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ARTICLE MANIPULATING APPARATUS

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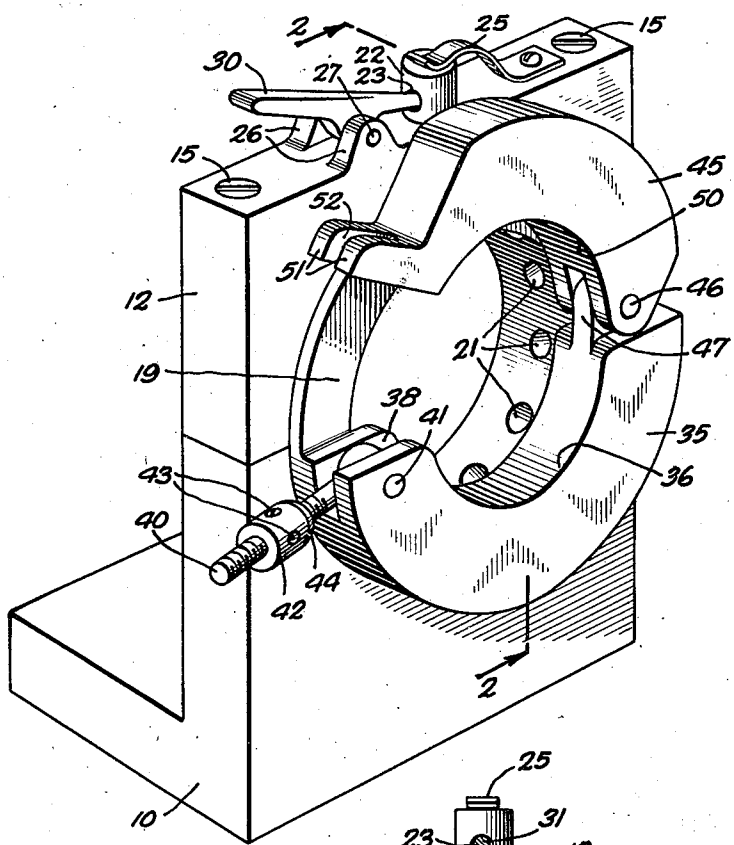


FIG. 1

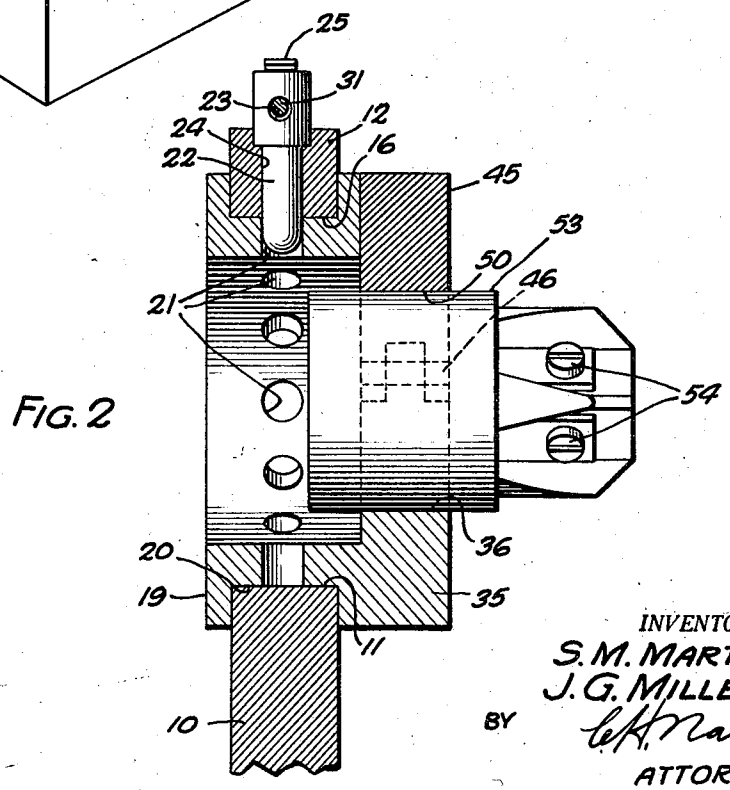


FIG. 2

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ARTICLE MANIPULATING APPARATUS

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7 Claims. (Cl. 29—89)

This invention relates to an article manipulating apparatus and more particularly to a fixture for holding a terminal plug in which the terminal plug may be firmly held in any one of a number of positions.

In fastening a plurality of conductors forming parts of a multi-conductor cable to terminals carried by a component of a cable plug, it is necessary to hold the component firmly while attaching one of the conductors to a terminal and then turn it to and firmly hold it in another position while attaching a second conductor to a second terminal. If a stationary vise is used to hold the insert, it must be loosened to rotate the component to the second position and tightened again, which is time-consuming. If the component is held manually, the tool employed by the operator might slip and injure his hand.

It is an object of this invention to provide a new and improved article manipulating apparatus.

An apparatus for holding cable plugs embodying the present invention comprises a frame carrying a rotatable ring provided with a plurality of circumferential openings, a detent which engages the openings to selectively position the ring, and a releasable clamp mounted on the ring for securing a cable plug within the rotatable ring.

This invention may be completely understood from the following detailed description and the accompanying drawing, in which

Fig. 1 is a perspective view of an article manipulating device embodying the invention, and

Fig. 2 is a sectional view thereof taken along the line 2—2 in Fig. 1.

In the particular embodiment of the invention disclosed in the accompanying drawing, there is provided an L-shaped frame 10 (Fig. 1), which may be secured to a work table. The frame 10 has a semicircular cut out portion 11 therein (Fig. 2). A companion frame member 12, which is adapted to be secured to the L-shaped frame 10 by bolts 15—15, has a semicircular cut out portion 16 of the same radius as and complementary to the semicircular portion 11, so that these cut out portions form a circular opening when the frame member 12 is joined to the frame 10.

A bushing 19, having a circumferential groove 20 therein which conforms to cut out portions 11 and 16 in the frames 10 and 12, is rotatably secured in the opening formed by the cut out portions of the frames 10 and 12 which fit into the groove 20. The bushing 19 has a plurality of spaced radial apertures 21—21 therein. The top of a pin 22 is engaged by a leaf spring 25 which tends to urge the pin downwardly through an aperture 24 in the frame 12 into one of the apertures 21—21 to secure the bushing 19 against rotation. The pin 22 is provided with a socket 23 into which is inserted a reduced portion 31 of a lever 30 which is pivoted on a pin 27 mounted in ears 26—26 of the frame 12.

A semicircular shoulder 35 of the flanged bushing 28 has a semicircular article gripping surface 36 thereon and a slot 38 formed therein in which a latch 40 is pivotally secured by a pin 41. A collar 42 is adjustably secured on the pivoted latch 40 by set screws 43—43 and has a cam surface 44 formed thereon. An arcuate lamp 45 is pivotally mounted on a pin 46 projecting therethrough and through a lug 47 formed on the semicircular shoulder 35. The clamp 45 has a semicircular article gripping surface 50 and is provided with a pair of rounded tongues 51—51, forming a slot 52 therebetween through which the latch 40 enters, and on which the cam surface 44 slides to draw the clamp 45 against the shoulder 35.

In the operation of the above-described fixture, a cable plug 53, to which conductors are to be secured, is inserted between the article gripping surfaces 36 and 50. The clamp 45 is drawn down and secured by swinging the latch 40 into the slot 52 and forcing the cam surface 44 of the collar 42 over the arcuate tongues 51—51. The lever 30 is pressed downwardly to raise the pin 22 from the particular aperture 21 in which it has been inserted and the bushing 19 and the plug 53 held therein may then be rotated to any suitable position. The lever 30 is then released to permit the pin 22 to enter another of the apertures 21—21, which firmly locks the bushing against rotation. After a conductor is attached to a terminal 54 of the plug 53, which is most convenient in this position, the plug 53 and the bushing 19 holding it may be rotated to another position, as previously described, without unclamping the plug. Very little time will be consumed in changing to a position in which one of the other of the conductors may be more conveniently attached to another terminal 54. The operation is repeated until all of the conductors are attached to the terminals 54—54. The latch 40 is then removed from the slot 52 to release the clamp 45 and the plug is removed from the fixture. Another plug may then be clamped in the fixture and the operations repeated.

If it is desired to substitute another bushing having the shoulder 35 and clamp 45 thereon

designed to hold a plug of a different diameter, the bolts 15—15 are loosened, the frame 12 is removed from the frame 10, and the bushing 19 removed. The other bushing is then placed on the frame 10 so that the frame fits into a groove similar to the circumferential groove 20, the frame 12 is placed on the frame 10 so as to fit into the groove similarly to the manner in which the frame 12 fits into the circumferential groove 20, and the bolts 15—15 are retightened. Thus, the substitute bushing is rotatably secured between the frames 10 and 12 similarly to the original bushing.

Many variations from the particular embodiment of the invention disclosed in the accompanying drawing may be made without departing from the scope of the invention, which is limited only by the claims.

What is claimed is:

1. An article manipulating apparatus comprising a frame consisting of an L-shaped base having a semicircular cut out portion therein, a frame member removably secured to the base and having a semicircular cut out portion therein which coacts with the semicircular cut out portion in the base to form a circular opening, a double flanged bushing rotatably secured in the circular opening and having a plurality of radial holes spaced about the periphery thereof, a semicircular shoulder formed on the bushing, a semicircular clamp pivoted on the shoulder and having a slot in the end thereof, a latch pivotally connected to the shoulder and designed to enter the slot in the clamp and having a cam thereon for engaging the clamp above the slot to secure an article between the shoulder and the clamp, a detent, a spring for urging the detent into one of the radial holes in the bushing to prevent rotation of the bushing, and means for withdrawing the detent from engagement with the radial hole to permit the bushing to be rotated.

2. An article manipulating apparatus comprising a frame having a circular opening therein, a bushing rotatably mounted in the opening and having a plurality of radial apertures formed in the periphery thereof, a detent secured to the frame for entering any of the apertures to selectively secure the bushing against rotation, and an article clamping means secured to the bushing adjacent to the circular opening, said article clamping means having work engaging surfaces extending around the axis of the bushing for securing an article extending into the bushing.

3. An article manipulating apparatus comprising a bushing having a plurality of radial apertures formed therein, a detent, a frame having a circular opening formed therein in which the bushing is rotatably mounted and also being provided with a bore extending from the opening to the outer periphery thereof through which the detent extends for entering any of the radial apertures, whereby the bushing may be secured against rotation in any of a plurality of positions, an arcuate projection extending from the bushing, and an arcuate member pivotally secured to the projection for cooperating therewith to secure an article therebetween, said arcuate projection and member forming a work clamping surface of the general contour of the bushing opening and in alignment therewith.

4. An article manipulating apparatus, which comprises a frame, a cylindrical bushing rotatably secured to the frame for rotation about the axis thereof, said bushing having an article gripping surface thereon, a latch pivotally mounted on the bushing and having an article gripping surface thereon for cooperation with the first-mentioned gripping surface to secure an article, said gripping surfaces being located around and in alignment with the axis of the bushing, whereby the opening of the bushing will afford clearance for a secured article, and means to releasably secure the bushing against rotation.

5. An article manipulating apparatus, which comprises a frame, a cylindrical bushing having a plurality of radially extending apertures around the periphery thereof, said bushing being rotatably secured to the frame by means exteriorly of the opening of the bushing, clamping means carried by the bushing and arranged around the axis thereof for securing an article in said bushing in alignment therewith, and a detent movably mounted on the frame for entering any of said apertures to selectively secure the bushing against rotation in any of a plurality of positions.

6. An article manipulating apparatus, which comprises a frame having a circular opening therein, a detent, means for movably mounting the detent on the frame, a bushing rotatably secured in said circular opening and provided with a series of spaced, radial apertures formed in the outer portion thereof into any of which the detent may be inserted to prevent rotation of the bushing, said opening and said bushing forming an unobstructed passage through the frame for an article, a semicircular shoulder projecting from said bushing, and a semicircular clamp pivotally carried by said shoulder for securing an article between the shoulder and the clamp, said semicircular shoulder and said semicircular clamp being arranged around the axis of the bushing.

7. An article manipulating apparatus, which comprises a plate having a circular opening formed therein, a tube rotatably mounted in the opening in the plate with its ends projecting beyond the plate and provided with a plurality of radial openings, article clamping means arranged around the axis of the tube and mounted on one end thereof for gripping an article which may pass through the tube, and a detent for entering the radial openings to selectively secure the tube in any one of a plurality of positions.

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