July 19, 1932. A. REITZIG 1,867,712

APPARATUS FOR STRIPPING ELECTRIC WIRES AND FOR BINDING THE END OF THE INSULATION

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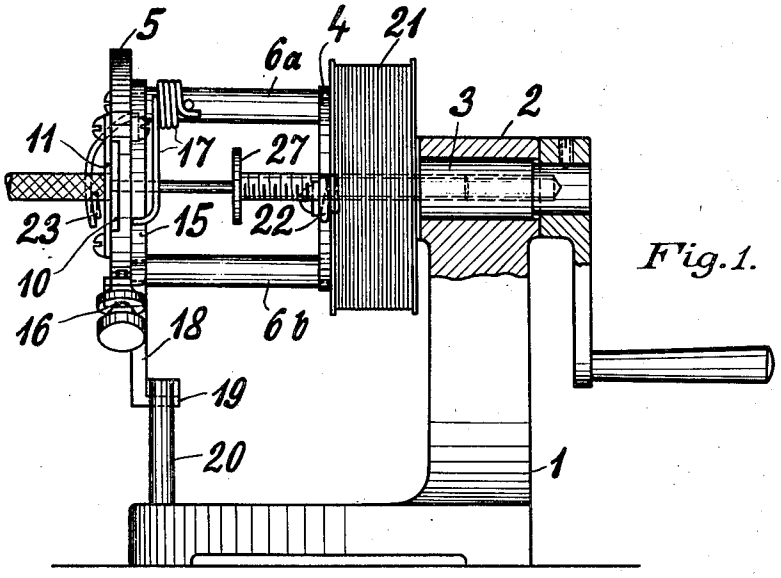
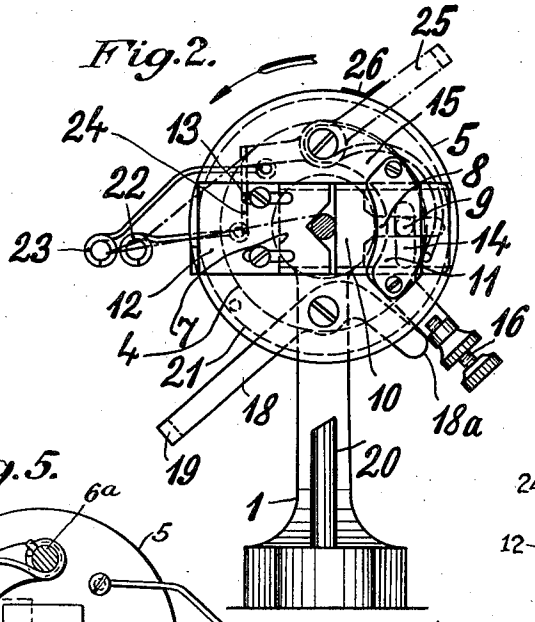


Fig. 1.

Fig. 2.



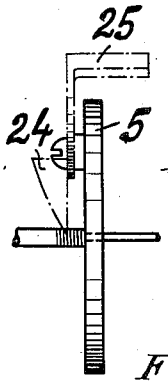


Fig. 3.

Fig. 4.

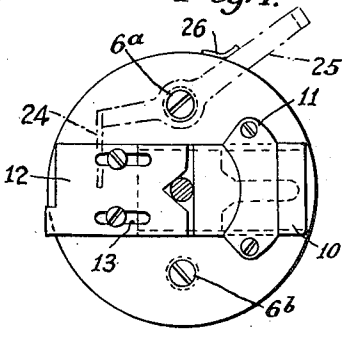
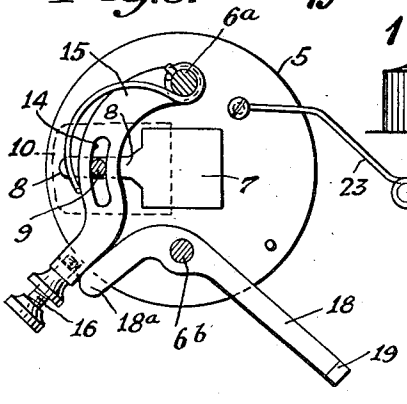


Fig. 5.



Inventor:
Albert Reitzig
by Jas. Thomson
Attorney

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UNITED STATES PATENT OFFICE

ALBERT REITZIG, OF MAGDEBURG, GERMANY

APPARATUS FOR STRIPPING ELECTRIC WIRES AND FOR BINDING THE END OF THE INSULATION

Application filed March 26, 1928, Serial No. 264,832, and in Germany April 4, 1927.

Stripping of electric wires and binding of the end of the insulation were hitherto carried out the one separate from the other. According to the invention, both operations are carried out simultaneously. One or several knives or shears travel around the end of the cable or lead and cut, owing to their automatic inward movement, the insulation of the wire radially with regard to the axis of rotation of the knives or shears. At the same time as the knife is traveling a thread is moved around the end of the cable or wire, designed to bind the end of the insulation which remains on the cable. When an ordinary thread is used, a tying device of known type must be connected to the apparatus. This tying device can be omitted when, instead of an ordinary thread, a sticky thread is used or when the knot is subsequently made by hand, or when for the thread a coating of lacquer is substituted.

The apparatus according to the invention is constructed in such a manner that the knife, which has made the incisions in the insulation, is lifted by an abutment, when the knife-head-shaft is being turned backward. A second abutment is arranged, connected with a knife or shear designed to cut the binding thread, which can also be cut upon the backward rotation of the knife-head-shaft.

By pulling out of the apparatus the end of the cable or wire, with the knife in closed position, the severed insulation is stripped off the wire or cable. The apparatus may be used for stripping only.

An embodiment of the invention is illustrated, by way of example, in the accompanying drawing, in which:

Fig. 1 is a side-elevation showing the apparatus.

Fig. 2 is an end-elevation of the apparatus.

Fig. 3 shows a detail illustrating the knife for severing the binding thread.

Fig. 4 shows in front view the disc of the knife head with the parts mounted on the front side of this disc.

Fig. 5 shows in rear view the disc of the knife head with the parts mounted on the rear side of this disc.

The frame 1 of the apparatus has a bearing 2 in which the knife-head-shaft 3 is journalled. This knife-head-shaft 3 is composed of two discs 4 and 5 connected the one with the other by two horizontal bolts 6*a* and 6*b*. The disk 5 has an aperture 7 for guiding the cable or wire. This aperture 7 merges into a slot 8 designed to guide a stud 9 which is connected to a knife 10. The knife 10 is flush with the end-face of disk 5 and is adapted to slide in a corresponding groove of the disk. A bridge 11 serves to prevent the knife from dropping out of the groove. The cable or wire is inserted into a holder 12 having a wedge-shaped aperture and adapted to be adjusted in its position in accordance with the diameter of the cable or wire. The adjusting of the holder is effected by means of slots 13.

The stud 9 of the knife engages with a slot 14 of a lever 15, hingedly mounted on a spacing bolt 6*a*. This lever is bent approximately at right angles, and the end, which is then bent again at right angles, carries an adjustable screw 16, bearing against the circumference of disk 5 when the depth of cut is reached and serving as a stop. A spring 17 bearing against the back of the lever 15 presses the same continuously towards the axis of rotation of the knife-head. Against the lever 15 bears the end 18*a* of an abutment 18, pivotally mounted on the spacing bolt 6*b*, said end being bent at right angles. The outer end 19 of this abutment 18 which forms a two-armed lever is also bent at right angles. When the disk is rotating in the direction indicated by the arrow in Fig. 2, the bent end 19 of the abutment strikes against a pin 20. As the abutment can yield, the rotation of the knife-head can continue. When however the direction of rotation is reversed, the arm 18*a* of the abutment 18 strikes against the lever 15 and pushes the same away from the axis of rotation of the knife in opposition to the action of the spring 17. As the knife 10 is positively connected with the lever 15, it must move in outward direction so that the cable or wire can be inserted into the apparatus or removed from the same.

The adjustable screw 16 serving as an abutment prevents cutting into the metal of the cable or wire. When this screw is unscrewed the knife moves towards the axis of rotation and, when the screw is screwed in the knife can move towards the axis of rotation only as much as the end of the screw bearing against the rim of disk 5 permits. In the drawing the end of the screw is not yet bearing against the circumference of disk 5 as the knife has only just begun to cut into the insulation of the wire.

A bobbin 21 carrying the tread for tying the insulation of the wire is loosely mounted on shaft 3. The thread is conducted through two eyes 22 and 23. The eye 22 is fixed on the disk 4 and the eye 23 on the disk of the knife-head. When an ordinary thread is used, a tying device of known type must further be provided. When a sticking thread is used, this device is not necessary.

When the binding thread is to be automatically cut off a knife 24 is arranged which in Fig. 2 is merely indicated in dash-dot-lines and which is separately shown in Fig. 3. The knife 24 is mounted on a two-armed lever 25 pivotable around the central axis of bolt 6*a*. A spring 26 is preferably arranged which pushes the lever 25 in a direction opposite to the direction of rotation of the disk. When the shaft is rotated, the lever 25, like the lever 18, can yield. When however the direction of rotation is reversed, the lever 25 no longer yields to the pin 20 but the end of this lever strikes against the pin 20 so that the wedge-shaped knife is moved towards the thread and severs the same.

An adjustable abutment 27 serves to ensure that the bared end of the wire is always of the same length. The adjustment is carried out in the form of construction shown by screwing the abutment in or out of the shaft 3.

The operation of the apparatus is as follows:—

The end of the electric wire which is to be bared and at the same time bound is inserted into the knife-head which is opened for this purpose by means of the abutment arrangement 18, 19 and 20 through turning of the knife head in the opposite direction to that of the arrow shown in Fig. 2. The lever arm 18*a* of the abutment 18 thereby rests against the lever 15 and moves this lever together with the knife 10 connected therewith away from the axis of rotation of the knife head against the action of the spring 17.

If the knife-head is turned in the direction of the arrow the knife, which is acted upon by the spring 17, gradually cuts through the insulation of the wire to the copper core. The knife is prevented from cutting deeper by the adjusting screw 16 serving as a stop, and which comes into contact with the outer circumference of the knife-head.

If an adhesive thread is used for binding, this is pressed into the end of the insulation which is to remain on the wire, before the insulation is cut. If the knife head is then turned the thread winds itself automatically around the end of the wire and thus prevents an unravelling of the insulation. If no adhesive thread is used a loop is first formed by hand or by a tying apparatus of known type. When the insulation has been cut another loop must be made.

When the cutting of the insulation as also the binding has been effected the thread may be cut off by hand or automatically and the cut-off insulation is stripped from the copper core by pulling the wire out of the closed knife head.

I claim:

1. An apparatus for stripping the ends of electric cables and wires and for binding the end of the remaining insulation, comprising in combination a slidable knife, means for holding the wire, a knife-head travelling around the wire and means for moving said knife towards the wire so that it cuts the insulation radially to the axis of rotation of said knife-head, a bobbin carrying a thread to be wound around the end of the insulation on the wire and a winding device adjacent the plane of said knife-head.

2. An apparatus for stripping the ends of electric cables and wires and for binding the end of the remaining insulation, comprising in combination a slidable knife, means for holding the wire, a knife-head travelling around the wire, a spring for pressing the knife against the insulation of the wire in a direction radially towards the axis of rotation of said knife-head, an adjustable abutment for limiting the cutting movement of said knife, a bobbin carrying a thread to be wound around the end of the insulation on the wire and a winding device adjacent the plane of said knife-head.

3. An apparatus for stripping the ends of electric cables and wires and for binding the end of the remaining insulation, comprising in combination a slidable knife, means for holding the wire, a knife-head travelling around the wire, a rotating shaft carrying said knife-head, a spring for pressing the knife against the insulation of the wire in a direction radially towards the axis of rotation of said knife-head, an adjustable abutment for limiting the cutting movement of said knife, a second abutment movable into engagement with said knife to lift said knife at the backward rotation of said rotating shaft, a bobbin carrying a thread to be wound around the end of the insulation on said wire, and a winding device adjacent the plane of said knife-head.

4. An apparatus for stripping the ends of electric cables and wires and for binding the end of the remaining insulation, compris-

ing in combination a slidable knife, means for holding the wire, a knife-head travelling around the wire, a rotating shaft carrying said knife-head, a spring for pressing the knife against the insulation of the wire in a direction radially to the axis of said knife-head, an adjustable abutment for limiting the cutting movement of said knife, a second abutment movable into engagement with said knife to lift said knife at the backward rotation of said rotating shaft, means for supplying a thread to be wound around the end of the insulation on the wire, a winding device adjacent the plane of said knife-head, and a second knife for severing the binding thread at the backward rotation of said rotating shaft.

5. An apparatus for stripping the ends of electric cables and wires and for binding the end of the remaining insulation, comprising in combination a slidable knife, means for holding the wire, a knife-head travelling around the wire, a rotating shaft carrying said knife-head, a spring for pressing the knife against the insulation of the wire in a direction radially to the axis of said knife-head, an adjustable abutment for limiting the cutting movement of said knife, a second abutment movable into engagement with said knife to lift said knife at the backward rotation of said rotating shaft, means for supplying a thread to be wound around the end of the insulation on the wire, a winding device adjacent the plane of said knife-head, a second knife for severing the binding thread at the backward rotation of said rotating shaft, and an adjustable abutment for determining the length of the wire-end to be stripped.

6. An apparatus for stripping the ends of electric wires, comprising in combination with a frame, a rotatable knife-head, a shaft carrying said knife-head, a holder for the wire, a slidable knife travelling around said wire, a pressure spring for pressing said knife in radial direction against said wire to cut the insulation on said wire, an abutment movable into engagement with said knife-head to lift said knife from said wire at the backward rotation of said shaft, and an adjustable abutment adapted to determine the length of the end of the wire which has to be stripped.

In testimony whereof I affix my signature.

ALBERT REITZIG.