Oct. 27, 1936. E. R. SWANSON 2,058,839

CONVEYER MEANS FOR WINDING AND LIKE MACHINES

Filed Sept. 29, 1932 3 Sheets-Sheet 1

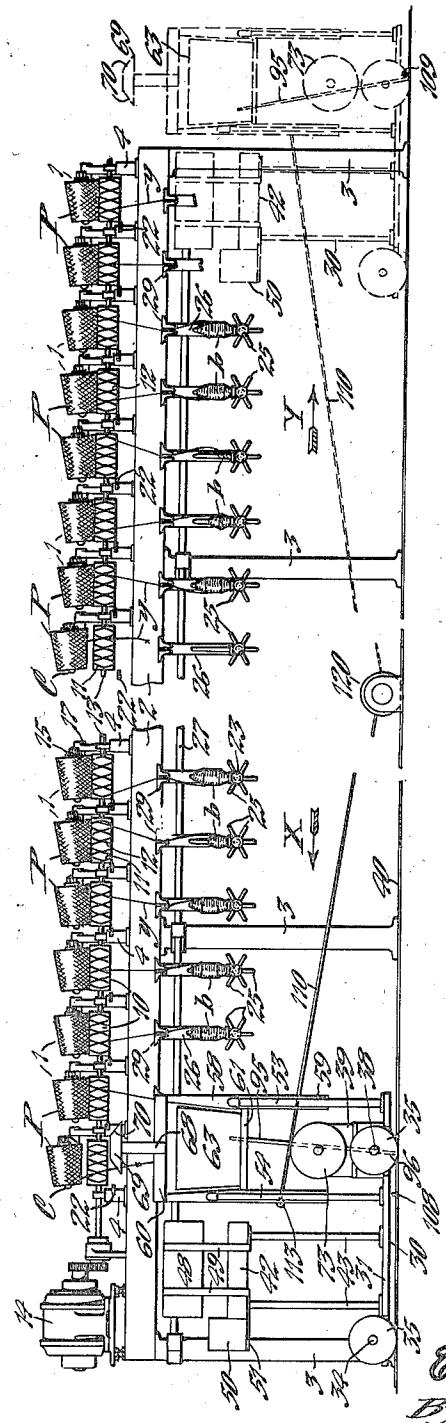


Fig. 1.

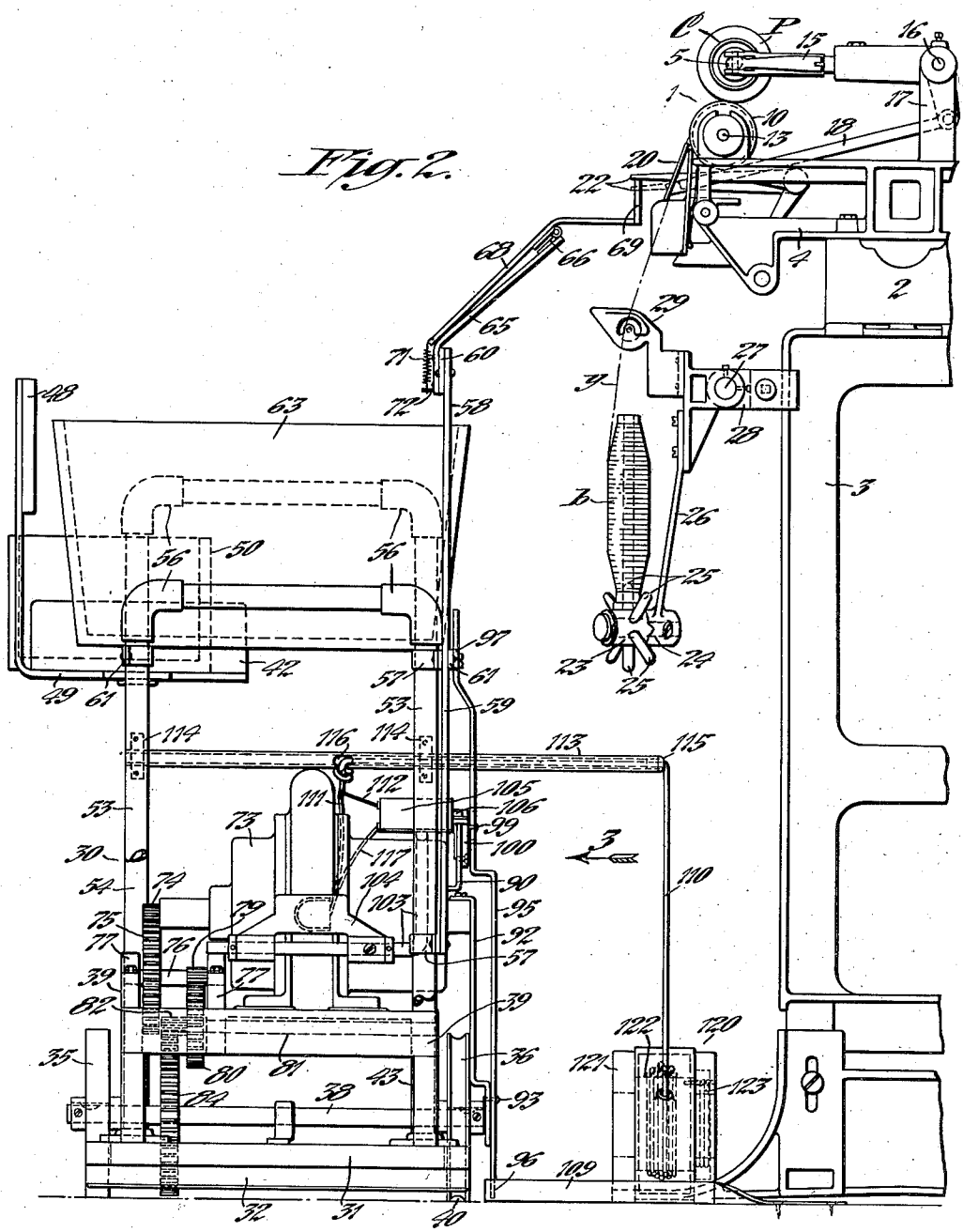
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CONVEYER MEANS FOR WINDING AND LIKE MACHINES

Filed Sept. 29, 1932 3 Sheets-Sheet 2

Fig. 2.



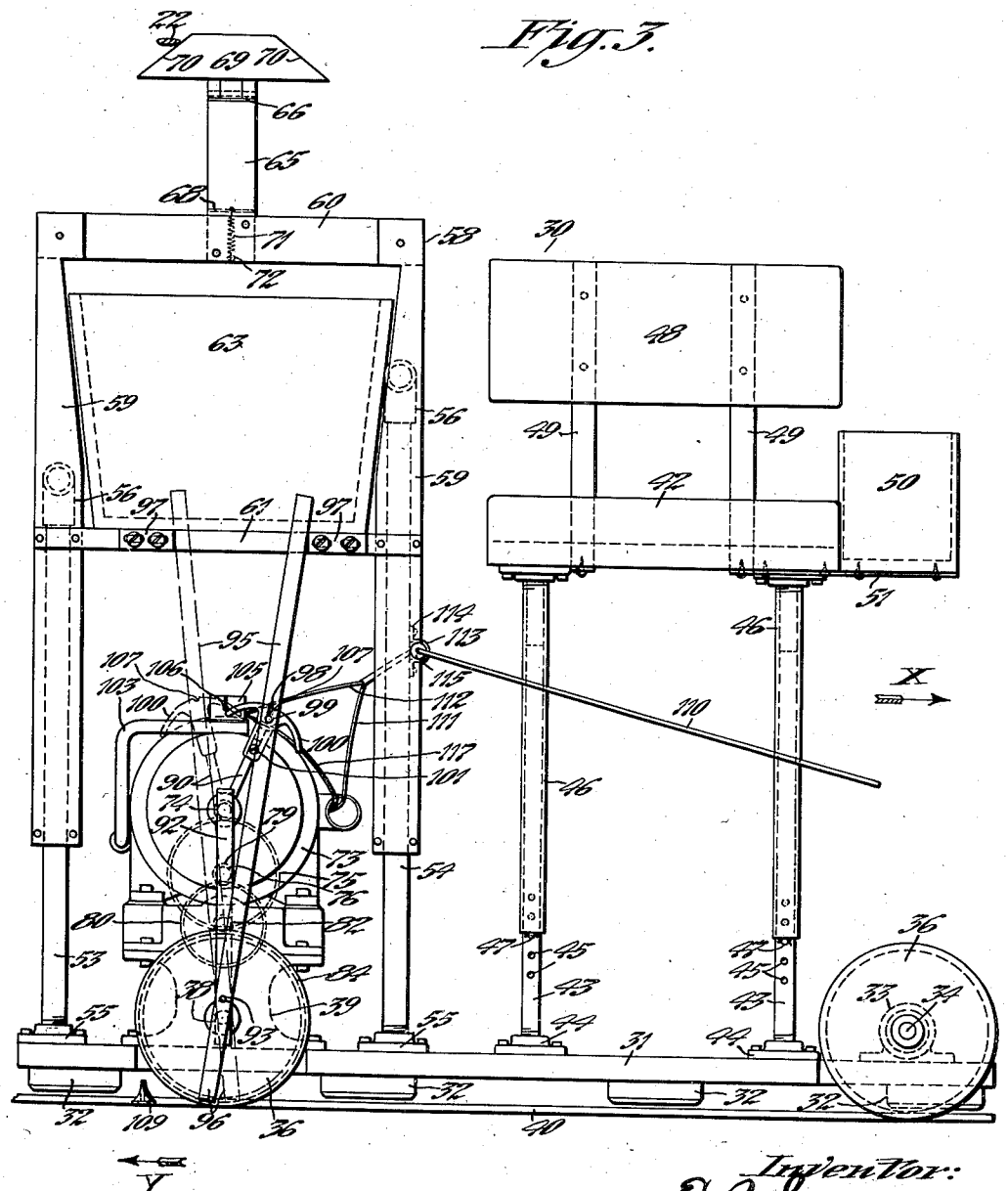
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CONVEYER MEANS FOR WINDING AND LIKE MACHINES

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Fig. 3.



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UNITED STATES PATENT OFFICE

2,058,839

CONVEYER MEANS FOR WINDING AND LIKE MACHINES

Ernest R. Swanson, Cranston, R. I., assignor to Universal Winding Company, Boston, Mass., a corporation of Massachusetts

Application September 29, 1932, Serial No. 635,438

3 Claims. (Cl. 104—151)

This invention relates to improvements in winding machines for winding cops, cones, cheeses and other forms of packages of yarn, thread, cord or other strand material, hereinafter referred to generally by the term "yarn". Specifically, the invention relates to means, in the form of a carriage, for conveying or transporting an operator or attendant of the machine along the side thereof, first in one direction and then in the opposite direction to tend the winding units arranged in series thereon.

One object of the invention is to provide an operator's carriage with means to propel it back and forth along one side of a winding frame in parallel relation thereto whereby to transport the attendant successively past the individual winding units.

Another object of the invention is to provide a carriage of the type specified having self-contained driving means for traversing it along the machine frame in opposite directions at variable speeds; whereby the operator may slowly pass the winding units to doff completed packages and tie-in fresh supply-bobbins during one traverse of the carriage while returning at a faster rate of speed.

Another object of the invention is to provide an apparatus of the type specified embodying a simple trip mechanism for automatically reversing the drive at the completion of each traverse of the carriage.

Another object of the invention is to provide an apparatus of the type specified having means incorporated in the carriage for automatically starting the winding mechanisms of the several units after the latter have been prepared for operation whereby to leave the attendant's hands free to perform other duties.

Another object of the invention is to provide an apparatus of the type specified organized as a complete unit adapted to be located adjacent a winder or other machine and operable independently thereof.

Another object of the invention is to provide an apparatus of the type specified which is adapted for use with practically all types of winders or similar textile machines without requiring alterations in the construction thereof.

Another object of the invention is to provide an apparatus of the type specified which is simple in construction, automatic in operation and proof against derangement or getting out of order.

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 view in front elevation of a conventional type of winding machine showing the present improved conveying apparatus as applied to use therewith;

Fig. 2 is an enlarged end view of the same; and

Fig. 3 is an elevational view of the conveying apparatus looking in the direction of the arrow 3 in Fig. 2.

The present improved apparatus comprises, in general, a carriage provided with a seat for the operator and means for supporting a bobbin-container; and means for traversing the carriage along the side of a winder or other machine, first in one direction and then in the opposite direction at different rates of speed in accordance with the time required by the operator to perform the necessary manual operations.

Referring to the drawings, the winding machine herein illustrated by way of example is of conventional type wherein the packages are driven by peripheral contact with drive-rolls or drums; a similar construction being shown and described in my copending application for United States Letters Patent, Ser. No. 447,588, filed April 26, 1930, now Patent No. 1,895,741, dated January 31, 1933. The present apparatus is adapted for use with practically all types of winders and like machines, however, and therefore the illustrated machine will be described only briefly as relating to the operation of the apparatus.

The multiple winding units or heads 1, any number of which may be provided, are mounted upon a bed or frame 2 supported from the floor by legs 3 arranged at intervals therealong. The bed 2 carries brackets 4 which support bearings for the rotative elements of the winding mechanisms. In the present construction of the machine the winding mechanism of each unit comprises only two principal elements, namely, a winding-mandrel or spindle 5 on which the yarn-receiver or cop-tube C is rotatably supported and a drive-roll 10 for rotating the yarn-receiver and in which is embodied the means for traversing the yarn back and forth axially of the package being wound. In this form of construction the drive-roll 10 has its peripheral surface provided with connected helical grooves 11 and 12 extending in opposite directions and adapted to receive the strand of yarn to guide it back and forth between the ends of the package. This particular form of traversing means is fully shown and de-

scribed in United States Letters Patent No. 1,749,-355, dated March 4, 1930.

The drive-rolls **10** for all of the several winding units are carried on a horizontal shaft **13** journaled in bearings supported by the brackets **4** and continuously driven from an electric motor **14** arranged at one end of the machine. The machine is herein shown as adapted for winding packages P of conical form in which the yarn is built up on an axial support or receiver such as a wooden or fiber cone-tube C mounted to rotate on the winding-spindle **5**. Referring to Fig. 2, the spindle **5** is swiveled to the forked end of an arm **15** which is hinged on a rod or stud **16** held in a bearing **17** projecting from the top of the bracket **4**. The arm **15** is usually weighted to cause the surface of the yarn-receiver C, or of the package P, as the case may be, to be held firmly in contact with the periphery of the drive-roll **10** and as the yarn is built up on the receiver it forces the latter upwardly with the arm **15** pivoting on its stud **16**.

Stopping mechanism is usually provided for arresting the rotation of the package when the yarn breaks or its supply is exhausted and also when the package reaches a predetermined size. As this mechanism is fully shown and described in the application above referred to, a detailed description herein is deemed unnecessary. Suffice it to state that a sizing bar **18** connected to the spindle-carrying arm **15** is actuated by the stopping mechanism when the package reaches the required size to swing the arm **15** on its pivot **16** to carry the package P away from the drive-roll **10**. Similar actuation of the bar **18** takes place upon breakage of the yarn or exhaustion of its supply, the operation of the stopping mechanism in such case being controlled and set in motion by a pivoted bail or drop-wire **20**. When the spindle **5** is raised away from the drive-roll to arrest the winding operation it is held in this position by means of a starting handle **22**. After the operator ties-in a new yarn from the supply the winding unit is restarted by lifting the starting handle **22** which acts to return the parts to normal or running position with the package held in driving contact with the periphery of the drive-roll **10**.

In accordance with the usual method of operation of machines of the present type the starting handle must be manipulated by the operator, but as one feature of improvement of the present invention means are provided for starting the winding operation automatically as the operator or attendant completes the tying-in of the supply yarn. In the form as herein illustrated the automatic starting device is carried by the traveling operator's carriage, being organized and arranged in the manner as later explained.

The supplies of yarn to be wound are usually arranged below the winding mechanisms and, as herein shown, each winding unit is furnished with one or more supply-bobbins *b* held on spindles **25** radiating from hubs **23** which are rotatably mounted on studs **24** fast in the lower ends of brackets **26**. The brackets **26** are secured to a horizontal rod **27** by arms **28** fastened to the legs **3** of the machine. The supply-holder herein illustrated, by way of example, is of substantially the same construction as that shown and described in United States Letters Patent No. 1,869,-731 dated August 2, 1932, and therefore will not be described in detail. Suffice it to state that the supply-holder hub **23** may be rotated or indexed around to bring fresh supply-bobbins *b* into position to deliver the yarn to the winding mechanism. The hub **23** is held in its indexed position by automatically operated detent-means and the exhausted bobbins are thrown off or doffed from the spindles **25** as the latter are turned into down position. Mounted on each bracket **26** is a tension-device **29** which may be of any suitable construction for applying resistance to the draft of the strand of yarn *y* as it leads upwardly from the supply-bobbin *b*. From the tension-device **29** the yarn passes up over the bail or drop-wire **20** and thence through the grooves in the drive-roll **10** which guide it helically of the cop-tube C.

In the operation of multi-unit or gang winders the attendant is usually obliged to walk continually up and down the length of the machine to tend the individual winding units. The supply-bobbins are usually stacked in trays or boxes arranged below the winding units and the operator is required to stoop to pick up the bobbins and place them on their holders in replacing spent supplies. The gang machines are of considerable length, usually embodying some forty or more units arranged in series along their sides, so that the operation of tending the machine is laborious and fatiguing and thus tends to restrict its productive capacity. Moreover, much time is wasted by the operator in walking up and down the machine so that a considerable number of the winding-spindles may unavoidably remain inoperative awaiting attention for greater or less intervals.

To alleviate the above mentioned conditions the present invention contemplates the use of a carriage or conveyor upon which the attendant is transported along the length of the machine to successively pass its individual units at a rate to allow the necessary operations to be performed. The operator is thus enabled to attend the units in a convenient and systematic manner with less labor and fatigue so that the productiveness of the machine is substantially increased.

Referring further to the drawings, the carriage **30** comprises a chassis mounted on two pairs of outer and inner wheels **35** and **36**. As herein shown the chassis comprises a rectangular platform **31** reinforced by cross-strips **32** on its under side and serving as a base for a superstructure or framework. Bearing members **33** fastened to the platform **31** at one end serve as journals for a rotatable axle **34**. The wheels **35** and **36** are secured fast upon the ends of the axle **34** and keyed rotatively therewith. The opposite pair of wheels **35** and **36** are fastened and keyed to the ends of a similar driven axle or shaft **38** journaled in bearings at the ends of a frame member **39**. The shaft **38** is connected to be driven from an electric motor **73**, mounted upon the top of the frame member **39**, by means of reducing gearing to be later described. It will be observed by reference to Figs. 2 and 3 that the rims of the inner wheels **36** of the carriage, that is, those nearest the winding frame, are peripherally grooved to ride upon a rail **40**. The rail **40** is semicircular in cross section to fit the groove in the wheels and is secured to the floor by suitable means to extend along the entire length of the winding machine to guide the carriage in a fixed path parallel thereto. The outer or opposite wheels **35** of the carriage have flat rims and may roll directly upon the floor.

An operator's seat **42** is mounted at one end of the carriage **30**, being vertically adjustable thereon to secure a comfortable position of the operator for attending the winding units. Referring to Fig. 3, a pair of uprights **43**, preferably of pip-

ing, are secured to the platform 31 by means of flanged feet 44. The seat 42 is provided with a pair of depending tubular legs 46 for telescopically fitting the uprights 43 which have a series of holes 45 spaced at intervals therealong and adapted to receive cross-pins 47. The seat 42 may be adjusted vertically by sliding its legs 46 on the uprights 43 and inserting the pins 47 through appropriate holes 45 to serve as supports upon which the lower ends of the legs rest. A back-rest 48 is secured to the seat 42 by means of angular straps 49 fastened to the underneath side of the seat. A box 50 attached to one side of the seat 42 by means of straps 51 serves as a holder or receptacle for waste yarn.

Rising from the opposite end of the chassis platform 31 are two parallel frames or standards 53 and 54 secured thereto by means of screws passing through flanges 55 and screwed into the platform. The frames 53 and 54, which may be constructed from piping, comprise pairs of uprights or columns connected by cross members secured to their upper ends by elbows 56. The standards 53 and 54 are arranged in spaced parallel relationship with their cross members extending transversely of the carriage. Secured to the forward uprights of the standards 53 and 54 by means of clamps 57 is a framework 58 of inverted U-shape. The framework 58 comprises a pair of opposite legs 59 joined at their upper ends by a horizontal cross member 60. Front and rear metal straps 61 clamped at their ends to the uprights 53 and 54 serve as a shelf upon which a bobbin-box 63 may rest.

Fixedly secured to the upper cross member 60 of the frame 58 is a flat strip or bar 65 which extends upwardly and rearwardly therefrom and carries at its upper end a hinge 66. One ear of the hinge 66 is fastened to the bar 65 and the other ear to the under side of an angular arm 68 termed "a lifter member". The forward end of the lifter member 68 is bent upwardly and extended laterally in a T-head 69 formed at its ends with beveled or inclined cam-faces 70 adapted to engage with and raise the starting handles 22 of the winding units as the carriage 30 is traversed longitudinally of the machine. The lifter member 68 functions in the manner of a follower to restart the winding mechanism immediately after they have been attended by the operator. The forward or operative end of each lifter 68 is yieldingly held in raised position by means of a spring 71 fastened to its lower rearward end and anchored to a pin 72 driven into the bar 65. Through this connection the cam member or lifter 69 is inductively or yieldingly pressed against the starting handles 22 to prevent shock and strain on the parts.

The means for traversing the carriage in opposide directions alongside the winding frame is constructed and arranged as next described. The electric motor 73, before referred to as mounted on the frame 39 of the carriage 30, carries a pinion 74 at the forward end of its armature-shaft, the pinion meshing with a larger gear 75 fast on a stud-shaft 76 which is journaled in bearings 77 formed as a part of the frame 39. A second pinion 79, which as herein shown is formed integral with the stud-shaft 76, meshes with a gear 80 fast on a shaft 81 also journaled in the frame 39. The shaft 81 is formed with or carries a pinion 82 at its forward end which meshes with a larger gear 84 fast on the driving shaft 38 of the carriage. The motor 73 is thus connected through the train of gearing 74, 75, 79, 80, 82 and 84 to drive the shaft 38 at a greatly reduced rate of speed and thereby the carriage 30 is traversed along the machine frame. The speed of rotation of the shaft 38 is preferably variable to regulate the rate of travel of the carriage in accordance with the capacity of different operators, the means for effecting such an adjustment being arranged as next described.

The motor 73 may be of the reversible and variable speed type having its brushes shiftable circumferentially of its rotor to effect a change in speed and to reverse the direction of rotation of the armature-shaft. Motors of this character are usually provided with a manually operable control-lever such as illustrated at 90 in the drawings, the lever being pivoted on the axis of the armature and connected to the brushes to shift the latter therearound. With the control-lever 90 in neutral or upright position the motor is idle and the carriage 30 remains stationary. Movement of the control-lever 90 to the position shown by full lines in Fig. 3 causes the brushes of the motor to be shifted in a clockwise direction as viewed in this figure to effect a clockwise rotation of the armature-shaft. With the motor turning in this direction the carriage wheels 35 and 36 driven therefrom will be rotated contra-clockwise to cause the carriage to travel toward the left as viewed in Fig. 3, or toward the right as viewed in Fig. 1, this direction being indicated by the arrow Y in each view. When the lever 90 is shifted into opposite position as illustrated by the dash lines in Fig. 3 the brushes of the motor are revolved in a contraclockwise direction and the rotation of the armature-shaft will likewise be contraclockwise. The driving wheels 35 and 36 will then be rotated in a clockwise direction and the carriage traveled toward the right as viewed in Fig. 3, or toward the left as viewed in Fig. 1, as indicated by the arrow X in each view.

Not only is the direction of rotation of the armature-shaft governed by the positioning of the control-lever 90, but the speed of the motor may also be regulated by this adjustment. The rotative speed of the motor is governed by the distance the brushes are advanced in one direction or the other, the speed being gradually accelerated as the lever 90 is shifted away from neutral or vertical position. In accordance with one feature of the present invention the lever 90 is operated automatically to reverse the direction of travel of the carriage 30 at the end of each traverse along the machine, the purpose of this provision being to relieve the operator of any attention to the propelling means whereby the hands are free at all times to perform the necessary operations on the winding units.

The means for controlling the drive of the carriage are arranged as next described. An arm 92 secured to the motor housing extends downwardly therefrom and carries a pivot-pin 93 at its lower end, upon which is rockably mounted a shift-lever 95. The upper arm of the shift-lever 95 is formed with a slot 98 engaged by a pin 99 projecting from the control-lever 90 whereby the latter is caused to be rocked by and with the movement of the shift-lever. The lower arm of the lever 95 terminates in a toe 96 adapted to be engaged by trip-members 108 and 109 at the ends of the carriage trackway to swing the lever on its pivot in the manner as later explained. The upper arm of the lever 95 bears against the cross-strap 61 of the frame 60 and is slidable therealong between abutments or stops 97 secured in

place by a screw and slot connection to adapt them for longitudinal adjustment.

As shown most clearly in Fig. 3, a cam member 100 is mounted upon the upper extremity of the control-lever 90 and secured thereto by means of a screw 101. The cam member 100 has its upper surface formed with an arcuate face arranged eccentric to the axis of the lever 90. Mounted on the end of an elbow-shaped rod 103, carried by a bracket 104 attached to the motor housing, is an electrical switch 105 for controlling the starting and stopping of the motor 73. A finger 106 projecting from the switch 105 is engaged by the cam-face of the member 100 to adapt it to be raised and lowered thereby as the lever 90 is shifted across center. When the control-lever 90 is in vertical position it maintains the finger 106 raised and the electrical circuit through the switch open so that the motor 73 is inoperative. Movement of the lever 90 from the vertical permits the finger 106 to descend to close the circuit and energize the motor. The cam member 100 may have a detent-notch 107 for engaging the finger 106 to yieldingly hold the lever 90 in its vertical or neutral position.

The trip members 108 and 109 for actuating the shift-lever 95 are constituted by strips of spring-metal screwed to the floor at the left- and right-hand ends of the machine, see Fig. 2. Forwardly-extending portions of the trip members 108 and 109 are twisted to lie in a place at right-angles to the floor and in the path of the lower end or toe 96 of the shift-lever 95 as the carriage 30 approaches the ends of its traverse along the machine frame. The trip members 108 and 109 act to swing the lever 95 one way or the other on its pivot 93 as the carriage 30 reaches the end of its traverse and through the pin and slot connection of the lever 95 with the control-lever 90 the latter is shifted within prescribed limits as defined by the stops 97 to reverse the direction of rotation of the motor armature.

Any suitable arrangement of conductor may be employed for supplying current to the motor 73, such as a third-rail or an overhead trolley wire, but preferably a flexible cable 110, comprising a pair of conductors 111 and 112, is connected to the power line at one end and wound onto an automatic take-up reel 120 before passing to the carriage 30. A conduit 113 clamped to one of the standards 54 at 114 projects forwardly from the carriage 30 and is preferably provided at its end with a porcelain bushing 115 through which the cable 110 leads. The cable 110 passes part way through the conduit 113 and outwardly through an opening 116 in the side thereof, see Fig. 2. At this point the wires 111 and 112 are separated with one branch 111 connected directly to the motor 73 and the other wire 112 attached to one terminal of the switch 105. Another wire 117 leading from the opposite terminal of the switch to the motor 73 completes the circuit.

The automatic wind-up or reeling device 120, above mentioned, is secured to the floor preferably at a point midway of the length of the winding machine frame and in alinement with the rearward end of the conduit-pipe 113. The wind-up device may be of a usual construction and therefore will not be described in detail. Suffice it to state that a take-up reel or drum 122 is rotatably mounted within a casing or housing 121 to automatically wind up the cable 110 under the influence of a coil-spring 123. In this way the cable is maintained substantially taut and paid out as required during the traverse of the carriage whereby to prevent it from dragging on the floor to become tangled or caught on an obstruction.

The method of operation of the complete apparatus is as next explained. Assuming that the carriage 30 is in the position illustrated by full lines in Fig. 1, and that the supply-hopper or box 63 has been filled with supply-bobbins, the operator steps upon the platform 31 and assumes a comfortable position on the seat 42. With the carriage in stationary position and the motor 73 at rest the control-lever 90 and shift-lever 95 are in vertical or neutral postion. Upon being seated the operator starts the motor 73 by manually shifting the lever 95 in the proper direction. With the carriage in the location illustrated in Fig. 1 the operator pulls the lever 95 toward the seat 42, the lever being thus carried to the position shown in dash lines at the right of Fig. 1 and in full lines in Fig. 3. Concurrently with the manual movement of the lever 95 the control-lever 90 is shifted from its vertical position in a clockwise direction as viewed in Fig. 3 and the finger 106 of the switch 105 will ride down the arcuate face of the cam member 100 to close the electrical circuit and energize the motor 73. The shifting of the lever 90 advances the brushes of the motor in a clockwise direction and thereby the armature-shaft is caused to rotate in the same direction. The turning of the motor in this direction drives the wheels 35 and 36 of the carriage 30 to propel the latter along the winding frame in the direction indicated by the arrow Y. In starting the motor 73 the lever 95 is thrown to its full extent as limited by the stop 97, see Fig. 3, and the brushes are thereby advanced to a point to cause the motor to operate at a relatively high speed to propel the carriage 30 at its fastest rate of traverse. During this relatively quick traverse of the carriage in the direction indicated by the arrow Y the operator simply places fresh bobbins on the supply-holders without any attempt to tend the winding units by tying-in the yarns. With the type of supply-holder herein shown the operator places the full bobbins on the spindles 25 which are inclined upwardly toward the approaching carriage, thereby being enabled to apply the bobbins in quick succession as the carriage travels at a rapid rate.

As the carriage reaches the right-hand end of the machine, as viewed in Fig. 1, its direction of traverse is reversed in the manner as next explained. At this point the toe 96 of the lever 95 makes contact with the fixed trip member 109 which thereby acts to swing the lever on its pivot to shift it toward the position illustrated by dash lines in Fig. 3. As the lever 95 is swung past the vertical the control-lever 90 shifted thereby moves the brushes of the motor 73 to a neutral position while the cam member 100 raises the switch-finger 106 to open the circuit. At this juncture the carriage 30 momentarily coasts under its own momentum until the lever 95 is carried to its extreme opposite position, illustrated by dash lines in Fig. 3, to bring up against the stop 97. It is here noted that the trip members 108 and 109 are constructed of spring-metal to render them yieldable to a slight extent so that should the carriage 30 overrun the prescribed extent of its traverse no undue strain will be imposed on the reversing mechanism.

As the lever 95 is automatically shifted in the

manner as above explained the brushes of the motor 73 are reversed. That is to say, the brushes will be shifted about the axis of the armature in a contraclockwise direction, as viewed in Fig. 3, and the armature-shaft will therefore be rotated in this latter direction. Under this control the carriage 30 is propelled in the direction indicated by the arrow X to transport the operator back along the winding machine. As the motor is reversed the lever 95 is thrown to a less extent than that first described as regulated by the position of the stop member 97. The stop 97 is adjusted for this purpose to effect shifting of the brushes of the motor only to an extent to effect a relatively slow rotation of the armature and thereby a reduced rate of travel of the carriage. This relatively slow rate of traverse of the carriage allows ample time for the operator to doff the full packages P from the winding-spindles and tie-in fresh supplies of yarn. In this latter operation the bobbin applied during the previous traverse of the carriage is carried up into vertical or delivery position and a bare spindle brought into place to receive a fresh reserve supply as the operator is returned down the side of the machine at the next traverse.

As each unit of the winder is attended in the manner explained to put it in operative condition the operator continues on to the next unit in the series and meanwhile the previously prepared unit is automatically set in motion. This latter operation is effected by the action of the lifter member 69 which successively wipes under the starting handles 22 to lift the latter in the manner as previously explained.

Referring again to Fig. 1, as the carriage 30 completes its traverse toward the left-hand end of the machine, as viewed in Fig. 1, the arm 96 of the shift-lever 95 strikes the stop-finger 108 and through the instrumentalities before described the drive is again reversed and the operator transported back in a right-hand direction at a faster rate of speed. The cycle of operations as above outlined may continue indefinitely with the operator traveling first in one direction and then in the opposite direction to give the necessary attention to the several winding units. By adjusting the stop members 97 the rate of traverse of the carriage may be regulated as required for different operators and if desired the order or method of the manipulations may be varied. When it is desired to stop the carriage for any reason, for example, for refilling the hopper 63 with full supply-bobbins, the operator has only to grasp the upper end of the shift-lever 95 and swing it into vertical or neutral position.

It will be observed from the foregoing that the present invention provides a particularly simple yet efficient apparatus for transporting an operator along the side of a winder or other gang machine. The carriage is arranged to tavel along the machine in close proximity thereto with the operator comfortably seated in position to expeditiously perform the necessary operations at the winding units with a minimum of effort. In this manner the operator is relieved of fatigue and the productive capacity of the machine substantially increased.

As one feature of improvement of the present invention means are provided for automatically propelling or advancing the carriage along the winding machine, first in one direction and then in the opposite direction, at different rates of speed. This means is adjustable to vary the rate of movement of the carriage to provide that the operator may slowly pass the individual winding mechanisms while tying-in the supply yarns and doffing the completed packages during one traverse of the carriage, while effecting the return of the carriage at a faster rate during the replenishing of the supply-bobbins. This enables the operator to attend the machine in a rapid and systematic manner and as a result thereof the intervals of inoperativeness of the winding units are materially shortened.

As a further feature of improvement the present apparatus is organized as a complete unit adapted to be placed upon the floor adjacent the winding machine and operated independently thereof. This provides that the apparatus may be used in connection with various types of machines, either textile or otherwise, without alteration in the construction thereof. The conveyer or carriage apparatus is simple in construction, automatic in operation and proof against derangement or getting out of order.

While I have herein shown and described a preferred form of construction of the apparatus, it is to be understood that various modifications may be made therein and in the manner of its use without departing from the spirit or scope of the invention. Therefore, without limitation in this respect, I claim:

1. A conveyer adapted for continuous movement alternately in opposite directions along the side of a machine, an electric motor for propelling the conveyer in opposite directions, a brush-shifter for reversing the direction of rotation of the motor and for varying the speed thereof, and stops engaged by the brush-shifter during the movement of the conveyer, said stops and brush-shifter being so constructed and arranged as to automatically reverse the direction of rotation of the motor and to move the brushes to different relative positions on opposite sides of their neutral axis to cause a slow rate of travel of the conveyer in one direction and a quick return in the opposite direction.

2. In a servicing apparatus for textile machines, the combination of a conveyer travelable along the side of the machine, a motor for propelling the conveyer alternately in opposite directions, a brush-shifter on said motor, a lever mounted for pivotal movement about the axis of the motor and connected with the brush-shifter, stops engaged by the lever at the end of travel of the conveyer in opposite directions, said stops and lever actuating the brush-shifter to reverse the direction of rotation of the motor, and adjustable means for controlling the movement of the lever to position the brushes so that the conveyer has a relatively slow movement in one direction and a quick return in the opposite direction.

3. A conveyer adapted for continuous movement alternately in opposite directions along the side of a machine, an electric motor for propelling the conveyer, shiftable brushes on the motor for reversing its direction of rotation, means at the end of travel of the conveyer in both directions for automatically operating the brushes to reverse the motor, and adjustable stops for limiting the movement of the brushes to adjust the motor to operate the conveyer with a slow travel in one direction and a quick return in the opposite direction.

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