June 25, 1968 T. H. KRUEGER ET AL 3,389,681

DISPENSER FOR GUMMED TAPE

Original Filed Sept. 25, 1963 3 Sheets-Sheet 1

Fig. 1.

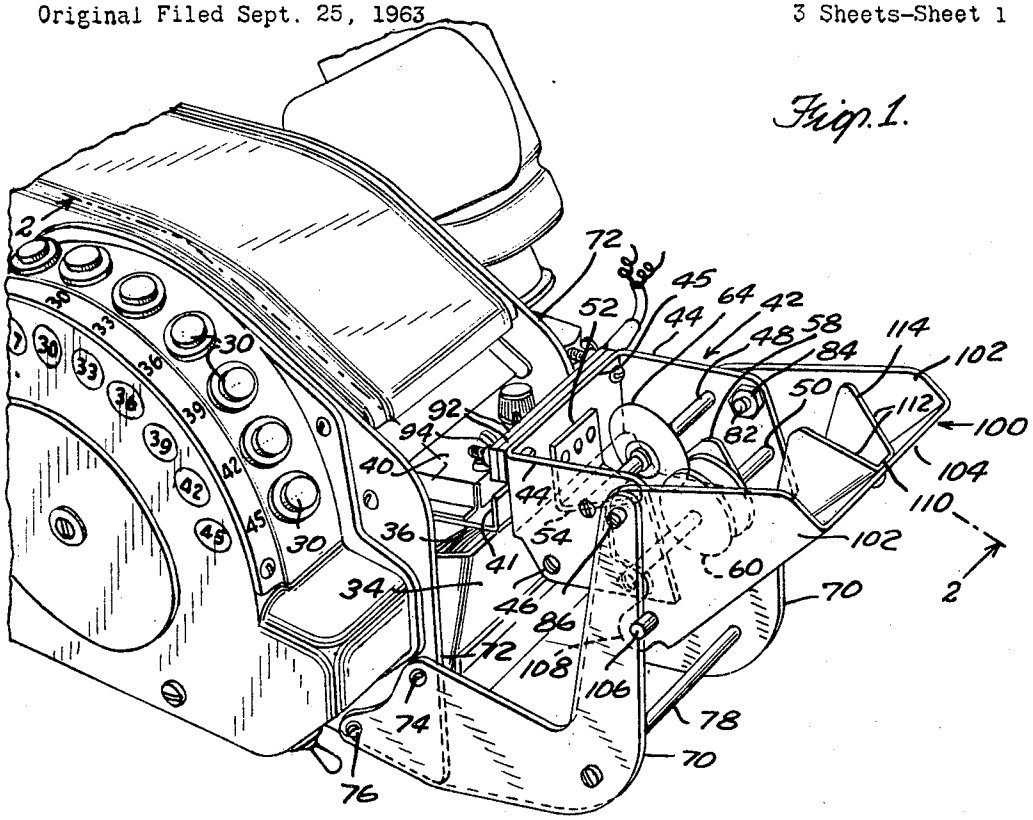
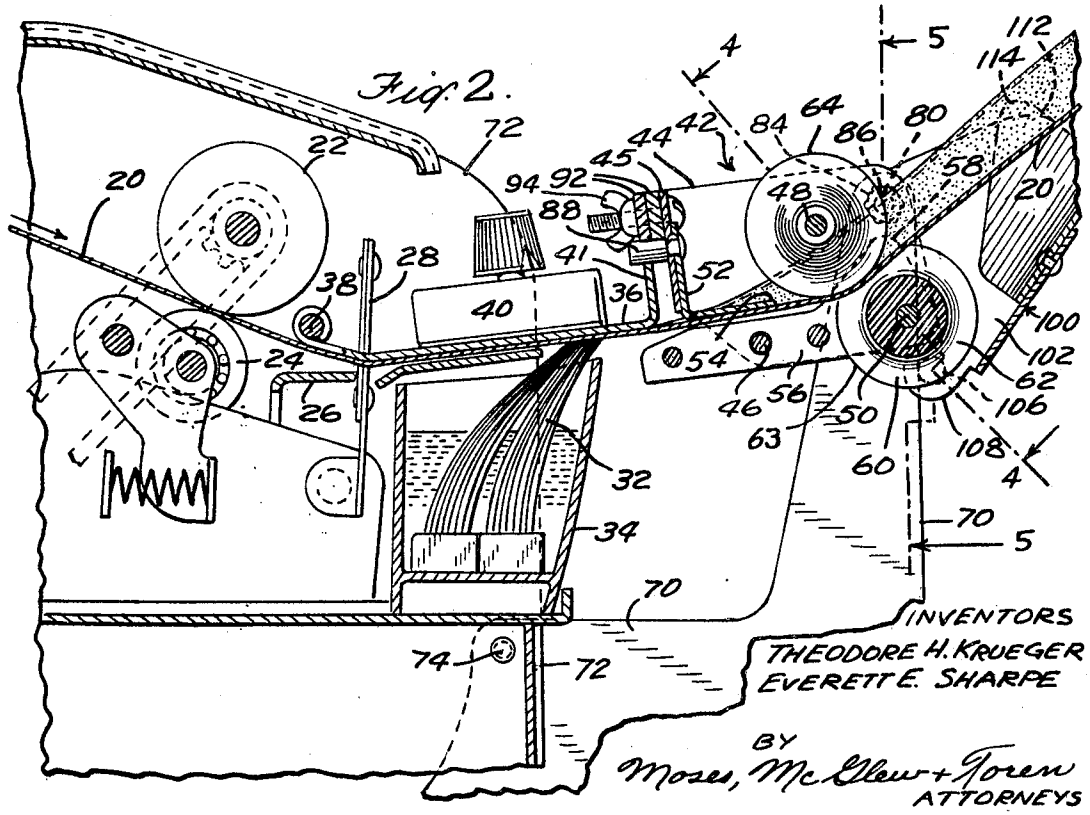


Fig. 2.



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DISPENSER FOR GUMMED TAPE

Original Filed Sept. 25, 1963 3 Sheets-Sheet 2

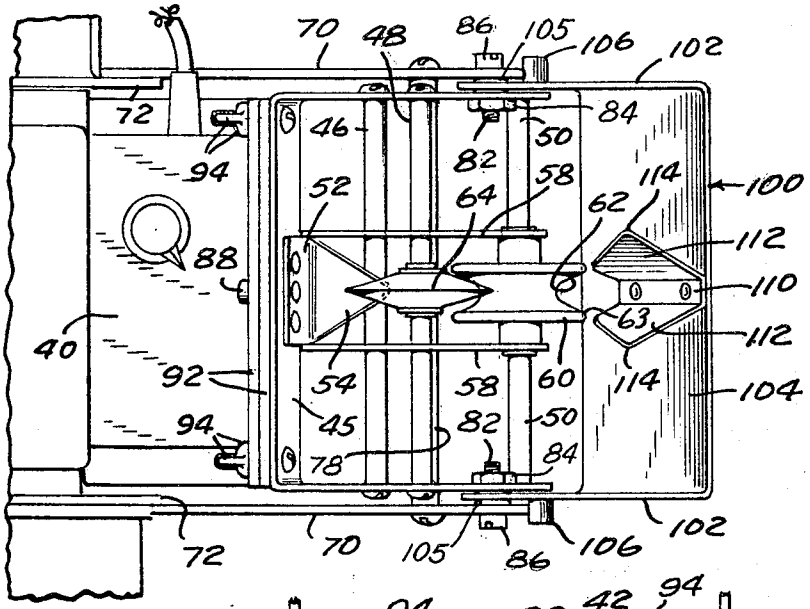


Fig. 3.

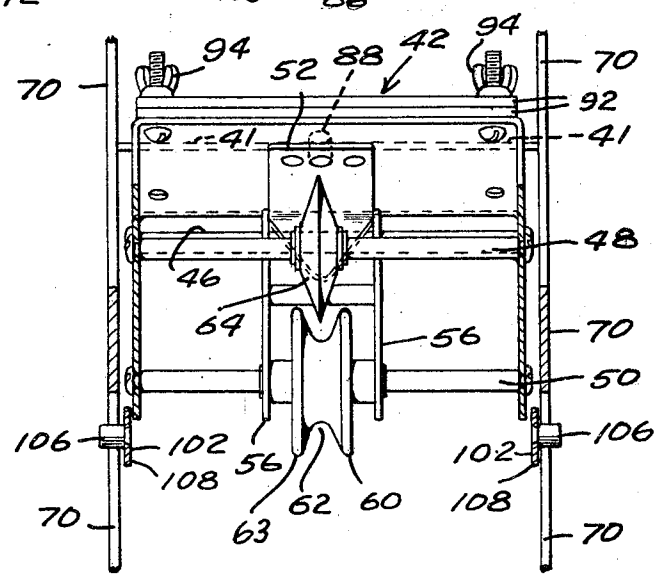


Fig. 4.

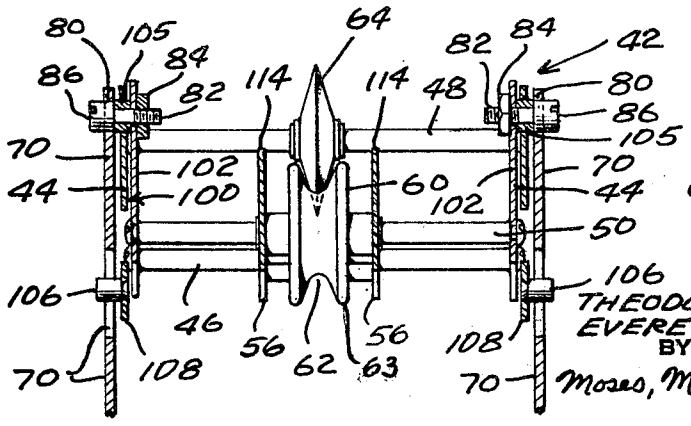


Fig. 5.

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DISPENSER FOR GUMMED TAPE

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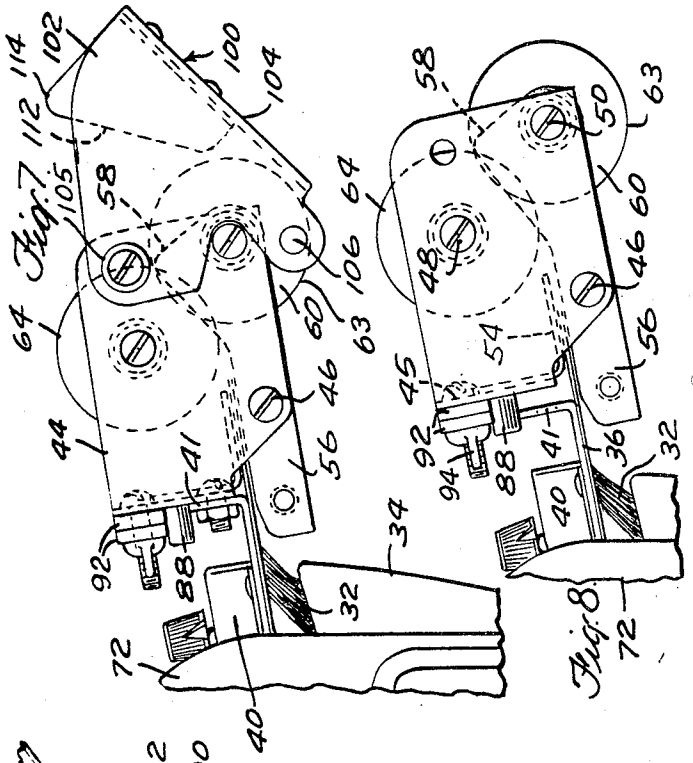


Fig. 7

Fig. 8

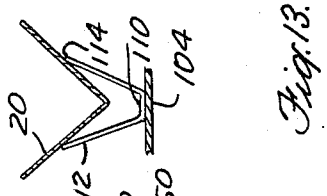


Fig. 13

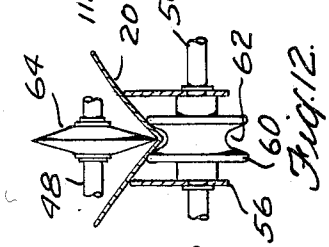


Fig. 12

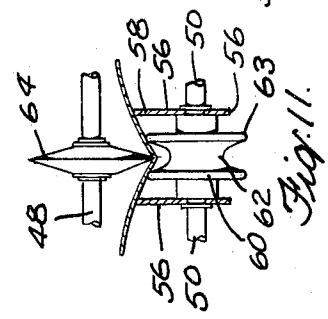


Fig. 11

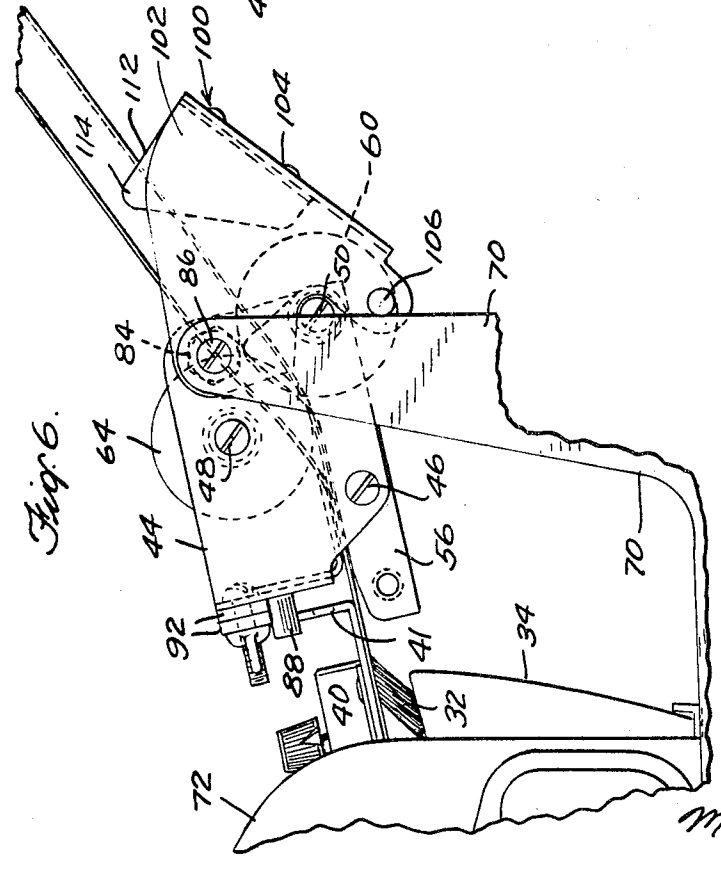


Fig. 6

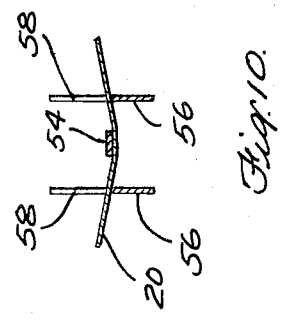


Fig. 10

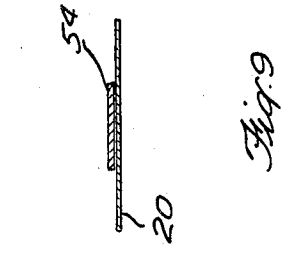


Fig. 9

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3,389,681

DISPENSER FOR GUMMED TAPE

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Continuation of application Ser. No. 311,542, Sept. 25, 1963. This application Mar. 8, 1967, Ser. No. 621,712
9 Claims. (Cl. 118—44)

ABSTRACT OF THE DISCLOSURE

A device for dispensing selected lengths of tape includes means for orienting a creasing attachment in respect to the moistening element of the dispenser. In one embodiment of the invention the creasing attachment is mounted between a support extending outwardly from the tape dispenser and an attachment directly to a pressure plate which is pivoted over the moistening element and beneath which the tape is fed. In addition to the creasing attachment there is provided means for supporting the tape along with the creasing means so that it extends outwardly from the dispenser in a position so that the tape may be grasped by the user. The creasing means comprises only a single set of rollers with one of the rollers being engaged in a groove of the other roller so that when the tape is fed therebetween, it causes a creasing of the tape in a longitudinal direction substantially centrally between the sides thereof. The single roller set also holds the tape in conjunction with a simple support plate which is mounted so that the tape may be fed to extend outwardly to relatively great length. The support plate includes two plate elements which engage the tape on opposite sides of the crease line and provide a support therefor.

Summary of the invention

This application is a continuation of Ser. No. 311,542 filed Sept. 25, 1963, and now abandoned.

This invention relates to dispensers for gummed tape and especially to dispensers having means for creasing or forming the tape into a V-shape as it is dispensed so that it will be dispensed in a substantially straight line which will be maintained during the actual dispensing operation. The straight strip of tape is cut off and may be readily handled by the operator and applied to the carton or other package which is to be sealed. The invention may be used in connection with any kind of gummed tape, such as pressure sensitive tape or tape to which wet glue is applied as it is dispensed. It is particularly applicable, however, to the dispensing of dry gummed tape which is moistened as it is dispensed. The invention may be used with any type of dispensing machine, either manual or power operated, but it is especially useful in connection with power operated dispensers in which means are provided for delivering measured lengths of tape. For example, the invention may be used with a dispenser in which preselected lengths of tape are dispensed by means of a push button control or the like as shown, for example, in the U.S. Patent to T. H. Krueger, No. 2,994,464 or in a type of machine from which measured lengths are repeatedly delivered such as shown, for example, in Krueger's U.S. Patent No. 3,097,776.

In machines of the types specified, the dry gummed tape is pushed forward by feeding rollers and passes through a moistening couple which moistens the gum. Such a moistening couple as shown in the patents mentioned comprises an inverted brush which is kept wet by being mounted in a tank of water, the tape passing

between the tips of the brush bristles and under a pressure plate which presses the tape against the ends of the bristles with the desired pressure. It is a characteristic of brush moisteners of this type that the pressure plate which rests by gravity on the brush will occupy a position determined by the length and stiffness of the bristles. As the machine is used, the bristles get softer and wear off, so that the pressure plate gradually assumes a lower position. The line in which the tape is delivered will therefore gradually change during the use of the machine and in order that the tape may be properly aligned with the tape creasing or forming instrumentalities, it is a particular feature of the present invention that the tape creasing instrumentalities will also change in position in accordance with the movement of the pressure plate. This may be accomplished by mounting the tape creasing instrumentalities directly on the pressure plate or by providing connections with the pressure plate such that as the plate moves, the tape creasing instrumentalities will move correspondingly.

It is therefore an important object of the present invention to provide tape creasing or forming instrumentalities so associated with the pressure plate of the moistening couples to vary in position in accordance with the position of the pressure plate and therefore provide correct alignment at all times of the tape entering the tape forming instrumentalities.

It is a further object of the invention to provide the tape creasing or forming instrumentalities in the form of an attachment which may be readily applied to a standard tape dispensing machine without requiring change or reconstruction of such machines.

Various types of gummed tapes are used which differ in their weight and thickness, some tapes being quite flexible and others very stiff such as, for example, tape reinforced with an asphalt layer incorporated therein or with other stiff reinforcing means. The nature of the creasing or tape forming instrumentalities must be adapted to the type of tape being dispensed and it is accordingly an object of the invention to provide a tape forming or creasing attachment which may be modified in various ways to handle different types of tapes which may be encountered. These variations of the tape creasing or forming attachments can best be described in connection with the detailed descriptions of examples of the invention illustrated.

Other and further objects of the invention will appear from the following descroption of preferred embodiments of the invention chosen to illustrate the principles thereof.

In the drawings:

FIG. 1 is a perspective view showing the invention as applied to a tape machine of the type shown in Krueger Patent No. 2,993,464. This figure shows the dispensing machine as provided with all three assemblies of the tape forming device including the tape creasing assembly, the tape supporting assembly and the mounting bracket assembly;

FIG. 2 is a vertical longitudinal section of the parts shown in FIG. 1;

FIG. 3 is a plan view of the parts of the invention shown in FIGS. 1 and 2;

FIG. 4 is a transverse sectional view at the position indicated by line 4—4 of FIG. 2;

FIG. 5 is a similar view of the position indicated by line 5—5 of FIG. 2;

FIG. 6 is a side elevation of the parts shown in FIGS. 1 and 2 illustrating the projection of a long piece of tape;

FIG. 7 is a view similar to FIG. 6 showing the tape creasing and tape supporting assemblies carried directly by the pressure plate of the moistening couple, the mounting bracket assembly being omitted;

FIG. 8 is a view similar to FIG. 7 showing the tape support assembly omitted; and

FIGS. 9, 10, 11, 12 and 13 are diagrammatic cross sections showing successive stages in the forming of a tape into a V cross section.

Referring to the drawings in detail, the invention is shown as applied to a push button tape dispenser of the form shown in Krueger Patent No. 2,994,464. In this machine the tape 20 is pulled from a supply roll of tape (not shown) by feed rollers 22 and 24, one or both of which being driven from a motor (not shown) contained in the machine, and is pushed over tape cutting means comprising a fixed ledger blade 26 and a movable blade 28 which cuts off the tape when the feeding stops. The particular length of tape to be delivered at an operation is determined by selection of one of the push buttons 30 in the manner described in the above-mentioned patent. When the predetermined length of tape has been delivered, the feed stops and the cutter 28 is brought down so as to shear off the tape against the blade 26. During the feeding operation, the tape passes under the raised cutter blade and through the moistening couple comprising the inverted brush 32 mounted in a water tank 34 and the pressure plate 36 which is pivotally mounted on pivot 38, its position being determined by its engagement with the tips of the brush bristles or with the tape which is between the pressure plate and the brush bristles. As the brush bristles become more bent or wear away, the normal position of the pressure plate will be lowered and this change in position takes place progressively during the lifetime of the brush. In the instance shown, the pressure plate is provided with an electric heater 40 which heats the tape and the gum thereon at the time when it is passing over the brush, thereby to soften and to more effectively moisten the gum. The heating of the tape may also end to make the tape somewhat more flexible. In the construction shown, the pressure plate 36 also carries an upwardly projecting flange 41.

The tape forming or creasing attachment 42 comprises a U-shaped frame 44, the sides of which are joined by a back or cross portion 45 and by several cross shafts 46, 48 and 50. The path for the tape coming from the moistening couple is formed between an L-shaped plate 52, carried by the back 45, the horizontal extension of which is of generally triangular shape, as indicated at 54 and the sides thereof converge in the direction of tape feed. The tape passes under this extension or tongue 54 and over the upper edges of a pair of guide rails 56 carried by the cross shafts 46 and 50. The upper edges of the guide rails are parallel with the tongue 52 for a short distance and then curve upwardly, as indicated at 58. The tape is centered in respect to the rounded end or apex of the plate 54 as it is fed thereby. The rails 56 guide the advancing tape into a curved or V-shape in cooperation with the triangular part 54 of the plate 52. The shaft 50 also carries a grooved roller 60 which preferably has a round bottomed groove 62 therein into which the tape is guided by the rail portions 56 and 58, the tape being engaged primarily by the edge portions 63 of the groove. The shaft 48 carries a roller 64 with a sharpened V-shaped periphery which presses the tape into the space between the edge portions 63 of the roller 60 and thereby creases the same into a more-or-less sharply formed V, in which form the tape issues from the machine. This V-shape of the tape disposes it to resist binding so that it will be projected for a substantial distance in a practically straight line. The length obtained which will maintain itself in a position of substantial straightness depends, of course, upon the weight and thickness of the tape, the distance through which it may be projected being the greater the stiffer the tape.

The rollers 60, 64 are preferably made of a plastic, such as nylon, which is durable and light and which has the property of not being strongly adhered to by the moistened gum on the tape or the rollers may be made of metal or other material coated with polytetrafluorethylene or its equivalent. This applies particularly to the grooved roller 60 which engages directly with the moistened gum.

The U-shaped frame 44 carrying the triangular tongue 54 and the rails 56, the transverse shafts and the rollers 60 and 64 may be referred to generally as the creasing assembly. In FIGS. 1 to 6, the creasing assembly is shown as mounted on a mounting bracket assembly comprising two substantially L-shaped plates 70 which are attached to the frame 72 of the dispenser by means of screws 74 and 76. They are also preferably connected together by a cross shaft 78 and at their upper ends have holes 80 formed therein. The sides of the U-shaped frame of the creasing assembly are provided with studs 82 locked in position by nuts 84 and having outwardly projecting pivot ends 86 which fit in the holes 80 in the ends of the bracket plates 70. The rear wall 45 of the U-shaped frame 44 carries a rearwardly projecting pin 88 which bears on the upwardly projecting flange 41 of the pressure plate 36. The weight of the creasing assembly is thereby borne partly by the pivots 86 and partly by the pin 88 resting on the pressure plate 36. The pressure plate therefore does not bear too heavily on the brush tips. In instances where more pressure is desired on the brush tips to secure an increased moistening effect, weights 92 may be used, one or more of which are secured to the frame 44 by the wing nuts 94. Two weights are shown, but the number may be increased or diminished to adjust the pressure on the brush as desired.

The use of the creasing assembly so far described is all that is necessary to procure a substantially straight creased length of tape where the length is not too great or the tape is quite stiff. In instances where a longer piece of tape must be dispensed or a more flexible tape is to be dispensed, a tape support assembly is preferably added to the creasing assembly. As shown, this tape support assembly comprises a U-shaped frame 100 comprising side walls 102 and a transverse end 104. The latter preferably slopes upward and forward, as shown. The frame 100 is pivoted on washers 105 on the pivots 86 inside of the ends of the pivots which are engaged by the brackets 70. The frame 100 is free to turn on these pivots and is limited in its downward pivotal movement by stop pins 106 carried by ears 108 projecting from the frame side members 102. The weight of the frame 100 is therefore carried directly by the bracket plates 70 and is not added to the weight of the creasing assembly which is partly borne by the pin 88 which rests on the flange 41 of the moistening couple pressure plate.

The inclined end wall 104 of the tape support assembly frame carries a tape supporting guide in the form of a flat-bottomed V comprising a flat portion 110 fixed to the plate 104 and having upwardly and outwardly projecting ears 112, the rounded tips 114 of which are so placed as to support the V-shaped tape after it leaves the creasing rollers 60, 64. As the tape leaves the rollers, it does not directly contact the tips 114 but as the strip of tape being delivered increases in length, it will drop slightly so that it may contact the tips. These will support the tape until a full length as desired has been dispensed. This is useful where the tape is rather flexible or where a very long tape up to, say, four or more feet may be projected.

FIGS. 1 to 6 show the complete organization of a creasing and dispensing assembly carried by the dispenser, including the creasing assembly proper, on the tape support assembly. FIG. 8 shows how the tape support assembly may be omitted where conditions do not require its use.

FIGS. 7 and 8 show how the creasing assembly or the creasing assembly combined with the tape support assembly may be mounted directly upon the pressure plate of the moistening couple without the use of the mounting bracket assembly. This adds considerable weight upon the pressure plate and upon the brushes and is feasible only where the strip of tape which is being dispensed is stiff and not too long.

While specific embodiments of the invention have been shown and described in detail to illustrate the application of the inventive principles, it will be understood that this

invention may be embodied otherwise without departing from such principles as defined in the claims.

What is claimed is:

1. In a tape dispenser having means for feeding a strip of gummed tape over a tape moistening means including an inverted brush and a pressure plate adapted to press the tape against the brush, and a tape creasing attachment for creasing tape issuing from the dispenser between the pressure plate and brush, means for movably mounting said tape creasing assembly, and operative connections between the tape creasing assembly and the movable pressure plate for changing the position of the tape creasing assembly to correspond with that of the pressure plate so that proper alignment of the tape with the pressure plate will be maintained.

2. A construction as claimed in claim 1, in which the creasing assembly is pivoted to a fixed support and operative connections are provided between the creasing assembly and the pressure plate for moving the creasing assembly in accordance with movements of the pressure plate.

3. A construction as claimed in claim 1, in which the creasing attachment is supported by said pressure plate.

4. A tape dispenser comprising feed rolls and means for rotating the same so as to advance tape passing between the rolls, a moistening unit located beyond the feed rolls through which the tape is passed, the feed rolls and moistening unit being carried in a frame, a mounting bracket assembly mounted on the dispenser frame comprising spaced bracket plates having outwardly and upwardly extending arms, a tape creasing unit comprising a frame pivotally mounted between the arms, said frame having means for engaging the pressure plate of the dispenser moistening unit so as to preserve alignment between the creasing unit and the path of the tape issuing from the moistening unit, said creasing unit including rails for guiding the tape entering the creasing unit, creasing rollers carried by said unit comprising a grooved roller engaging the underside of the tape and a creasing roller having a V-shaped edge section engaging the upper side of the tape, and a tape supporting assembly comprising a frame carried by the mounting bracket arms and having two spaced outwardly extending plates mounted on said frame having smooth upper guiding edges for engagement with the side sections of the tape so as to support the same and resist its tendency to sag upon leaving the creasing unit.

5. In a tape dispenser including a tape dispenser housing, moistening means in said tape dispenser housing, means in said housing for feeding tape into contact with said moistening means and beyond said moistening means, and a tape creaser comprising a single pair of cooperating rollers between which the tape is fed for creasing the tape, means for mounting said tape creaser adjacent to said moistening means and in an aligned position for the feeding of tape between said cooperating rollers, the improvement, comprising a fixed plate support adjacent said creasing rollers acting with said creasing rollers to support the creased tape in a position projecting out of said housing.

6. A tape dispenser according to claim 5, wherein said fixed plate support comprises an upwardly extending plate portion on each side of the crease of said tape engaging the sides of said tape and guiding the tape in its projected path from said creasing roller set.

7. A tape dispensing machine comprising moistening means, means for feeding a seletced length of tape over said moistening means, a single set of cooperative rollers disposed adjacent said moistening means, means for locating said rollers in a position to receive the length of tape therebetween as it is fed, one of said rollers having a groove and the other of said rollers having its periphery extending into the groove of said one of said rollers to cause creasing of the tape as it is fed between said rollers, and a fixed plate support adjacent said roller set and located to engage and support the creased tape along with said roller set in a position at which the tape projects outwardly from said roller set in a direction away from said moistening means

8. A tape dispensing machine comprising moistening means, means for feeding a selected length of tape over said moistening means, a single set of cooperative rollers disposed adjacent said moistening means, means for locating said rollers in a position to receive the length of tape therebetween as it is fed, one of said rollers having a groove and the other of said rollers having its periphery extending into the groove of said one of said rollers to cause creasing of the tape along a horizontal crease line as it is fed between said rollers, and a fixed plate support adjacent said creasing rollers including a plate element on each side of the crease line of said tape contacting and supporting said tape along with said roller set in a position at which the tape projects outwardly from said roller set in a direction away from said moistening means.

9. A tape dispensing machine comprising moistening means, means for feeding a selected length of tape over said moistening means, a single set of cooperative rollers disposed adjacent said moistening means, means for locating said rollers in a position to receive the length of tape therebetween as it is fed, one of said rollers having a groove and the other of said rollers having its periphery extending into the groove of said one of said rollers to cause creasing of the tape as it is fed between said rollers, and a fixed plate support adjacent said creasing rollers including a plate element on each side of the creased line of said tape contacting and supporting said tape along with said roller set in a position at which the tape projects outwardly from said roller set in a direction away from said moistening means, a housing for said moistening and said feeding means, and a mounting bracket connected to said housing and extending outwardly therefrom and supporting said roller set and said fixed plate support in an aligned position in respect to said moistening means to receive the tape which is fed over said moistening means.

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