May 12, 1931. N. H. NELSON 1,804,798

ROLLING AWNING

Filed March 10, 1930 3 Sheets-Sheet 1

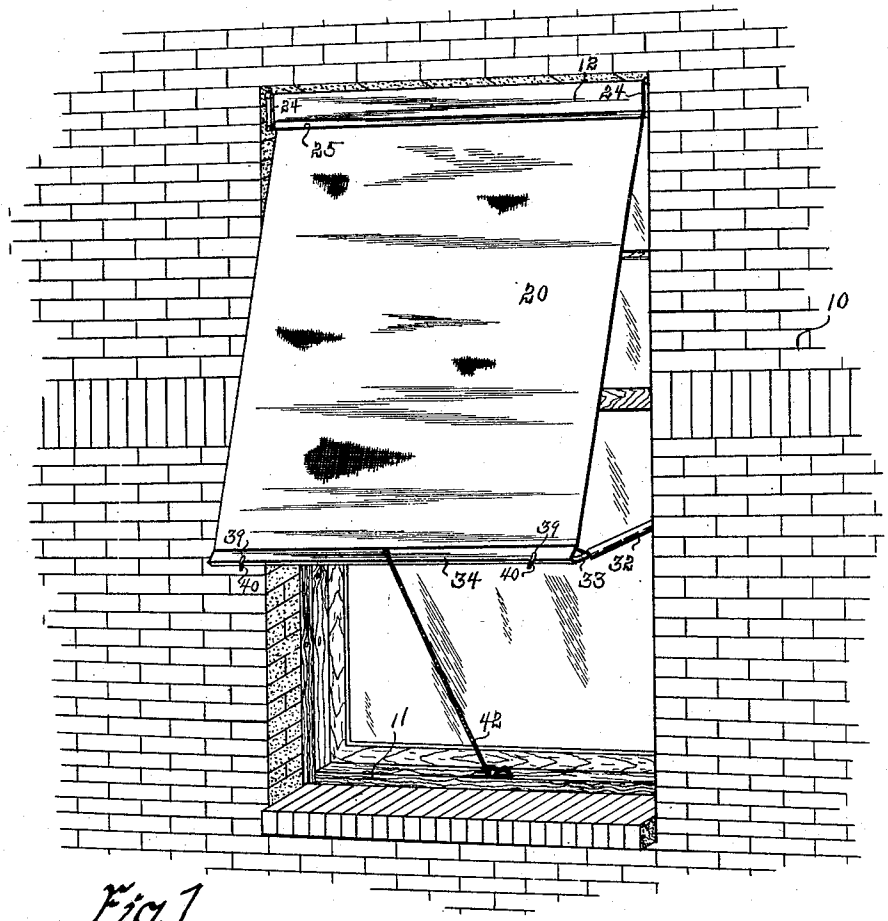


Fig. 1.

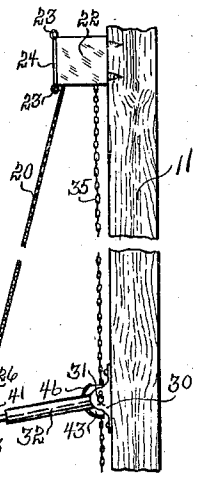


Fig. 2.



Fig 3.

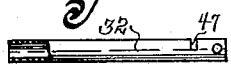


Fig. 4.

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ROLLING AWNING

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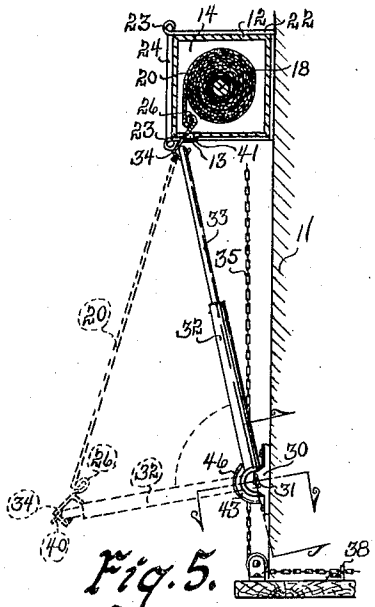


Fig. 5.

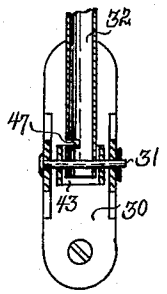


Fig. 6

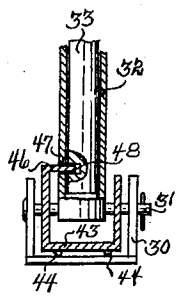


Fig. 7.

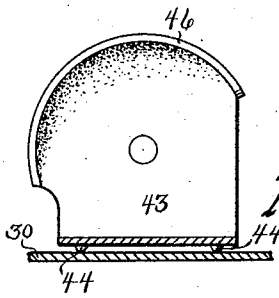


Fig. 8.

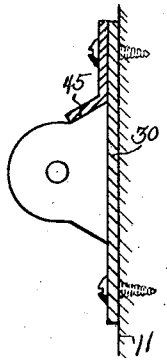


Fig. 9.

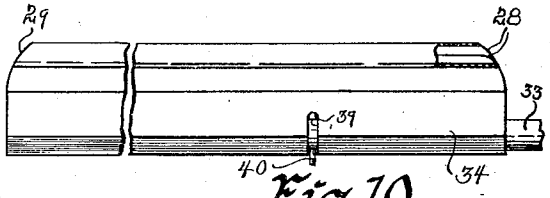


Fig. 10.

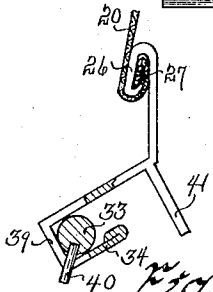


Fig. 11.

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ROLLING AWNING

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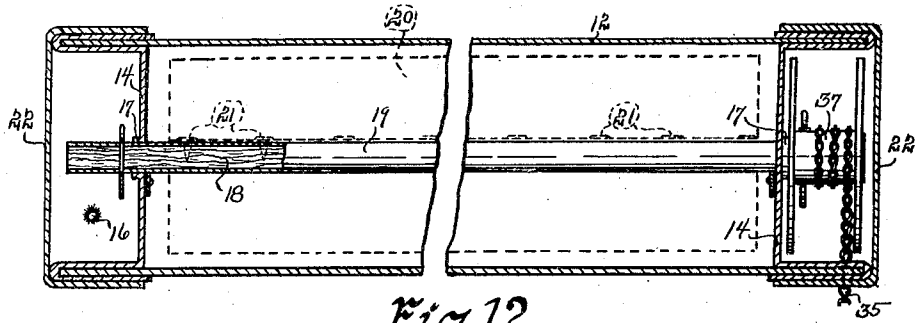


Fig. 12.

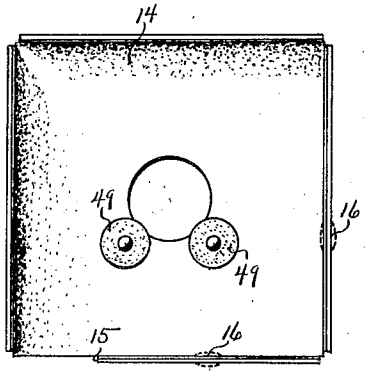


Fig. 13.

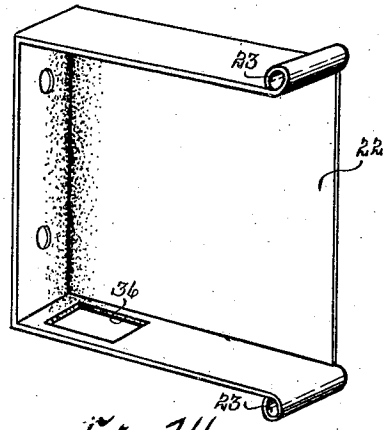


Fig. 14.

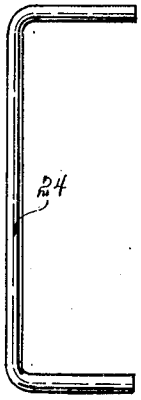


Fig. 15.

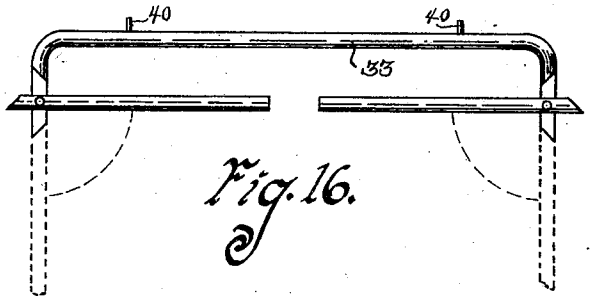


Fig. 16.

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Patented May 12, 1931 1,804,798

UNITED STATES PATENT OFFICE

NELS H. NELSON, OF DES MOINES, IOWA

ROLLING AWNING

Application filed March 10, 1930. Serial No. 434,661.

The principal object of this invention is to provide a roll awning having a telescoping frame that is prevented from the telescoping action except when in an upwardly extending near horizontal position.

A further object of my invention is to provide a rolling awning having a binder strip that does not become accidentally detached from the hinged frame portion when the awning is being lowered or raised.

A still further object is to provide a housing for the awning when not in use that is strong and does not develop any torque influenced by the rolling awning operation.

A still further object of my invention is to provide a rolling awning that is easy running and requires a minimum amount of physical effort to operate it.

A still further object of my invention is to provide a rolling awning that may easily and quickly be detached from its roller and binder strip, thereby making it possible to repair or substitute new awning cloth.

A still further object of this invention is to provide a frame for a rolling awning that is not affected by the painting of the same.

A still further object of this invention is to provide a binder strip that will not bend in use, and one that successfully closes the opening in the housing when the awning is stored therein.

A still further object of my invention is to provide a rolling awning that is economical in manufacture, refined in appearance and durable in use.

These and other objects will be apparent to those skilled in the art.

My invention consists in the construction, arrangement and combination of the various parts of the device, whereby the objects contemplated are attained as hereinafter more fully set forth, pointed out in my claims and illustrated in the accompanying drawings, in which:

Fig. 1, is a perspective view of my rolling awning mounted on a window case and in use.

Fig. 2 is a side view of the rolling awning secured to a window case and in an extended position.

Fig. 3, is a top plan view of one end of the U-shaped bar.

Fig. 4, is a top plan view of one of the pipe arms and into which one end of the U-shaped bar is slidably mounted.

Fig. 5, is a side sectional view of my awning in an extended position and more fully illustrates its interior construction.

Fig. 6, is a front sectional view of the hinged portion of one of the pipe arms when extending upwardly in a near vertical position.

Fig. 7 is a bottom sectional view of the hinged portion of one of the pipe arms when in a horizontal position.

Fig. 8, is a side view of one of the catch means for preventing the U-shaped bar from sliding in the pipe arms when not near a vertical position and is turned one-quarter revolution from its normal position on a window frame.

Fig. 9, is a side sectional view of one of the hinge brackets with a roof to ward off paint from the working parts of the hinge portion.

Fig. 10, is a front sectional view of a portion of the binder strip on the U-shaped bar and means for preventing its accidental detachment therefrom.

Fig. 11, is a side sectional view of the binder strip secured to the awning cloth and attached to the U-shaped bar.

Fig. 12, is a front sectional view of the awning housing and more fully illustrates its construction.

Fig. 13, is an inside view of one of the housing ends.

Fig. 14, is a perspective view of one of the awning housing supporting and end enclosing caps.

Fig. 15, is a side view of one of the U-shaped keys for retaining the awning housing in the supporting caps.

One of the chief objections to telescoping awning frames for roll awnings is that the telescoping action actuates at undesirable times and sometimes actually becomes accidentally disassembled. I have overcome all these objections as will be appreciated by those familiar with the art.

In the drawings I have used the numeral

10 to designate the wall of a building having a window and window frame 11 to which the invention is designed to be attached. The numeral 12 designates the awning housing formed from sheet metal or like material and approximately rectangular in cross section.

The bottom and front walls are formed from the opposite side marginal portions of the sheet and do not quite abut at their edges, but are slightly apart to form a slot or mouth 13, which extends longitudinally of the housing at the lower forward corner thereof. The numeral 14 designates the two housing ends for closing the two open ends of the awning housing, respectively. These two housing ends are in the form of square cups and have their bottoms inserted in the housing and toward each other. The forward side wall portions are then bent outwardly and back upon themselves, with the end portions of the housing in between as shown in Fig. 12. The lower side wall of each of the end members is cut away at 15 to correspond with the mouth 13. When the side walls of the end members which are on both sides of the housing, are spot welded, bolted, riveted, or the like to the housing at points designated by the numeral 16, an awning housing is formed that has great strength and cannot be distorted or torqued out of normal condition by the operation of the awning. This feature is especially advantageous when coil spring rolled awnings are used. By piercing the bottom of each of the end members near their centers and forcing the marginal edge laterally a bearing member 17 is created. Rotatably mounted in these two bearing members and extending beyond the same is the awning roller comprising a wooden core 18 and a metal shell 19. A flexible awning member 20 such as canvas or like material is attached at one end to this roller by tacks 21. These tacks after passing through the metal shell, clinch in the wooden core 18. The flexible awning is designed to extend through the slot 13 at times, and its housing 12 is adapted to be secured to the top of the window frame 11, as shown in Fig. 1. This attaching of the housing is accomplished by the two awning housing supporting and end enclosing caps 22 of yoke form having their back walls secured to the window frame by screws as shown in the drawings.

These caps are of a design to fit snugly, the outside of the housing 12 and engage the housing near its respective ends. As they have no front walls, the awning housing may easily and readily be removed therefrom by moving outwardly from the window frame. To prevent the accidental removal of the housing from these caps, I have provided eyes 23 on the upper and bottom wall of each of the caps and extending beyond the housing when the same is in the caps 22 and a key 24 formed of a piece of wire or light rod having its end portions bent at right angles and adapted to be inserted in the upper and lower eyes and extend across the front of the housing as shown in Fig. 1. These caps also enclose the open ends of the members 14.

To prevent these keys from becoming accidentally detached the marginal edge of the front side of the housing at the slot portion may be bent outwardly and back upon itself as shown in Fig. 1, to provide a lug 25. This lug or strip will prevent the keys from moving inwardly unless this side of the housing is depressed to allow the keys to slide over this bent portion or lug.

In order to facilitate the assembling of the awning housing in manufacture the portions of the cup members 14 that are bent back upon themselves extend, as shown in Fig. 12, beyond the bottom of the cups. By this arrangement these cup members are easily centered on the ends of the housing 12 and are guided thereby onto the end portions of the housing 12. If these bent portions of the cup members were flush with the bottoms of the cup members it would indeed be a very difficult task to guide them onto the end portions of the housing.

A binder strip is provided for the outer margin of the awning cloth 20, which strip is composed of a sheet of metal extending the full width of the cloth. This strip is quickly detached from the cloth by a hook portion 26 forming a groove opening outwardly and downwardly as is shown in Fig. 11. By this construction the usual seam 27 formed on the marginal edge of the awning by sewing engages back of the final hook on the hook portion 26 and when weight or stress is placed on the awning to draw it to a taut condition it will be rigidly held. However, when the awning is in a loosened condition it may be easily slid from right to left or vice versa, in or out of the hook portion. This construction is very desirable when installing the awnings or when it is desired to repair or substitute a new cloth awning. In order that the hook portion 26 will not damage or interfere with the sliding movement of the awning therein the extreme ends of the final hook of the hook portion are rounded as shown in Fig. 10, and which is designated by the numeral 28. I have also rounded the upper corners of the binder strip designated by the numeral 29 in order that the binder strip will be guided into and enter the slot 13 when the awning is completely rolled on the shaft 19.

Designed to be secured by suitable means to each of the side portions of the frame 11 at a lowered elevation is a bracket 30. Each of these brackets have two spaced apart ears through which is a small shaft 31. Rotatably and slidably mounted at one end to each of these shafts is a hollow arm or pipe 32. By these pipes being slidably mounted as well as

rotatably mounted, slight dimensional errors in the installing of the brackets are automatically compensated for.

The numeral 33 designates a U-shaped bar having its two end portions hingedly secured to its center or base portion as shown in Fig. 16. These end portions of the bar 33 are permitted to fold inwardly as shown in Fig. 16 for the conserving of space when being shipped or placed on the store shelf. They may be swung outwardly to a transverse position to the main portion as shown by dotted lines in Fig. 16. But because of the shoulders of the hinged portions they cannot be swung more than a right angle from the base portion of the same. The two ends of this U-shaped bar 33 extend into and are slidably mounted in the two pipe arms 32. The binder strip is hingedly and detachably secured to the central portion of this U-shaped bar by a hook or trough portion 34 formed on its outer end and rear side as shown in Fig. 11. This hook portion 34 extends outwardly and downwardly from the hook portion 26, and is preferably rectangular in cross section and possesses enough resiliency to extend around the central portion of the U-spaced bar whenever the bar is sprung into the same. By bending the free end of the trough inwardly and back upon itself a projection will be formed to more successfully retain this bar in the same and also the construction of the trough will be strengthened. The numeral 35 designates a chain, cable or the like having one end entering the housing 12 through a hole in its bottom and near one end. To accomplish this an opening 36 must also be provided in the supporting cap member 22 as shown in Fig. 14. This chain is secured to a spool 37 secured against relative rotation on one end of the shaft 19 and located between one of the cup members 14 and the supporting cap 22 adjacent thereto as shown in Fig. 16. This chain is designed to extend through the window frame and have any one of its links capable of entering and engaging the usual chain catch member 38, secured to the inside of the window frame.

By this arrangement if the chain is not engaging the catch member, the weight of the binder strip, pipe arms and U-shaped bar will unroll the awning cloth from the awning roller, out of the slot 13 and to a position in front of the window. The extent of lowering of the awning cloth will depend upon what link of the chain 35 is again permitted to engage the catch member 38. By such a construction any desired position of the awning may be had. As the chain is secured to the spool, the same will be wound around this spool as the awning is lowered. By pulling on the chain 35 the awning roller will be rotated and the cloth awning rolled upon the roller and the chain unwound from the roller or spool. During this last operation the pipe arms will be moved to an upward position and the U-shaped bar slid outwardly from these pipes to a position shown in Fig. 5. This telescoping action of the arms and bar permits the brackets 30 to be well down on the window frame, thereby the awning cloth will not only cover approximately the entire opening of the window, but its lower portion will be held close to the wall 10, allowing little, if any sunshine or rain to enter between the wall 10 and the awning cloth. When the chain is released from the catch member 38 for lowering the awning the first action of the invention will be for the U-shaped bar to move directly downwardly into the pipe arms, pulling with it the lower end of the awning. This action is very rapid and the momentum of the binder strip would tend to unhook the binder strip from the U-shaped member. To prevent this I have provided a plurality of transverse slots 39 in the bottom of the trough or hook portion 34 and extending through each of these slots is a pin 40 secured to the U-shaped member as shown in the drawings. These pins 40 extend at approximately forty-five degrees to the horizontal when the bar member is in a vertical position and prevent the accidental detachment of the binder strip from the U-shaped member.

When it is desired to remove the binder strip from the U-shaped member it is merely necessary to manually rotate the bar member relative to the binder strip so that the pins may be moved out of the slots. The numeral 41 designates a longitudinal flange secured on the under side of the binder strip as shown in Fig. 11. When the awning is completely rolled inside the housing 12 this flange 41 and the hook portion 34 completely inclose the slot 13 in the housing 12, thereby sealing the cloth awning against the elements. This flange 41 also strengthens the binder strip which is very desirable when a cord, cable or the like 42 is secured to the outer side of the hook portion 34 and is used to rigidly tie and hold the awning in a lowered position against wind and the like as shown in Fig. 1. If the strengthening flange 41 were not used the manual pulling and tightening of the cord 42 would bend the bar member and binder strip which is certainly not desirable and also if the binder strip were distorted or bent the same would not enter and close the longitudinal slot 13. By the cord 42 being secured to the outer side of the binder strip and also due to the construction of the binder strip the hook portion 26 will be tightened on the end of the cloth awning, thereby preventing any movement of the cloth awning relative to the binder strip. As telescoping of the bar member and pipe arms is only desired when the awning is in the housing 12 I have provided a means for preventing this telescoping action as soon as the pipe arms start to swing

outwardly. This is accomplished by a U-shaped member 43 slidably mounted on each of the shafts 31 and embracing the hinged portion of the pipe arm rotatably secured on the small shaft 31. Each of these U-shaped members 43 are prevented from rotation by having projections 44 engaging the bracket member base as shown in Fig. 7.

These projections also hold the U-shaped members a slight distance from the bracket member base in order that paint or the like will not stick the two members together. To further prevent paint or the like interfering with the successful sliding movement of these U-shaped members between the two ears of the bracket members I have provided a roof 45 as shown in Fig. 9. Extending inwardly on one side of each of these U-shaped members is a circular flange 46 capable of entering a slot 47 in the pipe arm adjacent to it when the said pipe arm is swung outwardly from a near horizontal position. The numeral 48 designates a slot in each of the end portions of the U-shaped bar member capable of registering with the slots in the pipe arms when the bar member is fully telescoped inside the arms. In other words when the pipe arms are in a near vertical position as shown in Fig. 5, the U-shaped bar member may freely telescope therein, but when the awning is lowered and the U-shaped bar member is fully telescoped inside the pipe arms, the pipe arms will commence their swinging movement outwardly from the building and the flanges 46 will immediately enter the slots in the pipe arms and will also engage the slots in the U-shaped bar member, thereby preventing the U-shaped bar member from sliding out of the pipe arms until the pipe arms are again in a near vertical position. By such a construction there is no possibility of the U-shaped bar member sliding completely out of the pipe arms and detaching itself from the same.

To make the awning roller rotate more easily and also to provide a more successful bearing I have provided small disks 49 rotatably mounted on each of the cup members 14, having their peripheries over-lapping the marginal edge of the bearing member 17, as shown in Fig. 13.

Some changes may be made in the construction and arrangement of my improved rolling awning without departing from the real spirit and purpose of my invention, and it is my intention to cover by my claims any modified forms of structure or use of mechanical equivalents which may be reasonably included within their scope.

I claim:

1. In a device of the class described, a flexible awning element, a frame, a binder strip secured to said frame, a means for securing one end of said flexible awning element to said binder strip, and a longitudinally extending flange attached on said binder strip for strengthening the same.

2. In a device of the class described, a housing having a longitudinal slot, a shaft rotatably mounted in said housing, a flexible awning element having one end secured to said shaft and capable of being wound on or unwound from said shaft, an awning frame designed to be hingedly secured to a supporting member, a binder strip having one end secured to the free end of said awning and its other end secured to said frame, and a longitudinal flange on said binder strip; said binder strip and flange being of such character that when said awning is wound upon said shaft and in said housing said binder strip and flange will engage the two marginal edges of the longitudinal slot in said housing, thereby completely closing said housing.

3. In a device of the class described, a housing having a longitudinal slot, a shaft rotatably mounted in said housing, a flexible awning element having one end secured to said shaft and capable of being wound on or unwound from said shaft, an awning frame designed to be hingedly secured to a supporting member, a binder strip having its lower marginal edge secured to said frame and its other marginal edge portion bent first outwardly and downwardly, then inwardly and upwardly to form a hook member for engaging a seam formed on the free end of said awning, said formed hook portion and the seam of said awning being of such character that said awning may be freely slid inwardly or outwardly in contact with said hook portion when said awning is in a loosened condition, and a longitudinal flange on said binder strip; said binder strip and flange being of such character that when said awning is wound upon said shaft and in said housing said binder strip and flange will engage the two marginal edges of the longitudinal slot in said housing, thereby completely closing said housing; and blunted corners formed on said hook portion to facilitate the removal or replacement of the flexible awning therein, and the said upper ends of said binder strip being rounded for guiding the upper ends of said binder strip into said slot when said flexible awning is rolled onto said shaft.

4. In a device of the class described, a mounted flexible element, a swinging frame, a binder strip secured to said flexible element, a hook portion formed on said binder strip for engaging and supporting said frame, a transverse elongated slot formed in the bottom of said hook portion, and a projection on the portion of the frame inside said hook portion and extending through said slot.

5. In a device of the class described, a hinged frame, a rotatably mounted shaft, a flexible awning element having one end secured to said shaft, a binder strip secured to the free end of said flexible awning, a hook

portion formed on said binder strip and engaging said frame, a plurality of transversely extending elongated slots in said hook portion, and a plurality of projections on the portion of the frame in said hook portion extending into and through said slots, respectively; said projections extending at approximately a forty-five degree angle from the horizontal when said awning element is rolled on said shaft and said frame is in approximately a vertical position.

6. In a device of the class described, a rotatably mounted shaft, an awning having one end secured to said shaft, two bracket members, a shaft secured to each of said bracket members, a pipe arm rotatably mounted on each of said shafts in said brackets, a U-shaped bar member having its two ends extending into and slidably mounted in said pipe arms, a means for securing the free end of said awning to said bar member, a slot formed in each of said pipe arms, a slot formed in each of the portions of said bar that is slidably mounted in said pipe arms and capable of registering with the slots in said pipe arms, and a non-rotatable circular flange adjacent each of said slots in said pipe arms and capable of entering and engaging said slots and the slots in said U-shaped bar member at times.

7. In a device of the class described, a rotatably mounted shaft, an awning having one end secured to said shaft, two bracket members, a shaft secured to each of said bracket members, a pipe arm rotatably mounted on each of said shafts in said brackets, a U-shaped bar member having its two ends extending into and slidably mounted in said pipe arms, a means for securing the free end of said awning to said bar member, a slot formed in each of said pipe arms, a slot formed in each of the portions of said bar that is slidably mounted in said pipe arms and capable of registering with the slots in said pipe arms, a non-rotatable U-shaped member embracing the hinged portion of each of said pipe arms, and a flange on each of said U-shaped members capable of entering the slots in said pipe arms and the slots in the U-shaped bar member registering therewith when said pipe arms are moved downwardly from approximately a vertical position.

8. In a device of the class described, a rotatably mounted shaft, an awning having one end secured to said shaft, two bracket members, a shaft secured to each of said bracket members, a pipe arm rotatably mounted on each of said shafts in said brackets, a U-shaped bar member having its two ends extending into and slidably mounted in said pipe arms, a means for securing the free end of said awning to said bar member, a slot formed in each of said pipe arms, a slot formed in each of the portions of said bar that is slidably mounted in said pipe arms and capable of registering with the slots in said pipe arms, a U-shaped member embracing the hinged portion of each of said pipe arms, projections formed on each of said U-shaped members capable of engaging the bracket member adjacent to it for preventing the rotation of the same, a roof member secured to each of said bracket members for preventing paint or the like from attaching said U-shaped members to said bracket members, and a circular flange on said U-shaped members capable of entering the said slots when said pipe arms are moved to said positions.

9. In a device of the class described, a housing having a longitudinal slot, a shaft rotatably mounted in said housing, a flexible element secured to said shaft, two supporting caps designed to be secured to a building for supporting the two ends of said housing, respectively, a key member on each of said supporting caps for preventing the accidental detachment of said housing from the same, and a lug on said housing for preventing the accidental detachment of each of said key members.

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