This invention relates to art of window construction and in particular has reference to improvements in the field of sliding windows that operate transversely of each other during usage.

In the known prior art of sliding window construction there have been provided several different types and forms of windows falling within this general category. In the main, these windows have generally comprised two or more windows that are slidable transversely of the frame member in a series of truss members provided on opposed side rails thereof. In this regard, the conventional double hung window is typical of the type of construction employed wherein two side-by-side guide tracks are employed for respectively receiving the upper and lower sash members.

Recent improvements in this field have been directed to use of triple track type construction where a screen or other member is placed in an intermediate track falling between the tracks for the top and bottom sash members, for example, to facilitate conversion from a storm window to a screen without the necessity for removing any of the component parts.

One of the prime disadvantages of the above type windows is that the same must always be sealed at their point of overlap with each other with such seal being normally difficult to effectuate.

As an additional disadvantage, it has been found that the opposed tracks within which the sash members slide must be made removable so as to facilitate removal of the sash members with respect to the frame. Such a removable feature necessarily adds to the cost of the construction and renders difficult the problem of effectuating an air-tight sealing in the critical edge area of the sash.

It accordingly becomes a principle object of this invention to provide an improved type of sliding sash construction that is characterized by the use of two or more sash members that are capable of being abutted in side-by-side co-extensive relationship with each other while being capable of being shifted into a condition of overlapping upon sliding movement of the members during usage thereof.

It is a further object of this invention to provide an improved type of sliding sash construction characterized by the fact that the removable sash members are removable with respect to the frame without the necessity for removing or in any way changing the position of the guide members thereof.

It is a still further object of this invention to provide an improved type of sliding sash construction that is characterized by an effective air-tight seal between the movable sash and the frame, as well as an effective air-tight seal between the sash members themselves when the same are arranged in side-by-side co-extensive relationship with each other.

These and other objects of the invention will become more apparent upon a reading of the following brief specification, considered and interpreted in the light of the accompanying drawings.

Of the drawings:

Figure 1 is an elevational view looking at the exterior surface of the improved window.

Figure 2 is a similar plan view but showing the interior surface of the improved window.

Figures 3, 4, 5 and 6 are sectional views taken on the lines 3—3, 4—4, 5—5, and 6—6, respectively, of Figure 2.

Figure 7 is a vertical section taken on the lines 7—7 of Figure 5.

Referring now to the drawings and in particular to Figures 1, 2 and 5 thereof, the improved window construction generally designated by the numeral 10, is shown including a frame member 11 having a rectangular opening within which is received a pair of sliding sash members 12 and 13; the arrangement being such that the sash members 12 and 13 are movable from the side-by-side co-extensive relationship with each other that is shown in full lines in Figures 1, 2 and 5, to a position that the overlapping as partially indicated in chain-dotted lines in Figure 5 of the drawings. In this manner, the window opening may be partially opened for ventilation or other purposes.

Considering first the structure of frame member 11, it will be seen from the drawing that the same includes the usual side rails 20 and 21, as well as a sill 22, and a top rail or frame member 23.

With regard to the construction of the side rails 20 and 21, reference is made first to Figure 5 of the drawing where it is shown that the side rails 20 and 21 include the usual shoulder stops 20a and 21a respectively, against which the edge portions of the sash may be received as shown in Figure 5. In addition, the side rail 21 includes a spaced stop member 24 for the purpose of defining, with shoulder 21a, a guide track for the movable sash member 13, with a weather-stripping unit 25 being shown received in the groove for the purpose of tensionally spacing the sash member 13 with respect to this track.

By like token, the opposed side rail 20 includes a removable stop member designated by the numeral 26, and as shown in Figure 7 of the drawings, this stop member 26 is vertically shiftable with respect to the top rail 23 and the sill 22 so that the same may merely be shifted upwardly to the position shown in chain-dotted lines of Figure 7 to facilitate removal thereof with appropriate grooves 22a and 23a being provided in the members 22 and 23 respectively for this purpose. A similar weather-stripping unit 27 is received within the just-described vertical track of side rail 20 for the purpose of suspending the movable sash 12 with respect thereto.

Referring next to Figure 6 for a detailed description of sill member 22, it will be seen that the same includes an inner and outer vertical surfaces 30 and 31 respectively, that are interconnected by an inclined surface 31a, guide-ways 32 and 33, as well as an inner face 34; the arrangement of the above component parts being such that the guide-ways 32 and 33 are spaced at different elevations for purposes to be described and are additionally separated by a stop 35, that extends, as best shown in Figure 5, approximately half-way across the sill member 22. A weather-stripping unit 36 is received in the groove or guide-way 32 for the purposes of making the effective elevation thereof approximately equal to that of the groove 33.

In addition, the inclined face 31a includes a resiliently extending weather-stripping member 36a that is carried by the sill 22 so as to have a free end 36b thereof projecting for contact with the outer face of the sash members 12 and 13 as is best shown in Figure 6 of the drawings.
Referring next to the upper rail 23, it will be seen from Figure 6 of the drawing that the same includes the usual inner and outer faces 40 and 41 that are interconnected by an inwardly presented face generally indicated by the numeral 42. This inwardly presented face 42 includes a horizontal face 43 that abuts against an undercut guide-way 44 to define a shoulder 45 against which may be received the upper edge of the sash 12, for example, as shown in Figure 6 of the drawings, with this groove 44 overlying the groove 32 and including a weather-stripping unit 46.

In addition, the undercut portion 44 defines a second vertical shoulder 47 that defines a horizontal face 48 from which depends a flange 49 that has the return end 50 thereof spaced with respect to the surface 48 to define a groove within which a complementary portion of the sash members 12 and 13 may be received as will presently be described.

In addition to the aforementioned component parts, there is also carried by the upper rail 23 a cam plate generally indicated by the numeral 51 and its plan configuration best shown in Figure 4 of the drawing where-in it is shown that the cam plate 51 includes a tapered surface 52 against which an edge portion of the sash 12 may be received as will be presently described, with such cam plate 51 being secured to the flange 49 in known manner as shown in Figure 6 of the drawings.

Considering next the structure of the sash members 12 and 13 per se, it will be seen from the drawings that the same are of rectangular shape so as to include the usual opposed stile members and bottom rails. In addition, the sash members 12 has the upper rail thereof defined by an undercut slot 55 (see Figure 6) that is designed for reception within the groove defined by members 48 and 50. In this manner, the flange or lip 59 becomes received within the undercut slot 55 so that the same may be shifted transversely of the sill 22 between the full and chain-dotted line positions of Figure 5. A similar slot (not shown) may be provided on the remaining sash member 13 if desired.

At this time, it will be assumed that it is desired to open the sash and at this time, it is merely necessary that the lug 65 be turned and the knob 64 pulled inwardly so that the entire sash assembly 12 may be moved to the chain-dotted line position of Figure 5. At this time, the knob 64 may have force exerted thereon to cause the sash 12 to be moved to the left to the dotted line position in Figure 5. During the aforementioned movement, it is believed apparent that such transverse movement of the sash member 12 across the sill 22 will cause the guide therefor (see Figure 6) to be engaged by the projecting lip 59 with the result that the sash member 12 is suspended with respect to the top rail 23 of frame 11.

Also, at this time, it will be noted from an examination of Figure 5, that the lower rail of the sash 12 will be received within the groove 53 so that a guide transverse movement occurs with respect to the sash 12, with maintaining of its vertical condition being achieved as a result of the support provided by the guide 23 and the innerlock between the flange 50 and slot groove corresponding to groove 53 of member 13.

When it is desired to close the sash member 12, it is merely necessary that the knob 64 be moved to the right to result in the inner edge portion 12a (see Figure 5) of sash 12 riding along the inclined surface 52 of cam plate 51. Such engagement between the edge 12a and the surface 52 will guide the side rail of the sash member 12 into the guide channel defined by the shoulder 22 and removable step 26.

In the event it is desired to remove one or more of the sash members, it is merely necessary that the removable stop member 26 be raised vertically (see Figure 7), so as to be easily removed from its condition of engagement with the side rail 20. At this time, the bottom portion of the sash member 12 may be swung transversely of the sill 22 and by virtue of the fact that the groove 33 extends only half-way across, this will permit the sash member 12 to be easily removed with respect to the frame 11 for cleaning or other purposes.

During the time that the window is closed as above described, it is believed apparent that the sash members 12 and 13, together with the frame 11, will constitute an air-tight structure, with air seals being provided by weather-stripping units 25, 27, 32 and 46, as well as the resilient flange 60 that seals off the point of contact between the sash members 12 and 13. In this regard, as an alternative embodiment of the invention, there may be utilized between sash members 12 and 13 or elsewhere, a weather-stripping having an arched sheet that is tensioned only with respect to a flat base member to effectuate a weather-tight seal. It is to be understood that other equivalent types of weather-stripping could be employed with a satisfactory result.

In addition to the above described component parts the preferred embodiment in the invention set forth herein additionally shows in Figure 5, the provision of an outer stop rail 70 that would extend perimetricaly of the frame opening so as to contact the outer portions of frame 11 for the purpose of receiving thereon a screen member that is designated by the numeral 71. In this regard, it is to be understood that the use of the screen is not mandatory and could accordingly be dispensed with if desired.

It will be seen from the foregoing that there has been provided a new and novel type of sliding sash window construction characterized by the use of sliding sash members that coextensively abut at their side rail portions when in a closed position. It has been shown how the use of an interconnecting structure between the top edge of the frame and the top edge of the individual sash members permits a movement from this closed position to an overlapping condition without the provision of additional tracks for this purpose, and, additionally, it is shown how this interlocking structure permits and facilitates the easy removal of the window when desired, for the purpose of cleaning, etc.

While the foregoing preferred embodiment has illustrated single panes of glass in the sash members, it is to be understood that a double glass sash could be employed with equal facility.

It follows that modifications of the invention could be resorted to without departing from the spirit hereof or the scope of the appended claims.

What is claimed is:

1. A sliding sash construction of the character described, comprising; a frame having a quadrilateral opening therein and including a top rail area; a first guide track defined by said opening; a second guide track defined by said opening and being disposed adjacent said first guide track; a first guide flange spaced from and overlying said second guide track in the top rail area thereof; a pair of movable sash members slidingly received in said first guide track in side-by-side relationship and each having a top edge surface disposed adjacent said top rail area; means for shifting at least one said sash member between a position in said first guide track and a position in said second guide track upon movement thereof transversely of said opening; and means for mechanically interlocking said top edge surface of at least one said sash with said guide flange upon shifting of said sash member into said second guide track.

2. The device of claim 1 further characterized by the fact that said last mentioned means includes a transverse extending groove that extends inwardly from one face of said sash at a spaced distance from said edge surface thereof, whereby said groove may be received over said flange upon said shifting movement.

3. The device of claim 1 further characterized by the fact that said means first mentioned include a cam plate positioned within said second guide track.
4. The device of claim 1 further characterized by the fact that either said sash is removable with respect to said flange only when positioned in said first guide track.

5. A sliding sash construction of the character described, comprising; a frame having a quadrilateral opening therein and including a top rail area; a first guide track defined by said opening; a second guide track defined by said opening and being disposed adjacent said first guide track in parallelism therewith; a guide flange spaced from the overlying said second guide track in the top rail area thereof; a pair of movable sash members slidingly received in said first guide track in side-by-side relationship, and each having a top edge surface disposed adjacent said top rail area; means for shifting at least one said sash member between a position in said first guide track and a position in said second guide track upon movement thereof transversely of said opening; and means for mechanically interlocking said top edge surface of at least one said sash with said guide flange upon shifting of said sash member into said second guide track, said first guide track having received therein a spring loaded weather stripping device whereby said sash members are tensionally spaced with respect to said first guide track.

6. A sliding sash construction of the character described, comprising; a frame having a quadrilateral opening therein and including a top rail area; a first guide track defined by said opening; a second guide track defined by said opening and being disposed adjacent said first guide track in parallelism therewith; a guide flange spaced from and overlying said second guide track in the top rail area thereof; a pair of movable sash members slidingly received in said first guide track in side-by-side relationship and each having a top edge surface disposed adjacent said top rail area; means for shifting at least one said sash member between a position in said first guide track and a position in said second guide track upon movement thereof transversely of said opening; and means for mechanically interlocking said top edge surface of at least one said sash with said guide flange upon shifting of said sash member into said second guide track, said first guide track including a stop portion that is removable with respect to said frame, whereby access to said first guide track can be had upon removal of said stop member.

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