

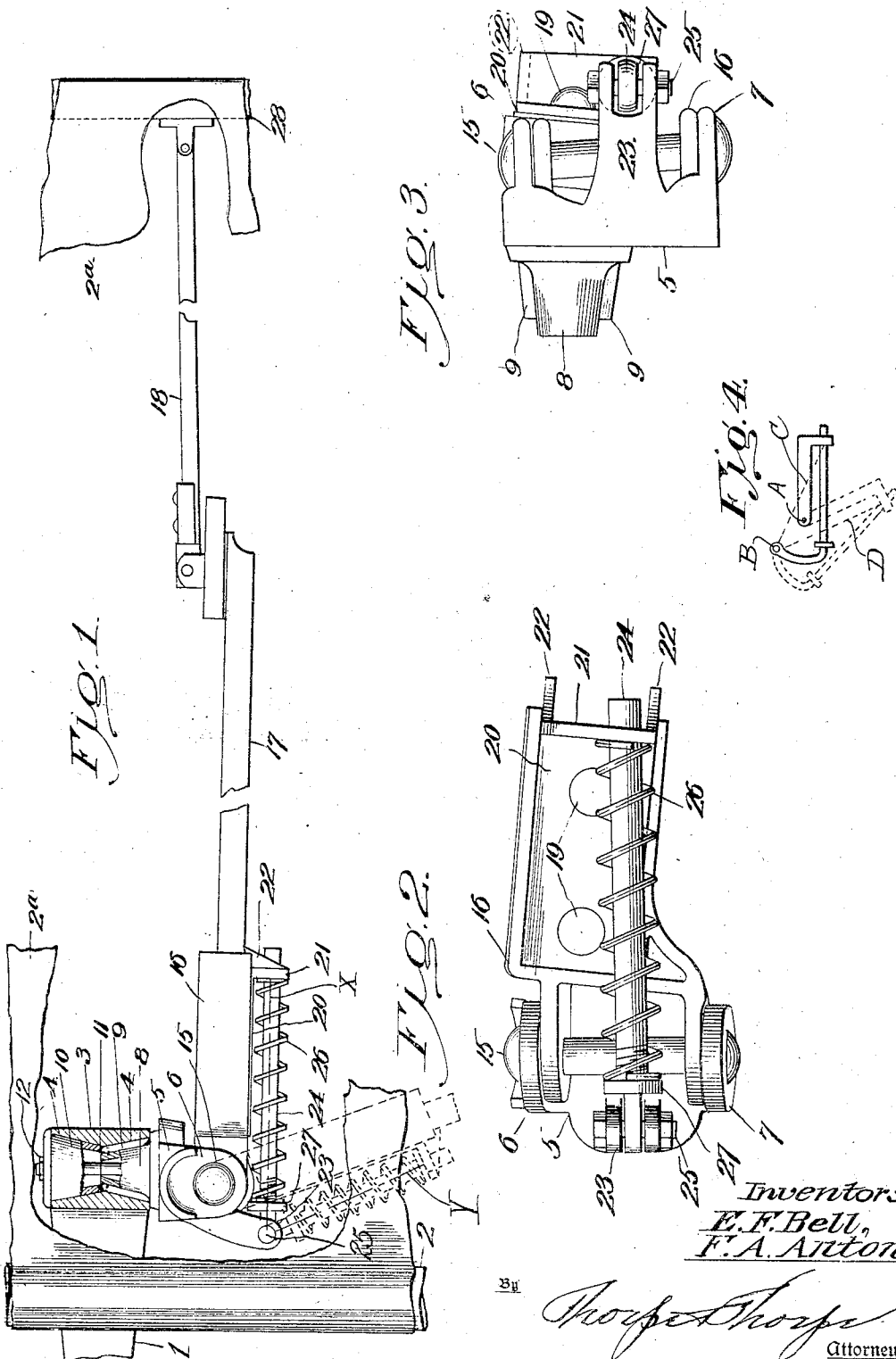
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LATERAL ARM AWNING CONSTRUCTION

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# UNITED STATES PATENT OFFICE

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## LATERAL ARM AWNING CONSTRUCTION

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This invention relates to awnings of that class known as lateral arm awnings which involve the use of jointed arms which fold and unfold according to the position of the awning between horizontal planes spaced but a relatively small vertical distance, said awnings as heretofore constructed practically always relying upon the force of gravity only to effect opening of the awning and the maintenance of the fabric in stretched condition after reaching open position.

With modern building front construction, in the endeavor both to conserve height of the window and also to have the transom bar or awning boxing of small vertical height, it has become more and more a problem with lateral arm awnings to secure sufficient pitch or inclination of the arms to assure proper gravity opening and maintenance of the stretched condition of the fabric after full opening movement has been effected.

The present invention, therefore, has for one of its objects the production of a strong, durable, simple and efficient spring mechanism which will quickly and easily effect opening movement of the awning and will maintain the fabric in stretched condition even when the arms have very little inclination and are operating in substantially a horizontal plane.

Another object of the invention is to produce a construction of the type indicated in which springs of different power may be readily substituted to fit the inclination of the installation being made so that the lateral arms will readily unfold and may maintain, if desired, particularly where the awning is substantially horizontal, a relative constant force on the awning arms regardless of their position; and in which the spring tension may be readily adjusted within reasonable limits.

With the general objects named in view and others as will hereinafter appear, the invention consists in certain novel and useful features of construction and organization of parts as hereinafter described and claimed; and in order that it may be fully understood, reference is to be had to the accompanying drawing, in which:—

Figure 1 is a fragmental plan view of a hanger and folding arm embodying the invention, the hanger and certain parts associated therewith being broken away to more clearly disclose their relationship, and the folding arm occupying its extended or operative position.

Figure 2 is an enlarged side view of the hanger end of a part of the folding arm, the latter, as in Figure 1, being indicated in the position occupied when the awning is in stretched or operative position.

Figure 3 is a side view of the bracket rotatably adjustable on the hanger, and also discloses the inner end of the folding arm.

Figure 4 is a diagrammatic view to illustrate how the awning parts may be made so that the lever arm of the spring, that is the tension of the spring, will increase from minimum, with the awning folded, to maximum, with the awning open, whereby it is possible to so proportion the parts that the spring tension or force of the spring on the arm is substantially the same regardless of the position of the awning.

In the said drawing, where like reference characters identify corresponding parts in all of the figures, 1 indicates a hanger adapted to be secured to the front of a building or to the back of a box or housing fastened to a building for the reception and protection of the awning when in inoperative position, and 2 and 2a respectively indicate fragments of the awning fabric and roller overlying said bracket. The hanger is of any suitable type and is provided at its outer end with a horizontal head 3, which internally tapers from each end as at 4, as indicated in the broken part of the hanger disclosed in Figure 1.

A bracket 5, which stands in a position more or less inclined downwardly and outwardly according to the pitch or inclination of the awning when in use, is forked to provide an arm 6 and a lower arm 7, and fits against one end of the head 3 and has a conical stud 8 which projects into the head and has external longitudinal ribs 9. An opposing conical stud 10 fits against and projects into the head 3 at the opposite end thereof and fits

over the stud 8 and has notches 11 receiving the ribs 9 to interlock the two studs against independent rotative movement. To clamp the studs firmly in place so that the bracket cannot accidentally turn, a bolt extends through the bracket and the studs and is engaged at its threaded end by a nut 12. As thus far described, the parts correspond to analogous features of our co-pending application Ser. No. 300,519. It will be evident that the clamping action of the nut 12 tends to frictionally lock the bracket in any desired position of rotative adjustment, but as an additional precaution against accidental turning of the bracket and for convenience in adjusting the same when necessary or desirable, we may provide other features shown and described in the pending application hereinabove identified, which features are not shown herein as forming no part of the present invention.

The upper and lower forks of the bracket 5, are provided with alined openings for the reception of a pivot bolt 15, said bolt forming a journal for the forked end 16 of the upper or inner member 17 of a lateral arm, by passing through alined openings therein, the lower or outer end of member 17 being pivoted to the inner end of the outer member 18 of the folding arm, as common in the art.

The forked end 16 of the upper arm is preferably made in the shape of a casting separate from the arm, and is provided with a recess to receive one end of the upper arm member 17 which is securely held in position by a pair of bolts or rivets 19. Clamped against the face of the end of the arm by said bolts 19, is a relatively L-shaped strap 20, having its leg 21 provided with a pair of brace or reinforce lugs 22, which stiffen the leg of the strap against the force of a spring, hereinafter mentioned.

Projecting from the vertical or body portion of the bracket 5, is a forked extension 23, between the ears of which one end of a rod 24 is pivoted on a bolt 25, the opposite end of said rod passing through an opening in the outstanding leg 21 of the strap 20. Rod 24 is encircled by an expansion spring 26, having one end abutting a nut or adjusting collar 27 threaded on rod 24, whereby the tension of the spring may be increased or diminished within reasonable limits without necessitating the substitution of another spring to meet slight demands for a change in power to suit a particular installation. The other end of the spring 26 abuts the outstanding leg 21 of the strap 20, the brace flanges or lugs 22 assisting the strap in withstanding the strain imposed by the spring 26.

With this construction, it will be apparent that the spring 26 is subjected to greatest tension when the awning is folded and therefore applies its greatest force to effect the initial

opening or unfolding of the awning as soon as the canvas or fabric is released for unrolling or unwinding action, the spring being under the least tension when the fabric is fully stretched or spread in operative position. The spring has this unequal power as illustrated in Figure 1, because it is under greater compression when the awning is folded than when the awning is open, as shown by the comparative lengths of the dotted lines X and Y respectively, extending from the center of the pivot 25 to the abutment member 21 carried by the awning arm. This result is due to the eccentric relationship between the centers of the pivot bolts 15 and 25.

In practical operating conditions, particularly as the inclination of the awning arms approaches a horizontal position, it may be necessary or desirable, to insure a positive and quick unfolding operation, to so construct the parts that, as the awning unfolds and the spring force tends to diminish through its expansion, to prevent such expansion by eccentrically arranging the centers of pivot bolts 15 and 25, so that the distance from the pivot 15 to the arm abutment 21 shall be the same when the awning is open as when the awning is closed.

In Figure 4, one method of arranging the centers of bolts 15 and 25 is illustrated, so that the pressure or force of the spring on the awning arm is the same in both awning-closed and awning-opened positions. In said figure, A represents the pivotal point of the awning arm, and B, the pivotal point of the rod 24 carrying the spring 26. With the arm fully open or extended, the distance C from the center of B to the abutment 21 carried by the arm, is the same as the distance D between the center of B and said abutment 21, when the arm is closed. In other words, centers A and B are in a plane bisecting the angle formed by awning-opened and awning-closed positions, and the spring tension will be substantially the same throughout the arc of swinging movement.

It will be evident that the spring may be readily replaced by removing the bolt 25 and the rod 24, and a new spring as readily substituted, and that the strength of the spring used will be such as to efficiently overcome the initial inertia of the arms to unfolding movement, the arc through which the arm moves in unfolding being about 90°. In Figure 1, the out member 18 of the folding arm is shown as pivotally connected to the pole 28 to which the end of the fabric is attached as customary.

From the above description it will be apparent that while we have described constructions embodying all of the features of advantage set forth as desirable, it is to be understood that we reserve the right to make all changes properly falling within the spirit

of the invention and without the ambit of the prior art.

We claim:—

1. In an awning, a bracket, an awning arm  
5 pivoted to said bracket for movement in a  
relatively horizontal plane, a guide rod inter-  
connecting said bracket and arm and hav-  
ing a pivoted connection one member and  
a sliding connection with the other, and an  
10 expansion spring carried by said rod and  
pressing at one end against the bracket and  
at its other end against the awning arm.

2. In an awning, a bracket having a pair  
of lugs, an awning arm pivoted to said bracket  
15 for movement in a relatively horizontal  
plane, a guide rod pivoted to said bracket  
lugs and having sliding engagement with the  
arm, and an expansion spring carried by said  
rod and pressing at one end against the  
20 bracket and at its other end against the awn-  
ing arm.

3. In an awning, a bracket having a pair  
of lugs, a second bracket pivoted to said  
first-named bracket and being provided with  
25 a recess, an awning arm secured in said re-  
cess, an L-shaped strap secured to said awn-  
ing arm, and an expansion spring pressing  
at one end against said lugs and at its other  
end against said strap.

4. In an awning, a bracket having a pair of  
lugs, an awning arm pivoted to said bracket,  
an extension on said awning arm having an  
opening, a guide rod pivoted to said bracket  
lugs at one end and slidably engaging said  
25 extension opening at its other end, and an  
expansion spring encircling said guide rod  
and pressing at one end against the bracket  
lugs and at its other end against the arm  
extension.

5. In an awning, a bracket, an awning arm  
pivoted to said bracket for movement in a  
relatively horizontal plane, a guide rod inter-  
connecting said bracket and arm and hav-  
ing a pivoted connection to one member and  
45 a sliding connection with the other, and an  
expansion spring carried by said rod and  
exerting force against the arm to swing said  
arm to open position, the parts being so ar-  
ranged by having the spring abutment eccen-  
50 tric of the arm pivot that the spring force  
on the arm is substantially uniform regard-  
less of the operative position of the awning.

6. In a lateral arm awning, a roller, an  
awning fabric adapted to be rolled on said  
55 roller, a bracket, an awning arm adapted to  
approach and recede from said bracket and  
being secured to one end of the fabric for  
effecting unrolling thereof from the roller,  
and a spring exerting substantially constant  
60 force on said awning arm regardless of its  
operative position of adjustment with regard  
to the bracket by having a fixed abutment  
eccentric of the arm pivot.

7. In a lateral arm awning, a roller, an  
65 awning fabric adapted to be rolled on said

roller, a bracket, an awning arm adapted to  
approach and recede from said bracket and  
being secured to one end of the fabric for ef-  
fecting unrolling thereof from the roller, a  
spring exerting force against the arm to move  
70 same to open position, said spring being so  
related to the arm and bracket by having an  
eccentric abutment that as the spring expands  
its leverage on the awning arm is increased to  
compensate for loss of power in the spring  
75 due to such expansion.

8. In an awning, a roller, awning fabric  
for winding and unwinding thereon, a  
bracket bearing a fixed relation to the awn-  
ing, an awning arm pivoted to said bracket,  
80 an abutment lug on said arm, a rod having  
sliding engagement at one end with the arm  
and having its opposite end pivoted to the  
bracket eccentrically of the pivotal point  
of the arm, and a spring fitting on said rod  
85 and exerting force in opposite directions on  
the bracket and abutment lug.

In testimony whereof we affix our signa-  
tures.

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