Aug. 10, 1926. 1,595,198

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STRAND GUIDE AND POLISHER FOR WRAPPING AND TWISTING MACHINES

Filed Feb. 25, 1924 2 Sheets-Sheet 1

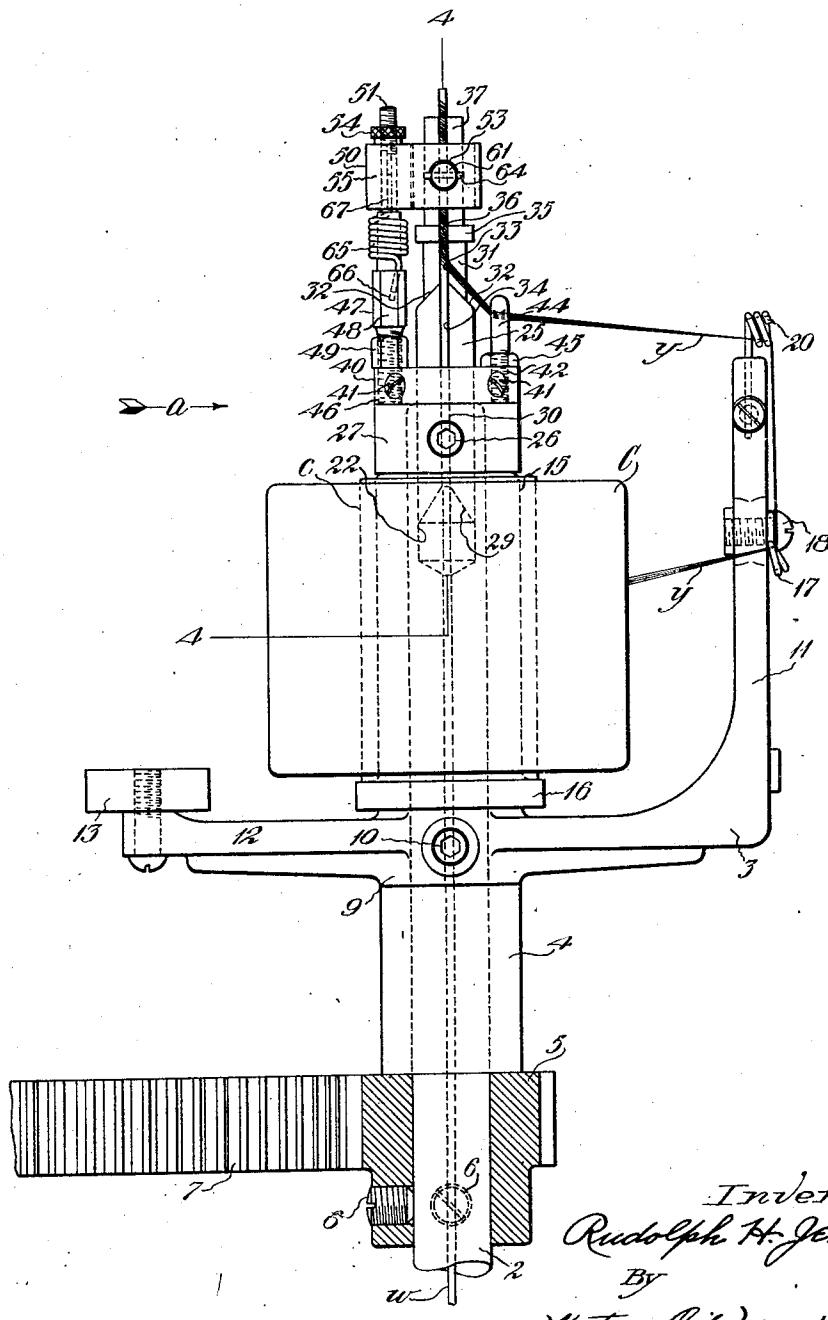


Fig. 1.

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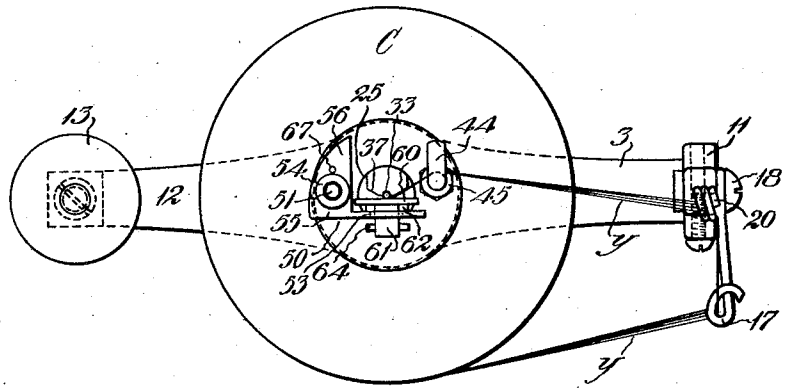


Fig. 2.

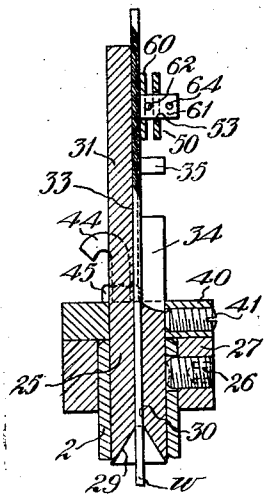


Fig. 4.

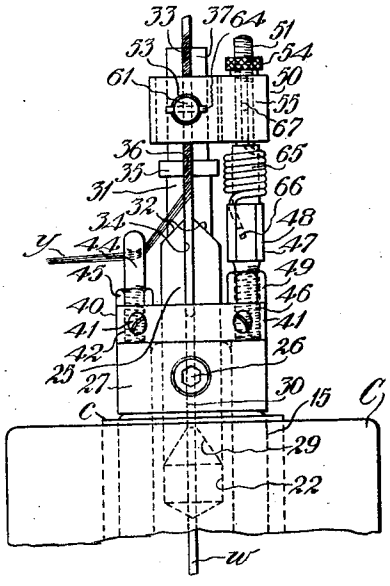


Fig. 3.

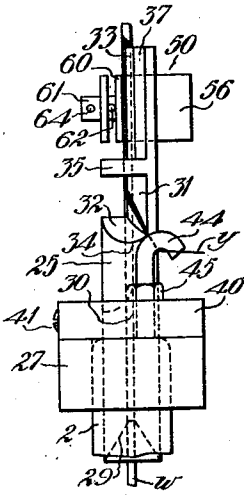


Fig. 5.

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UNITED STATES PATENT OFFICE.

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STRAND GUIDE AND POLISHER FOR WRAPPING AND TWISTING MACHINES.

Application filed February 25, 1924. Serial No. 695,126.

This invention relates to an improved strand-guide and polisher for use with wrapping-machines employed for covering wire or other conductor with insulating-material, and for wrapping elastic cords with strands of cotton or silk, or for other like purposes such as polishing and finishing twisted paper twine.

A principal object of the invention is to provide a device of the type described which will produce a more even and uniform wrap of the strands around the wire, cord, or other material to be covered; or a smoother and more uniform twist in the twine produced on a twisting-machine.

Another object of the invention is to provide a device of the type specified which is adapted for high speed operation whereby the production of the machine is increased.

Another object of the invention is to provide a device of the type specified which is adjustable for wrapping wire and cords or polishing twine of varying sizes.

Another object of the invention is to provide a device of the type specified which is adjustable to adapt the machine to cover the core with either a right- or left-hand wrap.

Another object of the invention is to provide a device of the type specified which is adapted for use with a maximum size of strand of cotton or other covering material.

Another object of the improvement is to provide a device of the type specified in which a large number of strands may be wrapped around the wire or core in the form of a flat tape without twisting, separating or bunching the strands, whereby they are laid more evenly to completely cover the core.

Another object of the invention is to provide a device of the type specified having a polisher which irons the strands into position so that they are laid flat under the required tension to provide a firm, tight wrap with the stranded tape spread to a maximum width to economize in the use of the material.

Another object of the invention is to provide a device of the type specified in which the supply cup or package of covering-strands may be applied to and withdrawn from the flier without removing the parts or disturbing the adjustment of the wrapping-mechanism.

Another object of the invention is to provide a device of the type specified in which the wire or other core is properly centered as it passes through the machine during the wrapping operation and restrained from vibration so as to prevent liability of the wire being hardened to cause it to become brittle.

Further objects of the improvement are set forth in the following specification which describes a preferred embodiment of the invention as illustrated in the accompanying drawings. In the drawings:

Fig. 1 is an elevation showing the rotating spindle and revolving flier for wrapping the yarn or other material about the wire or other core, and illustrating my improved strand-guide and polisher as applied to use therewith;

Fig. 2 is a plan view of the same showing the manner in which the stranded tape leads to the guide and polisher;

Fig. 3 is a fragmentary view similar to Fig. 1 showing the improved strand-guide and polisher adjusted for applying the wrap with a left-hand twist;

Fig. 4 is a vertical sectional view taken on the line 4—4 of Fig. 1 looking in the direction indicated by the arrow *a;* and

Fig. 5 is a detailed view of the nose-piece and polisher of the device looking in the direction opposite to that indicated by the arrow *a* in Fig. 1.

Wrapping-machines of the type for which the present invention is adapted are well known in the art and, therefore, only the essential elements of the wrapping-mechanism are herein shown and described.

Referring first to Fig. 1 of the drawings, 2 designates the hollow, rotatable spindle of the wrapping-machine, through which the wire or other core passes during the wrapping operation, and 3 is the revolving flier for winding the yarn about the axis of the spindle to cause it to be wrapped around the wire or other core. The vertical spindle 2 is journaled in a bearing 4, forming a part of or attached to the main frame of the wrapping-machine, and carries a pinion 5 held fast thereon by suitable means such as the set-screw 6. Meshing with the pinion 5 is a driving-gear 7 through which the spindle 2 is rotated to revolve the flier 3 about the wire to be wrapped. The flier 3 is provided with a hub 9 secured fast to the

spindle 2 by suitable means such as a set-screw 10, and having an arm projecting at one side formed with the upright extension 11. Projecting from the opposite side of the hub 9 is an arm 12 carrying a weight 13 at its outer end which acts to counterbalance the arm 11 to provide for high speed rotation of the flier.

Rotatably mounted on the spindle 2 above the hub 9 of the flier 3 is a sleeve or carrier 15 for holding the cop or bobbin C of yarn or other strand-material. The cop C, as herein shown, consists of a cross-wound package wound in multiple with a plurality of strands laid in a flat tape or band. The cop or package C is usually wound on a paper tube *c* which fits over the sleeve 15 and seats at its lower end against an enlarged head or flange 16 thereon. Secured to the side of the upright arm 11 of the flier 3 is a wire pigtail-guide 17 held in place by a screw 18. At the top of the arm 11 is a second pigtail-guide 20, the tape of strands *y* being adapted to draw off from the package C through the guide 17 and thence up through the pigtail 20.

The upper end of the spindle 2 is formed with a relatively large axial counterbore 22 adapted to serve as a socket for the nose-piece or extension 25 through which the wire or other core *w* draws during the operation of wrapping the strand-material thereabout. The nose-piece 25 is held in its socket 22 by suitable means such as a set-screw 26. The set-screw 26 extends through the side of a collar 27 which surrounds the upper end of the spindle 2 and holds the sleeve 15 in place with its lower end bearing against the hub 9 of the flier 3, the collar being of slightly less diameter than that of the barrel of the sleeve 15 in order that the cop-tube *c* may be slipped over it in placing it on or removing it from the spindle. The set-screw 26 is preferably of the headless type so as not to extend beyond the periphery of the collar, and projects through a hole in the spindle 2 with its end binding against the nose-piece 25. Its inner end is tapered and formed with a concavity providing a sharpened edge which bites into the surface of the nose-piece 25 to securely hold the several parts rotatively in connection, see Fig. 4. The screw 26 is provided with a hexagonal socket at its outer end into which a suitable wrench may be inserted for turning the screw.

The nose-piece 25 is formed with a tapered concavity 29 at its lower end to facilitate the insertion of the wire therein, and continuing upwardly therefrom is an axial bore 30 through which the wire *w* draws. Midway of its extremities the nose-piece or spindle-extension 25 is milled off on its side to provide a substantially half-round section 31, as shown most clearly in Figs. 1 and 5. The nose-piece 25 is cut back from its forward side nearly to its vertical axis, but sufficient metal is left to provide a shallow groove 33, see Figs. 2 and 4, which forms an extension of the axial bore 30. Where the nose-piece 25 is cut away at 31 the shouldered end of its lower or butt portion is beveled off on its opposite sides to form guiding-faces 32 for the strands of wrapping-material to prevent them from sliding down on the section 31. Above the collar 27 the forward side of the nose-piece 25 is milled through with a slot 34 opening into the axial bore 30. A slight distance above the point where the nose-piece is cut away to form the half-round section 31 sufficient metal is left to extend outwardly in a flange 35 which is milled with a slot 36 opening into the axial groove 33. The flange 35 serves as a guide for preventing the wire from becoming laterally displaced from the groove 33. Above the flange 35 the nose-piece 25 is flatted or beveled off on the sides as indicated at 37, this portion of the nose-piece coöperating with the polisher which irons the insulation into place and smooths it out on the wire in the manner and for the purpose as later more fully explained. It will be understood that the nose-piece or spindle-extension 25 is made detachable in order that it may be removed and replaced by a similar element having a wire-receiving bore and channel of different size to accommodate wire or other cores of smaller or larger diameter.

My improved strand-guide and polisher, which form component parts of the nose-piece attachment, are preferably mounted on a collar 40 which surrounds the nose-piece 25 above the collar 27 on the end of the spindle 2. The collar 40 may be held in position on the nose-piece 25 by means of one or more set-screws 41 shown in detail in Fig. 4. The collar 40 is provided with a vertical threaded hole 42 adapted to receive the threaded end of a guide 44 formed with a hook at its upper end through which the strands of yarn *y* or other material lead as they draw from the pigtail-guide 20 on the flier 3. The guide 44 is locked in place by a check-nut 45 and is adapted for adjustment in position in accordance with whether the nose-piece and strand-guide are being used for a right- or left-hand wrap. At the opposite side of the nose-piece 25 the collar 40 is provided with a larger tapped hole 46 for receiving the threaded end of a post or standard 47 which serves as the support for the polisher-arm 50 to be later described.

The post 47 is formed with a hexagonal portion 48 for receiving a wrench by means of which it is screwed into the collar 40 and adjusted in position, and a check-nut 49 at its lower end serves to lock it in

place. The upper end of the post 47 is reduced in diameter at 51 and screw-threaded at its end. Mounted to turn on the reduced portion 51 of the post 47 is the polisher-arm 50 which is provided with a lateral hole 53 at its end. The polisher-arm 50 is held in place on the post 47 by means of a thumb-nut 54 screwed onto the threaded end of the post, and the hub 55 of the arm is extended rearwardly to form a centrifugal compensating weight 56, see Figs. 2 and 5. The weight 56 has a flat surface on its inner side extending perpendicularly to the back of the arm 50, but on its outer side it is rounded substantially in conformity with the cylindrical periphery of the collar 40, the object of this construction being to adapt the polisher-arm and its weight to fall within the circumferential confines of both the collars 27 and 40 so that the cop-tube *c* can be slipped on and off over the polisher without removing any of the parts of the device.

The polisher proper consists in a flat rectangular presser-plate 60 carried on the swinging polisher-arm 50. Projecting from the back of the presser-plate 60 is a pin or stud 61 which fits loosely within the hole 53 in the arm 50, see Figs. 1 and 2. A pin 62 driven through a lateral hole in the stud 61 holds the presser-plate away from the arm 50 and permits a slight rocking movement thereof whereby the polisher may accommodate itself to the surface of the wrapping on the wire *w*, see Fig. 2. A second pin 64 driven through the outer end of the stud 61 holds the presser-plate in assembled relation on the arm 50 to prevent its disconnection therefrom when the arm is swung back from the nose-piece 25. One of the lateral edges of the plate 60 lies alongside the flat inner side of the centrifugal weight 56 whereby to prevent the polisher from turning on the axis of its stud 61 which projects through the arm 50.

Coiled around the lower portion of the vertical post 47 is a helical wire spring 65 having its lower end anchored in a hole 66 in the enlarged hexagonal portion 48 of the post 47. The upper end of the spring 65 is inserted in a vertical hole 67 in the centrifugal weight 56 on the polisher-arm 50. The hole 67 extends clear through the weight 56 so that when the polisher is reversed in position on the post 47, to adapt the machine to wind with a left-hand wrap as shown in Fig. 3, the spring can be connected with the polisher-arm in the manner as hereinafter more fully explained. It will be understood that the spring 65 is held under tension to cause it to act on the polisher-arm 50 to urge the polisher 60 toward the axis of the nose-piece 25, whereby the polisher bears against the wrapping being applied to the wire drawing through the nose-piece, see Fig. 2. The tension of the spring 65 may be adjusted to vary the amount of pressure applied to the polisher by turning the post 47 in its hole in the collar 40. For this adjustment the check-nut 49 is first released and then the post is turned one way or the other to either wind up the spring to increase its tension or to unwind it to lessen its tension.

Having now described a preferred form of construction of the invention its method of operation will next be explained: In preparing the machine for operation a cop, bobbin or package C or yarn, silk or other strand-material is placed on its holder or sleeve 15 by slipping its cop-tube *c* over the nose-piece and its attached parts from the top. It will be understood that the cop-holder or sleeve 15 is rotatable with respect to the spindle 2 so that the material may be unwound from the cop C as it draws to the wrapping-device, and usually a braking-means is provided to check the rotation of the cop with respect to the spindle whereby to apply the proper tension to the strands drawing off from the cop. Any suitable friction braking-means may be used for this purpose, but as such devices are well known in the art they are not herein shown or described. The tape *y* composed of multiple strands or filaments of textile or other material is led off from the cop C through the guide 17 on the flier 3, and thence up through the pigtail-guide 20 to the hook-guide 44 carried by the collar 40. The wire *w* or other core to be covered is inserted in the bore of the hollow spindle 2 and carried up through the axial bore 30 of the nose-piece 25, thence passing through the slot 36 in the guide-flange 35 and drawing through the channel or groove 33 with the polisher 50 pressing against its side, see Figs. 1 and 2. From the nose-piece 25 the wire leads to a suitable take-up or winding-on reel, not herein shown, which is operated from the machine to draw the wire through the covering device at the prescribed rate of speed.

The end of the tape of strands *y* is twisted around the wire *w* to secure it thereto so that as the flier 3 is revolved with the spindle 2 the strands will be wrapped around the wire in the manner as well known to those versed in the art. As the tape of strands *y* draws from the pigtail-guide 20 through the hook-guide 44 the latter acts to flatten the tape and spread the strands before they lead to the wire *w*. As shown in Figs. 1 and 2, the tape of strands *y* draws across the rounded section 31 of the nose-piece 25 to spread the tape to greater width whereby it will be smoothly applied to the surface of the wire with the individual strands in parallel contiguous relation as illustrated in Fig. 1. The beveled shoulder 32 at the upper end of the butt-portion of the nose-piece 25

serves as a guide or abutment to prevent the strands from winding down on the wire should such a tendency be present and the relation between the hook-guide 44 and the guiding-face 32 may be adjusted to provide for the proper cooperation between the parts. As the strands *y* are twisted or wrapped around the wire *w* the latter draws up through the slotted guide-flange 35 and is restrained thereby from vibrating or chattering in the nose-piece 25 so that the wire will not become crystallized or made brittle as is sometimes the case in devices where no means are provided for preventing the lateral vibration of the wire under high speed operation. The strands of covering-material are wrapped smoothly and uniformly around the wire at the proper pitch or lead in accordance with the number of strands being used and the size of the yarn or other material, the device being adjustable to regulate the lead of the wrap by raising or lowering the nose-piece, or by adjusting the height of the guide 44.

As the wrapped wire passes under the polisher 60 the pressure of the latter on the covering acts to straighten the strands and to iron them into place so that any kinks, bunches or other irregularities occurring will be eliminated and the covering smoothed and polished to insure a proper finish on its surface. The pressure of the polisher against the covering on the wire is regulated by varying the tension of its spring 65 which is adjusted by rotating the post 47 in one direction or the other in accordance with the requirements.

The polisher is maintained bearing against the yarn with a constant pressure at the maximum speed of rotation of the device due to the peculiar action of the centrifugal weight 56 which counterbalances the effect of centrifugal force. The centrifugal weight on the polisher-arm forms a most essential and important feature of the improvement and is believed to be entirely novel as applied to the present use. The weight is designed to prevent the polisher-arm from swinging outwardly away from the wire under the influence of centrifugal force during high speed operation. In other words, the weight acts as an efficient counterpoise to maintain the spring 65 active with a constant tension, so that the pressure brought to bear on the wrapped wire or other material is at all times uniform and sufficent for the purpose intended. It has been demonstrated that where heretofore in the art the speed of the wrapping head with its revolving flier has been limited to a considerable extent by the capacity of the polisher under the effect of centrifugal force, in the present improvement a much increased speed is possible due to the counterbalancing of the polisher whereby its pressure is maintained constant and uniform at all times. In fact, the pressure of the polisher may be controlled to get the maximum effect at a speed far in excess of that of any type of similar device heretofore used in the art.

The peculiar form of nose-piece 25 as above described also constitutes an important improvement in the art. First, it holds the wire from vibrating or chattering as it passes through the covering-device and, further, it acts to distribute the covering-strands on the wire with a maximum width of tape without separating the strands, while preventing them from crowding, bunching or kinking. The curved guide 44 acts as the initial spreader for the strands of the tape, and the convex section 31 of the nose-piece serves as the final flattening or spreading guide as the strands draw thereacross with an extended contact thereon. It is also to be noted that the guide 44 is placed close to the nose-piece 25 in order to prevent the tape of insulating- or covering-material from whipping or vibrating, so that the strands cannot become alternately slack and tight, but are applied to the wire with a uniform tension to obtain a maximum covering capacity for a given amount of material. The abutment or shoulder 32 on the nose-piece 25 prevents the strands from separating and running down on the wire, liable to cause open places and faults in the insulation, the tape being maintained with the strands always laid in contact to completely cover the wire. The polisher 60 being rockably mounted on its arm 50 is rendered self-alining so that it always contacts properly with the covering on the wire with a maximum of smoothing effect.

As a further feature of improvement the device is adjustable for right- or left-hand wrapping and practically no alteration in or substitution of new parts is required for this purpose. Fig. 1 shows the device adjusted for covering the wire with a right-hand wrap and when it is desired to put the covering-material on with a left-hand wrap the parts are set as shown in Fig. 3. All that is necessary is to reverse the position of the parts as follows: The collar 40 is removed from the nose-piece 25 and turned the other side up so that the holes for the post 47 and hook-guide 44 will be in reverse position on opposite sides of the nose-piece. The guide 44 is then applied to place with its hook extending rearwardly with respect to the front of the nose-piece 25. The polisher-arm 50 is reversed in position on the post 47, and the post is then screwed into the collar and locked in place by means of its check-nut 49. In reversing the position of the arm 50 this part is simply turned bottom side up and, preferably, a spring of opposite wind is substituted for the spring 65 so that when the polisher is forced away from the nose-piece

25 the tendency will be for it to wind up the spring.

It will be observed by reference to Fig. 2 that by adjusting the collar 47 about the axis of the nose-piece 25 the post 47 will be brought into such position that the polisher-arm 50 will assume the proper relation to the upper end of the nose-piece. That is to say, it is essential that the arm shall extend substantially at right-angles to a medial plane bisecting the reduced portion of the nose-piece. When it is desired to cover wire of larger or smaller diameter a different nose-piece is substituted with the proper size bore 30 and guiding-groove or channel 33. When a larger wire is being covered the collar 40 is rotated counter-clockwise, and vice versa with a smaller wire, to bring the post 47 into such position that the polisher 60 will be maintained tangent to the surface of the covered wire without danger of its contacting with the nose-piece itself. This feature is most important, that is, the adaptability of the polisher for adjustment in conformity with the size of the wire being covered so that it will always contact with the covered surface of the wire away from the nose-piece without danger of its bearing on the nose-piece itself which would be liable to cause its pressure to be diminished, or in some cases entirely removed. It will be observed from the above that the device is readily adjusted for either a right- or left-hand wrap of the material on the wire and no parts need to be added or substituted for those already applied to the mechanism.

The present improved device provides for high speed operation, while insuring a high quality of product, and also makes for greater economy in the insulating-material employed per foot or pound of wire being wrapped. The covering is applied more smoothly and with greater uniformity, thereby enhancing the appearance of the finished product and also providing for a higher dielectric strength in the insulation without any chance for the appearance of bare places or faults. Moreover, my improved device is adapted for using larger sizes of cotton strands than generally employed, the pressure of the polisher acting to flatten the individual strands to increase the width of the tape and thus making for further economy in the material employed for wrapping. The complete device is particularly efficient in operation and proof against derangement or getting out of order, while being adapted for a wide range of operation in insulating wire or other conductors, for covering elastic cords and for polishing twisted paper or fiber twine.

While I have herein described and illustrated a preferred form of the invention as applied to use on a wrapping-machine, it is to be understood that the improvement is also adapted for other purposes. For instance, as before mentioned, it may be used to great advantage on twisting-machines for polishing cords or paper and fiber twine, and also for similar use in finishing materials of a like nature such as braided cords or coverings. It is also to be understood that various modifications may be made in the structure and arrangement of the parts of the device without departing from the spirit or scope of the invention.

Therefore, without limiting myself to the exact embodiment herein disclosed, I claim:

1. In a device for finishing cord, twine, wire and like materials, the combination of a polisher rotatable about the material and pivoted on an axis parallel with its axis of rotation to adapt it to bear against the surface of the material, means to press the polisher against the material, and a weight on the polisher arranged in offset relation with respect to its pivot to adapt it to counteract the effect of centrifugal force on the polisher during its rotation whereby to maintain its pressure on the material substantially constant.

2. A polishing-device for finishing cord, twine, wire and like materials comprising means for guiding the material, a polisher rotatable about the material and pivoted to swing on an axis parallel with its axis of rotation to adapt it to bear against the surface of the material, means to press the polisher against the material, and a weight on the polisher arranged in offset relation with respect to its pivot to adapt it to act to resist the effect of centrifugal force on the polisher whereby to prevent relief of its pressure on the material during its rotation.

3. In a device for polishing cord, twine, wire and like materials, the combination of a polisher rotatable about the material to be polished and pivoted on an axis parallel with its axis of rotation to adapt it to swing toward the material to bear against the surface thereof, means to press the polisher against the material, means for adjusting the pressure of the polisher, and a weight on the polisher arranged in offset relation with respect to its pivot to adapt it to counteract the effect of centrifugal force on the polisher to maintain its pressure substantially constant during rotation under high speed operation.

4. In a polishing-device for finishing cord, twine, wire and like materials, the combination of a polisher rotatable about the material to be polished and pivoted on an axis parallel with its axis of rotation to adapt it to swing toward the material to bear against the surface thereof, means to press the polisher against the material, and a weight on the polisher projecting at one side of its pivot to adapt it to act on the polisher to counteract the effect of centrifu-

gal force whereby to maintain the pressure of the polisher constant during its rotation.

5. In a polishing-device for finishing cord, twine, wire and like materials, the combination of a polisher rotatable about the material to be polished and pivotally mounted on an axis parallel with its axis of rotation to adapt it to swing toward the material to bear against the surface thereof, and means to press the polisher against the material, said polisher being provided with an integral weight offset from its pivot and so proportioned and related to its mounting as to counteract the effect of centrifugal force on the polisher whereby to maintain its pressure constant at whatever speed it is rotated.

6. A device for polishing cord, twine, wire and like materials comprising a member rotatable about the material to be polished and pivoted to move toward said material, a polisher rockably mounted on said member with a universal joint to adapt it to bear against the material and to adjust itself tangentially of and in alinement with the surface thereof, and means acting on said member to press the polisher against the material to smooth and polish its surface.

7. In a device for polishing cord, twine, wire and like materials, the combination of a polisher-arm pivoted on an axis rotatable about the material, a polisher flexibly mounted on said arm with a universal joint and having an extended face adapted to bear against the surface of the material, and means for swinging the arm to cause the polisher to bear against the material during its rotation therearound to smooth and polish its surface.

8. In a device for polishing cord, twine, wire and like materials, the combination with means for guiding the material to be polished, of a support rotatable about the material, an arm hinged to said support, a polisher flexibly mounted on said arm with a universal joint to adapt it to bear against the surface of the material and to aline its polishing face in contact therewith, and resilient means acting on the arm to cause it to press the polisher against the material during its rotation therearound.

9. A polishing-device for finishing cord, twine, wire and like materials comprising means for guiding the material to be polished, a support rotatable about the material feeding through the guiding-means, a polisher-arm pivoted to said support and provided with a weight projecting at one side of its pivot and so related thereto as to counteract the effect of centrifugal force on the arm, a polisher flexibly mounted at the end of the arm with a universal joint to adapt it to bear against the surface of the material and to aline its face in contact therewith, and means for swinging the arm to press the polisher against the surface of the material.

10. In a device for polishing cord, twine, wire and like materials, the combination of a support rotatable about the material to be polished, an arm pivoted to said support to adapt it to swing toward the material and provided with a hole at its end, a polisher having a stud held in the hole in the arm to adapt the face of the polisher to bear against the surface of the material, and means for swinging the arm to press the polisher against the material during its rotation therearound.

11. In a device for polishing cord, twine, wire and like materials, the combination of a rotatable hollow spindle through which the material draws, a post supported on said spindle to adapt it to rotate therewith around the material to be polished, a polisher hinged to said post to adapt it to bear against the surface of the material, and a spring on the post acting on the polisher to press the latter against the surface of the material.

12. In a device of the type specified, the combination of a rotatable hollow spindle, of a collar carried by said spindle, a post mounted on said collar, a polisher pivoted on the upper end of the post to adapt it to be swung toward the material drawing through the spindle, and a spring encircling the post and anchored at one end thereto with its opposite end engaging the polisher to swing the latter to cause it to bear against the material.

13. In a device of the type specified, the combination of a rotatable hollow spindle, a nose-piece mounted on the spindle and provided with channels for guiding a wire or other core leading through the spindle, a collar rotatable with the nose-piece, a post mounted on said collar in parallel relation with the nose-piece, a polisher pivoted to said post, means for pressing the polisher against the material guided in the nose-piece, and a strand-guide mounted on the collar in opposite relation to the post and adapted to guide the strands of covering-material being wrapped around the material guided in the nose-piece.

14. In a device of the type specified, the combination of a rotatable hollow spindle, means for guiding a wire or other core axially through the spindle, a flier rotatable with the spindle for wrapping strands about the wire, a collar rotatable with the spindle, a post carried by the collar to rotate about the axis of the spindle, a polisher pivoted on said post to adapt it to bear against the material, a strand-guide carried by the collar in opposite relation to the post to adapt it to guide the strands of covering-material leading from the flier to the wire or other core, and means for assembling the collar its

post and strand-guide to allow the parts to be reversed in position whereby the device is adapted for covering the wire or other core with either a left- or right-hand wrap.

15. In a device of the type specified, the combination of a rotatable hollow spindle, a nose-piece rotatable with the spindle and provided with means for guiding the wire or other core drawing through the spindle, a flier rotatable about the axis of the spindle for wrapping strands about the wire or other core, a collar rotatable with the spindle, a post attachable to either side of the collar, a polisher-arm pivoted on said post to adapt it to be reversed in position in accordance with the position of attachment of the post, and a strand-guide carried on the collar in opposite relation to the post and adjustable in position at either side of the nose-piece in accordance with the direction of wrap of the strand-material about the wire or other core.

16. In a device of the type specified, the combination of a rotatable hollow spindle, and means for wrapping strand-material about a wire or other core drawing through the spindle comprising a nose-piece projecting from the end of the spindle and formed with an axial bore for guiding the wire, said nose-piece milled away on its forward side leaving a convex surface across which the strand-material draws as it is wrapped around the wire or other core and provided with a relatively shallow channel through which the wire leads, and a flange projecting forwardly from the milled away portion of the nose-piece and provided with a slit through which the wire draws, said flange acting as a guide to prevent whipping or vibration of the wire as it draws through the nose-piece.

17. In a device of the type specified, the combination of a rotatable hollow spindle, and means for wrapping strand-material about a wire or other core drawing through the spindle comprising a nose-piece projecting from the end of the spindle and formed with an axial bore, said nose-piece being milled away on its forward side to leave a shallow channel through which the wire draws and having a guide projecting forwardly from its reduced portion and formed with a narrow slit through which the wire leads to prevent it from vibrating or chattering in the nose-piece as the strand-material is wrapped therearound.

18. In a device of the type specified, the combination of a rotatable hollow spindle, and means for wrapping strand-material about a wire or other core drawing through said spindle comprising a nose-piece projecting from the end of said spindle, said nose-piece having an axial bore for the wire extending a portion of its length with a slit milled through from the front into the bore, said nose-piece being milled away on its forward side leaving a half-round surface with a shallow axial channel extending therealong, and a flange projecting forwardly from the reduced portion of the nose-piece and slitted with an opening leading into the channel to provide guiding abutments adapted to confine the wire or other core within the channel to prevent it from whipping or chattering while the strand-material is being wrapped therearound.

19. In a wrapping-machine for covering wire or other cores, the combination of a rotatable hollow spindle, a nose-piece on the spindle for guiding the wire or other core, means for wrapping strands about the wire guided in the nose-piece, and a polisher arranged to bear against the covered wire to smooth the covering thereon, said polisher provided with a weight operating to counteract the effect of centrifugal force whereby to maintain the pressure of the polisher constant.

20. In a wrapping-machine for covering wire or other cores, the combination of a rotatable hollow spindle through which the wire draws, a nose-piece carried by said spindle and provided with a guiding-channel for the wire, means for wrapping strand-material around the wire, a polisher adapted to bear against the wrapped wire as it draws through the nose-piece, means for pressing the polisher against the wire, and a weight on the polisher adapted to counteract the effect of centrifugal force during the rotation of the polisher about the axis of the nose-piece whereby to maintain the pressure of the polisher on the wire constant and uniform.

21. In a wrapping-machine, the combination of a rotatable hollow spindle, a nose-piece at the end of the spindle having channels for guiding the wire as it draws through the spindle, means for wrapping strand-material about the wire guided in the nose-piece, a polisher pivoted on an axis parallel with the axis of rotation of the nose-piece, resilient means for maintaining the polisher bearing against the covered wire, and a weight on said polisher acting to resist the effect of centrifugal force whereby to prevent the polisher from moving away from the wire under high speed rotation.

22. In a device of the type specified, the combination of a rotatable nose-piece having channels for guiding a wire or other core to be covered, means for wrapping strand-material about the wire guided in the nose-piece, a polisher pivoted on an axis parallel with the axis of rotation of the nose-piece to adapt it to bear against the covered wire and provided with a weight for compensating the effect of centrifugal

force on the polisher, and resilient means for swinging the polisher on its pivot to press it against the covered wire.

23. In a device of the type specified, the combination of a rotatable hollow spindle, means for guiding a wire or other core axially through the spindle, a flier rotatable with the spindle for wrapping strands about the wire, a post carried by the spindle to revolve about its axis, a polisher pivoted on said post and provided with a projecting weight-portion arranged to counteract the effect of centrifugal force on the polisher, and a spring on the post connected with the polisher to press the latter against the covered wire.

24. In a wrapping-machine, the combination of a rotatable hollow spindle, means for supporting a package of strand-material to rotate on said spindle, means for guiding the wire axially through the spindle, a flier rotatable about the axis of the spindle for wrapping strand-material about the wire, a polisher pivoted on an axis parallel with the axis of rotation of the spindle to adapt it to bear against the wire being covered, resilient means for pressing said polisher against the covered wire, and a weight projecting from the polisher and adapted to counteract the effect of centrifugal force to maintain a constant pressure of the polisher on the wire, said polisher and presser-means being confined within a restricted space to adapt the cop to be applied to or removed from the device without detaching or displacing the parts thereof.

25. In a wrapping-machine, the combination of a rotatable hollow spindle through which the wire draws, means carried by said spindle for supporting a cop or package of textile material, a flier rotatable about the axis of the spindle and having means for guiding the material to wrap it around the wire, a collar on the end of the spindle of less diameter than the opening through the cop whereby the latter may be applied to and removed from the spindle without removing the collar, a bearing extending upwardly from the collar within the confines of its perimeter, a polisher pivoted to said bearing to adapt it to bear against the covered wire and formed with a centrifugal counterbalance weight arranged within the confines of the perimeter of the collar, and resilient means for operating the polisher to adapt it to press against the wire as the covering is applied thereto.

26. In a wrapping-machine, the combination of a rotatable hollow spindle through which the wire draws, means for supporting a cop of textile material on the spindle, a flier rotatable about the axis of the spindle and having means for guiding the material to wrap it around the wire feeding through the spindle, a nose-piece at the end of the spindle having means for guiding the wire as it is wrapped, a post carried by the spindle in close association with the nose-piece, a polisher pivoted on said post and provided with a weight for counteracting the effect of centrifugal force, and means for applying pressure to the polisher to cause it to bear against the covered wire passing through the nose-piece, said polisher its weight and supporting-post being confined within a restricted space to adapt the cop to be placed on or removed from the machine without displacing the parts of the device.

In testimony whereof I affix my signature.

RUDOLPH H. JENNY.