June 3, 1952 H. WIDEN 2,599,032

WINDOW OPERATOR

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Fig. 1.

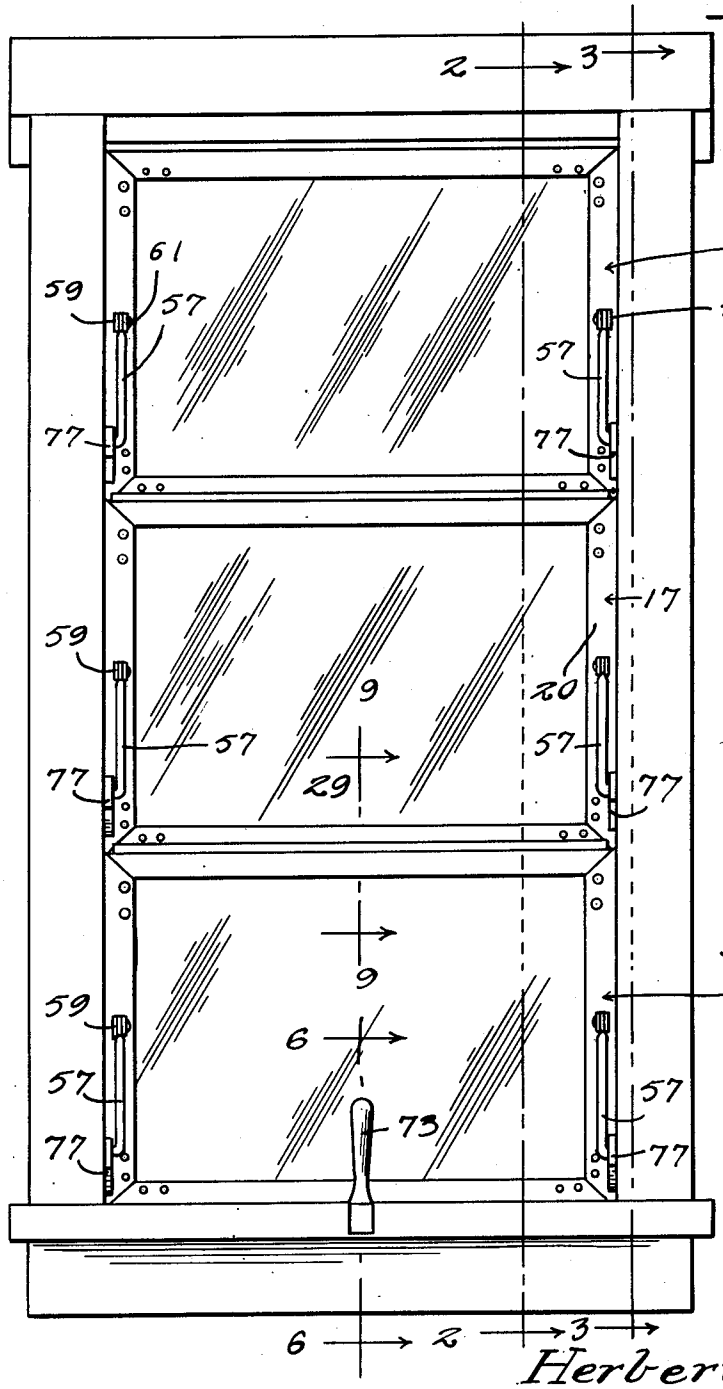
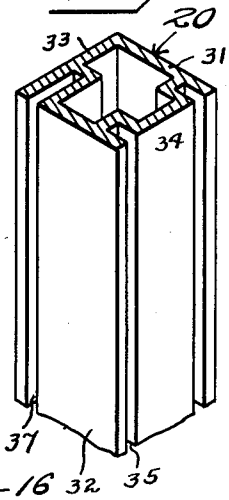


Fig. 11.



Inventor

Herbert Widen

By Kimmel & Crowell

Attorneys

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Fig. 2.

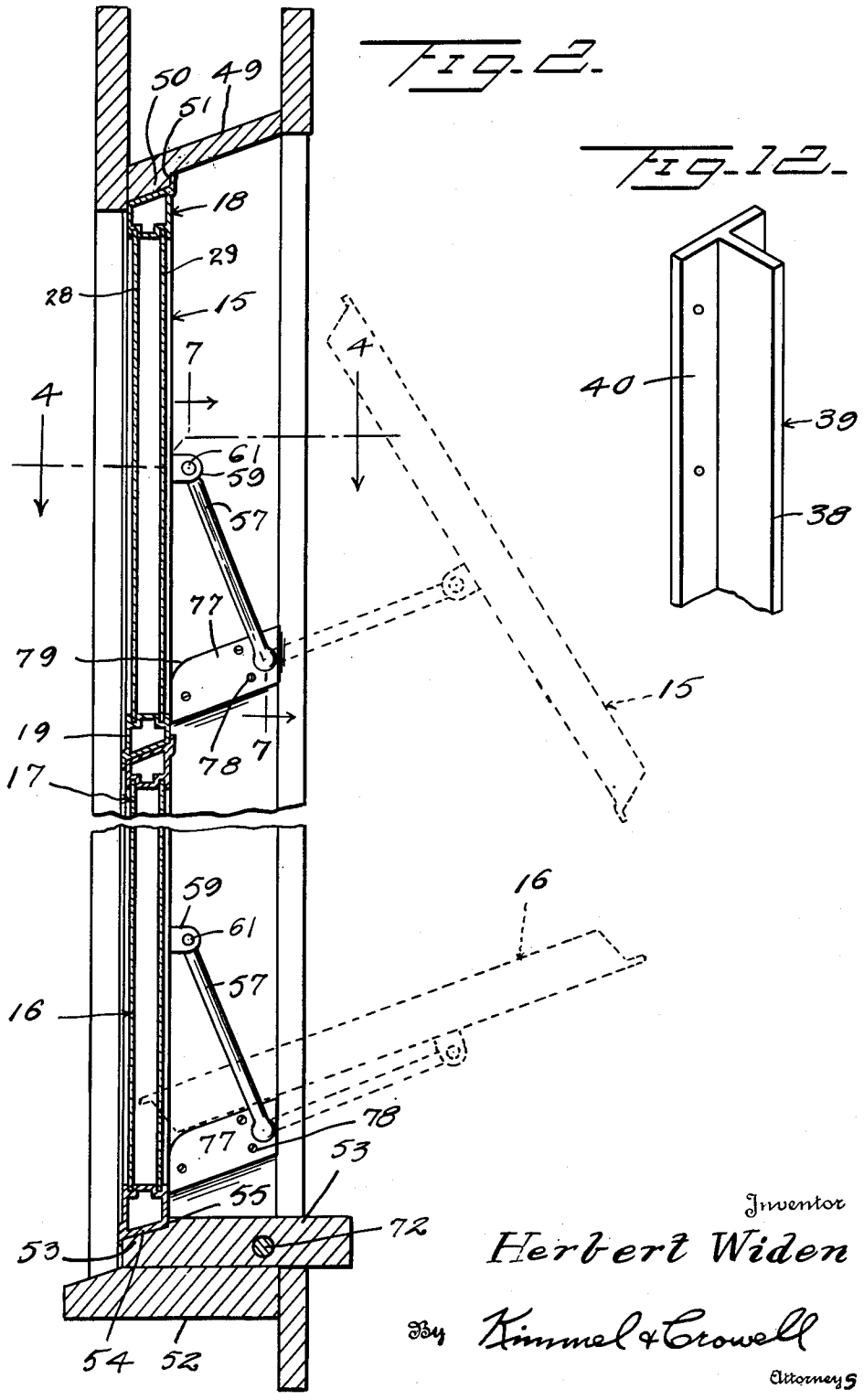


Fig. 12.

Inventor

Herbert Widen

By Kimmel & Crowell

Attorneys

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Fig. 3.

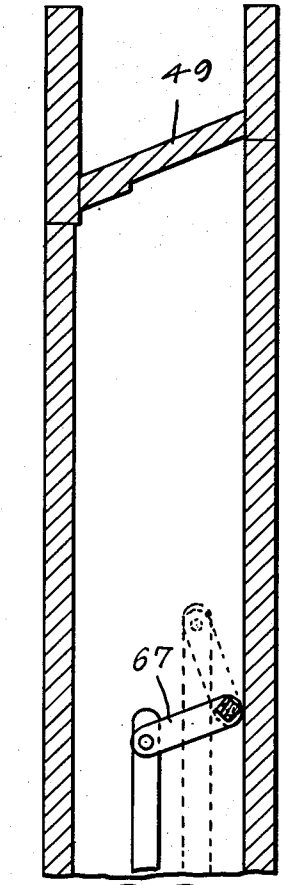


Fig. 10.

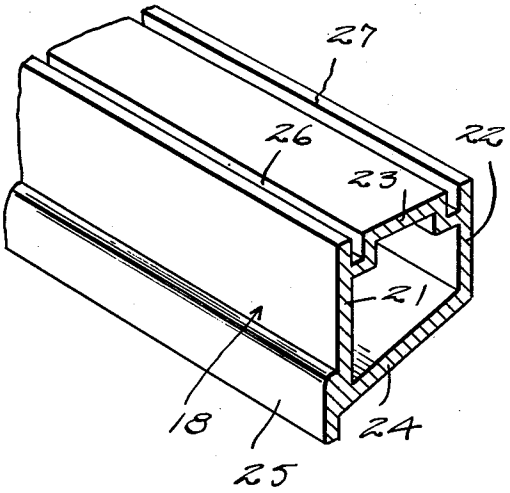
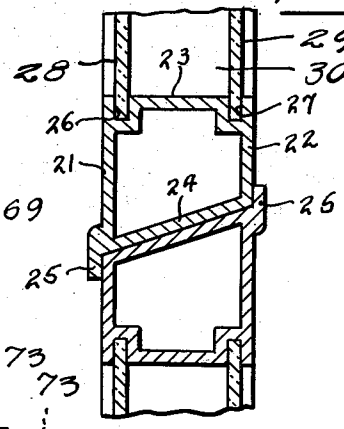


Fig. 9.



Inventor

Herbert Widen

By Kimmel & Crowell

Attorneys

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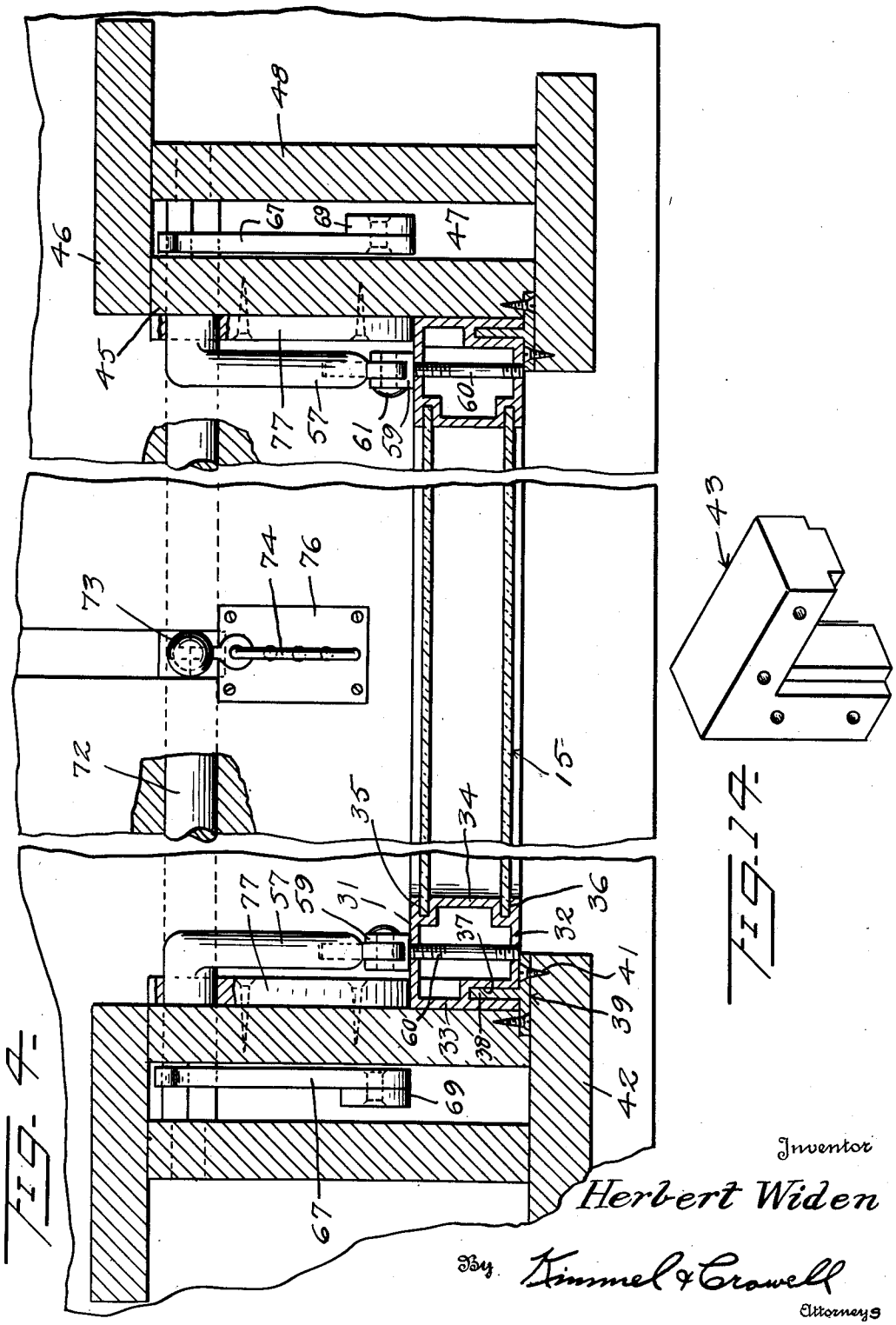


FIG. 4

FIG. 14

Inventor
Herbert Widen
By Kimmel & Crowell
Attorneys

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Fig. 5.

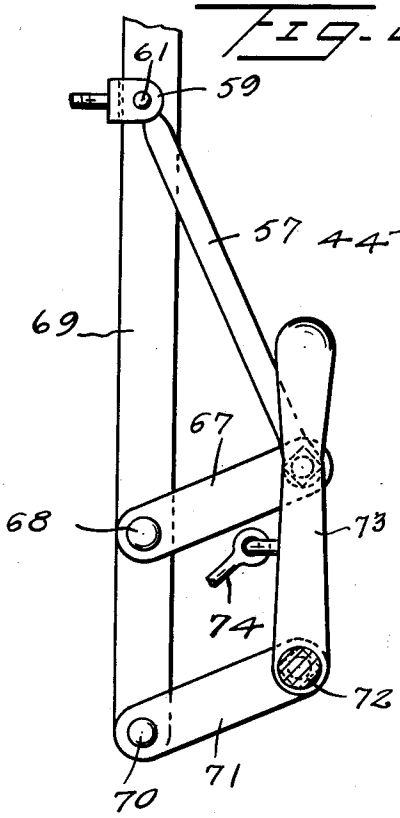


Fig. 13.

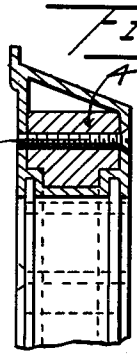


Fig. 7.

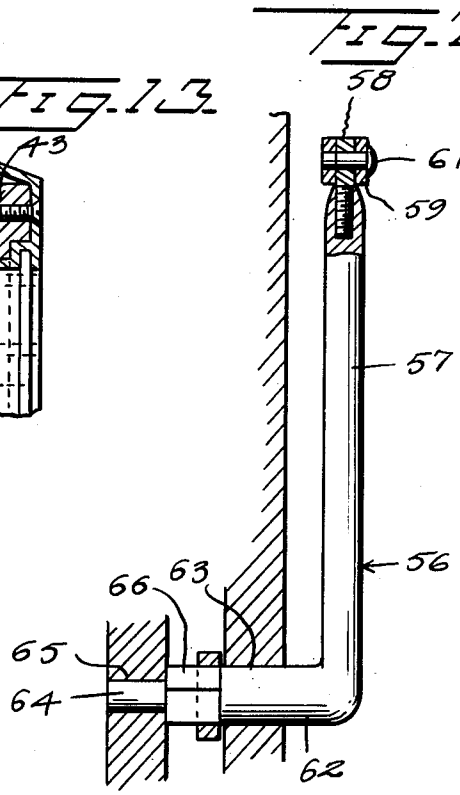


Fig. 6.

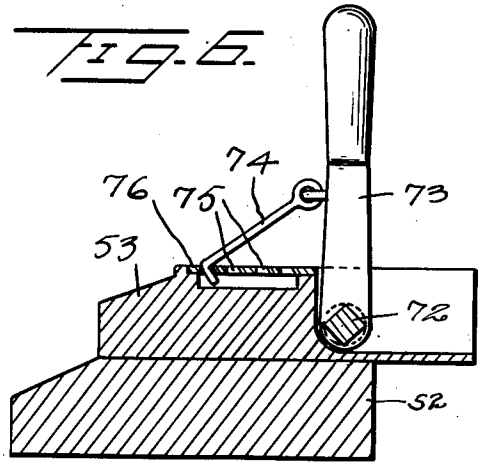
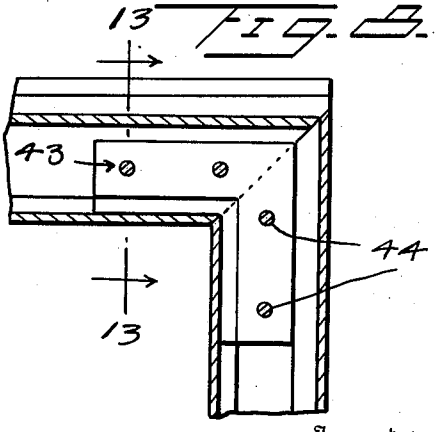


Fig. 8.



Inventor

Herbert Widen

By Kimmel & Crowell

Attorneys

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UNITED STATES PATENT OFFICE

2,599,032

WINDOW OPERATOR

Herbert Widen, McKeesport, Pa., assignor of one-half to Harry W. Levy, McKeesport, Pa.

Application April 15, 1948, Serial No. 21,151

4 Claims. (Cl. 268—111)

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This invention relates to an improved window construction.

An object of this invention is to provide an improved window construction wherein the sashes are swingingly supported, and may be partially opened to a ventilating position, or may be completely opened to a position wherein the sashes may be cleaned on the inner and outer sides thereof.

Another object of this invention is to provide an improved sash construction wherein the rails and stiles may be formed from extruded material, and are so constructed as to provide for two spaced glass panels thereby providing an insulating window assembly.

A further object of this invention is to provide a swinging sash construction including correlated weatherstripping so that the sashes will be weather sealed when in closed position.

A further object of this invention is to provide an improved operating means for a series of window sashes whereby all of the sashes will be swung to closed position as a unit, or will be opened as a unit.

To the foregoing objects, and others which may hereinafter more fully appear, the invention consists of the novel construction, combination and arrangement of parts, as will be more specifically referred to and illustrated in the accompanying drawings, but it is to be understood that changes, variations, and modifications may be resorted to which fall within the scope of the invention as claimed.

In the drawings:

Figure 1 is a detailed inner side elevation of a window construction embodying this invention.

Figure 2 is a sectional view partly broken away taken on the line 2—2 of Figure 1.

Figure 3 is a fragmentary vertical section taken on the line 3—3 of Figure 1.

Figure 4 is a sectional view, partly broken away, taken substantially on the line 4—4 of Figure 2.

Figure 5 is a detailed side elevation showing the operator for the several windows in window closing position.

Figure 6 is a fragmentary vertical section taken on the line 6—6 of Figure 1.

Figure 7 is a fragmentary sectional view taken on the line 7—7 of Figure 2.

Figure 8 is a fragmentary sectional view through one of the corners of a sash.

Figure 9 is a fragmentary sectional view taken on the line 9—9 of Figure 1.

Figure 10 is a fragmentary perspective view of one of the sash rails.

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Figure 11 is a fragmentary perspective view of one of the sash stiles.

Figure 12 is a fragmentary perspective view of the weatherstripping associated with the stiles.

Figure 13 is a fragmentary sectional view taken on the line 13—13 of Figure 8.

Figure 14 is a perspective view of one of the connecting corner members for the sashes.

Referring to the drawings and first to Figure 1, the numerals 15 and 16 designate generally upper and lower window sashes and the numeral 17 designates generally an intermediate window sash. The sashes 15, 16 and 17 are of like construction and each includes an upper tubular rail 18, a lower tubular rail 19 and vertical side stiles 20. The upper and lower rails 18 and 19 are of like construction and as shown in Figure 10, each includes parallel side walls 21 and 22, an inner wall 23 and an outer wall 24. The wall 24 is inclined to the vertical so that when two rails are in closed position the inclined walls 24 will be disposed on a downward and outward inclination. The wall 21 which is the outer wall for the lower rail and the inner wall for the upper rail has formed integral therewith a flange 25 which is adapted to overlap the wall 22 of the adjacent rail when the sashes are in closed position.

The inner wall 23 is formed with a pair of grooves or channels 26 and 27 within which glass panels 28 and 29 are adapted to be secured so that there will be a dead air space 30 between the two panels forming an air insulating means.

The stiles for each sash are also of like construction and, as shown in Figure 11, each stile 20 is formed of inner and outer parallel walls 31 and 32, respectively, and opposite side walls 33 and 34. The side wall 34 which is the inner side wall is formed with a pair of grooves or channels 35 and 36 within which the glass panels 28 and 29 are adapted to be secured. The outer wall 32 is formed with an inwardly extending channel 37 forming a keeper for the tongue 38 of a weather stripping generally designated as 39. The weatherstripping 39 includes the tongue 38 which is formed integral with a base strip 40 adapted to be secured by fastening means 41 to the outer trim strips 42 forming the window frame.

At the corners formed between the rails and stiles hereinbefore described, the rails and stiles are mitered and these members are secured together by means of a right-angular corner block 43 shown in perspective in Figure 14. The corner block 43 is secured within the rails and stiles

by bolts or fastening means 44 so that a relatively solid sash will be provided.

The sashes are adapted to be mounted in a window frame structure which includes vertical side frame members 45 disposed between the outer frame members 42 and inner frame members 46. A space 47 is formed between the outer and inner members 42 and 46 by securing an inner frame member 48 between the outer and inner members and the operating means for swinging the sashes will be disposed in the space 47. The window frame also includes a header or top frame member 49 which is formed with an offset 50, as shown in Figure 2, against which the upper rail of the upper sash is adapted to abut and the flange 25 of the upper rail is adapted to bear against the shoulder 51 formed on the lower side of the header or upper frame member 49, the latter being inclined downwardly and outwardly. The window frame also includes a lower sill 52 and an inner sill 53 superposed on the lower sill 52 and offset inwardly therefrom. The inner or upper sill 53 is formed with an inclined ledge 54 terminating in a shoulder 55 so that the lower rail of the lower sash will sealingly engage the forward portion of the inner sill 53.

In order to provide a means whereby each sash may be swung from a closed position with the several sashes in vertical alignment to either a partially open or a completely open position, I have provided a pair of bellcranks 56 for each sash. The bellcrank 56 includes a relatively long lever arm 57 which is formed at its free end with an eye 58 engaging between a pair of ears 59 carried by a bolt 60 which is threaded into an adjacent stile. The eye 58 has extending therethrough a pivot bolt 61 which extends through the two ears 59. The opposite leg or side 62 of the bellcrank 56 is rockably extended through an opening 63 formed in the frame member 45 and the short side 62 is formed with a reduced stud 64 journalled in an opening 65 formed in the inner frame member 48. The short side 62 of the bellcrank is formed with a polygonal stud 66 and a right-angularly disposed lever or arm 67 is mounted on the polygonal stud 66. The arm or level 67 is pivotally secured by means of a pivot 68 to a vertically disposed link or rod 69 extending vertically in the space 47. The lower end of the link or rod 69 is pivotally secured by means of a pivot 70 to an obliquely disposed arm or lever 71 carried by a shaft 72 which is journalled across the lower sill 53. The shaft 72 has secured thereto at an intermediate portion an operating lever or handle 73 and the handle or lever 73 is adapted to be locked in its vertical window closing position by means of a hook 74 carried by the handle or lever 73 and engageable in a selected one of a series of openings 75 formed in a keeper plate 76 secured to the upper side of the inner sill 53.

The short side 62 of the bellcrank 56 extends through a plate 77 secured by fastening means 78 to the inner side of the window frame member 45. The plate 77 is disposed on an angle to the vertical being inclined downwardly and outwardly and the outer upper corner of the plate 77 is rounded as indicated at 79 so that the lower edge of the sash may readily slide over the edge of the plate 77 and downwardly to closed position. These plates 77 form a wedging means whereby the sashes will be wedged tightly against the inner sides of the window frame when the sashes are in closed position. Preferably, the bellcranks 56 are secured to the stiles of the sashes at a point slightly above the center of the stiles so that the sashes will be overbalanced downwardly and forwardly in order that they will readily slide over the upper edges of the plates 77 when moving to either open or closed position.

In the use and operation of this window construction the windows when in closed position will be disposed in vertical alignment and it will be understood that there may be one, two or more sashes in each window opening. As herein disclosed there are three of these sashes in the window opening. When it is desired to open the windows partially, the window operator 73 is rocked clockwise or inwardly as viewed in Figure 6, being first released by raising the hook 74. Downward and inward rocking of the operator 73 will raise the arm 71 together with the connecting bar 69. Upward movement of the bar 69 will rock the lever arms 67 upwardly and inwardly and swing the bellcranks 56 clockwise as viewed in Figure 5. Inasmuch as the sashes are overbalanced at their lower portions, the lower portions of the sashes will contact with the upper edges of the plates 77. When it is desired to clean the glass panels on each side thereof, the operator 73 may be swung downwardly to substantially a horizontal position. If desired, the upper sashes in a window opening may be swung downwardly independently of the lower and intermediate sashes by manually rocking the upper sashes to substantially the position shown in dotted lines in Figure 2. When the sashes are in closed position the stiles will be engaged with the weatherstripping 39 and the rails of the several sashes will be disposed with the flanges 25 thereof in overlapping position.

I claim:

1. A window construction comprising a window frame, a sash mounted in said frame, means swivelably supporting said sash, and operating means in said frame connected with said supporting means for rocking the latter from a sash closing position to a sash opening position, said supporting means including transverse swivel members disposed outwardly of said sash, a pair of oppositely disposed and connected bellcranks having one arm thereof journalled in said frame and the other side thereof pivotally secured to one of said swivel members whereby rocking of the connected bellcranks is effective to swing said sash free of the frame for swiveled movement about said swiveled members.

2. A window construction comprising a window frame, a plurality of sashes, means swivelably supporting said sashes, and attached to opposite side thereof above the longitudinally centerline of each of said sashes, and operating means in said frame connected with said supporting means for rocking the latter from a sash closing position to a sash opening position, said supporting means including a pair of oppositely disposed bellcranks having one arm thereof journalled in said frame and the other side thereof pivotally secured to the sides of a sash, a lever arm fixed to said one arm of each bellcrank and extending angularly therefrom, and means connected with said lever arms for rocking said bellcranks.

3. A window construction comprising a window frame, a plurality of sashes disposed in vertical alignment when in closed position and movable to vertically swiveled open positions, a pair of bellcranks for each sash, means rockably mounting one side of each bellcrank in a vertical

side of said frame, means pivotally securing the other side of each bellcrank to a sash, said securing means having transversely disposed swivel members spaced outwardly of each of said sashes, a lever arm fixed to said one arm of said bellcrank and extending at right angles with respect to said other arm, a vertically disposed bar pivotally secured to said lever arm, means for vertically moving said bar, and means fixed to the vertical sides of said frame for wedging the lower portions of said sashes in said frame when said sashes are in closed position.

4. A window construction as defined by claim 2 wherein the means connected to the lever arms for rocking said bellcranks include obliquely disposed lever arms fixedly connected to each bellcrank and operatively connected with said lever arms.

HERBERT WIDEN.

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