My invention relates to an improved machine for removing the sheathing from sheathed articles and will be illustrated as preferably constructed for removing the sheathing from electrical cables comprising a plurality of mutually insulated conductors placed inside the sheathing.

It is a principal object of my invention to provide a simple yet efficient machine for removing the sheathing without damaging the elements held inside the same.

In order that the particular nature of my invention may be better understood, reference is made to the accompanying drawings wherein:

Fig. 1 is a general perspective view showing the general relationship of the principal parts of my invention.

Fig. 2 is a top view of the rotary cutting knife, sheathing guide and bed with an electrical cable shown in the bed, the guard being eliminated for purposes of illustration.

Fig. 3 is a side view of the bed with an electrical cable in the bed, the sheathing guide, knife and guard being also shown.

Fig. 4 is a cross-sectional view taken along the line IV—IV of Fig. 3.

Fig. 5 is a top view of the sheathing guide, showing the point and slot thereof.

Fig. 6 is a cross-sectional view of the bed adjusting means.

Fig. 7 shows an alternative sheathing guide construction.

Referring now to Fig. 1, it will be seen that a suitable base plate 10 is provided, and this base plate may be suitably affixed upon a bench or the like by inserting screws through the holes 12. Fixedly carried by the base plate 10 is the block 14 which supports the electric motor 16 which in turn is affixed upon block 14 by means of screws 18. The output shaft of the motor 16 is numbered 20 in Figs. 1 and 2 and affixed upon the outer end of this shaft by means of set screw 24 is the rotary cutting knife 22 which is driven by motor 16 in the clockwise direction at a high rate of speed as seen in Fig. 1. A suitable supporting block 28 is fixedly held by the bracket 27 which in turn is held by the block 14. Block 26 as best seen in Fig. 3 supports the arm 29 which in turn supports the guard 30 which surrounds the knife 22 as shown. In Figs. 3 and 4 it will be noted that the guard 30 is provided with a groove 32 through which the cutting edge of the knife 22 travels.

In Figs. 1 and 3 it will be seen that a pointed, tapered sheath guide 34 is provided, this sheath guide being held by the block 26. Integral with the sheath guide 34 is the vertical threaded extension 36 which passes through a bore in the block 26. A nut 38 coats with the threaded extension 36 and is positioned below the block 26 while a second nut 40 also coats with the threaded extension 36 and is placed above block 26. It should be noted that the nut 40 has an integral hollow bell-shaped portion 42 which receives the upper end of threaded extension 36.

By virtue of this arrangement the sheathing guide 34 may be adjusted vertically in relation to the cutting knife 22 and may be properly angularly adjusted with respect to the cutting knife.

Referring now to Fig. 5, it will be seen that the sheathing guide 34 is pointed and tapered at its forward end and that it is provided with a groove 42 through which the knife 22 travels. This feature of my invention is also shown in Fig. 3. As clearly shown in Figs. 1 and 3, the pointed tip of the sheathing guide 34 is preferably positioned slightly ahead of the vertical center line of the knife 22 and slightly below the lower edge of the knife. The upper edges of the slot 42 slant upwardly so that they are higher than the adjacent portion of the knife 22, and therefore the knife 22 travels in the slot. The side appearance of the guide 34 resembles a wedge.

In the drawings it will be seen that a cable bed 50 is fixedly mounted upon the upper end of the vertical plunger 51 and that a second bed 52 fits inside and is carried by the lower bed 50. Integral with the left end of bed 52 is the lip 54 which coats with the left end of the lower bed 50, and integral with the inner bed 52 is the stud 55 which extends through a suitable hole in bed 50. Accordingly, bed 52 is removable from the bed 50 for a purpose to be later described and the lip 54 and stud 55 prevent relative movement between the two beds 50 and 52 when they are in assembled relation as shown. In the illustrated embodiment of the invention, the beds 50 and 52 are sem-cylindrical in shape because of the shape of the cables. The bed or beds may be of any suitable shape, depending upon the shape of the sheathed article. For some uses the bed may simply be a flat surface.

Referring now more particularly to Fig. 6, the base plate 10 is shown and a circular bore 58 is placed therein for the reception of the circular sleeve 60 which has an integral flange 62 which rests upon plate 10. Placed inside the sleeve 60 is the hollow threaded sleeve 54, but it should be noted that the interior of sleeve 60 is not threaded for coaction with the threads upon the exterior.
of sleeve 64. A nut 66 encircles the upper end of sleeve 64 to coact therewith and a nut 68 encircles the lower end of sleeve 64 for coaction therewith. It will be appreciated that by manipulating the nuts 66 and 68 the vertical position of sleeve 64 relative to sleeve 60 may be changed.

The plunger 51 is placed inside sleeve 64 and affixed in the lower end of plunger 51 is the upper end of vertical link 70, to the lower end of which is connected the upper end of cable 72. The lower end of cable 72 connects to the forward end of the foot pedal 74 which is pivoted by the hinge 76. A cap 78 is threaded into the lower end of sleeve 64 to be held thereby and a compression spring 80 encircles the upper end of link 70 and is positioned between cap 78 and the lower end of plunger 51. A slot 82 is placed in the sleeve 64 and a pin 84 integral with plunger 51 extends through the slot 82.

As best seen in Fig. 1, a pair of circular slots 86 and 88 are placed in the annular flange 62 and a pair of set screws 90 and 92 pass through these slots. As best seen in Fig. 6 the set screws 90 and 92 are held by the plate 10.

In view of the above arrangement it will be appreciated that the vertical position of the beds 50 and 52 relative to the cutting knife 22 may be adjusted by manipulation of the nuts 66 and 68. Secondly, it will be appreciated that by depressing the foot pedal 74, the plunger 51 and the beds 50 and 52 may be moved downwardly a distance equal to the travel of pin 64 in slot 82. Release of the foot pedal 74 permits the compression spring 80 to move the plunger 51 and beds 50 and 52 to their uppermost position as shown in Fig. 6. Lastly, by relaxing the set screws 90 and 92 the entire assembly shown in Fig. 6 down to and including link 70 may be rotated about the axis of plunger 51. In this manner the angle of the beds 50 and 52 relative to the cutting knife 22 may be adjusted.

In the use of my improved sheathing removing machine it will be appreciated that the beds 50 and 52 should be vertically displaced from the cutting knife 22 according to the diameter of the sheathing and its enclosed elements. This initial adjustment may be accomplished by manipulation of the nuts 66 and 68 and/or fitting an interior bed 52 of the proper size to the lower bed 50. For example, if the operator of the device customarily employs the machine for removing the sheathing from a plurality of cables having different diameters of not too great a spread, the nuts 66 and 68 may be positioned so that the bed 50 is properly spaced from the cutting knife 22 when work is being performed upon the cable of largest diameter. For other cables of lesser diameter beds 52 of selected size are positioned in the bed 50 as shown in the drawings.

After the apparatus has been adjusted as just described for vertical distance between the upper bed and the cutting knife, the angular relationship between the beds and the cutting knife must be established. This may be done by releasing the set screws 90 and 92 as described, whereupon the beds may be manually rotated. For certain types of work it may be desirable to align the beds parallel to the plane of the cutting knife 22. When this has been accomplished, the operator may press down upon the foot pedal 74 and place the sheathed cable in the upper bed, being careful to see that the point of the guide 34 is just under the sheathing, numbered 100 in Figs. 2 and 3. The foot pedal 74 is then released, allowing the beds 50 and 52 to move upwardly and press the sheathing against the cutting edge of the knife 22. By means of a suitable switching arrangement, the motor 16 may then be started and the sheathed cable is manually moved by the operator toward the knife 22. As the cable and sheathing move toward the knife, the wedge-like action of guide 34 raises the sheathing somewhat from the plane of the knife 22, and the rotation of the knife cuts that portion of the sheathing held between the knife and the guide 34 a short distance to the rear of the point of the guide. At the same time the wedge-like shape of the guide forces the individual conductors 102 inside the sheathing downwardly, thereby preventing them from contacting the knife. Accordingly, the point of guide 34 progresses easily under the sheathing 100 a slight distance ahead of the cutting point and the sheathing is continuously fed up into the cutting position by guide 34.

In removing the sheathing from electrical cables by use of the apparatus described above, the supporting bed should be aligned parallel to the cutting knife 22 only in the event that the individual cables held inside the sheathing form a relatively smooth surface. When the cables within the sheathing are perfectly positioned relative to one another so as to give a relatively smooth overall shape, it is possible to remove the sheathing as just described. However, when the individual conductors are within the cables what is properly positioned, the set screws 90 and 92 may be loosened so that the beds 50 and 52 are at an angle relative to the plane of the cutting knife 22, as shown in Fig. 2. The cable is inserted in the beds relative to the cutting knife and guide 34 as previously described, and as the operator moves the cable toward the cutting knife and guide, he may also twist the cable so that the cutting knife 22 and guide 34 are generally parallel to the portions of the individual conductors adjacent the guide 34. In this manner the point of guide 34 progresses under the cutting point of the sheathing 100 along the valley formed by the adjacent conductors, and the guide 34 lifts the sheathing up into the cutting position. In this manner the sheathing may be removed from cables having a rather irregular pattern without any danger of the cutting knife 22 severing the insulation upon any of the individual conductors.

In the event it is desired to separate the individual conductors of the cable during the cutting process, the sheathing guide 34 may be provided with a depending fin 104, as shown in Fig. 7. It has been found by actual experience that by employing the previously described apparatus, the sheathing upon electrical cables may be easily and quickly removed without causing damage to the insulation of the individual conductors contained within the sheathing. It will be appreciated that changes may be made in the preferred embodiment of my invention without departing from the spirit thereof. Also, my invention may be used for removing the sheathing from other types of materials than disclosed herein. All such changes and all such uses are intended to be covered by the following claim:

I claim:
1. A machine for removing the sheathing from sheathed articles comprising, in combination, a rotary cutting knife having a cutting edge, means connected to said knife for driving the same, a pointed and slotted sheathing guide positioned
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underneath said knife, said guide being positioned with its point approximately below the center of rotation of the knife and so that the cutting edge of the knife travels in the slot in the guide, and a bed underneath said guide and knife for holding the article against the underside of the guide.

2. A machine for removing the sheathing from sheathed articles comprising, in combination, a rotary cutting knife having a cutting edge, means connected to said knife for driving the same, a sheathing guide having a point and slot positioned underneath said knife, the point of said guide being positioned approximately below the center of rotation of the knife and the slot being positioned to the rear of the point so that the cutting edge of the knife travels in the slot, the edges of the slot extending upwardly to guide the sheathing upwardly against the cutting edge, and a bed positioned underneath the knife and guide for holding the article against the underside of the guide.

3. A machine for removing the sheathing from sheathed articles comprising, in combination, a rotary cutting knife having a cutting edge, means connected to said knife for driving the same, a pointed and slotted sheathing guide positioned underneath a knife, the point of said guide being positioned approximately below the center of rotation of the knife and a slight distance below the cutting edge of said knife, the top edges of said slots being inclined upwardly from said point to a height above the adjacent portion of said cutting edge so that said cutting edge travels through said slot, and a bed underneath said guide and knife for holding the article against the underside of the guide.

4. A machine for removing the sheathing from sheathed articles comprising, in combination, a rotary cutting knife having a cutting edge, means connected to said knife for driving the same, a pointed and slotted sheathing guide positioned underneath said knife, the point of said guide being positioned slightly ahead of the vertical center-line of said knife and a slight distance below the cutting edge of said knife, the top edges of said slots being inclined upwardly from said point to a height above the adjacent portion of said cutting edge so that said cutting edge travels through said slot, and a bed underneath said guide and knife for holding the article against the underside of the guide.

5. A machine for removing sheathing from sheathed articles comprising, in combination, a rotary knife having a cutting edge, means connected to said knife for driving the same, a slotted sheathing guide positioned below said knife so that when driven the cutting edge of said knife travels through the slot in said guide, and a bed angularly adjustable in a plane perpendicular to the plane of the knife positioned below said guide and knife for supporting the sheathed article.

6. A machine for removing sheathing from sheathed articles comprising, in combination, a rotary cutting knife having a cutting edge, means connected to said knife for driving the same, a slotted sheathing guide positioned below said knife so that when driven the cutting edge of said knife travels through the slot in said guide, and a bed angularly adjustable in a plane perpendicular to the plane of the knife positioned below said guide and knife for supporting the sheathed article.

7. A machine for removing the sheathing from sheathed articles comprising, in combination, a rotary cutting knife having a cutting edge, means connected to said knife for driving the same, a pointed and slotted sheathing guide positioned below said knife, the point of said guide being positioned approximately below the center of rotation of the knife and a slight distance below the cutting edge of said knife, the top edges of said slots being inclined upwardly from said point to a height above the adjacent portion of said cutting edge so that said cutting edge travels through said slot, and a bed angularly adjustable in a plane perpendicular to the plane of the knife positioned below said guide and knife for supporting the sheathed article.

8. A machine for removing sheathing from sheathed articles comprising, in combination, a rotary knife having a cutting edge, means connected to said knife for driving the same, a slotted sheathing guide positioned below said knife so that when driven the cutting edge of said knife travels through the slot in said guide, a bed angularly adjustable in a plane perpendicular to the plane of the knife positioned below said guide and knife for supporting the sheathed article, and manually operable means for changing the vertical position of said bed.

9. A machine for removing the sheathing from sheathed articles comprising, in combination, a rotary cutting knife having a cutting edge, means connected to said knife for driving the same, a pointed and slotted sheathing guide positioned below said knife, the point of said guide being positioned approximately below the center of rotation of the knife and a slight distance below the cutting edge of said knife, the top edges of said slots being inclined upwardly from said point to a height above the adjacent portion of said cutting edge so that said cutting edge travels through said slot, a bed angularly adjustable in a plane perpendicular to the plane of the knife positioned below said guide and knife for supporting the sheathed article, and manually operable means for changing the vertical position of said bed.

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