Sept. 29, 1936. H. RODEMEYER 2,055,882

FASTENING DEVICE

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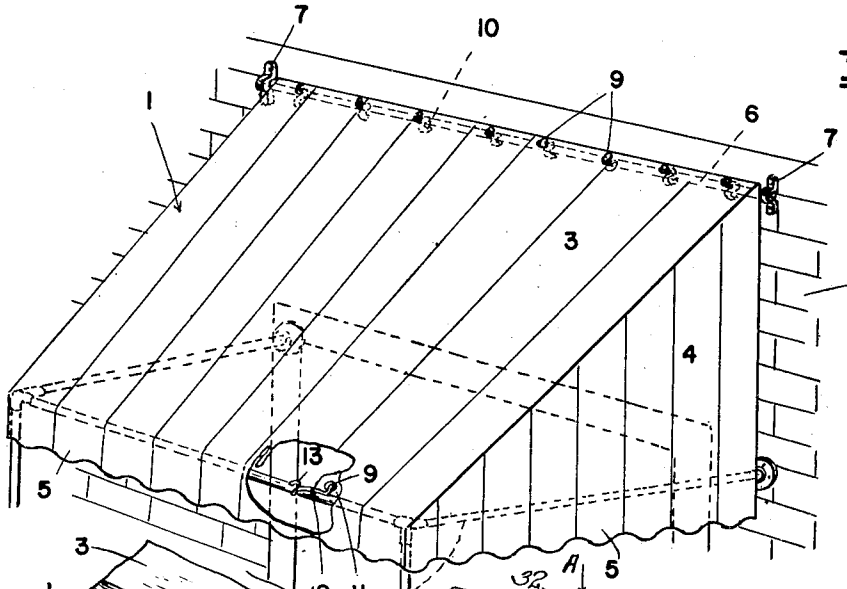


Fig. 1.

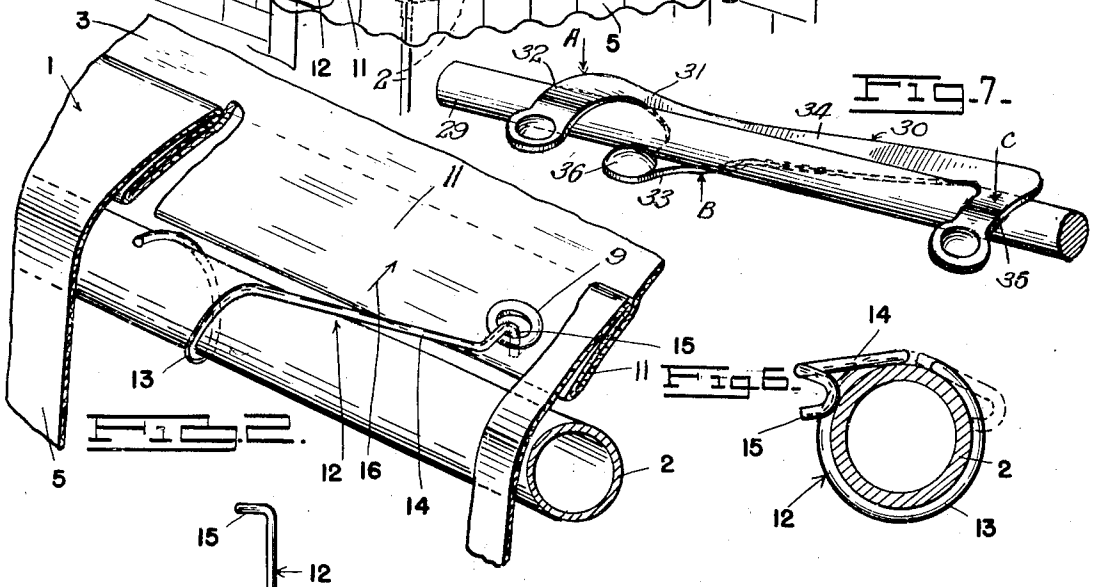


Fig. 7.

Fig. 2.

Fig. 6.

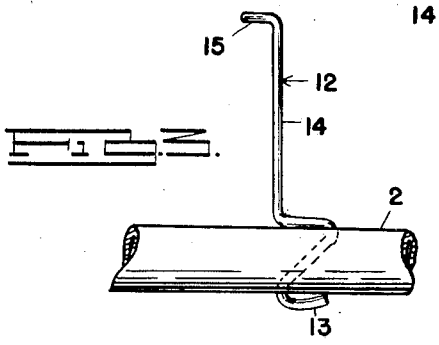


Fig. 3.

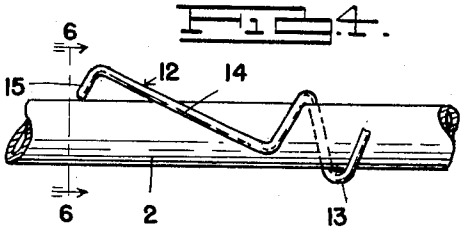


Fig. 4.

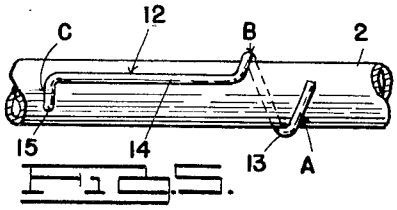


Fig. 5.

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FASTENING DEVICE

Harry Rodemeyer, Detroit, Mich.

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12 Claims. (Cl. 156—15)

This invention relates generally to fastening devices and refers more particularly to improved fasteners for securing articles to cylindrical supports.

While the invention is capable of numerous and diversified uses, nevertheless, it finds particular utility when employed in connection with awnings for securing the awning material to the supporting framework.

Heretofore in awnings of the type wherein the awning material is supported by a fixed cylindrical supporting frame it has been customary to secure the awning material to the supporting frame by tying the same with twine or the like so that the awning material may be removed from the supporting frame. Such a method of securing the awning material to the supporting frame has been found objectionable, not only due to the time and labor required to properly tie the awning material to the supporting frame, but also due to the tendency of the ties to loosen and permit the awning material to become slack.

One of the principal objects of this invention is to overcome the foregoing objections by providing a fastener which is capable of being readily secured to and removed from the supporting frame, and, in addition, is capable of readily and removably securing the awning material under tension to the supporting frame.

Another object of this invention is to provide a fastener which will uniformly secure the awning material taut to the supporting frame and which will further automatically compensate for shrinkage of the awning material and permit the awning material to move relative to the supporting frame to which it is fastened when some external force is applied, thus eliminating undue strain and tendency for the material to tear.

A further object of this invention is to provide a fastener having a yieldable portion tensioned by the awning material and having a support engaging portion held in effective gripping relation to the support against rotation by the tension of the first named portion.

A still further object of this invention resides in a fastener for securing the awning material to the supporting frame which is made of spring wire and designed to snap into engagement with the support.

Other objects, advantages and novel details of the invention will be made more apparent as this description proceeds, especially when considered in connection with the accompanying drawing, wherein:

Figure 1 is a perspective view of an awning attached to a wall with the awning material partly broken away, showing an application of my fastener;

Figure 2 is a detailed fragmentary perspective view of the awning partly broken away showing how my fastener secures the awning material to the supporting frame;

Figures 3, 4 and 5 are detail views illustrating the way my fastener is secured to the supporting frame;

Figure 6 is a sectional view taken on the line 6—6 of Figure 4 showing the transition of my fastener from a released position to a position whereby it effectively grips the supporting frame; and

Figure 7 is a perspective view of a modified form of this invention.

Referring now in detail to the drawing and with particular reference to Figures 1 and 2, it will be noted that there is fragmentarily illustrated an awning comprising the awning material 1 and the framework 2. The framework may be of conventional design if desired and forms a support for the awning material. The awning material is made of the usual canvas or suitable weather-proof material and consists of a top 3 and sides 4 provided with a skirt or apron portion 5. Located at the upper edge of the awning material is a cylindrical support 6 detachably mounted in spaced brackets 7 secured to the wall 8. The top 3 of the awning is provided adjacent its upper edge with a plurality of spaced eyelets 9 and is attached to the support 6 by means of an improved fastener designated generally by the reference character 10 which will hereinafter be more fully described. The awning material is provided adjacent its lower edge with the usual securing flap 11 having a plurality of spaced eyelets 9 therein and is secured to the support 2 by means of a fastener 12 about to be described.

As shown in Figure 2, the fastener 12 is formed of a single piece of spring wire and comprises a support engaging portion 13 in the form of a support encircling loop having an arm 14 extending in the direction of the axis of the support encircling loop and terminating into a hook 15 engaging in the eyelet 9 of the awning securing flap 11. The support encircling loop is spiral in design and the distance between the free end and the opposite end of the spiral is so determined that the support encircling loop may freely engage the support to which it is to be applied in the manner shown in Figure 3. Preferably the length of the support encircling loop is one complete turn of wire. However, this length may

vary slightly over or under one complete turn without destroying the gripping action or hindering the assembly of the fastener onto the support.

The arm 14 of the fastener 12 is arranged at an angle with respect to the axis of the support encircling loop, and yieldably and normally assumes the position shown in Figure 4. With this construction, when the arm 14 and hook 15 are moved to the position shown in Figure 5, the hook snaps into engagement with the support and at the same time the support encircling loop effectively grips the support. This arrangement locks the fastener to the support and thereby adapts the fastener to be used for other purposes besides as a fastener for securing the awning material to the awning support. While I have shown the arm 14 to be of a fixed length, I wish to have it understood that the length of the arm may be changed for varying the tension exerted upon the awning.

To apply the fastener 12 to the support 2, the fastener is first positioned so that the support encircling loop 13 will freely slip onto and engage the support in the manner shown in Figure 3. From this position, the fastener is moved to assume the position shown in Figure 4 where the hook 15 abuts the support. The arm 14 is then sprung to the position shown in Figure 5 at which time the hook snaps into engagement with the opposite side of the support and the support encircling loop tightens and effectively grips the supports thus locking the fastener thereto. The transition of the fastener and the snap engagement of the hook 15 will perhaps be more apparent from Figure 6 wherein the full lines illustrate the normal position of the fastener shown in Figure 4 and the broken lines illustrate the position of the fastener when operating to effectively grip the support as shown in Figure 5. The arm 14 is then sprung from the position shown in Figure 5 to the position shown in Figure 2 where the hook 15 is engaged in the eyelet 9 in the awning securing flap 11 for securing the awning material to the support.

To disengage the fastener, the arm 14 is sprung in the direction indicated by the arrow 16 in Figure 2 to relieve the tension on the securing flap 11 and awning material 1 so that the eyelet 9 may be slipped off of the hook 15. Upon releasing the securing flap 11, the fastener assumes the position shown in Figure 5, and then the hook 15 is sprung over the support to release its engagement therewith and at the same time the gripping action of the support encircling loop 13 is released. The fastener may then be freely moved to the position shown in Figure 3 and disengaged from the support. If desired, the fastener 12 may be left in the locked position on the support, as shown in Figure 5, so as to facilitate and expedite the remounting of the awning material upon the support.

With the invention thus far described it is obvious that the greater the force exerted upon the hook 15 and the arm 14 the tighter the support encircling loop 13 grasps the cylindrical support 2 with the result the fastener is locked and prevented from rotating upon the support when it is operating to secure the awning material thereto. Moreover, from the foregoing it will be readily apparent that when a series of my fasteners is used for securing the awning material to a support, the awning material is uniformly secured under tension and held taut, thereby preventing any sags in the awning material which might pocket water and tend to destroy the awning material.

For securing the upper edge of the awning material to the cylindrical support 6, I employ any one of my improved fasteners 10 shown in Figures 7 to 10 inclusive which are made of suitable wire, preferably spring wire.

In the modification illustrated in Figure 7, I have shown a fastener 30 formed of spring sheet metal which embodies broadly the principle of my fastener 12. In detail, the fastener 30 comprises a support encircling portion 31, formed by a pair of spaced fingers 32 and 33, and an arm 34 extending substantially in the direction of the axis of the support encircling portion 31 and terminating into a finger 35. The fingers 32 and 35 are each suitably formed or arced to fit around one side of the support and the finger 33 is similarly formed in the opposite direction to fit around the opposite side of the support so as to engage the support 29 in the manner shown in Figure 12. Each of the fingers are also fashioned with raised portions 36 which serve as a means to lock the fastener 30 to the support 29. This construction is particularly adaptable to be used in a manner similar to a clothespin and has many diversified uses. In order to clearly disclose the similarity of the principle implied in this modified construction and the construction of the fastener 12, reference characters A, B and C have been applied to Figures 5 and 7 to illustrate the three point contact common to both forms of construction and the direction of pressure or force exerted by the fasteners upon the support when the fasteners are operating to yieldably grip the latter.

While the invention has been described with considerable detail for use in connection with awnings, it is to be understood that the invention has many other applications, and that the description is illustrative only, and is not definitive of the limits of the inventive idea. The right is reserved to make such changes in the details of construction as will fall within the purview of the accompanying claims.

What I claim as my invention is:

1. A fastener having a portion adapted to encircle a support, an arm extending from the portion aforesaid movable into engagement with the support and operable upon movement into engagement with the support to tension the portion aforesaid around the support.

2. A fastener having a yieldable portion freely insertable into engagement with a support and operable to substantially encircle the support, an arm extending from said portion movable into engagement with the support and operable upon movement into engagement with the support to tension said portion around the support.

3. A fastener having a yieldable portion freely insertable into engagement with a support, an arm extending from the portion movable into engagement with the support and operable upon movement into engagement with the support to tension said portion around the support, and means at the free end of the arm fashioned to snap into engagement with the support upon the aforesaid movement of the arm into engagement with the support.

4. A fastener having a yieldable portion freely insertable into engagement with a support, an arm extending from the portion movable into engagement with the support and operable upon movement into engagement with the support to tension said portion around the support, and com-

mon means at the free end of the arm for providing for the attachment of an article to be supported and fashioned to snap into engagement with the support upon the aforesaid movement of the arm toward the support.

5. A fastener having a support encircling portion engageable with a support, an arm yieldably extending from said support encircling portion at an angle to the axis thereof and movable into engagement with the support, and means on said arm operable for holding the arm into engagement with the support to tension the support encircling loop around the support.

6. A fastener for securing an article to a support, comprising an open spiral support encircling loop readily detachably engageable with a support, an arm extending from said open spiral support encircling loop at an angle to the axis thereof and movable into engagement with the support to tension said support encircling loop around said support, and a hook on the end of said arm engageable with the article for securing the latter under tension to the support.

7. A fastener for securing awning material under tension to a support comprising a yieldable portion engageable with and tensioned by the awning material, and a support engaging portion held in effective gripping relation to the support against rotation by the tension of said first named portion.

8. A fastener for securing articles to a support, comprising a support encircling portion having a finger arced to engage one side of the support and having a second finger arced in the opposite direction to engage the opposite side of said support, and an arm extending from said support encircling portion having a finger at the end thereof arced in the direction of said first named finger for engaging said support to hold said support encircling portion into engagement with the support.

9. A fastener element comprising a support encircling portion detachably engageable with a support, an arm extending from the support encircling portion at an angle to the axis thereof and being yieldable to permit movement of the same into engagement with the support, and means on said arm effective upon movement of the arm toward the support to snap into engagement with the support and to tension the encircling portion of the element around the support.

10. A fastener element having a yieldable support encircling portion removably engageable with a support and having a yieldable integral arm extending from the support encircling portion at an angle to the axis thereof and effective upon movement into engagement with the support to tension the encircling portion of the element around the support.

11. A fastener element for awnings comprising a support and awning material carried by the support provided with eyelets, said fastener element comprising a yieldable portion engaging within the eyelets and tensioned by the awning material, and a support encircling portion detachably engageable with the support for the awning material and held in effective gripping relation to the support by the tension of the yieldable portion aforesaid of the element.

12. A fastener element having an open spiral support engaging loop and having an arm extending from one end of the loop at an angle to the axis thereof and movable toward the support to tension the loop around the support, and means effective upon movement of the arm toward the support to secure the free end of the arm to said support.

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