

[54] **WIRE GRIPPING APPARATUS**

[75] Inventor: **Ignazio Leonardo**, Mountainside, N.J.

[73] Assignee: **General Cable Corporation**, New York, N.Y.

[22] Filed: **June 25, 1973**

[21] Appl. No.: **372,923**

1,440,200	12/1922	Wood et al.	294/19 R
1,537,470	5/1925	Johnson	294/19 R
2,041,613	5/1936	Lincks	24/243 WC X
3,191,910	6/1965	Eitel	24/263 A X
3,326,254	6/1967	Diehl	294/19 R X
3,582,124	6/1971	Quirk	294/26

Primary Examiner—Richard A. Schacher

Assistant Examiner—Johnny D. Cherry

[52] U.S. Cl. **24/263 A**, 81/3 R, 294/1 R, 294/16

[51] Int. Cl. **A44b 21/00**

[58] Field of Search 294/1 R, 16, 19 R, 26, 294/86 R, 103; 24/115 R, 115 G, 132 SB, 135 R, 135 A, 135 L, 135 M, 135 N, 243 AC, 243 WC, 252 LH, 263 A; 81/3 R, 3.8, 13, 9.3, 53; 145/1 R, 46, 61 G

[56] **References Cited**

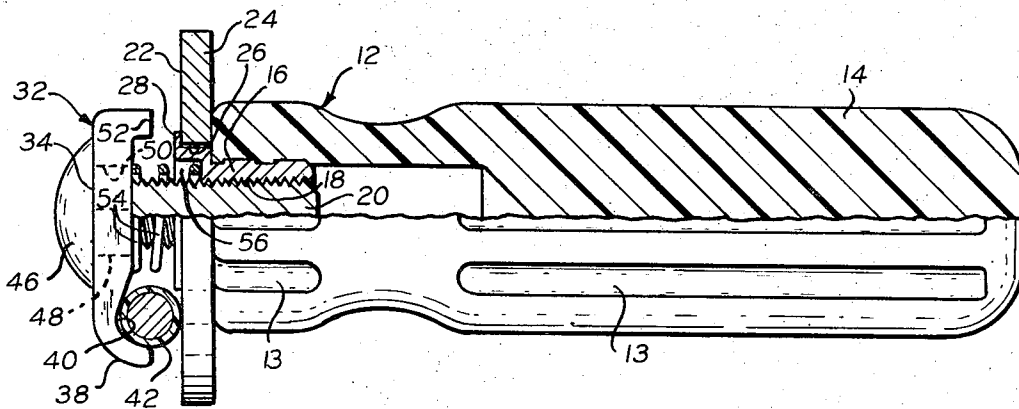
UNITED STATES PATENTS

1,426,535 8/1922 Barton 24/263 A

[57] **ABSTRACT**

This apparatus provides a temporary means for securing and holding a cable to enable a workman to maneuver for lashing and/or installing equipment into place. The apparatus is a self-contained unit with a clamp section on a screw that moves into or out of a handle as the handle is rotated one way or the other to move the clamp section with respect to an end face of the handle against which the clamp section clamps the cable.

3 Claims, 5 Drawing Figures



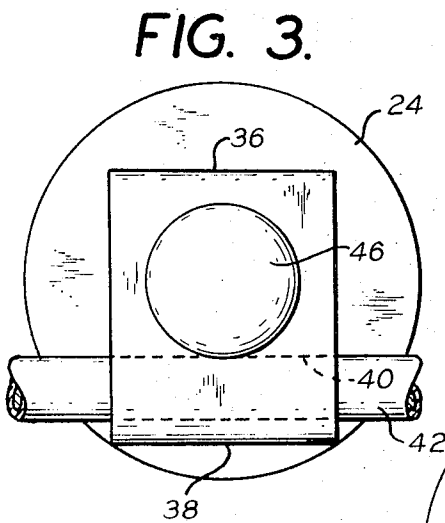
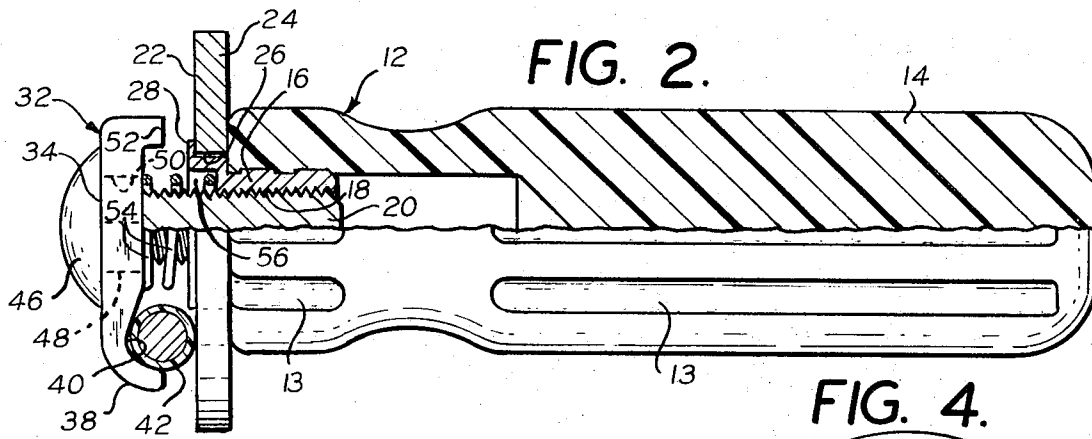
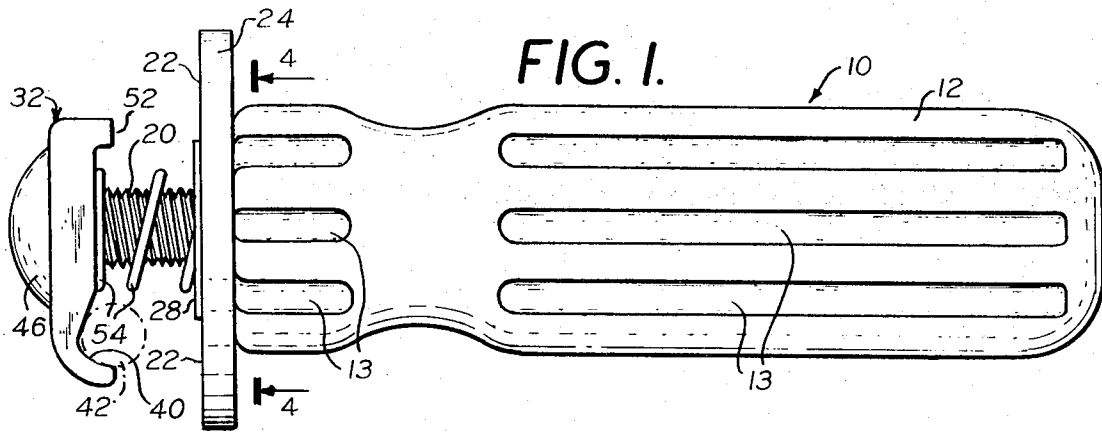
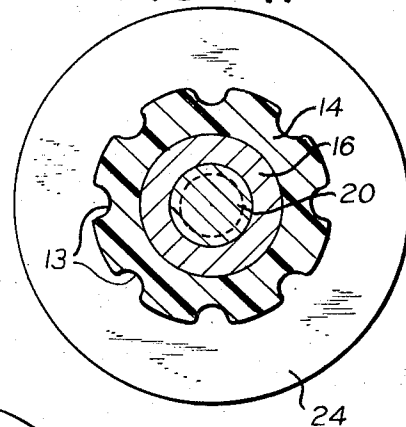
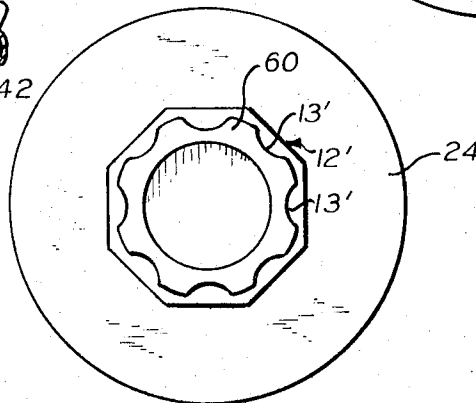


FIG. 5.



WIRE GRIPPING APPARATUS

BACKGROUND AND SUMMARY OF THE INVENTION

The purpose of this invention is to provide a workman with apparatus for temporarily gripping and holding a cable while he performs some other operation. The unit is self contained and fits around the cable so as to hold a clamp section against rotation while a handle of the apparatus is operated to close or open the clamp.

The handle may be made from a hollow extruded tube, preferably aluminum for light weight, or it may be a mostly solid construction such as commonly used for screw drivers and the like. It is of relatively large cross-section, with grip surfaces, to provide leverage for rotating the handle to screw the clamping surfaces toward and from one another. An end face of the handle against which a cable is clamped by the clamp section is preferably a generally annular element that rotates in bearings on the handle to permit the handle to rotate while the clamp section and the face of the handle that contacts with the cable remains stationery.

The clamp operating mechanism includes a screw, preferably a carriage bolt that fits into a non-circular opening in the clamp section, and there is a spring that holds the clamp element against the head of the carriage bolt. The construction is simple and inexpensive. It requires no tools to operate it, and it can be operated by one hand when necessary.

Other objects, features and advantages of the invention will appear or be pointed out as the description proceeds.

BRIEF DESCRIPTION OF DRAWING

FIG. 1 is a side elevation of cable clamping apparatus made in accordance with this invention, the apparatus being shown with the clamping surfaces separated from one another;

FIG. 2 is a view, partly in section, showing the apparatus of FIG. 1 with the clamping elements brought together sufficiently to clamp a cable between them;

FIG. 3 is an end view of the apparatus shown in FIG. 1, the view being taken from the left hand end of FIG. 1;

FIG. 4 is a sectional view taken on the line 4—4 of FIG. 1; and

FIG. 5 is an end view of apparatus similar to that shown in FIG. 1 when viewed from the right in FIG. 1, but with a modified handle formed from an extruded aluminum tube.

DESCRIPTION OF PREFERRED EMBODIMENT

FIG. 1 shows a clamping apparatus 10 having a handle 12 which is hollow for a part of its length and provided with depressions to provide a better grip for turning the handle 12. The handle 12 also includes a bushing 16 with a center opening 18 threaded to receive a screw 20.

The handle 12 has an end face 22 on one side of a plate 24 which is of generally annular shape and which has an inner cylindrical face 26 that rotates on the bushing 16 as a bearing. There is a flange 28 at the left hand end of the bushing 16, and this flange 28 provides a thrust bearing which prevents the plate 24 from moving toward the left. The end face of the handle 12 pre-

vents the plate 24 from moving toward the right in FIG. 2.

The extent to which the bushing 16 is inserted into the handle 12 is such that the confronting faces of the flange 28 and the left hand end of the handle 12 provide a groove 29 in which the plate 24 rotates freely but is held against thrust in axial directions; and the plate 24 is thus free to remain stationery while the handle 12, and the bushing 16 rotate as a unit during operation of the apparatus. The bushing 16 may be forced into the handle 12 with a press fit or it may be secured to the handle 12 in any other suitable manner to make the bushing and the handle a unitary structure. The apparatus has a clamp section 32 which consists of a plate 34 with a lower portion 38 in which there is a groove 40 for receiving a cable 42, as best shown in FIG. 2.

The screw 20 is preferably a carriage bolt with a rounded head 46 that fits against the left hand face of the clamp element 32; and the portion of the screw 20 immediately below the head 46 has a polygonal shank portion 48, usually four sided, and beyond which are the threads of the carriage bolt or screw 20. The screw 20 extends through an opening 50 in the clamp element 32 and this opening 50 is of a polygonal shape which fits the shank portion 48 of the screw 20 so as to prevent relative rotation of the screw 20 and the clamp element 32.

The clamp element 32 is held against the head 46 of the screw 20 by a compression spring 54 which surrounds the screw 20 and which is compressed between the clamp element 32 and a face of the bushing 16. This face of the bushing 16 which contacts with the spring 54 is at one end of a counterbore 56 which is provided for the purpose of leaving space into which the spring 56 can be compressed without limiting the movement of the clamp element 32 toward the plate 22 against which the cable 42 is clamped.

A stop 52 at the upper part of the clamp element 32 extends inward toward the plate 22 for substantially the same distance as the lower side of the groove 40 extends toward the plate surface 22. This limits any possible movement of the clamp element 32 into an oblique position, with respect to the axis of the screw 20, as the result of pressure of the cable 42 against the lower end of the clamp element 32.

The handle 12 is hollow for sufficient length to provide ample clearance for the end of the screw 20 to move into the portion of the handle 12 beyond the end of the bushing 16. FIG. 5 shows a handle 12' made from an extruded aluminum tube having depressions 13' extending for its full length. This handle 12' has its end closed by a plug 60.

In the operation of the apparatus, the handle 12 is rotated in a direction to cause the clamp element 32 to move away from the face 22 of the plate 24. FIG. 1 shows the clamp element 32 at a substantial distance from the face 22 and the clamping apparatus is in its open position ready to engage a cable. An operator holding the apparatus by the handle 12 can hook the lower part of the clamp section 32 over a cable 42, as shown in broken lines in FIG. 1.

With the cable 42 lodged in the groove 40, the handle 12 can be rotated and as long as the apparatus is held with the clamp section 32 firmly against the cable 42, the clamp element cannot rotate and the continued rotation of the handle 12 will screw the handle toward the clamp section 32.

When the handle 12 has moved far enough along the threads of the screw 20, the clamp element 32 will push the cable 42 into contact with the surface 22 of the plate 24. Since the handle 12 is constructed so that it has relative rotation with respect to the plate 24, the cable 42 can be tightly clamped without any movement of the clamping face 22 of the plate 24 across the contacting surface of the cable 42.

The substantial circumference of the handle 12 and its scalloped outer contour provide the workman with a firm grip and sufficient torque to tightly clamp the cable 42. When it comes time to release the cable 42, the handle is rotated in an opposite direction so that the handle unscrews along the screw 20 and the clamp opens wide enough to permit the cable 42 to be released through the clearance between the lower end of the clamp section 32 and the confronting clamping surface 22 of the plate 24.

The preferred embodiment of the invention has been illustrated and described, but changes and modifications can be made, and some features can be used in different combinations without departing from the invention as defined in the claims.

What is claimed is:

1. A wire gripping apparatus comprising a handle portion, a face at one end of the handle portion, a clamp section having a cable gripping surface confronting said face, and mechanism that moves the clamping section toward and from said face when the handle is rotated in different directions with respect to the clamp section, characterized by the face at one end of the handle being a plate, a bearing on which the plate and other portions of the handle are rotatable with respect to one another whereby the other portions of the handle can be rotated while the plate remains stationary and in contact with the cable that is being gripped, and further characterized by the face plate being generally annular with an inner cylindrical face that provides a bearing that contacts with a circumferential surface of the handle, the handle including a bushing that extends from one end of the handle, the handle having said circumferential surface on the bushing, and having thrust bearing surfaces on both sides of the face plate, one thrust bearing surface being a flange of the bushing and the other a shoulder on the handle.

2. The wire gripping apparatus described in claim 1 characterized by the bushing being secured to the other parts of the handle and rotatable as a unit therewith, the bushing having a longitudinal opening with screw threads therein that constitute a part of said mechanism,

and a screw secured to the clamp section and integral therewith, said screw threading into the bushing and constituting another part of the mechanism from moving the clamp section toward and from the side of the face plate that confronts the clamp section, the face plate being of larger area than the clamp section and extending radially beyond the clamp section in all directions normal to the axis of the screw.

3. A wire gripping apparatus comprising a handle portion, a face at one end of the handle portion, a clamp section having a cable gripping surface confronting said face, and mechanism that moves the clamping section toward and from said face when the handle is rotated in different directions with respect to the clamp section, and said mechanism being a screw, connected to the clamp section as a unit therewith, the handle having a threaded end through which the screw threads during relative rotation of the handle with respect to the clamp section and screw, characterized by the screw being a carriage bolt having a head and having a polygonal shank section immediately below the head and before the threaded portion of the screw, the clamp section having an opening through which the polygonal section extends and the opening being shaped to prevent rotation of the screw in the clamping section, and a compression spring surrounding the screw and compressed between the clamp section and the handle for holding the clamp section against the head of the screw, the clamp section having a stop that contacts with the face at the end of the handle if the clamp section moves into a canted position on the screw beyond a limited angle that depends upon the extent of opening of the apparatus, and further characterized by the clamp section being a plate with a wide portion at one side of the screw and having a straight line depression in the face of the clamp section on the side thereof that confronts the face of the handle, said groove being in position to receive a length of wire or cable that is to be clamped and to clamp said wire or cable against the face of the handle, the handle being a metal tube of polygonal cross section with a threaded bushing in one end thereof for receiving the screw, the bushing being rigidly secured to the handle and having a portion of the bushing telescoped into the handle, and a plug closing the end of the handle remote from the clamp section and comprising a sleeve portion that fits into the tube and a decorated end wall that closes the tube and that extends beyond the outside circumference of the sleeve.

* * * * *