May 3, 1938. E. F. PARKS 2,116,410

WINDING MACHINE

Filed Sept. 11, 1935 3 Sheets-Sheet 1

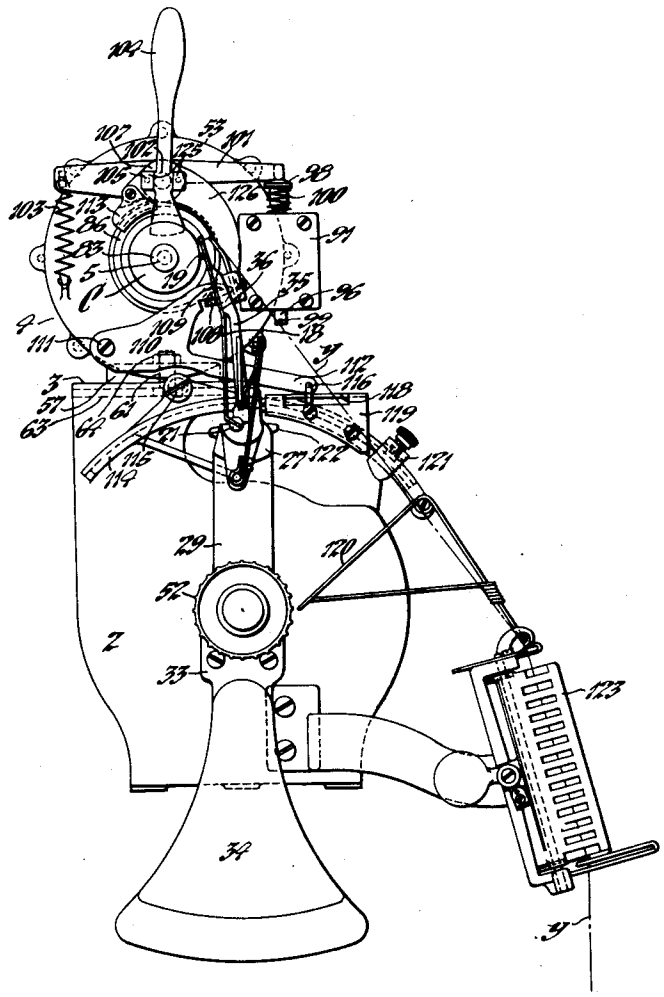

Fig. 1.

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WINDING MACHINE

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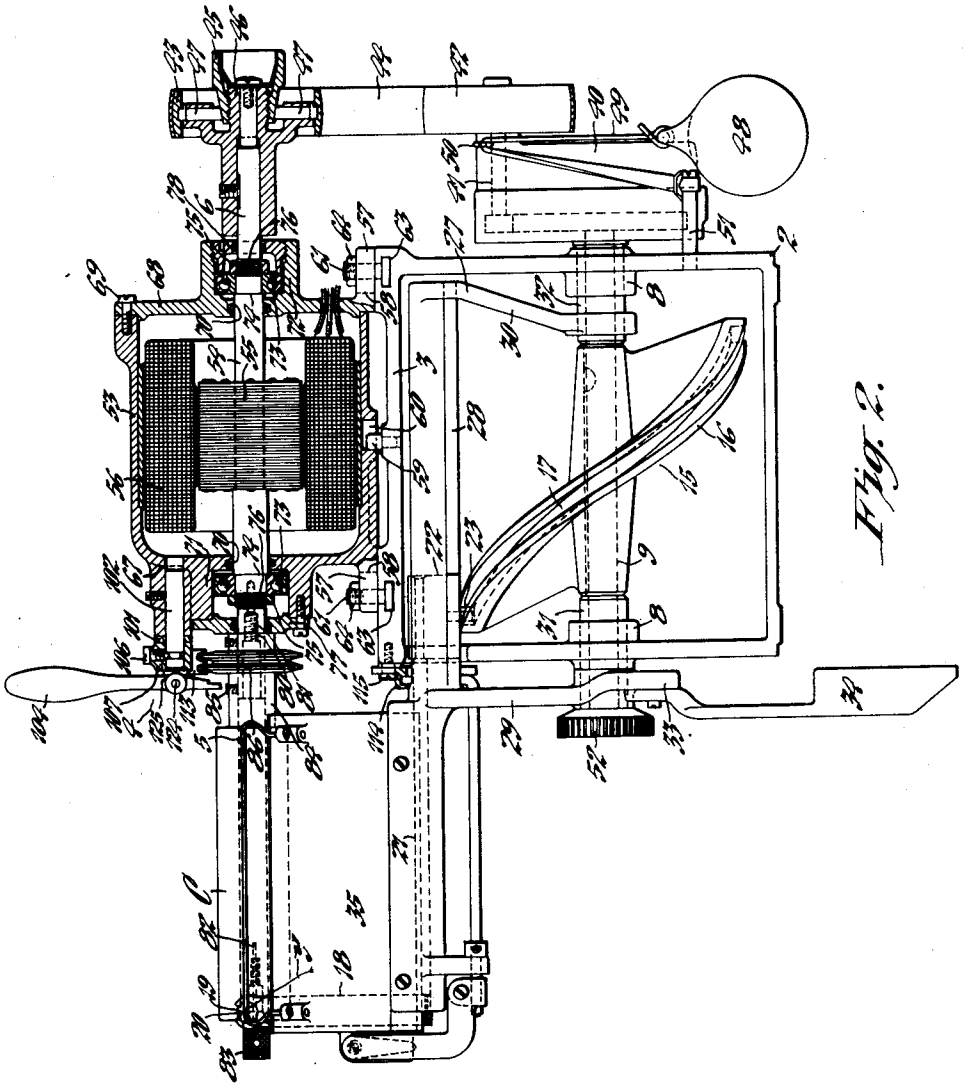

Fig. 2.

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WINDING MACHINE

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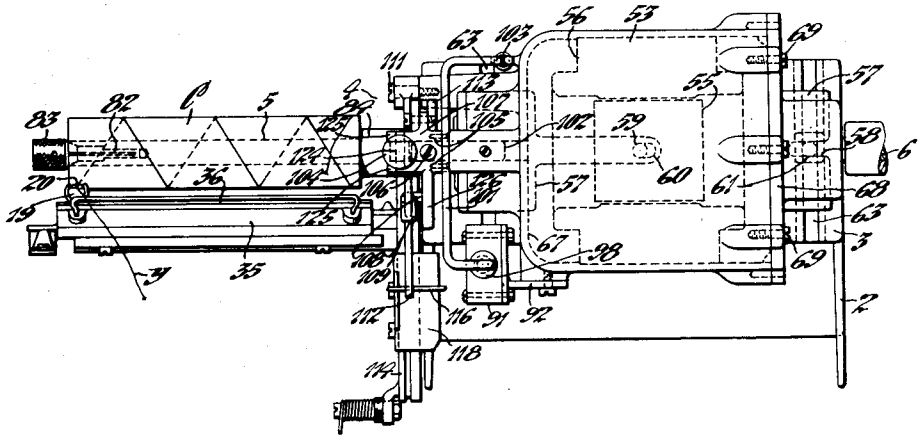

Fig. 3.

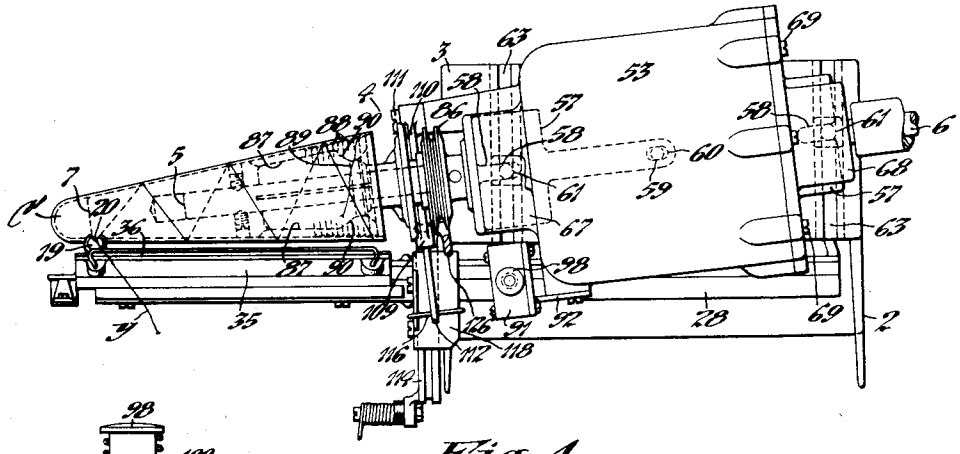

Fig. 4.

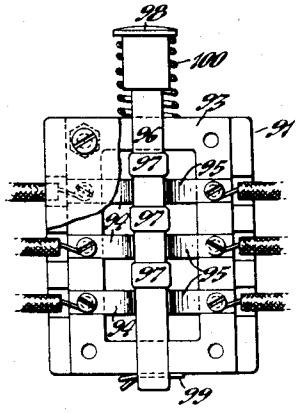

Fig. 5.

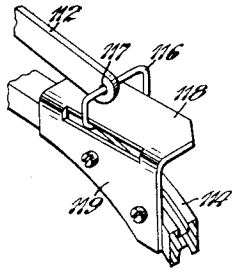

Fig. 6.

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UNITED STATES PATENT OFFICE

2,116,410

WINDING MACHINE

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Application September 11, 1935, Serial No. 40,159

4 Claims. (Cl. 242—18)

This invention relates to winding machines for winding thread, yarn, wire or other strand material into cops, cones, coils or other types of packages and more particularly to a self-contained, angularly-adjustable spindle and driving unit for such machines.

For convenience of description the material to be wound will hereinafter be referred to as "yarn" and the wound mass or body produced on the machine as a "package"; it being understood that these terms are to be construed broadly as designating any kind of strand material, whether textile or otherwise, and any form of cop, cone, coil or package wound therefrom.

One object of the present invention is to provide a winding machine of the type indicated having a positively driven winding-spindle which is angularly adjustable with respect to the traversing mechanism to wind either cylindrical or conical packages of any angular taper.

Another object of the present invention is to provide a machine of the type indicated having a self-contained unit, including a spindle and its driving mechanism, which is adjustably mounted on the machine frame to provide for altering the angular relationship of the spindle with respect to a relatively-fixed traversing mechanism.

Another object of the present invention is to provide an angularly adjustable spindle and driving unit of the type indicated comprising an electric motor having the opposite ends of its armature-shaft extended to form the winding-spindle and a drive-shaft for the traversing mechanism.

Still another object of the invention is to provide a winding machine of the type indicated which is of simple construction, efficient and economical in its operation and adapted for use over long periods of time without repair or replacement of its parts.

Further objects of the improvement are set forth in the following specification which describes a preferred form of construction of the invention, by way of example, as illustrated by the accompanying drawings.

In the drawings:

Fig. 1 is a front elevational view of one head of a multiple spindle winding machine illustrating the present improved spindle and driving unit as applied thereto;

Fig. 2 is a side elevational view of the winding head showing the relationship of the spindle and driving unit with respect to the other elements of the machine;

Fig. 3 is a plan view of the winding machine head shown in Fig. 2 illustrating the spindle and driving unit clamped to the supporting frame in position to wind a cylindrical package;

Fig. 4 is a view similar to Fig. 3 showing the winding unit adjusted on the supporting frame to wind a conical package;

Fig. 5 is a side elevational view of the circuit-breaker for the electric motor shown with its cover partly broken away to illustrate the relationship of its operative elements; and

Fig. 6 is a perspective view of the connecting means between the stopping mechanism and the circuit-breaker actuator for permitting angular adjustment of the spindle and driving unit with respect to the machine frame.

In winding machines of conventional type as heretofore used the winding-spindle is journaled in the machine frame in fixed bearings. To adapt such machines to wind conical packages it has heretofore been necessary to alter the form of the traverse-frame carrying the thread-guide to cause the latter to oscillate toward and away from the axis of the package to a greater or lesser degree as it is reciprocated along its periphery. Usually the winding-spindles of such machines are driven by belts connected to a continuously driven countershaft or in other cases to a continuously operated motor.

The present invention provides for quickly and easily adjusting the angular relation of the winding-spindle with respect to a traversing mechanism so that either a cylindrical or conical package may be wound on the machine without changing the traverse-frame back or the direction of motion of the thread-guide. Further, the present invention provides an individual motor drive for each spindle so that only those spindles need be driven which are performing a winding operation while also eliminating the use of belts, pulleys, countershafts and belt-shifters or clutches for connecting the drive.

The present machine comprises in general a main frame or casing having a traverse-frame pivotally mounted thereon for swinging movement about a fixed axis and a cooperating winding-spindle formed as an extension of the armature-shaft of an electric motor. The motor is mounted on the main frame for adjustment about a vertical axis to alter the angular relation of the spindle with respect to the traverse-frame on which the thread-guide reciprocates to wind a package; and means are provided for clamping the motor in any adjusted position. The motor is controlled by a circuit-breaker which is arranged to be manually operated to close the circuit and automatically operated to open the cir-

cuit when the yarn breaks or the package attains a predetermined size. The present invention also provides an actuating mechanism for the circuit-breaker comprising separate elements on the main frame and motor, respectively, and self-adjusting means for connecting these elements to permit angular adjustment of the motor with respect to the main frame.

Referring to Figs. 1 and 2 of the drawings, one winding head of a series is herein shown as mounted on a suitable bed which may be extended to support any desired number of winding units. The operating parts of each winding head are mounted on a box-like frame 2 having an upper horizontal platform 3 for supporting the self-contained and angularly-adjustable spindle and driving unit 4, to be later described in detail. Suffice it to state here that the unit 4 includes an electric motor having its armature extended to form a winding-spindle 5 overhanging one side of the frame and a drive-shaft 6 overhanging the opposite side of the frame. The winding-spindle 5 may be so constructed as to support either a cylindrical or conical package and in the latter case it carries a suitable form of cop-holder 7 to receive a tapered cop-tube C' on which the package is wound.

Below the winding unit 4 the frame 2 carries bearings 8 in which a cam-shaft 9 is journaled. Fast on the cam-shaft 9 is a cam 15 having a cylindrical rim 16 in which a helical groove 17 is formed. The cam 15 is connected to reciprocate the thread-guide 18 which is of usual construction having a head 19 formed with a groove or slot 20 through which the yarn y feeds to direct it onto the package being wound. The thread-guide 18 is carried at the end of a horizontal rod or traverse-bar 21 which is connected to a slide or crosshead 22 having a bowl or roller 23 engaging the helical groove 17 of the cam 15.

The thread-guide 18 and its reciprocable traverse-bar 21, together with the connected crosshead 22, are arranged to slide in a traverse-frame 27 rockably supported by the cam-shaft 9. As shown in Figs. 1 and 2 of the drawings the traverse-frame 27 comprises a horizontally-extending member 28 formed with suitable grooves or guideways for the crosshead 22 and traverse-bar 21 and provided with opposite legs 29 and 30 straddling the cam 15 and pivotally mounted on the cam-shaft 9. The legs 29 and 30 of the traverse-frame 27 have hubs at their ends surrounding bushings 31 and 32 in the bearings 8 on the frame 2 of the machine which serve as the journals for the cam-shaft 9. The outer leg 29 of the traverse-frame 27 is extended below its bearing hub, preferably in a separate arm 33 attached thereto and terminating in a counterweight 34 which tends to maintain the frame in substantially erect position. Attached to the overhanging part of the traverse-frame 27 is a plate or back 35 against which the thread-guide 18 bears to direct it in a course parallel to the surface on which the winding is performed. In the present illustration of the machine the traverse-frame back 35 has its bearing face 36 extending parallel to the fixed axis of the cam-shaft 9 on which the traverse-frame is pivotally mounted.

The cam-shaft 9 may be driven from the drive-shaft 6 in a manner common to machines of the present type to give the thread-guide 18 a continuous lead or gain. As herein shown the drive comprises reduction gearing enclosed in a housing 40 formed as a part of the bushing 32 and rotatable on the cam-shaft 9. The housing 40 has a bearing for a stud-shaft 41 for driving the reduction gearing and on which a driven pulley 42 is rigidly fixed exteriorly of the housing. The pulley 42 is driven by a belt 44 passing over a pulley 43 fast on the drive-shaft 6. The pulley 43 is of the usual expansible type having a tapered thimble 45 longitudinally adjustable on its hub 46 to force the spokes 47 radially outward to expand the split rim of the pulley. In this manner the diameter of the pulley 43 may be altered to adjust the speed ratio between the spindle 5 and cam-shaft 9 to give the desired gain to the thread-guide 18 in accordance with the size or count of the yarn being wound. The housing 40 and pulley 42 are rocked about the cam-shaft 9 to tension the belt 44 by means of a weight 48 at the end of a cord 49 which is looped through an eye 50 on the housing and attached at its opposite end to a fixed pin 51. The peripheries of the pulleys 42 and 43 are crowned to hold the belt 44 in driving engagement therewith when the driving pulley 43 is angularly positioned with respect to the driven pulley 42. The forward end of the cam-shaft 9 projects beyond the hub of the traverse-frame 27 and carries a toothed wheel 52 of usual construction for actuating the stopping mechanism of the machine in a manner as later explained.

The present invention is directed particularly to the self-contained spindle and driving unit 4 for providing angular adjustment of the winding-spindle 5 with respect to the traverse-frame 27 so that either cylindrical or conical packages may be wound without change or substitution of any of the parts of the machine. The spindle and driving unit 4 is comprised of a frame or mounting which may be of any suitable form for rotatably supporting the winding-spindle 5 together with its driving means, and of such construction as to provide for its angular adjustment about a vertical axis on the horizontal platform 3. In the preferred embodiment herein illustrated the unit 4 is in the form of an electric motor having the usual frame or casing 53 in which the armature-shaft 54 is journaled with its extended ends constituting the winding-spindle 5 and drive-shaft 6.

Preferably, the motor is of the three-phase induction type to eliminate fire hazard and provide for ease in starting, but it may be of any other suitable type whether induction or repulsion, direct or alternating current, single or multiple phase. As illustrated in Fig. 2 the motor includes the usual armature 55 fixed to the shaft 54 and cooperating field coils 56 carried by the casing 53 interiorly thereof. The casing 53 is provided with a flat base formed by laterally-extending feet 57 for mounting the motor on the platform 3, the feet having narrow slots 58 open at their outer ends.

The motor is adjustably mounted on the frame 2 for movement about a vertical axis constituted by a stationary pin 59 extending upwardly from the horizontal face of the platform 3 and engaging a slot or recess 60 in the motor casing 53. The slot 60 is preferably elongated to provide for a slight adjustment of the unit longitudinally of the main frame 2. The motor casing 53 is clamped in any position of angular adjustment on the platform 3 by means of bolts 61 arranged in any suitable manner on the main frame 2 to extend through the slots 58 in the feet 57. As herein illustrated the heads of the bolts 61 are held in inverted T-shaped slots 63 formed in the platform 3 with their threaded shanks projecting

upwardly through the slots 58 in the feet 57. The slots 58 in the feet 57 of the casing 53 and the slots 63 in the platform 3 permit sliding movement of the bolts 61 during angular adjustment of the unit 4 about the pivot-pin 59, after which nuts 64 are screwed down on the threaded shanks of the bolts into binding engagement with the feet of the casing. It will be understood that the unit 4 is adjusted from the position shown in Fig. 3 to that shown in Fig. 4 or into other angular relationship by loosening the nuts 64 on the bolts 61 and turning the unit 4 bodily until the winding-spindle 5 is at the desired angle with respect to the traverse-frame back 35.

The armature-shaft 54 is journaled in bearings in the end bells of the motor which are preferably of the form illustrated in the drawings. As herein shown, one end-bell 67 is formed integrally with the motor casing 53 while the opposite end-bell 68 is detachably secured to the casing by screws 69. The end-bells 67 and 68 are provided with alining bores 70 through which the armature-shaft 54 extends and surrounding the bores 70 are hollow cylindrical housings 71 and 72 in which similar bearings 73 are mounted. The bearings 73 are preferably of the antifriction ball-bearing type having their outer races fixed to the interior of the housings 71 and 72 and the inner races held between shoulders 74 and nuts 75 screwed onto threaded portions 76 of the armature-shaft 54. The housing 71 is closed at its outer end by a plate 77, while the housing 72 is closed by an adjustable gland 78 having screw-threaded engagement with the interior of the housing and engaging the outer race of the bearing 73 to prevent end thrust. The lubricant for the bearings 73 is prevented from escaping from the housings 71 and 72 by packing between the shaft 54 and end-bells 67 and 68 and the end plate 77 and gland 78.

The drive-shaft extension 6 is shown as integral with the armature-shaft 54 while the winding-spindle 5 is preferably detachable therefrom. A form of detachable spindle 5 for winding a cylindrical package, as illustrated in Figs. 2 and 3, has a reduced threaded end-portion 80 screwed into a threaded bore 81 in the end of the armature-shaft 54. The outward end of the spindle 5 is split at 82 and adapted to receive the threaded end of a tapered expanding screw 83. As the expanding screw 83 is screwed into the spindle 5 the split end of the latter is expanded to bind it against the interior of a cylindrical cop-tube C. A sleeve 84 secured to the shaft 54 and spindle 5 by set-screws 85 carries the usual grooved brake-wheel 86. When a conical package is to be wound the spindle 5 is detached from the armature-shaft 54 and another spindle applied carrying a suitable holder 7 for a tapered cop-tube C' for use in winding a conical form of package. The tapered cop-tube holder 7, as disclosed in Fig. 4, is of well known construction comprising a plurality of segments or spring-fingers 87 having serrations 88 at their ends for engaging a conical cop-tube C'. The segments are expanded by sliding a sleeve 89 inwardly on the spindle 5 to cause it to ride under internal cam-faces 90 on the segments, the sleeve being actuated by a control handle as later described.

The motor current is controlled by a circuit-breaker 91 mounted on an arm or bracket 92 fastened to the motor casing 53. As shown in detail in Fig. 5 the circuit-breaker is enclosed in a casing 93 and comprises pairs of oppositely-disposed contact-fingers 94 and 95, one for each phase winding of the motor, with the fingers extending inwardly from the sides of the casing. A plunger-rod 96 of suitable nonconducting material is mounted for longitudinal movement in the casing 93 and carries metallic bridging contacts 97 thereon. The rod 96 extends beyond the ends of the casing 93 and at one end has a push-button 98 while at its other end is a cross-pin 99 for limiting upward movement of the rod with respect to the casing. Surrounding the rod 96 between the push-button 98 and casing 93 is a spring 100 for normally holding the bridging elements 97 out of contact with the contact-fingers 94 and 95 to maintain the circuit open.

As shown most clearly in Fig. 1, the plunger-rod 96 of the circuit-breaker 91 is actuated to bridge the contacts 94 and 95 to close the circuits and energize the motor by a lever 101 engaging the push-button 98. The lever 101 is pivoted on a pin 102 fixed in the motor casing 53 above the bearing housing 71. The lever 101 is normally rocked about the pivot-pin 102 in a counter-clockwise direction by a spring 103 tensioned between one arm of the lever and the motor casing 53 to hold the opposite end of the lever in inoperative position. The lever 101 is adapted to be rocked in a clockwise direction to depress the plunger 96 to circuit-closing position by means of a handle 104 rockably mounted on a hub 107 which is pivoted on the pin 102 and connected with the lever by pins 105. The assembly of lever 101 and handle 104 are held against axial movement on the pivot-pin 102 by a set-screw 106 extending through the hub 107 and into a groove in the pin, see Fig. 2. The handle 104 is pivoted on a pin 124 held in lugs 125 on the hub 107 to also adapt it for pivotal movement in a plane at right-angles to its plane of movement about the pin 102. The handle 104 is rocked manually in the latter direction to actuate the sliding sleeve 89 of the cop-tube holder 7 in a well-known manner.

The lever 101 is held in circuit-closing position against the actions of the springs 100 and 103 to maintain the machine operative by suitable detent mechanism as next described. The detent mechanism comprises a curved arm 126 extending from the hub 107 around the periphery of the brake-wheel 86 to a position below the armature-shaft 54. At its lower end the arm 126 is provided with a projecting detent or locking lug 108 which is adapted to be engaged by a correspondingly-shaped lug 109 carried at the end of one arm of a bell-crank lever 110, see Fig. 1. The bell-crank lever 110 is pivotally mounted on a stud 111 projecting from the motor casing 53 and is adapted to be rocked in a counterclockwise direction to release the detents 108 and 109. The spring 103 will then act to rock the lever 101 while the plunger-rod 96 of the circuit-breaker 91 is raised by the spring 100 to open the circuits to the motor. The curved arm 126 extends beyond the hub 107 on the opposite side of the pivot-pin 102 and at its end carries a pivotally-mounted brake-shoe 113 for cooperating with the brake-wheel 86 to arrest the rotation of the winding-spindle when the circuit-breaker is opened.

The bell-crank lever 110 is held in locking engagement with the end of the curved arm 126 by means of a quadrant 114 pivotally mounted on a stud 115 projecting from the side of the main frame 2. As shown in detail in Fig. 6, the longer arm 112 of the bell-crank lever 110 is connected to the quadrant 114 by a link 116. The link 116 is in the form of a wire loop extending through

an aperture 117 in the end of the arm 112 and loosely embracing a flat plate 118 having a depending slotted portion 119 fastened to the side of the quadrant 114. The looped link 116 is relatively wide with respect to the arm 112 to permit the latter to slide laterally on the loop while the loop itself is adapted to slide longitudinally of the plate. The link 116 thus provides a flexible connection between the lever 110 and quadrant 114 so that the unit 4 may be angularly adjusted on the machine frame 2.

The quadrant 114 is automatically raised when the yarn breaks or its supply is exhausted and when a package of predetermined size has been wound. Such actuating mechanism for the quadrant 114 is of usual construction including a yarn-controlled drop-wire 120 pivotally mounted on the end of the quadrant 114 and a stop 121 adjustable along its length. When the yarn *y* breaks or its supply is exhausted one arm of the drop-wire 120 engages the toothed wheel 52 at the end of the cam-shaft 9 to thereby rock the quadrant 114 in a counter-clockwise direction about its pivot-stud 115. When the package is wound to a predetermined size a rib 122 on the traverse-frame 27 engages the wedge-shaped under side of the stop 121 to rock the quadrant 114 in a similar manner. In either case the rocking of the quadrant 114 lifts the bell-crank lever 110 to release the curved arm 126 which is thereupon rocked by the spring 103 to permit the spring 100 to slide the plunger-rod 96 of the circuit-breaker 91 to open the circuits. A suitable tensioning device 123 of usual construction mounted on the frame 2 operates on the yarn *y* as it feeds to the package being wound. The machine having now been described in detail its method of operation will be next explained.

To prepare the machine for a winding operation a suitable spindle 5 and cop-tube holder assembly are attached to the end of the armature-shaft 54. The unit 4 is swung about the fixed pivot-pin 59 on the frame 2 to adjust the angular relationship of the spindle 5 with respect to the bearing face 36 of the traverse-back 35 to correspond with the shape of the package to be wound. If the package is to be cylindrical the axis of the spindle 5 is set parallel with the bearing face 36 of the traverse-frame back 35 as explained above. When properly adjusted the unit 4 is clamped to the platform 3 by screwing down the nuts 64 against the feet 57 on the motor casing 53. During this adjustment of the unit 4 the position of the driving pulley 43 at the end of the drive-shaft extension 6 of the armature-shaft 54 may be altered somewhat with respect to the driven pulley 42 but the gear-housing 40 automatically assumes the proper relationship to tension the belt 44 under the action of the weight 48.

The machine is then ready to commence a winding operation. A cop-tube C is applied to the spindle 5 and the split end of the spindle expanded by means of the expansion screw 83. With the machine prepared as above-described the winding operation proceeds in the usual manner as next explained. The yarn *y* is drawn up from its source of supply, not herein shown, led through the tensioning device 123 and across the drop-wire 120 at the end of the quadrant 114, then through the thread-guide groove 20 and its end attached to the cop-tube C. The control handle 104 is then rocked in a clockwise direction, as viewed in Fig. 1, which causes the end of the lever 101 to engage the push-button 98 and depress the plunger-rod 96 of the circuit-breaker 91. With the rod 96 depressed the conductors 97 bridge the contact-fingers 94 and 95 in the casing 93 to close the circuits to the motor. As the handle 104 is rocked in the manner explained the lug 108 at the end of the curved arm 126 slides over the lug 109 on the pivoted bell-crank lever 110 into locking engagement therewith to maintain the circuit-breaker 91 closed. The closing of the circuits energizes the motor to rotate its armature-shaft 54 and the spindle 5 and wind the yarn on the periphery of the cop-tube C. Due to the driving connection between the drive-shaft extension 6 and the cam-shaft 9 the cam 15 is rotated to reciprocate the traverse-rod 21 to thereby cause the thread-guide 18 to traverse the yarn to wind a package in the normal manner. The winding continues until the yarn breaks, its supply is exhausted or a package of predetermined size is completed. If the yarn *y* breaks the drop-wire 120 at the end of the quadrant 114 is released to engage the toothed wheel 52 which causes the quadrant and bell-crank lever 110 to be rocked to disengage the detents 108 and 109. The springs 100 and 103 then act to rock the lever 101 and actuate the plunger-rod 96 of the circuit-breaker 91 to open the motor circuits. Simultaneously with the actuation of the circuit-breaker 91 the brake-shoe 113 is applied to the wheel 86 on the shaft 54 to arrest its rotation. When a package of predetermined size has been wound the traverse-frame 27 will have been rocked about the cam-shaft 9 to a position where the rib 122 engages the adjustable stop 121 on the quadrant 114. Engagement of the stop 121 in this manner causes the quadrant 114 to be raised to effect the opening of the circuits and the application of the brake in the same manner to arrest the operation of the machine.

To adjust the winding machine for winding a conical package the nuts 64 are loosened on the bolts 61 and the unit 4 turned about the fixed pivot-pin 59 to the proper angular relationship with respect to the traverse-frame back 35. The nuts 64 are then screwed down on the bolts 61 to clamp the unit 4 in adjusted position, it being understood that a spindle 5 with a tapered or conical holder 7 such as shown in Fig. 4 is first attached to the armature-shaft 54. During this angular adjustment of the unit 4 the arm 112 slides on the link 116 and the link adjusts itself on the plate 118 to the proper position as shown in Figs. 3 and 4. The link 116 thus provides a flexible connection between the separate elements of the circuit-breaker actuating mechanism which is self-adjusting to compensate for the different angular positions of the unit 4 with respect to the traverse-frame 27. With the machine adjusted as last described a conical cop-tube C' is applied to the holder 7 and the latter expanded to grip the tube by rocking the handle 104 on the pin 124 to slide the sleeve 89.

The invention and its mode of operation having now been described, it will be observed that a winding machine of relatively simple construction is provided in which the winding-spindle is adapted to be readily and quickly adjusted to alter its angular relation with respect to the traversing mechanism so that either cylindrical or conical packages of any degree of taper may be wound. It will further be observed that each winding head has a separate winding unit with an individual motor drive thereby eliminating the usual belts, pulleys, counter-shafts, belt-shifters and clutches. It will still further be observed

that the present invention provides a construction and arrangement of the winding machine which permits angular adjustment of the spindle without altering or affecting the starting and stopping control mechanism or its automatically-operated actuating means.

While I have herein described and illustrated a preferred form of construction of the machine, it is to be understood that modifications may be made in the structure and arrangement of the elements thereof without departing from the spirit or scope of the invention. Therefore, without limiting myself in this respect, I claim:

1. In a winding machine, a supporting frame, a self-contained driving unit on the frame comprising an electric motor having an armature-shaft constituting a winding-spindle, package-supporting means at one end of the spindle, traversing means on the frame associated with the package-supporting means to guide yarn onto the package, a second shaft on the frame, means for connecting said second shaft to operate the traversing means, and means operatively connecting the spindle with the second shaft, said self-contained unit being mounted on the frame for adjustment about an axis perpendicular to the spindle to vary the angular relation of the package-supporting means with respect to the traversing means whereby to permit different forms of packages to be wound on the same spindle.

2. In a winding machine, a supporting frame having a platform, a self-contained driving unit mounted on the platform comprising an electric motor having an armature-shaft extending beyond the ends of the motor, package-supporting means on one extended end of the armature-shaft, traversing means on the frame associated with the package-supporting means to guide yarn onto the package, a cam-shaft on the frame, a cam on the cam-shaft connected to operate the traversing mechanism, means for operatively connecting the motor-shaft with the cam-shaft, a pin-and-slot connection between the platform and motor to permit the latter to be adjusted about an axis perpendicular to the spindle to vary the angular relation of the package-supporting means with respect to the traversing means whereby to permit different forms of packages to be wound on the same spindle, and means for clamping the unit in adjusted position on the platform.

3. In a winding machine, a supporting frame having a platform thereon, an electric motor mounted on the platform and having an armature-shaft extended beyond the ends of the motor, package-supporting means on one extended end of the armature-shaft, a traverse-frame mounted on the supporting frame for swinging movement about a fixed horizontal axis, traversing means on the swinging frame associated with the package-supporting means to guide yarn onto the package, a cam-shaft journaled in the frame, a cam on the cam-shaft connected to operate the traversing means, means for operatively connecting the motor-shaft with the cam-shaft, said motor being adjustable on the platform about a vertical axis to vary the angular relation of the package-supporting means with respect to the swinging traverse-frame whereby to permit different forms of packages to be wound on the same shaft, and means for clamping the motor in adjusted position.

4. In a winding machine, a supporting frame having a horizontal platform thereon, an electric motor mounted on the platform and having an armature-shaft extended beyond the opposite ends of the motor, package-supporting means on one extended end of the armature-shaft, a horizontal cam-shaft on the frame, a traverse-frame mounted on the cam-shaft for swinging movement with respect to the package-supporting means, traversing mechanism carried by the swinging frame and cooperating with the package-supporting means to guide yarn onto the package, a cam on the cam-shaft connected to operate the traversing mechanism, means for operatively connecting the armature-shaft with the cam-shaft, a pin-and-slot connection between the motor and platform to permit the motor to be adjusted about a vertical axis to vary the angular relation of the package-supporting means with respect to the swinging traverse-frame whereby to permit different forms of packages to be wound on the same shaft, and means for clamping the motor in adjusted position on the platform.

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