

May 8, 1951

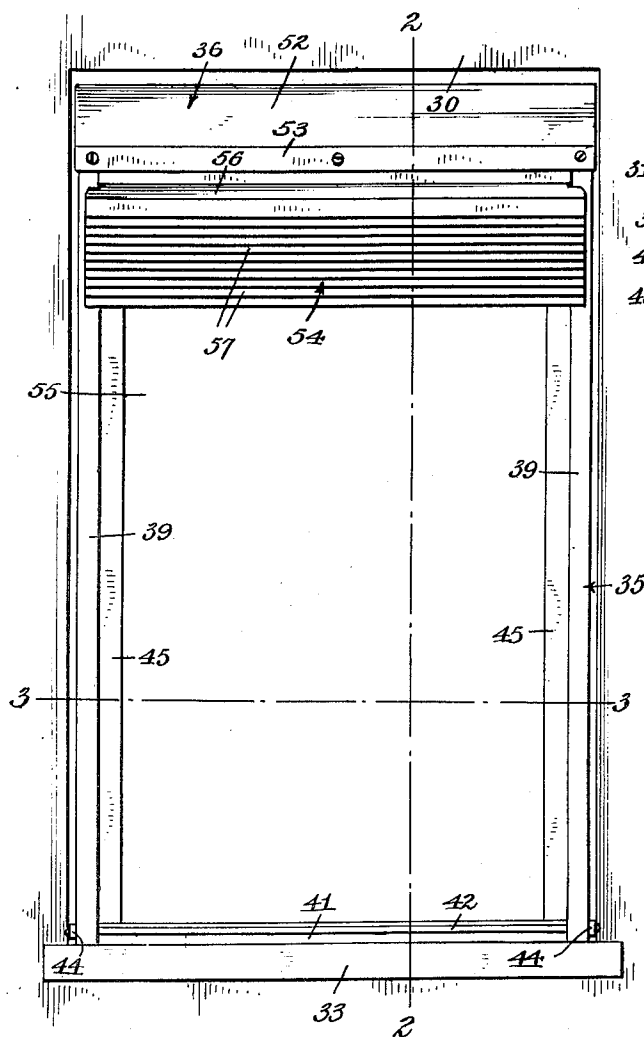
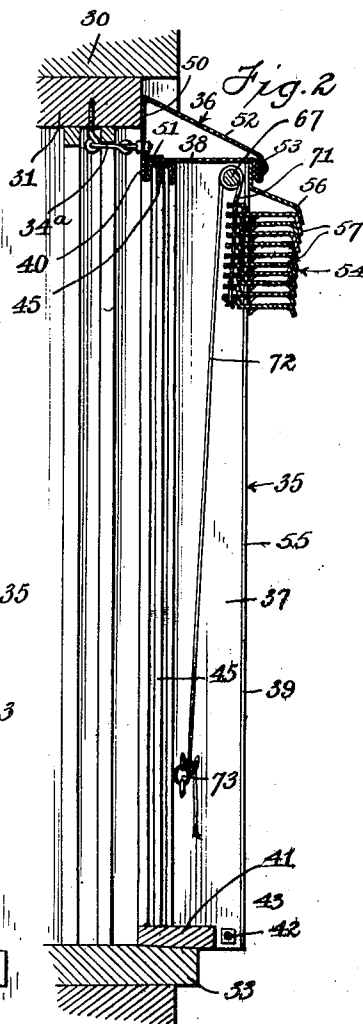
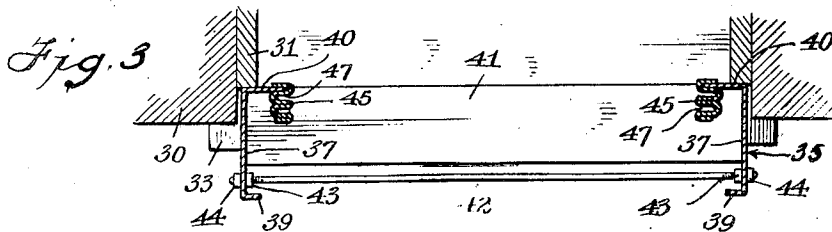
L. GUARCELLO
SHEET METAL AWNING

2,551,736

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3 Sheets-Sheet 1

Fig. 1.



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Fig. 4

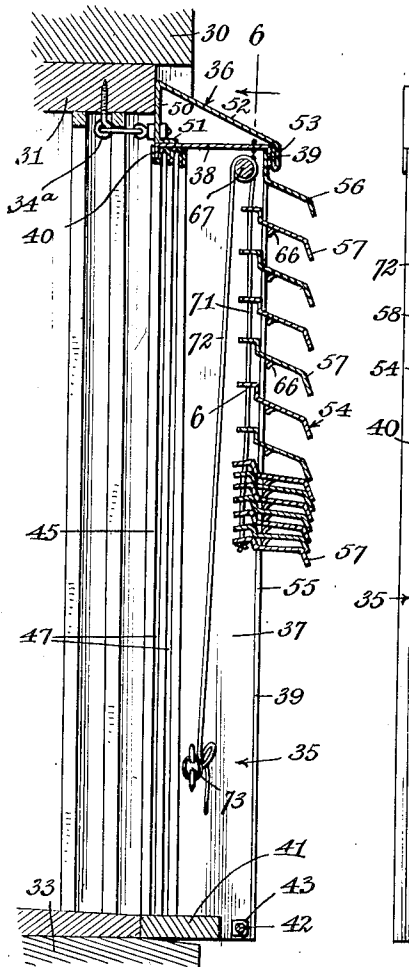


Fig. 5

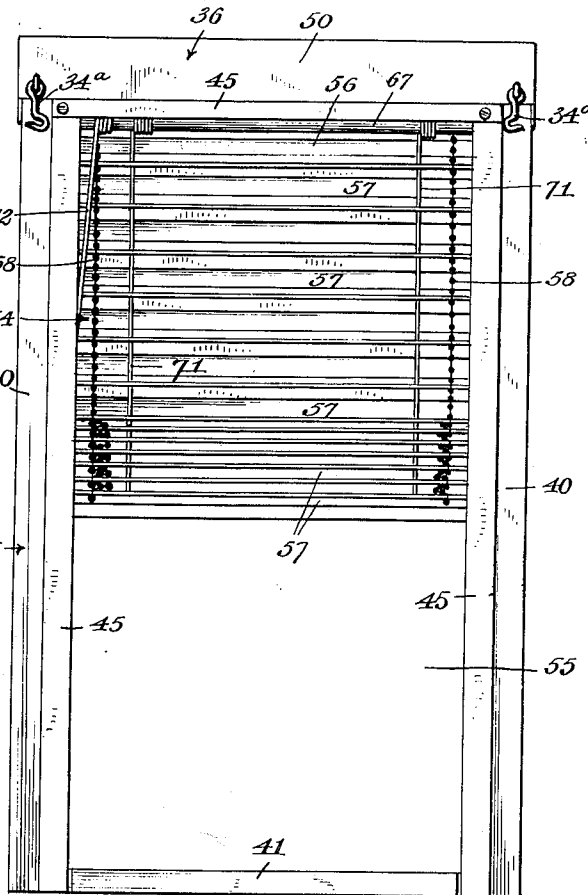
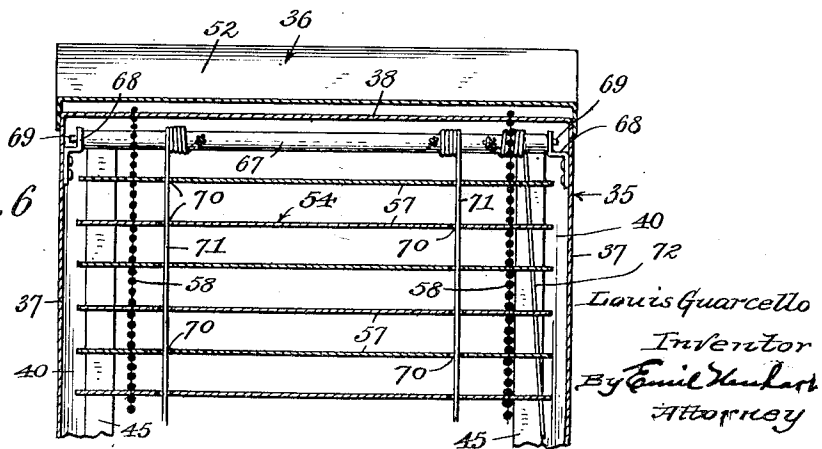


Fig. 6



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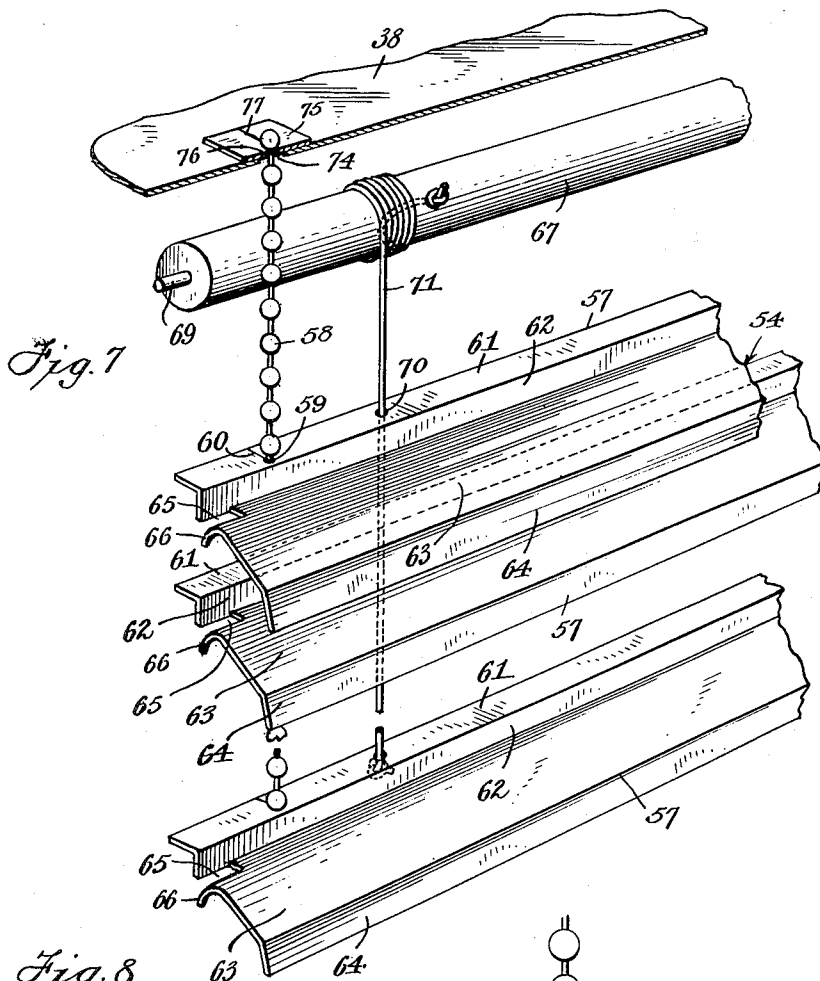
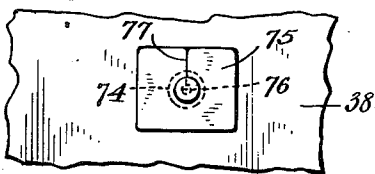
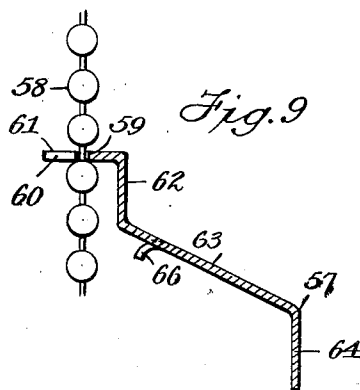
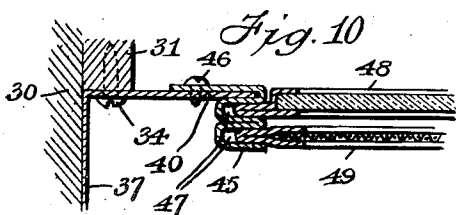
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3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE

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SHEET METAL AWNING

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5 Claims. (Cl. 160—34)

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This invention relates to a sheet metal awning and it is herein illustrated as applicable to windows of homes, apartments, etc., and to store windows where display of goods on sale can be made while protecting the goods from the rays of the sun.

One of the objects of my invention is to provide an awning with a frame or housing attachable to a building wall to shade a window and having a shade element formed of a plurality of flexibly-connected shade units and which is extensible or contractible on the frame in a vertical plane, the assembly of shade units being such that when the shade element is contracted, the flexibly-connected units will be nested and held elevated on the frame or housing and when extended be spaced apart regularly and in a manner to prevent the rays of sun passing beyond the shade element, yet enable one behind the latter to have a clear view of the outer nearby region.

Another object of my invention is to provide the frame or housing mentioned with a hood having a top inclined outwardly to shed water, said hood having a fixed shade unit attached thereto under which adjustable shade units of the shade element are nested when the latter is contracted.

Another object is to provide the frame or housing of the awning with parts or walls serving as vertical guides along which the several adjustable units of the shade element are guided in their movements.

A further object is to provide an awning which will be self-ventilating, yet prevent rain, sleet and other elements of the weather entering through the frame or housing or the shade element, and when the latter in extended form is made coextensive with the frame or housing, as may be desirable in the case of use on individual homes, apartment buildings, hotels, office buildings, and the like, the windows of the building to which the awnings are applied may be left open without any possibility of rain entering, even in a more than average storm.

With these general statements of some of the objects of my invention and leaving other objects apparent from the ensuing portion of this description, I will now proceed to describe the embodiments thereof illustrated in the accompanying drawings.

In the accompanying drawings which illustrate two embodiments of my invention,

Fig. 1 is a front elevation of my improved awning illustrated in an embodiment of my

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invention adapted for use in connection with a window of a dwelling, hotel, apartment house, or the like, the shade element of the awning being elevated or contracted to expose the major portion of the window.

Fig. 2 is a vertical section taken on line 2—2, Fig. 1.

Fig. 3 is a horizontal section taken on line 3—3, Fig. 1.

Fig. 4 is a view similar to Fig. 2 showing the shade element partly lowered or extended so as to shade the upper portion of the window.

Fig. 5 is a rear view showing the shade element in the position illustrated in Fig. 4.

Fig. 6 is a vertical section taken on line 6—6, Fig. 4, looking in the direction of the arrow crossing said line.

Fig. 7 is a perspective sectional view showing a portion of the housing, the raising and lowering roller in relative position thereto, and a view of three of the shade units with the flexible connections thereto broken between the two lowermost shade units to indicate the interposition of additional shade units in any number required, depending on the height or length of the window to which the awning is applied.

Fig. 8 is a plan view of a portion of the housing showing the means now employed for attaching the flexible shade unit suspending-elements therefrom.

Fig. 9 is a transverse section through one of the shade units showing the manner in which the flexible suspending-elements are connected thereto.

Fig. 10 is a horizontal section through a portion of the frame or housing, showing supplementary sash guides secured thereto and the manner in which sashes may be slidably arranged therein.

Now referring to the drawings in detail, the numeral 30 designates the wall of a building in which a window is included of which only the window-frame, designated 31, is shown.

The window opening is provided with a sill 33, and my improved awning is designed to fit the window opening and be attached to the window frame by means of screws 34, as for example shown in Fig. 9, or by means of hooks and eyes 34a, as shown in Figs. 2 and 4. It, however, is understood that the awning may be fastened in place in any other approved manner.

Preferably the awning is constructed to rest on the sill 33 and thus carry the weight of the same. It, however, is to be understood that the awning may be attached directly to the exterior

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of the building wall, and this may be found desirable in frame buildings since the window casing provides a smooth surface against which the awning may be held, but it will be understood that with present-day methods of fastening objects to brick or stone walls, the same methods may be embodied for fastening the awning to the exterior of such walls adjacent the window opening.

My improved awning comprises a frame or housing 35, and a hood 36 applied to the upper end of the frame or housing for a purpose to appear hereinafter.

The frame or housing 35 has side members 37 and a top member 38 connecting said side members, said members being formed of an elongated strip of sheet metal, and each of said members having inwardly-bent flanges 39, 40 at their front and rear edges, respectively. The lower ends of the side members 37 are fastened to a wooden sill member 41 by means of screws or otherwise, thus holding said side members in parallelism. The sill member 41 is somewhat narrower than the side members and these side members have an adjusting rod 42 passed there-through in close proximity to the front flanges 39 of the housing, stop nuts 43 being adjustably applied to said rod against which the inner surfaces of the side members 37 bear, and securing nuts 44 are threaded onto the extremities of said rods and bear against the outer surfaces of said side members. In this manner the front portions of said side members can be slightly fixed inwardly and outwardly so that the inner edges of the inwardly-bent front flanges 39 may be positioned truly parallel to each other.

As clearly shown in Fig. 10, each of the rear flanges 40 have sash guides 45 attached thereto by means of screws 46 or otherwise, and as shown in said figure each sash guide is formed of a strip of metal bent to form guideways 47 into which the side edges of screen or window sashes or flanges thereof are slidably fitted.

In the drawings I have shown one sash as a window sash 48 and the other as a screen sash 49, but both sashes may be screen sashes or window sashes, depending on the season of the year in which they are used.

The hood 36 is constructed of sheet metal and fastened in any suitable manner to the top of the frame or housing 35. The hood comprises a vertical rear member 50 having at its lower end an inwardly-directed flange 51 screwed, soldered or otherwise fastened to the top member 38, a forwardly inclined top wall 52 having at its front end a depending apron piece 53 overlying the inwardly-directed flange 39 on said top member 38. The purpose of the hood is to shed water or other elements of the weather coming in contact therewith.

A shade element 54 is applied to the front opening 55 of the housing or casing, said opening having as its limits the inner edges of the inwardly-directed front flanges 39, and this shade element comprises a fixed shade unit 56 and a plurality or series of adjustable shade units 57, the number of adjustable shade units being determined by the height of the opening 55 in the housing or casing.

The fixed shade element has a vertically-disposed member fitting behind the inwardly directed flange 39 of the top member 38, and it is secured thereto by means of screws, solder or otherwise.

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It may here be stated that where parts of the awning structure are connected together or fitted one to another in a rigid manner, solder, screws, rivets or other conventional means of attaching sheet metal parts together may be employed, and it is believed unnecessary to illustrate such means except in instances where the showing of such connections is considered necessary to a better understanding of the invention.

The adjustable shade units 57 are flexibly connected and suspended so that they may be raised or lowered and when fully raised be nested together and all nested into the said fixed unit 56. For this purpose flexible connector elements 58 are secured at their upper ends to the top member 38 of the frame or housing and the connections of these elements to said shade units 57 are made near opposite ends of the latter. Each of these connector elements has the adjustable shade units attached thereto in spaced relation, the lowermost adjustable unit being attached to the lower ends of said flexible elements, so that when the latter are drawn taut by lowering of the shade element, all adjustable shade units are spaced apart equi-distantly and the uppermost adjustable unit is spaced a like distance from the fixed shade unit 56.

I find a flexible element in the form of metal balls connected by a wire or other slender flexible strand spacing said balls apart to serve the purpose of connecting the adjustable shade units very effective, such connector elements being commonly used in pull-chain electric bulb-sockets and the like, and when used in my invention, each of the adjustable shade units has a small opening 59 punched therein near each end and a slit 60 extending from said opening to one edge of a part of said unit.

Each of the adjustable shade units 57 is formed of a strip of metal bent longitudinally at a right angle near one edge thereof to form a horizontal portion 61 and a vertical portion 62, and at the lower end of the vertical portion the metal is bent at an obtuse angle to form an outwardly-sloping portion 63 and a depending apron portion 64 formed at an obtuse angle to the sloping portion.

The horizontal portion 61 is in the form of a flange extending rearwardly from the highest point of each shade unit and the small openings 59 extend through said flange in the form of shade unit described, the slits 60 extending from the openings rearwardly to the rear edge of said flange. These shade units are attached to the flexible connector element 58 by bending the metal at one or both sides of the slits sufficiently to allow exposed portions of the wires or slender strands between the balls to be passed there-through and enter the openings at the inner ends of the so-opened slits, after which the metal at opposite sides of the open slits is brought into alinement to close the latter and to confine the flexible elements, or ball chains as they may be termed in the form shown, to the shade units. These shade units are therefore connected together in spaced-apart relation, the spaces being determined by the number of balls in the ball chain located between the flanges 61 of the several shade units.

When the said flexible elements are extended so as to separate the shade units to their maximum limit, the entire weight of the shade units is carried by these flexible elements or ball chains, and when said shade element is contracted to nest the shade units in the form shown in Fig. 2,

the portions of the flexible elements or ball chains between adjacent shade units are loose and looped or folded between such units.

When said shade units are separated, the outer portion of the fixed shade unit 56 overhangs the uppermost adjustable shade unit in a manner to prevent the rays of the sun from passing through the space between the fixed shade unit and the uppermost adjustable unit. This is due to the position of the outwardly sloping portion and depending portion of the fixed shade unit with respect to the position of the uppermost adjustable unit, and since such relationship is effected between each adjustable shade unit and the shade unit directly beneath, the rays of the sun, regardless of its position, cannot pass through the shade element, yet by reason of the spacing of the shade elements and the inclination given those portions thereof extending outwardly from the frame or housing, as will more particularly appear hereinafter, it will be possible for occupants of the building to which the awnings are attached to have a clear view of what is transpiring in the open directly outside of the building.

In order to raise or contract the shade element and lower or extend the same, it is necessary to guide the shade units along a vertical plane and for this purpose the outwardly sloping portion 63 of each shade unit is slotted at each end, as at 65, and the slots so formed receive the front flanges 39 of the frame or housing 35, with the result that the front surfaces of the vertical portions 62 at opposite ends of the shade units may ride in contact with the inner surfaces of the said flanges. This relationship is maintained due to the fact that the greater portion of each shade unit extends forwardly beyond the plane of said flanges, and since such outwardly-extending portions are of greater weight than the horizontal and vertical portions 61 and 62 of said shade units, firm sliding contact is assured between portions of the latter and the inner surfaces of the flanges 39 when lowering the shade element.

The corners formed by the front walls of the slot 65 and the end edges of the shade units in which said slot are fashioned are curved downwardly, as at 66, as best shown in Figs. 4, 7. These curved portions are adapted to ride in contact with the front surfaces of the front flanges 39. Thus the shade units are guided along both the front and rear surfaces of the flanges 39, yet permit upward tilting of the outwardly-extending portions of said units to nest more readily one within another while maintaining its guided relationship to said flanges.

Provision, of course, is made for raising or contracting and for lowering or extending the shade element, and for this purpose an elongated cylindrical element or raising and lowering roller 67 is journaled for rotation underneath the top wall 38 of the frame or housing, brackets 68 receiving trunnions 69 at the ends of the roller being fastened to the inner surfaces of the side members 37 by means of screws or otherwise. Each of the adjustable shade units has openings 70 formed in the horizontal portions or flanges 61 thereof at opposite sides of the vertical center of the shade element, and passed loosely through said openings are raising and lowering flexible elements 71, which have their upper ends fastened to said cylindrical element or roller and their lower ends arranged to at all times support the lowermost adjustable shade unit. These flexible elements may be knotted underneath the lowermost shade element so as to prevent dislodgment

of the same therefrom, the knots so formed serving as stops for the flexible elements against which the lowermost shade unit rests, and manifestly these stops may be otherwise formed.

The upper ends of these flexible raising and lowering elements are wound around said cylindrical element or roller, and when rotating the latter in one direction, cause the adjustable shade units to be drawn upwardly one after the other, starting from the lowermost unit, these shade units being held spaced-apart by the connector ball chains or other flexible elements, portions of which latter located between a unit being raised and the unit next above coiling or folding up until the unit being raised engages the one next above and lifts the latter therewith, this being continued successively with the gradual nesting of the adjustable shade units until the shade element is raised to the extent desired, as for example shown in Fig. 4 of the drawings, in which several of the lowermost units are nested and the remaining units retained in spaced or separated condition. This nesting of the shade units may be continued until the shade element is raised to its maximum height, as shown for example in Figs. 1 and 2.

In order to lower the shade element to any desired extent or to its full extent, the cylindrical element or roller 67 is rotated in an opposite direction, passing out portions of the flexible raising and lowering elements wound around said roller, under which action the uppermost adjustable shade elements are allowed to separate while retaining the others in nested position, the separation taking place successively from top to bottom of the shade element.

The means I have selected for rotating the cylindrical element or roller 67 is a flexible operating element or rope 72, the upper end of which is secured to and wound around the cylindrical element or roller 67 in a direction opposite that in which the flexible raising and lowering elements are wound around the same; thus, when drawing upon and unwinding the coiled portion of the flexible operating element or rope 72, said flexible raising and lowering elements are wound around said cylindrical element or roller. The shade element can thus be positioned in any adjusted position by fastening the operating element or cord to one of the side members 37 of the frame or housing, a suitable fixture, such as shown at 73 or otherwise, being fastened to said side wall for the purpose.

When releasing the flexible operating element or cord 72, the combined weight of the shade units will permit uncoiling of the coiled-up portion of the raising and lowering elements 71, the operator retaining the operating element or rope taut and under control until the shade element is lowered fully or to the extent desired, after which the operating element or cord is again fastened to the side wall and the shade element thus retained in the position desired for the same.

The flexible connector element 58, or shade-suspending elements as they may be termed, may be fastened to the top member 38 of the frame or housing in any suitable manner, but when using a ball-chain, openings 74 are formed in said top member, the balls of the ball-chains at the upper ends thereof being passed through said openings. The wires or slender elements between the uppermost ball of the chain and the ball immediately spaced therefrom is passed through a slitted retainer 75 which is in the form of a flat piece of metal having a small opening 76 there-

through, from which the metal is slit outwardly to one edge thereof, as at 77, and in order to secure the ball-chain to each retainer, the metal at opposite sides of the slit is bent relatively so as to separate the walls of the slit sufficiently to permit the wire or slender connection between the two uppermost balls to be passed therethrough and enter the small opening 76 in the retainer, the uppermost ball of the ball-chain being larger than said opening assures a secure connection of the ball-chain of the retainer. After positioning the chain in the retainer, the retainer is flattened so that portions at opposite sides of the slit are again aligned, and all possibility of the chain separating therefrom eliminated. These retainers then are positioned to lie against the upper surface of the top member 38 with the ball-chains extending through the openings 74 in said member.

Considering the advantages gained by the use of my invention, the apparatus is of the simplest and most inexpensive construction, since most of the parts thereof are of sheet metal stampings, and its action is nevertheless essentially practical and effective. The assembling of the parts and the application of the apparatus to a building does not require the employment of skilled labor or expert supervision. In fact, the embodiment of my invention designed for ordinary windows can be installed by any inexperienced person, since no more effort or knowledge is required than that for applying window screens or storm windows.

In accordance with the provision of the patent statutes, I have described the principle of operation of my invention in what I now consider to represent the best embodiment thereof; but I desire to have it understood that the apparatus shown is only illustrative and that the invention can be carried out by various changes in construction and assemblage of parts so long as a detachable frame or housing is provided having the essential operating elements shown and described in connection therewith.

Having thus described my invention, what I claim is:

1. A sheet metal awning, comprising a frame having a horizontal top wall and side walls provided at opposite marginal portions with inwardly-directed flanges, said inwardly-directed flanges serving as guide tracks, a shade element formed of a plurality of shade units vertically movable along said guide tracks, said shade units having substantially right-angled upper portions, outwardly sloping intermediate portions and aprons serving as lower portions, each of said units having slots at opposite ends at the junction of its right-angled upper portion and its outwardly sloping intermediate portion receiving said inwardly-directed flanges, a roller rotatably mounted in said frame at its upper end in a plane in rear of said guide tracks, flexible elements secured to said roller and wound around the same in one direction, said flexible elements passing freely through the right-angled upper portions of said plurality of shade units and having their lower ends permanently supporting the lowermost of said plurality of shade units, flexible connections secured at their upper ends to said horizontal top wall and to said right-angled upper portions in spaced relation, and a flexible operating element secured to said roller and wound around the same in a direction opposite the winding of said first-mentioned flexible elements whereby upon unwinding said flexible

operating element the said first-mentioned flexible elements will be wound around said roller and the shade units lifted successively from the lowermost shade unit to the uppermost shade unit.

2. A sheet metal awning, comprising a frame having a horizontal top wall and side walls spaced apart and held in parallelism, a hood mounted on said top wall and having an outwardly sloping top wall, a shade element comprising a fixed shade unit secured to said top wall and extending outwardly therefrom and a plurality of adjustable shade units movable toward and from said fixed shade unit, means to draw said adjustable shade units upwardly to nest the same underneath said fixed unit and to allow said adjustable shade units to be lowered, each of said shade units having an inwardly-directed horizontal flange at its upper end, flexible elements secured at their upper ends to said top wall and having fixed connection with the inwardly-directed horizontal flanges of said adjustable shade units in a manner to allow said flexible elements to automatically fold between said flanges when said adjustable shade units are nested and to limit the downward movement of said shade units under tautness of said flexible connections between said flanges.

3. A sheet metal awning, comprising a frame having a horizontal top wall and side walls spaced apart in parallelism, a shade element comprising a plurality of shade units vertically adjustable along said side walls, means to raise or lower said shade units in succession, each shade unit having an inwardly-directed horizontal flange at its upper end slit from its inner edge outwardly and provided with a circular opening at the inner end of each slit, the slits in said shade units being arranged in two spaced-apart vertical series, ball chains secured at their upper ends to said top wall and comprising spaced-apart spherical elements and flexible connections between said spherical elements with the flexible connections at spaced-apart points being passed through the slits of said shade units and entered into the circular openings at the inner ends thereof to thus hold said shade units in spaced-apart relation when lowered, said flexible elements being held taut when said shade units are separated to their maximum degree and being allowed to fold between said inwardly-directed flanges when said shade units are nested or drawn together.

4. A sheet metal awning, comprising a vertically elongated frame having a horizontal top wall and side walls extending downwardly therefrom and having inwardly-directed flanges at their outer edges serving as guide tracks, a roller rotatably mounted within said frame beneath said top wall, a shade element comprising a series of shade units extending across the front of said frame, each shade unit being bent longitudinally to form an outwardly-sloping portion, an apron extending from the lower edge of said outwardly-sloping portion, a substantially vertical portion extending from the upper edge of said outwardly-sloping portion and a horizontal flange extending inwardly from said substantially vertical portion, said horizontal flange having openings near opposite ends, a flexible element passed through the openings near each end of said horizontal flanges and having its lower end in fixed relation to the lowermost shade unit and its upper end attached to said roller and wound around the same in one direction, flexible elements connecting said shade units together near opposite ends so that they may be held in fixed spaced-

apart relation when said shade element is lowered, the upper ends of said last-mentioned flexible elements being attached to points of said frame above all of said shade units, said shade units being slotted at opposite ends near the junction of their vertical flanges with the outwardly-sloping portions thereof and having the corners formed by said slots and the end edges of said units bent downwardly, said guide tracks being entered in said slots to prevent undue inward or outward swaying of the shade element when being raised or lowered, and a flexible operating element secured to said roller and adapted to be wound around the same in a direction opposite the winding of said first-mentioned flexible elements therearound so as to cause the latter to be unwound under gravity when releasing said flexible operating element to permit the latter to automatically be wound up and to cause said first-mentioned flexible element to be wound up when pulling said operating element and causing the latter to be unwound.

5. A sheet metal awning, comprising a frame having a top wall and side walls provided at their outer edges with inwardly-directed flanges serving as guide tracks, a shade element vertically adjustable along said guide tracks, means to raise and lower said shade element, said shade element including a plurality of shade units flexibly connected together in a manner to permit limited operation thereof, said means including ball chains spaced apart along said shade units and each attached at spaced-apart intervals to said shade units, said top wall having openings

therethrough through each of which a ball of one of said ball chains is passed from the bottom of said wall, flat ball chain retainers lying against the upper surface of said top wall to close said openings, each of said retainers having a slit formed therein extending inwardly from one of its edges and terminating in a hole large enough to permit the flexible connection of its associated ball chain to pass thereinto when said flat retainer is bent to disalign the same at opposite sides of its slit and to position said ball of the chain passed through said opening so as to rest against the retainer when the retainer is rebent to normal flat form and thus securely fasten said ball chain to said top wall.

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