

Nov. 21, 1950

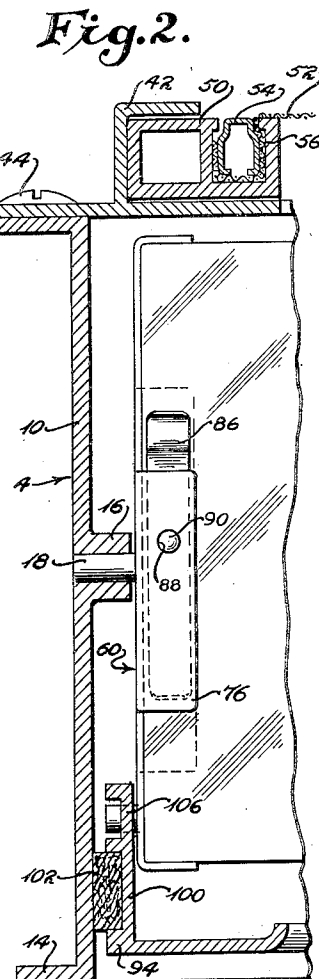
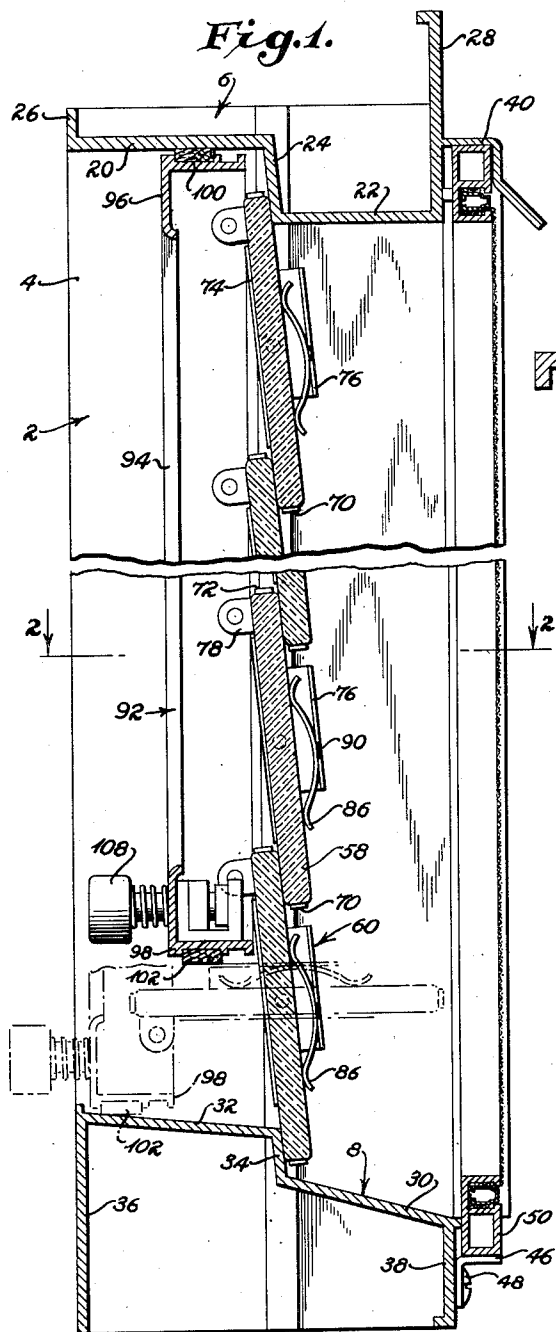
S. G. LOEWENTHAL ET AL

2,530,708

BUILDING UNIT

Filed June 14, 1948

2 Sheets-Sheet 1



Inventors:
William Lowenthal and
Sadie G. Lowenthal

By Cushman, Harby & Cushman
Attorneys

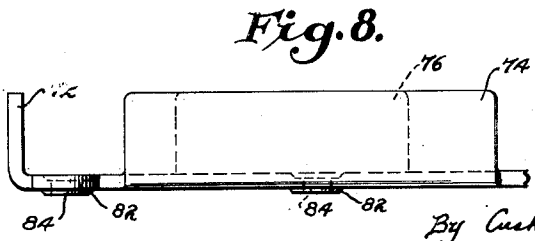
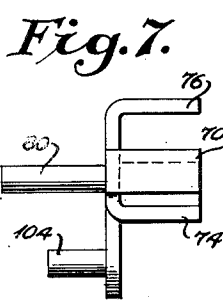
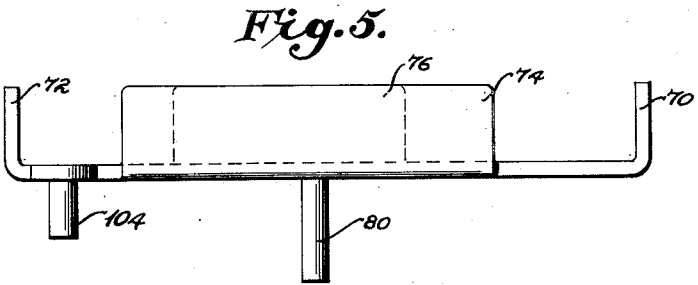
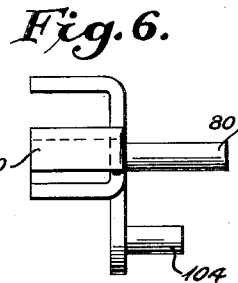
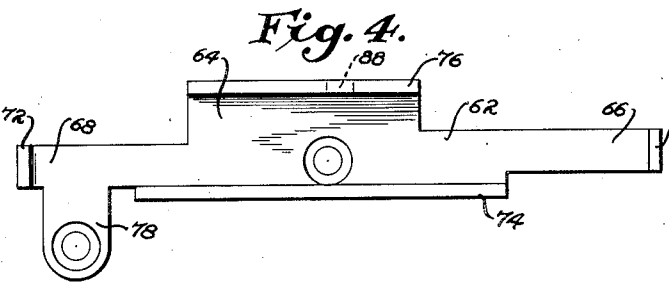
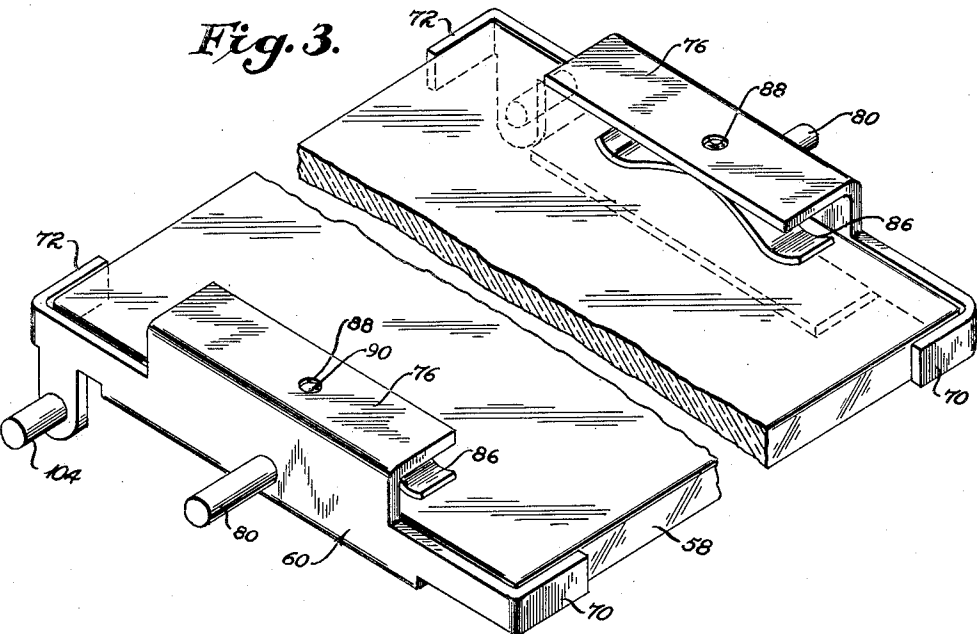
Nov. 21, 1950

S. G. LOEWENTHAL ET AL
BUILDING UNIT

2,530,708

Filed June 14, 1948

2 Sheets-Sheet 2



Inventors:
William Lowenthal and
Sadie G. Lowenthal
By Cushman, Harbig & Cushman
Attorneys

UNITED STATES PATENT OFFICE

2,530,708

BUILDING UNIT

Sadie G. Loewenthal and William Loewenthal,
Miami Beach, Fla.

Application June 14, 1948, Serial No. 32,784

9 Claims. (Cl. 189—69)

1

This invention relates to building units and more particularly, it is concerned with adjustable ventilated closures for buildings, such as windows and doors, incorporating a louver or shutter construction.

Pivoted shutter structures have been employed for a long time as closures for buildings and a recent development in the building construction industry has involved the use of this general type of structures in the formation of transparent ventilating windows and doors. Obviously, such building closures must be weather-tight if they are to be serviceable, must be capable of being easily cleaned and also capable of easy replacement of broken or damaged parts, such as a broken glass slat.

A principal object of this invention is the provision of new type of building units and of new structural elements used in the construction of such units. Further objects include:

(1) The provision of new ventilated closures embodying slats or louvers arranged to open and close in overlapping relation, presenting a structure which completely excludes rain or wind when the slats are placed in closed position and providing controlled, uniform ventilation throughout the entire closure area when the slats are adjusted to an open position;

(2) The provision of such building closures in which the shutters or louvers are self-counterbalancing;

(3) The provision of such closure units in which the slats are caused to close tighter when subjected to an overall pressure, such as pressure of wind, irregardless of which side of the closure the pressure is applied;

(4) The provision of new slat-holder members for use in such closure units;

(5) The provision of such slat-holders which accommodate for variations in slat width and small misalignments;

(6) The provision of such holders which permit slats to be withdrawn or inserted into the closure unit without dismembering the closure unit.

Still further objects and the entire scope of applicability of the present invention will become apparent from the detailed description given hereinafter in conjunction with the accompanying drawings, in which:

Figure 1 is a side sectional view of the preferred embodiment of the closure unit of this invention;

Figure 2 is a fragmentary top sectional view of the closure unit of Figure 1, taken along the line 2—2 of Figure 1, showing in full lines the slats when in horizontal position, as illustrated in Figure 1 in dotted lines;

2

Figure 3 is a broken, isometric view of a slat assembly of the closure shown in Figure 1;

Figure 4 is a side view of the slat holder shown in Figure 3;

5 Figure 5 is a top view of the slat holder of Figure 4;

Figure 6 is an end view of a right-hand slat holder as shown in Figure 5;

10 Figure 7 is an end view of a left-hand counterpart of the slat holder shown in Figure 6;

Figure 8 is a bottom view of a modified form of a slat holder.

Referring in details to the drawings, the closure unit consists of a rectangular frame member 2, having side stiles 4 joined by a lintel 6 and a sill 8. The frame member is preferably made from extruded or cast metal sections which may be welded together at their junctions, but the frame member may be also produced from any other satisfactory type of construction material.

Both side stiles consist of a flat side portion 10 having a front right-angle extension 12 and a back right-angle extension 14. A raised channel member 16 extends longitudinally down the stile near the center thereof, the member 16 being provided with a plurality of holes 18, arranged in spaced alignment along the member.

The lintel is formed with two horizontal webs 20 and 22, joined by a slanted ledge 24, a right-angle flange 26 extending upwardly from the rear end of the web 20 and a right-angle flange 28 extending upwardly from the front end of the web 22.

The sill member consists of two downwardly sloping webs 30 and 32 joined by a slanted ledge 34 and is provided with a back right-angle flange 36 and a front right-angle flange 38.

The closure unit may be provided with removable storm windows and screen attachments. These attachments consist of a top horizontal channel member 40, carried by the flange 28, a pair of vertical channel members 42 fastened to the stile flanges 12 by means of machine screws 44 and a bottom retaining angle piece 46 fastened to the sill flange 38 by means of machine screws 48. Figures 1 and 2 show the closure fitted with a window screen having a rectangular frame 50 over the opening of which a screen 52 is stretched and held in place by spring members 54 which retain the ends of the screen 52 within the channel opening 56 of the frame 50. The screen frame is held in place at the top by the channel 40, at the sides by the removable channel members 42, and at the bottom by the supporting angle piece 46.

55 The shutters or slats 58 in the closure extend horizontally across the frame and are so spaced one from the other that the bottom of one slat

overlaps the top of the subjacent slat when the slats are in closed position. The slats are held in position within the closure by means of pivoted slat-holders 60.

The slat-holders consist of a body portion 62 which is larger in width at the central section 64 than at the two end sections 66 and 68. The holders, which are preferably stamped from thin sheet metal, have the two ends thereof bent at right angles to the bottom portion 62 forming two opposed slat-edge-retaining flanges 70 and 72. A bottom extension on the holder is bent perpendicular to the body portion 62 forming a right-angle slat-supporting flange 74 and a second piece, extending from the central section of the holder 64, is bent at right angles forming a spring retaining flange 76. At the rear end 68 of the holder, there is provided a lug 78.

The holders are pivoted within the frame upon supporting pivot means which is located approximately midway between the ends 66 and 68 of the holder. In the form of holder shown in Figure 5, this means consists of a holder fastening pin 80, whereas in the form shown in Figure 8, this means comprises a raised circular section 82 provided with a central hole 84 through which a pin, carried by the frame 2, may be inserted or a machine screw, not shown, may be inserted and threaded into a tapped hole in the stile shoulder 16.

The slats 58, which may be formed of any material, but in the preferred form of my structures are formed of glass, such as plate glass, are readily assembled within the closure unit. Thus, the slats are slipped through the opening formed between the edges of the end flange 70 and the spring retaining flange 76, into the channel formed between the flanges 74 and 76, so that the bottom of the slat rests upon the top of the supporting flange 74 with the edges of the slats retained between the end flanges 70 and 72. With the slats so positioned, a resilient retaining member which, in the preferred form illustrated in Figure 3, consists of a curved leaf spring 88, but which may comprise any other resilient unit, such as a rubber block, not shown, is slipped into the unfilled portion of the channel between the top of the slat and the bottom of the retaining flange 76. Preferably, the flange 76 is provided with a small hole 86 which receives a teat 92 formed in the leaf spring 86.

The opening and closing of the slats is controlled by means of an operating frame unit 92, composed of two side bars 94 joined together by a top bar 96 and a bottom bar 98. Each of the bar members 94 to 98 of the operating frame 92 have outside U-shaped channels 100 which carry a gasket 102, such as a felt strip, or the like. The width of the frame 92 is such that a slidable, wind-proof connection is made between the gasket 102 and the inner side of the stiles 4.

The operating frame 92 is connected to each of the slat holders through pivots, such as the pivot pins 104, which are carried upon the lugs 78 and which engage holes 106 spaced in vertical alignment along the side members 94 of the operating frame.

The difference in vertical height between the frame 2 and the frame 92 is sufficient to allow enough vertical movement of the frame 92 parallel to the closure frame 2, so as to pivot the slats from an inclined vertical position to a substantially horizontal position. As can be comprehended by reference to the portion of the drawing of Figure 1, shown in dotted lines, the slats 58 may be

moved in unison from a closed position in which overlapping edges of the slats engage one another and the bottom of the lowest slat abuts the sill ledge 34, while the top edge of the uppermost slat abuts the head ledge 24, by the downward movement of the operating bar 94. Thus, by grasping and pulling upon the operating-frame catch 108, the operating frame 92 may be pulled down until the gasket 102 carried in the bottom member 98 rests upon the top section 32 of the sill.

The central pivot means in the holders 60, such as the pivot pins 80, are not located in the exact center of gravity of the holder, but are displaced slightly to the rear of the center. In this way, the weight of the operating bar 92 is counterbalanced against the excess weight on the long side of the slat unit beyond the pivot point. Consequently, the slats of the closure unit are adjustable to any position without requiring the use of counterbalancing weights and, since the operating bar is offset at the rear of the slat line because of the extensions of the lugs 78, overall pressure applied to either face of the slats will tend to cause the slats to move to a closed position. Thus, when the slats are actually in a closed position and the wind blows upon the closure, it tends to more tightly close the slats, thus increasing the weather-proofness of the units.

We claim:

1. A ventilated closure of the class described, comprising a rectangular frame having side stiles, a series of right and left hand pairs of slat-holders journaled on pivot pins in vertical alignment at spaced distances from one another in said side stiles, each of said slat holders comprising a sheet metal pattern bent to form a body portion having a right-angle, slat-supporting flange, a right-angle, spring-retaining flange opposing said supporting flange, a pair of right-angle end flanges, the space between said slat-supporting flange and said spring-retaining flange being about twice the width of said end flanges, a lug depending from one end of said body portion below the supporting flange, a pivot pin fastened near the center of said body portion, and a pivot pin fastened to said lug, both pins extending outwardly from said body portion on the side opposite to said flanges; a plurality of planar glass slats, each slat fastened in one of said slat-holder pairs by curved leaf springs tensioned between the adjacent surface of the slat and the bottom of said spring-retaining flange; a slat operating member comprising side members spaced to fit snugly within said frame for movement in parallelism with the frame, a gasket closing the space between said side members and said frame, said side members being connected to each of said slat holders on their respective side of the frame by said lug-fastened pins, said slats extending horizontally across the closure with lower edges overlapping the upper edges of subjacent slats, a header ledge in said frame against which the outside, upper edge of the top slat abuts when in raised position, and a sill ledge against which the inside lower edge of the bottom slat abuts when in raised position.

2. A slat holder for ventilated closures comprising a body portion, a slat-supporting flange extending perpendicularly from one side of said body portion, a spring-retaining flange extending from the same side of said body portion substantially parallel to said supporting flange, a pair of parallel slat-retaining flanges having slat-engaging sides extending from said body portion perpendicular to the inner side of said slat-sup-

5

porting flange, the space between the inner sides of said slat-supporting and spring-retaining flanges being at least twice the width of said slat-engaging sides, said spring-retaining flange being enough shorter in length than the distance between said slat-engaging sides that a closure slat may be inserted into said holder through the space between at least one of said slat-retaining flanges and the closest inner edge of said spring-retaining flange, a pivot member located about midway between said slat-engaging sides and a second pivot member located on a lug, which lug depends from one end of said body portion.

3. A holder as claimed in claim 2, wherein said pivot members are pins fastened to their respective supporting elements.

4. A holder as claimed in claim 2, wherein said pivot members are holes adapted to receive supporting pin members.

5. A slat holder for ventilated closures of the class described, comprising a body portion with a central section of larger width than the end sections, said end sections being bent at right angles forming a pair of opposed slat-retaining flanges, a second pair of opposed flanges extending perpendicularly from the body portion forming a channel therebetween, the channel being sufficiently larger in height than the width of said slat-retaining flanges that a slat may be slipped into and out of said channel edgewise through the opening between the edge of at least one of said second flanges and said retaining flanges, pivot means positioned about midway between said retaining flanges, a lug depending from one end of said body portion, and second pivot means associated with said lug.

6. In slat holders for ventilated closures of the class described, into which a slat may be inserted without removing the holder from its ventilated closure and without bending any part of the holder, the combination which comprises a body portion, a slat-supporting flange, a spring-retaining flange of shorter length than said body portion, both said flanges extending perpendicularly from the same side of said body portion, a slat-retaining flange located at one end of said holder, a second slat-retaining flange located at the opposite end of said holder, each of said slat-retaining flanges having an inner slat-engaging side whose width is less than the space between the inner sides of said slat-supporting flange and said spring-retaining flange, the length of said spring-retaining flange relative to the distance between said slat-engaging sides being such that a rectangle having two sides equal in length to said slat-engaging sides and two sides equal in length to said distance between said slat-engaging sides may be moved in a plane parallel to said body portion into the rectangular space bounded by said slat-engaging ends, said slat-supporting flange and said spring-retaining flange through the opening between at least one of said slat-engaging sides and the closest inner end of said spring-retaining flange.

7. A slat unit for ventilating closures of the class described, into which a slat may be inserted without removing the unit from its ventilated closure and without bending flanged parts thereof which comprises a right and left hand pair of slat holders each having a flat body portion, a slat-supporting flange, and a spring-retaining flange of shorter length than said body portion, both said flanges extending perpendicularly from

6

the same side of said body portion, a slat positioned between said holders with the ends thereof engaging the inner sides of the body portions of said holders, a curved leaf spring tensioned between each of said spring-retaining flanges and the adjacent surface of the slat, a pair of parallel slat-retaining flanges located on the ends of each of said holders having slat-engaging sides substantially the same height as the thickness of said slat and engaging the sides of the slat, the space between said slat-supporting flange and said spring-retaining flange being substantially greater than the thickness of said slat with the length of said spring-retaining flange relative to said space being such that the slat may be slipped into and out of the holder edgewise through the opening between the edge of at least one of said slat-retaining flanges and the closest edge of said spring-retaining flange, and pivot means on each of said slat holders for mounting the same in a ventilated closure.

8. A slat unit as claimed in claim 2, wherein said pivot means are pins extending perpendicularly from said body portion on the side opposite said flanges, the body-portion-carried pin being located sufficiently to one side of the center of gravity of the unit that the holder is counter-balanced by the offset.

9. A slat unit for ventilated closures comprising a right- and left-hand pair of slat holders, each of said slat holders having a body portion with a central section of larger width than the end sections, said end sections being bent at right angles to form a pair of opposed slat-retaining flanges, a second pair of opposed flanges extending perpendicularly from said body portion forming a channel therebetween, a slat held in said pair of holders with each end of the slat located in said channel of the respective holder, said channel being of width substantially larger than the thickness of said slat, a curved leaf spring tensioned between the spring-retaining flange of each of said slat holders and the adjacent surface of said slat, said slat-retaining flanges of said holders being substantially the same height as the thickness of said slat and at least one of said flanges of said second pair of opposed flanges being shortened and of such length relative to the width of said channel and the thickness of the slat that said slat may be slipped into and out of said channel edgewise through the opening between at least one of said slat-retaining flanges and said shortened flange, and pivot means on said slat holders for positioning said holders in a ventilated closure.

SADIE G. LOEWENTHAL.
WILLIAM LOEWENTHAL.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
483,650	Grass et al.	Oct. 4, 1892
687,705	Walker	Nov. 26, 1901
921,854	Lindemann	May 18, 1909
1,493,054	Nabers	Jan. 10, 1922
1,551,753	Lane	Sept. 1, 1925
2,287,195	Richardson	June 23, 1942

FOREIGN PATENTS

Number	Country	Date
17,277	Australia	1935