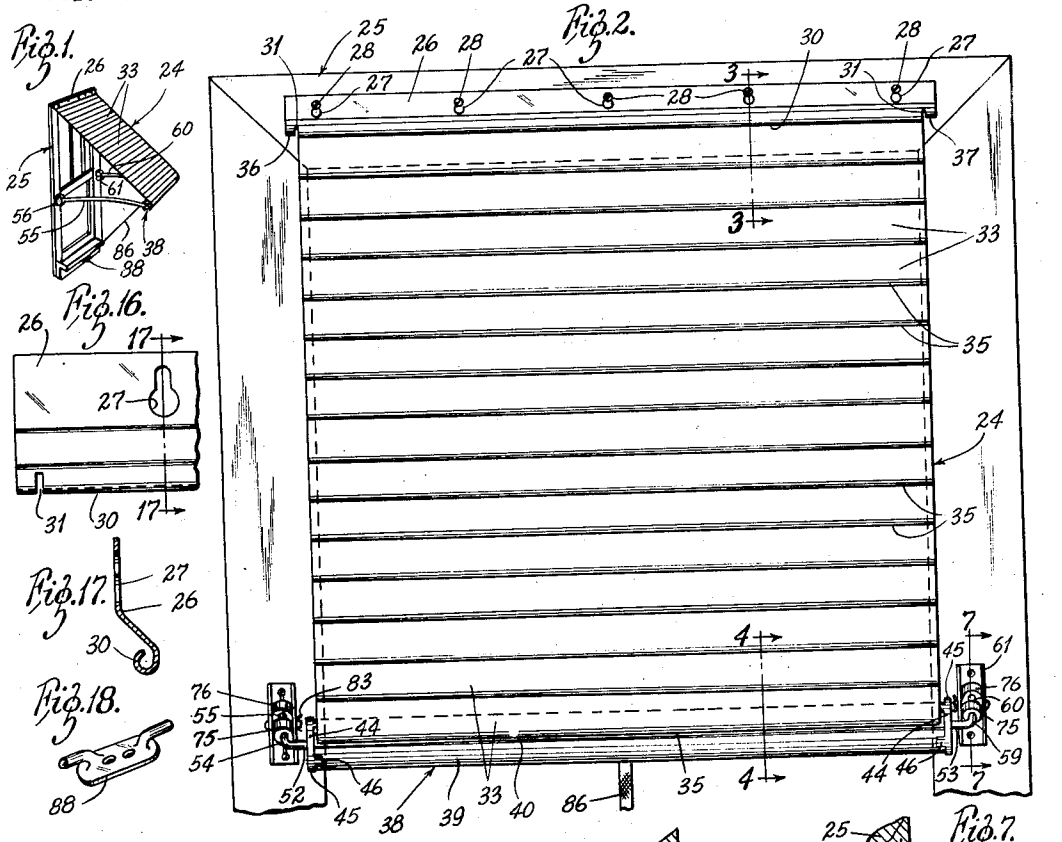
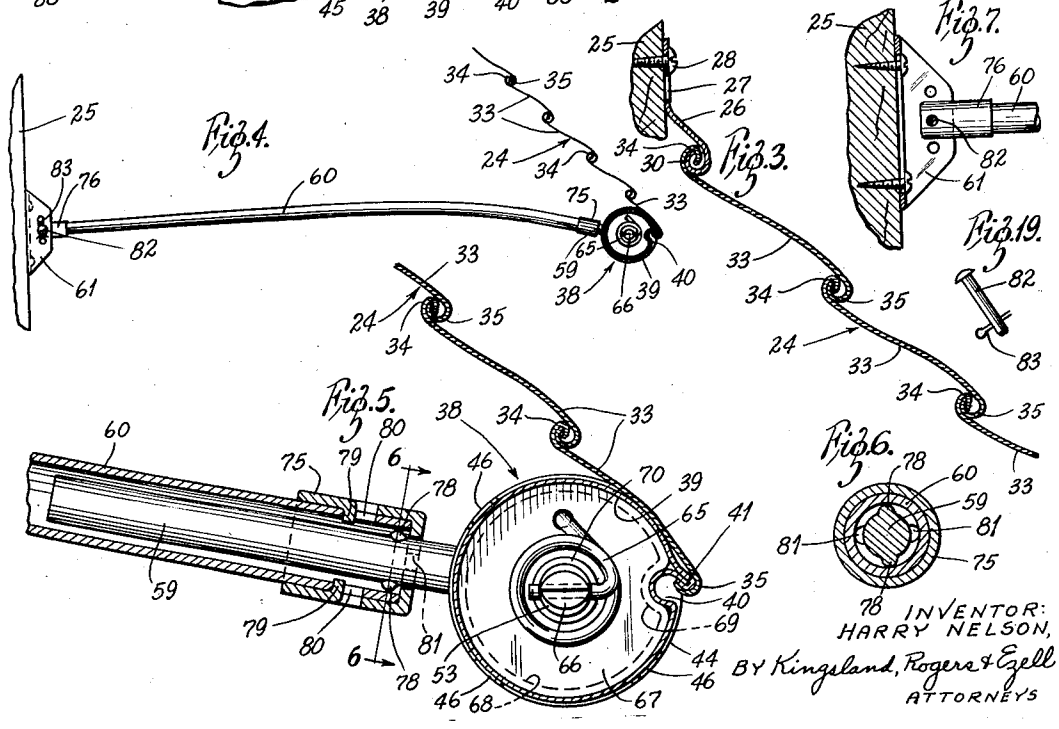
July 14, 1959 H. NELSON 2,894,572

ROLL-UP AWNING

Filed Jan. 27, 1956 2 Sheets-Sheet 1





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Fig. 8.

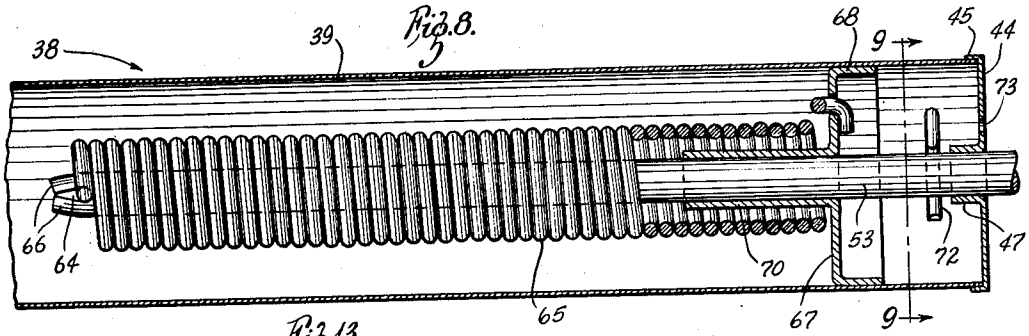


Fig. 13.

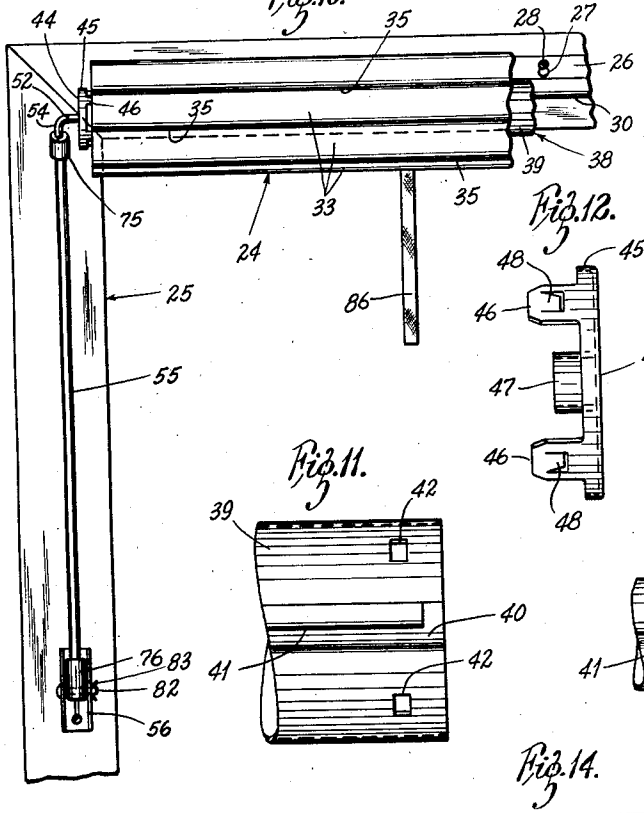


Fig. 9.

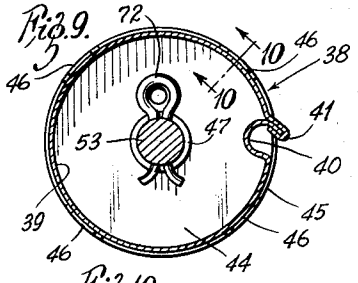


Fig. 12.

Fig. 10.

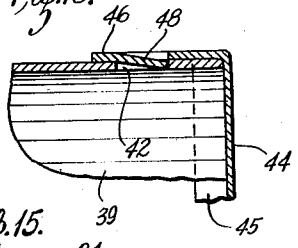


Fig. 11.

Fig. 15.

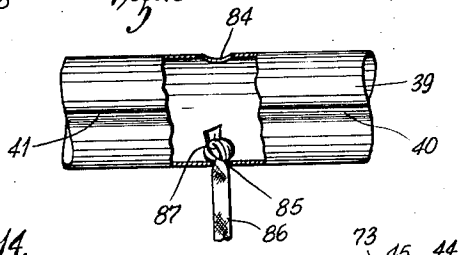
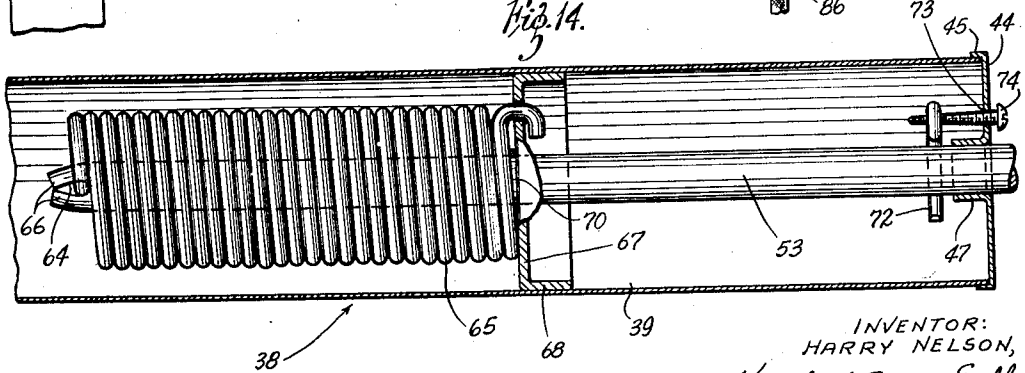


Fig. 14.



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ROLL-UP AWNING

Harry Nelson, McKeesport, Pa., assignor to Artcraft Venetian Blind Manufacturing Company, St. Louis, Mo., a corporation of Missouri

Application January 27, 1956, Serial No. 561,900

4 Claims. (Cl. 160—62)

The present invention relates to a roll-up awning. Many of the features of this invention can be applied to other similar devices, such as blinds or shades, although it will be apparent that they have especial value in connection with the roll-up awning to be described.

A preferred type of roll-up awning is made of a plurality of relatively narrow slats that are lockingly interfitted along their edges so that they make up an articulated curtain that can be rolled up from or lowered over a window or door. This curtain is preferably attached at its upper end to the frame of the opening. At its other end, it is attached to arms that can be swiveled out from a lower part of the frame of the opening, so as to project the lower end of the awning outwardly and downwardly from the window. These arms support a winding device that applies spring pressure capable of rewinding the awning.

Broadly, it is an object of the invention to provide a construction that will enable most of the parts to be made up of available sheet and bar stock.

Another object of the invention is to provide a winding device and arrangement that will cause the curtain part of the awning to be wound evenly without lateral displacement.

An additional object is to provide a construction that may be conveniently assembled, so that the awning may be sold wholly or partly disassembled, and may be assembled and installed by an ordinary householder.

Another object of the invention is to provide a winding device in which the tension is readily adjusted.

A further object is to provide a winding device to which the curtain portion may be easily attached and held securely.

Other objects will appear from the description to follow.

In the drawings:

Figure 1 is a perspective view of a window frame with the awning in lowered position thereon;

Figure 2 is a front elevation of the awning on the window frame, the latter being partly broken away;

Figure 3 is a section of the upper part of the awning and securing means therefor, taken on the line 3—3 of Figure 2;

Figure 4 is a transverse section of the lower part of the awning, taken on the line 4—4 of Figure 2;

Figure 5 is an enlarged-scale reproduction of the right hand end portion of Figure 4, with the cap construction in section;

Figure 6 is a transverse section through one of the arms, taken on the line 6—6 of Figure 5;

Figure 7 is a sectional view through one of the arm supporting brackets, taken on the line 7—7 at the lower right corner of Figure 2;

Figure 8 is a diametrical section through the right end

of the winding device showing the winding spring tightened as when the curtain is down;

Figure 9 is a transverse section through the winding device, taken on the line 9—9 at the right end of Figure 8;

Figure 10 is a section taken on the line 10—10 of Figure 9, showing the means attaching the winding cylinder caps thereto;

Figure 11 is a fragmentary view of the winding cylinder to illustrate the way the curtain portion and caps can be attached to it;

Figure 12 is an elevation of one of the end caps for the winding cylinder;

Figure 13 is a view of the left end of the awning rolled up against the upper part of the window frame;

Figure 14 is a diametrical section similar to Figure 8, but showing the winding spring in its partly relieved position as when the curtain is up;

Figure 15 is a view partly in section of a portion of the winding cylinder showing the tie tape or cord;

Figure 16 is an enlarged view of the upper hanging molding for the curtain portion of the awning;

Figure 17 is a section on the line 17—17 of Figure 16;

Figure 18 is a view illustrating a cleat that is used to hold the drawstring or cord to the window frame; and

Figure 19 is a view of a clevis and cotter pin assembly used to attach the awning arms to their supporting brackets.

The awning comprises, in general, a curtain portion 24, to be attached to an opening such as a window frame 25. The upper part of the curtain portion 24 of the awning is secured to a hanger molding 26, which consists of a strip of sheet metal or the like having a plurality of key hole slots 27 that may be slipped over and locked under headed attaching screws 28. The lower edge of the hanger molding is offset outwardly from the window frame 25, as is especially illustrated in Figures 3 and 17, and has its extreme edge 30 rolled under. At its opposite ends, the hanger molding 26 is provided with notches 31 for a purpose later to appear.

The curtain portion 24 of the awning is made up of a series of slats 33, preferably of metal, the edges of which are oppositely rolled and the middle portions of which are given a somewhat reverse curve. Thus the upper edge of each of the awning slats 33 is rolled over at 34 so that it can engage in a swiveling manner with the backwardly rolled lower edge 35 of the adjacent slat or strip. The uppermost slat 33 has its upper edge 34 engaged in the rolled edge 30 of the hanger molding strip 26. These rolled interlocks are such as to prevent disengagement of adjacent slats but to permit a fairly free articulation of the slats. They do not, as such, constitute a part of the present invention.

The uppermost slat 33 is engaged onto the hanger molding 26 by being slipped in from the end thereof. The notches 31 permit the roll 30 to be slightly offset rearwardly as at 36, so as to limit the inward movement of the slat 33 across the molding strip 26 upon initial application thereto. After the parts are thus located, the opposite end of the roll 30 can easily be offset as at 37, by a hammer blow or the like, so as to retain the curtain slat on the molding.

The lowermost slat 33 of the curtain portion of the awning has its backwardly rolled edge engaged in a groove provided in a cylinder winding device 38. The winding device includes a cylinder 39 that can be formed of sheet metal. One edge of the sheet forming the

cylinder 39 is shaped to form a groove 40 that extends the length of the cylinder. The edge of the metal forming the cylinder is then brought outwardly at something of an angle to a radius of the cylinder, where the opposite edge of the sheet forming the cylinder is crimped over it, as illustrated at 41 in Figure 9. This provides the groove 40 with a rigid lip or edge 41 projecting angularly across the opening of the groove. The lip or edge 41 terminates short of the ends of the cylinder 39, as is illustrated in Figure 11. Adjacent its ends, the cylinder 39 is provided with square openings 42.

End caps 44, that also may be made of stampings from sheet metal, are provided to fit over the two ends of the cylinder 39. Each end cap 44 is provided with a relatively narrow flange or side wall 45, and with a plurality of tabs 46. It is also provided with a center bearing 47 that is stamped inwardly, as illustrated in Figures 8, 12 and 14.

The end caps 44 are fitted over the opposite ends of the cylinder 39. Their flanges 45 engage the outer surfaces of the cylinder, the lip 41 terminating short of the ends of the cylinder. The tabs 46 extend along the cylinder to admit the flanges 45.

The tabs 46 of each end cap 44 are provided with inwardly projected prongs 48, stamped inwardly in the manner illustrated so as to snap into the openings 42 in the end of the cylinder 39. Figure 10 shows clearly the way that the tabs 48 engage the edges of the openings 42 so that the end caps are held against endwise removal from the cylinder 39. The straight sidewalls of the openings 42 cooperate with corresponding walls of the tabs 48 to aid in preventing twisting of the caps. This provides a sturdy construction which can be easily assembled by merely pressing the end caps into place.

The two bearings 47 on the end caps support torsion rods 52 and 53. The rod 52 projects out the left end of the cylinder 39 through its cap 44 and is bent over as illustrated at 54 to engage in the tubular arm 55. The opposite end of the arm 55 is, in turn, pivoted to a bracket 56. Details of the arms will be described hereafter. The rod 53 at the other end of the cylinder 39 extends outwardly and has a bent portion 59 that joins a tubular arm 60 that is pivoted at its other end to a bracket 61 attached to the window frame 25.

Each of the rods 52 and 53 has a torsion spring arrangement to wind up the awning. Since these are the same, it is necessary to describe only one of them, namely, the one about the rod 53.

The rod 53 passes through the end cap 44 and is supported in the bearing 47 thereof. The inner end of the rod 53 has a slot 64 that receives the final bend of a coil spring 65. The slot makes two end prongs 66 that can be squeezed together to lock the spring into the slot. The coil spring 65 has a considerable length since it is a torsion spring. Its other end is engaged in an opening in a spring holder 67. The spring holder 67 comprises a disc flanged at 68, and the flange is indented at 69 (Figure 5) to engage around the portion forming the groove 40. This enables the spring holder 67 to slide along the cylinder 39 axially, but prevents it from rotating therein. The spring holder 67 also has an elongated center flange 70 that provides an additional bearing for the rod 53. It can be seen that the cylinder 39 may be rotated with respect to the rods 52 and 53 while the bent ends 54 and 59 of the latter are held against rotation by the arms 55 and 60. Such rotation will wind or unwind the springs as the case may be.

There is a cotter pin 72 that is passed through the rod 53 to keep it from being removed from the cylinder. A hole 73 is provided in the cap 44 to receive a small screw or other like pin 74 engageable with the loop of the cotter pin 72, for a purpose to appear.

The two arms 55 and 60 are made of tubular stock such as lockseam steel tubing, capped with aluminum end caps 75 and 76. These parts are the same on both of the arms, and therefore need be described only once.

As shown in Figure 5, the arm 60 receives the bent end 59 of the rod 53. The end 59 has small ears or prongs 78 struck out therefrom. The tubular arm 60 has the end cap 75 pressed onto it. After the cap is pressed onto the arm 68, tabs 79 are bent into holes 80 in the arm 60, to secure the cap to the arm. The cap 75 has a double keyhole slot 81 through it, so that the rod end 59 may be passed through the cap, and then twisted 90° to the position illustrated in Figures 5 and 6, so that the rod 59 is secured in the arm. By virtue of this arrangement, arms 55 and 60 having various lengths suited to different applications may be assembled with the winding device 38 prior to fastening the other ends of the arms in their mounting brackets 56 and 61.

The inner ends of the arms 55 and 60 receive aluminum caps 76 that are similar to the caps 75, except that the caps 76 are pinned by clevises 82 into one of three holes in the brackets 56 or 61, as the case may be. The presence of the three holes permits some adjustment in the mounting of the arm and simplifies the alignment of the two arms. The clevises 82 (Figure 19) are secured by cotter pins 83.

As shown in Figure 15, the middle of the cylinder 39 has a large hole 84 through the wall thereof and a smaller hole 85 opposite the hole 84. A draw cord 86 with a knot 87 on the end thereof is passed through both holes, the knot 87 stopping against the walls of the smaller holes 85 after it has passed through the larger hole 84. The other end of the cord 86 may be fastened to a cleat 88.

Assembly

This awning lends itself to being shipped in wholly or partly knocked-down form and assembled and installed by the purchaser. Even where it is professionally installed, the cost of installation is reduced by the simplicity thereof.

The package of parts will include the hanger molding strip 26, the curtain 24 of appropriate width and length, the winding spring roller assembly 38, the tubular arms 55 and 60, the brackets 56 and 61, and the appropriate attaching elements and screws. In some cases, it may be desirable to install the lower end of the curtain onto the winding roller 39 prior to shipment. However, the present description will go forward as if the parts were completely disassembled.

The upper end of the curtain 33 is installed onto the hanger molding 27 by having the upper rolled edge 34 of the top slat slid endwise onto the lower rolled edge 30 of the molding. Previously, one end 36 of the roll 30 is offset somewhat to limit movement of the curtain slat 33 onto the molding strip; and after application of the curtain 24 to the molding 26 the other end 37 may be similarly offset to hold the parts in place against removal.

If the caps 44 are off the cylinders, the two rods 52 and 53, with the caps 44, cotter keys 72, spring retainers 67, and the springs 65 in place, are entered into the opposite ends of the cylinder 39. The notches 69 in the spring holders 67 are aligned with the groove 40 in the cylinder 39 so that the spring holders 67 may be slid into place. No torsion need be applied to the springs 65 at this stage of the assembly.

The caps 44 are then installed. The tabs or ears 46 of the caps are lined with the four holes 42 in the cylinder 39 and then the caps are driven axially onto the cylinder. The tabs 48 snap into place. Owing to the shapes of the holes 42 and the tabs 48, the tabs aid in holding the end caps 44 against rotation with respect to the cylinder as well as securing them against removal from the cylinder.

When the caps are thus placed, the bent portions 54 and 59 of the rods 52 and 53 project outwardly. They

may be slipped into the ends of the tubular arms **55** and **60** and turned so that the prongs or ears **78** are locked in. The inner caps **76** on the two arms are swiveled to the brackets **55** and **61** by means of the pins **82**. These pins are secured in place by cotter pins **83**.

The curtain **24** can be attached to the cylinder **39** by drawing the rolled edge **35** of the lowest slat **33** onto the lip **41** of the cylinder while the slat is tangential to the cylinder. The groove **40** receives the edge **35**; and if the slat rocks about the lip toward a position more radial with respect to the cylinder, the rolled edge of the slat enters the slot to such an extent that the slat cannot be pulled off the cylinder. This prevents excessive unrolling of the curtain from detaching the curtain from the cylinder.

The cleat **83** is secured appropriately to the window frame. The cord **82** is located onto the cylinder **39**.

After the positions of the parts have been appropriately marked, the screws **28** are put into the window frame to receive the hanger molding **26**. The brackets **55** and **61** are attached to the sides of the frame **25**. The hanger molding may be placed on the screws **28**. At this point, it is necessary to tighten the two springs **65**.

One easy way to tighten the springs **65** is to remove the hanger molding **26** from the screws **28** and wind the curtain **24** around the cylinder while the two arms **59** and **60** hold the cylinder. Then if the curtain **24** is drawn from the cylinder, the two springs will be wound up equally. When the curtain **24** is fully drawn out, the screws **74** are passed through the holes **73** in the end caps **44** and into the eyelets of the cotter pins **72**. This will hold the bars **53** and **54** against unwinding of the springs. Then the curtain **24** may be again manually wound onto the cylinder and, after withdrawal of the screws **74**, again unwound in a manner to tighten the springs further. After the springs have been appropriately tightened, the hanger molding **26** is again installed onto the screws **28**. During the winding and unwinding of the springs, the spring holders slide along the inside of the cylinder **39**, but do not rotate relatively thereto. It is an advantage of this construction that the tensioning of both springs **65** can be done at the factory and the cylinder shipped in condition that the user need only attach the arms **55** and **60** to the wall, bend ends **54** and **59**, remove the screws **74**, and attach the hanger strip **26**, to have the awning in condition for use.

When the curtain is wound up, the tape or cord **82** will also be wound up into the awning. In order to draw the awning down, the user need only pull on the cord **82** which causes the cylinder to unwind, freeing the curtain **33** as the arms **59** and **60** swing downwardly toward some position such as that shown in Figure 1. The amount of the lowering of the awning can be adjusted. When the awning is as low as desired, the cord **82** is attached to the cleat and the springs **65** thereafter will hold the awning taut.

To raise the awning again, the operator need only release the cord **82** from the cleat **83** and let the springs **65** retract the awning as desired.

It should be evident from the foregoing that the construction hereinbefore described provides an awning that is easily assembled and operated, whether in a manufacturing plant or by a home owner. A minimum number of parts are required, because variations in the width or length of the awnings involve only the use of slats and other parts of different widths, or more slats. The winding parts may be identical save only in the length of the cylinder **39**.

These components may be made of relatively small pieces of metal, and therefore the cost is at a minimum. A maximum percentage of sheet metal parts are used, this having the advantage of permitting the use of forming and shaping dies so as to reduce the amount of physical labor required, and yet only a few special dies are necessary.

For all of the reduction in cost in the manufacture, this construction also provides for a strong sturdy awning and one that is attractive in appearance.

What is claimed is:

1. A roll-up article of the kind described, comprising a hollow winding cylinder; an end cap thereon, the end cap having a center bearing therein, a rod rotatably supported in the bearing and projecting into and out of the cylinder, the cylinder having an integral portion therein to render it non-circular, the portion extending along the length of the cylinder, a spring retaining device within the cylinder engageable over the non-circular integral portion, whereby it is slidable along the interior of the cylinder, but not rotatable therein, a torsion spring in the cylinder attached at one end to the rod and at the other end to the spring retaining device, a looped cotter key through the rod inside of the end cap to prevent withdrawal of the rod from the cylinder when the end cap is in place, a hole through the end cap opposite the loop in the key, and a removable pin engageable through the hole and the loop to prevent relative rotation between the rod and the cylinder, and bracket means attachable to a wall, or the like, to which the outer end of the rod is attached.

2. A roll-up article of the kind described, comprising a curtain formed of a plurality of articulated slats and a winding device, the winding device comprising a hollow cylinder having a longitudinal groove and angularly projecting lip means, said lip means being adjacent the groove and overhanging the same to define a restricted mouth for the groove, the curtain having a portion at one of its ends that is turned backwardly and inwardly on itself to form a hook, the turned back portion being in articulative hooked engagement with the lip and projected partially through said mouth into the groove, the width of the mouth of the groove being less than the overall thickness of the turned back curtain portion so that when the curtain is pulled away from tangential position relatively to the cylinder the turned back portion is articulatively retained within the groove.

3. A roll-up article of the kind described, comprising a hollow winding cylinder in articulated connection with an articulated curtain, said cylinder having an end cap thereon, the end cap having a center bearing therein, a rod rotatably supported in the bearing and projecting into and out of the cylinder, the cylinder having an integral formed portion therein to render it non-circular, the portion extending along the length of the cylinder, a spring-retaining device within the cylinder in slidable bearing engagement with the non-circular integral portion, whereby it is slidable lengthwise along the interior of the cylinder, but not rotatable therein, a torsion spring in the cylinder attached at one end to the rod and at the other end to the spring-retaining device, bracket means adapted for pivoted attachment to a wall, or the like, said bracket means comprising a hollow tubular arm provided with an end cap into which the outer end of the rod is inserted, and means including a prong on the rod and a keyhole slot in the end cap for releasably retaining the rod in the bracket.

4. A roll-up awning, or the like, comprising a curtain formed of a plurality of identical slats having their edges oppositely curled so that they may be secured together into an articulated material, a winding roller formed of sheet metal in cylindrical form with a longitudinal lip projecting beyond the outer cylindrical surface thereof and a longitudinal indentation in the metal adjacent said lip and forming a groove along the cylinder, the mouth of said groove having less width than the interior of the groove, the curled edge of the lowest slat of the curtain being articulatively hooked over the projecting lip of the roller so as to extend into the adjacent groove, the curled edge of said lowest slat having an overall

thickness greater than the width of the aforesaid mouth so as to prevent withdrawal of the slat from the cylinder by the tensioning of the curtain in a direction transversely of the cylinder, but to permit removal by sliding the slat tangentially of the cylinder so as to unhook the curled slat edge from the projecting lip of the cylinder, a pair of rods, one extending into each end of the cylinder, a coil spring and a spring-retainer around at least one of said rods, said spring being anchored at one end to its rod and at its other end to its spring-retainer, the spring-retainer including a plate-like portion disposed transversely inside the cylinder, said plate-like portion having a central aperture to receive its rod and being relieved at its edge to receive the ridge in the inside of the cylinder that forms the groove in the outside thereof, so that the retainer is

slidable along the inside surface of the cylinder, but is kept from rotating therein.

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