

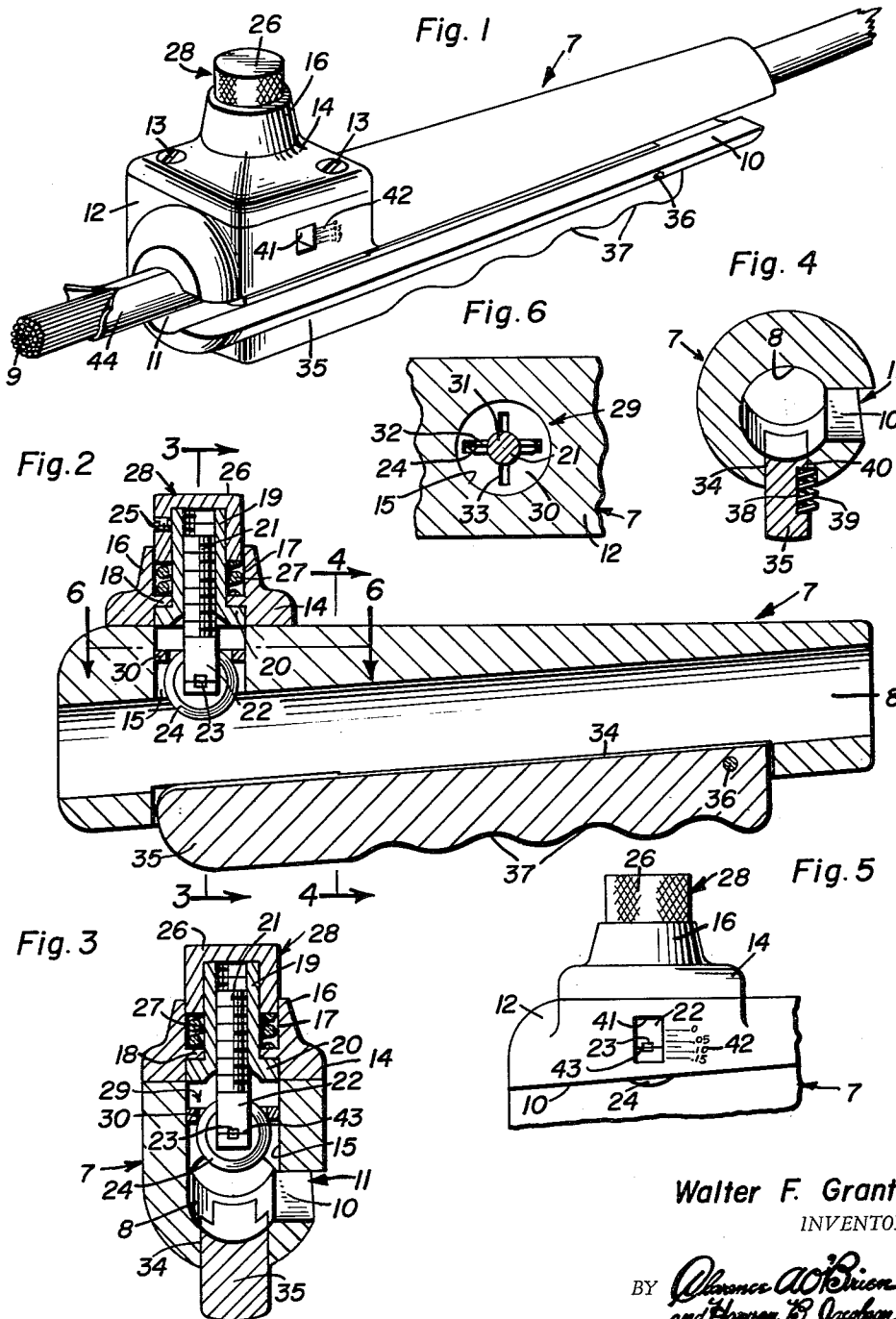
May 28, 1963

W. F. GRANT
CABLE SLITTING TOOL

3,091,031

Filed Dec. 4, 1961

2 Sheets-Sheet 1



Walter F. Grant
INVENTOR.

BY *Almonce A. Brown*
and *Harvey B. Jacobson*
Attorneys

Filed Dec. 4, 1961

2 Sheets-Sheet 2

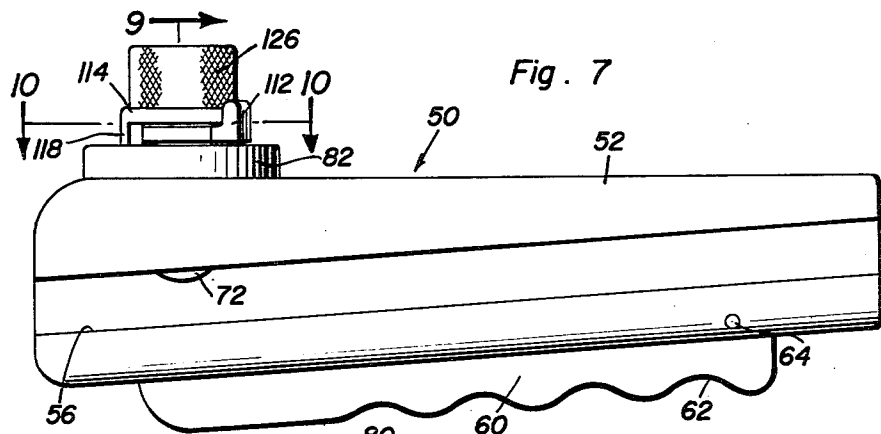


Fig . 7

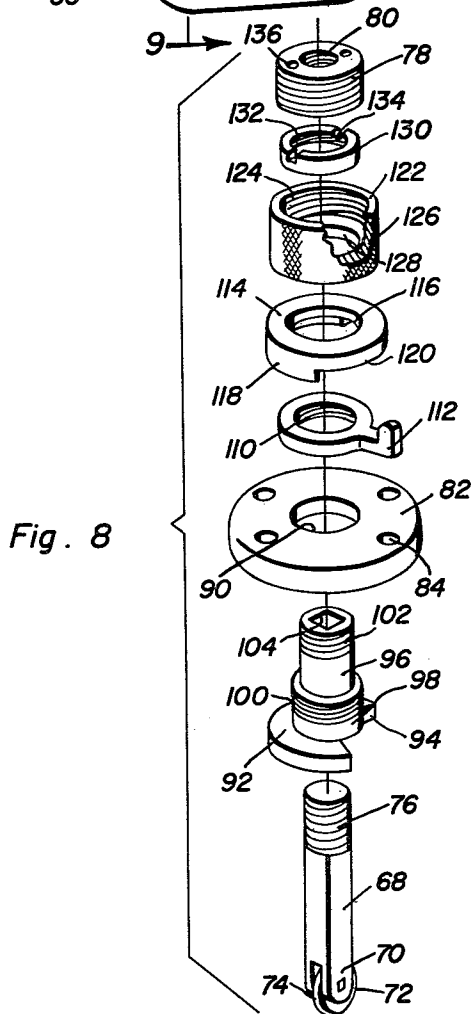


Fig. 8

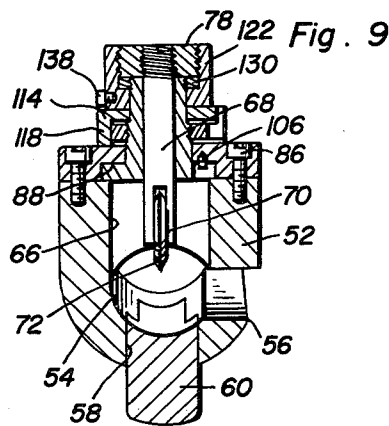


Fig . 9

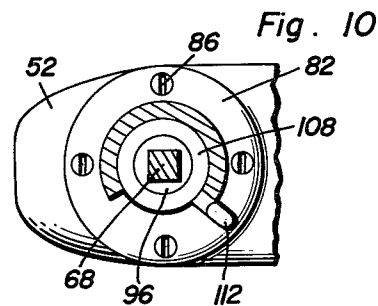


Fig. 10

Walter F. Grant
INVENTOR.

BY *Clarence W. Brien*
and Harvey E. Jacobson
Attorneys

1

3,091,031

CABLE SLITTING TOOL

Walter F. Grant, 610 Kentucky St., Bellingham, Wash.
Filed Dec. 4, 1961, Ser. No. 156,867

7 Claims. (Cl. 30—91)

This invention relates to new and useful improvements in cable slitters or strippers of the type constituting the subject matter of my U.S. Patent No. 2,761,211, issued September 4, 1956.

An important object of the present invention is to provide a slitter of the character described which may be expeditiously applied laterally to the cable at any desired point, rather than being slipped longitudinally thereon from an end thereof, as in the device of the above-identified patent.

Another highly important object of this invention is to provide, in a manner as hereinafter set forth, an improved tool of the aforementioned character which is adapted to be readily adjusted to cut a non-metallic cable armor or sheath either longitudinally or circumferentially.

Other objects of the present invention are to provide an improved cable slitting tool of the character set forth which will be of relatively simple construction, strong, durable, compact, of light weight and which may be produced at low cost.

All of the foregoing and still further objects and advantages of the invention will become apparent from a study of the following specification, taken in connection with the accompanying drawing wherein like characters of reference designate corresponding parts throughout the several views, and wherein:

FIGURE 1 is a perspective view, showing an improved tool embodying the present invention in use;

FIGURE 2 is a view in vertical longitudinal section through the improved device;

FIGURE 3 is a view in transverse section, taken substantially on the line 3—3 of FIGURE 2;

FIGURE 4 is a view in transverse section, taken substantially on the line 4—4 of FIGURE 2;

FIGURE 5 is a fragmentary view in side elevation of the upper portion of the forward end portion of the device;

FIGURE 6 is a fragmentary view in horizontal section, taken substantially on the line 6—6 of FIGURE 2;

FIGURE 7 is a side elevational view of a modified form of the present invention;

FIGURE 8 is an exploded group perspective view of the components of the slitting mechanism;

FIGURE 9 is a vertical sectional view taken substantially upon a plane passing along section line 9—9 of FIGURE 7 illustrating the relationship of the components; and

FIGURE 10 is a transverse, plan sectional view taken substantially upon a plane passing along section line 10—10 of FIGURE 7 illustrating further structural arrangements of the components.

Referring now to the drawing in detail, it will be seen that the embodiment of the present invention which has been illustrated comprises an elongated body of suitable insulating material which is designated generally by reference numeral 7. The elongated body 7 is of a shape and dimensions to be firmly and comfortably gripped in the hand. Extending longitudinally through the body 7 from end-to-end thereof is a bore 8 for the reception of a cable to be stripped, as indicated at 9. The body 7 is further provided, in one side thereof, with a longitudinal slot 10 which extends from end-to-end of said body and which is in communication throughout its length with the bore 8. The bore 8 and the slot 10 define what may be considered a lateral groove 11 which is

2

substantially keyhole shaped in cross section in the body 7.

The forward, upper portion of the body 7 is formed to provide a head 12 which is substantially square in plan. Removably secured by screws 13 on the head 12 is a cap or the like 14. The head 12 of the body 7 has formed therein a vertical circular opening 15 which communicates with the bore 8. The cap 14 includes an upstanding neck portion 16 and extending vertically through said cap is a cylindrical opening 17 which is aligned with the opening 15. Formed in the lower portion of the opening 17 is a flange 18.

Rotatably and slidably mounted in the opening 17 in the cap 14 is an internally threaded tube or sleeve 19. The sleeve 19 is operable in the circular opening defined by the flange 18 and said sleeve is provided on its lower end portion with a head or flange 20 which is engageable beneath said flange 18.

Threadedly mounted for vertical adjustment in the sleeve 19 is a shank 21 comprising a bifurcated lower end portion 22 which extends downwardly into the opening 15 in the head 12. Extending between the furcations 22 of the shank 21 is a square pin 23 on which a stationary cutting disk 24 is mounted.

Secured by a setscrew 25 on the projecting upper portion of the sleeve 19 and operable in the opening 17 of the cap 14 is a knurled adjusting knob or cap 26. A coil spring 27 is mounted under compression in the opening 17 of the cap 14 between the flange 18 and the lower portion of the adjusting knob or cap 26 for yieldingly urging the cutter unit or assembly 28 upwardly in the openings 15 and 17. A keeper 29 is provided for retaining the shank 21 and the cutter 24 thereon against rotation with the sleeve 19. In the embodiment shown, the keeper 29 comprises a disk or the like 30 which is fixed at an intermediate point in the opening 15 and through which the shank 21 is slidable. Toward this end, the disk 30 has formed therein a centrally located circular opening 31 which accommodates the shank 21. The opening 31 intersects longitudinal and transverse slots 32 and 33, respectively, in the disk 30 in which the cutter 24 is selectively engageable.

The body 7 is still further provided, in its lower portion, with a longitudinal slot 34 which communicates with the bore 8 and which terminates in spaced relation to the ends of said body. A pressure bar 35 of suitable insulating material is operable in the slot 34 for engaging the cable 9 with the cutter 24. The pressure bar 35 has its inner or rear end portion pivotally secured to the body 7, as indicated at 36. The pressure bar 35 is adapted to be actuated by the fingers of the hand which grips the body 7. Toward this end, the pressure bar 35 is provided in its lower portion with finger receiving recesses or undulations 37.

The pressure bar 35 is further provided, in one side thereof, with a lateral recess 38 (see FIGURE 4). The recess 38 accommodates a coil spring 39 the upper end of which is seated in a notch or recess 40 provided therefor in one of the side walls of the slot 34. The spring 39 returns the pressure bar 35 to its lowered position. The pivoted end of the pressure bar 35 abuts the opposed inner end wall of the slot 34 for limiting downward movement of said pressure bar.

On one side thereof, the head 12 of the body 7 has formed therein an opening 41 which communicates with the bore 8 and which is aligned with the pin 23 of the cutter 24. A scale 42 is provided on the head 12 adjacent one side of the opening 41. A mark or indicator 43 is provided on the adjacent bifurcation 22 of the shank 21 to be read against the scale 42 through the opening or window 41 to facilitate the vertical adjust-

ment of the cutter 24 when said cutter is in longitudinal position as shown in FIGURE 2 of the drawing.

It is believed that the use or operation of the improved tool will be readily apparent from a consideration of the foregoing. Briefly, the cable 9 to be stripped or skinned is inserted laterally through the slot 10 into the bore 8 of the body 7. It will thus be seen that the improved tool may be readily slipped on the cable at any desired point. With the cutting disk 24 in the longitudinal position as shown in FIGURE 2 of the drawing for cutting or splitting the sheath or armor 44 of the cable 9 longitudinally, the knob 26 is adjusted, if necessary, for vertically adjusting the cutting disk 24 according to the thickness of said sheath or armor. Of course, rotation of the knob 26 turns the sleeve 19 for screwing the shank 21 upwardly or downwardly in said sleeve. In its longitudinal position, the cutting disk 24 is engaged in the longitudinal slots 32 in the keeper disk 30 for retention thereby against rotation with the sleeve 19. With the fingers of the hand which grips the body 7, the bar 35 is then swung upwardly on its pivot 36 for engaging the cable 9 with the cutting disk 24. Thus, the cutting disk is caused to penetrate the sheath or armor 44 of the cable 9. The cable 9 is then pulled outwardly or forwardly through the body 7 for causing the disk 24 to longitudinally slit the armor or sheath of said cable in an obvious manner. To cut the cable circumferentially, the cutter assembly 28 is depressed against the tension of the coil spring 27, thus disengaging the disk 24 from the longitudinal slot 32. The assembly is then turned 90 degrees for aligning the cutting disk 24 with the transverse slot 33. The assembly 28 is then released for permitting the spring 27 to function to engage the upper portion of the cutting disk 24 in the transverse slot 33 for retaining said cutting disk in the position of FIGURE 3 of the drawing.

Referring now specifically to FIGURES 7-10, of the drawings, the modified form of the present invention is generally designated by numeral 50 and includes a longitudinally elongated body 52 having an inclined longitudinal bore 54 extending therethrough and an inclined longitudinal slot 56 extending laterally into one side of the body thus forming communication with the bore. The bottom of the body is provided with a slot 58 which is not continuous throughout the length thereof and which receives a pressure bar 60 or the like having recesses or undulations 62 in the bottom edge thereof. The rear upper corner of the pressure bar 60 is pivotally attached to the body 62 by virtue of a pivot pin 64 whereby the tool may be used with one hand and pressure exerted on the pressure bar for urging an insulated cable disposed in the bore 54 to be urged upwardly toward the top surface of the bore. The slot 56 enables the body 52 to be readily and quickly assembled onto the cable at any point thereon by lateral movement of the body on the cable whereby the cable will move through the slot 56 in an obvious manner.

At the forward end or end opposite from the pivot point 64, the body 52 is provided with a vertically extending bore 66 communicating with the longitudinal bore 54 for vertically adjustably and rotatably adjustably supporting a square shank 68 having a bifurcated lower end 70 rotatably receiving a circular cutter knife 72 having a sharpened peripheral edge 74 by virtue of having both edge surfaces bevelled. The upper end of the shank 68 is screw threaded as at 76 for receiving a nut 78 having an internally threaded bore 80 extending therethrough. The shank 68 is square throughout its length except for the threaded end 76 and the bifurcated end 70.

Mounted on top of the body 52 is an annular retaining member 82 having a plurality of apertures 84 therein for receiving fasteners 86 which releasably secure the retaining ring 82 to the body 52. The retaining ring 82 is provided with a recess 88 communicating with a central aper-

ture 90 therein and the recess 88 has a diameter larger than the bore 66 for tentatively receiving a flange 92 which is segmental in nature in that it has a quadrant 94 thereof cut out. The flange 92 is integral with a sleeve 96 having an enlarged lower portion 98. The sleeve 96 is cylindrical on the exterior surface and provided with threaded portions 100 and 102 and the interior of the sleeve is provided with a square bore 104 receiving the shank 68. Thus, the sleeve 96 will be locked to the shank 68 as far as rotation is concerned and will enable vertical sliding movement of the shank 68. Thus, by providing a quadrant 94 cut out of substantially 90 degrees, the shank 68 may be rotated a quarter turn for orientating the rotational axis of the cutter knife 72 perpendicular to the longitudinal axis of the cable for longitudinally slitting the insulation on the cable or parallel to the longitudinal axis of the cable for severing the cable insulation peripherally thereof. A stop screw 106 is disposed in the top surface of the recess 88 and is received in the cut out segment 94 thus limiting the rotational movement of the sleeve 96 in relation to the annular ring 82 and body 52.

The sleeve and especially the larger lower portion 98 is extended upwardly through the bore 90 and receives a locking nut 108 having an internally threaded bore 110 in threaded engagement with the threaded portion 100 of the enlarged lower end of the sleeve member 98. The nut 108 is provided with a laterally extending handle 112 by virtue of which the nut 108 may be tightened and loosened thus enabling the sleeve to be locked and unlocked as far as rotational movement thereof is concerned thus locking the shank 68 in position about its longitudinal axis.

Disposed in overlying relation to the nut 108 is an annular retainer 114 having a central bore 116 therein together with a depending peripheral flange 118 having a cut-out segment 120 of substantially 120°. The cut-out area 120 receives the laterally extending handle 112 on the nut 108 while the flange 118 extends downwardly alongside of the periphery of the nut 108 thus retaining the nut 108 in place.

Disposed above the retainer 114 is a cylindrical member or spacer 122 which is internally threaded as at 124 and provided with a knurled exterior surface 126. The spacer 122 is provided with a flange 128 which engages the portion of the sleeve 96 above the larger lower end and above the retainer 114. Disposed interiorly of the spacer 122 is an annular retainer nut 130 which is internally threaded at reference numeral 132 for threaded engagement with the upper threaded end portion 102 of the sleeve 96. The retainer 130 will overlie the flange 128 thus rotatably retaining the flange and spacer in place. The top surface of the nut 130 is provided with a pair of notches 134 for receiving a suitable spanner wrench. Also, disposed interiorly of the spacer 122 is the previously referred to cylindrical nut 78 having the internally threaded bore 80 which is threaded onto the shank 68. Also, the top surface of the nut 78 is provided with a pair of spaced apertures 136 for receiving the special spanner wrench for loosening or removing the nut 78. If desired, a suitable small screw 138 may be provided for indicating the position of the cutter knife in relation to the bore 54.

With this construction, the cutter knife may be used to slit the insulation or ring the insulation and the position of the knife may be vertically adjusted for slitting various thicknesses of insulation.

It is believed that the many advantages of a cable slitting tool constructed in accordance with the present invention will be readily understood and although a preferred embodiment of the device is as illustrated and described, it is to be understood that changes in the details of construction and in the combination and arrangement of parts may be resorted to which will fall within the scope of the invention as claimed.

What is claimed as new is as follows:

1. A cable armor splitter comprising a generally tubular body for slidably receiving a cable, and means in said

5

body for cutting the cable longitudinally or circumferentially, said means including a sleeve rotatably and slidably mounted in the body, a shank threadedly mounted for adjustment in said sleeve, a knife mounted on said shank, an operating knob on the sleeve, a keeper in the body for releasably securing the knife against rotation and in rotatably adjusted position, and means for engaging the knife with the keeper, said keeper including a member in the body having intersecting slots therein, said knife comprising a disk engageable selectively in said slots.

2. A cable armor slitter in accordance with claim 1, said knob including a cap receiving the upper portion of the sleeve and affixed thereto, the second-named means comprising a coil spring in the body supported thereby, said coil spring encircling the sleeve and engaged under compression with the cap for yieldingly urging same upwardly.

3. A cable armor slitter comprising a generally tubular body for slidably receiving a cable, means in said body for cutting the cable longitudinally or circumferentially, said means including a sleeve rotatably and slidably mounted in the body, a shank threadedly mounted for adjustment in said sleeve, a knife mounted on said shank, an operating knob on the sleeve, a keeper in the body for releasably securing the knife against rotation and in rotatably adjusted position, and means for engaging the knife with the keeper, said keeper including a member in the body having intersecting slots therein, said knife comprising a disk engageable selectively in said slots, the last named means including a coil spring mounted in the body and encircling the sleeve and operatively connected thereto for yieldingly urging same in a direction to engage the disk in the slots.

4. A cable armor slitter comprising an elongated tubular body having a longitudinal bore therethrough for slidably receiving a cable and further having a cylindrical opening therein communicating with the bore, an annular member on the body coaxial with the opening and including an internal flange projecting thereover, a vertical sleeve mounted for rotary adjustment in the

6

flange and including an internal anchoring flange on its lower end rotatably engaged therebeneath, a shank mounted for vertical adjustment in the sleeve and including a bifurcated lower end portion depending therefrom into the opening, a cutting disk on said lower end portion of the shank engageable with a cable in the bore, threaded means connecting the shank to the sleeve, means for rotating said sleeve, and means for urging the sleeve upwardly for engaging the flange thereon with the first-named flange in a manner to frictionally resist rotation of said sleeve.

5. A cable slitter in accordance with claim 4, the last-named means including a coil spring on said first-named flange encircling the sleeve under compression and operatively connected thereto for yieldingly urging same upwardly through said first-named flange.

6. A cable slitter in accordance with claim 4, the last-named means including a nut threaded on the sleeve and engaged with the first-named flange for urging said sleeve upwardly through said first-named flange.

7. A cable armor slitter in accordance with claim 6, the first-named means including a nut threaded on an upper end portion of the shank, a nut threaded on an upper end portion of the sleeve and engaged beneath the second-named nut, and a cylindrical member threadedly mounted on said second-named nut and comprising a flange in its lower portion engaged beneath the third-named nut.

References Cited in the file of this patent

UNITED STATES PATENTS

1,866,095	Foley	July 5, 1932
2,385,368	Montgomery	Sept. 25, 1945
2,388,698	Montgomery	Nov. 13, 1945
2,452,734	Costelow	Nov. 2, 1948
2,761,211	Grant	Sept. 4, 1956
2,830,366	Chisens	Apr. 15, 1958
2,943,391	Shannon	July 5, 1960