

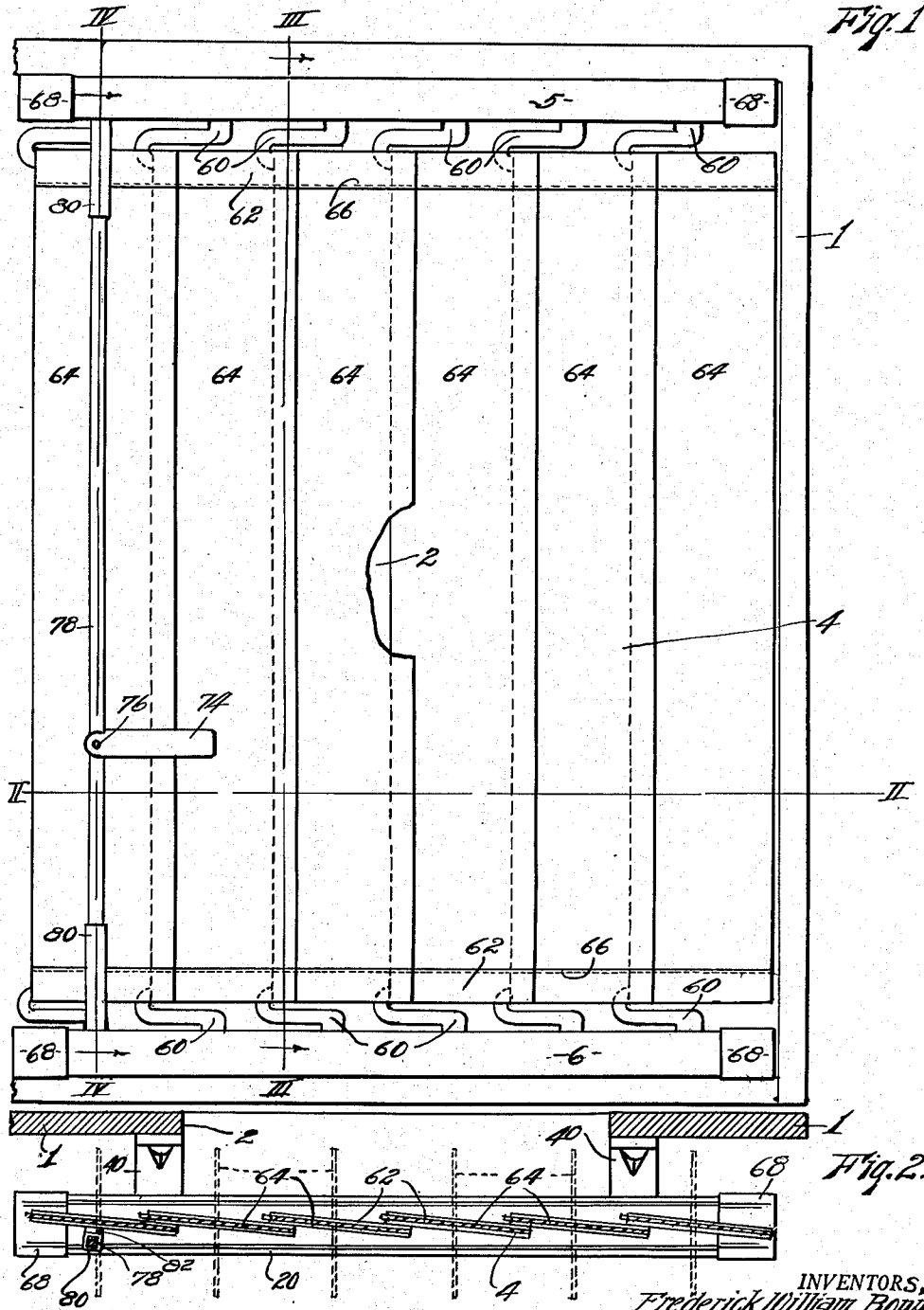
Nov. 24, 1953

F. W. BOPP ET AL
VERTICAL WINDOW SHUTTER

2,660,237

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4 Sheets-Sheet 1



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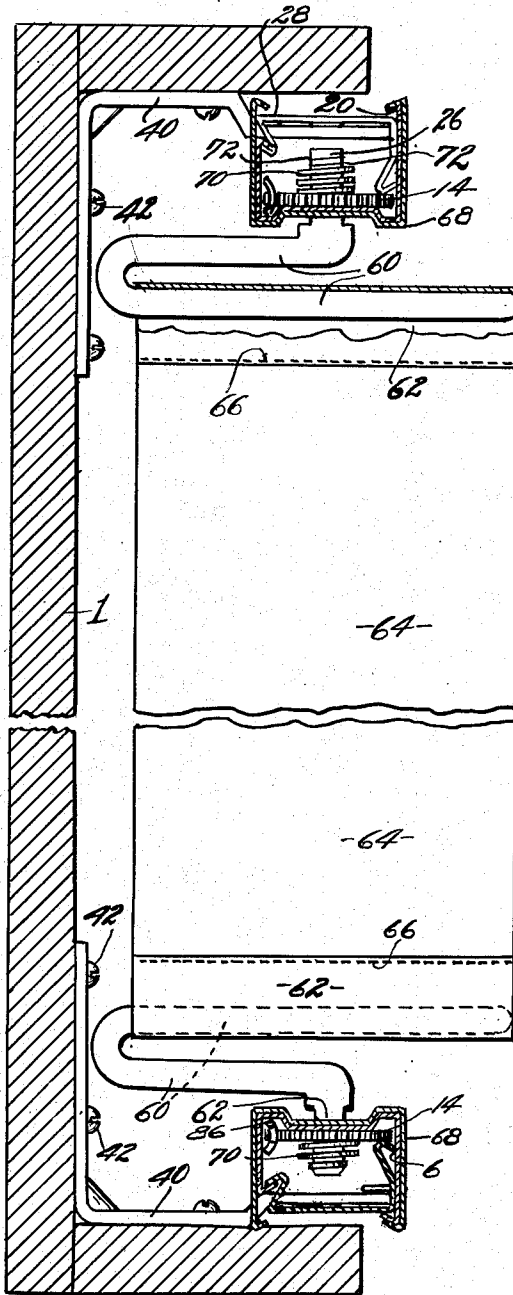


Fig. 3

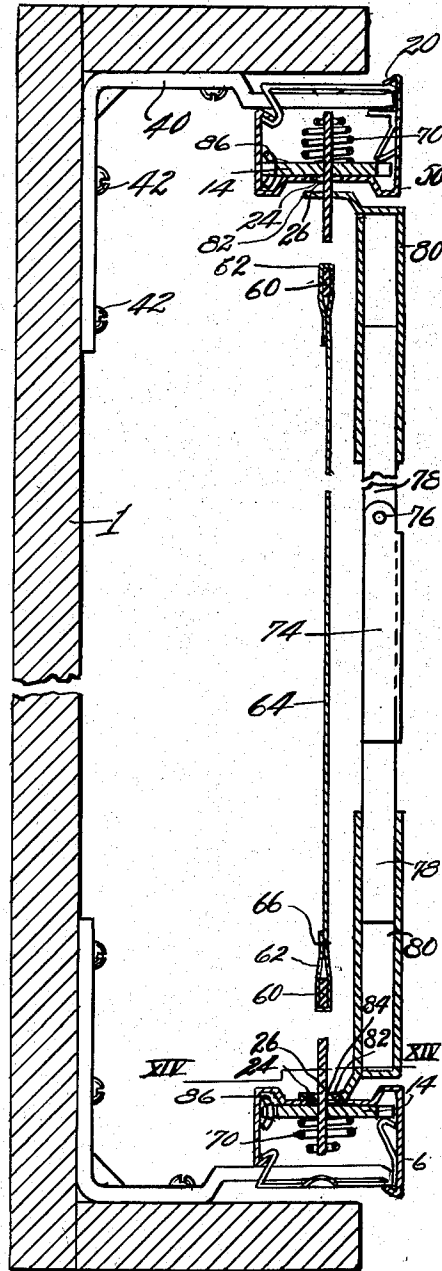


Fig. 4

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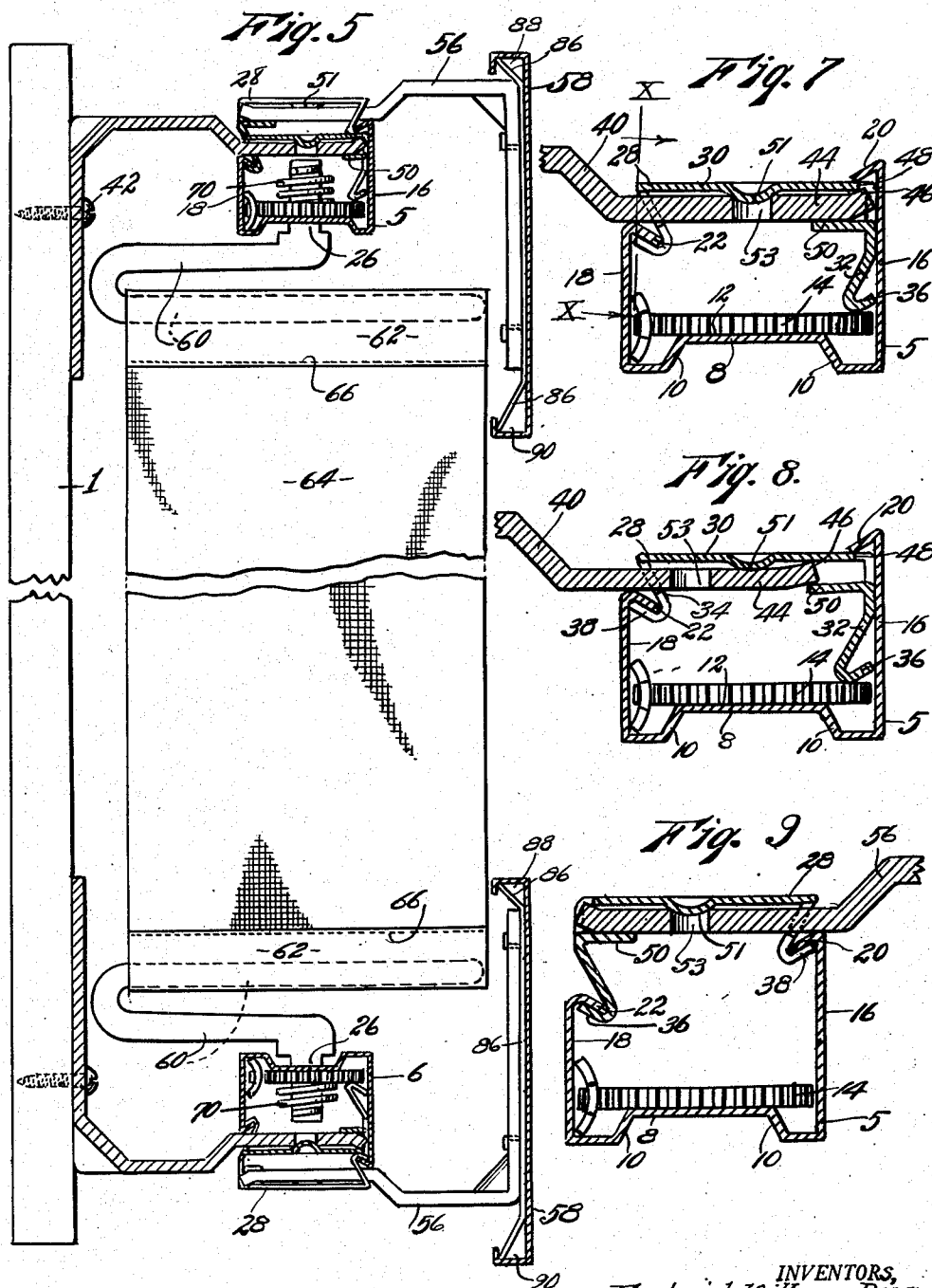
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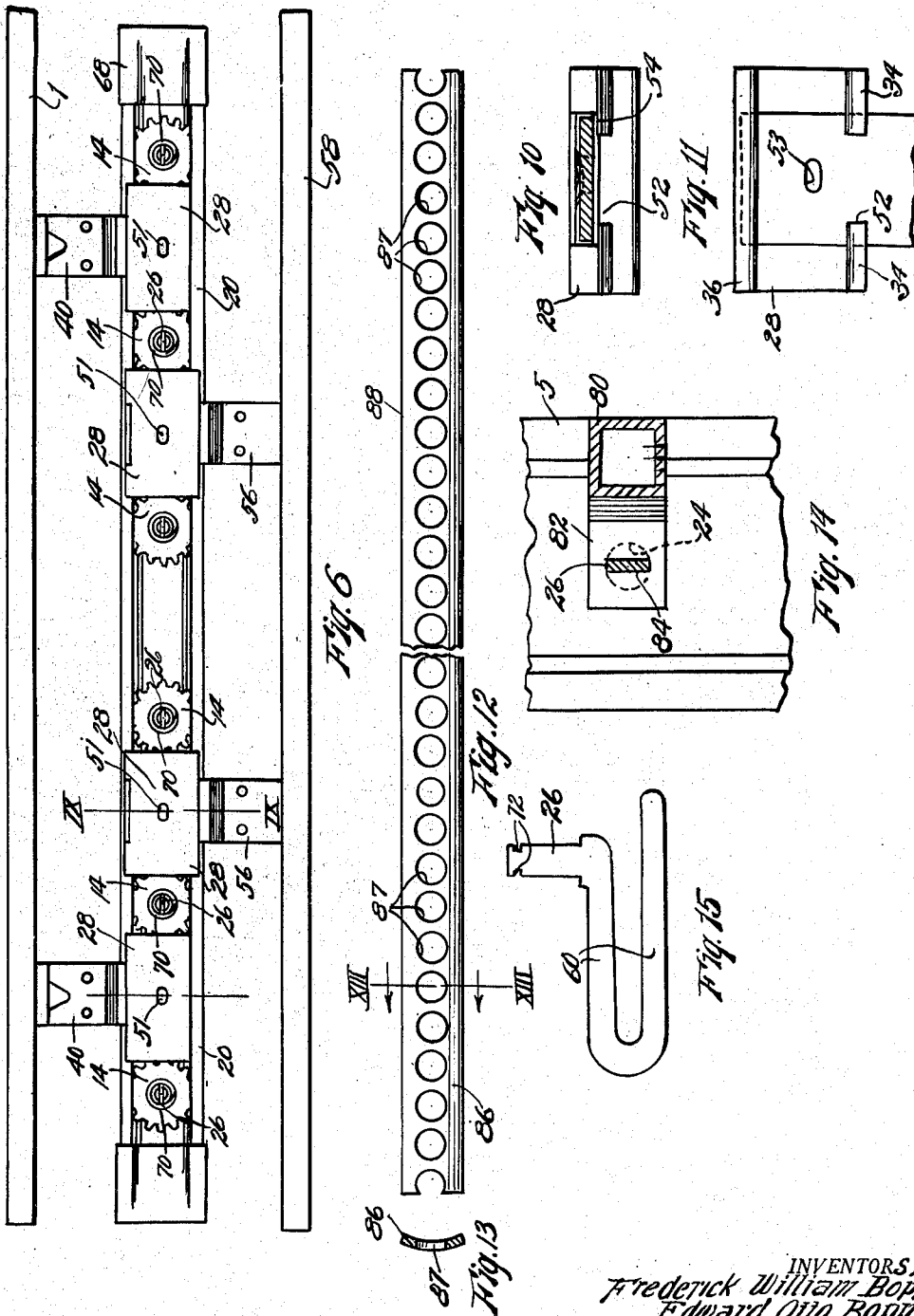
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UNITED STATES PATENT OFFICE

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VERTICAL WINDOW SHUTTER

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1

This invention relates to improvements in vertical window shutters and has particular references to window shutters having vertically spaced apart horizontally disposed channel members with a plurality of vertically disposed strips carried under tension therebetween.

The principal object of the present invention is the provision of a window shutter having operating channel members provided with relatively adjustable parts whereby brackets for supporting said operating channel members to the window frame and brackets for supporting a facia board to the operating channel members may be accomplished by simply relatively adjusting the operating channel member parts.

Another object of the present invention is the provision of a support structure for window coverings comprising a pair of channel support members, positioned respectively adjacent the upper and lower edges of the window frame opening, a bracket receiving member mounted for longitudinal adjustment on one of said channel support members, an angled bracket member secured by one of its legs to the window frame and with its other leg removably secured in said bracket receiving member, whereby the channel supporting member is secured in position to said window frame, another bracket receiving member carried in reverse position on said channel support member to receive one leg of an angled bracket while the other leg of said bracket is secured to a facia board, whereby the facia board is secured to said channel support member inside said window structure.

Other objects are simplicity and economy of construction, ease and efficiency of operation, and adaptability for use wherever a shutter for controlling light and air is needed.

With these objects in view as well as other objects which will appear during the course of the specification, reference will now be had to the drawings, wherein:

Fig. 1 is an inside elevational view of a vertical window shutter embodying this invention.

Fig. 2 is a horizontal sectional view of the window shutter taken on line II—II of Fig. 1.

Fig. 3 is an enlarged, foreshortened vertical section taken on line III—III of Fig. 1 with the strips turned to the transverse open position.

Fig. 4 is a view similar to Fig. 3 taken on line IV—IV of Fig. 1.

Fig. 5 is a figure similar to that shown in Fig. 3 with facia boards shown in position thereon.

Fig. 6 is a reduced plan view of the upper channel support of the window shutter shown in Fig. 5.

2

Fig. 7 is an enlarged fragmentary sectional view of the wall supporting bracket in relation to upper support channel 5.

Fig. 8 is a sectional view similar to that shown in Fig. 7, with the wall supporting bracket positioned in its initial position for movement to the securing position shown in Fig. 7.

Fig. 9 is an enlarged fragmentary sectional view taken on line IX—IX of Fig. 6, showing the supporting position of the facia board supporting bracket.

Fig. 10 is a reduced rear view of the bracket mounting member taken on line X—X of Fig. 7 with parts omitted.

Fig. 11 is an inverted plan view of the parts shown in Fig. 10.

Fig. 12 is an elevational view of rack shown as foreshortened.

Fig. 13 is a sectional view taken on line XIII—XIII of Fig. 12.

Fig. 14 is an enlarged fragmentary cross sectional view taken on line XIV—XIV of Fig. 4.

Fig. 15 is an elevational view of one of the gear shafts and hook member.

Throughout the several views like numerals refer to similar parts and the numeral 1 designates a window frame of a suitable type having a window opening 2 which is to be covered with a vertical window shutter 4 to regulate the air and light passing therethrough. Elongated supporting channels 5 and 6 are identical and are made in pairs to be respectively positioned adjacent the upper and lower portions of the window opening in parallel relation. Each of the support channels is formed from an elongated sheet of metal to present a channel of uniform cross sectional form having a base 8 offset at 10 to present a longitudinally disposed table 12 to receive certain gear wheels 14 for operative movement thereon. The relatively long and short side walls of the channels 5 and 6 are designated respectively as 16 and 18, and are respectively provided with like inwardly and downwardly inclined flanges 20 and 22. The medial portion of base 8 is perforated at regular intervals to form round holes 24 to receive gear shafts 26 for rotation therein. Depending side walls 32 and 34 of the bracket mounting members 28 have flanges 36 and 38 respectively which engage and cooperate with flanges 20 and 22 of the elongated support channel to permit longitudinal adjustment on said channel to properly support the brackets relative to the window frame.

Referring now to Figs. 7, 8 and 9, it will be noticed that the angled bracket 40 secures the

upper window supporting channel 5 to the window frame. One leg of this bracket is secured to the window frame by means of wood screws 42 and has an outwardly projecting section or leg 44, which is adapted to be forced into position in said bracket mounting member 23 with its upturned outer end portion 46 engaging offset shoulder 48 formed in the body of 23, by the removal of the rearwardly projecting tongue 50 therefrom. This tongue is somewhat resilient and may be depressed to admit the forward end of 44 of the bracket 40 to move to the engaging position as shown with the depending boss 51 formed in member 23 to move into the opening 53 formed in the body of bracket 40.

In Fig. 8 the bracket 40 is shown in position with the end portion of 46 in position to force the tongue downwardly so that operating parts may be forced to the interengaging position as shown in Fig. 7. With this type of mounting it is apparent that the shutter may be easily and quickly mounted or dismantled by simply pressing the parts together or by pulling them apart. When the parts are positioned as just described it will be noted that the flange 20 of side wall 16 will rest on top of member 23 while the inner portion of projection 44 will rest on flange 22 of side wall 18, thus giving the supporting channel and associated parts rigid support. Referring now to Fig. 10, it will be noted that the narrow wall 34 is notched cut at 52 to form ledges 54 on which the bracket 40 rests as it is inserted into bracket mounting member 23. When the parts are positioned as shown in Fig. 7, it will be noticed that the side wall flange 36 will serve no interengaging function but will simply be positioned adjacent the upper side of gear wheel 14.

Referring now to Fig. 9, wherein the mounting of bracket 56 for supporting the facia plate 58 is shown it will be observed that the bracket mounting member 28 is reversed in the channel member 5 so that the facia board may be positioned inside the room in front of the channel member 5 and its associated parts whereby they are covered from view to persons within the room. It will be noted that gear shafts 26 are stamped from sheet metal to present a thin flat shaft 28 provided at its free end with transversely disposed hook member 60 adapted to be inserted in sleeve 62 formed at each end of vertical straps or strips 64 which normally lay in overlapped position to completely cover the said window opening and which may be turned by means of gears 14 to move the strip to relatively open positions. The sleeves 62 are formed by folding the end portion of the pliable strips 64 and stitching at 66. As clearly shown in Fig. 6 each end of the support channels is provided with a protecting slip on cap 68. Each shaft 26 extends through gear 14 and is provided with an expansive spring 70 which presses against said gear and is screwed at its other end into notches 72 formed in the outer end portion of said shafts. These springs 70 acting against opposite ends of strips 64 will always maintain the strips in taut stretched out position.

Reference will now be had to Fig. 4 wherein is shown connecting means whereby both series of shafts may be simultaneously rotated by a single hand lever 74, pivoted at 76 to an operating bar 78. This operating bar is shown square in cross section and is fitted at its opposite ends into socket members 80. Each socket member is provided at its closed end with a transversely dis-

posed side arm 82 slotted at 84 to snugly fit gear shaft 26 so that as hand lever 74 is oscillated, gear 14 will be operated through a like angle to drive rack bar 86 to simultaneously drive all of the gears in like manner to cause a like adjustment of all the shutter strips 64. It will be noted that operating bar 78 is of a suitable length that it can be vertically adjusted to remove one of its ends from one of the sockets 80. The bar 78 may then be rotated through 90 degrees and again inserted in said socket so that the two series of shafts will oscillate through like angles one ahead of the other to cause a twisting of the strips from top to bottom. Any designed degree of twist may be obtained by setting operating bar 78 in the proper position relating to the sockets. A rack bar 86 detailed in Figs. 12 and 13 is made of an elongated strip 88 arcuate in cross section, and perforated at regular intervals at 87 to receive the teeth of the respective gears 14 whereby they are moved in unison. This rack bar is mounted in support channel 5 with its edges resting against the inside surface of side wall 18 and in operation relation with, the gears resting on table 12 and operatively mounted on shafts 26.

Referring to Fig. 5, it will be noted that angled bracket 56 is provided at its inner leg with a fixed strip 86 which extends above and below the bracket to engage in grooves 88 and 90 formed respectively in the upper and lower edges of facia plate 58. When a plurality of these strips 86 are mounted in the facia board it will be held in the desired position relative to the window shutter.

Most of the specific description has been applied to channel support member 5, however it is also applicable to channel support member 6 disposed adjacent the lower portion of the window opening 2 in an inverted position, so that shutter strips 64 may be supported in vertical position therebetween. Springs 70 which exert a tension in opposite direction on strips 64 tend to secure the windows shutter structure parts in proper operating relation at all times regardless of shrinking of the materials or the action of moving air therebetween. This insures a silent and taut window shutter at all times regardless of changing conditions.

We claim:

1. A support structure for vertical window shutters comprising a pair of channel members disposed horizontally respectively at the upper and lower edge of the inner face of a window frame and opening respectively upwardly and downwardly, said channels being adapted to support shutter slats therebetween and each having side walls of different widths, the wider of said side walls being disposed outwardly from said window frame, a plurality of bracket receiving members carried by each of said channels, each of said bracket receiving members being of substantial U-shape with legs of unequal length and disposed in opposed relation to the associated channel, said bracket receiving member having a first position relative to said channel wherein the shorter leg of said member is in engagement with the narrower wall of said channel and the longer leg of said member is in engagement with and disposed entirely inside the wider wall of said channel, and being reversible to a second position wherein the shorter leg of said member is in engagement with and extends outwardly from the wider wall of said channel and the longer leg of said member is in engagement with the narrower wall of said channel, said bracket receiving member having a window formed in

5

the shorter leg thereof for receiving the horizontal leg of a bracket fixed to the window frame when said member is in the first position and for receiving the horizontal leg of a bracket fixed to a fascia board when said member is in the second position, said fascia board being disposed at the side of the channel opposite the window frame.

2. The structure as recited in claim 1 wherein said bracket receiving members engage said channels for sliding movement longitudinally therealong, whereby they may be spaced properly relative to the window frame or fascia board brackets.

3. The structure as recited in claim 1 wherein the side walls of each channel are each provided along their free edges with an inwardly turned flange, and wherein the free ends of the legs of said bracket receiving members are provided with outwardly turned flanges in sliding engagement with said channel flanges.

6

4. The structure as recited in claim 1 wherein each bracket receiving member is provided with resilient detent members operable to grip the associated bracket arm to prevent accidental dislodgment thereof.

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