March 5, 1935. E. H. SCHANE 1,993,183

AWNING ARM

Filed Oct. 29, 1932 2 Sheets-Sheet 1

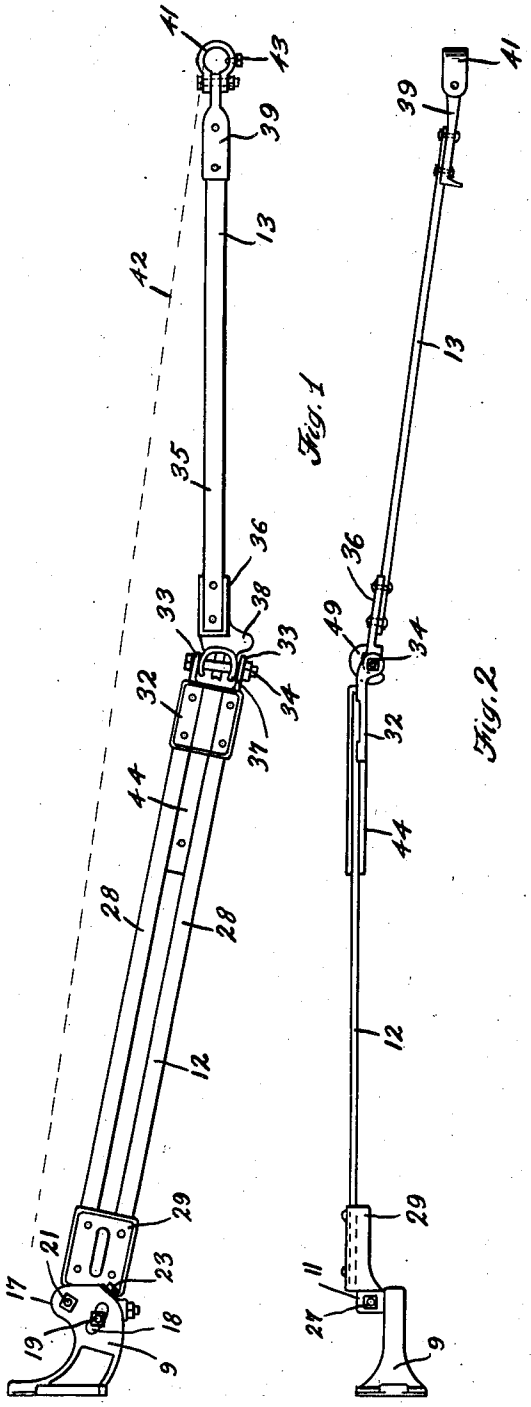


Fig. 1

Fig. 2

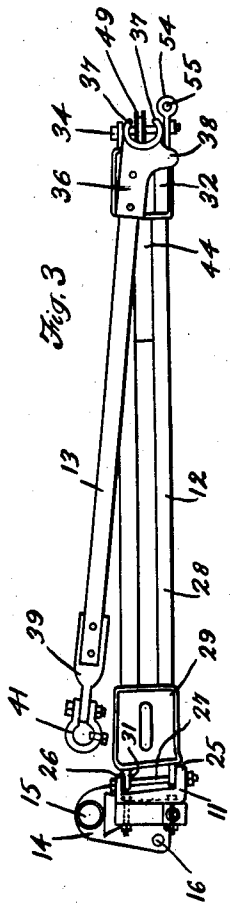


Fig. 3

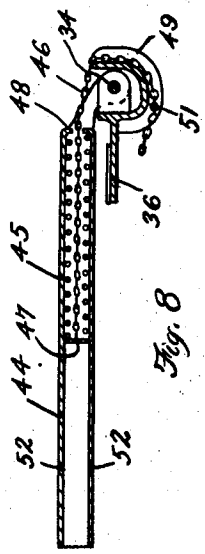


Fig. 8

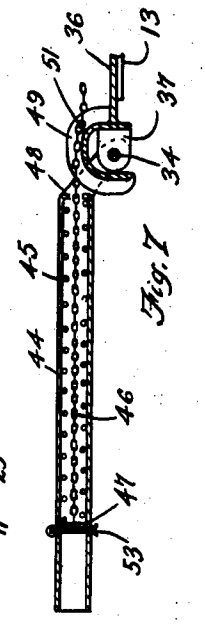


Fig. 7

INVENTOR.

Edward H. Schane

BY

Fay, Oberlin & Fay

ATTORNEYS.

March 5, 1935. E. H. SCHANE 1,993,183

AWNING ARM

Filed Oct. 29, 1932 2 Sheets-Sheet 2

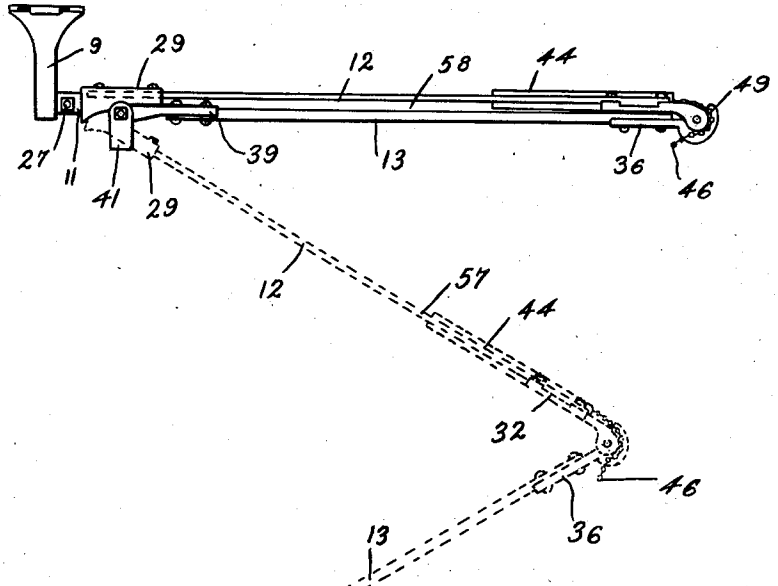


Fig. 4

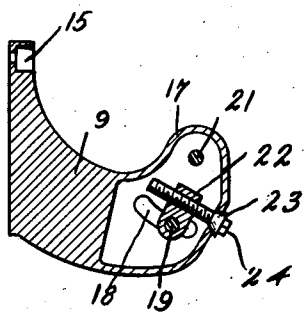


Fig. 5

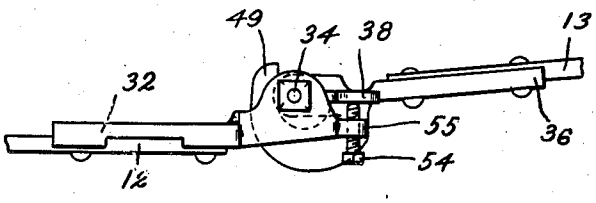


Fig. 6

INVENTOR.

Edward H. Schane

BY

Fay, Oberlin & Fay

ATTORNEYS.

Patented Mar. 5, 1935 1,993,183

UNITED STATES PATENT OFFICE

1,993,183

AWNING ARM

Edward H. Schane, Lakewood, Ohio, assignor to The Fanner Manufacturing Company, Cleveland, Ohio, a corporation of Ohio

Application October 29, 1932, Serial No. 640,267

9 Claims. (Cl. 156—44)

The present invention relates to an arm for supporting awnings and, more particularly, to an awning arm for awnings of large size which are preferably provided with positive acting means for unfolding the awning.

It is desirable in awnings for store fronts and other business locations to provide an awning which is wide enough to extend over the sidewalk a considerable distance and which may, at the same time, be folded to occupy a relatively narrow vertical space when folded. This requires that the awning and its supports shall be disposed in as compact a form as possible against the side of a building when not in use. The increased size of awnings employed also requires a strong and relatively massive arm in order that the awning may be adequately supported from the building front. The increased weight of the necessary structure renders it insufficient to rely on the force of gravity alone to unfold the awning, particularly where the awning extends at an angle only slightly depressed below the horizontal and positive means for unfolding the awning are, therefore, highly desirable. The present invention aims to provide an awning arm structure which constitutes an adequate support for wide awnings and is equipped with various adjusting elements which insure positive action without binding or locking of the parts.

It is, accordingly, an object of the present invention to provide an awning arm which unfolds an awning with a positive action. Another object of the invention is to provide an awning arm which can be adjusted after being set in place to accommodate various conditions of use which may be encountered. A further object of the invention is to provide an awning arm having spring means for unfolding the same with an attached awning, which arm may nevertheless be safely shipped and placed in operating condition without danger from the spring means.

To the accomplishment of the foregoing and related ends, said invention, then, consists of the means hereinafter fully described and particularly pointed out in the claims.

The annexed drawings and the following description set forth in detail certain mechanism embodying the invention, such disclosed means constituting, however, but one of various mechanical forms in which the principle of the invention may be used.

In said annexed drawings:

Fig. 1 is a side elevation of the awning arm in extended position for supporting an awning; Fig. 2 is a top plan view of the awning arm corresponding to Fig. 1; Fig. 3 is a side elevation of the awning arm in folded position; Fig. 4 is a top plan view of the awning arm completely folded and also showing an intermediate position of the arm during folding; Fig. 5 is an enlarged vertical section through a hinge bracket serving to attach the arm to a building; Fig. 6 is an enlarged side elevation of a hinge detail; and Figs. 7 and 8 are enlarged vertical sections taken through the spring assembly of the awning arm.

Referring to Fig. 1 of the drawings, a hinge bracket 9 carries a hinge 11 on which are supported arm sections 12 and 13, the inner section 12 being mounted directly on the hinge 11 and the outer arm section 13 being hinged to the inner arm section. The bracket includes a plate 14 which is roughly triangular in shape and is provided with apertures 15 and 16 for securing the bracket to the wall of a building. The forward portion 17 of the bracket is hollow and formed with arcuate slots 18 through which a bolt 19 passes. Another bolt 21 is also passed through the hollow portion of the bracket. These two bolts serve to attach the hinge 11 to the bracket, the heads of the bolts being disposed in a groove in this hinge to prevent turning.

Within the hollow portion 17 of the bracket a link 22 is loosely disposed, one end of this link being drilled or cored to receive the bolt 19 and the opposite end being threaded perpendicularly to the bolt 19 to receive a screw 23 provided with a head having a square end 24 for the application of a tool.

Since the weight of the awning arm tends to force the hinge about the bolt 21 as a pivot toward the wall to which the bracket 9 is attached, loosening the bolts 19 and 21 permits the link 22 and the bolt 19 to be forced along the arcuate slot 18 by turning the screw 23. The hinge is thus swung about the bolt 21 as a pivot and the arm sections 12 and 13 depending therefrom will be raised or lowered so as to slant at various angles away from the wall of the building. This adjustment may be made while the arm is in use and carrying the weight of an awning due to the mechanical advantage obtained by the use of the screw, the arms being lifted by turning the screw, the enlarged head of which bears against the end of the bracket, so as to pull the link toward the head of the screw and the arms being dropped by turning the screw in the reverse direction so that the weight of arms draws the link away from the head of the screw. When the desired slope of the awning has been attained, the nuts on the bolts 19 and 21 may be tightened

and the awning arm will be locked in the adjusted position.

It will be noted that the hinge 11 is so constructed that its lower flange 25 extends farther from the bracket 9 than does the upper flange 26 and that the bolt 27 passing through these flanges is disposed at an angle to the vertical or to the side wall of the bracket. As a consequence, the arm sections 12 and 13, which swing on this hinge, are thrown up to an approximately horizontal position or above when the awning arm is folded against a wall, as seen in Fig. 3.

The hinge 11 is attached to the inner arm section 12, as stated, the arm section consisting of steel bars 28 riveted to a plate 29, and the plate having pierced lugs 31 through which the bolt 27 passes, hingedly attaching the arm section to the hinge 11. At the outer end of the arm section 12 is a similar plate 32 also riveted to the bars 28 and also carrying pierced lugs 33 through which a bolt 34 is passed, hingedly securing the outer arm section 13 to the inner arm section. This outer arm section consists of a single steel bar 35 to which is riveted a casting 36 provided with pierced fingers 37 which are engaged by the bolt 34 between the lugs 33. The casting is also provided with a projecting portion 38 for a purpose hereinafter to be described. At the outer end of the section 13 is riveted, or otherwise attached, an extension 39 carrying a swiveled ring 41. This ring is for the reception of an awning bar which passes therethrough and retains the awning 42. The awning bar is locked in the swiveled ring by means of a set screw 43.

Referring to Figs. 1 and 3 of the drawings, it will be observed that when it is desired to lower an awning, the awning bar must be extended from the folded position shown in Fig. 3 to the extended position shown in Fig. 1 and that the awning is extended at an angle only a few degrees below the horizontal, so that the force of gravity may not be great enough at this small angle to open the awning and extend the arm. Accordingly, positive acting means have been devised to throw the awning arm into extended position when raised. This means comprises a tubular housing 44 integral with the hinge plate 32 so that the tubular housing is disposed between the two bars 28 and attached to the arm section 12 when the plate 32 is attached. A spiral spring 45 is positioned inside of this housing, as best seen in Figs. 7 and 8 of the drawings, and is adapted to be compressed by tension on a chain 46 or other flexible connector attached to a washer 47 disposed in the housing 45 at one end thereof. An inwardly turned flange 48 retains the spring in the housing against compression. This chain 46 is attached at its other end to a channel member 49 forming part of the casting 36 by means of a cotter pin 51 passing through holes in the sides of the channel. When the arm sections 12 and 13 are extended, as in Fig. 1, the spring 45 is under minimum compression and occupies the position shown in Fig. 7, but when the outer arm section 13 is folded against the inner arm section 12, as in Fig. 3, which is the position that the arm occupies when the awning is up, the chain 46 is drawn partly out of the tubular housing 44, and the spring is gradually placed under maximum compression. Upon the next occasion for lowering the awning, the fully loaded resilient member or spring 45 will pull on the chain 46 and throw the arm sections into extended position. This draws the entire arm and awning out and away from the building and the residual compression remaining in the spring when the arm is extended holds the awning tight and prevents movement thereof by the wind. It will be observed that the spring is always under compression for any position of the awning, but the amount of compression is at a maximum in the folded position and at a minimum, necessary for holding the awning in the extended position, when extended.

Due to the fact that the spring 45 must be of considerable strength in order to spread a heavy awning, it will be apparent that shipping of an awning arm in folded position with the spring loaded, as would be the case if the parts were assembled in operative relation as explained above, might be inconvenient or dangerous to the one who packed or unpacked the shipment. Also, it would be difficult to reinsert the spring in the housing 44 if it should be removed or escape from this housing. For this reason, the means 51 for attaching the chain 46 to the channel member 49 is made detachable, being preferably a cotter pin which may be withdrawn from the channel member, thus leaving the chain unconnected and making it possible to fold the arm section 13 against the arm section 12 without loading the spring. If this were done without taking means to secure the spring, the latter would spring out of its housing and difficulty would be encountered in again placing it in position. To avoid such a contingency, the housing 44 is provided with holes 52 near the end remote from the arm section 13, and another cotter pin 53 may be placed therein before the pin 51 is removed, thus securing the spring in the housing. It will be obvious that only one of the retaining means 51 and 53 will be in use at any given time, either pin being sufficient to retain the spring in the housing. In other words, the pin 51 will be used when the awning arm is functioning to support an awning and the pin 53 will be used when the awning arm is being shipped or stored.

Due to the fact that the spring 45 extends the awning arm with considerable force, there is danger that the outer arm section 13 would be thrown beyond dead center at the hinge joint and could not be caused to fold up readily when the awning was again to be raised. To avoid this, the stop 38 is provided on the outer section 13 and this engages with the end of a screw 54 threaded in an extension 55 of the hinge plate 32. The screw 54 can be turned in its seat so as to engage the stop 38 a greater or lesser distance from dead center, as required. In this way, there is no possibility of the outer arm section being thrown beyond dead center and the awning arm will always fold readily when it is desired to raise the awning.

It is believed that the operation of the structure will be obvious from the foregoing, but it may be pointed out, as shown in Fig. 4, that an awning is raised by pulling on the awning bar 56 passing through the swiveled ring 41 which always remains perpendicular to the wall of the building. As the awning is drawn up, the awning arm will assume the intermediate position 57, shown in dotted outline in Fig. 4, and the spring 45 will be accordingly pulled down in its housing to the compressed position by the chain 46 attached to the outer arm section. When the awning is fully raised, the awning arm will have assumed the folded position 58 wherein the two arm sections are disposed close against the side of the building on which the awning is used and will be approxi-

mately at right angles to the bracket 9. In the last part of the folding movement, the arm sections are thrown upwardly a small amount due to the laterally inclined position of the hinge 11 and these are brought up in line with the bracket 9 so that the awning and awning arm will be disposed in a position occupying the shortest possible vertical space, a consideration where it is desired that the awning when folded should not obscure a window or a sign or where it is desired to fold the awning and its arm into a recess provided in the face of the building. The spring 45 will, of course, be fully loaded while the awning is folded and is ready, whenever it is desired again to lower the awning, to throw the arm outward into extended position, thus carrying the awning out with it quickly and easily without the expenditure of any great effort. The laterally inclined position of the hinge 11 also aids in lowering the awning since this structure causes the folded arm to drop in the first part of its travel and thus helps to initiate the outward movement of the arm.

As mentioned above, the screw 24 in the bracket 9 may be used to adjust the angle at which it is desired to dispose the awning, this adjustment raising or lowering both arm sections as a unit, but the outer section 13 always being positioned at a slight angle to the inner section in order that the hinge mechanism joining the two sections shall not contact with the awning to cause wear and tear. For the same reason the set screw 43 in the swiveled ring 41 is located at the bottom of such ring in order to avoid contact with the awning material.

The arm above described is shipped in folded position to conserve space and may be tied in this position. In order to assemble the arm in operative condition, it is only necessary to extend the sections and then insert the pin 51 in the holes provided in the channel member 49. The pin 53 may then be removed since the spring will be held in its housing by the chain and the awning arm is ready to be mounted in position. Conversely, if it is desired to demount the awning arm for storage or shipment, the sections may be folded together and the pin 53 inserted in the hole provided in the housing 44, the sections extended and the pin 51 removed, whereupon the arm can then be folded without loading the spring. It will also be obvious that the arm can be mounted in the operative position while the spring is still unloaded, thus making for ease of handling while the awning is being erected, and the spring can then be set in operative position after the arm is in place. The ability to unload the spring while it is still in its housing also makes it a simple matter to take out the spring if this becomes necessary while, on the other hand, the provision of the two retaining means described makes it difficult to lose the spring, either the flexible connector, such as the chain 46, or the cotter pin in the housing 44 serving to retain this resilient element.

Other modes of applying the principle of my invention may be employed instead of the one explained, change being made as regards the mechanism herein disclosed, provided the means stated by any of the following claims or the equivalent of such stated means be employed.

I therefore particularly point out and distinctly claim as my invention:

1. An awning arm comprising an inner arm section and an outer arm section hinged to said inner arm section, an integrally formed hinge plate and spring housing mounted on said inner arm section, a spiral spring in said housing, a flexible connector compressively engaging one end of said spring and passing through the same, and detachable means attaching said connector to said outer arm section.

2. An awning arm comprising an inner arm section and an outer arm section a hinge joining said outer arm section to said inner arm section, a spring on said inner arm section, and flexible means removably attached to said outer arm section and compressively engaging said spring, and means for retaining said spring under a degree of compression when said flexible means is detached from said outer arm section.

3. An awning arm comprising an inner arm section and an outer arm section hinged to said inner arm section, a hinge joining said sections, a housing, a spring in said housing, a flexible connector spanning said hinge and passing through said spring, detachable means attaching said flexible connector to said outer arm section, and means attaching the same to said spring, and detachable means for retaining said spring in said housing when said flexible connector is detached from said outer arm section.

4. An awning arm comprising two arm sections, a hinge joining said sections, a spring housing on one of said sections, a spiral spring in said housing, said housing formed to provide an aperture in one end thereof, a removable pin adapted to be inserted in said aperture to retain said spring in said housing, a chain compressively engaging said spring, and likewise adapted to secure said spring in said housing, means for removably connecting said chain to the other of said arm sections including a removable pin, either one of said pins being sufficient to retain said spring in said housing.

5. In a folding awning arm, including inner and outer arm sections, a hinge connecting the sections together, the inner arm adapted to be connected to a supporting wall bracket at one end, the outer arm adapted to support an awning bar at its free end, a housing supported by the inner arm in parallelism therewith, a helical spring disposed in said housing, a flexible connector detachably connected to the outer arm and extending through the spring, a crosshead in said housing attached to the end of the connector and adapted to engage the end of the spring remote from the hinge, said spring and said connector adapted to urge the arms toward an unfolded position.

6. In a folding awning arm, including inner and outer arm sections, a hinge connecting the sections together, the inner arm adapted to be connected to a supporting wall bracket at one end, the outer arm adapted to support an awning bar at its free end, a housing supported by the inner arm in parallelism therewith, a helical spring disposed in said housing, a flexible connector detachably secured to the outer arm at a point spaced from said hinge and extending through the spring, a crosshead in said housing attached to the end of the connector and adapted to engage the end of the spring remote from the hinge, said spring and said connector adapted to urge the arms toward an unfolded position.

7. In a folding awning arm, including inner and outer arm sections, a hinge connecting the sections together, the inner arm adapted to be connected to a supporting wall bracket at one end, the outer arm adapted to support an awning bar

at its free end, a housing supported by the inner arm in parallelism therewith, a helical spring disposed in said housing, a flexible connector detachably secured to the outer arm at a point spaced from said hinge and extending through the spring, a crosshead in said housing attached to the end of the connector and adapted to engage the end of the spring remote from the hinge, said spring and said connector adapted to urge the arms toward an unfolded position, detachable means adapted to be inserted in said housing to relieve the tension of said spring against said connector to permit ready detaching of the connector.

8. In a folding awning arm including inner and outer arm sections, a hinge connecting the sections together, the inner arm adapted to be connected to a supporting wall bracket at one end, the outer arm adapted to support an awning bar at its free end, a housing supported by the inner arm, a helical spring disposed in the housing, a flexible connector connected to the outer arm, a cross-head in the housing engaging the end of the spring remote from the hinge, said connector being attached to the cross-head through the spring and together with the spring adapted to urge the arms toward an unfolded position.

9. A folding awning arm including inner and outer arm sections, a hinge connecting the sections together, the inner arm being adapted to be supported at one end and the outer arm being adapted to support an awning bar at its free end, a housing supported by the inner arm, a helical spring disposed in the housing, a connecting element arranged to swing with the outer arm and with respect to the inner arm, a flexible connector attached to said connecting element, a cross-head in said housing engaging the end of said spring remote from said hinge, said connector being coupled with said cross-head through said spring whereby swinging of said outer arm about said hinge in one direction pulls upon said connector and cross-head and compresses said spring.

EDWARD H. SCHANE.