Nov. 28, 1950 L. G. BROWN 2,531,499

SLAT OPERATING MECHANISM

Filed June 1, 1945 2 Sheets-Sheet 1

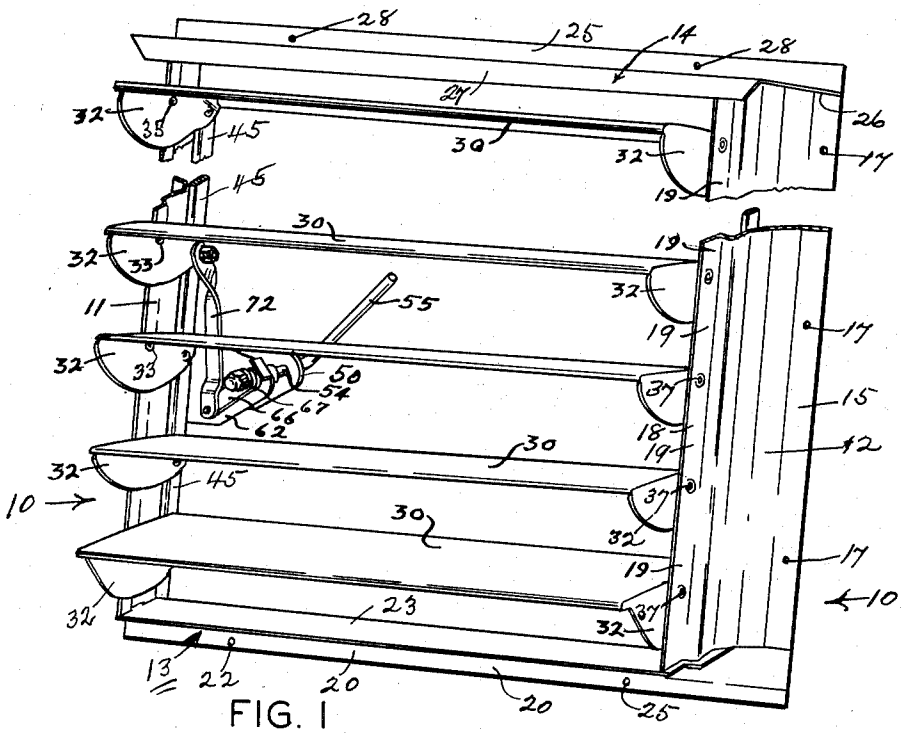

FIG. 1

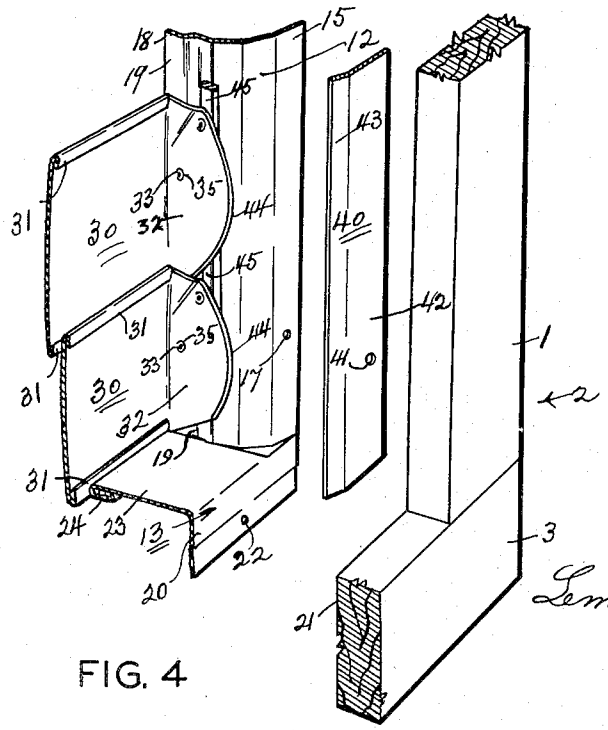

FIG. 4

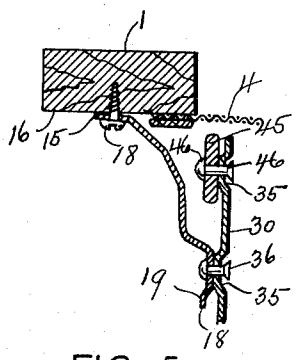

FIG. 5

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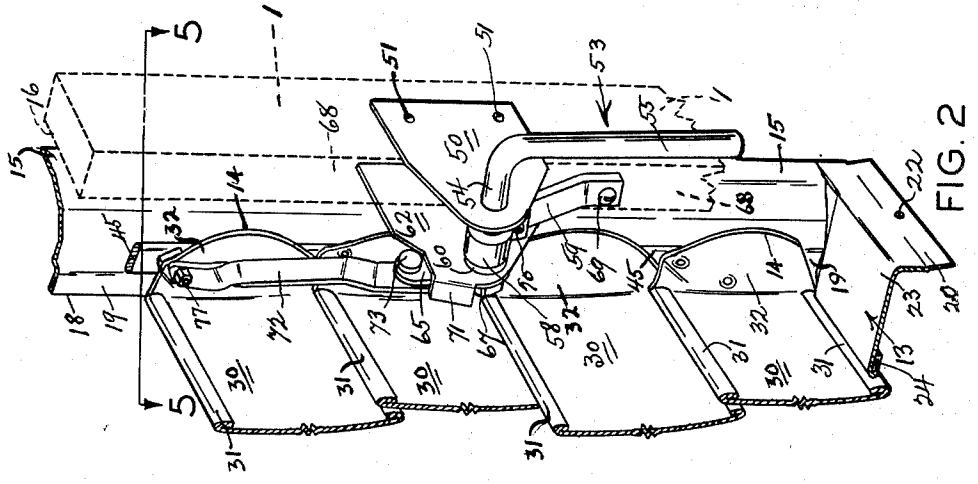

FIG. 2

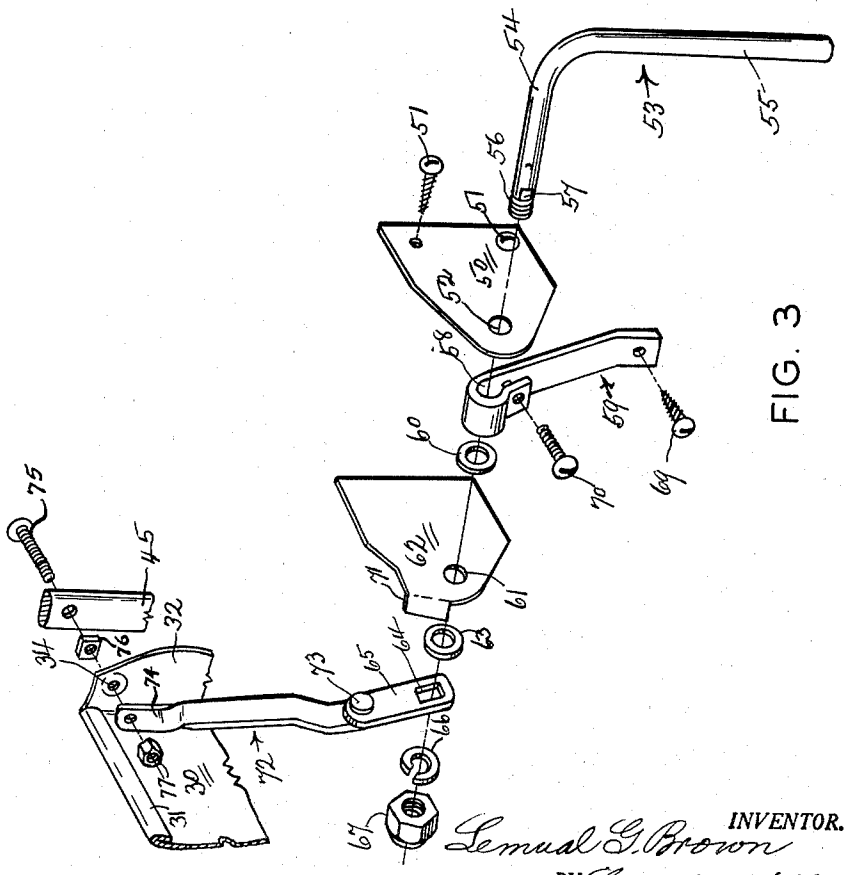

FIG. 3

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SLAT OPERATING MECHANISM

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Application June 1, 1945, Serial No. 597,010

8 Claims. (Cl. 268—96)

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My invention relates to awnings for building openings such as windows, and relates more particularly to awnings and relates more particularly to awnings composed of pivotally mounted horizontal slats or louvers, and commonly called "metal awnings."

An important object of the invention is to provide a slatted awning unit which is adapted to be mounted upon the frame of a usual window fly-screen, the slats of which are so designed that sun light is excluded at the ends of the slats, even though the slats are in partially opened position.

Another object is to provide an awning of this class which when fully closed, will exclude wind and rain.

A further object is to provide an actuating mechanism for operating all of the slats in unison, and which is comparatively cheap to manufacture, simple to install, positive in action, and is capable of locking the slats in their closed positions.

A still further object is to provide an awning of this class which is strong and durable, even though formed of comparative thin gauge sheet metal.

Other object will be apparent from the following description when taken in conjunction with the accompanying two sheets of drawings, wherein:

Figure 1 is a fragmentary perspective view of the awning unit, and looking at the outside thereof, the slats being shown in fully opened positions;

Figure 2 is a fragmentary perspective view of the inside of one end portion of the unit, the slats being shown in fully closed positions, and the actuating mechanism being shown in its locked position;

Figure 3 is an exploded perspective view of the slat actuating mechanism, its parts being shown in slightly separated positions, but in their correct positions relative to each other;

Figure 4 is a fragmentary perspective view looking at the inside of the lower right hand corner portion of the unit, portions of the splash-plate and the fly-screen frame being shown slightly separated from the unit, but in their correct positions relative to the unit and to each other; and,

Fig. 5 is a horizontal sectional view taken substantially along the line 5—5 of Fig. 1.

Like characters of reference designate like parts in all the figures wherein they occur.

In the drawings:

The reference numeral 1 indicates the vertical side rail of a usual fly-screen frame referred to as a whole by the numeral 2, and the numeral 3 indicates the lower horizontal rail of the frame. The fly-screen frame 2 is not a part of the device of the present invention, but is the element,

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or window portion, upon which the illustrated embodiment of the invention is adapted to be installed or mounted. The usual fly screen is composed of a rectangular frame having two of the side rails 1, the lower ends of which are spacedly held parallel by the bottom rail 3 and the upper ends of which are held similarly spaced by a top rail, not shown. The space between the frame members is covered by a netting or screen 4.

The device per se consists of a rectangular awning frame 10 preferably made of sheet metal, and composed of two parallel vertical side members 11 and 12 which are identical in cross-section. The bottom ends of the side members 11 and 12 are held in rigid spaced relation by a sill 13, and their upper ends are similarly connected by a head member 14.

In cross-section, as may best be seen in Figs. 2, 4, and 5, the side members 13 each has a longitudinally extending flat portion 15 extending throughout its length, and adapted to lie flatly against the front surface 16 of one of the side rails 1 of the screen frame 2. The term "front" is used herein to designate the surface facing a person who is outside of the buildiing upon which the device is installed. A plurality of spaced perforations 17 are provided for the purpose of receiving detents, such as wood screws 18, for holding the member in place upon the screen frame. Each side member further includes a series of self formed bends which combine to retain the opposite edge 18 of the side member in a forwardly facing position. In other words, the edge 18 faces the same direction as does the front face 16 of the side rail 1 of the screen frame 2. The front edge portion of the side member 12 is flat, and its side faces are at right angles to that of the flat portion 15. This flat forward portion is indicated by the reference numeral 19.

The sill 14 has a downwardly projecting portion 20 adapted to be attached flatly against the forward face 21 of the bottom frame member 3 by detents, not shown, inserted through perforations 22. The sill 13 is further composed of a forwardly extending flat portion 23, the extreme front edge of which terminates in a close-bend which forms a bead 24.

The head member 14 has a flat vertically extending portion 25, a flat forwardly extending portion 26, and a downwardly and forwardly sloping visor portion 27. The vertical portion 25 is provided with spaced perforations 28 through which detents may be inserted for attaching the head member to the front face of the top rail of the screen frame 2.

At their respective junction points therewith, the awning frame side member 11 and 12 are weld-integrated to the sill and head members 13 and 14, so as to make a rigid structure.

Extending between the front flat edge portions 19 of the side members 11 and 12 are provided a plurality of identical shutters 30. Each of the shutters 30 have re-inforcing beads 31 extending along both of their edges, and have a flat end portion 32 at both ends. The end portions 32 extend rearwardly at right angles to the longitudinal extent of the shutter, and each are provided with spaced perforations 33 and 34. Each of the perforations are in the center of a round deformity 35 which is bulged outwardly a slight distance as best shown in Figure 5. A pivot pin 36 passes through each of the perforations 33 and also through one of a series of vertically spaced perforations 37 in the flat portion 19 of one of the side members 11 or 12. The shutters 30 may each be moved pivotally, with the pins 36 acting as an axis, and are so arranged or spaced from each other that when pivoted to a closed position, as shown in Figures 2 and 4, the lower bead of each shutter overlaps the upper outside edge of the shutter lying sub-jacent thereto.

The lowermost of the shutters 30 is so arranged that its lower bead 31 fits snugly against the front beaded edge of the sill 13. The uppermost of the shutters 30 is so arranged, that when the shutter is in closed position, its upper bead 31 fits snugly beneath the nether surface of the visor 27 of the head member 14. It is thought to be apparent, that when the shutters 30 are all in closed positions, the entire central opening of the awning frame 10 is completely closed. Also, that when the shutters are in their fully opened positions, as shown in Figure 1, the opening is practically free of obstruction to the passages of air. The shutters may, of course, be selectively disposed at any desired angle with relation to the vertical. Admission or exclusion of the direct rays of the sun may therefore be regulated at will.

It is pointed out that the shutter ends 32 act to exclude the entry of sun rays at a downward angle from the side of the frame 10, even when the shutters are in fully opened positions as in Figure 1. Also, that wind and rain may be effectively excluded by closing all of the shutters.

Since there might be a chance of some rain beating past the shutters between the outer side surfaces of their ends 32, and the inside surfaces of the flat portions 19 of the side members 12, a splash-plate 40 (Fig. 4) may if desired be provided between the front surface 16 of the screen frame side rail 1, and the rear surface of the flat portions 15 of the side members 11 and 12. This splash-plate may be held in place by the detents 17, and is provided with perforations 41 for receiving them. The splash-plates 40 each consists of a flat portion 42 adapted to lie flatly against the screen side rail 1, and of a bevelled or slanted lip 43 which projects beyond the inside edges 44 of the shutter ends 32. Provision of the splash-plate 40 is optional.

It is desirable that the shutters 30 be operated in unison, and to this end, similar end portions 32 of the shutters 30 are connected by a vertically disposed actuating strip or rod 45. The two strips 45 are identical and each is spacedly perforated to receive pivot pins 46. There is one pivot pin 46 for each shutter end portion 32, and the pins each passes through one of the perforations 34 in the shutter end portion. Obviously, vertical movement of one of the actuating rods will cause simultaneous pivotal movement of all of the shutters, and also will cause simultaneous vertical movement of the other actuating rod 45.

Similarly, pivotal movement of one shutter will cause identical movement of all other shutters.

Referring more particularly to Fig. 5 of the drawings, it is pointed out that the outside surface of the strip 45 lies beyond the inside surface of the portion 19 of the side member 12, and consequently the strip lies in the same plane as the opening between the side member 12 and the end 32 of the shutters. The strips 45 therefore act also to exclude passage of the sun's rays through said opening.

In order to selectively move one of the actuating rods 45 vertically, the following described actuating mechanism is provided.

A flat metal bracket 50 is attached by detents 51 to the rear face of one of the screen frame side rails 1. The bracket 50 extends inwardly toward the other rail 1 to a point a desired distance beyond the edges 44 of the end portions 32 of the shutters, and its inner end portion is provided with a transverse perforation 52.

An operating handle 53 having a horizontal portion 54 and a hand-hold portion 55 at right angles thereto, is provided for operating the actuating mechanism, and to this end, the horizontal portion 54 has its free end threaded as shown at 56, and has two flattened sides adjacent its threads. One of the flattened sides is indicated by the reference numeral 57 and is shown in Figure 3.

After being passed through the perforations 52, the horizontal portion 54 of the handle is inserted through a loop 58 of a brace 59, a washer 60, a perforation 61 in a second bracket 62, a washer 63, and a polygonal perforation 64 in the lower end of a link or crank member 65. The flattened portions 57 of the handle seat firmly within the perforation 64 so that rotative movement of the handle portion 54 will act to move the crank in a similar direction. A lock-washer 66 and nut 67 are provided around the threads 56 of the handle, the nut 67 preferably being of the "acorn" type. Deformities 30 are provided on the portion 54 of the shaft for positively engaging the inside surface of the bracket 50. The bracket 62 is welded firmly to the flat portion 15 of one of the side members 11 or 12.

In assembling the parts on the horizontal portion 54 of the handle, tightening the "acorn" nut 67 acts to draw the second bracket 62 into firm clamping engagement with the front face 16 of the screen rail 1, while the deformities 30 force the bracket 50 into similar engagement with the rail 1. The lower end of the brace 59 is anchored to the inside edge 68 of the screen rail 1 by a detent 69. The loop 58 of the brace may be adjustably tightened around the handle portion 54 by manipulation of a bolt 70. The inside end portion of the second bracket 62 is provided with a stop 71 for limiting movement of the crank 65 in one direction. The stop 71 is bent at right angles to the remainder of the brace, and extends forwardly into the path of the crank 65.

The actuating mechanism further includes a partially twisted strap-like metal link 72 which has its lower end pivotally connected to the upper end of the crank 65 by a pivot pin 73. The upper end portion 74 of the link 72 lies flatly against the inside rearmost surface of one of the end portions 32 of a shutter 30, and is pivotally connected to the shutter end, and also to the adjacent actuating rod 45 by a threaded pin 75. A spacer nut 76 is provided on the pin 75 between the end portion 32 of the shutter and the rod 45. A nut

77 is provided on the headless end of the pin for holding the link 72 and rod 45 in close pivotal relation to the shutter end 32.

It is thought to be apparent that manual movement of the hand hold portion 55 of the operating handle 53 in a downward direction will move the crank 65 and link 72 upwardly, and such upward movement of the link 72 will move the operating rod 45 in a similar direction. Since the actuating rods are pivotally connected to the rear portion of all of the shutter ends 32, upward movement of the rods cause a downward movement of the edges of the shutters. The arrangement of the crank 65, pin 73 and link 72 is such that as the shutters reach fully closed positions as shown in Figure 2, the pin 73 passes slightly beyond center of the link 72 and crank 65. The stop 71 acts to limit movement of the crank and link. When the pin 73 is past center, the shutters are effectually locked in their closed positions, and cannot be pried open from the front of the device.

It is thought that operation of the device is apparent from the foregoing description, and that a stripped awning has been disclosed which will accomplish all of the objects and purposes for which it is intended.

The awning shown in the drawings and described herein is an embodiment intended for use upon house and building openings, but it is intended to modify the device in order to accommodate it to automobile or other windows. I therefore do not wish to limit myself to the specific embodimeht shown, further than I am limited by the scope of the appended claims.

I claim:

1. In an actuating mechanism for horizontally positioned axially pivotable shutter slats, said slats having an actuating bar pivotally connecting their ends whereby reciprocation of the bar simultaneously moves the shutters, the combination of' a link having its upper end pivotally connected to one shutter for pivotally moving the same; a second link having one end pivotally connected to the lower end of the first link, said second link having a polygonal opening through its other end; a horizontal shaft having a polygonal portion inserted in said link opening; a lock-washer and a nut on the outer end of said shaft for retaining the same in said link opening; a pair of bracket plates each attached rigidly to an opposite surface of a frame stile, said plates being alignedly perforated and rotatably supporting said shaft; a brace member having one end rigidly attached to said stile and lying between said plates, the other end of said brace member journalling said shaft; a shoulder on said shaft adapted to contact the one of said plates lying most remote from said nut, whereby said nut and shoulder retain the entire assembly in operable relationship; and a crank arm on that end of the shaft which lies most remote from the nut.

2. Structure as specified in claim 1, in which the shaft journalling end of said brace member is adjustable so that selective tension may be placed on the shaft to retard its ease of rotation.

3. Structure as specified in claim 1, and means carried by said brace member for selectively adjusting its tension around the shaft.

4. In an actuating mechanism for horizontally positioned axially pivotable shutter slats, said slats having an actuating bar pivotally connecting their ends whereby reciprocation of the bar simultaneously moves the shutters, a link having one end pivotally connected to one of the shutters for pivotally moving the same, and a second link pivotally connected to the first link and having a polygonal opening through its other end, the combination of: a horizontal shaft having a polygonal portion inserted in said polygonal link opening; means for retaining said shaft in said opening; a pair of bracket plates each attached rigidly to an opposite surface of a frame stile, and rotatably supporting said shaft; a brace member having one end rigidly attached to said stile and lying between said plates, the other end of said brace member journalling said shaft with adjustable tension; and a crank arm on the shaft for aiding manual rotation thereof.

5. In an actuating mechanism for horizontally positioned axially pivotable shutter slats, said slats having an actuating bar pivotally connecting their ends whereby reciprocation of the bar simultaneously moves the shutters, a link having one end pivotally connected to one of the shutters for pivotally moving the same, and a second link pivotally connected to the first link and having a polygonal opening through its other end, the combination of: a horizontal shaft having a driving connection with said second link; a pair of bracket plates rigidly engaging opposite surfaces of a frame stile, and rotatably supporting said shaft; a crank arm on said shaft for aiding manual rotation thereof; and means for applying adjustable tension to the shaft for selectively altering its ease of rotation.

6. In an awning having a frame with horizontally positioned axially pivotable shutter slats mounted therein, said slats having an actuating bar pivotally connecting their ends whereby reciprocation of the bar simultaneously moves the shutters, the combination with a horizontal crank-shaft rotatably mounted to the frame adjacent the slat ends, and with operative connections between the shaft and the bar for reciprocating the bar by rotation of the shaft, of: a clamp member carried by the frame and engaging the shaft; and means for selectively adjusting the frictional engagement of the clamp member with the shaft, and thereby holding the slats in various partially open positions.

7. In an awning having a frame with horizontally positioned axially pivotable louvers mounted therein, the combination with a horizontal crank-shaft carried by the frame, and with operative connections between the shaft and the louvers, whereby rotation of the shaft acts to selectively pivot the shutters simultaneously, of: adjuastable means applied to the shaft for frictionally retarding its rotation, and thereby retaining the louvers in various partially open positions.

8. Structure as specified in claim 7, in which said means includes: a friction brake member carried by the frame and surrounding the shaft; and an adjusting screw for manipulating the clamp.

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