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FEEDING AND MOISTENING MEANS FOR DRY GUMMED STRIP MATERIAL

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Fig. 1

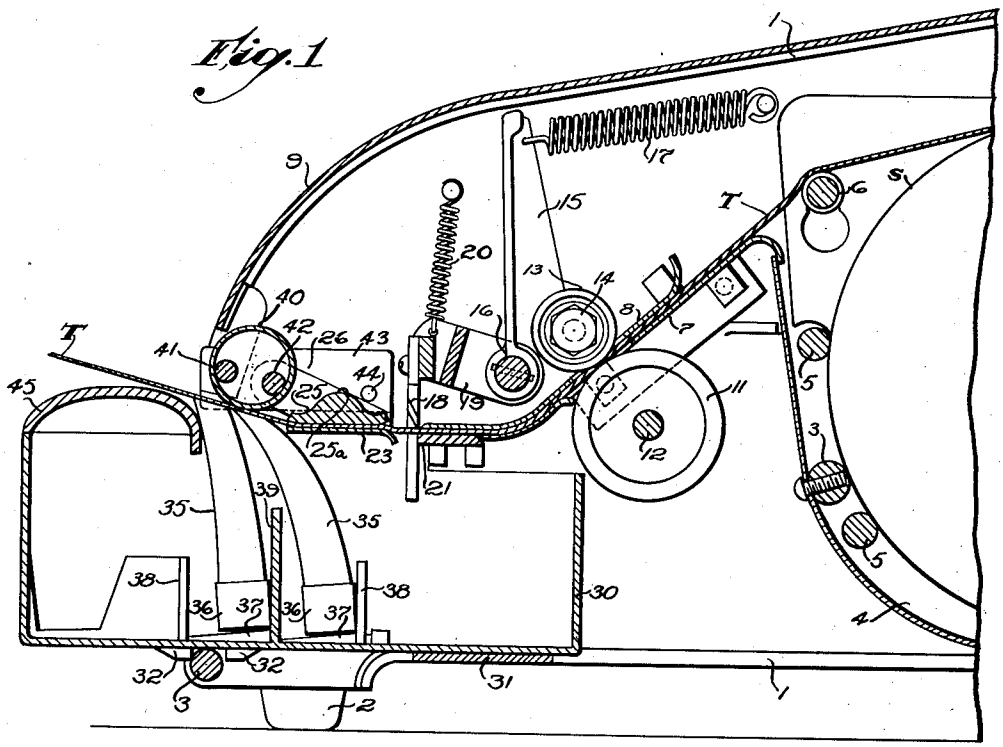


Fig. 2

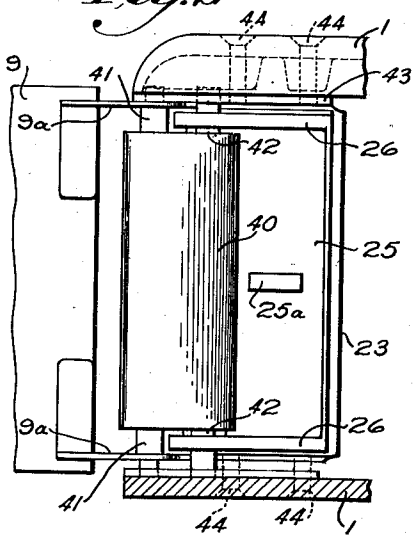
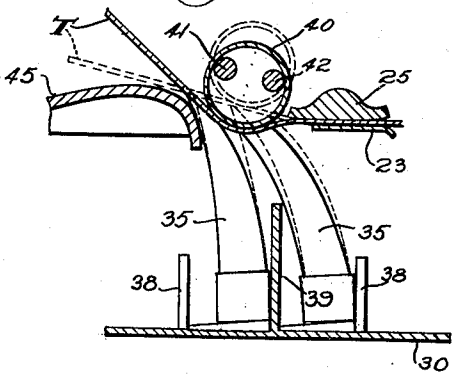


Fig. 3



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Att'ys.

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FEEDING AND MOISTENING MEANS FOR DRY GUMMED STRIP MATERIAL

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6 Claims. (Cl. 91—38)

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This invention relates to machines and devices for dispensing or serving strip material and particularly dry gummed or coated tape for packaging, sealing, labeling and like purposes. It aims to provide improved means by which such tape passes through a moistener station so that desired lengths are delivered in adhesive condition for use. Typical apparatus of the class described and with which the means of the present invention is generally useful is represented in Patents Nos. 2,244,105 and 2,352,149.

In the drawings illustrating by way of example one embodiment of the invention:

Fig. 1 is a central longitudinal section vertically through the front portion of a tape dispenser or strip server;

Fig. 2 is a top plan of a portion of the moistening and delivery assembly of Fig. 1 upon a somewhat larger scale, with the cover plate of the machine open;

Fig. 3 corresponds to a portion of Fig. 1 illustrating different positions of the tape moistening and delivery means.

The illustrative machine of Fig. 1 comprises a main frame or housing including laterally spaced side frames 1 with supporting feet 2 and cross ties 3. At the rear the housing provides supporting means for a roll supply S of the tape or strip material to be dispensed. Such means as shown includes a well 4 in which the tape roll S is rotatably supported in position to be drawn on, as by a series of transverse bearing rollers 5.

The tape T passes forwardly from the roll supply preferably over a guide roller 6 into a feed channel comprising lower and upper guides 7, 8 defining a throat or tape feed passage. Rotary feed means engaging the opposite faces of the tape advance it for severance and delivery in moistened condition. As illustrated the feed means includes a bottom feed roll 11 on a shaft 12 and driven from a hand operating lever or otherwise. It engages the underface of the tape T through an appropriate slot in the underguide 7 and in opposition to a cooperating top feed roll 13 rotatably supported on a stud shaft 14. This upper member 13 of the feed roll pair is carried on a bracket 15 pivotally mounted on a cross shaft 16 enabling the roll 13 readily to be lifted away from the opposite roll 11 to facilitate initial threading in of the tape. Feeding relation of the rolls with the tape T to be advanced between them is normally maintained as by a spring 17 loading the top roll bracket 15.

The tape T as advanced by the feed means moves forwardly along the guides 7, 8 to and past

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means for severing it into desired lengths, illustrated as comprising a movable blade or cutter 18 on a yoke 19 pivoted on the cross shaft 16 mentioned and normally held clear of the tape path as by a spring 20. A stationary severing element 21 at the opposite face of the tape path cooperates with the movable blade 18 to cut the tape. Forwardly beyond the cutter means 18, 21 the tape path continues across a lower guide plate 23, between the latter and an overlying deflector or top guide plate 25 having lateral arms 26, Fig. 2, whereby it is operatively positioned with capacity for bodily vertical movement away from the opposite guide 23, as by means of the finger piece 25a.

The described guide pair 23, 25 directs the tape to a moisture applicator or moistening and delivery means of the capillary wick or brush type. Such means includes a removable tank or reservoir 30 for the water or moistening liquid, disposed between the front portions of the side frames 1 where it is supported as by a cross strap 31 and at the front by one of the cross ties 3. The tank 30 is held in operative position by bottom lugs 32 which straddle the cross tie.

The moistening or applicator means proper as illustrated comprises one or more inverted bristle brushes 35, 35 disposed in generally upright position with the butts 36 resting on ribs 37 on the bottom wall of the tank. The individual brushes 35 illustrated in effect constitute sections of a capillary moistener unit. The lower portions of the brushes are operatively located with capacity for self-adjustment between vertical front and rear transverse fins 38 and an intermediate fin 39, these being interrupted to permit distribution of the liquid throughout the tank.

The tape T issuing forwardly from between the guides 23, 25 is directed across the upwardly projecting free ends of the brushes 35, between them and a single overlying bodily floating rotary depressor element 40. The depressor 40 herein novelly comprises a transversely extending rigid hollow cylindrical roll 40 in the form of a tubular sleeve or tubing section, open from end to end and wherein the inner diameter is such major fraction of the outer diameter that the wall thickness is only that consistent with substantial rigidity and with a weight for the roll as a whole, having regard to the material selected, preferably a non-corrosive metal of the heavier class such as brass, bronze, stainless steel and the like, adapting the roll to depress the tape T into proper moistening relation for its underface with the vertically opposed free ends of the brushes 35,

regardless of the exact level of the latter. Further, the internal diameter also is so calculated with reference to roll-positioning guide means extending through the roll and so engageable chordally with the inner surface thereof at opposite sides of the vertical plane centrally through the roll that the latter has capacity for self-adjusting positional variation vertically through a range at least equalling about one-half the inner radius of the roll.

Such roll guide means operatively retains the roll in vertical opposition to the brush means **35** subject to the stated capacity for automatic generally vertical depressing and relieving movement bodily toward and from said brush means over a substantial range, such for example as represented in Fig. 3 by the full and dotted showings. The roll guide means for this purpose may be variously constructed to present front and rear portions or elements herein illustrated as horizontally spaced locator bars **41** and **42** together constituting a guide and rotary bearing unit. As shown they are disposed at slightly different levels, with the front member or portion **41** of the unit somewhat higher. Hence when the roll **40** moves down it tends to be somewhat advanced in the direction of the tape feed, as seen by comparison of the full and dotted roll positions in Fig. 3. In the example shown the locator bars **41**, **42** are removably and preferably adjustably mounted on the machine as by bearer blocks **43** demountably secured as by screws **44** at the inner faces of the respective side frames **1**. The rear locator bar **42** herein serves also as a positioner pivot for the side arms **26** of the top guide **25** previously mentioned. Similarly the front locator bar **41** provides pivotal support for the top cover plate **9**, shown swung open in Fig. 2, fingers **9a** on the cover being journalled on the opposite end portions of the bar **41** and being extended inwardly to engage beneath the rear bar **42** as an opening stop for the cover. Forwardly beyond the moistening and guiding means comprising the plural brush element **35** and the described hollow floating roll **40** the tape T issues across a delivery table **45** herein constituted as a top cover for the tank **30**.

From the foregoing description in connection with the drawings it will be apparent that the hollow roll **40** and the retaining guide and bearing means **41**, **42** therefor are so relatively proportioned, constructed and arranged that the roll **40** is at all times retained lengthwise of the feed path in a position of general vertical opposition to the moistener means **35** but with capacity for vertical rise and fall in the general vertical transverse plane of the brushes through a range of at least about one-half the inner radius of the roll **40** and between a quarter and a third of the overall outer diameter thereof. And said outer roll diameter in turn approximates the total extent of the brush element **35** in the path of travel of the tape. Accordingly the structurally simple moistener and tape guiding couple **35**, **40** has an importantly extended capacity for mutual self-adjustment and accommodation to the tape path, the roll automatically rising and falling as required to maintain proper moistening contact of the tape with the brush element, following down to preserve said moistening relation as the brush or brushes bend or become compacted in use.

My invention is not limited to the particular embodiment thereof illustrated and described herein, and I set forth its scope in my following claims.

I claim:

1. A gummed tape dispenser comprising a frame, a support thereon for a roll tape supply, feeding means to advance selected lengths of the tape from the supply along a path to a delivery station, a reservoir having an up extending moistener brush therein below the tape path near the delivery end thereof, and rotary depressor means for the tape above and in general vertical line with the brush, said means comprising a hollow cylindrical roll of an outer diameter at least about equal to the thickness of the brush and an inner diameter substantially greater than one-half the outer diameter, and stationary roll-retaining guide means extending lengthwise through the roll and having greater extent in the direction paralleling the tape path than at right angles thereto for permitting relatively extensive movement of the roll in the latter direction and more restricted movement in the tape path direction.

2. A tape dispensing machine having a frame, a support thereon for a tape supply to be drawn on, feeding means to advance lengths of the tape along a path upon the frame, a moistener for the under face of the tape, said moistener being of a capillary type subject to vertical variation in use, a hollow tubular depressor roll for gravity contact with the upper face of the tape vertically opposite the moistener, said roll of a length exceeding the tape width and being uniformly open from end to end, the diameter of the roll opening being at least half the outer roll diameter, and roll-retaining guide means stationarily supported by the frame and having the roll hung thereon in encompassing relation, said means having in the direction generally paralleling the tape path an extent somewhat less than the roll inner diameter and having in the vertical direction a materially less extent whereby the roll is variably positionable horizontally and verticaly and to a greater extent in the latter direction.

3. Guiding and moistening means for gummed tape dispensing machines, comprising a liquid reservoir, an inverted moistener brush projecting for contact with the gummed under face of the tape, a stationary guide element spaced vertically above and extending transversely across the brush, said element having a predetermined substantial extend in the horizontal direction and being of materially less extent in the vertical direction, and a rigid sleeve-like cylindrical roll rotatably surrounding said guide element and having a inner diameter exceeding the horizontal extent of said guide element and an outer diameter but a minor fraction longer than said inner diameter, whereby the roll is vertically conformable to the brush through a substantial range of variation in vertical extent thereof and also is bodily movable in the fore and aft direction.

4. Guiding and moistening means according to claim 3 wherein the guide element comprises a pair of parallel bars having stationary supporting means at the respective ends.

5. Guiding and moistening means according to claim 3 wherein the moistener comprises a tandem pair of brushes and the roll outer diameter approximates the adjacent collective thickness of the brushes.

6. In a dispenser for gummed tape, a frame providing support for a tape supply to be delivered in moistened lengths and having means de-

fining a path for advance of the tape from the supply to a delivery station, a liquid reservoir underlying the tape path adjacent the delivery station, a capillary moistener element generally vertically disposed in the reservoir and projecting to a level to define a portion of the tape path, said moistener element having a yielding structure such that the projecting extremity is subject to vertical variation in use, a single hollow cylindrical roll of an overall diameter approximating the extent of the moistener in and lengthwise of the tape path and having an inner diameter substantially greater than one-half the outer diameter, and roll positioning guide means carried by the frame and extending lengthwise through the hollow interior of the roll so as to retain it in general vertical opposition to the moistener element, said guide means having front and rear margins disposed in parallel vertical planes spaced in the direction of the tape path by less than the inner diameter of the roll

and said guide means having substantially less extent vertically, whereby the roll is afforded a substantial range of bodily movement both in the direction of the tape path and also to a greater extent perpendicularly thereto so that the roll is enabled to float rotatably on and depress the tape into moistening relation with the moistener element at varying positions thereof.

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