March 28, 1933. A. E. JANNOPOULO 1,903,000

FASTENER

Filed June 6, 1932

FIG. 1.

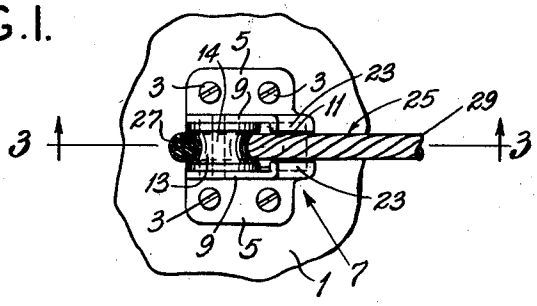


FIG. 2.

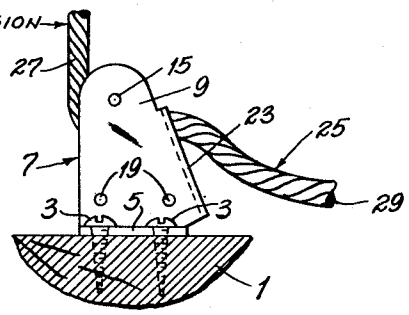
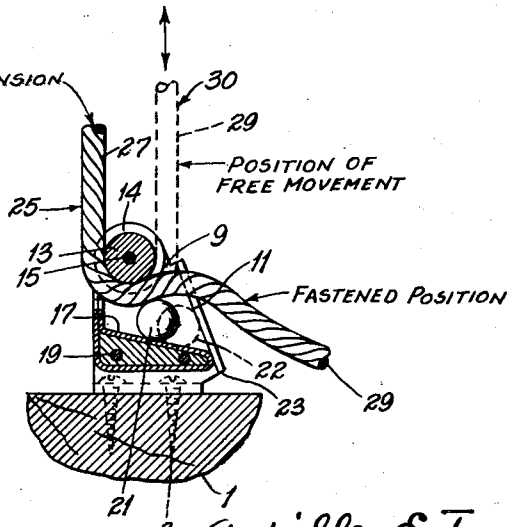


FIG. 3.



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FASTENER

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This invention relates to fasteners, and with regard to certain more specific features, to releasing fasteners with automatic clutching means for cords and the like.

Among the several objects of the invention may be noted the provision of a simple, compact and fool-proof fastener for cords such as are used on window shades, awnings, tennis nets, gloves, jewelry and the like, which permits free play of the controlled cord while the cord is being manipulated but which automatically grips said cord when it is released; the provision of a device of the class described which with a minimum number of sizes will accommodate a great number of cord and/or rope sizes; and the provision of a device of this class which can be economically manufactured and which is exceedingly dependable in use. Other objects will be in part obvious and in part pointed out hereinafter.

The invention accordingly comprises the elements and combinations of elements, features of construction, and arrangements of parts which will be exemplified in the structures hereinafter described, and the scope of the application of which will be indicated in the following claims.

In the accompanying drawing, in which is illustrated one of various possible embodiments of the invention:

Fig. 1 is a top plan view of the fastener;

Fig. 2 is a side elevation; and,

Fig. 3 is a vertical section taken on line 3—3 of Fig. 1.

Similar reference characters indicate corresponding parts throughout the several views of the drawing.

Referring now more particularly to Fig. 1, there is shown at numeral 1, a base such as a window sill, a post or other support, depending upon the particular use, to which the invention may be applied by means of screws 3 or the like, said screws passing through ears 5. The ears form an integral portion of a stamping 7 having parallel side walls 9 and a guide slot 11, the latter being formed by ears 23. Between the side walls 9, a grooved guide comprising a rotary pulley 13 is mounted on a pin 15. The groove is indicated at 14.

There is also located between said side walls 9, an inclined plane member 17, held in place by pins 19. A sphere, or gripping member 21 is imprisoned between the inclined plane member 17, the side walls 9, the pulley 13 and the lips 23 which form the slot 11. The sphere 21 and groove 14 preferably, though not necessarily have the same radius of curvature.

The operation of the device is as follows: The cord which is to be fastened has been indicated by the general numeral 25, the cord comprising two reaches 27 and 29. The reach 27 of cord 25 is under tension, the other end thereof (not shown) being fastened to the device which is to be manipulated, such as a curtain, tennis net or the like. The device is preferably mounted so that ordinarily the loose reach 29 of the cord 25 falls by gravity or a natural movement into the slot 11. The ball 21 will normally descend to the dotted-line position, that is, into the angular recess between the lips 23 and the inclined plane member 23. In this dotted-line position of the ball 21, the loose reach 29 of the cord 25 may be pulled along or near its dotted-line position 30, and be entirely free of the ball 21. Thus, that which is to be tensioned may be drawn up or payed out by drawing the loose reach 29 out along or near the dotted-line position, or suitably paying out the same to permit the tensioned device freely to draw the cord.

It will be understood that the dotted line position of the reach 29 of the cord 25 shown in Fig. 3 is not the only one permitting free movement, the same being exemplary. For example, the cord may be drawn off more to the right or left as well as along the lines shown. It would also be understood that the cord may move freely in either direction when not fastened and thereby distinguishes from a mere snubber.

Whenever it is desired to cause the fastener to come into operation, the loose reach 29 of the cord 25 is merely released or dropped from the dotted-line position shown in Fig. 3 and assumes the solid-line position there

shown. Or the reach 29 may be predeterminately guided by a natural movement against the ball 21. The loose reach 29, if not guided, falls down into the slot 11 and contacts with the ball 21 in the dotted line position 22 of said ball 21. The tension in the reach 27 of the cord 25 immediately begins incipiently to draw in the loose reach 29 which carries the ball 21 with it into the solid-line position of said ball. (See Fig. 3.) The ball 21 then rises up the inclined plane member 17 and frictionally grips the loose reach 29 between said ball and the grooved wheel 13.

It will be understood that the distance between the inside surfaces of the parallel walls 9 is only slightly greater than the diameter of the ball 21, thus insuring that the ball 21 will be guided into position adjacent to the groove of the wheel 13. It is also pointed out that the use of the ball 21, as shown, eliminates any possibility of a failure of operation, because the ball is effective in every position. It is possible that equivalent devices may be arranged to provide this result.

An advantage of this device is that the fastening operation is substantially instantaneous, the amount of play in the cord in moving the ball 21 from released to locking position being relatively small with respect to the primary motion of the cord.

Another advantage of the device is that after the reach 29 has been manipulated to affect the reach 27, as described, the reach 29 needs merely to be dropped and the subsequent fastening action is entirely automatic. No particular subsequent movement needs to be effected and memorized in order to effect said fastening. This is because gravity causes the loose or free reach 29 to drop down into position on the ball 21 in the dotted line position 22 of the ball so that said ball is automatically drawn into its solid-line, locking position (see Fig. 3).

A further advantage of the invention is that the movement of the ball 21 into frictional engaging position is substantially independent of the size of the cord, the same depending merely upon the fact that the free end of the cord drops down upon the ball, and thus in its incipient movements drawing the ball into engaging position. Because of this fact, I find that two sizes of the device will be sufficient to fasten all sizes of cord, from the size of ordinary string up to about a $\frac{3}{16}$'' rope. This fact is also advantageous in accommodating ropes and the like which gradually stretch and become smaller. The fastening device herein does not lose its efficiency under these conditions. There is also no rope cutting.

In view of the above, it will be seen that the several objects of the invention are achieved and other advantageous results attained.

As many changes could be made in carrying out the above constructions without departing from the scope of the invention, it is intended that all matter contained in the above description or shown in the accompanying drawing shall be interpreted as illustrative and not in a limiting sense.

I claim:

1. A fastener comprising a body member having spaced walls, a grooved roller rotatable between said walls having a cord in said groove, one reach of which cord is normally tensioned and the other of which is normally loose, a member inclined toward said roller and located between said walls, a second member angularly located with respect to said inclined member, a ball imprisoned between the said walls and said angularly located members and the roller, said normally loose reach of the cord being clear of the ball in one range of positions and engaging the ball in the normally loose position to cause the ball to approach the grooved roller and grip the cord upon incipient movement thereof.

2. A fastener comprising a body member having spaced walls, a curved guide between said walls having a cord substantially doubled back thereover, one reach of which cord is tensioned and the other of which is normally loose, a member inclined away from said curved guide and located between said walls, a second member angularly located with respect to said inclined member, a gripping member imprisoned between the said walls and said angularly located members and the guide, said untensioned reach of the cord being clear of the gripping member in predetermined operating positions and engaging the gripping member in loose position thereof, thereby causing the gripping member to approach the guide and grip the cord upon incipient movement of the cord, said second member having a slot for guiding the cord in its movement from a position of free movement to its fastened position.

3. A fastener comprising a body member having spaced walls, a roller rotatable between said walls having a cord thereover, one reach of which cord is tensioned and the other of which is normally loose, a member inclined away from said roller and located between said walls, a second member angularly located with respect to said inclined member, a gripping member imprisoned between the said walls and said angularly located members and the roller, said untensioned reach of the cord being clear of the gripping member in predetermined operating positions and engaging the gripping member in loose position thereof, thereby causing the circular member to approach the

roller and grip the cord upon incipient movement of the cord.

4. A fastener comprising a body member having spaced walls, a grooved roller rotatable between said walls having a cord in said groove, one reach of which cord is tensioned and the other of which is loose, a member inclined away from said roller and located between said walls, a second member angularly located with respect to said inclined member, a ball imprisoned between the said walls and said angularly located members and the pulley, said untensioned reach of the cord being clear of the ball in one range of positions and engaging the ball in another position to cause the ball to approach the roller and grip the cord upon incipient movement thereof, said second member having a slot for receiving the cord in its movement from a position of free movement to its position of restricted movement, the said second member carrying said slot being also angularly directed toward said roller.

In testimony whereof, I have signed my name to this specification this third day of June, 1932.

ACHILLES E. JANNOPOULO.