Aug. 3, 1926. 1,594643

J. L. STUART

AWNING

Filed Oct. 1, 1924

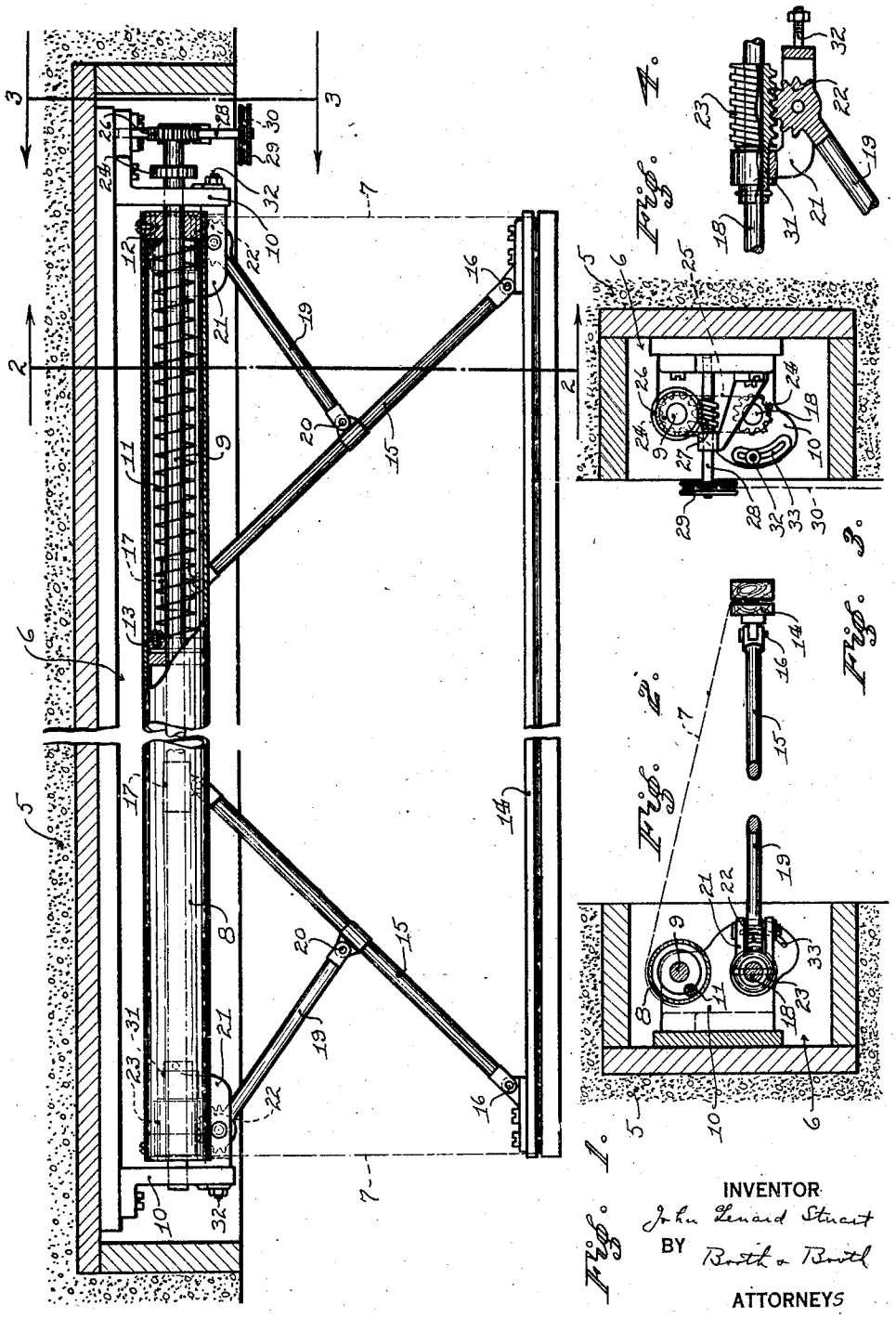

Fig. 1.

Fig. 3.

Fig. 2.

Fig. 4.

INVENTOR
John Lenard Stuart
BY Booth & Booth
ATTORNEYS

Patented Aug. 3, 1926. 1,594,643

UNITED STATES PATENT OFFICE.

JOHN LENARD STUART, OF OAKLAND, CALIFORNIA.

AWNING.

Application filed October 1, 1924. Serial No. 740,932.

My invention relates to awnings of the disappearing type. The principal object of my invention is to provide means for positively extending and retracting an awning. In awnings of the usual type, the weight of the awning and its frame is relied upon to extend it, the canvas being wound upon a roller, and said roller being rotated to retract the awning or to permit it to extend by gravity. Such construction requires sufficient fall to provide the necessary amount of gravitational force to extend the awning, so that said awning when extended, necessarily has considerable slope. Such awnings, moreover, are liable to stick and require considerable manipulation to cause them to extend, especially when the joints of the frame become rusted by exposure to the weather.

My present invention, however, provides means for positively moving the awning both to retract and to extend it, the operating mechanism being actuated either manually or otherwise, as desired. This enables me to position the awning at any desired angle, without reference to the effect of gravity; it may be inclined, or horizontal, or even vertical, if such a position be desired, and in whatever position the awning may be placed, its operation, both in extending and retracting, is smooth and positive.

A further object of my invention is to provide a positively operated awning which, when fully retracted, will occupy no more space than that provided in the usual recess formed in the building wall. There are no rods or other parts extending into the interior of the building, or down the front thereof, the entire frame of the awning folding, when retracted, into the recess.

A still further object of my invention is to provide an adjustable mounting, whereby the slope or inclination of the awning may be changed, within reasonable limits, without necessitating the replacement of the supporting brackets.

For purposes of illustration, I have herein described and illustrated, as a typical embodiment of my invention, an awning capable of extension from a building wall at a slight inclination from the horizontal. It will be obvious, however, that the awning, when suitably mounted, may be extended in any direction, and that it may be made to occupy any of a great variety of positions, without material change in its construction. It is to be understood, moreover, that the form and construction herein shown and described may be varied, within the limits of the claims hereto appended, without departing from the spirit of the invention as expressed in said claims.

With this in view a typical embodiment of my invention will now be fully described with reference to the accompanying drawings, wherein—

Fig. 1 is a part sectional broken plan view of my awning as mounted in a building wall, showing it in partly extended position.

Figs. 2 and 3 are transverse sections taken in the direction of the arrows on the respective lines 2—2 and 3—3 of Fig. 1.

Fig. 4 is a part-sectional detail of one of the frame-extending worms.

In the drawings, the reference numeral 5 designates a building wall, and 6 is the usual recess formed therein for the reception of the awning when retracted. The canvas or flexible cover of the awning, represented by the broken lines 7, is wound upon a roller 8, which is carried upon a rotatable shaft 9 mounted in brackets 10 secured within the recess 6. The roller 8 is resiliently connected with the shaft 9 by means of a helical spring 11 positioned within said roller, one end of said spring being connected with a flange 12 secured to said roller, and the other end to a flange 13 secured to said shaft. Thus the roller may have a limited amount of rotative movement relative to said shaft, for a purpose to be set forth hereinafter.

The forward edge of the cover 7 is secured to a bar 14. A pair of toggle arms 15 are pivotally connected at 16 with said bar 14, and have their inner ends pivotally connected with sleeves 17 which are slidably mounted upon a rod or shaft 18. Said shaft as shown in Figs. 2 and 3 is parallel to the roller 8, and is rotatably mounted in the brackets 10. A second pair of toggle arms 19 Fig. 1 have their outer ends pivotally connected at 20 with the arms 15 at the mid points of the latter; the length of the arms 19 being half that of the arms 15. The inner ends of the arms 19 are pivotally mounted in brackets 21 secured to the main brackets 10.

It will be seen that the bar 14 is supported and connected with the building wall 5 by the arms 15 and 19 and the guide shaft or

rod 18 upon which the inner ends of said arms 15 may slide. Any suitable mechanism may be provided for positively moving the bar 14 in and out and maintaining it parallel to said shaft 18 and the roller 8. For example, in the preferred form of such mechanism herewith illustrated, the inner ends of the arms 19 are provided with gear segments 22, one of which is shown in Fig. 4, and said gear segments mesh with worms 23 secured upon the shaft 18. Therefore, by rotating said shaft, the arms 19 are caused to swing, out or in as the case may be, thereby moving the bar 14 out or in, and maintaining it in parallel relation to the shaft 18 and the roller 8.

The shaft 18 and the roller shaft 9 are connected together by any suitable means, as for example a pair of sprockets 24 and a connecting chain 25 as indicated in Fig. 3. Therefore, as the bar 14 moves out, away from the building, the roller 8 is rotated to unwind the cover 7, and vice-versa. The various parts are so proportioned, of course, as to pay out or wind up the canvas at the same rate as that of the movement of said bar 14, but any slight differential movement, such for example as that caused by the varying effective diameter of the roller 8 as the canvas is wound on or off, is automatically compensated by the resilient spring connection 11 between said roller and the shaft 9.

The shafts 9 and 18 may be rotated by any suitable form of mechanism. For the sake of illustration I have shown a worm wheel 26, Figs. 1 and 3, secured upon the end of the shaft 9, and engaged by a worm 27 mounted on a short transverse shaft 28. The latter shaft is shown as provided with a sprocket 29 over which runs a chain indicated at 30 in Fig. 3. Said chain may be operated manually, or by any desired means not shown.

In order to provide adjustment of the slope or inclinaton of the awning when extended, the brackets 21, by which the arms 19 are supported, have bearings about the shaft 18, or more exactly, upon the hubs of the worms 23, as shown at 31 in Fig. 4, and said brackets are adjustably secured by bolts 32, in arcuate slots 33, Fig. 3, formed in the main brackets 10, said slots having the axis of the shaft 18 as their centers. Thus the brackets 21 may be swung, angularly, about the shaft 18, and the slope or inclination of the awning, when extended, varied accordingly.

It should be noted that, on account of the arrangement of the toggle arms 15 and 19, the front members or bar 14 of the awning may be moved in or out, positively and smoothly, and that such movement may take place equally well in any direction, irrespective of the effects of gravity. Thus the awning may be extended horizontally, or inclined upwardly or downwardly, or may even be extended vertically upward, if the supporting brackets 10 be properly positioned. It should also be noted that the simultaneous operation of the frame extending means and the cover carrying roller prevent any sagging or bunching of the cover, and that the resilient roller drive, formed by the spring 11, automatically takes care of any differential movement, and keeps the cover taut at all times. The preferred form of operating mechanism as shown and described provides a convenient, positive, and easily operated device for extending and retracting the awning and for maintaining the front member or bar 14 in parallel relation to the roller 8. This form of operating mechanism also lends itself very well to the ready adjustment of the slope or inclination of the awning, such adjustment being effected without interfering in any way with said operating mechanism. Finally attention is directed to the fact that the entire awning and frame, when retracted, is completely housed within the recess 6, there being no rods or other members extending either into the building, or upon the face of its wall.

I claim:—

1. An awning comprising a fixed supporting member; a member movable bodily toward and away from said fixed member; a roller associated with one of said members; a flexible cover wound upon said roller, said cover having its outer edge secured to the other of said members; hinged arms extending between and connecting said members; means for positively moving said movable member toward and away from said fixed member; and a resilient driving connection between said movable member and said roller whereby said roller is rotated in timed relation to the movement of said member.

2. An awning comprising a fixed supporting member; a member movable bodily toward and away from said fixed member; a roller associated with one of said members; a flexible cover wound upon said roller, said cover having its outer edge secured to the other of said members; hinged arms extending between and connecting said members; means for positively moving said movable member toward and away from said fixed member; a rotatable shaft upon which said roller is mounted; a resilient connection between said roller and said shaft; and means for rotating said shaft in timed relation to the movement of said movable member.

3. An awning comprising a fixed supporting member; a member movable bodily toward and away from said fixed member; a roller associated with one of said members; a flexible cover wound upon said

roller, said cover having its outer edge secured to the other of said members; hinged arms extending between and connecting said members; means for positively moving said movable member toward and away from said fixed member; a rotatable shaft upon which said roller is mounted; a spring within said roller, one end of said spring being connected with said shaft and the other end with said roller; and means for rotating said shaft in timed relation to the movement of said movable member.

4. An awning comprising a fixed support; a roller associated therewith; a flexible cover wound upon said roller; a member to which the outer edge of said cover is secured, said member being movable bodily toward and away from said roller; a rotatable rod associated with said fixed member; a pair of arms having their outer ends pivotally connected with said member and their inner ends slidable upon said rod; a second pair of arms pivotally connected with the first arms; gear segments secured to the inner ends of the second arms; worms upon said rod adapted to mesh with said gear segments; means for rotating said rod to move said member toward and away from said support; and means for rotating said roller to keep said cover taut.

5. An awning comprising a fixed support; a roller associated therewith; a flexible cover wound upon said roller; a member to which the outer edge of said cover is secured, said member being movable bodily toward and away from said roller; a rotatable rod associated with said fixed member; a pair of arms having their outer ends pivotally connected with said member and their inner ends slidable upon said rod; a second pair of arms pivotally connected with the first arms; gear segments secured to the inner ends of the second arms; worms upon said rod adapted to mesh with said gear segments; means for rotating said rod to move said member toward and away from said support; and means for rotating said roller in timed relation to the rotation of said rod.

6. In an awning structure having a fixed support, a movable bar, and a flexible cover extending between them; an extensible frame for moving said bars comprising a pair of arms pivotally mounted upon said support; a second pair of arms having their inner ends pivotally connected with the respective outer ends of the first arms and their outer ends pivotally connected with said bar; and means for applying power to the inner ends of the first mentioned arms to extend and retract the frame.

7. In an awning structure having a fixed support, a movable bar, and a flexible cover extending between them; an extensible frame for moving said bars comprising a pair of arms pivotally mounted upon said support; a second pair of arms having their inner ends pivotally connected with the respective outer ends of the first arms and their outer ends pivotally connected with said bar; a gear segment fixed to the inner end of each of the first mentioned arms; worms mounted on the support and meshing with said gear segments; and means for rotating said worms to extend and retract the frame by swinging the first mentioned arms.

8. In an awning structure having a fixed support, a movable bar, and a flexible cover extending between them; an extensible frame for moving said bar comprising a guide mounted upon said support; a pair of arms hinged at their outer ends to said bar and having their inner ends slidable upon said guide; a second pair of arms respectively hinged at their outer ends to the central regions of the first arms and hinged at their inner ends to said support; and means for applying power to said second arms to operate said frame.

9. In an awning structure having a fixed support, a movable bar, and a flexible cover extending between them; an extensible frame for moving said bar comprising a pair of spaced brackets fixed to said support; a guide extending between said brackets; a pair of arms hinged at their outer ends to said bar and having their inner ends slidable upon said guide; a bracket adjustably secured to each of said fixed brackets for vertical swinging movement about said guide as a center; and a second pair of arms respectively hinged at their outer ends to the central regions of the first arms and hinged at their inner ends to said adjustable brackets.

10. An awning comprising a pair of spaced fixed brackets; a roller journaled therein; a flexible cover wound upon said roller; a movable bar to which the outer edge of said cover is secured; a shaft extending between said brackets parallel with said roller; a pair of arms hinged at their outer ends to said bar and having their inner ends slidable upon said shaft; a bracket adjustably secured to each of said fixed brackets for vertical swinging movement about said shaft as a center; and a second pair of arms respectively hinged at their outer ends to the central regions of the first arms and hinged at their inner ends to said adjustable brackets.

In testimony whereof I have signed my name to this specification.

JOHN LENARD STUART.