Fig. 4

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This invention relates to a machine intended for use in applying rubberized tape to a bead wire bundle such as used in the manufacture of pneumatic tires, but suitable for applying tacky tape to other annular shaped articles.

Among the objects of the invention is to provide such a machine that will automatically accommodate bead wire bundles of varying radial thicknesses without the necessity of manual adjustment; which will automatically measure and sever the tape to desired lengths; which will automatically feed the tape to the point of application thereof to the bead wire bundles; and which will automatically eject the bead wire bundles from the machine upon the completion of the wrapping thereof.

Other objects and advantages of the invention will become apparent from the following description when read in conjunction with the accompanying drawings wherein:

Fig. 1 is a side elevational view of the machine of the invention;
Fig. 2 is a partial front elevational view of the machine looking in the direction of the arrows II—II of Fig. 1;
Fig. 3 is a top plan view of the machine;
Fig. 4 is a sectional view taken on the line IV—IV of Fig. 2 showing the details of the main bead driving and wrapping wheel of the machine;
Figs. 5—9 are partial sectional views of portions of the machine illustrating the sequential operations of the machine in wrapping a bead wire bundle; Fig. 5 showing the wrapping of three sides of the bead wire bundle; Fig. 6 showing the folding of one edge of the tape over the remaining side; Fig. 7 showing the stitching of the first turned edge; Fig. 8 showing the folding over of the remaining edge of the tape; and Fig. 9 showing the stitching of the second turned edge of the tape; and
Fig. 10 is a diagram of the fluid and electrical control system of the machine.

Referring to the drawings and in particular to Figs. 1 and 2, the intended function of the machine is to wrap a length of tacky rubberized tape T (Figs. 1 and 2) around a bead wire bundle or coil B (Fig. 2).

**Bead wrapping mechanism**

The portion of the machine which performs the wrapping of the bead B includes a bead driving and wrapping wheel 10 having spaced flanges 10a and 10b between which the bead wire bundle B is pressed in the wrapping of the tape T thereunder. The wheel 10 is secured to the end of a shaft 11 which extends from the front of the machine and is journaled, as best shown in Fig. 3, in suitable bearings 12 and 13 secured respectively to vertically extending framework plates 14 and 15 forming a part of the supporting framework for the machine.

As best shown in Figs. 2 and 3, the shaft 11 and the wheel 10 secured thereto are rotated in the direction of the arrow in Fig. 2 by means of an electric motor 16 (Fig. 3) through a drive including a speed reducer 17, a pulley 18 secured to the output shaft of the speed reducer 17, a pulley 19 secured to the shaft 11 and a belt 20 interconnecting the pulleys 18 and 19.

As best shown in Fig. 4, the flange 10a of the wheel 10 is secured to the end of the shaft 11 by means of a tapered, split bushing 21 and set screws 22. The flange 10b has a projecting externally threaded hub portion 23 which threads into an internally threaded bore 24 of the flange 10a. This arrangement permits variation in the spacing between the opposed peripheral surface of the flanges 10a and 10b by rotation of flange 10b with respect to flange 10a, so that bead wire bundles B of various widths may be accommodated therebetween. The flanges 10a and 10b may be locked in any desired relative rotative position by means of a pin 24 which is adapted to extend through any of a plurality of circumferentially spaced openings 25 through the flange 10b and an opening 26 through the flange 10a.

An annular plate 27 having a peripheral flange 27a is resiliently mounted in the space between the flanges 10a and 10b with the flange 27a thereof forming a base against which a bead wire bundle B positioned in the space between the outer peripheries of the flanges 10a and 10b may bear as the tape T is applied thereto.

The annular plate 27 is resiliently mounted in the space between the flanges 10a and 10b by a resilient rubber ring 28, one side of which is bonded, by the usual conventional process of bonding rubber to metal to the plate 27 and the opposite side of which is bonded to an annular plate 29 secured to flange 10a by screws 29a. This resilient mounting of the annular plate 27 permits radial displacement thereof upon the application of a localized force to the flange 27a thereof by the bead wire bundle B in the application of the tape thereto so that the bead wire bundles B of a variety of radial thicknesses can be automatically accommodated completely within the space between the flanges 10a and 10b, to thereby insure proper wrapping thereof.

In the application of the tape T to the bead wire bundle B, the bead wire bundle B, which is of a larger diameter than the wheel 10, is placed around the wheel 10 as shown in Fig. 2. The tape T is fed onto the peripheral surface of the wheel 10 and pressed thereagainst by a feed roller 30, as shown in Figs. 3 and 4. As the wheel 10 rotates it carries the tape T therewith and the bead wire bundle B is pressed against the tape T into the space between the flanges 10a and 10b by a pressure roller 31 to wrap the tape T around three sides of the bead wire bundle B as shown in Fig. 5. The resilient mounting of the annular plate 27 permits the complete accommodation of the bead wire bundle B in the space between the flanges 10a and 10b thereby insuring that the bead wire bundle is completely wrapped on three sides. Thereafter, as the bead wire bundle B is rotated by the wheel 10, one edge of the tape T is folded over the other side of the bead wire bundle by a plow 32 as shown in Fig. 6, and stitched down by a stitching roller 33 as shown in Fig. 7. The other edge of the tape is then folded over by a plow 34 as shown in Fig. 8 and stitched down by a stitching roller 35 as shown in Fig. 9.

The pressure roller 31, plow 32, stitching roller 33, plow 34, and stitching roller 35 are secured in spaced relationship to an accurate plate 36 (Fig. 2) in turn secured to a slide 37 to permit retraction therefrom of the operative position as shown in Fig. 2 to a retracted position as shown in Fig. 3 to allow feeding and unloading of the bead wire bundle from the wheel 10. The slide 37 is slidably mounted in parallel ways 38 and 39 which are secured to framework plate 14 and is actuated by fluid actuated cylinder 40 secured to the opposite
side of the plate 14 as shown in Fig. 3. The piston rod 40a of the cylinder 40 is secured to a plate 41 which is in turn secured to the end of the slide 37.

Tape feeding mechanism

The tape T for wrapping a bead wire bundle B is supplied from a roll thereof which is supported on a roller 42 journaled at one end in and extending from a side framework 14a adjacent the base thereof as best shown in Fig. 1. The tape T is normally wrapped with a length of liner fabric L interposed between adjacent turns of the tape to prevent sticking together thereof. A liner take-up roll 43 journaled in the end of an arm 44 pivotally suspended from a pivot pin 45 secured to the framework plate 14a, frictionally engages the periphery of the roll of tape T so that as the tape is withdrawn from the roll thereof, the liner take-up roll 43 is automatically rotated to take up the liner fabric L.

The tape T withdrawn from the roll thereof is directed around spaced guide rollers 46, 47 and guide plate 49, all secured to the plate 14a, and through a clamping and perforating mechanism 50, which as will be described in detail hereafter, serves in severing the tape to the proper length. From the clamping and perforating mechanism 50, the tape is directed around a guide roller 51, a guide roller 52 mounted on an adjustable slide 53 mounted in ways 54 and 55 secured to the side plate 14a and adapted to be locked in adjusted position by a lock nut 56. From the guide roller 52, the tape is directed around a pulley 57 secured to the input shaft of a variable speed drive 58, and around a guide roller 59, a guide plate 60, a guide roller 61, a guide roller 63, a guide plate 64 (best shown in Fig. 2) and under the feed roller 30.

Adjustment of roller 52 permits varying the length of the tape between the clamping and perforating mechanism 50 and the feed roller 30 in accordance with the circumference of the bead wire bundles B being wrapped. The variable speed drive 58 serves as a measuring and control device. A switch actuating cam 65 (Fig. 3) is secured to the output shaft of the variable speed drive 58 and serves to actuate a control switch forming a part of the control circuit for the clamping and perforating mechanism 50 after a predetermined length of tape has passed around the pulley 57. As best shown in Fig. 3, the tape 57 is secured to a shaft 66 which is journaled in bearings 67 and 68 and secured to a bracket 69. The shaft 66 is coupled to the input shaft of the variable speed drive 58 by a flexible coupling 70. By varying the speed ratio of the variable speed drive 58, variations in the length of tape passing around the pulley 57 between actuations of the control switch by the cam 65 can be obtained.

Guide roller 61, guide roller 63 and guide plate 64 are secured to a plate 71 which in turn is secured to a slide 72 (Figs. 1 and 3). Slide 72 is slidably mounted on a plate bracket 73 by bolts 74 which extend through slots in the slide 72. Adjustment of the slide 72 is provided by means of a threaded shaft 75 journaled in a plate 76 secured to bracket 73 and threaded into a block 77 secured to the slide 72. Adjustment of slide 72 by rotation of shaft 75 by means of a hand wheel 78 secured thereto permits proper alignment of guide plate 64, guide roller 63, guide roller 61, and plate 62 with wheel 10. The guide plate 64 is provided with an adjustable fence 64a providing for accommodation of tapes of various widths.

The tape feed roller 30 previously referred to, which presses the tape against the periphery of the flanges 10a and 10b of the wheel 10, is journaled, as best shown in Fig. 4, on the end of a shaft 79. Shaft 79 in turn is secured to the end of a lever arm 80 (Figs. 2 and 4). Lever arm 80 is secured to a shaft 81 which is journaled in a bearing 82 secured to framework plate 14. A lever arm 83 is secured to the shaft 81. A threaded actuator rod 84 pivotally secured to a core 85 of a solenoid 86 extends through an opening through the end of the lever arm 83 and springs 87 and 88 encompassing the actuator rod 84 and interposed between adjustment nuts 89 and 90 (Figs. 2 and 4) and the lever arm 83 provide a resilient connection between lever arm 83 and actuator rod 84. An extension spring 91 secured at one end to shaft 79 and at the other end to a pin 92 secured to a bracket 93 attached to side plate 14, serves to move the feed roller 30 away from the wheel 10 when the solenoid 86 is de-energized. A stud 94 threaded through bracket 93 serves as an adjustable stop to limit upward movement of the lever 80 and the feed roller 30 carried thereby. De-energization of solenoid 86, permitting upward movement of the feed roller 30 away from the periphery of the wheel 10, relieves the frictional contact of the tape T with the wheel 10 so that feeding of the tape will stop when the tape is severed, while allowing the wheel 10 to continue to rotate. A spring press brake finger 95 engages the tape T as it passes over the guide plate 64, and prevents the tape from retracting due to the tension therein when the feed roller is raised and the tape severed as will be hereinafter described. Finger 95 is journaled on a pin 96 which is secured to an extension of plate 71. While the initial feeding of the tape T is performed by the rotation of the wheel 10 when the tape T is pressed theretowards by the feed roller 30, the tape, because of its tautness, is sometimes difficult to pull from the roll thereof and a pulley 97 (Fig. 1) driven by an electric motor 98 which frictionally engages the tape T between the roll thereof and the guide roller 46 is provided to assist in pulling the tape T from the roll. The electric motor 98 is secured to the inner side of framework plate 14a. It will be appreciated that the frictional force between the pulley 97 and the tape T is hereupon the force which the pulley 97 exerts on the tape T is dependent upon the tension in the tape T and that therefore pulley 97 assists in pulling the tape from the roll thereof only as necessary to maintain a minimum predetermined tension in the tape.

Tape severing mechanism

The clamping and perforating mechanism 59, best shown in Fig. 1, which serves to sever the tape after the desired length of tape has been applied to a bead wire bundle, is secured to side plate 14a and includes a stationary jaw 99 and a movable jaw 100. Jaw 99 and clamping jaw 100 which is spring mounted by means of springs 100a and 100b on the lower face of a moveable plate 101 which is in turn actuated by a fluid actuated cylinder 102. The plate 101 also carries a perforating tool 103 which is adapted to move through an opening through the floating or spring mounted jaw 100 to perforate the tape T across the full width thereof to thereby weaken, without severing, the tape, at a predetermined point. The spring mounting of the jaw 100 permits the clamping of the tape prior to the perforation thereof. The clamping of the tape between the jaws 99 and 100 acts as a brake on the tape to thereby tension the tape a sufficient amount to cause the tape to break or fail along a previously perforated point thereof upon the completion of the wrapping of a bead wire bundle. The roller 52 and the variable speed drive 58 are so adjusted that the length of tape T passing through the clamping and perforating mechanism 50 between actuations thereof is equal to the length of tape necessary to wrap a particular bead wire bundle. Thus, the clamping of the tape causes the tape to break or fail along a previously perforated line at a point between the feed roller 30 and the pressure roller 31 whereby another bead wire bundle can be wrapped without re-threading the tape.

Bead wire ejection mechanism

A hook-like element 104 is adjustably secured to a bracket 71 by means of screws and wing nuts 106. The hook-like element 104 serves as guide for the bead wire
bundle when placed on the wheel 10. The lower circumference of the bead wire bundle is held in alignment with the wheel 10 by engagement with plates 107 and 108 attached to pins 109 and 110, respectively, adjacent to the periphery of the wheel 10. Pins 109 and 110 are secured to and extend from framework plate 14.

When the slide 37 is in operative position, the pressure roller 31, plows 32, 33 and stitching wheels 33, 35, distort a portion of the bead wire bundle 5 engaged thereby to a slightly smaller radius of curvature. When the slide 37 is retracted upon completion of the wrapping of the bead wire bundle, the bead wire bundle springs back to its normal radius due to the inherent resiliency thereof and thereby becomes disengaged from between the flanges 19a and 160 of the wheel 10 so that it is suspended only from a pin 111 which wheel is pivotally secured to the plate 14. The pin extends through a block 112 to the end of an arm 112 forming a part of the ejection mechanism. The arm 112 is pivotally mounted on a vertically extending pivot pin 113. Pivot pin 113 is secured to a bracket 114 secured to side plate 14. The lever arm 112 is normally urged toward the side plate 14 as shown in full lines in Fig. 3 by an extension spring 115. The extension spring 115 is connected at one end to the lever arm 112 and at the other end to side plate 14.

The arm 112 has a dog 117 (Fig. 2) secured thereto. The slide 37 has a bracket 118 secured thereto and a cam block 119 is secured to the end of the bracket 118. When the slide 37 is retracted upon completion of the wrapping of the bead wire bundle, the dog 117 on the arm 112 is engaged by a tapered surface 119a on the cam block 119 and the arm 112 pivoted to the dashed line position shown in Fig. 3 so that the wrapped bead is pushed off the pin 111 and thereby eject the wheel 10 into a suitable container or rack (not shown).

When the slide 37 is again moved toward the wheel 10 to wrap another bead wire bundle, the dog 117 is engaged by a tapered surface 119b on the top of cam 119 and the arm 112 lifted to the dashed line position as shown in Fig. 2 thereby permitting movement of the cam 119 past the dog 117 without imparting any ejection movement to the arm 112 as in the case where the slide 37 is retracted. A compression spring 120 around the pivot pin 113, and interposed between the arm 112 and a head 113a of the pin 113 serves to return the arm to the full line position of Fig. 2 after the cam 119 passes the dog 117.

Control system and cycle of operation

The control system, both fluid and electrical, is diagrammatically shown in Fig. 10. The electrical circuit includes a two wire 110 volt control circuit L1, L2, and a three wire 440 volt power circuit L3, L4 and L5. The two wire circuit L1, L2 derives its electrical energy from the three wire power circuit L3, L4 and L5 by means of a transformer 200.

In the diagram all switches are shown in their non-actuated positions and all solenoids in a non-energized condition. On initial operation of the machine, there is no bead wire bundle in the machine, the feed roller 30 is in its raised position with the end of the tape under the feed roller 30, and the slide 37 in its retracted position.

The motors 16 and 98 which serve to rotate the wheel 10 and the pulley 97 respectively, once started are intended to run continuously during the wrapping of a plurality of bead wire bundles. The motors 16 and 98 are started by means of the push switch 261 to close the contacts thereof.

The closing of contacts of push switch 261 completes a circuit to energize the solenoid of a motor control relay 202 to close contacts 202a, 202b, 202c and 202d thereof. The closing of contacts 202a, 202b and 202c completes the circuit of operation of motors 16 and 98. Closing of contacts 202a completes a holding circuit around the contacts of push switch 201 so that the solenoid of relay 202 remains energized when switch 201 is re-

The continuous operation of the motor 98 and the pulley 97 secured thereto, affects no feeding of the tape during the time between the wrapping of one bead wire bundle and the next bundle because there is essentially no tension on the tape during this period.

To wrap a bead wire bundle B, assuming that the motors 16 and 98 are in operation and the necessary adjustments made for the particular size bead wire bundle, the operator places a bead wire bundle B over the pin 111, around the wheel 10, into the hook shaped guide element 164. The wrapping of the bead wire bundle so positioned in the machine is initiated by pressing a push switch 203 to close the contacts thereof.

Closing of the contacts of push switch 203 completes a circuit through previously closed contacts 202a of control relay 202, normally closed contacts 204a of a relay 204, normally closed contacts 205a of a time delay relay 205 and energizes the solenoid of a control relay 206.

Energization of the solenoid of relay 206 closes normally open contacts 206a and 206b and opens normally closed contacts 206c and 206d thereof. Closing of contacts 206a completes a holding circuit around push switch 203 and the contacts 204a of the relay 204 so that the solenoid of relay 204 remains energized when push switch 203 is released and the contacts 204a of relay 204 are opened.

The closing of contacts 206b completes a circuit to energize a solenoid 207 to shift the valve of a solenoid actuated valve 208 to admit pressure to the cylinder 40 to move the slide 37 and the pressure roller 31, plows 32 and 33, and stitching wheels 33 and 35 into operative, bead wrapping position.

As the slide 37 moves to operative position, it actuates a limit switch 208. As best shown in Fig. 2, the limit switch 208 is secured to the framework plate 14 and is actuated by a cam block 208a which is secured to the slide 37.

Actuation of limit switch 208 to close the contacts thereof completes a circuit to energize the solenoid of the relay 204 to open normally closed contacts 204a thereof and close normally open contacts 204b, 204c and 204d thereof. Closing of contacts 204c completes a circuit to energize a solenoid 209 of a solenoid actuated valve 209 to shift the slide thereof, to admit pressure to cylinder 102 to raise the clamping jaw 106 and the perforating tool 103. Closing of contacts 204d completes a circuit through previously closed contacts 206b of relay 206 to energize solenoid 86, which as previously described presses the feed roller 30, toward the periphery of the wheel 10 to thereby press the tape against the periphery of the wheel 10 and cause the tape to feed therewith. At this time the wrapping of the bead wire bundle B begins.

Closing of contacts 204b also completes a circuit to energize a solenoid of a relay 205. Energization of the solenoid of relay 205 opens contacts 205a thereof after a short time delay occasioned by the dash-pot 205b or similar time delay device. The opening of contacts 205a breaks the circuit to the solenoid of relay 206 thereby allowing previously closed contacts 206a and 206b to open and allowing previously opened contacts 206c and 206d to close. Opening of contacts 206a breaks the holding circuit around push switch 203 and contacts 204a of relay 204. Opening of contacts 206b breaks the circuit in solenoid 207a of valve 207, whereby preparing valve 207 to be shifted on subsequent energization of the solenoid 207b. Opening of contacts 206b also breaks the circuit to the solenoid of relay 86 thereby allowing the feed roller 30 to rise under the influence of the spring 59 (Fig. 4).

The time delay in the opening of contacts 206b is provided to permit the roller 30 to feed the tape until it becomes engaged with the bead wire bundle being wrapped. Thereafter the tape continues to feed by reason of the attachment thereof to the bead wire bundle being wrapped.

Upon completion of the wrapping of the bead wire
bundle B, a limit switch 210 is actuated by the rotating cam 65 (Fig. 3) secured to the output shaft of the variable speed drive 58 which forms part of the measuring device. The limit switch 210 is secured to the bracket 69 adjacent the cam 65. Actuation of limit switch 210 to close the contacts thereof completes a circuit through previously closed contacts 204d of relay 204 to energize the solenoid of a relay 211 to close the normally open contacts 211a and 211b thereof. Closing of contacts 211a provides a holding circuit 212 so that the solenoid of relay 211 remains energized upon release of the limit switch 210. The closing of contacts 211b also completes a circuit through closed contacts 206d and relay 206 to energize the solenoid 207b of the valve 209 to shift the valve thereof to admit pressure to the cylinder 102 to clamp the tape between the jaws 100 and 99 of the clamping and perforating mechanism 50 to put sufficient load on the tape to cause the tape to break or fail along the previously perforated point between the feed roller 30 and the pressure roller 31 upon the completion of the wrapping of the bead wire bundle B. At the same time the tape is perforated across the width thereof by the perforating tool 103.

The closing of contacts 211b also completes a circuit through closed contacts 206d and relay 206 to energize the solenoid 207b of the valve 207 to shift the slider thereof to admit pressure to the cylinder 102 to retract the slide 37 and pressure roll 31, closes valves 33 and 35 and chopping wheels 33 and 35 from the wheel 10. As the slide 37 is retracted, the arm 112 is cammed outwardly, as previously described, to eject the wrapped bead wire bundle B from the machine. In fully retracted position the slide 37 releases limit switch 208 thereby breaking the circuit to the solenoid of relay 204a and permitting contacts 204a thereof to close and contacts 204b, 204c and 204d to open, thereby preparing the circuit for another cycle of operation. Closing of contacts 211b also completes a circuit through closed contacts 206d to energize the solenoid of a relay 212 to open the normally closed contacts 212c thereof after a short time delay occasioned by a dash-pot 212b or similar time delay device. Opening of contacts 212c breaks the circuit to solenoid 207b of valve 207 thereby preparing the valve 207 to be shifted on energization of the solenoid 207a of the next cycle of operation. The time delay insures that the slide of valve 207 is completely shifted before the solenoid 207b is deenergized. This completes the cycle of operations of the machine and a new cycle is initiated by again pressing the push switch 203.

From the above description, it can be seen that there is provided an improved machine for wrapping bead wire bundles or similar articles with a length of tape. The machine is substantially automatic in its operation and requires a minimum of adjustments. For this reason, the machine may be used by comparatively unskilled operators to effectively and efficiently wrap bead wire bundles. The novel construction of the main bead wrapping and driving wheel 10 provides for automatic accommodation of bead wire bundles of various radial thicknesses and for bead wire bundles of non-uniform radial thicknesses, thereby insuring proper wrapping of such bead wire bundles. The novel feeding mechanism and the novel perforating and clamping mechanism eliminates a number of manual operations necessary in wrapping bead wires on machines heretofore proposed.

While a preferred form of the invention has been described, it is to be understood that this is for the purposes of illustration only and that variations therein may be made without departing from the spirit and the scope of the invention.

Having thus described our invention, what we claim and desire to protect by Letters Patent is:

1. A machine for wrapping a bead wire bundle with a length of tape comprising, a rotatably mounted wheel, said wheel having spaced peripheral flanges between which a portion of a bead wire bundle may be forced in the wrapping thereof, said flanges being axially adjustable to permit variation in spacing thereof so that they may be adjusted to accommodate bead wire bundles of various radial thicknesses and for bead wire bundles of non-uniform radial thicknesses to be automatically accommodated completely within the space between said flanges, means for rotating said wheel, means for pressing said tape against the periphery of said flanges so that the tape is fed with the wheel upon rotation thereof, and means for wrapping said tape around a major portion of the surface of the bead wire bundle as the bead wire bundle is rotated by said wheel, means for folding one edge of said tape over said bead wire bundle, means for stitching down said folded edge, means for severing said tape upon the completion of the wrapping of the bead wire bundle, and means for ejecting the wrapped bead wire bundle from said wheel upon the completion of the wrapping thereof.

2. A machine for wrapping a bead wire bundle with a length of tape comprising, a rotatably mounted wheel, said wheel having spaced peripheral flanges between which a portion of a bead wire bundle may be forced in the wrapping thereof, said wheel having a member mounted in said space between said flanges providing a base against which a bead wire bundle positioned between said flanges can be pressed during the wrapping thereof, means for rotating said wheel, means for pressing said tape against the periphery of said flanges so that the tape is fed with the wheel upon rotation thereof, means for pressing a bead wire bundle against the medial portion of said tape carried by said peripheries of said flanges and into said space between said flanges, means for rotating said wheel, means for severing said tape upon the completion of the wrapping of the bead wire bundle, and means for ejecting the wrapped bead wire bundle from said wheel.

3. A machine for wrapping a bead wire bundle with a length of tape comprising, a rotatably mounted wheel, said wheel having spaced peripheral flanges between which a portion of a bead wire bundle may be forced in the wrapping thereof, said wheel having a member mounted in said space between said flanges providing a base against which a bead wire bundle positioned between said flanges can be pressed during the wrapping thereof, said wheel being secured to said flanges by a resilient rubber member whereby said member is resiliently mounted with respect to said flanges and can be displaced radially inwardly upon the application of a localized pressure to thereby automatically accommodate said bead wire bundles of various radial thicknesses and for bead wire bundles of non-uniform radial thicknesses to be automatically accommodated completely within the space between said flanges, means for rotating said wheel, and means for pressing said tape against the periphery of said flanges so that the tape is fed with the wheel upon rotation thereof, and means for pressing a bead wire bundle against a medial portion of the tape carried by said peripheries of said flanges and into said space between said flanges to wrap the tape
around a major portion of the surface of the bead wire bundle as the bead wire bundle is rotated by said wheel.

4. In a machine for wrapping a bead wire bundle with a length of tape, a rotatably mounted wheel, said wheel having laterally spaced flanges between which a bead wire bundle may be forced to wrap the tape around a major portion of the surface thereof, a member positioned in said space between said flanges for providing a base against which the bead wire bundle can be pressed in the wrapping of the tape thereon, and a means resiliently mounting said member with respect to said flanges whereby said member may be displaced radially inwardly upon the application of a localized pressure to thereby automatically accommodate bead wire bundles of various radial thicknesses completely within the space between said flanges.

5. In a machine for wrapping a bead wire bundle with a length of tape, a rotatably mounted wheel, said wheel having laterally spaced flanges between which a bead wire bundle may be forced to wrap the tape around a major portion of the surface thereof, a member positioned in said space between said flanges for providing a base against which the bead wire bundle can be pressed in the wrapping of the tape thereon, and a means resiliently mounting said member with respect to said flanges whereby said member may be displaced radially inwardly upon the application of a localized pressure to thereby automatically accommodate bead wire bundles of various radial thicknesses completely within the space between said flanges.

6. In a machine for wrapping a bead wire bundle with a length of tape, a rotatably mounted wheel, said wheel having laterally spaced flanges between which a bead wire bundle may be forced to wrap the tape around a major portion of the surface thereof, a member positioned in said space between said flanges for providing a base against which the bead wire bundle can be pressed in the wrapping of the tape thereon, and a means resiliently mounting said member with respect to said flanges whereby said member may be displaced radially inwardly upon the application of a localized pressure to thereby automatically accommodate bead wire bundles of various radial thicknesses completely within the space between said flanges.

7. In a machine for wrapping a bead wire bundle with a length of tape, a rotatably mounted wheel, said wheel having laterally spaced flanges between which a bead wire bundle may be forced to wrap the tape around a major portion of the surface thereof, a member positioned in said space between said flanges for providing a base against which the bead wire bundle can be pressed in the wrapping of the tape thereon, and a means resiliently mounting said member with respect to said flanges whereby said member may be displaced radially inwardly upon the application of a localized pressure to thereby automatically accommodate bead wire bundles of various radial thicknesses completely within the space between said flanges.

8. In a machine for wrapping a bead wire bundle with a length of tape comprising, a rotatably mounted wheel, said wheel having spaced peripheral flanges between which a portion of a bead wire bundle may be forced in the wrapping thereof, means for rotating said wheel, a slide mounted adjacent said wheel, means for moving said slide, means mounted on said slide for pressing said bead wire bundle into said space between said flanges to wrap tape thereon, means for moving said slide by means of said wheel, a movable arm positioned adjacent said wheel and engageable with the bead wire bundle positioned around said wheel, and a means for moving said slide for the retraction of said slide from said wheel upon the completion of the wrapping of a bead wire bundle to eject said bead wire bundle from said wheel.
ed on said slide for pressing said bead wire bundle into said space between said flanges to wrap said tape around said bead wire bundle, means for supporting a roll of said tape at a point spaced from said wheel, spaced guide means around which said tape is directed upon passage thereof from the roll thereof to said wheel, and means for weakening said tape without severing said tape at spaced intervals of a predetermined length as necessary to wrap a particular bead wire bundle, and means for clamping said tape at a point spaced from said wheel upon the completion of the wrapping of the bead wire bundle to tension said tape to cause said tape to fall along a previously weakened point to thereby sever the tape on said bead wire bundle from the remaining tape, a movable arm positioned adjacent said wheel and engageable with a bead wire bundle positioned around said wheel, and camming means secured to said slide engageable with said arm upon retraction of said slide from said wheel for moving said arm to eject a bead wire bundle from said wheel upon the completion of the wrapping thereof.

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