shown as projecting horizontally and outwardly of an upper portion of the frame 10, is an upper arm 12 and a similar lower arm, each of which is securely attached to or forms a part of the frame structure 10. Each of the elements 12 is provided at its outer terminus with a downturned lug or tongue 14, preferably rounded along its lower margin for greater ease of insertion of the tongue into a socket structure hereinafter described. A given pair of the arms with the lugs formed thereon, project respectively from an upper, and from a lower portion of the frame 10 each pair extended from the same side or face thereof. It is greatly preferred to provide an identical pair of lugs designated for differentiation, as 15, projected from the opposite side or face of the frame, thus providing as will appear, for the physical transposition of the fan assembly when it is desired to convert the fan from exhaust usage to intake operation. There have been omitted, in the interest of clarity of illustration, any side panels or wings, fixed or adjustable, which may be used adjunctively to the frame assembly to prevent any shunt flow of air between the frame 10 and the window framing elements.

Referring now to the structure and function of the one or more mounting bars through which the fan-motor assembly is normally positioned securely in the window, it will appear from Figs. 1 and 2 that the ultimate support of the mounting agencies is derived from the vertical framing elements of the window, these consisting of vertical stiles S or trim elements T, to whichever accessible, is affixed a pair of vertical window strips 20. One such strip is located at each opposite side of the window frame, substantially as shown, each strip 20 being provided with one or preferably a plurality of hook elements 21 best seen in Fig. 6. The strips 20 may be left permanently in position, screws 22 or the like being employed for their attachment.

In most cases a pair of mounting or supporting bars generally indicated at 23, serve to bridge the opposite frame elements of the window opening, the pair thereof being shown in Fig. 2 as spaced vertically of each other with each bar in horizontal position, somewhat above and below a projected fan circle, for the reason now obvious, of minimizing obstruction to the air stream.

Each of the mounting bars 23, a description of either being applicable to both, includes a pair of telescoping sections 24 and 25, each of which may be formed of a channel stock, the sections being so proportioned that the

element 25 may operate smoothly within and along the element 24, preferably with no more than adequate working clearance therebetween. The channel members are inverted as shown, and each is provided with a longitudinal top slot 26 in the member 25; and 27 in the member 24. The slots 26 and 27 are coincidental or in registry over at least a portion of the length of each, for a purpose later appearing. Formed just inwardly of the outer end of each of the sections 24 and 25, is a transverse slot designated at 30 (Fig. 6), each such slot serving to receive the upwardly presented arm of an adjacent hook 21 on the nearest window strip 20.

A slidable socket member or fan hanger 31 is carried by the supporting bar, the socket member including an upper or saddle portion comprised of two horizontal legs 32 apertured to receive clamping screws 33. These latter extend vertically downwardly through registering portions of the slots 26 and 27, each into threaded engagement with nuts or tapped strip 34 (Fig. 4) normally tightly engaging the upper bridge portion of the innermost inverted channel 25, along which the nuts or strip may be slidably moved when the screws 33 are loosened.

Extended downwardly and laterally of the portions 32 is a plate 35 which lies closely adjacent the nearest side face of the channel section 24, except that the intermediate portion of plate 35 is deflected outwardly, as best shown by Fig. 5, to provide with the adjacent face of the outer channel, a socket located by numeral 36. The socket is of a width and depth to receive the terminal lug or tongue 14 of one of the arms 12 or 15. The proportion of the width of socket 36 to the gauge of the lug 14, is such that the lug and socket may be brought into interfitted relation with a relatively snug fit. It will further appear that since the lug is formed of a flat stock, it is impossible for the lug, hence the fan frame and contents, to shift about a vertical median line. Either (or both) of the socket 36 and the lug 14 is preferably formed with its sides slightly out of parallelism, so that the tendency of the lug to seat in the socket is enhanced due to the weight of the fan assembly. Such a wedging engagement of the parts is further enhanced by extending the lug or tongue 14 at a slightly acute angle to the arm 12, which results in a tightening effect between the interfitting parts as same are snugly interengaged. It will of course have now become obvious that the male and female elements may, if desired, be transposed, in that a socket structure may be carried by the arm 12 or otherwise by the motor frame, while the companion element interfitting the socket, may be located on the slidable hanger member generally indicated at 31.

The manner of installation as well as the adaptability of the mounting provisions described, are thought to have become apparent from the foregoing description, but it may be noted for completeness that a usual first step involves the installation of the window strips 20 through fastening elements such as the screws 22. The mounting bars 23 may now be set in place by first backing off the screws 33, then drawing the bar sections 24—25 in opposite directions to adjust the bar to a length such that the slots 30 will engage the adjacent hooks 21. Following this, the slidable member 31, being freely movable along the bar, is brought to a centered position with respect thereto, and the screws 33 firmly threaded up. It will be noted that the slidable socket member 31 together with the screws and nuts, serve the combined purposes of a support directly engageable by the arms of the fan frame, as well as a clamp to maintain the sections 24—25 firmly in adjusted relation and in parallelism. The same steps of installation having been taken with respect to the second mounting bar, the fan-motor-frame assembly is applied to the bars by bringing the assembly to a position just slightly above its final window-supported position, then lowering same so that the lugs or tongues 14 are fully seated in the sockets 36. Any

side panels or wings utilized to fill any remaining window space laterally of the unit 10, will of course be adjusted to a position of service.

Assuming the set of lugs and arms to have been initially selected such that the fan discharges outwardly of the window, as for exhaust purposes, it may almost instantly be converted to an intake fan merely by lifting the unit 10 slightly, moving same away from the window opening sufficiently to enable rotation through a half turn about a vertical median axis, then setting the opposite pair of lugs in the sockets therefor.

When the fan assembly is desired for use as a free-air or circulating fan, it may be lifted as described and moved to any desired room location.

It will now have appeared that the structure as described will serve fully to realize the several objects hereinabove expressed, as well as others implied from the more extended description. Although the parts have been referred to by detailed reference, the detail of description should be understood solely in an instructive, rather than in any limiting sense, numerous variants being possible within the fair scope of the claims hereto appended.

We claim as our invention:

1. A mounting device for a window fan assembly including a frame, for the retention thereof in a window opening, the mounting device comprising a pair of mounting bars spaced one above another in bridging relation to the opposite sides of a framed window opening, means for anchoring the opposite ends of each bar internally of opposite window frame elements, each said mounting bar including a pair of telescopically related channel sections formed to provide an uppermost slot in each section, with the slots, over a portion of the length of each, being arranged in registering relation, clamping screws through said slots, means located to receive the screws for securement of the channel sections in relatively fixed relation, a slidably adjustable element having a portion overlying the outermost section of the mounting bar and apertured to receive the clamping screws extending therein, the slidable element thence extended inwardly and downwardly of the window opening to provide with the bar, a normally fixed mounting socket, and a pair of tongue elements carried by the fixed frame of the window fan assembly, and adapted conformably to interfit the sockets in wedging or self-tightening relation under the weight of the window fan assembly, the pair of said bars being arranged in parallel, vertically spaced relation.

2. A mounting device for a portable window fan assembly including a frame, for the retention thereof in a window opening served by the fan assembly, the mounting device comprising a pair of normally horizontal mounting bars spaced one above another in bridging relation to the opposite sides of a framed window opening, means for anchoring the opposite ends of each bar in detachable relation just internally of opposite window frame elements, each said mounting bar including a pair of inverted, telescopically related channel sections formed to provide an uppermost slot in each section, with the slots, over a portion of the length of each, being arranged in registering relation, clamping screws through said slots, means slidably positioned within the innermost channel, and located to receive the screws for securement of the channel sections in relatively fixed relation to establish a predetermined length of the bar, a slidably adjustable element having a portion overlying the outermost section of the mounting bar and apertured to receive the clamping screws extending therein, the slidable element thence extended inwardly and downwardly of the window opening to provide with the bar, a normally fixed mounting socket, and a pair of tongue elements carried by the fixed frame of the window fan assembly, and adapted conformably to interfit the sockets in wedging or self-tightening relation under the weight of the window fan

5

6

assembly, the pair of said bars being arranged in parallel, vertically spaced relation and spaced apart to an extent such that the bars, together with the tonques and sockets, are located respectively above and below a projected fan circle.

3. A mounting device for a portable window fan assembly including a frame, the device consisting of a mounting bar member including a pair of overlapping, longitudinally adjustable sections, said bar member being disposable in bridging relation to a framed window opening, said sections being provided with slots arranged in register, a slidable adjustable element carried by said bar member, clamping means extending through said slidable element and said slots, means located to cooperate with said clamping means to secure said sections in relatively fixed relation and to secure said slidable element to said sections, one part of a two-part connector carried by said slidable element, a companion part of the two part connector carried by the frame of the assembly, said connector parts slidably interfitting so as to mount the assembly detachably on said bar.

4. A mounting device for a window fan assembly including a frame, for the retention of the assembly in a window opening, the mounting device comprising a pair of mounting bars spaced one above another in bridging relation to the opposite sides of a framed window open-

ing, means for anchoring the opposite ends of each bar, each said mounting bar including a pair of overlapping, longitudinally adjustable sections, said sections being provided with slots arranged in registering relation, a slidably adjustable element overlying each of the mounting bars, and being provided with an aperture, clamping screws extending through said aperture and said slots, means located to receive the screws for securement of the sections in relatively fixed relation, and for securement of the slidable element to said sections, a socket formation on each of said slidable elements, and a pair of tongue elements carried by the frame of the window fan assembly, and adapted conformably to interfit the socket formations so as to mount said assembly detachably on said bars.

References Cited in the file of this patent

UNITED STATES PATENTS

1,698,328	Duffi -----	Jan. 8, 1929
1,929,688	Hirschman -----	Oct. 10, 1933
1,935,179	Orear -----	Nov. 14, 1933
2,487,294	Belter -----	Nov. 8, 1949
2,553,172	Carrick -----	May 15, 1951
2,619,023	Kisling -----	Nov. 25, 1952
2,644,390	Delf et al. -----	July 7, 1953