July 26, 1960 T. T. BUNCH 2,946,528

STRAND SNAGGING DEVICE

Filed May 8, 1958 3 Sheets-Sheet 1

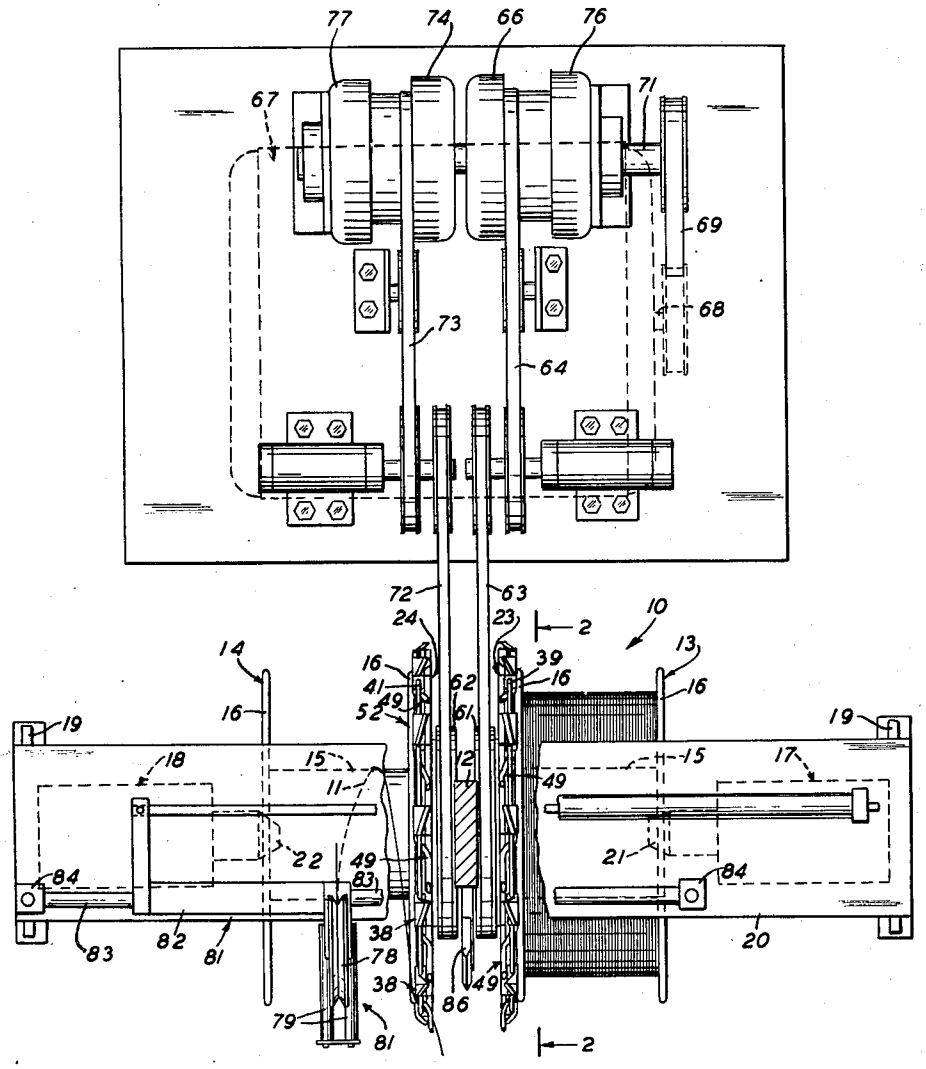


FIG. 1

INVENTOR.
T. T. BUNCH
BY A. C. Schwarz, Jr.
ATTORNEY

July 26, 1960 T. T. BUNCH 2,946,528

STRAND SNAGGING DEVICE

Filed May 8, 1958 3 Sheets-Sheet 2

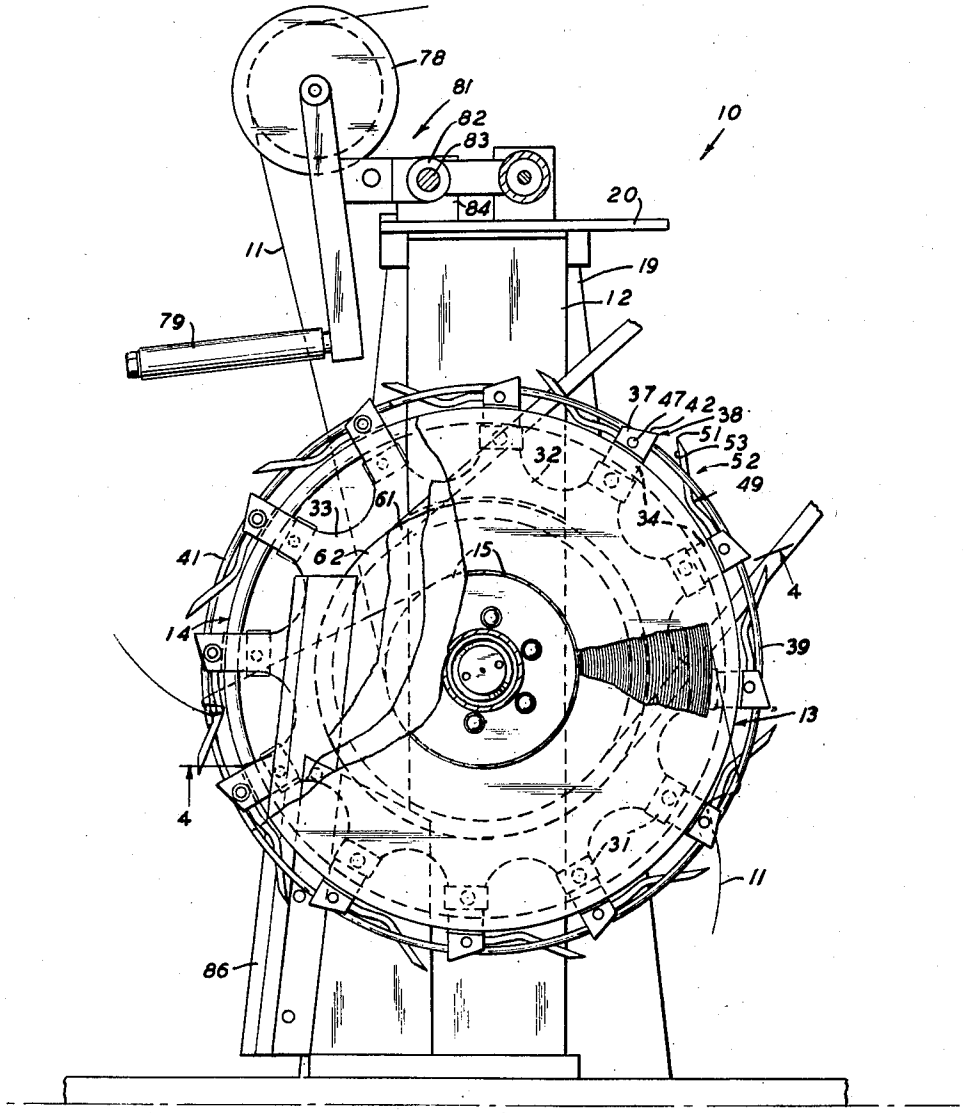


FIG. 2

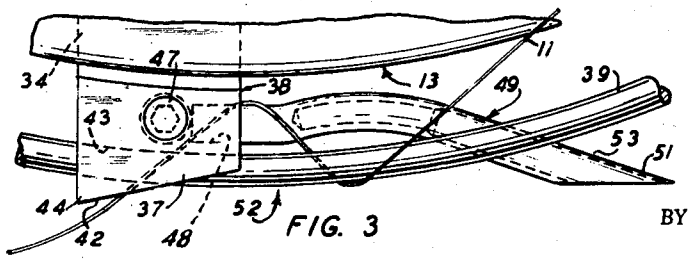


FIG. 3

INVENTOR.
T. T. BUNCH
BY A. C. Schwarz, Jr.
ATTORNEY

July 26, 1960 T. T. BUNCH 2,946,528

STRAND SNAGGING DEVICE

Filed May 8, 1958 3 Sheets-Sheet 3

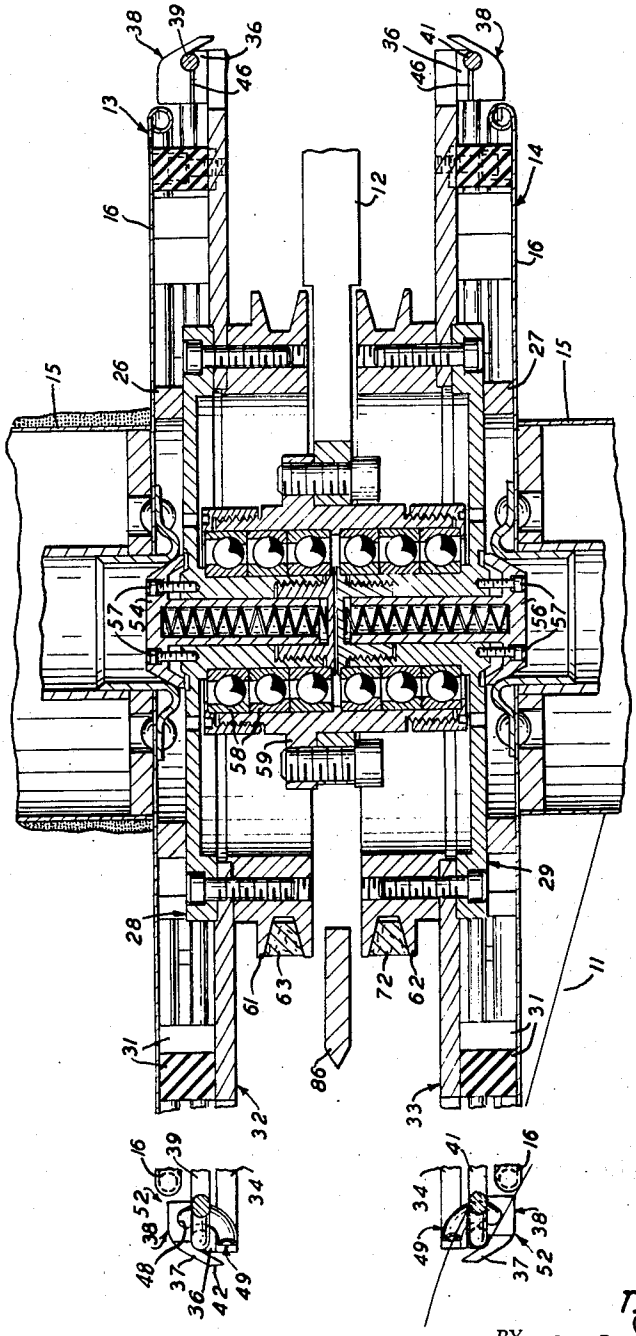


FIG. 4

INVENTOR.
T. T. BUNCH
BY A. C. Schwarz, Jr.
ATTORNEY

United States Patent Office

2,946,528

Patented July 26, 1960

2,946,528

STRAND SNAGGING DEVICE

Tillman T. Bunch, near Ashland, Md., assignor to Western Electric Company, Incorporated, New York, N.Y., a corporation of New York

Filed May 8, 1958, Ser. No. 733,908

10 Claims. (Cl. 242—25)

The present invention relates to improved snagging devices, and more particularly, although not exclusively, to improved snagging devices for securing a portion of a strand or filamentary material to one or more rotatable take-up reels of take-up apparatus which continues to operate uninterruptedly as the distribution of the strand or filamentary material is transferred from one take-up reel to a succeeding take-up reel.

In general, insulated electrical conductors are manufactured by means of a substantially continuous process in which an elongated conductive core or conductor is advanced continuously from a supply thereof to and through a series of manufacturing apparatus or processes, such as continuous extrusion apparatus, to produce the finished insulated conductor.

Since the stoppage of the extrusion apparatus lessens production, may cause damage to the conductor and causes waste by producing oversized, undersized, or nonuniform coverings of insulating material, it is desirable to operate the extrusion apparatus continuously so that interruption of the advancement of the core through the extrusion apparatus does not occur. In order that the extrusion operation may continue without interruption or disturbance, it is common practice to employ take-up apparatus having two or more rotatable take-up reels onto which predetermined lengths of finished insulated conductors are wound successively. In this practice, when a predetermined length of insulated conductor has been wound upon one take-up reel, the insulated conductor is transferred to an empty take-up reel without interrupting the advancement of the insulated conductor emerging from the extrusion apparatus.

In take-up apparatus of this type, means are connected operatively to adjacent sides of each of the take-up reels for gripping portions of the insulated conductor extending between the reels when the distribution of the insulated conductor is transferred from one reel to another. The trailing end of the insulated conductor is secured to the reel filled with the desired amount, and the leading end of the insulated conductor to be reeled on the empty reel is secured thereto. The portion of the insulated conductor extending between the reels is cut by a conventional knife positioned across the path formed by the extending portion of the insulated conductor as the reels continue to rotate during the transfer of the distribution of the insulated conductor.

As a result of the increasingly high speeds of operation of present day manufacturing apparatus, some difficulties have been encountered in attempting to effect successful cutovers or transfers while utilizing prior known type of snagging devices. It is desirable to have improved snagging devices which will assure effective transfers of the distribution or effective cutover operations at high speeds so that when the insulated conductor is moved in contact with the snagging devices during a transfer of the insulated conductor from the full take-up reel to the empty take-up reel, the first snagging device associated with each of the reels to arrive at the position of the insulated conductor will catch a portion of the insulated conductor and they will cooperate with each other to carry the portion of the insulated conductor extending therebetween against the cutting knife.

It is desirable to have snagging devices which will insure that when the strand is severed by the knife the new leading end thereof will remain attached to one of the snagging devices associated with the empty reel and will start to wind on the winding drum of the empty reel so that reeling of the insulated conductor commences on the winding drum of the empty take-up reel without interruption.

An object of the present invention is the improvement of snagging devices utilized on take-up or strand reeling apparatus.

A further object of the present invention is to provide a snagging device for take-up apparatus whereby the take-up apparatus can be operated with greater speed and better efficiency.

A still further object of the present invention is to provide a snagging device wherein the spacing of the elements between which the strand is caught is greater than the outer dimension of strand so that the strand is secured therein but not pinched thereby.

Other and more specific objects of the invention include the improvements in construction and cooperative relationship of component parts which go into making up an improved snagging device.

In attaining these and other objects, take-up apparatus embodying certain features of the present invention may comprise a plurality of rotatably driven take-up reels, a strand distributing means mounted for movement transversely of the winding surface of the take-up reels, and means for indexing the strand distributing means from an operating station wherein the strand is distributed on one of the take-up reels to another operating station wherein the strand is distributed similarly upon a succeeding take-up reel. A rotatable snagging hoop may be connected operatively to each of the reels and have a plurality of spirally shaped snagging fingers encompassing portions of the hoop. The snagging fingers each have a free end projecting outwardly of the hoop and in the direction of rotation of the take-up reel.

Each snagging finger cooperates with the adjacent portion of the associated hoop to form a strand-receiving, tortuous path and thus a snagging device. A portion of the strand, which is caused to contact the outer periphery of the snagging hoops during a cutover operation, is caught in one of the snagging devices associated with each hoop. The strand will ride on the snagging hoops and be struck by the snagging fingers and forced inwardly of the tortuous paths, as a result of the rotation of the snagging hoops, for wrapping the strand around the snagging fingers and portions of the hoops to secure portions of the strand adjacent to each reel when the distribution of the strand is indexed from one reel to a succeeding reel.

Other objects and features of the invention will be more readily understood from the following detailed description when read in conjunction with the accompanying drawings, in which:

Fig. 1 is a fragmentary, top plan view of a portion of a take-up apparatus embodying the invention;

Fig. 2 is a fragmentary, enlarged, sectional, side elevational view of a portion of the take-up apparatus as illustrated in Fig. 1 taken along line 2—2 thereof;

Fig. 3 is a fragmentary, enlarged view of the snagging device of Fig. 2, and

Fig. 4 is a fragmentary, enlarged, broken, sectional view of a portion of the take-up apparatus illustrated in Fig. 2 taken along the bent line 4—4 thereof.

Referring now to the drawings, and more particularly to Figs. 1 and 2 thereof, there is shown a take-

up apparatus designated generally by the numeral 10, for reeling a strand 11 without interruption, which comprises a thin rigid support member 12 located centrally between a right take-up reel, designated generally by the numeral 13, and a left take-up reel, designated generally by the numeral 14. The reels 13 and 14 are positioned side by side and are aligned axially but could be positioned otherwise.

The take-up reels 13 and 14 are identical in construction and of a conventional design, each of which includes a cylindrical winding drum 15 and a pair of flange-like reel heads 16—16 secured fixedly at opposite ends of the winding drum 15, but unlike reels could be used.

The reels 13 and 14 are urged toward the support member 12 by fluid piston-cylinder assemblies 17 and 18 which are secured to rigid support members 19—19 of an inverted U-shaped frame 20 on opposite sides thereof, through the pins or live centers 21 and 22 of tail stocks which help to support the reels 13 and 14, respectively. The reels 13 and 14, which are acted upon by the piston-cylinder assemblies 17 and 18, are urged against snagging wheels, designated generally by the numerals 23 and 24, respectively, secured rotatably to the rigid support member 12.

The reels 13 and 14 which are acted upon by the piston-cylinder assemblies 17 and 18 are urged against annular friction members 26 and 27 (Fig. 4) secured rigidly to hubs, designated generally by the numerals 28 and 29, forming parts of the snagging wheels 23 and 24, respectively. The reels 13 and 14 are urged also against horizontally projecting portions 31—31 of scalloped annular discs, designated generally by the numerals 32 and 33, secured to the outer periphery of the hubs 28 and 29, respectively.

The scallops of the annular discs 32 and 33 form a plurality of radially projecting spokes 34—34 of the snagging wheels 23 and 24. Each of the spokes 34—34 has formed integral therewith an arcuately grooved clamping member 36 adjacent to the outer extremity thereof. Each of the clamping members 36—36 cooperates with a clamping member 37 to form a clamp, designated generally by the numeral 38. The clamps 38—38 cooperate to clamp hoops 39 and 41 to the outer periphery of the annular discs 32 and 33, respectively. The hoops 39 and 41 form portions of the snagging wheels 23 and 24, respectively.

The outer surface 42 of each of the clamping members 37—37 is sloped to face in the direction of rotation of the associated take-up reel 13 or 14 and is positioned diagonally with respect to the associated hoop 39 or 41 to prevent any corners thereof from striking the strand 11. The hoops 39 and 41 are placed in arcuate shaped slots 43—43 near the outer surface and adjacent to the outer extremities of the clamping members 37—37. The outer extremities of the clamping members 37—37 project beyond the associated hoops 39 and 41 and form lips 44—44 which curve over the hoops 39 and 41 in a direction toward the companion snagging wheels 23 or 24.

Each of the clamping members 37—37 is secured to one of the clamping members 36—36 on the outer extremity of one of the associated spokes 34—34, with a piece of rubber-like material 46 therebetween, by a bolt 47 extending through apertures in the clamping members 36 and 37 and the associated spoke 34 to clamp the associated hoop 39 or 41 in place thereon.

Each of the clamping members 37—37 has a hole 48 bored in one extremity thereof. A substantially spirally shaped hollowed-out snagging finger, designated generally by the numeral 49, is positioned into the hole 48 in the clamping member 37 and is brazed therein. Each of the snagging fingers 49—49 partially encompasses an adjacent portion of the associated hook 39 or 41 in front of the associated spoke 34. The snagging fingers 49—49 each have a free end 51 which points in the direction of rotation of the associated take-up reel 13 or 14 and project outwardly of the associated hoop 39 or 41.

Each of the snagging fingers 49—49 and the adjacent portion of the hoop 39 or 41 encompassed thereby cooperate to form a snagging device, designated generally by the numeral 52, and a strand-receiving tortuous path 53. A portion of the strand 11 is directed and caught in the path 53 when the strand 11 is moved in contact with the hoop 39 or 41 and struck by the projecting free end 51 of the snagging finger 49 during the transfer of the distribution of the strand 11 from one reel to the other during the cutover operation. The portion of the strand 11 caught by the snagging device 52 is wrapped in the form of a bight on the snagging finger 49 and the portion of the hoop 39 or 41 encompassed thereby.

The reels 13 and 14 are positioned adjacent to the associated snagging wheels 23 and 24, respectively, for rotation concentrically therewith by means of spring-biased centers 54 and 56 of head stocks and the annular friction members 26 and 27 secured to the hubs 28 and 29, respectively. The supporting centers 54 and 56 of the head stocks are utilized to cooperate with the centers 21 and 22 of the tail stocks to support the opposing ends of the reels 13 and 14, respectively. The respective annular friction members 26 and 27 which, along with the projections 31—31, help to support the reels 13 and 14, engage the flange-like heads 16—16 of the reels 13 and 14 and are used for transmitting torque to the reels 13 and 14 from the hubs 28 and 29, respectively.

The reel supporting centers 54 and 56 are mounted slidably in the hubs 28 and 29 and on studs 57—57. The studs 57—57 are secured to the hubs 28 and 29 to prevent relative rotational movement between the centers 54 and 56 and the hubs 28 and 29, respectively. The hubs 28 and 29 are mounted rotatably by triplex, angular-contact ball bearings 58—58 in a housing 59 mounted in and secured to the support 12.

The hubs 28 and 29 are secured rigidly to pulleys 61 and 62, respectively, for rotation therewith. The pulley 61 is connected by means of endless belts 63 and 64 to a magnetic clutch 66 which is driven rotatably by an electric drive motor, designated generally by the numeral 67, through an output shaft 68, an endless belt 69, and a shaft 71. Similarly, the pulley 62 is connected by means of endless belts 72 and 73 to a magnetic clutch 74 driven by the electric drive motor 67 through the output shaft 68, the endless belt 69 and the shaft 71.

Magnetic brakes 76 and 77 are connected operatively to each of the drive means associated with the right reel 13 and the left reel 14, respectively. The brakes 76 and 77 are utilized to stop the motion of a full reel of strand 11 and to create a reserve length in the strand 11 which will permit the cutover from one reel to the other reel to take place without placing excessive stresses in the strand 11.

The strand 11, which may be, for example, an insulated conductor delivered at a substantially constant rate from a continuous extrusion apparatus (not shown) by a conventional strand-advancing capstan (not shown) and through a conventional strand accumulator (not shown). The strand passes to and partially around a rotatable guide sheave 78 and between a pair of spaced, parallel guide fingers 79—79 which are secured to a conventional distributing carriage, designated generally by the numeral 81. The sheave 78 and the guide fingers 79—79 are moved transversely of either of the take-up reels 13 and 14 by the distributing carriage 81 to distribute the processed strand 11 evenly across the winding surface thereof and to guide the strand 11 as the distributor carriage 81 is indexed from one take-up reel to the other during a cutover operation.

The distributor carriage 81 may be driven by any of many well-known means and is mounted slidably, by a bearing 82, on a horizontally extending traverse rod 83 for transverse movement therealong. The traverse rod 83 is supported fixedly to the inverted U-shaped frame

20 adjacent to the opposing ends thereof by upright members 84—84.

When one of the reels 13 and 14 is rotated by the motor 67 to take up the processed strand 11, the distributor carriage 81 is moved transversely of the winding surface of the reel 13 or 14 and parallel to the rotating axis thereof so as to move the distributor which, in turn, directs the processed strand 11 evenly back and forth along the winding surface of the reel 13 or 14 onto which the strand 11 is being taken up. The adjustment of the speed and length of travel of the carriage 81 with respect to the rotational speed and length of the take-up reel may be achieved by any of many well-known means.

Suitable electrical and fluid control means (not shown) are provided for stopping, starting and controlling the take-up apparatus including the drive motor 67, the magnetic clutches 66 and 74, the magnetic brakes 76 and 77, and the distributing means 81. The control means are disclosed in detail in a copending application Serial No. 656,956, filed on May 3, 1957, in the name of B. C. Ellis, Jr., as are many of the other features of the take-up apparatus.

As the strand 11 is caught under the end 51 of one of the snagging fingers 49—49 during the cutover operation and is forced inwardly of the tortuous path 53, it will ride over and partially around the snagging hoop 39 or 41 and under and partially around the snagging finger 49 and will be bent in a substantially S-shaped configuration. The strand 11 will be caught in the tortuous path 53 and held therein by being knotted or hitched to the snagging finger 49 and adjacent portion of the snagging hoop 39 or 41 to secure the strand 11 to the snagging wheel 23 or 24 and, in turn, to the take-up reel 13 or 14 associated therewith.

In this way, each of the snagging fingers 49—49 cooperates with the associated snagging hoop 39 or 41 to form the tortuous path 53 into one of which the strand 11 is directed, caught and held during and after the strand 11 is cut by a conventional knife 86, secured to the support member 12 and positioned between the snagging wheels 23 and 24 and thus the take-up reels 13 and 14, as a result of the rotation of the wheels 13 and 14 during the cutover operation.

As a result of the high speed of rotation of the full reel 13 or 14 with respect to the velocity of the distributor carriage 81 and as a result of the spacing of the snagging fingers 49—49 on the snagging wheel 23 or 24, the strand 11 will be caught by the snagging device 52 on the full reel in advance of the relative peripherial position of the snagging device 52 which catches the strand 11 and attaches it to the snagging wheel 23 or 24 associated with the empty reel. This will result in the strand 11 extending between the wheels 23 and 24 being disposed at an angle with respect to the axis of rotation of the reels 13 and 14. The exact degree of the angle will vary depending on the particular circumstances involved during any one cutover.

Operation

Assuming that the right reel 13 is being filled with the insulated strand 11 being supplied from the extrusion apparatus (not shown), the distributor 81 will direct the strand 11 onto the right reel 13, until a certain predetermined length of the strand 11 is wound thereon as determined by an automatic counter system (not shown) or by conventional manually operated controls. Prior to the cutover being commenced by the counter system, the control system causes the clutch 74 associated with the left or empty reel 14 to be actuated at a predetermined time thereby driving the empty reel 14 and the partially filled reel 13 at desired predetermined speeds.

When the right take-up reel 13 onto which the processed strand 11 is being reeled has become filled completely or filled with the desired amount of strand 11, an automatic cutover takes place to cause the distributor 81 to index the distribution of the insulated strand 11 from the full reel 13 to the empty reel 14. The strand 11 is moved into contact with a snagging device 52 on the periphery of the snagging hoop 39, and then moved into contact with a snagging device 52 on the periphery of the snagging hoop 41.

During the cutover operation a portion of the strand 11 is caught by one snagging finger 49 on each of the snagging wheels 23 and 24 and is forced inwardly of each of the associated tortuous paths 53—53. The portion of the strand 11 extending from the full take-up reel will extend outwardly in contact with the side of the snagging hoop 39 adjacent to the full reel 13, around the outer surface of the hoop 39, in contact with the side of the snagging finger 49 adjacent to the hoop 39, partially around the snagging finger 49 and to the snagging finger 49 associated with the empty take-up reel 14. The portion of the strand 11 will then extend partially around the snagging finger 49, outwardly to the adjacent surface of the snagging hoop 41 associated therewith, around the outer surface of the snagging hoop 41, inwardly to and around the winding drum 15 of the empty take-up reel 14.

The portion of the snagging hoop 39 and one of the snagging fingers 49—49 forming one of the snagging devices 52—52 associated with the take-up reel 13 cooperate to tie or hitch the portion of the trailing end of the strand 11 wound on the reel 13 to the snagging wheel 23 and thus to the take-up reel 13. The portion of the snagging hoop 41 and the snagging finger 49 forming the snagging device 52 associated with the take-up reel 14 cooperate to tie or hitch the portion of the leading end of the strand 11 to be wound on the take-up reel 14 to the snagging wheel 24 and thus to the take-up reel 14.

The strand 11 extending between the snagging devices 52—52 associated with the full reel 13 and the empty reel 14 is severed by the knife 86 as the reels 13 and 14 carry the portion of the strand 11 extending therebetween past the cutting edge of the knife 86. The full reel 13 will then be stopped by the magnetic brake 76 associated therewith. The drag and centrifugal force of the free end of the portion of the strand 11 connected to the empty reel 14, created by the cutting of the extended portion of the strand 11, tend to pull the associated hitch or knot tighter and insure that it does not come loose from the snagger device 52.

Now that a cutover operation is completed and the leading end of the strand 11 to be wound on the take-up reel 14 is connected to the snagging device 52 associated with the snagging wheel 24, the reeling operation on the left take-up reel 14 proceeds in a normal manner. The trailing end of the strand 11 wound on the full, right take-up reel 13, which was stopped by the brake 76, is removed manually from the associated snagging device 52. The full reel 13 is then removed from the reel supports 21 and 54 and replaced by an empty take-up reel 13.

The strand reeling or take-up apparatus is now operating so that the left take-up reel 14 is in the process of being filled. As the strand 11 advances continuously, the distributor 81 is reciprocated to distribute the convolutions of strand 11 in uniform layers upon the winding drum 15 or winding surface of the left take-up reel 14.

Prior to the time the left take-up reel 14 has become full, or a desired predetermined amount of strand 11 has been reeled thereon, the magnetic clutch 66 is energized to rotate the empty right take-up reel 13 and the take-up apparatus is again in readiness for a cutover operation to take place. When each of the take-up reels 13 and 14 are running at predetermined speeds and when the left take-up reel 14 has become filled completely or filled with the desired amount of strand 11, an automatic cutover operation takes place.

As the strand 11 is transferred from the full left take-

up reel 14 to the empty right take-up reel 13, one of the snagging devices 52—52 on each of the rotating snagging wheels 23 and 24 catch a portion of the strand 11 as described above with regard to the cutover from reel 13 to reel 14. The snagging devices 52—52 cooperate to carry the portion of the strand 11, extending therebetween, against the cutting edge of the knife 86, whereby the strand 11 is severed and the new leading end thereof remains attached to the snagging wheel 23 and is wound on the winding drum 15 of the empty right take-up reel 13. Thus, the reeling of the strand 11 commences on the winding drum 15 of the empty take-up reel 13 without interruption, and the full take-up reel 14 is stopped by the magnetic brake 77 associated therewith.

Now that the cutover operation is completed, the reeling operation on the right take-up reel 13 proceeds in the normal manner described previously. The trailing end of the strand 11 wound on the filled left take-up reel 14, which was stopped by the brake 77 associated therewith at the time of cutover, is removed from the associated snagging device 52. The full reel 14 is then removed from the reel supporting centers 22 and 56 and is replaced by an empty reel 14 in preparation for a subsequent cutover operation.

The various steps of the procedure are then repeated to take up strand on succeeding reels.

It is to be understood that the above-described arrangements are simply illustrative of the application of the principles of the invention. Other arrangements may be devised by those skilled in the art which will embody the principles of the invention and fall within the spirit and scope thereof.

What is claimed is:

1. An improved snagging device for strands, which comprises a rotatable snagging hoop, and at least one spirally shaped snagging finger secured adjacent to the periphery of the snagging hoop, said snagging finger having a free end projecting beyond the hoop in the direction of rotation of the snagging hoop, partially encompassing an adjacent portion thereof and cooperating therewith to form a strand-receiving, tortuous path into which a portion of a strand is caught and held.

2. An improved snagging device for strands, which comprises a rotatable snagging hoop, and a plurality of substantially spirally shaped snagging fingers secured adjacent to the periphery of the snagging hoop, each of the said snagging fingers having a free end projecting beyond the hoop in the direction of rotation of the snagging hoop, partially encompassing an adjacent portion thereof and cooperating therewith to form a strand-receiving, tortuous path into which a portion of a strand is caught and held.

3. An improved snagging device for strands, which comprises a rotatable snagging wheel having a plurality of outwardly projecting spokes and a rotatable snagging hoop secured adjacent to the outer extremities of the projecting spokes, and a plurality of substantially spirally shaped snagging fingers secured adjacent to the periphery of the snagging hoop, each of the said snagging fingers having a free end projecting in the direction of rotation of the snagging hoop, partially encompassing an adjacent portion thereof and cooperating therewith to form a strand-receiving, tortuous path into which a portion of a strand is caught and held.

4. An improved snagging device for strands, which comprises a rotatable snagging wheel having outwardly projecting spokes, arcuately shaped members secured adjacent to the outer extremities of the projecting spokes and extending from the spokes circumferentially of the snagging wheel, and a plurality of substantially spirally shaped snagging fingers secured adjacent to the extremities of the projecting spokes, each of said snagging fingers having a free end projecting in the direction of rotation of the snagging wheel, partially encompassing one of the arcuately shaped members and cooperating therewith to form a strand-receiving, tortuous path into which a portion of a strand is caught and held.

5. A strand take-up apparatus, which comprises a rotatable take-up means, a rotatable snagging wheel connected operatively to the take-up means, a rotatable snagging hoop connected operatively adjacent to the outer periphery of the snagging wheel and forming a portion thereof, and at least one substantially spirally shaped snagging finger secured adjacent to the outer periphery of the snagging hoop, said snagging finger having a free end projecting beyond the hoop in the direction of rotation of the snagging hoop, partially encompassing an adjacent portion thereof and cooperating therewith to form a strand-receiving, tortuous path into which a portion of a strand is caught and held.

6. A strand take-up apparatus, which comprises a rotatable take-up means, a rotatable snagging wheel connected operatively to the take-up means, a rotatable snagging hoop connected operatively adjacent to the outer periphery of the snagging wheel and forming a portion thereof, and a plurality of substantially spirally shaped snagging fingers secured adjacent to the outer periphery of the snagging hoop, each of said snagging fingers having a free end projecting beyond the hoop in the direction of rotation of the snagging hoop, partially encompassing an adjacent portion thereof and cooperating therewith to form a strand-receiving, tortuous path into which a portion of a strand is caught and held.

7. A strand take-up apparatus, which comprises a rotatable take-up means, a rotatable snagging hoop connected operatively to the take-up means adjacent thereto, and at least one substantially spirally shaped snagging finger secured adjacent to the outer periphery of the snagging hoop, said snagging finger having a free end projecting beyond the hoop in the direction of rotation of the take-up means, partially encompassing an adjacent portion of the snagging hoop and cooperating therewith to form a strand-receiving, tortuous path into which a portion of a strand is caught and held.

8. In a strand reeling apparatus for taking up an advancing strand upon rotatably driven take-up reels including a plurality of rotatably mounted reels, means for driving the reels rotatably, strand distributing means mounted for movement transversely of the winding surfaces of the take-up reels, means for indexing the strand distributing means from an operating station wherein such a strand is distributed on one of the take-up reels to another operating station wherein the strand is distributed similarly upon a succeeding take-up reel, and a rotatable snagging wheel connected operably to each of the reels, the improvement which comprises a rotatable snagging hoop secured adjacent to the outer periphery of each of the snagging wheels, and a plurality of substantially spirally shaped snagging fingers secured adjacent to the snagging hoops, each of said snagging fingers having a free end projecting beyond the associated hoop in the direction of rotation of the associated snagging hoop, partially encompassing an adjacent portion thereof and cooperating therewith to form a strand-receiving, tortuous path into which a portion of the strand which is caused to contact the outer periphery of the snagging hoop may be forced as a result of the rotation of the snagging wheel for catching and holding a portion of the strand adjacent to each reel when the distribution of the strand is indexed from one reel to another reel.

9. In a strand reeling apparatus for taking up an advancing strand upon rotatably driven take-up reels including a plurality of rotatably mounted reels, means for driving the reels rotatably, strand distributing means mounted for movement transversely of the winding surfaces of the take-up reels, and means for indexing the strand distributing means from an operating station wherein such a strand is distributed on one of the take-up reels to another operating station wherein the strand is distributed similarly upon a succeeding one of the take-up

reels, the improvement which comprises a rotatable snagging hoop secured adjacent to the outer periphery of each of the take-up reels, and a plurality of substantially spirally shaped snagging fingers secured adjacent to the periphery of the snagging hoops, each of said snagging fingers having a free end projecting beyond the associated hoop in the direction of rotation of the associated snagging hoop, partially encompassing an adjacent portion thereof and cooperating therewith to form a strand-receiving, tortuous path into which a portion of the strand which is caused to contact the outer periphery of the snagging hoop may be forced as a result of the rotation of the snagging hoop for catching and holding a portion of the strand adjacent to each reel when the distribution of the strand is indexed from one reel to another reel.

10. An improved snagging device for snagging strand material, which comprises an elongated member, a substantially spirally shaped snagging finger partially encompassing the elongated member and connected operably thereto, said snagging finger having a free end extending laterally across the elongated member and projecting toward a strand to be snagged, and means for causing relative movement between the portion of the strand to be snagged and the snagging finger, whereby, when relative movement exists and the free end of the snagging finger strikes the portion of the strand to be snagged, the portion of the strand is forced to ride between the snagging tooth and the elongated member, is wrapped around the elongated member and the snagging finger and is caught and held therebetween.

References Cited in the file of this patent

UNITED STATES PATENTS

1,393,286	Hosford	Oct. 11, 1921
2,763,442	Bruestle	Sept. 18, 1956