March 2, 1954 S. M. DEL RIO 2,670,792

COMBINATION BLIND AND AWNING

Filed March 19, 1953 3 Sheets-Sheet 1

Fig. 1.

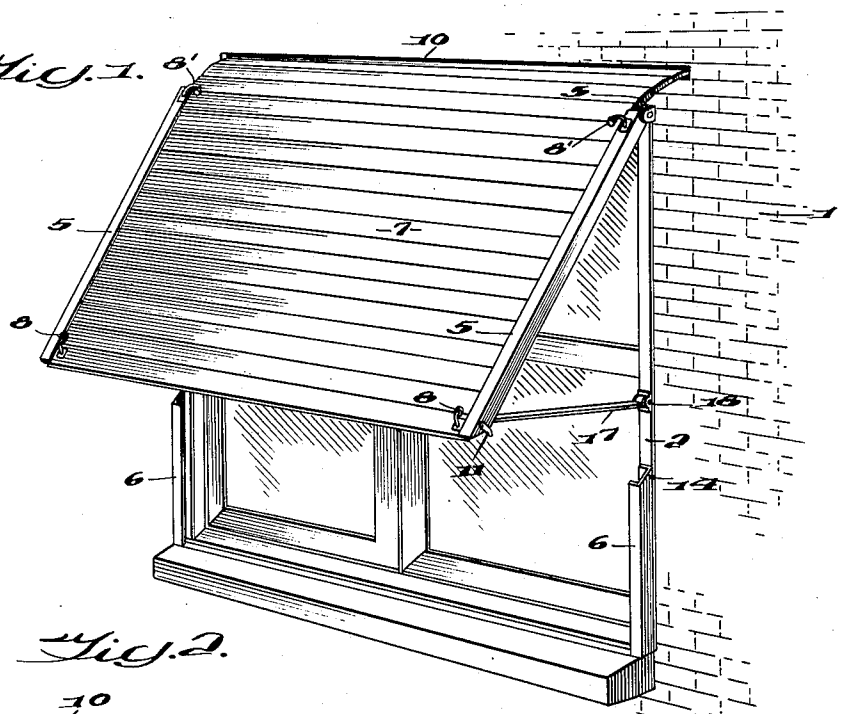
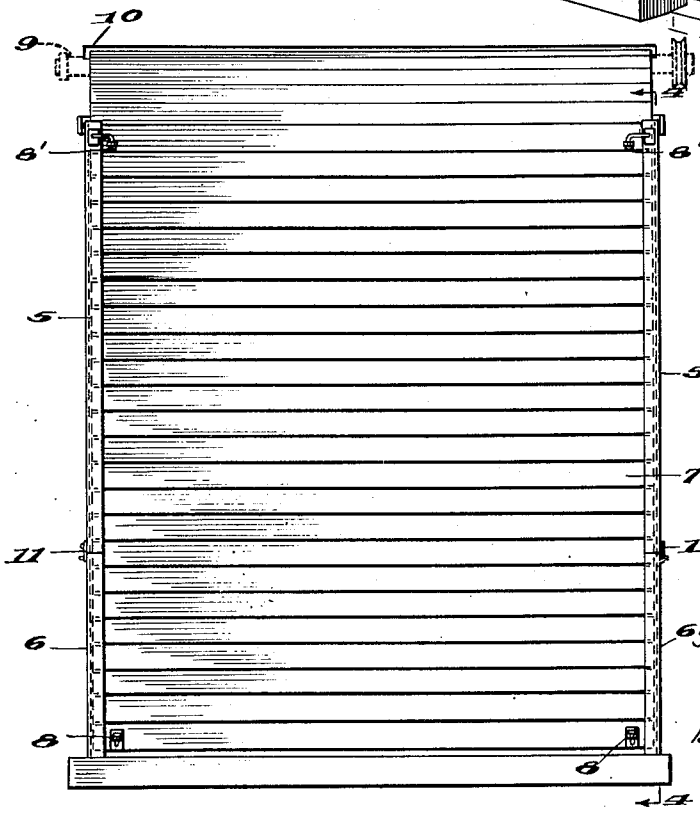


Fig. 2.



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3 Sheets-Sheet 2

Fig. 3.

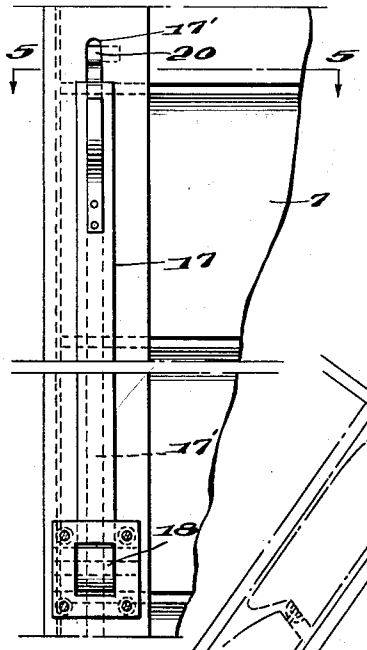


Fig. 4.

Fig. 5.

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Filed March 19, 1953 3 Sheets-Sheet 3

Fig. 6.

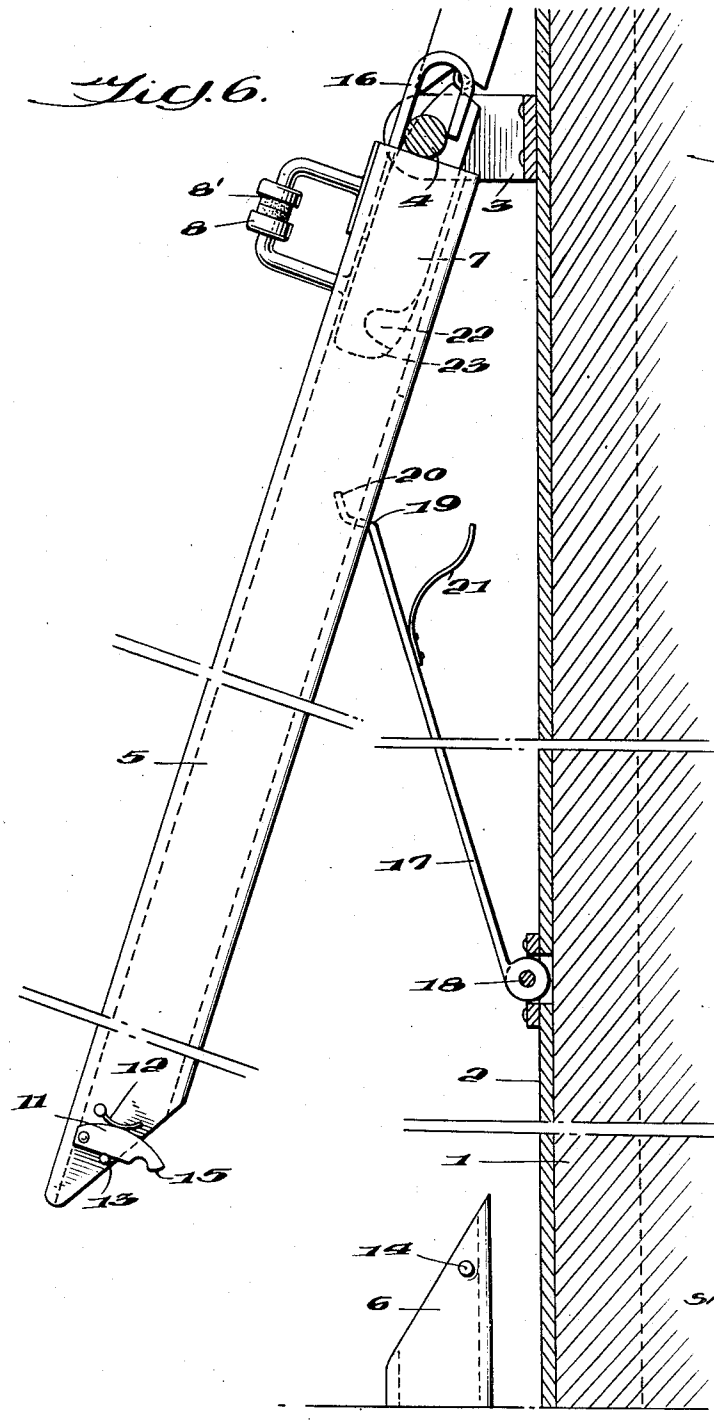
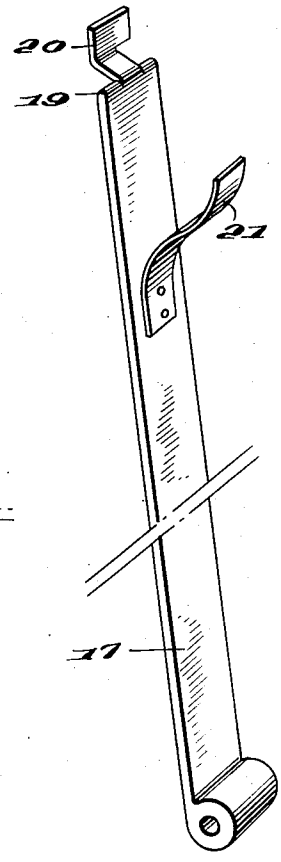


Fig. 7.



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COMBINATION BLIND AND AWNING

Salvador M. del Rio, New Canaan, Conn.

Application March 19, 1953, Serial No. 343,299

10 Claims. (Cl. 160—60)

1

This invention relates to a combined window blind and awning of the type generally disclosed in the U. S. Patent No. 1,917,449 of July 11, 1933, to H. H. Koller which embodies a swingably mounted frame in which a closure element or panel is vertically slidably disposed, the frame swingably depending from a horizontal axis so that it may be positioned in a depending vertical plane to function as a blind, or may be disposed in an outwardly and upwardly swung position to function as an awning.

A primary object of the invention is to provide such a device in which the conversion thereof from a blind to an awning or vice versa may be controlled solely by the sliding movement of the closure element, said closure element preferably, though not necessarily, being operable through means located in the interior of the structure on which the device is used whereby the entire operation of the device may be readily effected from the interior of the structure without the necessity of opening the window.

An important feature of the invention consists in the combination with such a swingably mounted frame and the closure element slidable therein, of a rigid swingably erecting arm having a free end which may be disposed for movement with and swung by the said closure element, to thus swing the frame and closure element responsive to sliding movement of the latter.

Further important objects are: to provide an automatically establishable and releasable connection between the closure element and the arm, and thus permit movement of the closure element independently of the arm while nevertheless establishing the desired connections between these parts as required for their mutual cooperation; to provide means for automatically positioning and maintaining the erecting arm out of operative engagement with the closure element during use of the device as a blind, thus permitting unimpeded raising and lowering of said element; to provide in such a device a latch mechanism which automatically engages to retain the frame in vertical position for use of the device as a blind, in combination with means establishing an operative connection between the latch mechanism and the closure element at a predetermined raised position of the latter, whereby raising of the closure element past said position will release said latch mechanism; to provide resilient means operable upon release of said latching mechanism to swing the frame away from vertical position sufficiently to prevent reengagement of the latching mechanism upon subsequent lowering of the closure element and for simultaneously projecting the free end of the erecting arm into the path of movement of the closure element so that the subsequent lowering of same will swing the arm downwardly and erect the device for use as an awning; and, to so arrange the several parts of the device that conversion of the device from an awning to a blind may be accomplished by rapid raising of the closure element, the consequent rapid downward swing of the frame imparting sufficient momentum thereto to overcome the force exerted by the aforesaid resilient means and permit return of the frame to vertical position, with consequent reengagement of the latching mechanism and return of the erection-arm to inoperative position.

2

In this application I show and describe only the preferred embodiment of my invention, simply by way of illustration of the practice thereof, as by law required. However, I recognize that my invention is capable of other and different embodiments and that the several details thereof may be modified in various ways, all without departing from my said invention. Accordingly, the drawings and description herein are to be considered as merely illustrative and not as exclusive.

In the accompanying drawings:

Figure 1 represents a perspective view of a portion of a building showing one of the devices of the invention applied to the window thereof; the device being erected for use as an awning;

Figure 2, a front elevation of the device shown in Figure 1, showing same as it appears when disposed in vertically depending position for use as a blind, the closure operating reel being shown diagrammatically;

Figure 3, a fragmentary enlarged rear elevation showing the erecting arm and adjacent cooperating portions of the device;

Figure 4, an enlarged broken vertical section on the line 4—4 of Figure 2, looking in the direction of the arrows, showing the device in full lines as it appears when in vertically depending position for use as a blind, and in broken lines as it appears when erected for use as an awning;

Figure 5, a section on the line 5—5 of Figure 3, looking in the direction of the arrows;

Figure 6, a view similar to Figure 4, but showing the frame in an intermediate position as it appears immediately following the release of the latching means, after having been swung outwardly by pressure of the resilient spring, the

arm being simultaneously projected into the path of movement of the closure panel; and the extent of the swinging movement being somewhat exaggerated for convenience of illustration; and

Figure 7, a detail perspective view of the erecting arm of the preferred embodiment.

Referring now in detail to the accompanying drawings, and first considering Figure 1, the numeral 1 therein designates the side wall of a usual building structure having a window opening in which is disposed a rigid supporting frame 2, the building and frame in the present instance serving as the support for the combined blind and awning of the invention which, in the drawings, is disposed for cooperation with the window opening to function as either a blind or an awning for same.

Fixedly disposed at the top of the frame 2 are brackets 3 from which the movable frame of the device swingably depends for movement about the horizontal axis defined by the pivots 4. The movable frame comprises relatively transversely opposed rigid guides which may be in the form of usual channel irons 5. Where the channel irons 5 do not extend completely to the bottom of the window opening, supplementary stationary guides or extensions 6 may be disposed in the window opening beneath the respective guides 5, as shown, to be in relative alignment therewith in the perpendicular position of the movable frame, as shown in Figure 2, to guide the closure panel or element 7 completely to the bottom of the window opening.

The closure panel or element, generally designated 7, is slidable upwardly and downwardly in the frame 5—5 through the upper end or extremity thereof, and in the preferred form may consist of a plurality of flexibly connected panels disposed horizontally between the respective guides 5 and having their ends slidably received and guided in the channels of said guides. However, the particular construction of the closure panel is not essential to the invention considered from its broader aspects.

Suitable mechanism for raising and lowering the closure panel or element 7 may be in the form of a usual reel 9 (shown in Figure 2) which may be rotatably disposed either within the wall or interiorly of the building, above the window opening. The element 7 passes through a horizontal slot 10 in the wall above the window opening to be wound and unwound from the reel 9. Control of the reel from the interior of the building to raise or lower the closure element 7 or to maintain it in any desired position may be accompished in any known manner, as disclosed for instance in the U. S. patent to H. H. Koller, No. 1,917,449.

Latching mechanism for maintaining the frame members or guides 2 in vertically depending position, as shown in Figure 4, may comprise spring loaded hooks or latch pawls 11 pivotally connected to each of said guides 2 and resiliently swung or urged downwardly by springs 12 into abutment with stops 13 carried by their respective guides. The lower edge of each of said pawls is notched as shown to receive a latch pin 14 fixedly positioned with respect to the supporting structure 1, as by being fixed to the relatively aligned stationary guide extension 6 of each guide. Each said pawl 11 is formed with a usual sloping cam edge 15 forwardly of its notch to automatically retract the latch pawl or hook 11 as its associated frame member 5 is swung downwardly to closed or vertical position so that the latch pin 14 may be operatively received in its notch. Thus it will be seen that the latch mechanism automatically reengages upon lowering or closing of the movable frame members 5.

As heretofore noted, the latch mechanism may be released by movement of the closer element or panel 7 upwardly beyond a predetermined raised position, means being provided for establishing an operative connection between the latch mechanism and the closure element 7 at such position as to release said mechanism responsive to continued raising of the closure element.

While such an arrangement may conceivably assume any of a number of different forms within the scope of the invention, I prefer to utilize the particular arrangement illustrated in which the connection is established through the frame 2—2 of the device. In such illustrated arrangement the frame is rendered upwardly displaceable in any suitable manner, as by forming its hinge mounts 16 in the form of downwardly opening U-hooks, as shown, which are rotatably caught over the pivot pins 4 of the mounting brackets 3. The operative connection is established through engagement of stops 8—8 and 8'—8' respectively carried adjacent the lower extremity of the closure element and the upper portions of the respective frame members 5, the stops 8—8 engaging the respective stops 8'—8' as the closure element 7 approaches the upper limit of its movement. Obviously continued upward movement of the closure element 7 after the stops thus engage will cause bodily upward movement of the entire frame and thus will cause the latch pawls 11 carried thereby to disengage from their respective latch pins 14, all as shown in Figure 6.

In practice, the hinged mounts 16 and pins 4 will be disposed to the sides and out of the path of movement of the closure element or panel 7 so as not to obstruct same, and it will be noted that the hooked conformation of the mounts 16 in this particular arrangement permits easy removal and replacement of the frame members 5 from the brackets 3.

A rigid erecting arm or brace 17 is pivotally mounted on the supporting frame or structure as at 18, for swinging movement in a vertical plane, separate such arms preferably being disposed for cooperation with the respective guides or frame members 5. In its vertically depending position, each guide or frame member 5 abuts against its respective brace or arm, as at 19, to maintain same in an upwardly swung or retracted position with the free end of the brace disposed out of the path of movement of the closure panel 7, so that said panel may be freely raised and lowered during use of the device as a blind. (See Figure 4.)

In the arrangement shown by way of exemplification, the free end portion of each arm 17 is freely vertically swingable through a vertical slot 17' in the rear wall of its channel member or guide 5 (see Figures 3, 4 and 5) with its free end extremity or tip 20 offset inwardly from the remainder of the arm and disposed in the guide channel or groove within the guide 5. This tip or free end extremity 20 is flat and relatively thin, and is disposed so that it will lie flat against the inner face of the member 5 in the retracted or raised position of the arm 17, as shown in Figure 4. As thus disposed, when the device of the invention is used as a blind, the arms 17 obviously will not interfere with the vertical move-

ment of the closure element or panel 7, but are entirely disconnected therefrom.

The means for swinging the frame 5 out of vertical position upon release of the latching mechanism 11—11, and the means for projecting the free ends of the arms 17 into the path of movement of the closure panel 7 upon such release, may both advantageously and economically be embodied in resilient elements such as springs 21 fixed to each of the arms 17 to be compressed between said arms and the adjacent face of the supporting frame 2 in the vertically depending blind position of the frame members 5, it being noted that said springs 21 cause the arms 17 to bear resiliently outwardly against the respective frame members 5 at the points 19.

Thus it will be seen that release of the latching mechanism by appropriate raising of the closure element 7 will permit the springs 21 to swing the arms 17 and frame members 5 outwardly, disposing the free end extremities 20 of the arms at an angle to their respective guides or members 5 and swinging said extremities into the path of movement of the raised closure element 7 to be engaged and swung downwardly by the latter as it is thereafter lowered.

The bottom portion or lower slat of the closure element or panel 7 is provided with sockets or recesses 22 to receive the free end extremities 20 of the respective arms (see Figures 4 and 6). The lower lip or ledge 23 which defines the lower edge of each such socket 22 is arranged and proportioned so as to clear the initially slightly projected arm extremities 20 during the initial downward movement of the element or panel 7 following release of the latch mechanism 11, so that said extremities 20 may properly seat within the sockets 22 and be swung downwardly during lowering of the element 7. However, it will be noted that these ledges 23 are of such width that after the closure element 7 has been lowered sufficiently to initiate downward swinging of the arms 17 and thus to increase the extent to which their free extremities project into the respective guide channels of members 5, any subsequent upward movement of panel 7 will cause the ledge 23 to function as a hook, engaging the extremities 20 and retracting the arms 17 upwardly to substantially their initially projected positions, whereupon the ledges and arms will automatically disengage to permit continued upward movement of the closure element or panel 7.

In the preferred embodiment of the invention, gravity is relied upon to cause lowering of the panel or element 7 as same is unwound from the reel 9, and in order to provide sufficient gravitational force the lower or bottom slat of the flexible panel illustrated may be fabricated of a substantially heavy or dense material or otherwise appropriately weighted, or if desired, the forces of gravity may be supplemented by resilient or other suitable means acting to urge the panel downwardly.

Operation

In the operation of the invention, which is believed to be readily apparent from the foregoing description, assuming that the device is positioned for use as a blind, as in Figure 2, with the closure panel 7 drawn completely to the bottom of the window opening, it will be seen that the closure panel or element 7 may be freely raised and lowered in the frame members 5 as desired, by suitable manipulation of the reel 10, and within the range permitted by the stops 8 and 8'.

When it is desired to swing the frame members 5 outwardly to erect the device for use as an awning, the reel 9 may be actuated from the interior of the building structure to raise the closure element 7 slightly beyond the point where the stops 8—8 engage the stops 8'—8', thus lifting the entire frame 5—5 bodily to release the latch mechanisms 11—11 and permit outward swinging of the frame members 5 and arms 17, such outward swinging being substantially as shown in Figure 6, though in Figure 6 the various parts are positioned in the extreme positions which they will or may assume under the momentum imparted to them by the spring 21, and it will be understood that the parts will return to a stationary position in which the released spring 21 rests against the frame 2 maintaining said parts sufficiently outwardly swung to prevent reengagement of the latch mechanism.

Thereafter, upon subsequent lowering of the closure element 7, the free ends or tips 20 of the arms 17 will be received in the respective sockets 22 of the said element and swung downwardly thereby until the said arms 17 abut against the lower ends of their respective slots 17' in the frame members 5. Such downward swinging of the arms 17—17 will result in outward and upward swinging of the frame members 5, thus erecting the device for use as an awning, as shown in dotted lines in Figure 4.

When it is desired to reconvert the device for use as a blind, this may be readily accomplished by rapidly raising the closure element or panel 7 to thus raise and retract the arms 17, the raising movement being carried past the point where the free ends 20 of the arms 17 disengage from their respective sockets 22, and resulting in downward swinging of the frame members 5—5. This is done with sufficient speed that by the time the frame members 5 have swung downward sufficiently to commence placing the springs 21 under compression, they will have gathered sufficient momentum to overcome the resistance of said springs and return to a completely lowered or vertically depending position, at which time the latch mechanisms 11—11 will automatically reengage. Such re-engagement of the latch mechanism will maintain the arms 17 in retracted position, as aforementioned, so that the closure element 7 may be lowered past their free ends 20—20 through the frame members 5—5 to their respective extensions 6—6 and completely to the bottom of the window opening. If desired any suitable latch or lock means, such as the usual hook and cooperating eye, may be utilized to secure the closure member 7 in closed position to the window sill 24, so that it cannot be raised from the exterior of the building in which the device is mounted, and thus the invention may be used to prevent illegal entry.

I claim:

1. A combination blind and awning comprising, a stationary support, a frame swingably depending from said support and bodily upwardly displaceable relative thereto, a closure element movable upwardly and downwardly in said frame through the upper extremity of the latter, and means carried by said support above said frame for causing such movement, said frame being disposable in a vertical plane to function as a blind, and cooperating latching means carried by said frame and said support respectively to interengage in the said vertical position of the frame

and prevent swinging movement thereof, said means being disengageable responsive to upward displacement of the frame, in combination with means connecting said frame to said closure element for upward movement therewith at a predetermined raised position of the latter to cause release of the latching means, resilient means operable to swing said frame out of vertical position, thereby preventing reengagement of said latching means upon subsequent lowering of said element, and a rigid brace pivotally mounted on said support below the swingable connection of said frame and swingable to hold said frame in outwardly inclined position, the free end of said brace being operatively engaged by said closure element to be swung thereby responsive to the sliding movement of said closure element, with consequent swing of said frame.

2. A combined blind and awning comprising a support, a frame swingably depending from said support for movement about a horizontal axis, a flexible closure element movable upwardly and downwardly in said frame and means for causing such movement, latching mechanism operable to secure said frame in vertically depending position for use as a blind, and means establishing an operable connection between said latching mechanism and said closure element at a predetermined raised position of the latter whereby upward movement of said element beyond said position will release said latching mechanism, a rigid brace pivotally connected to said support, said frame in its vertically depending position abutting against said brace and maintaining same in an upwardly swung position, the free end of said brace in such position being out of the path of movement of said closure element, and resilient means tending to swing said brace outwardly and downwardly, whereby upon raising of said closure element beyond said position for releasing said latching mechanism, said resilient means will simultaneously swing said brace and said frame to non-vertical positions wherein the free end of the brace will be disposed in the path of movement of the raised closure element to be engaged thereby and swung downwardly during subsequent lowering thereof, whereby the frame will be swung outwardly and upwardly to cause the device to function as an awning.

3. A combined blind and awning comprising a support, a frame swingably depending from said support for movement about a horizontal axis, a flexible closure element movable upwardly and downwardly in said frame and means for causing such movement, latching mechanism operable to secure said frame in vertically depending position for use as a blind, and means establishing an operable connection between said latching means and said closure element at a predetermined raised position of the latter whereby upward movement of said element beyond said position will release said mechanism, a rigid brace pivotally connected to said support on a horizontal axis for vertical swinging, said frame in its vertically depending position abutting against said brace and maintaining same in an upwardly swung position, the free end of said brace in such position being out of the path of movement of said closure element, and resilient means tending to swing said brace outwardly and downwardly whereby upon raising of said closure element beyond said position for releasing said said latching mechanism, said resilient means will simultaneously swing said brace and said frame to non-vertical positions wherein the free end of the brace will be disposed in the path of movement of the raised closure element to be engaged thereby and swung downwardly during subsequent lowering thereof, whereby the frame will be swung outwardly and upwardly to cause the device to function as an awning.

4. A combined blind and awning comprising a support, a frame swingably depending from said support for movement about a horizontal axis, a flexible closure element movable upwardly and downwardly in said frame and means for causing such movement, latching mechanism operable to secure said frame in vertically depending position for use as a blind, and means establishing an operable connection between said latching mechanism and said closure element at a predetermined raised position of the latter, whereby upward movement of said element beyond said position will release said mechanism, a rigid brace pivotally connected to said support on a horizontal axis for vertical swinging, said frame in its vertically depending position abutting against said brace and maintaining same in an upwardly swung position, the free end of said brace in such position being out of the path of movement of said closure element, and resilient means tending to swing said brace outwardly and downwardly upon release of said latching mechanism, the free end of said brace being disposed in the path of movement of the closure element when said brace is swung outwardly by said resilient means and being engaged and swung downwardly by said closure element upon subsequent lowering thereof with consequent swinging of the frame to awning position.

5. A combined blind and awning comprising a support, a frame swingably depending from said support, a flexible closure element movable upwardly and downwardly in said frame and means for causing such movement, latching mechanism operable to maintain said frame in vertical position for use as a blind, and means establishing an operable connection between said latching mechanism and said closure element at a predetermined raised position of the latter, whereby upward movement of said element beyond said position will release said mechanism, a rigid erecting arm pivotally connected to said support on a horizontal axis for swinging movement in a vertical plane, said frame in its vertically depending position engaging said arm and maintaining same in an upwardly retracted position out of the path of movement of said closure element, and means for projecting said arm into the path of movement of said closure element responsive to release of said latching mechanism, whereby the said arm will be engaged and swung downwardly by said closure element upon lowering of the latter to swing said frame to awning position.

6. A device as set forth in claim 5 wherein the lower extremity of the closure element is provided with a socket to receive and cooperate with the free end of said erecting arm, said socket opening toward said frame and being defined by an upper wall extending substantially across the path of movement of said element to engage and lower said arm, and a lower ledge projecting only part way across said path of movement to clear said arm in its initially projected position and permit reception of same in said socket during downward movement of said element, said lower ledge engaging said arm during upward

movement of said closure element and returning said arm to its initially projected position.

7. A combined blind and awning comprising, a support, a frame swingably depending from said support, said frame comprising relatively horizontally spaced parallel guides, a closure element slidable in said guides radially of the axis of swinging movement of said guides, in combination with a rigid erecting arm pivotally mounted on said support and vertically swingable thereon, the free end of said arm engaging said closure element and being swingable upwardly or downwardly responsive to the sliding movement of said element in said guides, thereby swinging said frame relative to said support.

8. A combination blind and awning comprising a support, a frame mounted on said support and swingable in a vertical plane, a closure element slidable in said frame radially to the swinging movement thereof, in combination with a rigid arm pivotally mounted on said support and swingable simultaneously with the movement of said frame, the free end of said arm being operatively engaged by said closure element to be

swung thereby responsive to the sliding movement of said element, thereby swinging said frame.

9. In a blind construction having a vertically swingable and vertically upwardly displaceable frame, together with means for upwardly displacing said frame, latching means operative in the vertically depending position of said frame to prevent swinging thereof, said means being disengaged by vertical displacement of said frame, in combination with resilient means thrusting against said frame and operative upon release of said latching means to swing said frame out of vertical position, thereby preventing reengagement of said latching means upon substantially vertical replacement of said frame.

10. A device as set forth in claim 5 wherein the closure element comprises means operable during the raising of said element to engage said erecting arm and retract same upwardly with said element.

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No references cited.