

March 4, 1930.

R. G. BEACH

1,749,407

GUMMED TAPE DISPENSING MACHINE

Filed Jan. 23, 1925

3 Sheets-Sheet 1

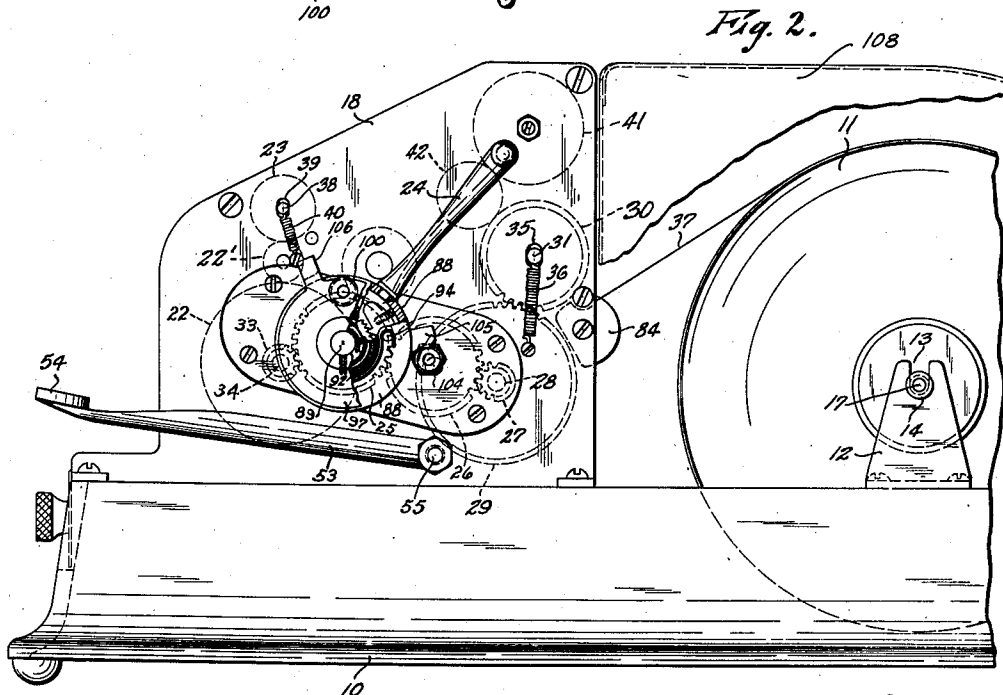
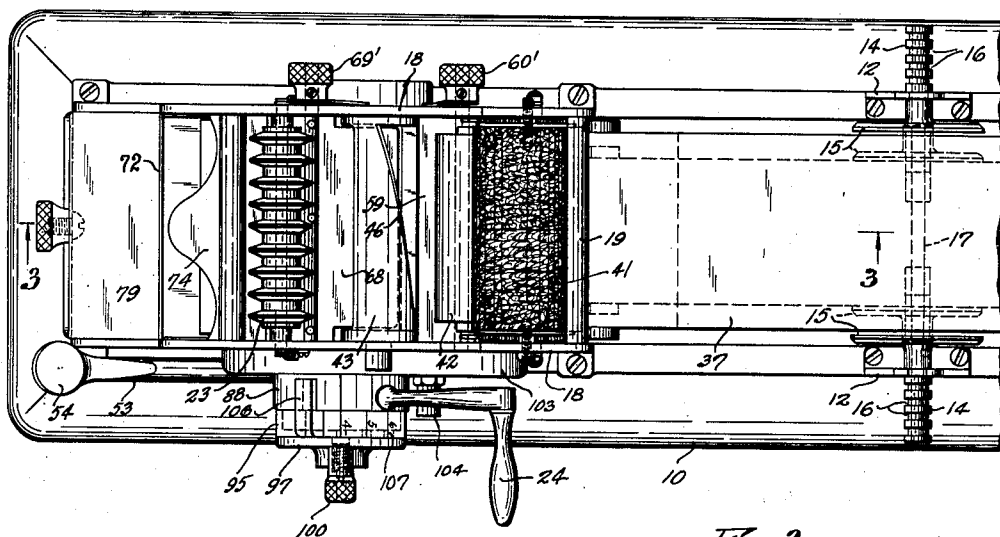


Fig. 1.

Inventor

Ray G. Beach

By

Wooster & Davis

Attorneys

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R. G. BEACH

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3 Sheets-Sheet 2

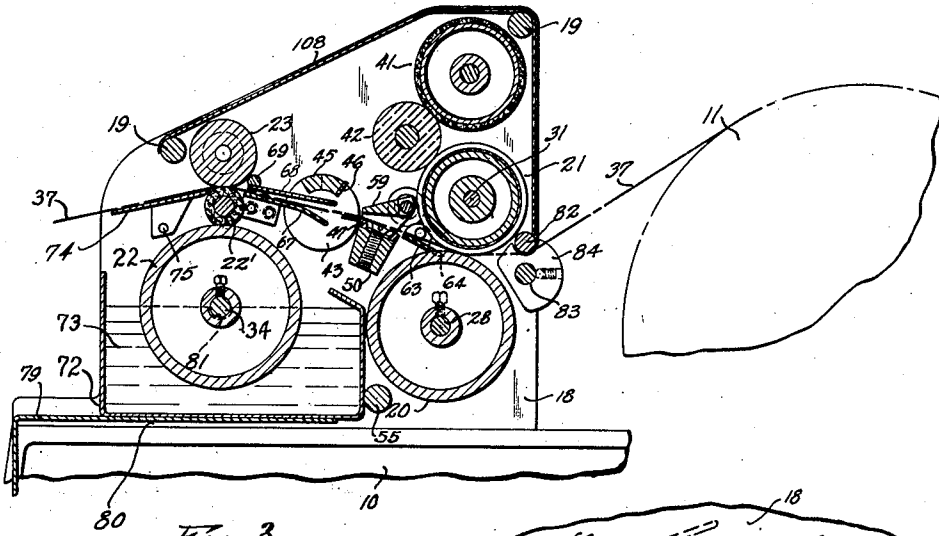


Fig. 3.

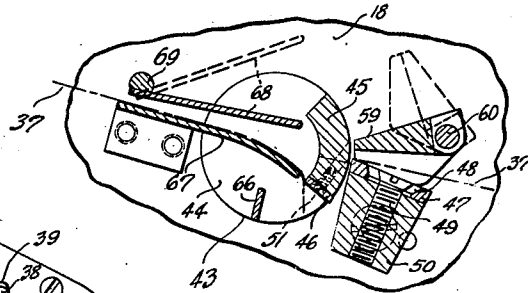


Fig. 4.

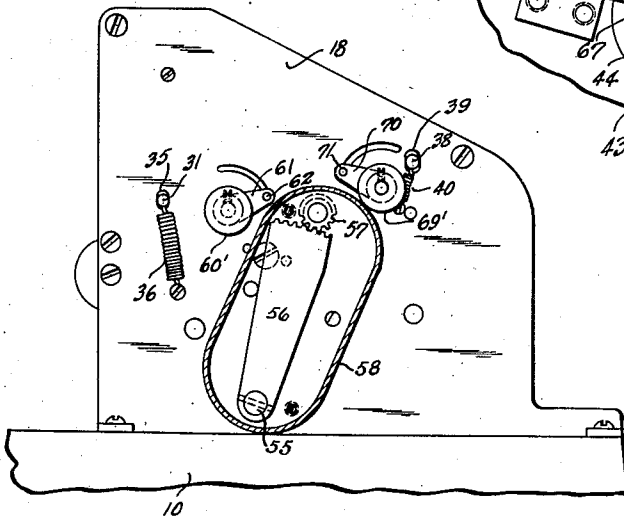


Fig. 5.

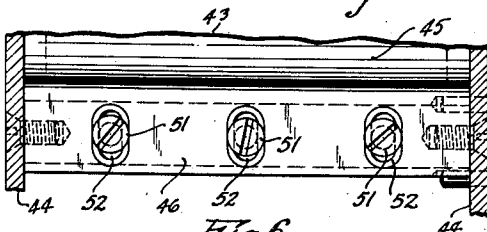


Fig. 6.

Inventor

Ray G. Beach
Hooster & Davis
Attorneys

March 4, 1930.

R. G. BEACH

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3 Sheets-Sheet 3

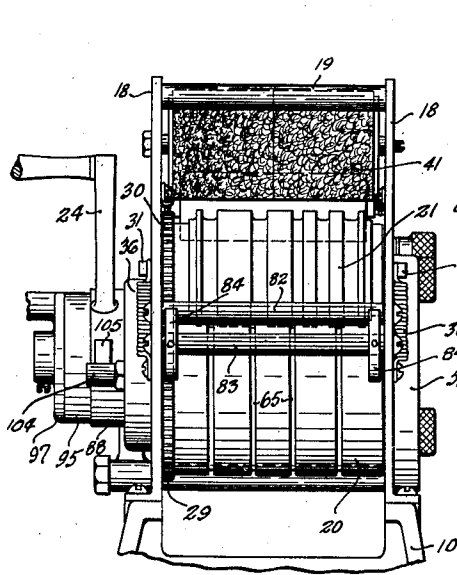


Fig. 2.

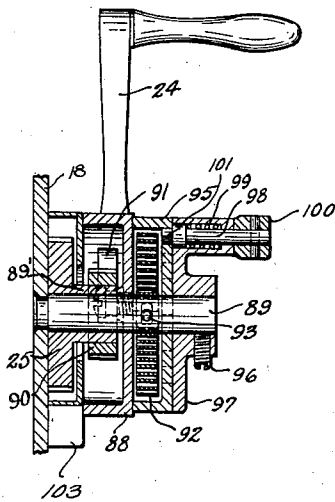


Fig. 10.

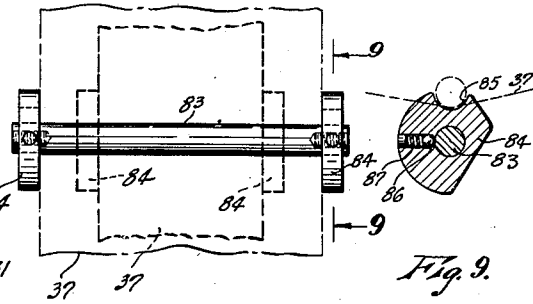


Fig. 8.

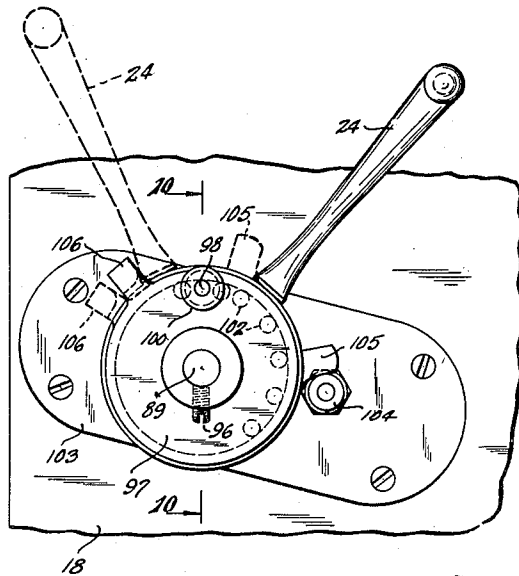


Fig. 11.

Inventor

Ray G. Beach

By

Hooper & Davis

Attorneys

UNITED STATES PATENT OFFICE

RAY G. BEACH, OF FAIRFIELD, CONNECTICUT, ASSIGNOR TO HUGH LAVERY, OF
BRIDGEPORT, CONNECTICUT

GUMMED-TAPE-DISPENSING MACHINE

Application filed January 23, 1925. Serial No. 4,247.

This invention relates to a device for supplying strips of paper or the like employed for wrapping or binding packages, or for use as labels, and refers particularly to that type of device in which a roll of a strip of paper previously gummed on one side and dried is supported in a position to supply a suitable mechanism which will withdraw the strip from the roll and moisten the gummed side so that it is ready for use, and has for an object to provide an improved construction of a device for holding, feeding and moistening the strip of paper, which will have improved means for printing a name or slogan on the other side of the paper, and which will have a measuring attachment which may be set so that a single operation of the feeding mechanism will provide a strip of a predetermined length.

It is also an object of the invention to provide an improved cutting mechanism for severing the individual strips from the main strip.

With the foregoing and other objects in view, I have devised the construction illustrated in the accompanying drawings forming a part of this specification, similar reference characters being employed throughout the various figures to indicate the corresponding elements. In these drawings,

Fig. 1 is a front side elevation of the device.

Fig. 2 is a top plan view thereof.

Fig. 3 is a longitudinal section substantially on line 3—3 of Fig. 2.

Fig. 4 is a detail section, similar to Fig. 3, of the cutting and guide mechanism on an enlarged scale.

Fig. 5 is a rear elevation of the housing enclosing the feeding and cutting mechanism, but showing the casing enclosing the cutter operating mechanism in section.

Fig. 6 is a detail section of the cutter support.

Fig. 7 is an end elevation looking from the right of Fig. 1 with the roll support removed.

Fig. 8 is a top plan view of the guide for the strip into the feeding mechanism.

Fig. 9 is a detail section substantially on line 9—9 of Fig. 8.

Fig. 10 is a transverse section of the con-

trol of the measuring mechanism, the section being substantially on line 10—10 of Fig. 11, and

Fig. 11 is a side elevation looking from the right of Fig. 10.

The device comprises a suitable base 10 upon which the support for the coil of gummed paper 11 and the mechanism for withdrawing the paper from the roll, measuring and moistening it, is mounted. The support for the roll comprises a pair of brackets 12 secured to the top of the base having forks 13 at their upper ends in which the transversely extending supporting means for the reel is mounted. This support in the present case is adjustable for different widths of strips so that no matter what the width of the strip is it will be maintained in the proper position. This support comprises a pair of tubular elements 14 having flanges 15 to be placed on opposite sides of the coil of paper to prevent the coil moving sidewise, and they have on their outer surfaces a plurality of annular grooves 16 to seat in the forks 13 of the brackets to prevent lateral movement, and a rod 17 projects into both of the tubular elements. This rod has a tight fit with one of these elements but a loose fit with the other so that the latter element may be adjusted on this rod to give different distances between the flanges 15 for different widths of tape, as for instance by moving them nearer together, as shown in dotted lines, Fig. 2, they may be used as guides for a narrower tape, and the corresponding grooves 16 will seat in the forks 13 and hold them in this position.

The mechanism for withdrawing the tape from the roll, printing, moistening and cutting are enclosed in a housing comprising two side plates 18 mounted on the base 10 and connected by suitable posts or tie-rods 19. The feeding mechanism comprises a series of rollers, a main bottom roller 20, a cooperating roller 21 above the roller 20 and which may be a printing roller, a moisture feeding roller 22 for carrying moisture to the moistening rollers 22' and a cooperating roller 23 above the moistening roller. All of these rollers are operated simultaneously

from a crank handle 24 through a train of gears, the main drive gear being shown at 25 meshing with an idler 26 which in turn meshes with a pinion 27 connected to the shaft 28 carrying the main roller 20. This shaft also carries a gear 29 meshing with a gear 30 on the shaft 31 carrying the printing roller 21. The ratio between these gears 29 and 30 is such as to give the same surface speed to the rollers 20 and 21. The main drive gear 25 also meshes with a pinion 33 on the shaft 34 carrying the moisture feeding roll 22. The shaft 31 for the printing roll 21 projects into elongated bearing openings 35 in the plates 18 to allow up and down movement of the printing roll, and springs 36 are provided which tend to hold this roll against the upper surface of the tape indicated at 37 as it passes between this roll and the main feed roll 20. The shaft 38 for the roll 23 also projects through elongated bearing openings 39 in the plates 18 and are held against the surface of the moistening roll 22' by springs 40. If the roll 21 is used as a printing roll an inking roll 41 is provided having a fibre surface to form a pad, and a transfer roll 42 runs on the surface of this roll and also the printing roll to transfer ink to the surface of the printing roll.

Mounted in the housing between the two sets of rolls 20-21 and 22-23 is a cut-off device for cutting the strip to proper length. Heretofore these cut-off devices have been a pair of simple shear blades one of which was stationary and the other hinged at one end. This type of shear, however, is not satisfactory because it is difficult to maintain the blades in proper adjustment, and unless they are perfectly straight and kept in this condition they do not cut properly. In the present machine I have provided an improved form of cut-off mechanism which is very reliable in operation, occupies less space and may be easily kept in proper adjustment.

It comprises a rotary blade holder 43 mounted to rotate in suitable bearings in the side plates 18 of the housing, and comprises circular discs 44 at its opposite ends connected by a body or tie member 45 which carries the adjustable blade 46, and this blade cooperates with a stationary blade 47 adjustably mounted by means of elongated slots 48 and screws 49 in a transverse support 50 carried by the housing. The surface or body of the tie member 45 upon which the blade 46 is mounted is curved or forms a portion of a spiral, as indicated in Fig. 2, so that as the blade holder is rotated there will be only a point contact between the blade 46 and the blade 47 and which will move from one end of these blades to the other giving an easy operation and cutting the strip from one side to the other. The blade 46 is adjustably secured to the holder by means of screws 51 threaded into the holder passing

through elongated slots 52 in the blade (see Fig. 6). It will be apparent that a lateral bending of this blade will not change its adjustment relative to the stationary blade. The body or tie member 45 is so proportioned and arranged as to lie above the strip of tape 37 during the feeding operation, as shown in Fig. 3, so as not to interfere with the movement of the tape, but by rotating the holder to the right or clockwise, as viewed in Fig. 3, it will move to the position shown in Fig. 4, and the cooperation of the blades 46 and 47 will cut the tape transversely as indicated. This rotary cutter is operated by means of a lever 53 having a finger piece 54 located where it is easily accessible. This lever is secured to a transverse shaft 55 mounted in the housing and which carries a gear segment 56 on the rear of the housing. This segment meshes with a pinion 57 connected to rotate with the blade holder 43 so that depression of the finger piece 54 will rotate the cutter as above indicated. The gear segment 56 and the pinion 57 are enclosed by a suitable casing 58.

Mounted above the stationary blade 47 is a swinging guide 59 for the tape to insure that during the feeding operation the free end of the tape will be guided under the movable blade 46. This guide is mounted on a shaft 60 mounted in the side plates of the housing so that the guide may be swung up out of the way to the dotted line position (Fig. 4), if desired, to facilitate cleaning and also adjustment of the stationary guide. A spring finger 61 is secured to one end of the shaft at the sides of the housing and provided with a projection 62 adapted to seat in a recess in the housing to hold the guide in proper position. The guide may be swung upwardly by a knurled knob 60'. A stripper guide 63 is mounted between the blade 47 and the main feed roll 20 and is provided with stripper fingers 64 projecting into grooves 65 to strip the tape from the roll and guide it over the stationary blade.

At a suitable distance from the blade 46 the rotatable holder 43 carries a transverse guide 66 which guides the tape from the stationary blade over a stationary guide 67 leading back to the surface of the moistening roll 22. Above the guide 67 is another guide 68 mounted on a shaft 69 carried by the side plates of the housing, and secured to this shaft outside the housing is a spring finger 70 having a projection 71 arranged to seat in a recess in the housing to hold the guide in proper position. By means of a knurled knob 69' the guide may be swung up to the dotted line position shown in Fig. 4 to allow cleaning of the guide and also easy removal of the strip of tape should it become clogged in the machine.

The moisture feeding roll 22 projects into a tank 72 adapted to carry water 73 for

moistening the surface of the roll, and which is carried by the surface of the roll to the moistening roller 22' covered with a suitable fibre and by which it is transferred to the under or gummed surface of the tape as it is fed between this roller and the roll 23. This arrangement gives a more uniform moistening of the tape and also insures that the entire length of tape taken off is moistened. If the hard surface roller 22 were in direct contact with the tape its surface would soon dry off between operations so that the forward end of the next strip taken off would not be moistened. The fibre roller 22', however, retains sufficient moisture to moisten the forward end of the strip as it is fed through and moistens the whole strip uniformly. If the tape is not previously gummed these rolls may be used to apply an adhesive to the under side of the tape. A stripping plate 74 is hinged to the side plate 18 at 75 and is provided with a sharp edge adjacent the surface of the moistening roll to prevent the tape sticking to the surface of the roll. The pivot 75 is back of the plate's center of gravity so that its free edge is against the roll. The tank is removably mounted in the housing by means of a plate 79 which slides at its opposite edges in guide grooves 80 in the side walls of the housing and the side walls of the tank have notches 81 in their top edges in which the shaft 34 seats and prevents the tank from sliding rearwardly. By withdrawing slide 79 the tank may be lowered and then removed through the back of the housing.

Adjustable guiding means is provided at the entrance to the housing for the strip of tape. As shown in Fig. 3, as the tape 37 enters the housing it passes under a transverse guiding rod 82 carried by the housing, and below this rod is another rod 83 on which are adjustably mounted guide blocks 84. There are two of these blocks, one for each of the side edges of the tape, and they are each provided with a notch 85 for the guide rod 82 to prevent turning of these blocks on the rod 83. Each block carries a ball 86 pressed against the rod 83 by a spring 87 which yieldingly holds these blocks in different positions on the rod. They will, however, allow adjustment of the blocks on the rod for different widths of tape as shown in dotted lines, Fig. 8.

I have provided improved means which may be used for measuring off the proper length of tape, and this means may be adjusted to automatically feed different lengths of tape as desired. The crank handle 24 is secured to a cupped member 88 which is mounted to rotate on a stud 89 carried by the housing and this stud carries a sleeve 89' which is rotatable on this stud and carries the main drive gear 25. This sleeve also carries a ratchet 90 which is operated by a spring

pressed pawl 91 carried by the cupped member 88. This provides a one-way drive between the crank handle 24 and the main drive gear 25, that is, movement of the crank handle to the left or counterclockwise, as viewed in Figs. 1 and 11, will rotate the gear 25 in the same direction to operate the feed rollers to draw the tape 37 from the coil 11 and pass it through the machine. The lever when released is returned to its original or full line position, Figs. 1 and 11, by means of a convolute spring 92. This spring is connected at its inner end to the stud 89 by a pin 93 and at its outer end to the cupped member 88 by a pin 94, and the spring is enclosed by a second cupped member 95 mounted to rotate on the stud 89. This second cupped member 95 forms an indexing device to determine the length of the tape which will be fed through the machine. Secured to this stud 89, as by means of a set screw 96, is a disc 97 carrying a spring pressed plunger 98 which may be drawn outwardly against the action of the spring 99 by a head 100. The inner end of this plunger is reduced, as shown at 101, so as to project into any one of a series of openings 102 in the cupped member 95. The gear drive from the main gear 25 is enclosed in a housing 103 secured to a side plate 18, and this housing carries a stop 104 to be engaged by a stop lug 105 on the cupped member 88 carrying the crank handle 24 to limit its backward movement under the action of the spring 92. The movement of this crank lever on the opposite or feeding direction is limited by means of a stop 106 on the adjustable cupped member 95, and it will, therefore, be apparent that by adjusting the member 95 about the stud 89 the position of the stop 106 may be varied so that the amount of movement allowed for the crank handle may be varied to allow different lengths of tape to be drawn from the coil 11. The stop 106 projects into the path of movement of the crank handle, as shown in Fig. 2. The length of the tape fed off is determined by withdrawing the plunger 98 and then rotating the cupped member 95 to bring the stop 106 to the desired position, and then this cupped member is held in this position by the end of the plunger seating in one of the openings 102. The periphery of the cupped member 95 is provided with a scale 107 indicating inches or any other suitable unit which may be brought to a zero mark carried by the disc 97, so that the device may be set to draw off a length of tape by a single movement of the crank handle to the left equal to that indicated on the scale.

The operation will be obvious from the foregoing description. After the cupped member 95 is set for the desired length of tape, say four inches as indicated in Fig. 2, movement of the crank lever 24 to the left or counter-clockwise, as viewed in Fig. 1, as far

as it will go, or until it is stopped by the stop 106, will, through the gear drive and the rollers, withdraw four inches of tape from the coil 11 and as it is withdrawn from the coil it may be printed on its upper surface by the roller 21 and its under or gummed surface will be moistened by the roller 22'. The crank handle may then be released and it will be moved back to its original position ready for the next operation by the spring 92. Depression of the free end of the lever 53 will rotate the cutter 46 and will cut off the strip of tape to the proper length, and it may then be withdrawn from the machine by drawing it rearwardly over the moistening roll, it being understood that the feeding operation has projected the free end of the tape from the rear end of the machine where it may be grasped by the operator. The mechanism carried in the housing is enclosed by a suitable cover plate 108 seated between the side plates 18 and resting on the tie-rods 19 as shown in Fig. 3, to keep out dust and dirt and otherwise protect the mechanism. The roll of tape 11 may also be enclosed by a cover 108. If it is found preferable not to measure the strips as described the measuring device may be omitted and the tape fed off with a simple gear drive.

30 Having thus set forth the nature of my invention, what I claim is:

1. In a tape dispensing device of the character described, means for intermittently advancing a tape capable of permitting pauses between successive advancing movements, means for moistening one side of the strip comprising a container for moisture, a rotary roll projecting into the container to remove moisture therefrom, a roll in contact with the first roll and the tape and covered with a moisture absorbent material capable of receiving moisture from the first roll and retaining it between successive tape advancing movements so that the roller will remain moist between these movements and will immediately moisten the tape as soon as the succeeding movement begins, and means for holding the strip against the second roll.

2. In a tape dispensing device of the character described, means for intermittently advancing a tape capable of permitting pauses between successive advancing movements, means for moistening one side of the strip comprising a roll in contact with the strip and covered with a moisture absorbent material capable of receiving moisture and retaining it between successive tape advancing movements so that the roller will remain moist between these movements and will immediately moisten the tape as soon as the succeeding movement begins, means for supplying moisture to said absorbent material, and means for holding the tape against the surface of said roll.

3. In a tape dispensing device of the char-

acter described, a housing, means within the housing for moistening one side of the tape including a roll, a mounting for the roll permitting it to rotate, a tank for holding liquid to moisten the roll, said tank being provided with notches in the edges of its side walls to receive said mounting, and a slidable support beneath the tank to hold it in position with said mounting in the notches.

4. In a tape dispensing device of the character described, means for intermittently advancing a tape capable of permitting elapse of time between successive advancing movements, means for moistening one side of the strip comprising a container, a rotary roll projecting into the container to remove moisture therefrom, a fibre covered roll in contact with the first roll to receive moisture from said roll, said fibre cover being in contact with the tape and adapted to absorb the moisture and retain it during the intervals between advancing movements of the tape so that it will remain moist in these intervals and will immediately moisten the tape on its next advance movement prior to the time additional moisture can be supplied by the first roll and means for holding the tape against the second roll.

In testimony whereof I affix my signature.

RAY G. BEACH.