

March 22, 1966

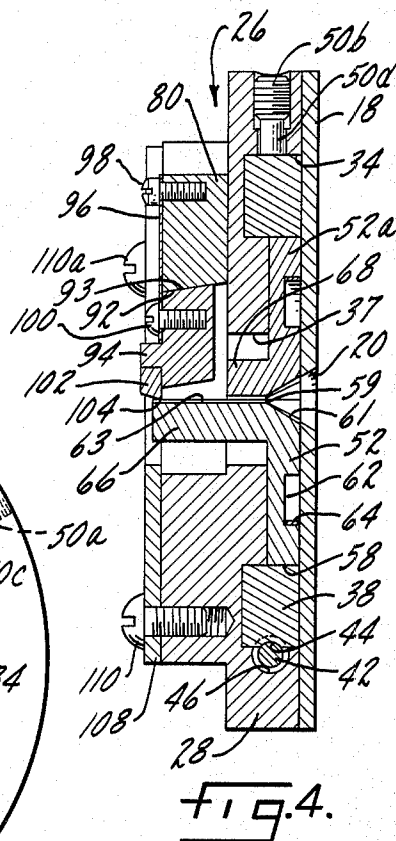
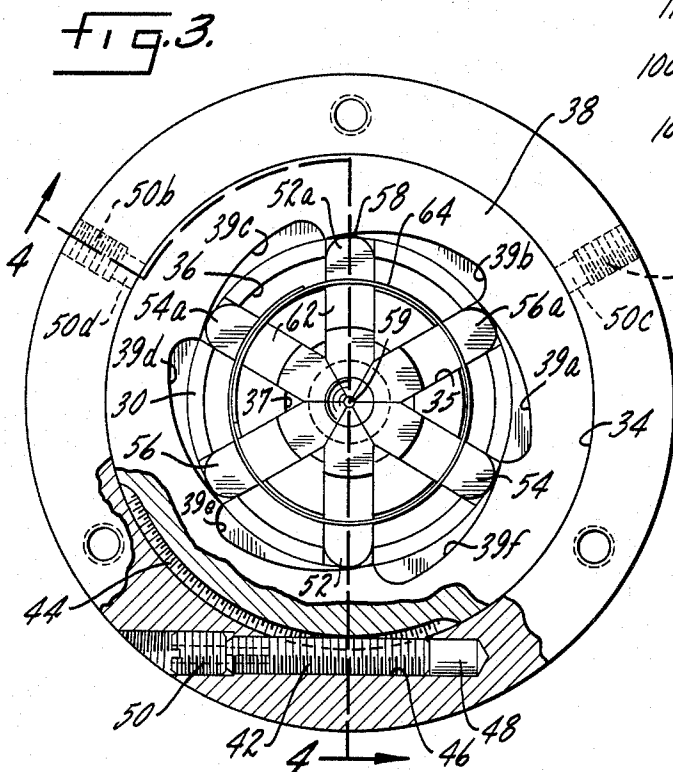
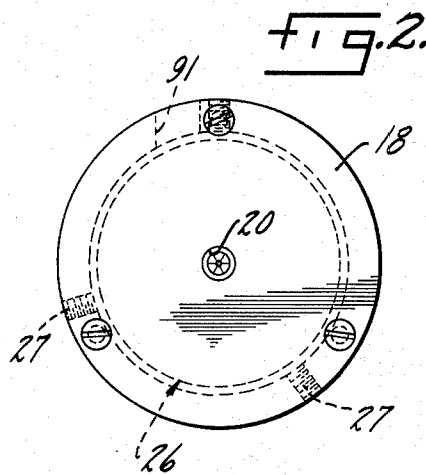
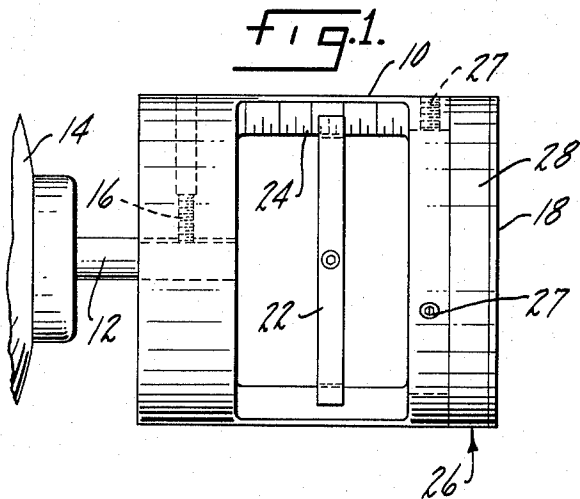
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3,241,407

ADJUSTABLE COLLET WIRE GUIDE FOR A WIRE STRIPPER

Filed Oct. 5, 1964

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

FIG. 5.

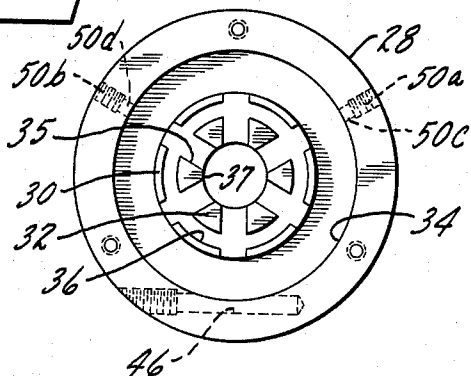


FIG. 6.

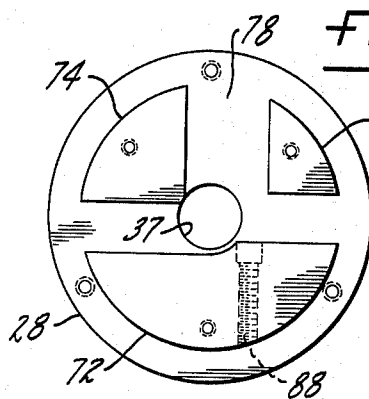


FIG. 7.

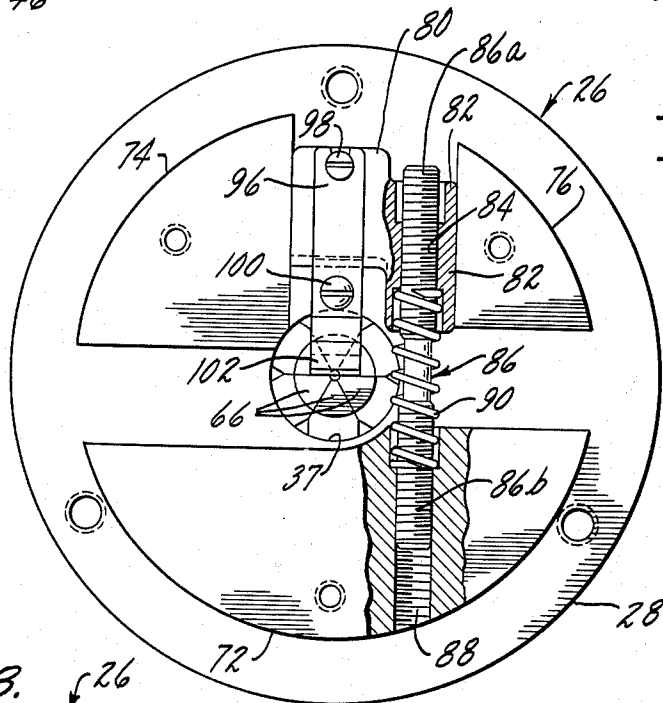
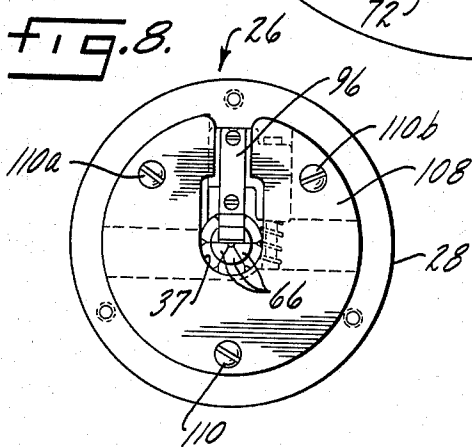


FIG. 8.



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ADJUSTABLE COLLET WIRE GUIDE FOR A WIRE STRIPPER

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3 Claims. (Cl. 81-9.51)

This invention relates to an adjustable wire guide for wire strippers. It particularly relates to wire guides which can be set to different openings by a plurality of split collets.

A primary object of this invention is an adjustable wire guide which can be accurately set in position to receive different diameters of electrical conductors with insulated covers.

Another object is an adjustable wire guide adapted to be used with rotary type wire strippers so that wires of different diameters may be positioned and held while they are cut by a rotating knife.

Another object of this invention is an adjustable wire stripper where the entry and guide for the wire is formed by a plurality of collet type members which move toward each other and away from each other to vary the size of the wire guide opening.

Another object of this invention is an adjustable wire guide in which a plurality of members split substantially at midpoint, have their split ends movable toward and away from each other to form a continuous collet type opening to receive wires of different diameters.

Another object of this invention is an adjustable wire guide for a wire stripper in which a plurality of members move toward and away from each other when the outer ends of such members are actuated by opposed cam surfaces dimensioned to move such members in unison.

These objects are attained along with other objects which will occur to practitioners upon a study of the invention shown in the following disclosure, consisting in part of drawings wherein:

FIGURE 1 is a side elevational view of a wire stripper adapted to receive the adjustable wire guide;

FIGURE 2 is an end view of the stripper head shown in FIGURE 1;

FIGURE 3 is an end view of the stripper head on an enlarged scale with parts removed and parts in section;

FIGURE 4 is a sectional view along the line 4-4 of FIGURE 3;

FIGURE 5 is a front elevational view of the head with working parts removed;

FIGURE 6 is a back elevational view of the head with working parts removed;

FIGURE 7 is a back elevational view on an enlarged scale of the head with mounted knife and means to adjust the knife; and

FIGURE 8 is a back elevational view of the head with a mounted cover plate.

The use of like numerals in the various views will refer to like elements and structures.

The adjustable wire guide is particularly useful in the spinner head or rotary type of stripper which is illustrated in the drawings. In such a stripper there is provided a spinner housing 10 which is mounted to the shaft 12 of the electric motor 14 by means such as a set screw 16. The spinner has a front plate 18 with a central opening 20 through which an electrical wire is passed into the adjustable wire guide behind the opening so a given

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length of insulation may be stripped. An adjustable stop such as 22 can be positioned with the aid of gauge 24 to control the length of wire inserted into the spinner head.

The spinner housing holds a head shown generally as 26 by set screws such as 27. This head contains the adjustable guide means for cutting the insulation from the electrical conductors. The head without working parts as shown in FIGURES 5 and 6, includes a body section in which the front has a raised annular section 28, a plurality of outer arched sections such as 30 and a plurality of inner arched sections such as 32. An annular channel or groove 34 is formed between the annular section and the arched sections. A plurality of straight channels or grooves such as 35 and an inner annular channel 36 are found between the arched sections. The head has a central opening or passageway 37 to receive a covered electrical wire.

The annular groove or channel 34 holds an annular cam element or cam ring 38. The cam ring has a plurality of inner cam surfaces such as 39a, 39b, 39c, 39d, 39e, and 39f which are oppositely disposed so that, for example, the low surface of cam 39d opposes the high surface of cam 39a and vice versa. The cam can be rotated to different, fixed positions by a socket screw 42 engaging circumferentially threaded groove 44 on the cam ring. The socket screw turns freely in smooth bore 46 and is positioned at one end by plug 48. In the embodiment shown, a set screw 50 is used to lock the socket screw within the smooth bore. The socket screw is turned by a tool inserted through a passageway in set screw 50 and into a socket in the head of the socket screw 42. Said tool may be an Allen wrench and the socket in socket screw 42 may accordingly be formed to lock with such a wrench. The passageway in the set screw may be shaped so the Allen wrench turns the set screw or it may have a slot so a screwdriver may turn it. The cam ring may be additionally fixed in its rotated position by tightening set screws 50a and 50b disposed in the circumferential edge of the head to press nylon plugs 50c and 50d or the like against the cam ring.

The straight channels such as 35 formed between the arched segments 30, 32 are used to receive a plurality of opposed paired collets or guides such as 52, 52a, 54, 54a, and 56, 56a. One end of the collets such as 58 engages the cam surfaces of the cam ring and the other end, such as 59, forms, in aggregate with the other collet ends, the guide opening for the wire. Each collet has a slot such as 62 to receive a circular spring 64 which spring urges the ends 58 of the collets against the cam surfaces. The slots of the collets and the spring are disposed within the annular channel 36. End 59 of each collet is formed by inclined curved surface 61 and trough 63 in lateral arm 66. Lower collets 52, 54 and 56 have longer lateral arms such as 66 which extend to the back of the head, and upper collets 52a, 54a and 56a have shorter lateral arms such as 68 to accommodate the blade cutting structure at the back of the head.

The back of the body section, as shown in FIGURE 6, has a lower, raised curved body section 72 and a pair of upper, curved sections 74 and 76. A channel 78 is defined between the upper curved section, and in this channel is mounted a column support block 80 which has an integral side member 82 with threaded bore 84 to engage one end 86a of double screw 86. The other

end 86b of the double screw threadably engages bore 88 in the lower curved body section. A spring 90 is provided to counteract backlash from the column support block during rotation.

Column support block 80 has an inclined face 92 which can engage matching face 93 of mating block 94. The mating block is joined to column support block 80 by a spring 96 which is preferably a laminated leaf spring, but it may be in another form. The spring is attached to the two blocks by screws such as 98, 100. A cutting knife 102 is securely fixed in the end of the mating block and its cutting edge 104 is positioned to cut an inserted wire seated in an aggregate of troughs such as 63.

The threads at 86a have a different pitch from the threads at 86b so that any given number of turns of the screw 86 results in movement of the block 80 in accordance with the pitch differential. Thus, quite small, accurate movement of the cutting knife 102 may be obtained. This provides a more sensitive control for adjusting column support block 80 and the edge of cutting knife 102 in relation to the electrical conductor wires. An opening such as 91 (FIGURE 2) is provided in the head so that a screwdriver may be inserted to turn upper end 86a of the double screw. A backplate 108 may be secured to the curved body sections by screws such as 110, 110a, and 110b (FIGURE 8).

The use and operation of my invention are as follows:

The wire to be stripped is introduced through the entry 20 in the front plate and through the guide formed by the split ends of the collet members. The wire guide entry together with the dimensions of the trough in the guide, is set to receive the particular diameter of the wire. Once the wire is positioned, the rotating cutter will sever the insulation so it may be removed.

With such a stripper, the cam element is preferably in an annular form so that it may be conveniently and advantageously rotated with an annular body section until the entry formed between the split collets is of a desired dimension.

It is a feature of the invention that the means to rotate the cam element also fix the cam element to assure that the selected entry opening is maintained during the wire cutting and stripping operation. In such an embodiment, the diametrically opposed cam surfaces are correspondingly dimensioned so that the outer ends of the split collets move to the same high or low point, as the case may be. With this arrangement the split collet segments radially move in unison to form the entry wire guide. This is true of the other split collets engaging their correspondingly dimensioned opposed cam surfaces. Thus, relative movement between the cam ring and the collets radially moves the collets in unison. This movement has been illustrated by way of rotation of the cam element, but the cam element could be stationary and the collets may be moved by appropriate means.

The stripping action by the rotary spinner has been particularly described in copending application Serial Number 344,170 and a summary of the operation will only be stated herein. When a wire to be stripped is pushed into the opening 37 into the rounded trough or passage formed by the aggregate of the troughs in the lateral arms 66 and 68, the blade 102 at the end of spring 96 is slightly bent close to the slanted surface.

The spring must be fairly sharply bent before the blade moves away from the column support block 80, and once it has moved away from such block, the spring will flex about an axis substantially far away from the slanted surface 92 of said block. The spring has been described as flexing or bending about different axes, but actually the spring flexes in a different area as there is no defined axis where the spring is bent. The path of the blade moving from the closed position for cutting the wire insulation may be described as irregularly arcuate or swinging with the swinging movement being compound on or about different axes or areas.

Although the invention has been described in connection with a rotary stripper, it should be realized that the arrangements shown and described may be used with other strippers.

I claim:

1. A wire stripper with an adjustable collet type wire guide which includes, in combination, a body section, a cam element within the body section, opposed cam surfaces on the cam element, a plurality of opposed collet pairs, each collet having opposed ends, each collet positioned so that one of the ends contacts the cam surfaces in the cam element, the other end of the collet pairs having a lateral arm with a trough defined therein, the plurality of troughs in the plurality of lateral arms adapted to form an entry guide for a wire, means to urge the collets against the cam surfaces, means to induce relative movement between the collet pairs and the cam element so that the collet pairs move towards each other and away from each other when relative movement occurs between said cam element and said collets, and the pairs of collets being moved the same radial distance upon relative movement so that a selected entry guide for a wire of given dimension is formed in said plurality of troughs, and yieldable cutting means substantially aligned with the trough formed in the lateral arms, and said cutting means adapted to cut the insulation cover from the wire which is inserted through the entry formed by the plurality of troughs in the lateral arms.

2. A wire stripper with an adjustable collet type wire guide which includes, in combination, a body section, a cam element within the body section, opposed cam surfaces on the cam element, a plurality of paired collets, each pair of collets having adjoining inner ends and outer ends, the outer ends of the collets adapted to engage the opposed cam surfaces of the cam element, a lateral arm joined to each inner end, a trough defined in each lateral arm, said trough following the long axis of the lateral arm and being disposed relative to the center of the wire stripper, said troughs at least partly adapted to define a substantially circular entry of different dimensions when the split collets are moved towards and away from each other, interior means between the body section and the cam element which can be activated to create relative movement between the cam element and the split collets so that the split ends may be moved towards and away from each other to thereby adjust the size of the substantially circular trough in the plurality of lateral arms, and said interior means fixing the relative positions of the body section and cam element when not inducing relative movement therebetween.

3. A rotary wire stripper with an adjustable collet type wire guide which includes, in combination, an annular body section, an annular cam element within the body section, opposed cam surfaces on the cam element, means to selectively rotate the cam element within the body section and to fix the cam element in a rotated position, a plurality of paired collets positioned within the cam element, each collet having an opposed outer end with a surface adapted to engage an opposed cam surface in the cam element, an inner end on each collet, a lateral arm joined to the inner end, a trough in the lateral arm positioned along the long axis of said lateral arm, each trough being disposed relative to the center of the wire stripper, means to urge the outer ends of the collets against the said cam surfaces to thereby move the inner ends towards each other and away from each other when the cam element is rotated, the troughs in the plurality of arms adapted to form an entry guide of selected size for a given wire, cutting means aligned substantially along the formed entry guide to cut the insulation from the wire after it has been introduced into said entry in wire guide, said cutting means mounted on a leaf spring, and said leaf spring connected to the body section.

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