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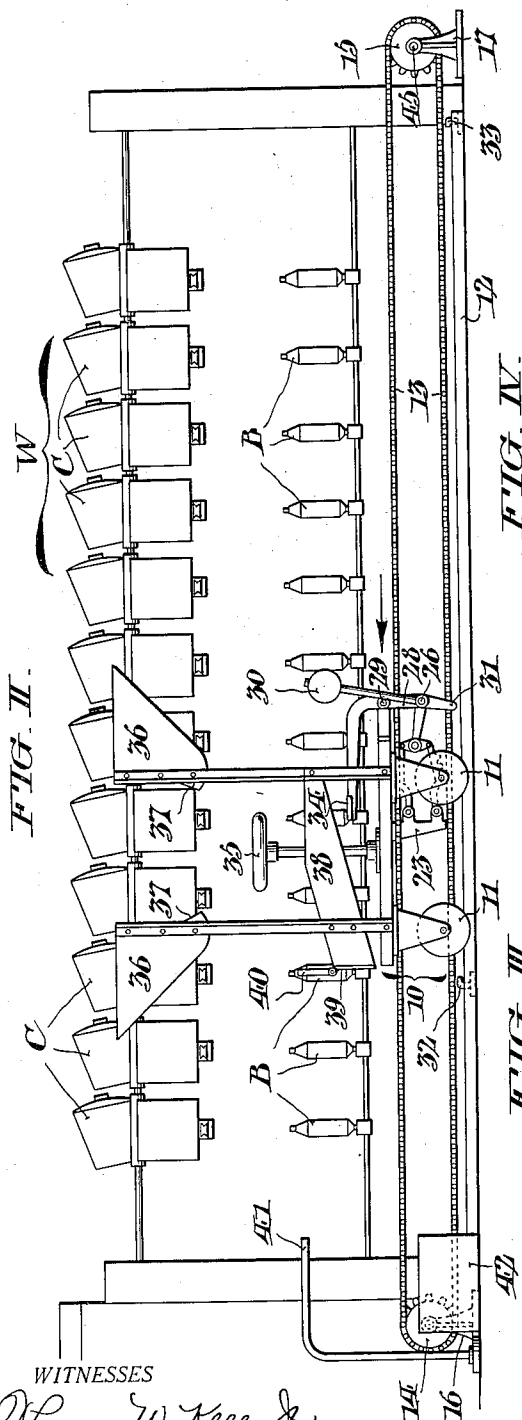
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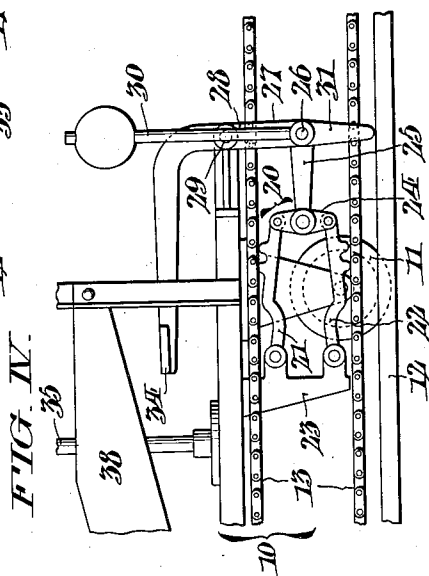
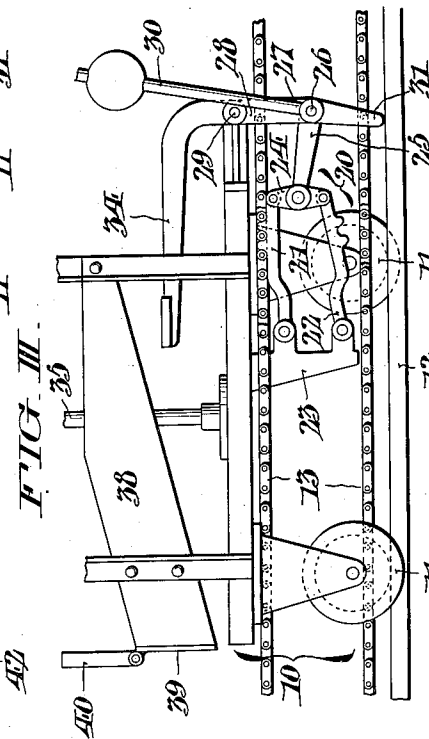
WINDING MACHINE

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2 Sheets-Sheet 2



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WINDING MACHINE

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2 Claims. (Cl. 74—37)

This invention relates to winding machines variously employed for example in the textile industry to wind yarns into conical or cylindric packages (ordinarily referred to as "cones" or "cheeses") of a convenient size suitable for use in knitting machines and the like, to wind yarns on spools, etc.; and has more particular reference to that type of winding machines with winding units in multiple arranged serially in straight rows along opposite sides. When used in numbers, such machines are generally grouped in gangs with aisles between them for operatives to pass back and forth in attending the spinning units at contiguous sides of neighboring machines. Accordingly, the task of the operatives is extremely arduous and tiring in view of the extensive length of the machines and the distance which must therefore be traversed repeatedly to replace empty bobbins, connect broken yarn ends, etc.

In the main, my invention is directed toward alleviating the unsatisfactory condition to which attention has been directed, that is to say, I aim to minimize fatigue incident to running spinning machines of the kind referred to. This end I attain, as hereinafter fully disclosed, through provision of automatically reversing conveyances whereby the operatives are carried back and forth in the aisles between the machines.

Further objects of my invention are to provide, in connection with conveyances suitable to the described purpose, for stoppage under manual control at any point along the line of travel; and also to provide for automatic disposal of empty spindles, etc. collected during each traverse of the conveyances.

Still other objects and attendant advantages will appear in the course of the detailed description following in connection with the attached drawings, whereof Fig. I is a plan view showing my invention in association with a group of winding machines arranged side by side in gang formation.

Fig. II is an elevation of the organization viewed as from below Fig. I.

Figs. III and IV are fragmentary illustrations, on a larger scale, showing different positions of a novel clutch means embodied in my invention.

With more detailed reference to these illustrations, I have depicted in Fig. I a group of winding machines W arranged side by side, after common practice in gang grouping, with traversing aisles A between them. As shown,

these machines W are typical of the kind with winding units in multiple serially arranged in straight rows along their opposite sides, the bobbin B of each such winding unit serving yarn to a reciprocating guide G incident to formation of a yarn package or cone C in a manner well understood in this art.

To transport the operatives back and forth within the aisles A past the winding units along contiguous sides of adjacent winding machines W, I provide in each instance a conveyance having the form of a carriage 10 with wheels 11 to run on track rails 12 that extend centrally through the aisle A. The means for progressing the carriage 10 along the track rails 12 includes a continuously driven endless propelling cable or chain 13 which is trained for movement in a vertical plane over positionally fixed guide wheels 14, 15 with journal support medially of the ends of the track 11 in bearings 16, 17. By reference to Figs. II-IV it will be observed that the carriage 10 is equipped with a clutch means 20 comprising a pair of grip members 21, 22 that are independently fulcrumed to a fixed drop bracket 23 on the carriage 10 and have their outer ends connected by a coupling link 24. The grip members 21, 22 may be formed with teeth as shown to engage interstices of the propelling chain 13. Still referring to Figs. II-IV, it will be noted that the link 24 is pivotally connected to the end of an arm 25 on a shaft 26, said shaft being rockable in the depending portion 27 of a frame 28 capable of rocking movement on an axis 29 at one end of the carriage 10. With this arrangement it will be apparent that the toothed clutch members 21, 22 are concurrently operable so that the upper one 21 is engaged with the top run of the propelling chain 13 simultaneously with disengagement of the lower one 22 from the oppositely moving bottom run of said chain, and vice versa. The clutch members 21, 22 are held in either of these positions through the influence of a counter-weighted lever 30 on the shaft 26 arranged to swing to opposite sides of the vertical dead center. For the purpose of controlling the clutch means to automatically bring about reversals in the travel of the carriage 10, I secure on the rock shaft 26 a finger 31 adapted to be tripped by fixed stops 32, 33 near the opposite ends of the track 12. With the clutch means in the position of Figs. II and III, the carriage 10 will obviously be moved to the left as indicated by the arrow, shown on the first mentioned figure, until the trip finger 31 encounters the stop 32 which oc-

curs at just about the time when said carriage nears the limit of its movement in the indicated direction. As a consequence of the encounter of the trip finger 31 with the stop 32, the clutch 20 is actuated and the upper toothed member 21 withdrawn from the top chain run, while the lower toothed member 22 is engaged with the bottom chain run, the new position of the parts being maintained through swinging of the counterweighted lever 30 to the opposite side of the vertical dead center in an obvious manner. The carriage 10 is thereupon propelled in the reverse direction until the trip finger 31 encounters the stop 33, with consequent restoration of the clutch 20 to the illustrated position at the end of the travel to the right, in preparation for the succeeding return movement. The carriage 10 is thus moved continuously and automatically back and forth in the aisle A.

To enable stoppage at any point along the line of travel I form the frame 28 with a foot treadle 34 which is conveniently accessible to the operative when seated on a swivel stool 35 centrally of the carriage 10. Depression of the treadle 34 obviously causes the frame 28 to be swung on its axis 29, thereby to bring the clutch members 21, 22 to a neutral position so that neither of them engages the propelling sprocket chain 13, as shown in Fig. IV, with consequent cessation in the travel of the carriage 10.

At each side, the carriage 10 is equipped with a magazine or holder 36 for filled or loaded bobbins B which are withdrawable successively through an outlet at 37; as well as with a receiver 38 for the empty bobbins, said receiver having an inclined bottom, as shown in Fig. III, for capacity to discharge endwise through a door 39. This door 39 is pivoted to the receiver 38 so as to swing upward, and has an actuating arm 40 adapted to be engaged by a stop 41 at the end of the carriage travel with resultant swinging of said door to open position and discharge of the collected empty bobbins B into a waiting receptacle 42 adjacent the stop 41. The described construction and operation of course holds for the conveying equipment for an operative in each of the aisles A.

The several propelling chains 13 may be driven from a common source of power, and to this end, the guide wheels 15 are shown as mounted on a line shaft 45 which is coordinated, by a belt or chain 46, with a countershaft 47 arranged to be driven in turn, through speed reduction gearing 48, by an electric motor 49. In practice, the speed predetermined for the propelling chains

13 is such that the operatives are afforded ample time to replace empty bobbins B and give whatever other attention may be required at each of the winding units incident to passage of the carriage 10 back and forth between neighboring machines W, the new bobbins B being within easy reach by virtue of support of the holders or magazines 36 at arm level, while the replaced empty bobbins B may be readily dropped into the receivers 38 for automatic discharge later under gravity influence into the collecting boxes 42 at the ends of the machines W in the manner previously explained.

While I have herein shown and described my invention in connection with yarn winding machines W, I do not wish to be limited to this particular field alone since it may obviously be used with attainment of corresponding advantage in connection with other machines for winding or spooling materials in strand form even including wire.

Having thus described my invention, I claim:

1. In winding machines with longitudinally arranged series of winding units, including a wheeled carriage to support an operative, and a rail track for the carriage extending alongside the winding machine, a constantly-moving endless chain lengthwise intermediate the track rails, and means comprising opposingly-active independently-fulcrumed grip members, subject to counterbalancing-influence, supported by the carriage for alternate coupling engagement with the respective flights of the endless chain to automatically propel said carriage along the track and convey the operative back and forth past the winding units.

2. In winding machines with longitudinally arranged series of winding units, including a wheeled carriage to support an operative, and a rail track for the carriage extending alongside the winding machine, a constantly-moving endless chain progressing in a vertical plane lengthwise medially intermediate the track rails, means comprising opposingly-toothed independently-fulcrumed members, subject to counterbalancing-influence, supported by a drop-bracket from the carriage for alternate coupling engagement with the upper and lower flights of the endless chain to automatically propel said carriage along the track and convey the operative back and forth past the winding units, and manually-operable means whereby the carriage may be stopped at any point along its path of travel.

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