

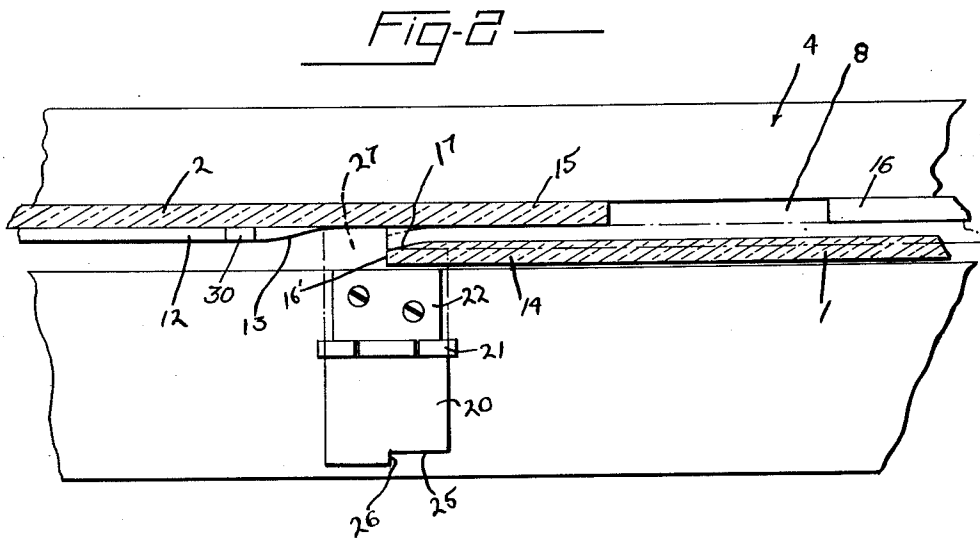
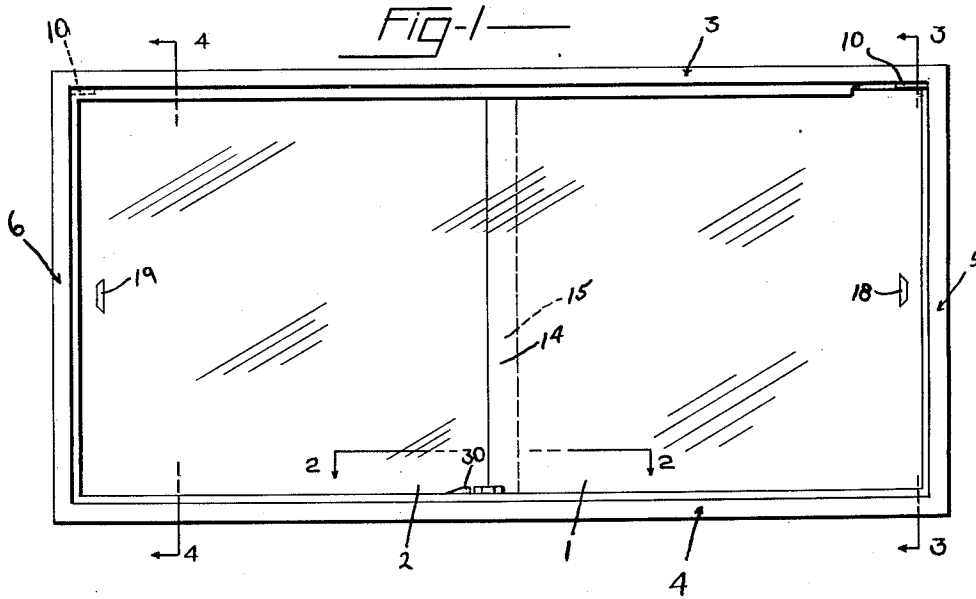
Nov. 21, 1950

E. PIERSON
SASHLESS WINDOW

2,530,724

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2 Sheets-Sheet 1



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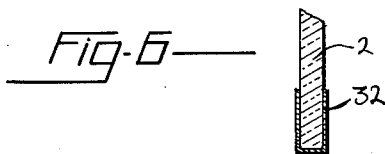
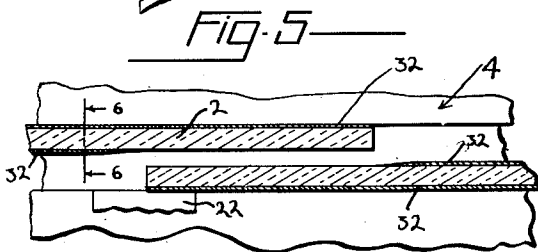
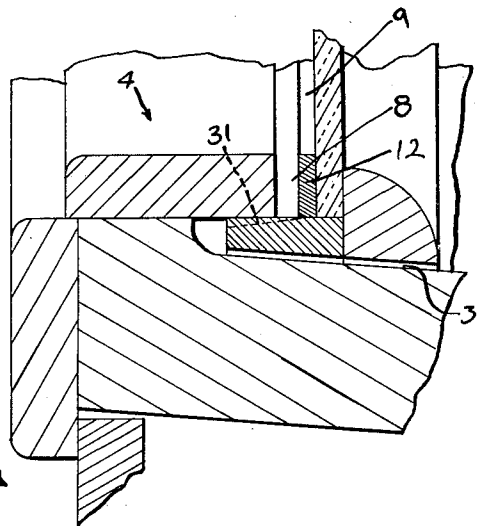
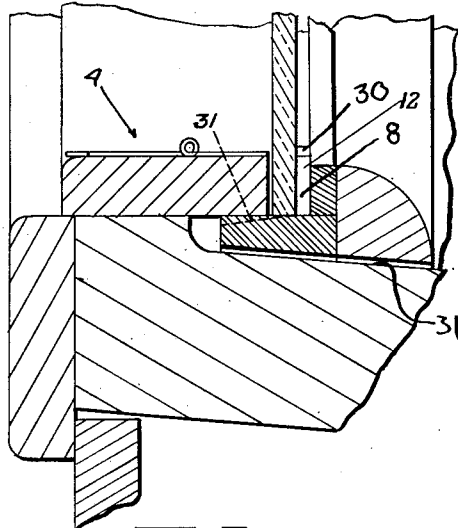
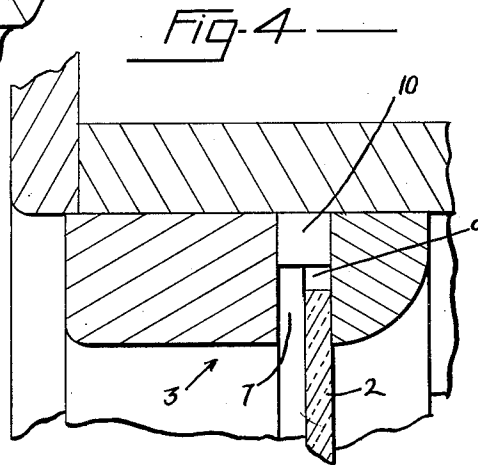
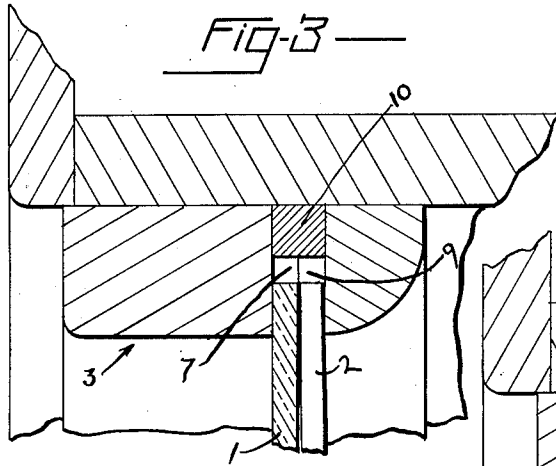
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E. PIERSON
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SASHLESS WINDOW

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5 Claims. (Cl. 20—52)

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This invention relates to a sashless window.

A few advantages of a sashless window are that more light is admitted than where sash is employed inasmuch as the panes may extend to the window frame, and such windows are more economical to make in that the mounting of them in sash is avoided, and the elimination of sash also eliminates the frequent trouble had where wooden sash swells and sticks in the frame.

Heretofore one of the difficulties encountered in the use of sashless windows is that of properly sealing a pair of relatively slidable panes with each other when in closed position and at the same time eliminating any chance of scratching the panes when opening and closing the window. The usual practice has been to provide a sealing strip between the panes where they overlap, but as this strip must wipe over one or the other pane when the window is opened or closed, it quickly scratches the pane over which it wipes, and ruins the desirable clarity of the pane.

One of the principal objects of this invention is the provision of a structure whereby the panes are held tightly together in direct engagement with each other when the window is closed, thus effecting a tight seal, yet the adjacent sides of which panes are automatically spaced apart upon opening the window by sliding the panes relative to each other in the frame.

In sashless windows there has heretofore been also some difficulty in keeping the panes fairly tight when the windows are closed, and also felt or the like, has generally been used in the grooves that support the panes for sliding. The felt strips eventually become packed, but in any event, add to the frictional resistance that must be overcome in sliding the panes.

One of the objects of this invention is the provision of means for tightly holding the panes of the window against rattling when the window is closed, and also the provision of means for positively locking the window closed without cutting or notching the panes and without adding anything to them.

And another object of the invention is the provision of a structure that eliminates the need for felt.

Other objects and advantages will appear in the description and in the drawings.

In the drawings,

Fig. 1 is a side-elevational view illustrating the invention with the window closed, and with the upper stop strip broken away at the upper right hand corner to show construction behind the strip.

Fig. 2 is an enlarged fragmentary sectional view taken along line 2—2 of Fig. 1, but with the locking means unlocked.

Fig. 3 is an enlarged sectional view taken along line 3—3 of Fig. 1.

Fig. 4 is an enlarged sectional view taken along line 4—4 of Fig. 1.

Fig. 5 is a fragmentary sectional view of a modified form of the invention taken at the same line as in Fig. 2.

Fig. 6 is a fragmentary sectional view of the lower part of one of the panes taken along line 6—6 of Fig. 5.

In detail, the window shown comprises sliding window panes 1, 2, that are free from sash and are slidable in a rectangular frame having an upper horizontal frame member 3, a lower frame member 4, and end frame members 5, 6.

As seen in Figs. 3, 4, the upper and lower frame members may each be made up of several elements or integral, but whatever structure is used, the upper frame member is formed to provide a downwardly opening groove 7 and the lower frame member is formed to provide an upwardly opening groove 8. Grooves 7, 8 are in oppositely opening relationship and the upper and lower edges of panes 1, 2 are in said grooves. End frame members 5, 6 are formed with oppositely opening grooves 9 (Fig. 4) for receiving the end edges of the panes 1, 2 when the latter are in closed position. Only one of the end grooves is shown, but they are identical in shape, each merely being positioned to receive the end edge of the pane for which it is intended.

The upper groove 7 is relatively deep as compared with the lower groove 8 and, except for the extreme ends, the space between the upper edges of panes 1, 2 and the bottom of groove 7 is sufficient to enable the panes to be elevated enough to swing their lower edges out of lower groove 8. However, stop elements 10 in the ends of groove 7 prevent the panes from being lifted out when the panes are in closed position. The ends of the panes are adapted to pass below said elements 10 when said panes are in closed position. This structure enables easy installation of the panes as well as quick and easy replacement. All that is necessary for making the replacement is to slide either one or both of the panes toward the center of the frame until they clear the elements 10, after which the panes may be lifted out of the groove 8 and out of the frame.

Upper groove 7 is relatively narrow with respect to lower groove 8, and when the panes 1, 2 are spaced apart at their lower edges and are respectively against the opposite sides of groove 8, their upper edges are substantially in contact with each other. This contact is merely a line contact at the adjacent corners of the upper edges of the panes, thus offering practically no resistance to sliding relatively.

Along the lower edge of pane 2 and in groove 8

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is a strip 12 of any suitable material, such as a composition material generally known as "Masonite" and which strip is preferably cemented to pane 2 so as to move therewith. The end of strip 12 that is adjacent the inner edge of pane 2, or the edge that is normally at about the center of the frame, terminates short of said inner edge, and is slanted as indicated at 13 (Fig. 2) to provide a slanted cam surface over which the adjacent edge of pane 1 is adapted to slide when pane 1 is moved horizontally out of the groove in end frame member 5.

When pane 2 covers the left half of the window frame opening, as seen in Fig. 1, and when pane 1 covers the right hand half of said opening, the window is closed and the marginal portions 14, 15 of the panes 1, 2 are in overlapping relation in the center of the frame opening and the lower edge of pane 1 may then be moved so that its marginal portion 14 may tightly engage the marginal portion 15 of pane 2, thus closing the space between the panes. The end 13 of strip 12 is spaced from the adjacent vertical end edge of pane 2 sufficient to permit this movement of the lower edge of pane 1.

A strip 16 coplanar with pane 2 is in groove 8, but spaced from the adjacent vertical end edge of pane 2 a sufficient distance to permit the pane 2 to be opened, if desired, thus enabling pane 2 to be lifted out of groove 8. This strip 16 is engaged by the lower end of pane 1 when the marginal portions 14, 15 are together.

Upon sliding pane 1 to open position it will be seen that the pane will automatically be forced away from pane 2 by sliding over the cam surface 13 on strip 12, and said cam surface is spaced from the adjacent vertical edge 16' (Fig. 2) of pane 1 a sufficient distance to permit the opposite edge of pane 1 to move out of the groove in the end frame member before the pane is moved away from pane 2. Thus groove 9 in said end member may fairly closely receive the end edge of pane 1 thereby eliminating any rattling. To facilitate the sliding of pane 1 over the cam surface 13 the marginal portion of pane 1 adjacent said edge 16' may be slightly slanted, as seen at 17 in Fig. 2.

Notches 18, 19 may be respectively formed in the inner sides of panes 1, 2 adjacent end frame members 5, 6 (Fig. 1) for engagement by the fingers of an operator. The notches in these positions do not in any way interfere with a clear and undistorted vision through the panes when they are in closed position.

The lower frame member 4 preferably carries the locking means for locking the panes 1, 2 in closed position, and this means may comprise a metal leaf 20 hinged at 21 to a plate 22 that is secured to said lower frame member. This leaf 20 is adapted to swing toward and away from the panes in direction transversely of frame member 4, and in the position seen in full line in Figs. 2, 3 it is in extended or unlocked position whereby the pane 1 may be freely slid to the left (Fig. 2) or pane 2 may be slid to the right.

The outer edge of leaf 20 is formed with a notch 25 that provides a shoulder 26, and when the panes 1, 2 are moved to closed position the leaf 20 may be swung toward their overlapping marginal portions 14, 15 so that the marginal portion of pane 1 will be received in notch 25 with the shoulder 26 extending across the edge 16 of pane 1. This movement of leaf 20 also will move the lower edge of pane 1 to tight en-

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agement with pane 2, and when leaf 20 is horizontal the marginal portions 14, 15 will be held together by leaf 20 and at the same time pane 1 cannot be opened.

When leaf 20 is in the above described window-locking position the portion 27 of said leaf will lie in front of a slight upward projection 30 on the end of strip 12 that is adjacent said leaf and slanted in a similar manner as strip 12, thus preventing the pane 2 from being moved to the right a sufficient distance to clear the element 10 in the upper groove.

By the locking means described above it is not necessary to cut or drill the panes 1, 2, nor to attach any device to them. Instead, the panes are free of all attachments and are not weakened in any manner. The notches 18, 19 are the only ones in the panes.

As seen in Fig. 4, a drain 31 may be provided in the lower frame member for draining any possible moisture that might otherwise accumulate in groove 8.

Where the frame members are of wood the bottom of groove 8 is preferably of hardwood which provides a good bearing surface for the panes, although as previously stated, the frame members may be made of any desired material as long as grooves are provided for the panes. Also the panes may be of glass or any suitable transparent material.

In certain instances, it may be desirable to use a binding strip of channel form along one or more edges of the panes, such strip being indicated at 32 in Figs. 5, 6 along the lower edges of the panes.

This binding does not extend across the opposed overlapping edges of the panes so there is no obstruction to moving the panes together along said edges. It is to be understood that the binding strips do not constitute sash and where used are ordinarily only along the lower edges of the glass providing bearing strips on the glass. They do not obstruct light and preferably are not even visible when the panes are in the frames.

I claim:

1. A sashless window comprising a rectangular, centrally open, vertically disposed frame including horizontal top and bottom parallel frame members formed with oppositely opening grooves therein, a pair of rectangular, vertically disposed window panes having one of their edges supported in the groove in said lower member and having their opposite edges in the groove in said upper member, one pane of said pair being adapted to move in said grooves longitudinally of the latter from a closed position closing said opening in which one of the vertical marginal portions thereof is in overlapping relation to one of the vertical marginal portions of the other pane at a point intermediate the ends of said frame to an open position in which said panes are in opposed side by side relation and a substantial portion of said opening is uncovered, the groove in said upper member being relatively narrow for holding the upper edges of said panes substantially together when said one pane is moved to said open position, and the groove in said lower member being relatively wide to permit spacing of said panes at their lower edges during said movement of said one pane to and from said open position, means in the groove in said lower member for so spacing said lower edges of said panes during said movement.

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2. A sashless window comprising a rectangular, centrally open, vertically disposed frame including horizontal top and bottom parallel frame members formed with opposedly opening grooves therein, a pair of rectangular, vertically disposed window panes having one of their edges supported in the groove in said lower member and having their opposite edges in the groove in said upper member, one pane of said pair being adapted to move in said grooves longitudinally of the latter from a closed position closing said opening in which one of the vertical marginal portions thereof is in overlapping relation to one of the vertical marginal portions of the other pane at a point intermediate the ends of said frame to an open position in which said panes are in opposed side by side relation and a substantial portion of said opening is uncovered, the groove in said upper member being relatively narrow for holding the upper edges of said panes substantially together when said one pane is moved to said open position, and the groove in said lower member being relatively wide to permit spacing of said panes at their lower edges during said movement of said one pane to and from said open position, means in the groove in said lower member for so spacing said lower edges of said panes during said movement, the said means comprising a strip extending along the lower edge of the other pane of said pair and terminating adjacent said overlapping marginal portions whereby said marginal portions may be moved into engaging relationship when said panes are in closed position.

3. A sashless window comprising a rectangular, centrally open, vertically disposed frame including horizontal top and bottom parallel frame members formed with opposedly opening grooves therein, a pair of rectangular, vertically disposed window panes having one of their edges supported in the groove in said lower member and having their opposite edges in the groove in said upper member, one pane of said pair being adapted to move in said grooves longitudinally of the latter from a closed position closing said opening in which one of the vertical marginal portions thereof is in overlapping relation to one of the vertical marginal portions of the other pane at a point intermediate the ends of said frame to an open position in which said panes are in opposed side by side relation and a substantial portion of said opening is uncovered, the groove in said upper member being relatively narrow for holding the upper edges of said panes substantially together when said one pane is moved to said open position, and the groove in said lower member being relatively wide to permit spacing of said panes at their lower edges during said movement of said one pane to and from said open position, means in the groove in said lower member for so spacing said lower edges of said panes during said movement, the bottom of the groove in said upper member being spaced from the edges of the panes adjacent thereto slightly greater than the depth of the groove in said lower member to enable lifting said panes out of the last mentioned groove for removal from said frame.

4. A sashless window comprising a rectangular, centrally open, vertically disposed frame including horizontal top and bottom parallel frame members formed with opposedly opening grooves

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therein, a pair of rectangular, vertically disposed window panes having one of their edges supported in the groove in said lower member and having their opposite edges in the groove in said upper member, one pane of said pair being adapted to move in said grooves longitudinally of the latter from a closed position closing said opening in which one of the vertical marginal portions thereof is in overlapping relation to one of the vertical marginal portions of the other pane at a point intermediate the ends of said frame to an open position in which said panes are in opposed side by side relation and a substantial portion of said opening is uncovered, the groove in said upper member being relatively narrow for holding the upper edges of said panes substantially together when said one pane is moved to said open position, and the groove in said lower member being relatively wide to permit spacing of said panes at their lower edges during said movement of said one pane to and from said open position, means in the groove in said lower member for so spacing said lower edges of said panes during said movement, the other pane of said pair being also movable in said grooves longitudinally of the latter whereby said panes may be respectively moved away from the ends of said frame.

5. A sashless window comprising a rectangular, centrally open, vertically disposed frame including horizontal top and bottom parallel frame members formed with opposedly opening grooves therein, a pair of rectangular, vertically disposed window panes having one of their edges supported in the groove in said lower member and having their opposite edges in the groove in said upper member, one pane of said pair being adapted to move in said grooves longitudinally of the latter from a closed position closing said opening in which one of the vertical marginal portions thereof is in overlapping relation to one of the vertical marginal portions of the other pane at a point intermediate the ends of said frame to an open position in which said panes are in opposed side by side relation and a substantial portion of said opening is uncovered, the groove in said upper member being relatively narrow for holding the upper edges of said panes substantially together when said one pane is moved to said open position, and the groove in said lower member being relatively wide to permit spacing of said panes at their lower edges during said movement of said one pane to and from said open position, means in the groove in said lower member for so spacing said lower edges of said panes during said movement, said means comprising a strip extending along the lower edge of the other pane of said pair and secured to said other pane for movement therewith.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
889,261	Prouty	June 2, 1908
2,126,111	Holderle et al.	Aug. 9, 1938
2,283,009	Levan	May 12, 1942
2,430,124	Johnson	Nov. 4, 1947