Nov. 8, 1938. S. A. JONES 2,136,012

VENTILATED AWNING SHUTTER

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Fig. 1.

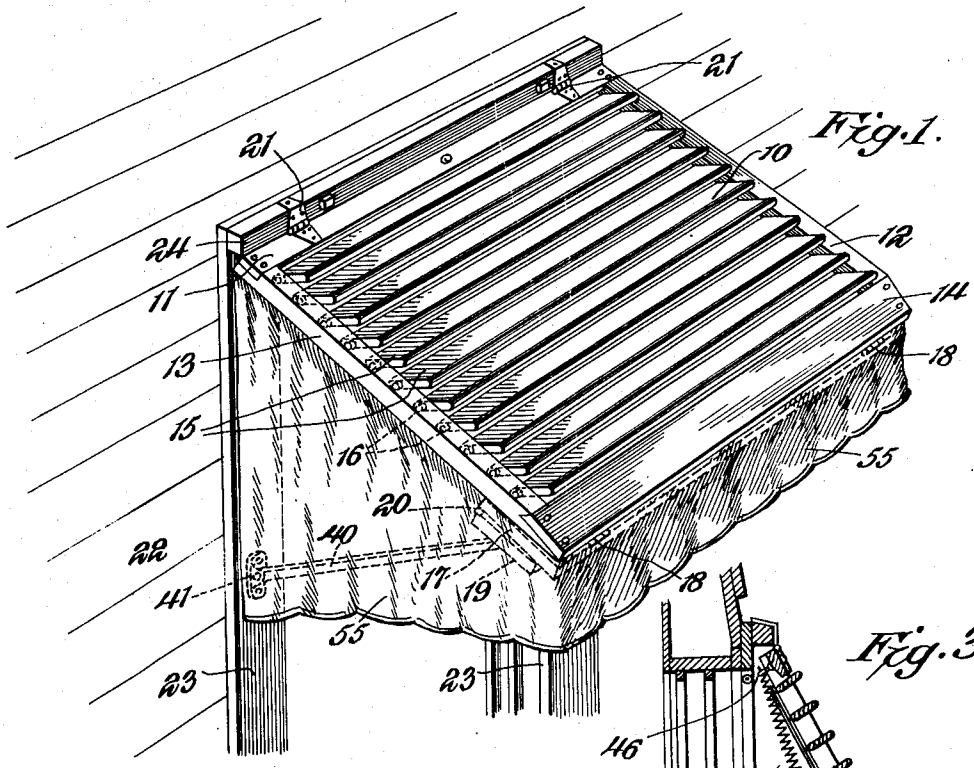


Fig. 2.

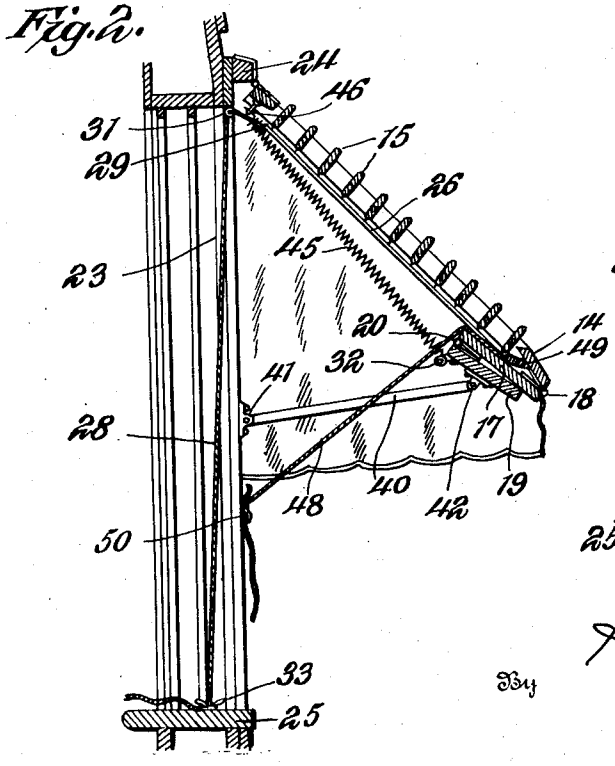
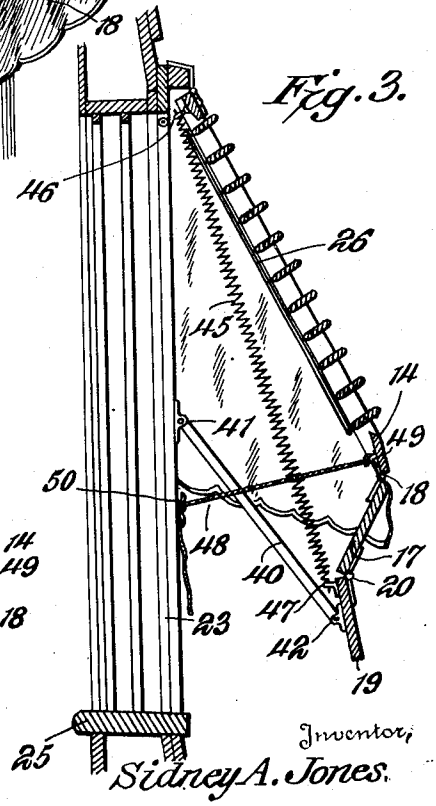


Fig. 3.



Inventor:
Sidney A. Jones.
By Henry E. Stauffer
His Attorney

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Fig. 4.

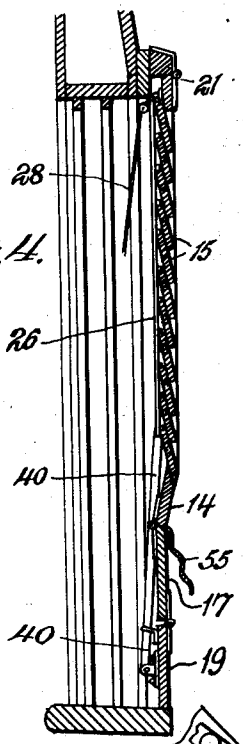


Fig. 5.

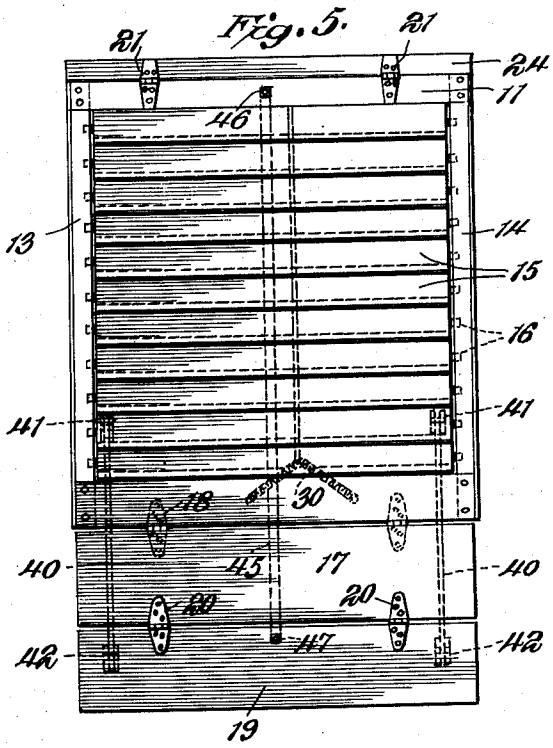


Fig. 6.

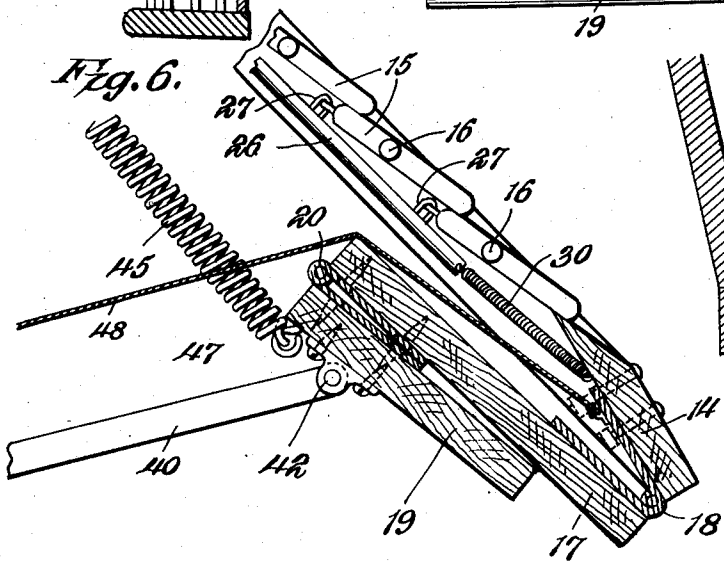
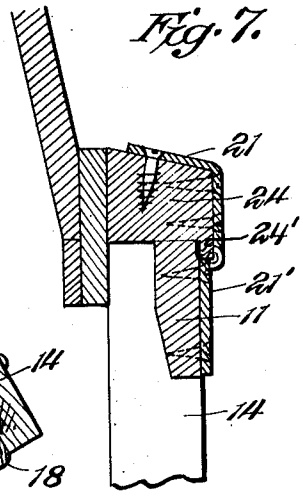


Fig. 7.



Inventor,
Sidney A. Jones.

By Henry E. Stauffer
His Attorney

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UNITED STATES PATENT OFFICE

2,136,012

VENTILATED AWNING SHUTTER

Sidney A. Jones, Fort Lauderdale, Fla.

Application June 17, 1936, Serial No. 85,780

2 Claims. (Cl. 20—59)

This invention relates to protective devices for windows or similar building openings, and it belongs to that class of closures known as "awning shutters"; that is, shutters which, when open, function as awnings for protection against sun and rain, and when closed, serve as shutters to entirely close the windows or other openings to which they are applied.

One of the objects of my invention is to produce a self opening structure, which, when released from its closed position, will automatically move to the awning position, and which by normal operation from within the building can be brought to the closed or shutter position.

A further object is to produce a structure of the character mentioned which will be automatically locked in open position by certain of the parts assuming the relation of elements of a toggle mechanism; and which prevent closing of the structure until the toggle is broken.

A further object of the invention is to effect ventilation, both when the structure is used as an awning, and when it is used as a shutter; and to this end the upper or awning portion of the structure is provided with pivoted elements, so connected with operating devices within the building that they may be operated to open or close at the will of the user, whether the structure is in open or closed position.

Referring to the accompanying drawings:

Fig. 1 is a perspective view of my ventilated awning shutter, showing the louvres or slats of the ventilating devices in partially open position.

Fig. 2 is a sectional view of the structure, showing the same in raised or awning position, and with the louvres or slats open.

Fig. 3 is a sectional view, similar to Fig. 2, but showing the awning shutter in partially open or partially closed position.

Fig. 4 is a sectional view, showing the structure closed and serving as a shutter, and with the louvres or slats lying close one upon the other.

Fig. 5 is a front view of the structure, as the same is closed.

Fig. 6 is a fragmentary view of the structure, as shown in Fig. 2, enlarged to more clearly disclose the construction.

Fig. 7 is an enlarged view of one of the hinges and related parts, by which the structure is secured to the building.

Refering to the drawings, the structure in general may be said to consist of an upper or awning section proper 10 and a lower portion. The upper section comprises a top rail 11, side rails 12 and 13, and a bottom rail 14. In the top section louvres or slats 15 are pivoted in the side rails 12 and 13. The lower portion, comprises two longitudinal sections, one of which 17 is pivoted or hinged at 18 to the bottom rail 14 of the awning section, the other 19 is pivoted or hinged as at 20 to section 17. The pivots or hinges 18 and 20 are so arranged that section 17 may be folded under the rail 14 of the upper section, and section 19 may be folded under section 17, as shown in Figs. 2, 3 and 6.

The construction is not limited to the use of two foldable sections, and more may be used; it is necessary only that the awning section shall not be unduly shortened by these folding sections, so that the ventilating space shall not be interfered with.

The upper or awning portion 10 is pivoted or hinged as at 21 to the building 22, or to the window frame 23, in any suitable manner. It is here shown secured to a special rail 24, which is fastened to the building 22 in any convenient way. The rail 24 is provided with a lip or projection 24', Fig. 7, which extends below the top of the rail 11 of the awning proper so as to prevent the entrance of water at this joint. The hinges center at the point where this strip stops, so that the awning will turn at this point. The hinges are offset, so that the lower leaf 21' is out of line with the uper leaf, as shown more particularly in Fig. 7.

The window sill is represented at 25 and is here shown only conventionally.

The louvres or slats 15, as stated above, are pivoted at 16 in the side rails 12 and 13 of the awning portion 10 of the structure. On one side, here shown as the inner side, the inner edges of the slats are pivotally connected to a rod 26 by means of staples 27, Fig. 6, in a manner well known in the art. An operating cord 28, has its upper end connected to the rod 26 at or near the upper end 29 thereof, and a spring 30, Figs. 5 and 6, is secured to the lower end. This cord at its upper end 28 passes over or around a suitable pulley 31 secured at or near the upper end of the window frame. A suitable anchor for the cord 23 is shown at 33, Fig. 2.

The spring 30 attached to the lower end of rod 26 tends to hold the rod 26 depressed and the slats 15 open. To close them, the cord 28 is drawn down and secured to the anchor 33, or by some other convenient means.

By loosening the operating cord 28, the rod 26 is moved down by spring 30, and the louvres or

slats 15 caused to open. On the other hand, if the louvres or slats are standing open, and a pull is given the operating cord, they will be closed. The louvres or slats 15 are made to overlap as is usual, so that when shut they entirely close the top of the awning.

Braces or arms 40, one or either side of the structure, Fig. 5, are pivoted at their upper or inner ends in suitable bearings 41, secured to the window frame or building structure, and at their other ends are pivoted to the lower section 19 of the shutter structure, as at 42. When the structure is elevated to the awning position, these braces 40 assume a more or less nearly horizontal position, as shown in Figs. 1 and 2; and when the structure is closed, they fold down substantially parallel with the face of the window, as shown more particularly in Fig. 4.

The relations of the pivots 41 and 42 of the braces 40 to each other, and to the pivots of the hinges 18, are important; for together they constitute means for locking the awning in open position. The braces 40, the auxiliary section 19, and the pivots 41, 42 and 20 together constitute the elements of a toggle mechanism. As the parts move from closed to open position the pivotal points 42 of the braces 40, one on either side of the structure, move from a position where they are in substantial vertical alinement, Fig. 4, through intermediate positions, Fig. 3, to final position, Fig. 2. In this latter position, the pivot 42 on each side is shown to have moved above a straight line drawn through the pivots 41 and the pivots of hinges 18. So long as the parts are in this position, no amount of pressure on the top or outer edge of the awning 10, can cause the awning to close, the parts being locked in this position. To close the structure, this toggle arrangement must be broken, as will be described below.

Spring means, here shown as a sufficiently strong helical spring 45 has its upper end securely fastened to the upper part of the awning section, and its lower end to the upper portion of the lower foldable section 19, as at 47. The function of this spring is to lift, or assist in lifting, the awning, as will be more fully described hereafter. There may of course be two or more of these springs, the number being determined by the strength of the springs and the size of the awning.

An operating cord or chain 48 has one end secured as at 49, to the lower rail 14, or some other convenient portion of the awning section 10. The other end is free, and is to be used by the operator, primarily for closing the structure, as will be explained more fully hereafter. An anchor 50 for the chain or cord is mounted on the window frame or at some other convenient place.

In Fig. 1 the awning portion of the structure is shown surrounded by a valance of any suitable material 55, which protects the front and sides of the opening in the usual way, but which may or may not be used as desired. When the awning is raised, as shown in Fig. 1, this covering opens out, as shown in Fig. 1, and when it is lowered, the same hangs loosely around the awning portion of the structure.

Operation

The louvres or slats 15 are free to move without regard to the position of the structure as a whole, and these elements may be opened or closed, whether the structure as a whole is raised to the awning position or lowered to the shutter position. And they may be operated from within the building, so that it is always possible to operate these elements to control light and ventilation; and this may be important when the awning is in use, just as it may be if the shutter is closed.

By making the lower parts of the structure of separate foldable sections, the shutter may be readily shortened to the proper length for use as an awning, or lengthened to serve as a shutter. It is important that the foldable sections 17 and 19 shall be relatively narrow, for if their width is limited, these elements will not cover any substantial part of the slatted awning, thus leaving nearly this entire area free for light and ventilation. Only two of these folded sections are here shown, but more than two may be used; it is only important that they be kept relatively narrow.

The spring means 45 is preferably of considerable strength, to of itself raise the structure from closed to open position, and the spring 45 and the braces 40 are so connected to the shutter proper, that the spring means shall serve to automatically lift the structure, and as it does so, cause the pivoted sections to fold upon themselves, as shown in Figs. 2 and 6. And, the operating cord 48 is so connected to the structure, that when pulled on by the operator, it will tend to unfold the pivoted sections 17 and 19, thus starting the closing; and continued stress on the cord will entirely close the structure to shutter position. A tying of the cord will hold the shutter closed, although locking means may be used if desired.

Assuming the shutter to be closed, the spring will be under strong tension, as shown in Figs. 4 and 5, and the operating cord or chain 48 will be secured to its anchor 50. Upon loosening the cord, the spring will tend to shorten, and in doing so will cause the sections 17 and 19 to turn upon their hinges 18 and 20. The parts will at first assume some intermediate position, as shown in Fig. 3; but as it continues to contract, the upper ends of the braces 40 turn in their sockets 41; their outer ends turn in their sockets 42; the lower end of the awning, with the supplemental sections 17 and 19 folded thereunder, swings out and moves up until the folding has been completed, and the parts assume the position shown in Figs. 2 and 6, and come to rest. The spring means 45 holds the awning raised, with the sections 17 and 19 folded as shown. It is locked in this position against closure by pressure from the outside, because the pivots 41, 42 and 18 have established the locked toggle position before referred to.

As the awning rises under the action of the spring 45, the edges of the foldable sections 17 and 19, at the point where they are secured together by the hinges 20, strike the cord 48, now loose at the inner end, and fold the cord over the edges of these sections. The reason for this is to help in the closing of the shutter.

To lower the structure to shutter position the operator must apply force in opposition to the tension of the spring 45. By drawing on the operating chain or cord 48, there is a tendency for the same, where it passes over the edges of the folded sections 17 and 19, to now turn these sections on their hinges 18 and 20, causing them to first assume the position shown in Fig. 3, and to then entirely open out, as shown in Figs. 4 and 5, and close the window. The operating cord 48 is secured to its anchor 50, and the structure is secured in place as a shutter.

The relative width of the foldable sections with respect to the part 10 of the awning proper is important; for with these sections relatively narrow, when they are folded up and under the awning, they do not substantially interfere with the function of the pivoted louvres or slats, so that substantially the whole of the slatted section is still uncovered, and ventilation may be effective, notwithstanding the fact that the sections are beneath the lower part of the awning.

From the above, it will be seen that I have produced a simple, convenient and highly practical awning shutter; one that will open automatically; that will be automatically locked open against external pressure; and which can be readily adjusted to control the flow of air either when open or when closed.

The above is a complete description of the invention, and of the manner of its use, but it is to be understood that changes in details may be made without departing from the spirit of the invention.

What I claim is:

1. An awning shutter, comprising an awning section having slats pivoted therein, means for operating the slats to open and close the same to control light and air therethrough, an auxiliary section comprising a plurality of operatively connected members the top one of which is pivoted to the lower portion of the awning section, means for raising the structure and for folding the operatively connected members upon themselves and beneath the lower portion of the awning section so as not to interfere with the function and operation of the pivoted slats.

2. An awning shutter, comprising an awning section having horizontally arranged slats pivoted therein, means for operating the slats to open and close the same to control light and air therethrough, an auxiliary section comprising a plurality of pivotally connected members the top one of which is pivoted to the lower portion of the awning section, braces adapted to be pivoted at one end to the building and at the other to the lower one of the pivotally connected members, means for raising the structure and for folding the pivotally connected members upon themselves and beneath the lower portion of the awning section so as not to interfere with the function and operation of the pivoted slats.

SIDNEY A. JONES.