Dec. 15, 1953 O. R. SERLEY ET AL 2,662,255

REMOVABLE DOUBLE HUNG WINDOW SASH STRUCTURE

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Fig. 1

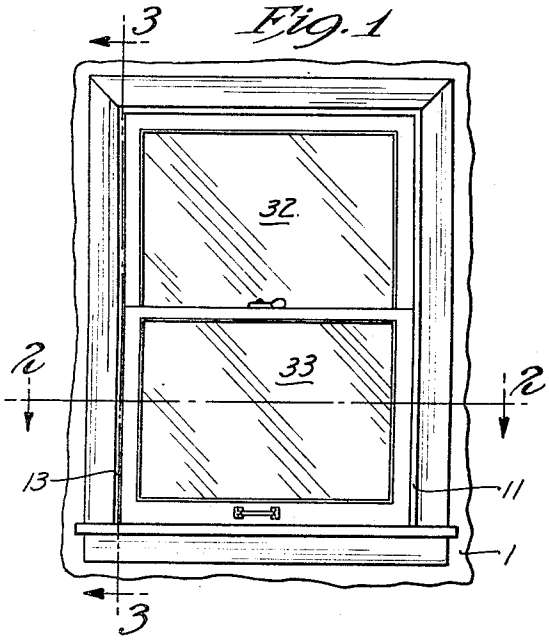

Fig. 3

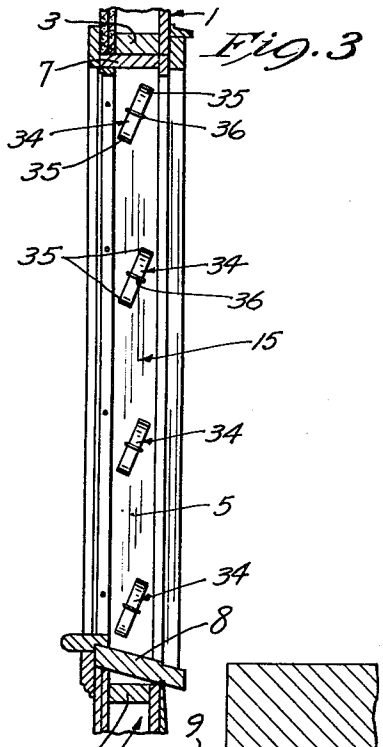

Fig. 2

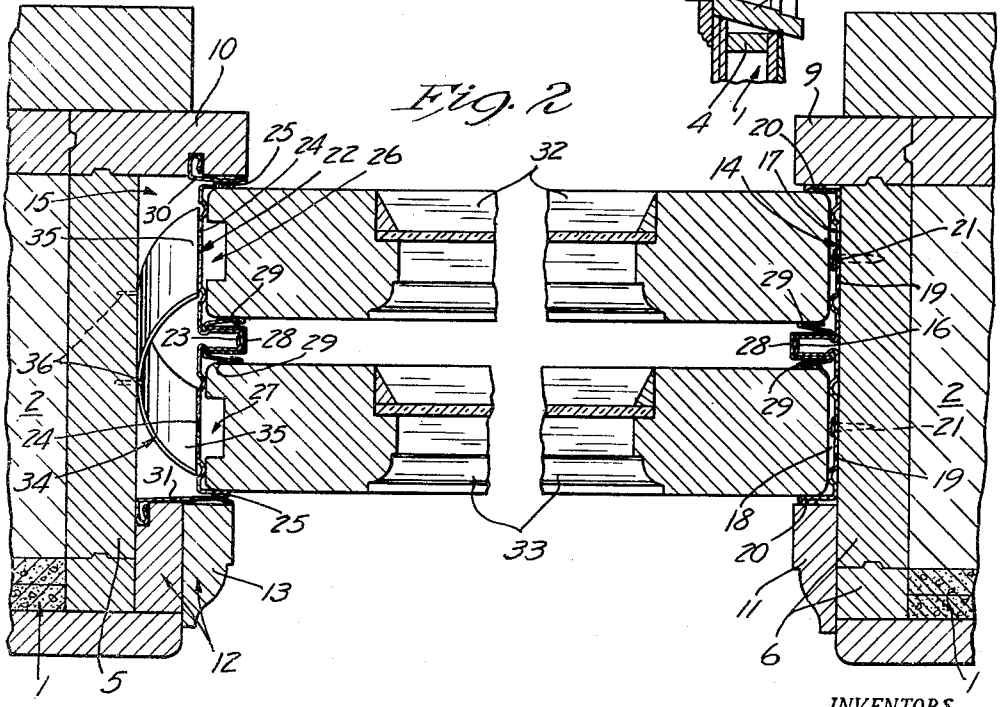

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Fig. 4

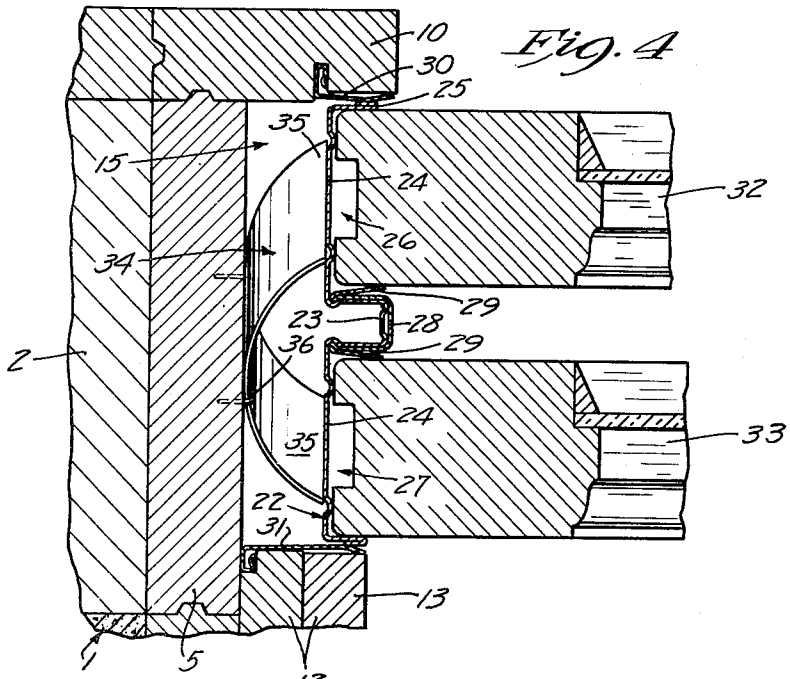
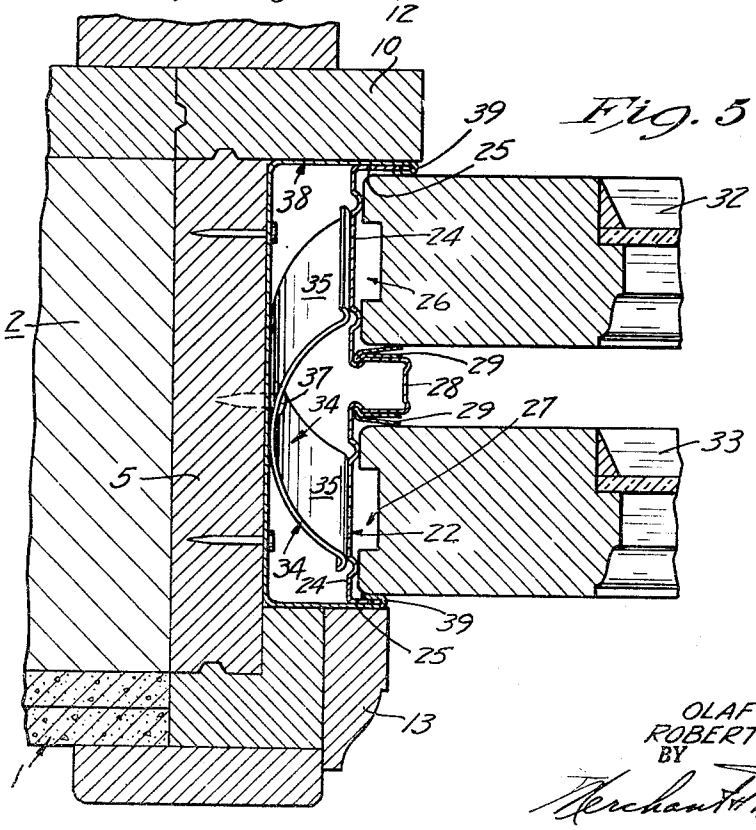


Fig. 5



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REMOVABLE DOUBLE HUNG WINDOW SASH STRUCTURE

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4 Claims. (Cl. 20—52.2)

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Our invention relates to improvements in double hung window constructions of the kind wherein the individual sash are removable without disassembly of the frames in which they are mounted. More particularly, our invention pertains to double hung window constructions of the above-mentioned variety wherein the individual sash are yieldably and releasably retained against accidental displacement from the guide channels of the frame by spring devices which may, if desired, be adjusted to serve also to frictionally retain the sash in variously-adjusted closed, opened, or partially opened positions in their guide channels, to thereby eliminate the necessity of the usual counterbalancing devices.

A particular object of the instant invention is the provision, in a double hung window construction of the variety described, of improved spring devices for accomplishing either or both of the above-described dual functions of yieldably and releasably retaining the individual sash against accidental displacement from their respective guide frame channels, and against accidental opening and closing sliding movements in their respective guide channels.

The above and other highly important objects and advantages of the invention will be made apparent from the following specification, claims and attached drawings.

Referring to the drawings, wherein like characters indicate like parts throughout the several views:

Fig. 1 is a fragmentary view in side elevation of the inside of a wall of a building equipped with a window construction involving the invention;

Fig. 2 is a greatly enlarged horizontal sectional view, taken on the line 2—2 of Fig. 1;

Fig. 3 is a vertical sectional view, taken on the line 3—3 of Fig. 1, said view being enlarged with respect to Fig. 1, but to a degree considerably less than Fig. 2;

Fig. 4 is a sectional detail view corresponding to the left-hand side of Fig. 2, but on a still further enlarged scale; and

Fig. 5 is a sectional detail view generally corresponding to Fig. 4, but showing a somewhat modified form of the invention.

Description, Figs. 1 through 4

In these Figs. 1 through 4, the wall of the building, indicated by 1, is provided with the usual rough window opening defined at its sides by vertical studs 2, at its top by a transverse header 3 and at its bottom by a transverse header 4. Mounted in this rough wall opening is a window

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frame comprising laterally-spaced parallel side or jamb members 5 and 6, a horizontal upper frame member 7, outwardly sloping horizontal bottom member 8, fixed vertical outer sash stops 9 and 10, a vertical inner stop strip 11 and a composite inner vertical stop 12 comprising a strip 13 corresponding to the strip 11. By reference particularly to Fig. 2, it will be seen that the frame elements 6, 9 and 11 define a comparatively shallow primary sash channel 14 at one side of the window frame (the right side in Fig. 2) and that the frame elements 5, 10, 12 and 13 define a relatively much deeper sash channel 15 at the other side of the window frame, namely, the left-hand side in Fig. 2.

The primary frame channel 14, shown at the right in Fig. 2, is divided at its transverse center by a vertical parting strip 16 to provide an outer sash channel 17 and an inner sash channel 18. In the preferred embodiment of the invention illustrated, this parting strip 16 is integrally formed as part of a sash channel lining further comprising wings 19 and side flanges 20; this sash channel lining being rigidly anchored in place by nails or the like 21 and extending the full length of the primary channel 14.

Laterally slidably mounted in the relatively deep frame side channel 15, shown at Fig. 4 and at the left in Fig. 2, is a floating sealing element, indicated as an entirety by 22 comprising a parting strip portion 23 and laterally-spaced wing portions 24. As will be seen by reference to the drawings, the parting strip portion 23 and wing portions 24 of the sealing member 22 effectively divide the outer portion of the primary frame channel 15 into outer and inner sash channels 26 and 27, respectively. In the preferred embodiment of the invention illustrated, the free end portions of the wings 24 of the floating sealing member 22 are provided with outturned marginal flanges 25, which define the outer sides of the sash channels 26 and 27 (see particularly Figs. 2 and 4).

In the preferred arrangement illustrated, suitable resilient metallic sash-engaging weather stripping is mounted on the parting strips 16 and 23; each such weather stripping comprising a U-shaped portion 28 embracing and yieldably interlocked to a parting strip 16 or 23 and resilient sash-engaging wing portions 29. Also in the preferred embodiment of the invention illustrated, opposite sides of the primary channel 15 (see Fig. 4 and the left-hand portion of Fig. 2) are equipped with resilient sash-engaging weather strips 30 and 31.

Seated in the outer channels 14 and 26 is a conventional glazed upper sash 32. Similarly seated in the inner channels 18 and 27 is a conventional glazed lower sash 33.

The floating sealing member 22, shown in Fig. 4 and at the left in Fig. 2, and the sash 32 and 33 are yieldingly urged toward the right with respect to Figs. 2 and 4 by means of a plurality of spring devices 34 which, in accordance with the invention, each comprise a bowed leaf spring intermediately reacting against and anchored to the frame member 5 and being diagonally disposed in the primary frame channel 15 with its opposite free end portions 35 each in engagement with a sealing member wing 24 located at an opposite side of the weather strip portion 23 of the sealing member 22 and opposed to the adjacent vertical edge of a different one of the sash 32 and 33. While various different anchoring devices or means may be employed for intermediately anchoring the bowed leaf springs 34 to the adjacent side of the frame, we have found that satisfactory results may be obtained by utilizing wide staples 36 for this purpose (see Figs. 2, 3 and 4). The bowed leaf springs 34 exert sufficient outward pressure on the floating sealing member 22 to maintain the wings 24 thereof in tight frictional weather sealing contact with the adjacent edges of the sash 32 and 33 and to maintain the other edges of the sash 32 and 33 in snug weather sealing frictional engagement with the bottoms of the frame channels 17 and 18. In fact, the springs 34 exert sufficient pressure on the sash 32 and 33 to maintain the sash frictionally supported in various different positions of vertical sliding adjustment without the use of counterbalancing devices. Also, of course, the springs 34 exert sufficient outward pressure on the sash 32 and 33 to maintain the same against accidental withdrawal from the opposite frame channels 17 and 18, such as is required, for example, to forcibly remove the sash from the frames. In this connection, it will, of course, be understood that the channel 15, shown at the left in Figs. 2 and 4, is of sufficient depth to allow forced insertion of the sash therein to sufficient depths to free the opposite edges thereof from their respective channels 17 or 18 to permit removal of the sash, either inwardly or outwardly.

By reference to the drawings, it is important to note that, in accordance with the invention, each bowed leaf spring 34 serves two sash and two sides of the floating sealing member 22, which expedient reduces to a minimum the cost of material and installation time. Also, it is important to note that by diagonally disposing the bowed leaf springs 34 in the frame channel 15, springs of almost any desired length may be employed, since maximum spring lengths are not then limited to the width of the channel 15 as would be the case with the springs horizontally disposed in the channel. Hence, in carrying out the invention, the springs 34 are preferably of lengths considerably greater than the width of the channel 15. In the preferred arrangement, this is true of the arcuate end to end measurement taken about the peripheries of the bowed leaf springs and of the straight line end to end measurements of the springs in various degrees of distortion. One of the advantages of the use of such relatively-long leaf springs is that they provide more uniform pressure over a greater range of distortion than do shorter springs. Hence, these long springs may be made to exert sufficient pressure on the sash to retain the same in different adjusted positions and against accidental displacement from the channels 17 and 18 without exerting unduly high resistance to extreme forced flexing, such as is required to forcibly remove the sash from the channels 17 and 18.

Description, Fig. 5

In this Fig. 5, all parts corresponding to parts shown in and described in connection with Figs. 1 through 4 are indicated by like characters. Virtually, the only important differences between the structure of Fig. 5 and preceding figures are as follows, to wit:

(A) The use of a screw 37 to intermediately anchor each of the leaf springs 34 as a substitute for the anchoring staples 36 of the preceding figures; and

(B) The use of a U-shaped metallic lining 38 in the frame channel 15, the latter having free edge portions of its side walls turned backwardly and inwardly upon themselves to provide channeled stop flanges 39 to slidably receive the side flanges 25 of the floating sealing element or member 22.

When this stop-flange equipped lining 38 is employed, a very satisfactory weather seal is provided without the use of weather strips, such as shown at 30 and 31 in Figs. 1 through 4 and the floating sealing member 22 is more positively retained against accidental outward displacement when the sash 32 and 33 are removed.

From the foregoing it will be clear that we have provided a simple and effective mechanism for accomplishing the objects set forth; and, while we have disclosed a preferred embodiment of our device, it will be understood that the same is capable of modification without departure from the spirit and scope of the invention as defined in the claims.

What we claim is:

1. In a removable double hung window sash construction, a window frame structure having opposed laterally-spaced sides, said sides comprising jambs and sash stops, one of said frame sides defining parallel inner and outer channels and an intervening parting strip, the other of said frame sides defining a channel of a width approximately equal to the combined width of the parallel channels and parting strip of the other frame side, a floating sealing member of substantially the width of said last frame channel mounted therein in spaced relation to the bottom thereof and for movements toward and from the opposite side of the frame, said floating sealing member comprising a parting strip portion and oppositely-projecting wing portions extending entirely across said last frame channel and contacting said sash stops, an upper and a lower sash having side stiles for sliding vertical movement in said frame, the stiles of one side of said sashes being slidable, one in the inner channel and one in the outer channel of the first-said frame side, the stiles of the other side of said sashes being disposed within the channel in the second said frame side on opposite sides of the parting strip portion of the floating sealing member and in sliding contact with the opposite extending wing portions of the sealing member, and a plurality of bowed leaf springs located in the space between the bottom of the last said frame channel and the floating sealing member yieldingly urging the floating sealing member and the sashes in the direction of the other

side of the frame, said bowed leaf springs being diagonally disposed in the last said frame channel with their intermediate portions anchored to and exerting a force against the transversely intermediate portion of the channel bottom, their free ends being in engagement with opposite wings of the floating sealing member intermediate the parting strip portion and the opposite edges of the floating sealing member.

2. The structure defined in claim 1, in which the arcuate length of each said bowed leaf spring is materially greater than the width of the frame channel in which it is situated.

3. In a removable double hung window sash construction, a window frame structure having opposed laterally-spaced sides, said sides comprising jambs and sash stops, one of said frame sides defining parallel inner and outer channels and an intervening parting strip, the other of said frame sides defining a channel of a width approximately equal to the combined width of the parallel channels and parting strip of the other frame side, a floating sealing member in contact with said sash stops and extending entirely across said last frame channel and mounted therein in spaced relation to the bottom thereof and for movements toward and from the opposite side of the frame, said floating sealing member defining parallel inner and outer channels and each having a flange and wing portions and an intervening parting strip, an upper and a lower

sash slidably mounted one in the inner channels and one in the outer channels, and a plurality of bowed leaf springs located in the space between the bottom of the last said frame channel and the floating sealing member and yieldingly urging said floating sealing member and the sashes in the direction of the other side of the frame, said bowed leaf springs being diagonally disposed in the last said frame channel with their intermediate portions anchored to and exerting a force against the transversely intermediate portion of the channel bottom their free ends being in engagement with the wings of the channels of said floating sealing member intermediate the parting strip portion and the opposite edges of the floating sealing member.

4. The structure defined in claim 3, in which the straight-line measurement between the free ends of each bowed spring is greater than the width of the channel in which the spring is situated.

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