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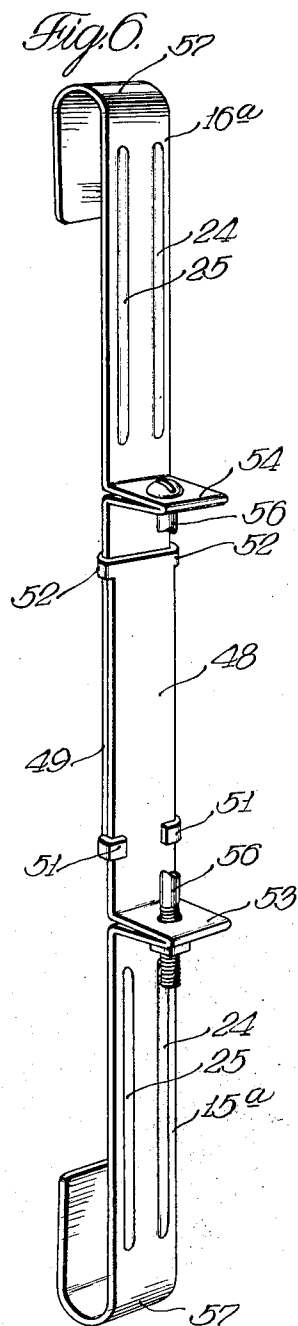
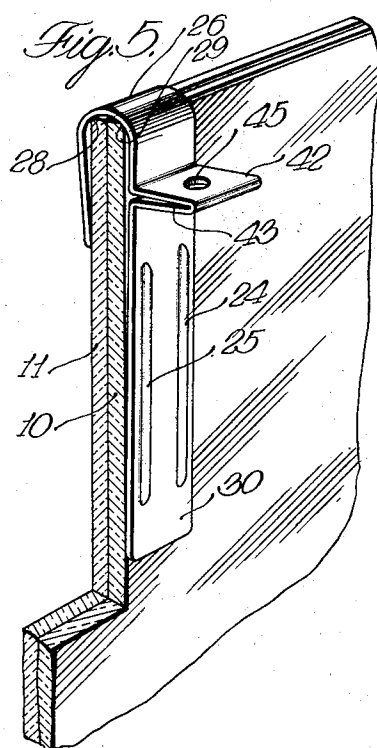
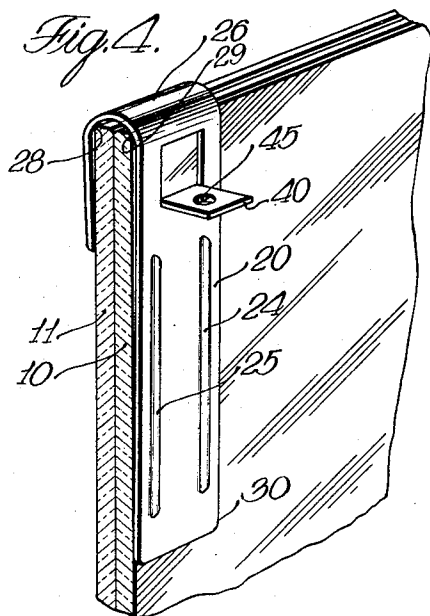
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VENTILATOR

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2 Sheets-Sheet 2



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VENTILATOR

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2 Claims. (Cl. 98—99)

The present invention relates generally to ventilators, and more particularly to ventilators adapted to be associated with windows of the double hung type. Ventilators of this general type are well known and usually consist of brackets adapted to be secured to the window frame at opposite sides of the lower portion of the frame, and such brackets usually support a pane of glass or the like in an inclined position so that the lower sash may be raised several inches or more without creating a direct draft into the room, the pane of glass or other material serving to deflect the incoming air upwardly.

In prior constructions, it is necessary to cut each pane of glass to fit the individual window on which the ventilator is to be mounted. Not only is this a troublesome arrangement in that it is necessary to accurately measure the distance between the brackets after they have been mounted on the window frame and in that it is necessary to have the proper equipment and place to cut the glass to fit the particular window, but, this, in addition, is expensive in that appreciable quantities of glass are wasted in equipping windows of various sizes with ventilators and in that considerable labor is involved in cutting and otherwise preparing the glass to be fitted in the brackets.

With these factors in mind, the present invention contemplates the provision of an adjustable window ventilator in which no cutting of glass or other material is required, and in which no skilled labor or special tools are required in installing the ventilator in place.

More specifically, the principal object of the present invention lies in the provision of a pair of cooperating glass plates which are capable of adjustment to various lengths, in connection with the provision of improved means for clamping the plates together after they have been adjusted to hold them together at the proper length. According to the present invention, the clamping means is particularly designed to place relatively low and uniformly distributed stresses on the glass plates so as to avoid breaking the same while nevertheless permitting the clamping means to be sufficiently tightened to hold the two glass plates firmly together as a rigid unit.

With respect to the clamping means, the present invention contemplates the provision of an improved clamping bracket which has a curved portion or end formed to engage over the outside edges of the plates and to extend inwardly therefrom a sufficient distance so that when the tightening means is adjusted to hold the plates rigidly together there will be no tendency for the clamp-

ing brackets to fracture either or both of the glass plates. The curved ends of the brackets serve to apply substantially equal pressure to the outside edges of the two plates so as to press the adjacent edges together and to accommodate slight shift in position of the brackets when they are tightened without disturbing the substantially uniform application of stresses to the edge of the glass plates.

These and other objects of the present invention will be apparent to those skilled in the art after a consideration of the following detailed description of the preferred structure, taken in conjunction with the accompanying drawings illustrating such structure.

In the drawings:

Figure 1 is a perspective view illustrating a window ventilator embodying the principles of the present invention;

Figure 2 is an enlarged fragmentary view showing one of the clamping brackets in place on the plates of glass;

Figure 3 is a view similar to Figure 2 but showing a slightly different form of clamping bracket; and

Figures 4 to 6, inclusive, show other forms embodying the principles of the present invention.

Referring now more particularly to Figure 1, the reference numerals 1 and 2 indicate brackets adapted to be secured to a window frame 3 adjacent the lower portions thereof and alongside the lower edge of the bottom sash 4. Each of the brackets 1 and 2 is formed with a channel 6 to permit the introduction of a panel 7 which, according to the present practice, is preferably formed of glass and the channels 6 are so disposed that the panel 7 is in an inclined position, spaced from the sash 4 at its upper edge and lying closely adjacent the sash along its lower edge. The sash 4 may be raised to various positions to admit more or less air into the room, and the provision of the panel prevents the introduction of direct drafts into the room, the air currents being deflected upwardly by the panel 7, providing the sash 4 is not raised to a point too far above the upper edge of the panel.

Usually the panels for ventilators are formed of glass and, as mentioned above, heretofore it was necessary to cut the panel to the proper length, and the lengths of the panels varied with the different windows. According to the principles of the present invention, the panel 7 is not formed of one piece but of two sections arranged to occupy the channels 6 and, at their inner ends, to overlap to provide an adjustability ac-

commodating various spacings between the brackets 1 and 2 without the necessity of employing skilled labor to cut the panel to the proper length and without the necessity of wasting portions of the panel.

In Figure 1, the two panel sections, constructed according to the principles of the present invention, are indicated by the reference numerals 10 and 11, and it will be seen that their inner ends overlap and are securely clamped together by a clamping device indicated in its entirety by the reference numeral 13. When the clamping device 13 is tightened, the panel sections 10 and 11 are rigidly secured together in adjusted position. The clamp 13 is of novel construction and is adapted particularly for use with glass panels or panels formed of other frangible material.

The clamping device 13 consists of a pair of clamping brackets 15 and 16, preferably identical, and tightening means 17, preferably in the form of a long bolt. The bolt 17 includes a head (Figure 2) at one end which is received by the upper bracket 16, and the other end of the bolt is received by the lower bracket 15. The lower end is threaded to receive the usual nut and is of the same form as the bolt 56 shown in Figure 6. By tightening the bolt 17, the clamping brackets 15 and 16 are caused to firmly engage the glass panels and to hold them in adjusted position but without any danger of chipping or breaking the edges of the glass plates.

Figure 2 is an enlarged view of one of the clamping brackets, the upper bracket 16 being taken for purposes of illustration. From this figure it will be seen that each clamping bracket comprises an elongated body portion 20 terminating at one end in a hook 21 adapted to be engaged over the edges of the glass plates 10 and 11. At the other end of the elongated body portion 20 of the bracket, a lug 23 extends outwardly at substantially right angles to the plane of the body portion 20. The lug 23 is apertured to receive the tightening bolt 17. The elongated body portion is the most rigid part of the bracket 16 and its rigidity is increased by the provision of a pair of parallel ribs 24 and 25 formed, as by stamping, in the body portion and extending substantially from the lug 23 to the hook end 21.

The hook 21 is formed as a loop, curved as indicated at 26, and terminating in an end or edge 27. According to the preferred construction, the curved portion 26 is of semi-circular formation and engages the opposite or outside edges 28 and 29 of the glass plates, exerting a force against each of them which is substantially normal to the tangent of the curved section at the point of contact, as indicated by the arrows in Figure 2. By virtue of this construction, practically all binding on the edge of the glass plates 10 and 11 is avoided because, being circular, the curved portion 26 will always engage the edges of the glass plates so that the clamping forces will lie in the direction of the normal to the tangent and will be substantially equal, notwithstanding slight shifts or flexing of this portion of the clamping bracket. It may be considered that the portion 26 of the bracket is self-centering so as to apply uniform stresses to the edges of the plates. Also, the substantially equal clamping forces, indicated by the arrows in Figure 2, have inwardly directed components so that the edges of the plates are firmly pressed together laterally.

The elongated body portion 20 extends in-

wardly from the edge of the glass panel a distance appreciably beyond the edges 28 and 29 of the glass plates. Moreover, by virtue of the shape of the curved portion 26 described above, the body portion 20 clears the face of the glass panel 10 except at or adjacent the heel of the lug 23, indicated by the reference numeral 30. The reason for having the point of contact of the part 30 with the glass a material distance inwardly of the edges of the glass plates is twofold. In the first place, when the bolt 17 is tightened, the bracket 16 is pulled tightly against the edges 28 and 29 of the glass plates 10 and 11, applying substantially equal pressure to each of them. As the bolt is tightened, the bracket 16, due partly to the rigidity established by the ribs 24, 25, tends to rock about the point of contact at 30. This rocking movement is, of course, resisted by the engagement of the bracket with the edges 28 and 29 but, because of the fact that the distance from the edges of the plates to the heel 30 is much greater than the distance from the bolt 17 to the plane of the glass plates, the uniform distribution of the clamping forces at 28 and 29 is not materially disturbed. In fact, as mentioned above, the end 26 may flex slightly under the clamping forces and the stresses on the edges 28 and 29 will remain uniform, due principally to the curvature of the end 26. However, any slight tendency for the stresses at 29 to exceed those at 28 when the bolt 17 is tightened will be counterbalanced by the slight additional force at 28 which resists the rocking of the bracket 16 about the heel 30. The reinforcing ribs 24 and 25 are of service in this connection in that the rigidity of the body portion 20 is increased.

In the second place, the disposal of the heel 30 a substantial distance inwardly of the edges of the glass plates by the relatively long body portion 20 materially reduces the tendency to bend the glass plates under the influence of the eccentric position of the clamping bolt 17 with respect to the glass plates. However, the reaction at 30 serves to press the plates together at points intermediate the edge portions thereof which are pressed together by the curved ends 26 of the brackets.

While the end portions 26 of the clamping brackets are preferably curved, other forms may be used if desired. These ends may be V-shaped, but in that case the brackets must have greater rigidity than where the ends 26 are rounded, for any flexing of the brackets having V ends would tend to disturb the uniformity of the clamping stresses imposed at 28 and 29 and their direction of application.

There is, therefore, according to the principles of the present invention, a relatively uniform distribution of the stresses involved in clamping the two glass panels 10 and 11 together, this distribution serving to eliminate practically all fracture and chipping of the glass at these points, while, at the same time, effectively and rigidly securing the glass plates or panels together. Thus, not only are the glass plates themselves held in proper adjustment but, in addition, the plates are so held that there is no likelihood that the ends will inadvertently come out of the channels 6, which would allow the panel to fall and probably break.

In Figure 1 I have illustrated a construction embodying only one clamping device 13, but it is to be understood that it may be desirable for some windows to provide two or more of such

clamping devices, especially where the windows are relatively wide.

Figure 3 illustrates a slightly different form of clamping bracket, the hook end in this case being in the nature of a bifurcated section having portions 21a and 21b spaced apart by a slot 35. The other portions of the clamping bracket are substantially the same as in the bracket described above. The construction shown in Figure 3 provides for an even greater distribution of the stresses involved in clamping the glass panels 10 and 11 together. Also, by virtue of the slot or opening 35, the clamping bracket is of somewhat more ornamental configuration.

In Figure 4 the body member 20 of the clamping bracket is finished off plain at its lower end 30 where the clamping bracket contacts with the side of the glass pane 10, and a lug 40 is formed adjacent the hook end of the clamping bracket. Preferably the lug 40 is punched from the stock of the body member 20. In this form, the hook end 21 of the bracket is of the same construction as that illustrated in Figure 2.

Figure 5 illustrates a form in which a lug 42 is disposed adjacent the hook end 21 of the clamping bracket, but in this case, the lug 42 is not punched from the body member but is formed by virtue of a fold, indicated by the reference numeral 43. In both Figures 4 and 5, the lugs are apertured to receive the tightening bolt 17, as indicated by the reference numeral 45. Also, in these forms, the body member is provided with reinforcing ribs 24 and 25 for the purpose of increasing the rigidity of the body member.

In both Figures 4 and 5, it will be noted that the inner end 30 of the body member contacts with the glass at a point spaced an appreciable distance inwardly from the edges of the glass panels. As is obvious, the farther inwardly the point 30 is placed the more nearly uniform will be the forces applied to the edges 28 and 29 of the glass panels, irrespective of the curvature of the portion 26 or its flexibility. So far as the forces and reactions are concerned, the position of the lug is immaterial. In either case, by virtue of the spacing just mentioned, the stresses imposed on the glass panes 10 and 11 by the act of tightening the bolt 17 will not chip or break the edges of the glass.

In Figure 6, the body members of the clamping brackets are extended until they overlap, and suitable clips or tabs may be provided to accommodate the clamping movement of the brackets. In this figure, the two cooperating clamping brackets are indicated by the reference numerals 15a and 16a, and it will be observed that their inner ends, 48 and 49, respectively, are disposed one over the other, the end 49 carrying suitable tabs 51 overlying the adjacent portion of the

bracket end 48, and the end 48 carrying similar tabs 52. Lugs 53 and 54 are provided adjacent the ends 48 and 49, and a clamping bolts 56 serves to connect the two clamping brackets. Each of the brackets carries reinforcing ribs 24 and 25 for increasing the rigidity of the body members of the brackets.

In this form of the invention, the lateral pressure against opposite sides of the glass panels is somewhat reduced, due to the fact that the inner ends of the clamping brackets are connected together, as at 51 and 52 in Figure 6. However, the hook ends 57 of the brackets are adapted to be securely engaged over the edges of the glass panes and to hold the latter in proper relative position when the bolt 56 is tightened.

While I have described above the constructions in which the principles of the present invention have been preferably embodied, it will be apparent to those skilled in the art that my invention is not to be limited to the specific details shown and described above, but that, in fact, widely different means may be employed in the practice of the broader aspects of my invention.

What I claim, therefore, and desire to secure by Letters Patent is:

1. An adjustable window ventilator comprising a pair of brackets adapted to be secured to the window, a pair of glass plates carried by said brackets and arranged in overlapping relation therebetween, whereby the plates may be adjusted to accommodate brackets spaced apart various distances, and clamping means removably attached to said plates intermediate their overlapping ends and including members formed to engage over the upper and lower edges of both plates to wedge the adjacent portions of the plates into engagement and means for pulling said members toward one another transversely of said plates, thereby holding said plates together in adjusted position.

2. An adjustable window ventilator comprising a pair of brackets adapted to be secured to the window, a pair of glass plates carried by said brackets and arranged in overlapping relation therebetween whereby said plates may be adjusted for various distances between said brackets, a pair of clamps adapted to secure said glass plates together in adjusted position, each of said clamps having a substantially semi-circular loop at one end, formed to engage over the edges of both of said glass plates, and an elongated body portion terminating in a lug spaced a substantial distance inwardly from the edge of said plates, and tightening means connecting said lugs and disposed alongside the overlapped portions of said plates.

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