

[54] ELECTRICIANS TOOL

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[51] Int. Cl. .... **B25f 1/00**

[58] Field of Search ..... 7/14.1 R; 15/104.02, 15/104.03, 104.04, 104.05, 93, 236; 408/119, 211, 194, 223, 231, 227, 200; 29/81 F, 81 G, 97.5

[56] **References Cited**

**UNITED STATES PATENTS**

|           |         |                |         |
|-----------|---------|----------------|---------|
| 1,053,531 | 2/1913  | Platt.....     | 408/119 |
| 1,204,994 | 11/1916 | Kendall.....   | 408/146 |
| 1,499,416 | 7/1924  | Stech.....     | 408/191 |
| 2,470,392 | 5/1949  | Gassmann.....  | 408/211 |
| 2,748,631 | 6/1956  | Neale.....     | 408/211 |
| 2,797,420 | 7/1957  | Lundquist..... | 408/211 |
| 3,138,044 | 6/1964  | Olexson.....   | 408/211 |

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[57]

**ABSTRACT**

An electrician's tool for reaming the cut edges of tubular electrical conduit, including a handle, a set of radially arranged blades fixed with respect to said handle, a second set of radially arranged blades mounted for coaxial displacement relative to said first set of blades against the action of a coaxially arranged spring. Said first and second sets of blades having cutting edges arranged to intersect at points along said edges to form notches positioned on a circular locus of points, whereby the inner and outer concentric edges of a transversely cut surface of a conduit may be simultaneously reamed. The second set of blades also mounts a screw driver blade which moves axially therewith, and which resiliently recedes into a circular housing during use to permit said housing to surround the head of a screw and align the screwdriver blade with respect to said screw head, and prevent subsequent disengagement.

**3 Claims, 8 Drawing Figures**

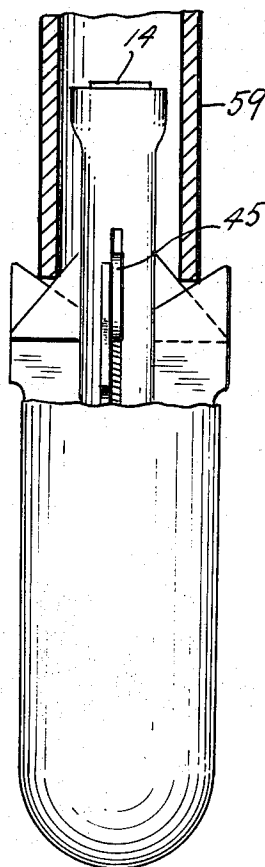


*Fig. 1*

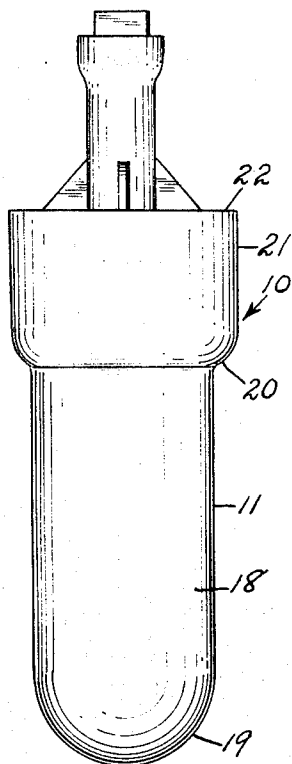


*Fig. 2*

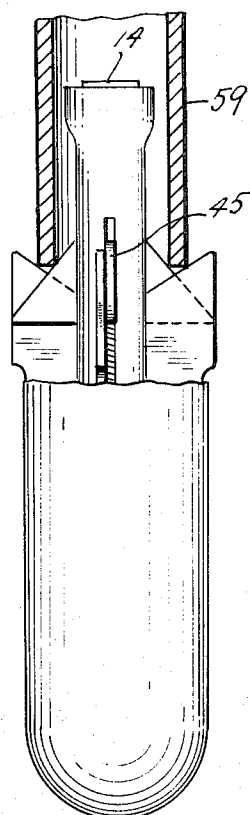
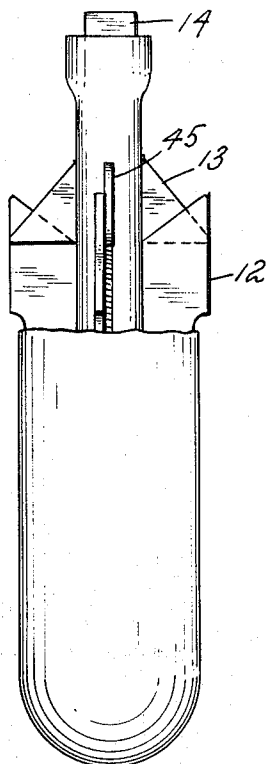


*Fig. 4*

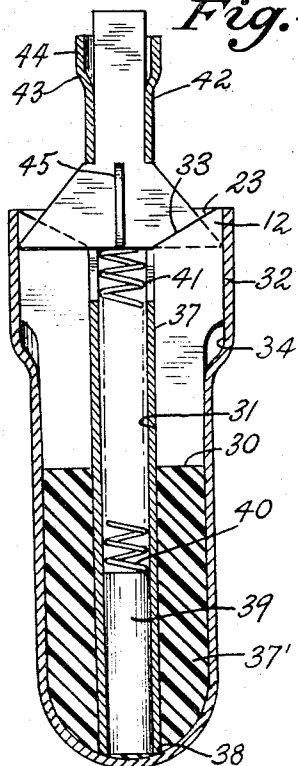


*Fig. 3*

*Fig. 8*

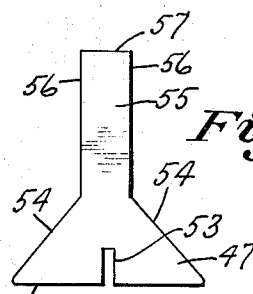


*Fig. 5*

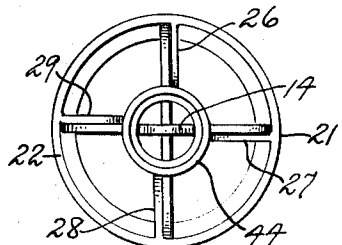
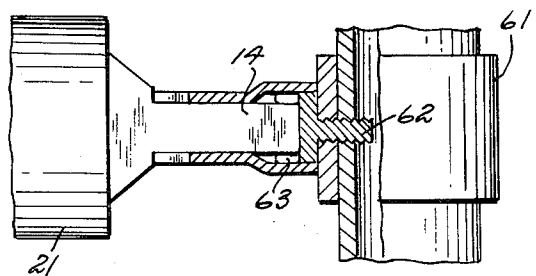


*Fig. 7*

*Fig. 6*



## ELECTRICIANS TOOL

This invention relates generally to the field of reaming tools, and more particularly to an improved device suitable for use by electricians during the installation of electrical wires and cables within metallic and non-metallic conduits. Such conduit is normally supplied in standard lengths which are cut using a hacksaw or other cutting device transversely to the principal axis thereof to obtain segments of desired length, the free ends of such segments normally being engaged by a fitting which contacts either the outer or the inner surface thereof. While the conduit is normally thin-walled, and not difficult to cut, the cutting operation invariably leaves ragged edges or burrs which make the engagement of the fitting difficult, and in some cases, where care is not exercised, an exact transverse cut is not obtained, necessitating the removal of material to permit engagement of the fitting. Often, the deburring and cutting must be performed while the worker is on a ladder or in awkward position, so that the performance of the operation is difficult. Further, after the reaming operation, a screwdriver is normally required to affix the fitting, necessitating the disposal of the reamer and selection of another tool.

It is therefore among the principal objects of the present invention to provide an improved combination tool construction, greatly facilitating the performance of the above described operations.

Another object of the invention lies in the provision of an improved electrician's tool including both reaming and screwdriving means combined in a single instrument in such manner that either function is available without manual adjustment.

Yet another object of the invention lies in the provision of an improved electrician's tool possessed of the above advantages, in which the cost of fabrication may be of a reasonably low order, with consequent wide sale, distribution and use.

Another object of the invention lies in the provision of an improved tool of the class described, in which the cutting edges thereof are readily available for contact with the cut end of a conduit, but which are not readily contacted by the fingers of the user, thereby affording an increased degree of safety, as contrasted with prior art devices.

These objects, as well as other incidental ends and advantages, will more fully appear in the progress of the following disclosure, and be pointed out in the appended claims.

In the drawing, to which reference will be made in the specification, similar reference characters have been employed to designate corresponding parts throughout the several views.

FIG. 1 is a side elevational view of an embodiment of the invention.

FIG. 2 is a similar side elevational view, partly broken away to show detail.

FIG. 3 is a similar side elevational view, partly in section, showing a reaming action performed upon the free end of a conduit.

FIG. 4 is a longitudinal central sectional view of the embodiment.

FIG. 5 is an end elevational view, as seen from the upper portion of FIG. 1.

FIG. 6 is a view in elevation, partly in section, showing the embodiment in use as a screwdriver.

FIG. 7 is a view in elevation of one of the inner cutting blades in detached condition.

FIG. 8 is a view in elevation showing another of the inner cutting blades having an axially aligned extension thereon forming a screwdriver blade.

In accordance with the invention, the device, generally indicated by reference character 10, comprises broadly: a handle element 11, a first blade element 12 and a second blade element 13 having associated screwdriver means 14.

The handle element 11 may be formed as an aluminum casting or a steel drawing, and includes a tubular portion 18 having a rounded end 19, and flared portion 20 and a second wider tubular portion 21 bounded by a circular free edge 22 defining an opening 23.

The first blade element 12 includes first, second, third and fourth blades 26, 27, 28 and 29, respectively, all of which are substantially similar and bounded by an end edge 30, and inner edge 31, an outer edge 32 and an angularly disposed cutting edge 33. The lower portion of each blade is secured to the inner surface 34 of the tubular portion 18 in any suitable manner, as by welding, insert molding and the like. The tubular housing 37 serves to support the spring 41 in an axial position and may be anchored for this purpose by filling the hollow portion 18 with an epoxy filler which is shown in the drawing by reference character 37'.

The second blade element 13 includes a tubular housing 37 having a first end 38 fitted with a plug 39 which bears against an inner end 40 of a coil spring 41. A second end 42 of the housing 37 includes a flared section 43 terminating in a larger cylindrical portion 44. Elongated slots 45 align and support first and second inner blade members 46 and 47, respectively, for movement between first and second limits along a path of motion parallel to the principal axis of the housing 37.

Referring to FIG. 7, the first inner blade member 46 is bounded by a transverse edge 48 and a pair of converging cutting edges 49. An axially positioned slot 50 provides means for engaging the second blade member 47.

The second blade member 47 is bounded by a transverse edge 52 and includes a correspondingly axially positioned slot 53. A pair of cutting edges 54 correspond to the edges 49 on the first member, and lead to a planar extension 55 bounded by side edges 56 and terminating in a screwdriver edge 57.

When the device is used as a reamer, the end of a piece of conduit 59 is placed in contact with the first and second blade elements as shown in FIG. 3. Pressure applied on the handle in an axial direction will result in compression of the spring 41, and permit the blade elements 12 and 13 to adjust themselves to the diameter of the conduit, this adjustment forming a sharpened notch at a plurality of points along a circular locus, whereby relative motion between the conduit and the handle element will serve to simultaneously smooth the inner and outer edges of the end surface of the conduit. If the end of the conduit is other than square, continued rotation will true the end to the condition shown in FIG. 3. Since movement of one set of blades with respect to the other radially shifts the locus of points where the cutting edges of the same intersect, it is possible to cover a relatively wide range of sizes of tubing or conduit, including the most common range of one half inch to one inch.

When it is desired to attach a fitting, such as that indicated by reference character 61, the screw 62 fastening the same is engaged by the screwdriver blade 57 in normal manner. Pressure exerted on the handle element will again compress the coil spring 41, permitting the screwdriver blade 57 to recede within the portion 44 which may then surround the head 63 of a screw 64, and prevent disengagement of the screwdriver blade as the same is rotated.

I wish it to be understood that I do not consider the invention limited to the precise details of structure shown and set forth in this specification, for obvious modifications will occur to those skilled in the art to which the invention pertains.

I claim:

1. A multi-purpose electrician's tool comprising: a handle element, and first and second blade elements; said first blade element including a first plurality of planar blades radially arranged with respect to the principal axis of said handle element, said second blade element including a second plurality of planar blades radially arranged in concentric relation with respect to said first blade element for relative movement along a coax-

ially disposed path between first and second fixed limits; said first plurality of blades having cutting edges disposed at a first given angle with respect to said principal axis, said second plurality of blades having edges disposed at a second angle with respect to said principal axis, so that when said second blade element is positioned between said limits, the cutting edges of said first and second blade elements will overlap along a circular locus of points concentric with said principal axis; and resilient means urging said second plurality of blades toward one of said limits.

2. Structure in accordance with claim 1, further characterized in that second blade element includes a tubular housing slidably mounting said second plurality of blades, said resilient means including a coil spring disposed within said housing.

3. Structure in accordance with claim 2, further characterized in said second blade element including an axially positioned screwdriver blade thereon, said tubular housing surrounding the free end of said blade when said second blade element is disposed between said fixed limits.

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