May 16, 1967 G. N. CROWTHER 3,319,912

FASTENER

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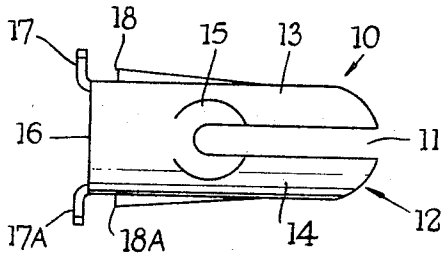


FIG.1

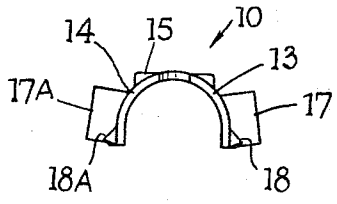


FIG.2

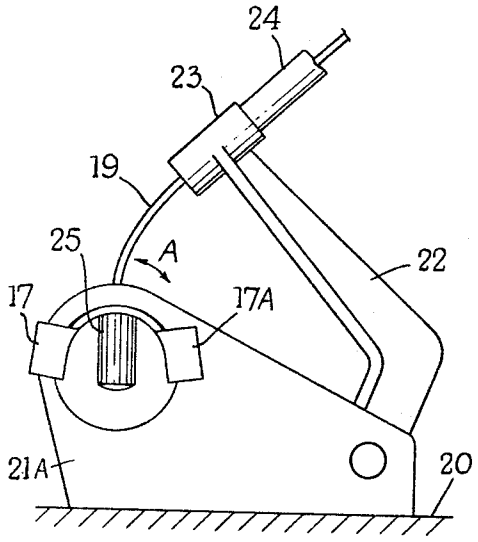


FIG.3

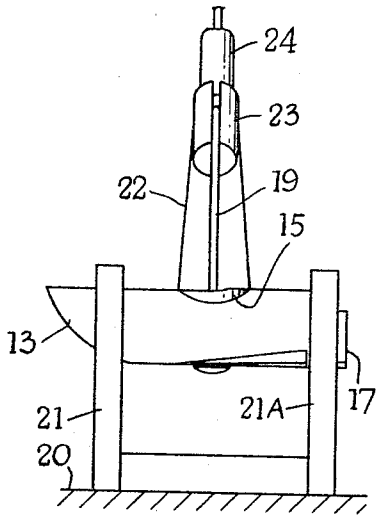


FIG.4

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FIG.5

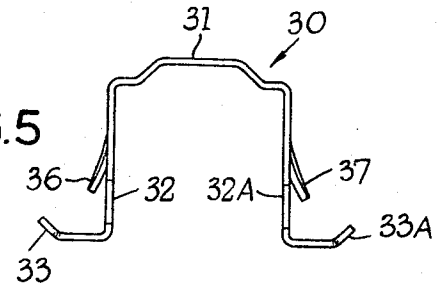


FIG.7

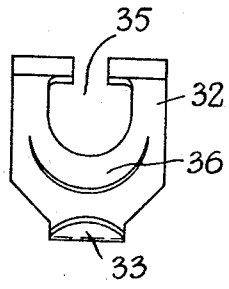
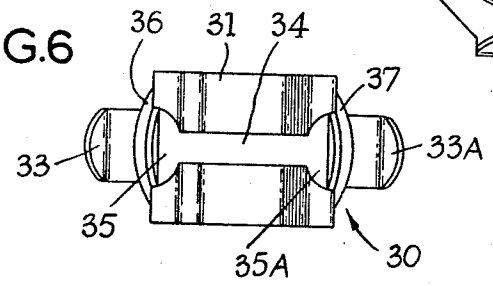


FIG.6



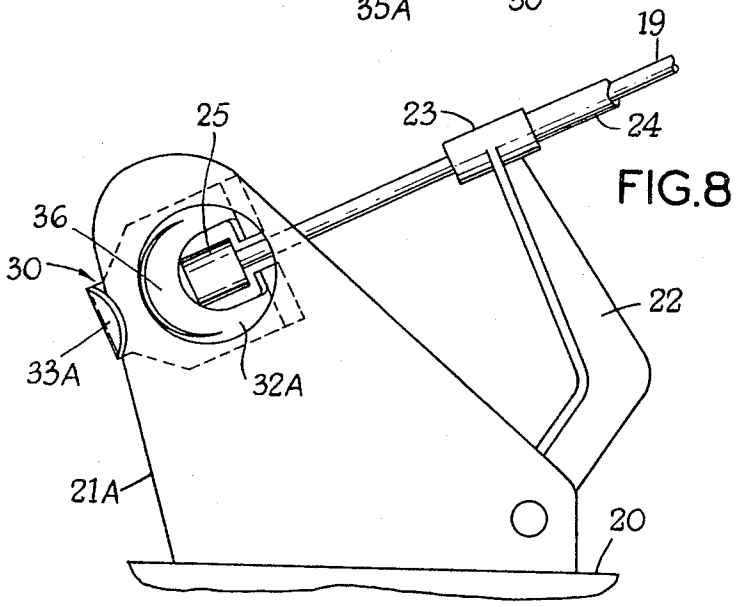


FIG.8

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FASTENER

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Claims priority, application Great Britain, June 18, 1964, 25,280/64
5 Claims. (Cl. 248—74)

The present invention relates to an improved fastener which is particularly, although not exclusively suitable for securing a cable having a nipple at one end to a support having two spaced apertured arms.

According to the invention there is provided the combination of a cable having an enlarged end attached to a support member having two spaced parallel arms formed with aligned apertures with the aid of a fastener comprising a body portion adapted to extend across the two arms the body portion being slotted from the centre to a side edge of the body portion and having extensions at each end adapted to extend into the apertured arms, the cable extending through the slot with the enlarged end located behind the body portion and being slidable along and out of the slot when the fastener is disengaged from the support.

According to a further embodiment of the invention there is also provided a fastener for attaching a cable having a nipple at one end to a support having two parallel outwardly extending and apertured arms, the fastener having a part-cylindrical body portion adapted to extend through the apertures in the arms of the support and a pair of outwardly extending lugs at one end of the body portion and adapted to abut the outer surface of an arm of the support, the body portion being slotted from the other end to receive the cable and the said slotting being narrower than the diameter of the nipple on the cable.

Alternatively, there is provided a fastener for attaching a cable having a nipple at one end to a support having two parallel outwardly extending and apertured arms, the fastener being channel-shaped and having two substantially parallel flanges joined by a web which is adapted to be introduced between the arms of the support, the flanges having outwardly bent feet portions and intermediate the web and the feet portions outwardly bent lugs which are adapted to engage in the apertured arms of the support, the web and flanges being slotted to receive the cable, the slotting stopping short of the lug in each flange and being narrower in the region of the web than the nipple on the cable and wider in the region of at least one flange than the nipple to enable the cable to be located through the slot with the nipple engaged behind the web.

In yet a further embodiment of the invention there is provided an assembly of a lever pivoted to a support and actuated by a sheathed cable having a nipple at one end, the sheath being attached to the end of the lever and the cable extending beyond the sheath and being attached by a fastener to the support, the support having two spaced apertured arms and the fastener being engaged transversely through the arms and having a slot through which the cable extends, the nipple being engaged behind the fastener and the cable being slidable sideways out of the fastener when the fastener is disengaged from the support.

Preferred forms of the invention will now be described with reference to the accompanying diagrammatic drawings in which:

FIGURES 1 and 2 are respectively a plan and end elevation of a fastener,

FIGURES 3 and 4 are respectively a side and front elevation of an assembly showing the fastener of FIGURES 1 and 2 holding a sheathed cable to two fixed apertured flanges,

FIGURES 5, 6 and 7 are respectively a side elevation, plan and end elevation of a modification of the fastener of FIGURES 1 and 2, and

FIGURE 8 is an elevation of an assembly similar to FIGURE 3 but showing the fastener of FIGURES 5 to 7.

In FIGURES 1 and 2 there is indicated generally at **10** a fastener which is formed from a single strip of metal and which, after being manufactured to the shape shown, is preferably rendered resilient and rustproof.

The fastener **10** comprises a body portion which is part-cylindrical in shape and is formed with a stopped axially-extending slot **11**. The slot **11** opens out of the leading end or nose **12** of the fastener, which is divided thereby into two tongues **13** and **14**. The free ends of the tongues **13** and **14** are arcuate, so that the nose **12** of the fastener is tapered, and a part-annular depression **15** is stamped out around the closed end of the slot **11**.

The opposite or head end **16** of the fastener is formed with two outwardly bent lugs **17**, **17***a* and prongs **18**, **18***a* are sheared and bent from the side edges of the fastener adjacent to the head **16** so as to provide abutments spaced from and facing the lugs **17**, **17***a*.

The fastener **10** is used, as shown in FIGURES 3 and 4, to attach a sheathed cable **19**, **24**, to a fixed support **20** having two parallel, upstanding, apertured arms **21**, **21***a*. A lever **22** is pivotally mounted between the arms and the inner cable **19** passes through a slotted head **23** on the lever with its sheath portion **24** seated in and attached to the slotted head **23**.

In order to attach the cable to the support **20** the tongues **13** and **14** of the fastener are pinched together and inserted through the aperture in the arm **21***a*. The cable **19** which carries a nipple **25** at its outer end is then passed along the slot **11** until the nipple is seated in the depression **15**. The tongues of the fastener are then pinched together again and pressed home through the other arm **21** until the prongs **18**, **18***a* snap-engage behind the inside face of the arm **21***a*.

In the assembled position the lugs **17**, **17***a* prevent the fastener from passing too far through the arms and the prongs **18**, **18***a* prevent the fastener from being withdrawn during normal operation.

As will be seen, pivoting movement of the lever **22** produces movement of the sheath **24** relative to the cable **19** and support **20** and vice-versa. Thus, the sheath can be used to actuate the lever **22** or movement of the lever can be used to actuate any mechanism to which the sheath **24** is attached.

The fastener **10** is free to rotate in the apertures in the arms **21**, **21***a* and transverse movements of the cable **19**, for example in the direction of the arrow A of FIGURE 3 which take place when the lever is pivoted, cause the fastener to rotate thus reducing the bending of the cable and the strain imposed on the cable thereby.

A modified form of fastener which is used for the same purpose as the fastener **10** is indicated generally at **30** in FIGURES 5 to 7.

The fastener **30** is sheared and bent to U or channel shape so as to have a web **31** and two flanges **32**, **32***a*.

The ends of the flanges **32**, **32***a* are outwardly bent to form feet **33**, **33***a* respectively and a slot **34** is formed in the fastener **30** so as to extend over the whole length of the web **31** and terminate in the flanges **32**, **32***a*. In the flanges **32**, **32***a* the slot **34** is of increased width to form recesses **35**, **35***a* respectively, the ends of which are arcuate.

Immediately beyond the arcuate end of each recess **35**, **35***a* the flanges are formed with arcuate cuts and the material in each flange between the cuts and the recesses

is bent outwardly from the flange to form arcuate retaining lugs **36** and **37** respectively.

The fastener **30** is used in the same manner as the fastener **10** to hold the cable **19** to the support **20**.

In order to make the assembly, the nipple **25** is passed sideways through one of the recesses **35**, **35***a* in the fastener so that the cable **19** slides along the slot **34**. With the nipple **25** located behind the web **31**, the web **31** is pressed through the arms on the support until the arcuate retaining lugs **37**, **37***a*, engage in the apertures in the arms with the feet **33**, **33***a* engaged behind the arms. In this position the cable **19** is attached securely to the arms of the support by the fastener **30** with the nipple **25** held behind the web **31** and is free to rotate relative to the arms so as to reduce the bending of the cable **19** in response to movement of the lever **22**, in the same manner as the fastener **10**.

It will be appreciated that the embodiments of the invention illustrated and described herein may be modified without departing from the scope and spirit of the invention which is best described in the following claims.

What I claim is:

1. The combination of a cable having an enlarged end attached to a support member having two spaced parallel arms formed with aligned apertures with the aid of a fastener comprising a body portion adapted to extend across the two arms, the body portion being slotted from the centre to a side edge of the body portion and having extensions at each end adapted to extend into the apertured arms, the cable extending through the slot with the enlarged end located behind the body portion and being slidable along and out of the slot when the fastener is disengaged from the support.

2. A fastener for attaching a cable having a nipple at one end to a support having two parallel outwardly extending and apertured arms, the fastener having a part-cylindrical body portion adapted to extend through the apertures in the arms of the support and a pair of outwardly extending lugs at one end of the body portion and adapted to abut the outer surface of an arm of the support, the body portion being slotted from the other end to receive the cable and the said slotting being narrower than the diameter of the nipple on the cable.

3. A fastener as claimed in claim **2**, in which the body

portion is formed with a pair of prongs projecting outwardly and towards the said lugs, the free ends of the prongs being spaced from the lugs by a distance not less than the width of one of the said arms of the support and being adapted to bear against an inner surface of the said one arm to resist axial movement of the fastener through the apertured arms of the support.

4. A fastener for attaching a cable having a nipple at one end to a support having two parallel outwardly extending and apertured arms, the fastener being channel-shaped and having two substantially parallel flanges joined by a web which is adapted to be introduced between the arms of the support, the flanges having outwardly bent feet portions and intermediate the the web and the feet portions outwardly bent lugs which are adapted to engage in the apertured arms of the support, the web and flanges being slotted to receive the cable, the slotting stopping short of the lug in each flange and being narrower in the region of the web than the nipple on the cable and wider in the region of at least one flange than the nipple to enable the cable to be located through the slot with the nipple engaged behind the web.

5. An assembly of a lever pivoted to a support and actuated by a sheathed cable having a nipple at one end, the sheath being attached to the end of the lever and the cable extending beyond the sheath and being attached by a fastener to the support, the support having two spaced, apertured arms and the fastener being engaged transversely through the arms and having a slot through which the cable extends, the nipple being engaged behind the fastener and the cable being slidable sideways out of the fastener when the fastener is disengaged from the support.

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