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L. R. BEARD

2,679,665

COMBINATION STORM SASH AND SCREEN

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3 Sheets-Sheet 1

BY Paul Young
ATTORNEY.

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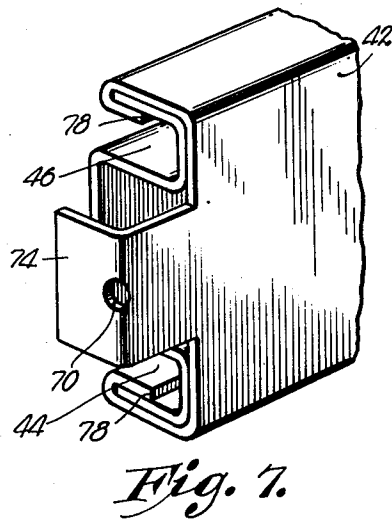
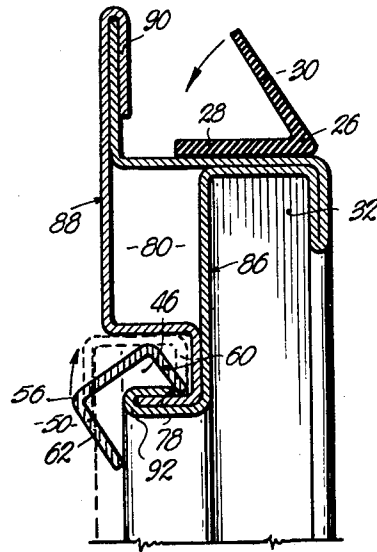
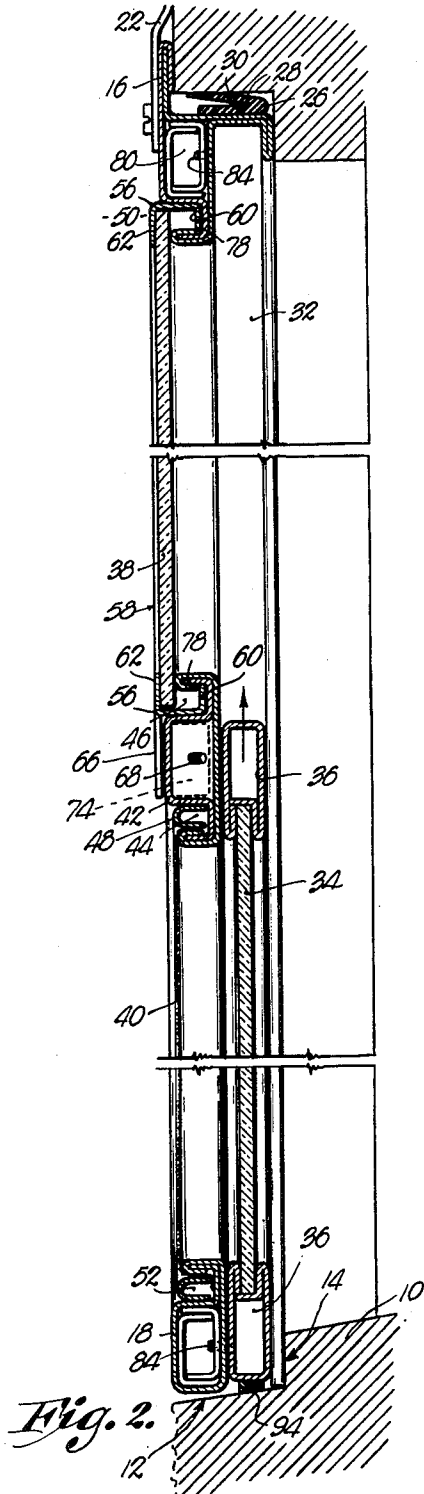
L. R. BEARD

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INVENTOR.
Leslie R. Beard

BY Carl Young
ATTORNEY.

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L. R. BEARD

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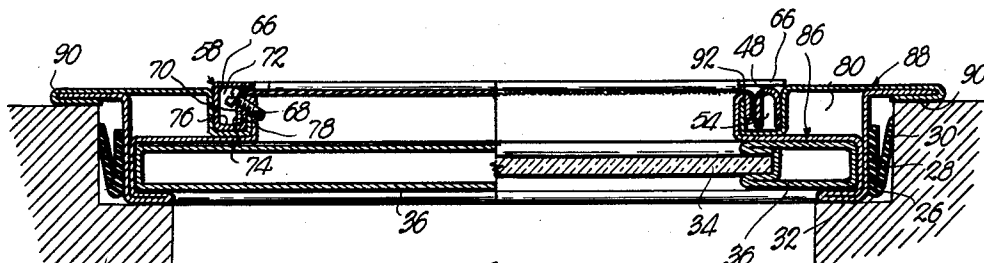


Fig. 3.

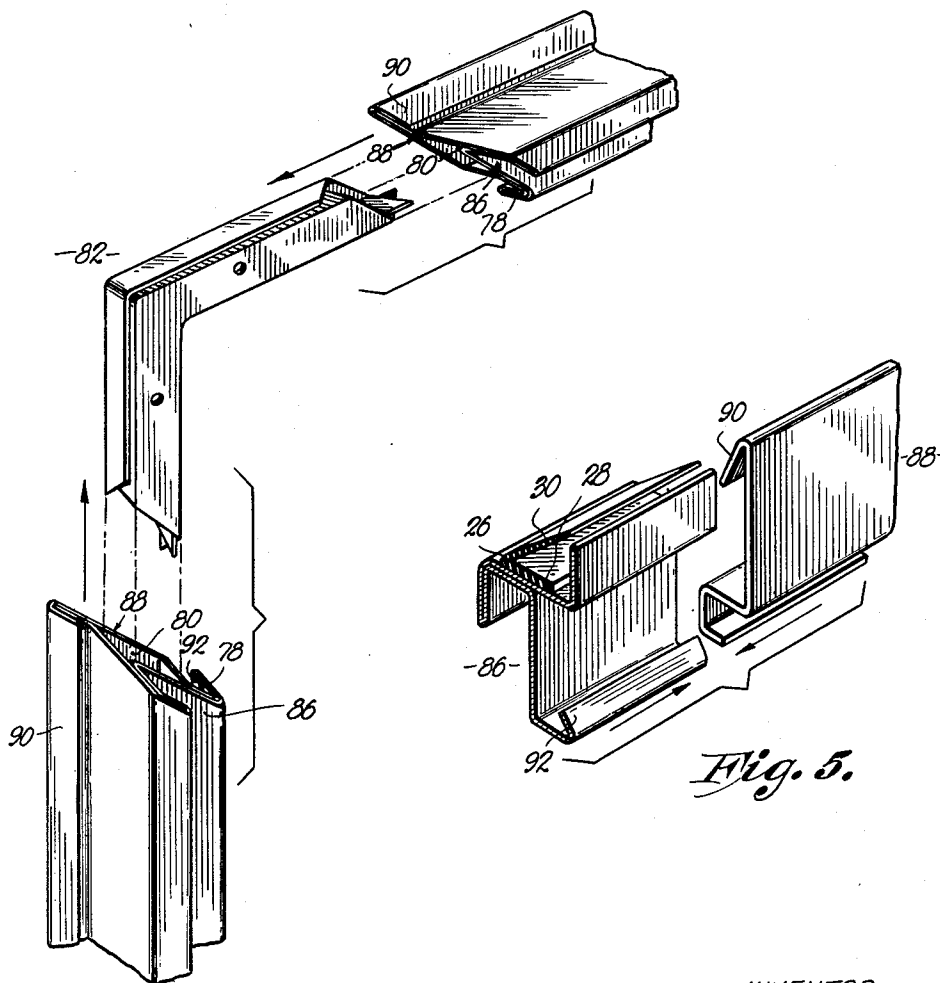


Fig. 4.

Fig. 5.

INVENTOR.
Leslie R. Beard.

BY *Geel H. Young*
ATTORNEY.

UNITED STATES PATENT OFFICE

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COMBINATION STORM SASH AND SCREEN

Leslie R. Beard, McPherson, Kans.

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5 Claims. (Cl. 20—55)

1

This invention relates to combination storm sash and screen structures for windows and pertains particularly to such assemblies as have permanently fixed screens over a portion of the area thereof and a permanently fixed sheet of glass covering the remaining portion of the frame of the assembly. Such structure, also, have a slidable pane of glass movable to and from a position covering the screened area of the frame, whereby a storm sash is produced for use in colder months and as a complete storm window for the opening being protected.

One of the important aims of this invention is to provide a combination storm sash and screen, the component parts whereof are constructed of metal created in ways capable of allowing quick assembly with a minimum amount of effort and tools.

A further aim of the instant invention is the provision of a frame structure for combination storm sash and screens, which frame structure has unique parts for securing a sheet of glass in place through the employment of metal units only and without the use of caulking compounds or putty that might become hardened and inefficient after a period of use.

A yet further aim of this invention is to provide a unique frame element for combination storm sash and screen, which frame element is composed of a pair of interlocked strips each contoured to present functional grooves, one for the reception of a retaining clip for the permanent sheet of glass and the other contoured and disposed to receive the slidable section of the storm window when the structure is in place.

Details of construction constitute important objects of this invention, and such aims and the character of forming and using the novel component parts constituting the invention will appear during the course of the following specification, referring to the accompanying drawings, wherein:

Fig. 1 is a condensed front elevational view of the combination storm sash and screen structure made in accordance with my invention.

Fig. 2 is a sectional view taken on line II—II of Fig. 1, looking in the direction of the arrows.

Fig. 3 is an irregular cross sectional view taken on line III—III of Fig. 1, looking in the direction of the arrows.

Fig. 4 is a fragmentary, perspective, stretch-out view of one corner of the frame forming a part of the structure and illustrating the manner of applying the splicer thereto.

Fig. 5 is a fragmentary, perspective, stretch-out

2

view illustrating the manner of interlocking the two component formed strips constituting the main frame of the structure.

Fig. 6 is an enlarged, fragmentary, cross sectional view through one of the rails of the frame; and,

Fig. 7 is an enlarged, perspective view of one end of the muntin bar entirely removed from the remaining portions of the structure.

The form of storm sash and screen structure chosen for illustration is adapted particularly for application to the window frame of a building, which window frame is broadly designated by the numeral 10 and includes a conventional sill 12 at the bottom of the frame and adjacent to the stop 14 which extends around the opening formed by the frame. The frame per se comprises a pair of end rails 16 and 18, respectively, normally disposed at the upper and lower portions of the structure and window frame 10, and a pair of identical side rails 20 that join rails 16 and 18 to complete a frame having a size comparable to the opening within the window frame 10 and capable of being attached thereto through the medium of conventional hangers 22 fastened to the upper rail 16.

When the frame is assembled, the upper and side rails 16 and 20, respectively, present outturned flanges 24 that lie in the major plane of the frame and rest against the outer surface of window frame 10 across the top and along the two opposite vertical sides thereof. The bottom rail 18 is spaced slightly above sill 12 as shown in Fig. 2; and, in the event rain passes through the hereinafter-described screen, it will be carried away along the upper, downwardly and outwardly inclined surface 12 of the sill.

A V-shaped weather stripping 26 is secured to the outer faces of rails 16 and 20, respectively, in a manner clearly shown in Figs. 2 and 6; and, when the frame is in place, this weather stripping will be confined in a compressed condition between the outer edge of rails 16 and 20 and the inner face of the window frame 10. One leg 28 of weather stripping 26 is secured to the rails of the frame, and the other leg 30 of weather stripping 26 is free to flex to the position and condition shown in Fig. 2.

In practice, this weather stripping 26 is composed of rubber and cooperates with outturned flanges 24 in sealing the meeting surfaces of the sash and window frames against passage of the elements into the building upon which the structure made according to my invention is mounted.

The upper and side rails 16 and 20, respectively,

3

cooperate in forming a groove 32 along the top and two vertical sides of the structure, and this groove 32 receives a movable sheet of glass 34 which is mounted in a metal binding 36. The manner of forming this binding 36 and securing the same to the marginal edges of the sheet of glass 34 is clearly shown in Fig. 2.

When the binding is mounted in the opposed grooves 32 of the vertical side rails 20, this shiftable sheet of glass 34 may assume the position shown in Fig. 2 to cooperate with another sheet of glass 38 in forming a full-length storm window; or the sheet of glass 34 may be moved upwardly in the direction of the arrow shown in Fig. 2 to a position in parallelism with sheet of glass 38 to permit screen 40 to function in a normal manner during the time when the user of the structure is desirous of admitting air through the window frame of the building and by way of screening or foraminous material 40.

The combination storm sash and screen frame composed as above defined is divided into two substantially equal areas, one of which is permanently covered by screen 40 while the other area is permanently covered by sheet of glass 38. The means for dividing the said structure is in the nature of a double muntin bar 42 having outwardly-directed grooves 44 and 46, respectively, to receive a securing strip 48 and a retainer 50 for the screen and sheet of glass 40 and 38, respectively.

The recurring strip 48 is frictionally held within groove 44 formed in muntin bar 42 and in a similar groove 52 formed in rail 18 across the bottom of the assembly. Each side rail 20 has a groove 54 provided therein to receive another stretch of securing strip 48. Thus, as shown in Fig. 1, screen 40 is held in place by four separate, U-shaped securing strips 48 extending around the opening between the bottom rail 18, muntin bar 42 and the lower portions of side rails 20.

The sheet of glass 38 is held in position by retainers 56 along two opposite edges thereof, and retainers 58 engage the sheet of glass 38 along the remaining two opposite edges, as shown in Fig. 1. These retainers are U-shaped in transverse cross section, and one leg 60 thereof is shorter than the opposite or remaining leg 62 for the special purpose of affording an interlocking element and a facing strip across the marginal edge of sheet of glass 38.

The side retainers 58 have the bights 64 and the relatively wide legs 66 thereof extended beyond the ends of double muntin bar 42 to cover the zone of juncture or the end of muntin bar, as clearly illustrated in Fig. 1. In this respect, screw 68 extending through opening 70 in a portion of muntin bar 42 is housed within the groove 72 of side rails 20.

The L-shaped finger 74 at the end of muntin bar 42 is formed as shown in Fig. 7; and, when screw 68 is placed as more graphically shown in Fig. 3, the muntin bar will be held in place and the screw head 68 will be housed within groove 72 which is closed by the overhanging portion of retainer 58.

Each retainer 56 and 58, respectively, which secures sheet of glass 38 in place, has the relatively short leg 60 and 76, respectively, thereof confined within the grooves and behind a shoulder 78. Thus, when the retainers are in the position shown in dotted lines in Fig. 6 and, also, in Figs. 1, 2 and 3, the same will be held against accidental outward movement and against the sheet of glass 38.

The main frame of the entire assembly com-

4

prises four separate parts as above indicated, i. e., the end rails 16 and 18, respectively, and side rails 20. These rails are hollow and present a chamber 80 into which the L-shaped splicer 82 is fitted when the parts are assembled. One splicer at each corner of the main frame tightly engages the proximal portions of the rails 18 and 20 or 16 and 20, as the case may be; and, while these splicers tightly and frictionally grip the said rails, it has been found desirable, in some instances, to employ a desired number of fastening screws 84 passing through a desired part of the side rail and the splicer 82.

The normally upper end rails 16 and side rails 20 are formed of two strips of material contoured as shown in Fig. 5 and interlocked along their longitudinal, marginal edges as becomes evident by an observation of the parts illustrated in Figs. 5 and 6 in the order mentioned. The normally inner strip 86 is bent as indicated in Figs. 5 and 6, as well as on a smaller scale in Figs. 2 and 3; and it is this strip 86 which forms groove 32 for the reception of the reciprocable sheet of glass 34.

This groove 32 is continuous along the side rails 20 and across the end rail 16. The other strip 88 forms groove 46 wherein the glass and screen retainers 56 and 58, respectively, are confined. In the case of the end rails 16, the retainer 56 is mounted in the groove 46 with the inner relatively short leg of the retainers held behind the shoulders 78.

The length of legs 60 of the retainers 56 and 58, as the case may be, is substantially the same as the width of the groove entered by the retainers; and the inherent resiliency of the strips 88 from which the rails are made permits introducing the retainer 56, for example (Fig. 6), in the manner shown.

The rebent marginal edge 90 of strip 88 embraces one longitudinal marginal edge of strip 86 to form the flange 24 heretofore defined as bearing against the outer surface of the building around the window opening with which the structure is employed. The rebent marginal edge 92 embraces the opposite longitudinal marginal edge of strip 88 to form groove 46 and the retaining shoulder 78. These strips 86 and 88 are individually created and then moved into assembled condition as shown in Fig. 5. A stiffened, rigid rail is thereby produced.

Normally lowermost end rail 18 is devoid of this flange 24, for this rail lies above the sill of the window and in slightly spaced relationship to the downwardly and outwardly inclined upper surfaces 12 thereof. In the event rain enters screen 40 and drops down behind this lower rail 18, the rain water will escape by running along the inclined surface 12 below rail 18. When the structure is employed as a complete storm sash with the sheet of glass 34 in the lowered condition as shown in Fig. 2 and covering the screened area, a weather strip 94 along the bottom of binding 36 will rest upon sill surface 12 and cooperate with the weather stripping 26 around the remaining three sides of the structure in preventing the ingress of the elements.

When the structure is assembled, normally lower end rail 18 and two side rails 20 are secured together at their corners by the splicers 82 and the double muntin bar 42 is placed through the medium of screws 68. Screen 40 is moved to position and its marginal edges forced into the grooves 52, 44 and 72 of normally lower rail 18, muntin bar 42 and side rails 20, respectively, by securing strips 48.

5

Retainer 56 is then moved into groove 46 of muntin bar 42 and the sheet of glass 38 slipped between the leg 62 of retainer 56 and the edge of muntin bar 42 that is in opposed, spaced relation with legs 62 as seen in Fig. 2. Retainers 53 are then slipped into position along the opposite normally vertical edges of the sheets of glass 38 with the extended ends overlying the ends of muntin bar 42 as hereinbefore set down.

Normally upper rail 16 is then moved to position with retainer 56 in its operative position within groove 46. Splicers 82 have one stretch thereof within rail 16; and, when the other stretches of the splicers are forced into chambers 80 of side rails 20, the said normally upper rail 16 is secured in place to complete the assembly of the entire structure. With the sheet of glass 38 thus held in position around all of its marginal edges by the retainers which have their relatively short legs 60 interlocked behind the shoulders 78, said sheet of glass 38 will not accidentally move from operative position, and a tight, rigid arrangement of parts is accomplished.

Double muntin bar 42 is formed from two strips of material contoured to have the marginal, longitudinal edges in overlapping relation as shown in Fig. 7, thus, also, to create a shoulder 78 in the groove 46 and with which the retainer 56 will cooperate.

Having thus described my invention, what I claim as new and desire to secured by Letters Patent is:

1. In closure structure for a building having an opening, an elongated top rail, an elongated bottom rail, and a pair of elongated side rails; means joining the rails to present a continuous frame defining a rectangular opening; and an elongated muntin bar parallel with the top and bottom rails; means joining the muntin bar to the side rails intermediate the ends of the latter, all of the rails having a longitudinal portion and the muntin bar having a pair of longitudinal portions, said portions each having a pair of legs and a bight rendering each portion U-shaped in cross section and defining a groove for receiving a clip adapted to hold a closure against one of the

6

legs, the grooves of said portions all facing outwardly away from the building when the frame is mounted in said opening of the building, the top rail and the side rails each having a longitudinal strip provided with a short leg, a long leg and a bight rendering each strip J-shaped in cross section and defining a sash-receiving groove facing inwardly toward said rectangular opening, said strips being disposed between said portions and the building when the frame is mounted in said opening of the building.

2. In closure structure as set forth in claim 1 wherein each of said portions is provided with a flange within the groove thereof having a longitudinal shoulder spaced from and facing the bight of said portions.

3. In closure structure as set forth in claim 1 wherein said long legs are in overlapping engagement with the bights of said portion of the top rail and the side rails.

4. In closure structure as set forth in claim 3 wherein each of said long legs has a rebent marginal edge looped around one of the legs of said portion of the top rail and the side rails to join the strips to said portions of the top rail and the side rails.

5. In closure structure as set forth in claim 4 wherein said rebent marginal edge has a flange within the groove of said portions of the top rail and the side rails provided with a shoulder spaced from and facing the bight of said last-mentioned portions.

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