March 21, 1950 J. A. RUTH 2,501,539

APPARATUS FOR APPLYING DECALCOMANIAS TO HOSIERY

Filed April 26, 1948 3 Sheets-Sheet 1

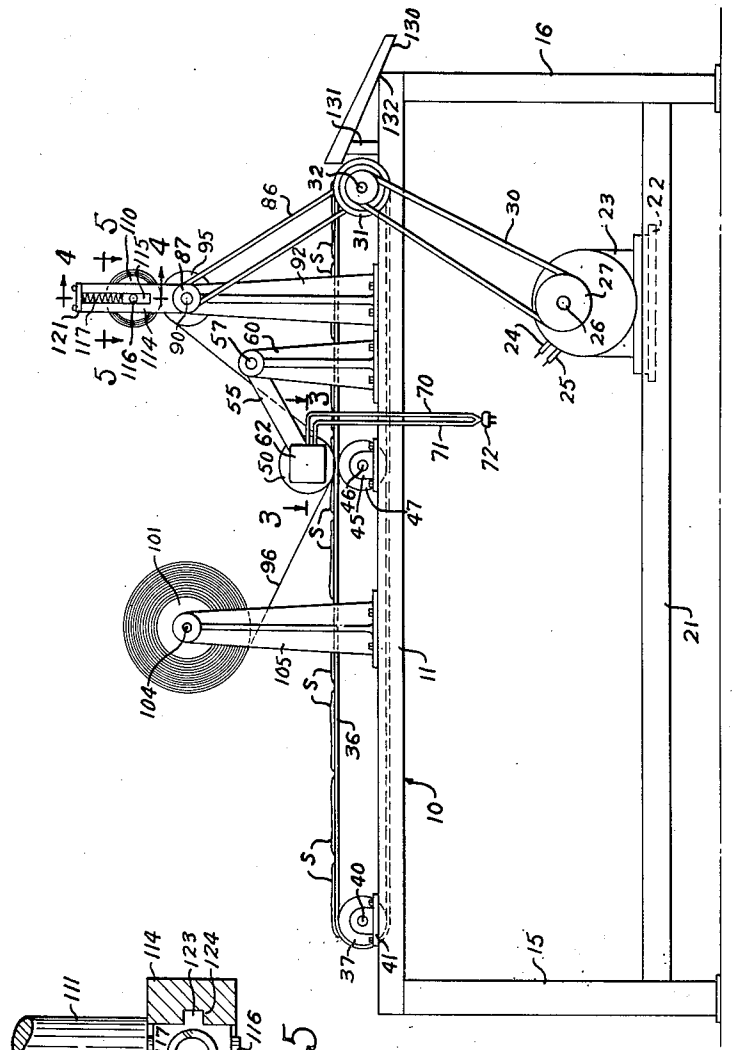


FIG - 1

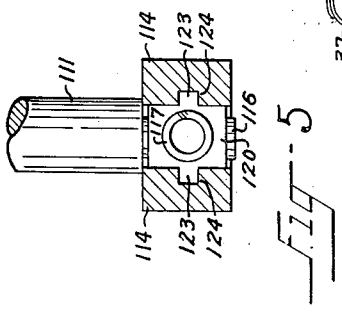


FIG - 5

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APPARATUS FOR APPLYING DECALCOMANIAS TO HOSIERY

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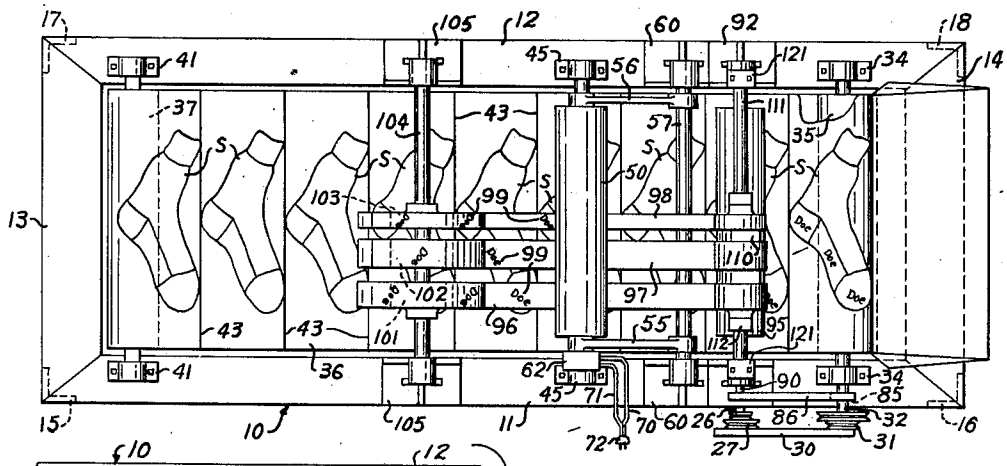


Fig - 2

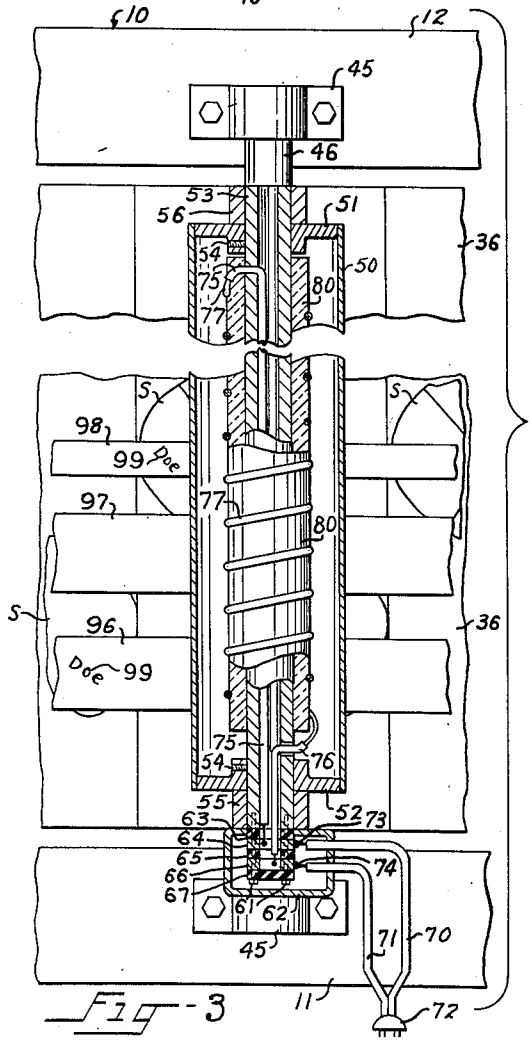


Fig - 3

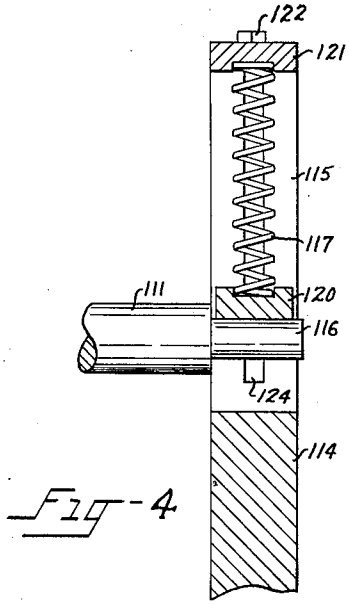


Fig - 4

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APPARATUS FOR APPLYING DECALCOMANIAS TO HOSIERY

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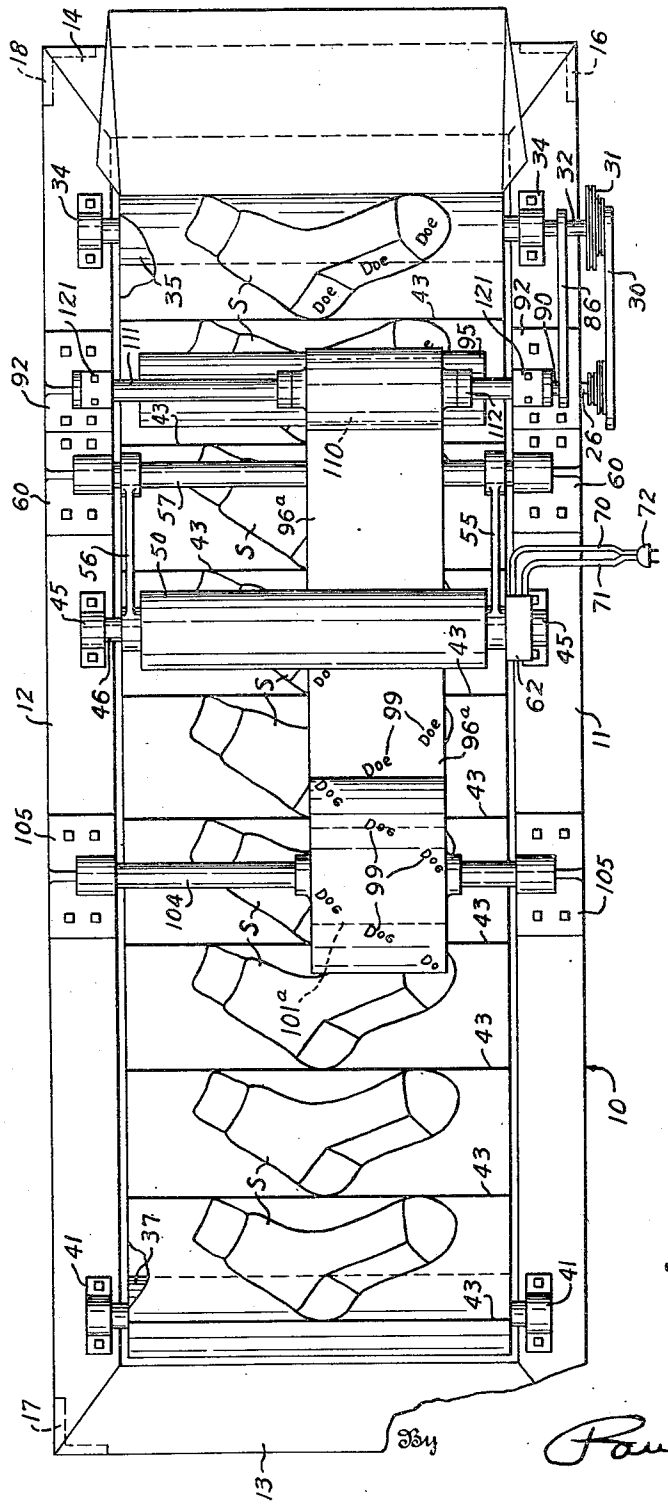


FIG. 6

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UNITED STATES PATENT OFFICE

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APPARATUS FOR APPLYING DECALCOMANIAS TO HOSIERY

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Application April 26, 1948, Serial No. 23,285

4 Claims. (Cl. 41—1)

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This invention relates to a machine for simultaneously applying trade-marks or other legends to the foot, heel or the toe of hosiery. It is an object of this invention to provide a conveyor upon which an operator places stockings and the stockings pass along with the conveyor between a pair of superposed rollers, the upper one of which is heated. A plurality of rolls of paper have the decalcomanias or printed matter thereon, which pass beneath the heated roller and upwardly to other friction driven rollers which provides a means for taking up the tape after the same has passed beneath the heated roller. As the stockings pass beneath the heated roller, the pressure and heat of the heated roller against the decalcomanias and the stockings will cause the decalcomanias or printed matter to be transferred to the stockings and then the stockings continue along the conveyor and the stockings may drop into a chute or into any suitable container, or conveyor.

Some of the objects of the invention having been stated, other objects will appear as the description proceeds, when taken in connection with the accompanying drawings, in which

Figure 1 is a side elevation of the machine;

Figure 2 is a plan view of the machine;

Figure 3 is an enlarged top plan view with parts in section and being taken along the line 3—3 in Figure 1;

Figure 4 is a vertical sectional view taken along the line 4—4 in Figure 1;

Figure 5 is an enlarged sectional plan view taken along the line 5—5 in Figure 1;

Figure 6 is a top plan view of a modified form of the apparatus.

Referring more specifically to the drawings, the numeral 10 indicates a framework comprising a bed made up of horizontal longitudinal members 11 and 12 and cross members 13 and 14 which make up the bed of the machine and the members 11 and 12, 13 and 14 are supported at each corner by vertically disposed angle bars 15, 16, 17, and 18. Welded to and supported between the vertical legs 15 and 16 as well as the vertical legs 17 and 18 is a pair of horizontally disposed bars 21, disposed on the same level, only one of which is shown, which have secured therebetween a transversely disposed plate 22 on which an electric motor is mounted. The motor 23 has a pair of wires 24 and 25 leading to a suitable source of electrical energy, not shown (Figure 1).

The motor 23 has a shaft 26 extending therefrom on which is fixedly mounted a stepped V-

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pulley 27 around which a V-belt 30 passes and the V-belt 30 extends upwardly to a stepped V-pulley 31 fixedly mounted on a shaft 32. The shaft 32 is rotatably mounted in bearing blocks 34 secured to the longitudinal frame members 11 and 12.

Fixedly mounted on the shaft 32 and disposed between the bearing blocks 34, is a roller 35 on which is disposed a conveyor belt 36. The other end of the conveyor belt 36 passes over a roller 37 which is fixedly mounted on a shaft 40 which extends through the roller 37 and is rotatably mounted at each end in bearing blocks 41 secured to the longitudinal members 11 and 12. The conveyor belt 36 has a plurality of spaced parallel lines 43 thereon which serve as guide lines when an operator places a plurality of stockings S on the conveyor belt 36.

Rotatably mounted in bearing blocks 45, which are secured to the longitudinal members 11 and 12 of the frame 10 is a shaft 46 which is disposed intermediate the two rollers 37 and 35. The shaft 46 has fixedly mounted thereon a roller 47 over which the belt 36 is permitted to pass.

Directly above the roller 47 is a sheet metal roller 50. The sheet metal roller 50 is mounted on end members 51 and 52, by any suitable means such as welding, and the end members 51 and 52 are secured to a tubular shaft 53, by any suitable means such as screws 54. The tubular shaft 54 is rotatably supported at each end thereof in arms 55 and 56 which extend to the right and upwardly as observed in Figure 1 and are oscillatably mounted on a shaft 57 which is secured at each end in upwardly extending bearing blocks 60 which are secured to the longitudinal frame members 11 and 12 of the frame 10.

The lower left-hand end of the arm 55 in Figure 1 has a box-like portion 62 integral therewith. The lower end of the tubular shaft 53 as observed in Figure 3 has successively secured thereto, by any suitable means such as screws 61, an insulation ring 63, a contact ring 64, another insulation ring 65, another contact ring 66 and an insulation cover 67, all of which are penetrated by insulation screws 61 and secured to the end of the shaft 53, and are confined within the box-like portion 62 of the arm 55.

The box-like portion 62 is penetrated by electric wires 70 and 71 which lead to a male plug 72 which may be connected to a suitable source of electrical energy, and the wires 70 and 71 are connected within the box-like member 62 to suitable brushes 73 and 74 respectively, which

are permitted to engage the contact rings 64 and 66 respectively.

Secured to the interior surface of the contact rings 64 and 65 respectively are wires 75 and 76 which are connected to a suitable heater coil 77, wound around a suitable insulation tubular member 80 which is secured on the shaft 53 within the confines of the end members 51 and 52 and the sheet metal roller 50.

It is thus seen that the current will flow from the source of the electrical energy through the wires 70 and 71 to the contact rings 64 and 66, through the wires 75 and 76 to complete a circuit through the resistance coil 77 and that the coil 77 will be insulated from the shaft 53 by the insulation member 80, and the contact rings 64 and 66 are insulated from one another as well as from the shaft 53 by the insulation rings 63 and 65, the insulation cap 67 and the insulation screws 61. When the electrical heating unit 77 is energized in the manner heretofore described, heat will be transmitted to the exterior surface of the roller 50.

Secured to the shaft 32 and disposed between the stepped V-pulley 31 and the bearing block 34 is a V-pulley 85 having a V-belt 86 thereabout which extends upwardly to a V-pulley 87. The V-pulley 87 is fixedly mounted on a shaft 90 which is rotatably mounted in uprising bearing stands 92. The bearing stands 92 are secured to the longitudinal frame members 11 and 12.

Fixedly secured on the shaft 90 is a roller 95 which engages paper tapes 96, 97 and 98. The paper tapes 96, 97 and 98 are drawn from rolls 101, 102 and 103 respectively and the tapes 96, 97 and 98 as well as the rolls 102, 101 and 103 may be of one piece, is so desired. The rollers 101, 102, and 103 are fixedly mounted on an idler shaft 104 which is rotatably mounted in extended bearing stands 105 which are secured at their lower ends to the longitudinal frame members 11 and 12.

After the tapes 96, 97 and 98 leave the rolls 101, 102 and 103 respectively, they pass downwardly below the heated roll 50 and these tapes 96, 97 and 98 have printed matter or decalcomanias thereon and these decalcomanias are spaced from each other in timed relation to the sections of the conveyor belt 36 so that the stockings S will pass one at a time between the rollers 50 and 47, at the same time the printed matter or decalcomanias will pass beneath the roller 50 and thus the decalcomanias or printed matter will be transferred to the heel, foot, and toe of the stocking S simultaneously. After the tapes 96, 97 and 98 have passed beneath the roller 50 and the printed matter or decalcomanias have been transferred therefrom, the tapes will pass upwardly above the roller 95.

Due to the fact that the increase in diameter which would be necessary in the event that the tapes 97, 98 and 96 were wound about the roller 95, there is mounted above the roller 95 a roller 110 around which the tapes 96, 97 and 98 are wound as they are used. The roller 110 is rotatably mounted on a shaft 111 and is prevented from horizontal sliding movement on the shaft 111 by suitable collars 112 which are fixedly secured on the shaft 111. The uprising bearing stands 92 have extended upwardly therefrom and integral therewith uprising members 114, having vertically disposed slots 115 therein, in which the ends of the shaft 111 are mounted.

The ends of the shaft 111 have a restricted portion 116 at each end which extends into the grooves 115 and the roller 110, which is secured

on the shaft 111, is urged downwardly against the roller 95 by compression springs 117, the lower ends of which are mounted in spring perches 120 having arcuate portions which conform to the restricted portions 116 of the shaft 111. The upper ends of the compression springs 117 engage blocks 121 which are secured by any suitable means such as screws 122 on the upper ends of the extended portions 114 of the uprising bearing stands 92. The arcuately shaped spring perch blocks 120 each have extending therefrom portions 123 which have vertical sliding movement in grooves 124 in the side-walls of the members 114, forming the slot 115 and these extended portions 123 prevent the blocks 120 from being moved laterally out of the slots 115.

After the stockings S have been properly marked by passing beneath the heated roller 50, they continue along the conveyor belt 36 and at the end of the conveyor belt 36 there is an inclined chute 130 which has downwardly projecting legs 131 which are secured to the cross bar 14 of the frame 10 by any suitable means such as welding.

The lower end of the chute 130 rests on the edge of the cross member 14 as at 132.

By referring to Figure 6 there may be observed a plan view of the machine showing a modified form of the invention. Instead of the shaft 104 having a plurality of rollers 101, 102 and 103 fixedly mounted thereon, the shaft 104 has a single roller or drum 101*a* fixedly mounted thereon. The roller 101*a* has a tape 96*a* mounted thereon which is drawn from the roller in a manner identical to that of the tapes 96, 97 and 98, that is; the tape 96*a* passes below the heated roller 50 and then upwardly to the roller 95 as heretofore described.

The single tape 96*a* may have as many rows of printed matter or decalcomanias 99 thereon as desired.

In the drawings and specification there has been set forth a preferred embodiment of the invention, and although specific terms are employed, they are used in a generic and descriptive sense only, and not for purposes of limitation, the scope of the invention being defined in the claims.

I claim:

1. In a machine for applying decalcomania indicia to hosiery comprising an endless conveyor having a plurality of transverse indications thereon defining zones in which hosiery may be laid in flat condition, means for driving the conveyor to pass the hosiery through the machine while on the conveyor, a roller disposed below the upper reach of the conveyor for supporting a medial portion of the upper reach of the conveyor, a heated roller disposed above the first named roller and resting by gravity against the upper reach of the conveyor, a roll of tape having decalcomania indicia thereon, means for supporting the rolls for withdrawing the tape therefrom, an idler roller onto which the tapes are wound after passing beneath the heated roller, a driven roller in contact with the idler roller for winding the tapes onto the idler roller, the roller for contacting the idler roller being driven at the same rate of speed as the conveyor to thus cause the tapes to travel at the same rate of speed as the conveyor and the hosiery thereon, an electrical coil disposed within the heated roller for heating the same to thus cause the decalcomania indicia to be simultaneously transferred from the plurality of tapes onto spaced portions of the stocking.

2. In a machine for applying decalcomania indicia to hosiery comprising an endless conveyor having a plurality of transverse indications thereon defining zones in which hosiery may be laid in flat condition, means for driving the conveyor to pass the hosiery through the machine while on the conveyor, a roller disposed below the upper reach of the conveyor for supporting a medial portion of the upper reach of the conveyor, a heated roller disposed above the first named roller and being supported for up and down movement by being supported by the free end of a pair of arms pivoted at one side of the last-named roller for resting against the upper reach of the conveyor, a plurality of rolls of tape having decalcomania indicia thereon, means for supporting the rolls for withdrawing the tape therefrom, an idler roller onto which the tapes are wound after passing beneath the heated roller, a driven roller in contact with the idler roller for winding the tapes onto the idler roller, the roller for contacting the idler roller being driven at the same rate of speed as the conveyor to thus cause the tapes to travel at the same rate of speed as the conveyor and the hosiery thereon, an electrical coil disposed within the heated roller for heating the same to thus cause the decalcomania indicia to be simultaneously transferred from the plurality of tapes onto spaced portions of the stocking, and resilient means for pressing the idler roller against the driven roller on which it rests.

3. In a machine for transferring decalcomanias to the heel, foot and toe of stockings, a frame, a conveyor mounted on the frame comprising a pair of end rollers, a third roller intermediate the first-named rollers, a conveyor belt mounted on the three rollers, a heated roller mounted in arms pivoted at one side of and being moved towards the third roller by gravity, said roller being disposed directly above the conveyor belt, means for driving one of the end rollers to drive said conveyor, means for rotatably mounting a plurality of rolls of tapes each having spaced decalcomanias thereon, means for withdrawing the tapes from their rolls and beneath the heated roller comprising a pair of uprising brackets each having a vertically disposed slot therein, a fourth roller having its ends mounted for rotation in said brackets, a tape take-up roller having its ends mounted in the slots in said brackets, means pressing the tape take-up roller against the fourth roller and the pair of rollers being of the same diameter, driving means connecting the fourth roller and one of the pair of rollers to drive the fourth roller at the same peripheral speed as the pair of rollers, whereby by placing stockings on the conveyor belt at spaced intervals, as the stockings pass beneath the heated roller in timed relation to the travel of the tapes having the decalcomanias thereon, the decalcomanias will be transferred from the tapes to the stockings.

4. Apparatus for applying decalcomania transfers to articles of wearing apparel comprising a frame, a pair of rollers mounted for rotation on the upper part of the frame, there being a roller at each end of the frame, a conveyor belt mounted on the rollers for conveying articles through the apparatus, a medial roller mounted between the first-named rollers and on which the upper reach of the conveyor belt rests, a pair of upstanding brackets mounted on the frame and disposed to one side of the medial roller and having a pair of arms pivotally connected to the upper ends of the same, a hollow roller mounted for rotation in the free ends of said arms, means disposed within the hollow roller for heating the same, said hollow roller being adapted to press the upper reach of the conveyor belt against the medial roller, a second pair of brackets mounted on the other side of the heated roller from that side on which the first pair of brackets is mounted, means disposed between the second pair of brackets for supporting a roll of tape having decalcomania transfers thereon, a third pair of brackets disposed on the side of the first pair of brackets which is remote from the medial roller and extending upwardly, a fourth roller mounted in the last-named brackets, the last-named brackets each having a vertically disposed slot therein and a shaft mounted at each of its ends in said slots and said shaft being adapted to receive a tape take-up roll for the tape after it has passed beneath the hollow roller, resilient means pressing the shaft and its take-up roll against the fourth roller, the diameter of the fourth roller and one of the pair of rollers on which the conveyor belt is mounted being the same, means for driving said one of the pair of rollers for imparting movement to the conveyor belt and driving means connecting the driven one of said pair of rollers with the take-up roller for imparting the same peripheral speed thereto as the rollers on which the conveyor belt is mounted and whereby the rate of take up of used tape will be the same as the rate of travel of the conveyor.

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