Aug. 10, 1937. R. W. PHILLIPS 2,089,420

STRIP SERVING DEVICE AND MOISTENING MEANS

Original Filed April 7, 1932

Fig. 1.

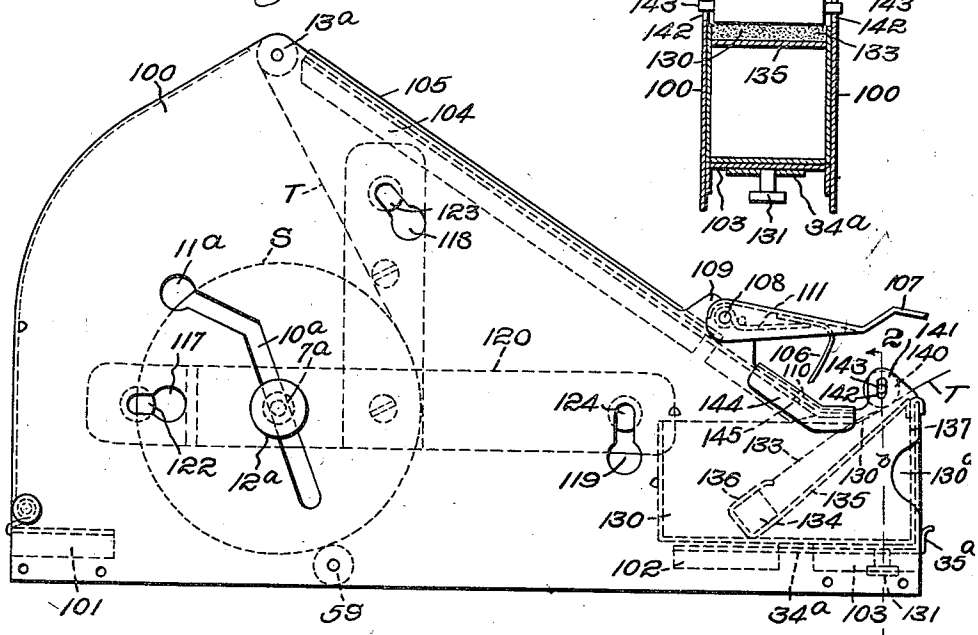


Fig. 2.

Fig. 3.

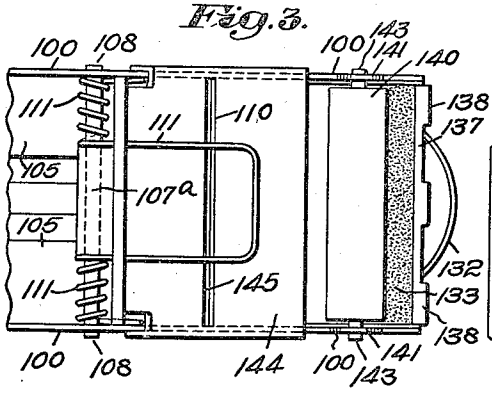


Fig. 4.

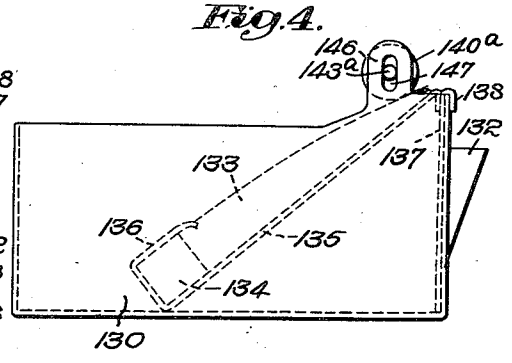
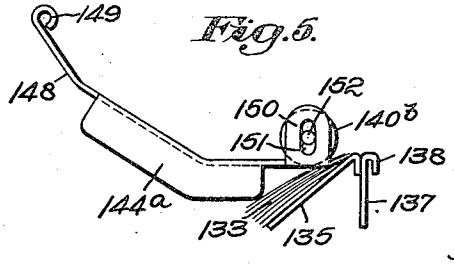


Fig. 6.



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STRIP SERVING DEVICE AND MOISTENING MEANS

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Original application April 7, 1932, Serial No. 603,777. Divided and this application January 4, 1936, Serial No. 57,587

7 Claims. (Cl. 91—14.5)

My present invention relates to coating or moistening means, and more particularly such means as are adapted for use in so-called strip serving machines and devices for moistening or otherwise rendering adhesive strip material such as tape, labels and the like for packaging, labeling and similar purposes, and aims to provide simple, efficient and otherwise improved means of the character referred to.

This application is a division of my copending application S. N. 603,777, filed April 7, 1932, now Patent 2,035,373 dated Mar. 24, 1936.

In the drawing illustrating by way of example certain embodiments of the invention,

Fig. 1 is a side elevation of a strip server or tape dispensing device embodying one form of the invention;

Fig. 2 is a side elevation of the same;

Fig. 3 is a plan of the delivery end of the device of Figs. 1 and 2, but with the severing means removed to display the underlying parts;

Fig. 4 illustrates in side elevation another form of moistening means in accordance with the invention; and

Fig. 5 is a side elevation of portions of another form of moistening means also embodying the invention.

The strip serving apparatus or device as illustrated in Figs. 1 to 3 comprises a frame or housing including the side members 100 connected at their lower portions as by the cross strips 101, 102, 103 and at their intermediate and upper portions by the top wall or floor 104 which forms the bottom of a tape or strip guide channel or feed throat. Inwardly projecting flanges 105 serve to confine the side portions of the strip and furnish a feed slot between them for feeding access to the strip. The side members are formed at their bottoms to provide a base upon which the device may rest for use in standing position as upon a counter, table or the like, suitable rubber tipped or other supporting feet, not shown, being provided if desired. The device as shown is also arranged for use in suspended position as in a store aisle, upon a wall, at the edge of a counter or like locations, support being then provided as by a bracket 120 carrying laterally projecting studs 122, 123, 124 adapted for reception in correspondingly arranged key-hole slots 117, 118, 119 in one or the other of the side members, as more fully described and claimed in my said copending application, and one or more of the others referred to therein.

At the forward end of the feed channel is a tape severing blade, cutter or knife 106 having a finger or hand-engaging portion or actuator 107. The knife and actuator are pivotally supported as by a sleeve 107^a, Fig. 3, at the rear of the actuator received on a pin 108 held in ears 109 upon the respective side frames 100. A slot 110 in the feed platform 104 permits the blade 106 to be depressed to sever the tape. The blade and its actuator are normally elevated by a suitable spring 111 of general U-shape, having its ends turned about the knife pivot pin 108.

The tape or adhesive strip supply in roll form is received in position to be drawn upon, between the side frames of the housing, as indicated at S. The roll S has a floating support upon a roller 5^g and the axis of the tape roll is confined to a given path, as the tape roll S decreases in size, by means of the slot formations 10^a in the opposite side frames. Said slot formations have enlarged portions 11^a for entrance of a spindle 7^a having a head 12^a and reduced guide portions whereby it is retained against unintentional withdrawal.

As shown in Fig. 1 the tape roll S is assumed to be wound with the adhesive face of the tape outside, the tape passing upwardly from the roll supply, as indicated at T, over an upper guide roll 13^a journaled on the machine frame, thence through the feed channel 104, 105, past the cutter 106 and the moistening means, to be described, for delivery as indicated by the full line T at the right in Fig. 1.

In the form of strip serving device as herein illustrated by way of example, the tape or strip to be delivered is engaged by the operator's finger or fingers at any desired point along the channel or feed throat 104, 105 and is pushed forward so as to be fed out past the severing and the moistening means, by forward down-bearing movement of the operator's finger or hand, along an uninterrupted path, the feeding, moistening and severing operations being effected in the course of a single substantially continuous manual operation. It will be understood, however, that so far as concerns the moistening means and its relation with a tape severing device, in accordance with my present invention, other forms of feeding means may be employed such as feed rolls or other tape gripping and advancing means for manual or other operation.

The moistening means includes a tank or reservoir 130 removably received between the fore portions of the side frames and upon the cross straps 102, 103 previously described. The reservoir is removably retained against unintentional forward withdrawal as by a spring detent 34^a having an operating finger piece 35^a. A stop 131 projecting downwardly from the cross

piece 103 and extending through a corresponding aperture in the detent 34a serves to limit the down movement of the latter. A filling lip 132 may be provided at the front of the reservoir. The side frames 100 may be recessed as at 130a to afford a grip on the reservoir for inserting or removing it. As indicated at 130b a portion of the reservoir top wall is extended angularly upwardly and forwardly and is adapted to contact transversely the upper side face of the group of bristles of the brush 133 to be described, confining or compacting and guiding them, and tending to limit the quantity of moisture which will be conducted upwardly by capillary action.

The moistening means further includes a brush 133 comprising a multiplicity of bristles or hairs set into a suitable anchoring composition as at 134. The brush is adapted to be disposed with its lower portion in the reservoir and the free ends of its hairs or bristles projecting from it.

In association with the brush I may provide a supporting strip or plate 135 formed with a clip-like lower portion 136 in which the butt 134 of the brush is removably but firmly held. The supporting plate 135 extends upwardly and forwardly along the underface of the brush and at its front end is provided with an integral or other rest or foot 137. One or more lips 138 may be provided at the forepart of the described brush unit, as by turning over the upper edge of the foot 137, or a portion thereof, such lip or lips being adapted to engage over the top of the front wall of the reservoir.

Cooperating with the described brush moistener I provide means for guiding the tape across the brush in proper moistening relation with it. Herein for the purpose I have shown a rotatable element, which may be bodily fixed or vertically movable. As illustrated in Figs. 1 to 3, said element comprises a roller 140 rotatably mounted between ears or upward extensions 141 on the side frames 100. These ears are formed with bearing apertures or slots 142 for reception of the roller journal or bearings 143. Thus the brush-cooperative roller is supported on the frame of the strip server in position for either fixed or vertically movable moistening cooperation with the brush when the latter is in operative position. Rearwardly of the roller 140 is a guide clip 144 having side portions holding it resiliently in position overlying the lower portion of the feed channel. In the present instance the clip 144 is elongated to extend from a point rearwardly of the cutter 106, past the latter and substantially up to the moistener roller 140, so as to overlie and accurately guide the tape up to and between the latter and the brush. A slot 145, Fig. 3, is formed in the clip, in line with the underlying slot in the platform itself, for the down passage of the knife 106.

In a modification as illustrated in Fig. 4, the moistening roll 140a is mounted upon the removable reservoir, as an element thereof. In this instance, referring to said Fig. 4, the reservoir side walls are formed with ears or projections 146 having apertures or slots 147 for the bearings 143a of the roll. This construction, wherein the roll remains in operative association with the reservoir, whether or not the latter is in place in the machine, has been found desirable in some instances, particularly where a plurality of reservoirs are provided in connection with any given strip server, whereby the same roll and brush are continuously employed as a couple.

In a further embodiment, as illustrated in Fig. 5, the overlying tape bridge or guide member 144a, corresponding to the element 144 of Fig. 3, is formed with a rear extension 148 including an eye 149 whereby this guide may be hingedly related to the machine frame, as by reception upon the knife pivot pin 108. In this instance a moistener-roller 140b is supported upon the guide element 144a, the latter being formed with up-set members or ears 150 having the bearing apertures or slots 151 for the bearings 152 of said roller 140b. Here again the roll is supported upon the machine as a whole but may be bodily elevated to afford ready access to the brush. This construction, as well as the others described, permits of substantially uninterrupted guiding of the tape fully to the moistening point. The guide element or clip 144a carrying the roll may be resiliently held in position, similarly as the element 144 of Fig. 3, with or without pivotal or other connection, if preferred.

My novel moistening assembly or couple, several embodiments of which have above been described, comprising a brush and cooperating movable-surfaced member, illustrated as a roller, said brush and cooperating member preferably being relatively bodily yieldable, facilitates the entire operation of feeding and moistening gummed tape. This is particularly so in connection with tape or strip servers in which the tape is engaged at a point behind the moistener, as by feed rolls or other gripping means, and advanced or pushed up to and through the moistener. The improved performance is largely due to the decreased resistance to the passage of the tape offered by the moving or rotary-surfaced element of my moistening assembly. In the instance of a roller, the leading edge of the tape automatically enters itself between the brush and roller so long as it first contacts the latter anywhere below the diametral plane through the roller parallel with the path of the advancing tape, since the convex and downwardly and forwardly inclining surface of the roller moves freely along with the tape, accurately guiding the latter into proper moistening relation with the brush but at the same time presenting little or no resistance or drag upon the tape. Hence tape of lighter weight can be fed and moistened satisfactorily, and without necessary use of special additional guide means immediately to the rear of the moistening point. Nevertheless, and especially with extremely light weight tape, my roller and brush assembly makes it feasible to provide additional tape guiding means substantially fully up to the very moistening point, if desired, due to the curved surface structure of the roller.

The efficient performance of the moistening means of the present invention is also in part effected by reason of the fact that there is but substantially a line contact between the roller and the ungummed face of the tape. This fact in itself further tends to reduce the total resistance or frictional drag on the tape. It further aids the moistening action because the distance during which any given transverse zone of the gummed face of the tape is directly pressed into engagement with the brush is reduced, due to the line contact between the roller and the ungummed face of the tape. Hence the tendency to wipe off gum in the course of moistening is reduced, so that the adhesive quality of the tape is not impaired, and the brush is kept cleaner. The decreased direct pressure contact area referred to also tends to reduce wear and deforma-

tion of the brush, since the pressure on the tape and brush is of maximum effect only at a narrow zone approximating a line. By this I do not imply that the brush and gummed face of the tape have merely a line contact, but I refer to the substantial line engagement between the roller and ungummed face of the tape, and whereby the direct pressure between the roller and tape and through the latter to the brush is of maximum effect along but a narrow zone approaching a line.

In many strip servers tape has heretofore been moistened between two rollers, one of which is wetted and generally is driven. Under various circumstances such means is effective and entirely satisfactory, but the tendency is toward an insufficient moistening contact of the gummed face of the tape with the rotating moistening surface—the contact at both faces of the tape being but substantially a line. Other tape serving machines have used a brush and overlying pressure plate, floating or otherwise, but having no movement in the direction of the tape feed. As already noted, the tendency there is to place an objectionable drag on the tape, to wipe off gum onto the brush, and to require provision of special additional tape guide means because of the resistance offered by the moistening brush and plate to the passage of the tape. Such arrangement does, however, allow a larger area of the gummed face of the tape to contact the wetted element than in the case of two opposed rollers.

My new combination of moistener elements, namely a brush and a cooperating roller, utilizes a brush as the wetted element but at the same time avoids its disadvantages by coupling it with an opposed moving guide and pressure surface, that of the roller. To state it differently, desirable features of both elements of the moistening couple are availed of, with the novel result of capacity for more rapid feed and use with lighter weight tape, both in the presence of efficient moistening.

My invention is not limited to the particular illustrative embodiments herein shown and described, its scope being set forth in the appended claims.

I claim:

1. In a gummed tape or strip serving mechanism, in combination with means to advance the tape along a path from a supply to and past a moistening and delivery station by engagement of the tape behind said station, a liquid reservoir, a brush receiving moisture from the reservoir and having the free ends of its hairs or bristles projecting into the path of the gummed face of the tape, and means presenting a surface movable in the direction of tape travel and engaging the ungummed face of the tape above the brush thereby to effect low-resistance moistening engagement between the gummed face of the tape and the brush during travel of the tape across the latter, said tape-engaging means above the brush resting solely by gravity on the tape passing the brush.

2. In a gummed tape or strip serving mechanism, in combination with a frame, a support thereon for a strip supply, guide means providing a service path for the strip from the supply, and a reservoir for liquid, a strip moistening couple comprising an inverted brush having its butt end in the reservoir and its bristle end projecting, and overlying freely rotatable roller means paralleling the projecting end of the brush and resting solely by gravity in operative relation to the brush to contact a strip passing between the roller means and the brush, means so positioning said roller means while affording it capacity for movement by or against gravity toward or from the brush respectively, said roller means cooperating with the brush to receive and guide a strip which receives feeding engagement rearwardly of said couple and is advanced to and between them, whereby said couple serves to moisten the brush-contacting face of the strip while avoiding objectionable drag thereon and minimizing tendency of strip buckling and of brush deformation, and means whereby the strip may be so engaged rearwardly of the moistening couple and fed forwardly to and past it.

3. Gummed tape or strip serving mechanism in accordance with claim 2, wherein the roller means is mounted on the frame in its said gravity-retained operative relation to the brush.

4. Gummed tape or strip serving mechanism in accordance with claim 2, wherein the roller means is mounted on the reservoir in its said gravity-retained operative relation to the brush.

5. Gummed tape or strip serving mechanism in accordance with claim 2, wherein the positioning means for the roller means comprises a strip guiding element overlying the strip path and removably supported in stationary position upon the frame behind the projecting end of the brush, said element being provided with guide means for rotatably positioning the roller means in its gravity-retained operative relation to the brush.

6. In gummed tape serving apparatus wherein the tape is fed from a supply past severing and moistening means located in advance of feeding means engaging the tape, a tank for liquid, a capillary moistener projecting from the tank, an underguide defining the floor of the tape path intermediate the severing means and said moistener, a separate overguide providing a directing top wall for said portion of the tape path, and floating presser means extending transversely over the tape path adjacent the front edge of said overguide, in position to receive beneath it the tape advancing from between said under and over guides, said presser means resting by gravity on the tape passing the moistener and having an under formation adapted to make but approximately a transverse line contact upon the upper face of the tape thereby to guide the tape across and in moistening relation to the moistener with avoidance of excess drag on the tape.

7. A tape guiding and moistening assembly for a machine of the class described, comprising, in combination with a tank for liquid and an inverted brush moistener receiving liquid therefrom, lower and upper guide members providing between them a feed throat for the tape approaching said moistener, supporting connections for said members enabling the upper one to be raised to expose the under one, and vertically yieldable gravity-actuated presser means having a substantially lineal transverse formation at its lowermost part, said means being positioned so as to float on the upper face of the tape adjacent said throat and moistener, and having only substantially line contact with said face of the tape.

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