April 28, 1964 J. T. AULD ETAL 3,131,109

GUMMED PAPER TAPE APPLYING DEVICE

Filed May 1, 1961 3 Sheets-Sheet 1

FIG. 1

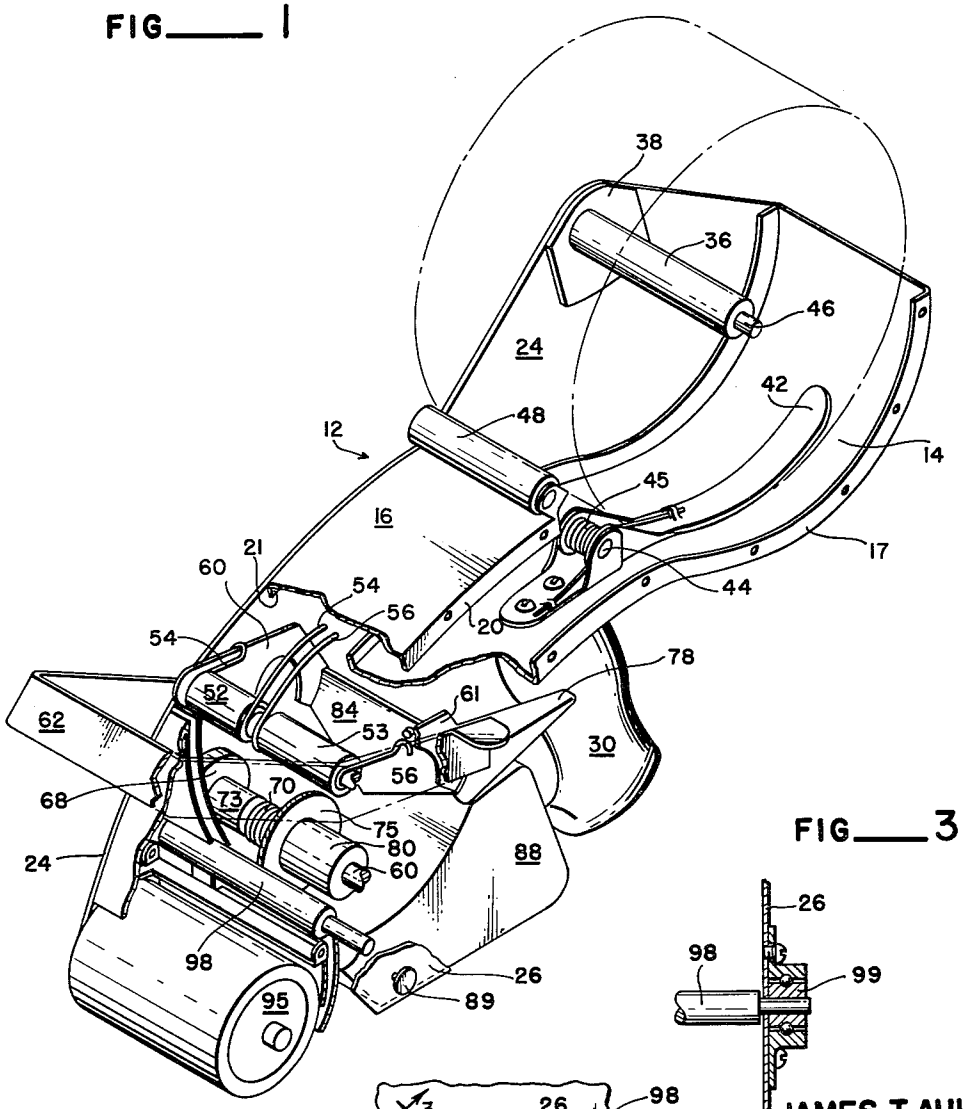


FIG. 3

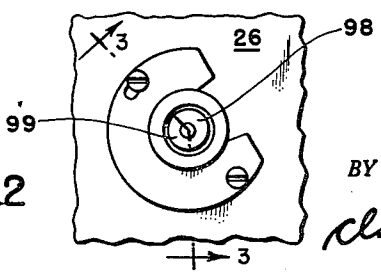


FIG. 2

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FIG. 4

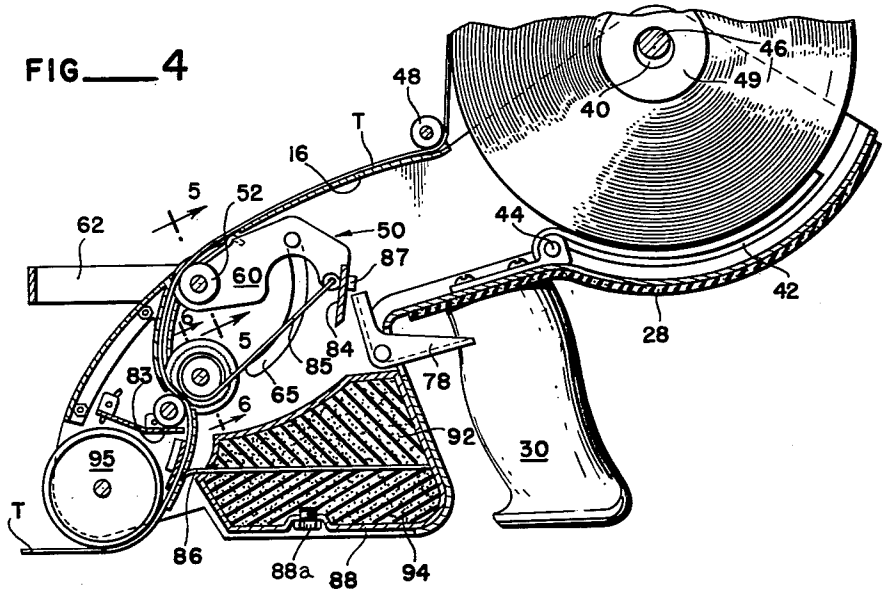


FIG. 5

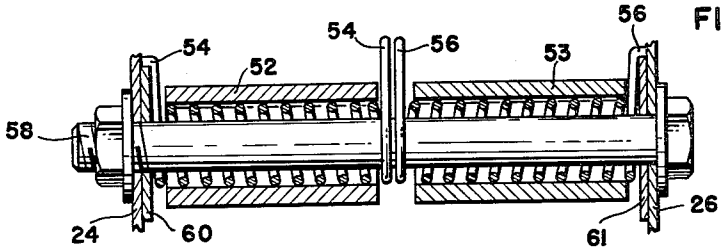
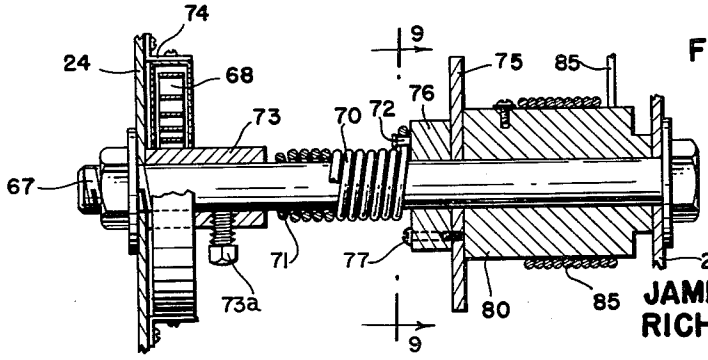


FIG. 6



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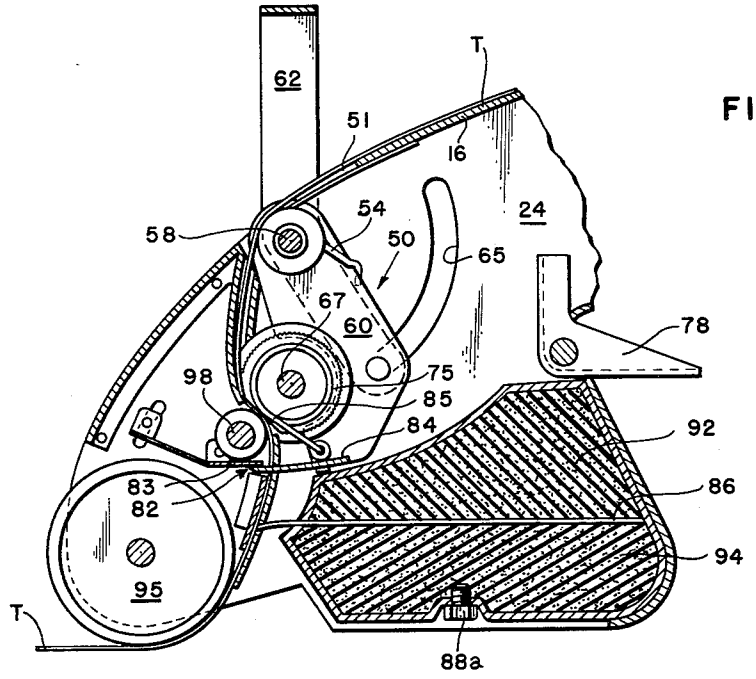
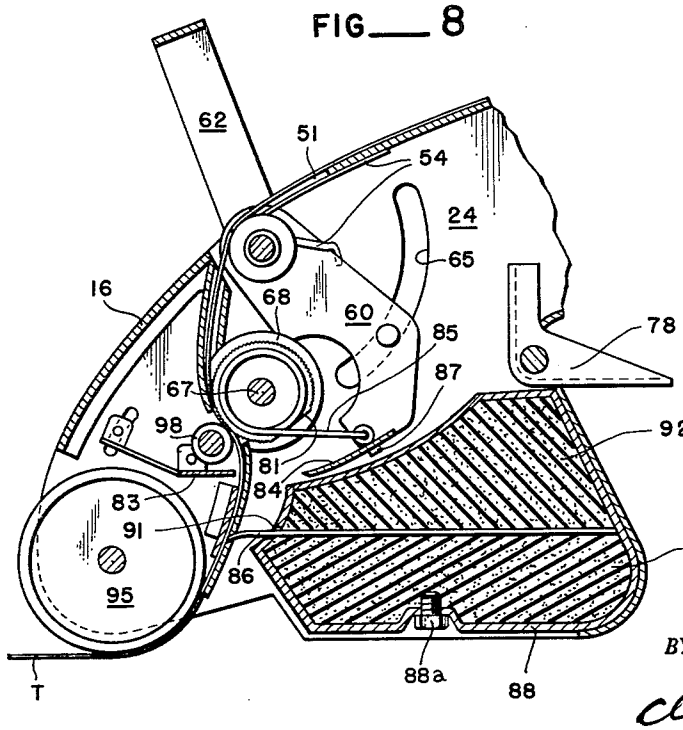


FIG. 7

FIG. 8



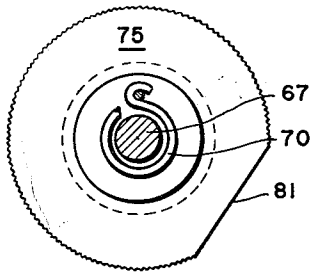


FIG. 9

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United States Patent Office 3,131,109 Patented Apr. 28, 1964

3,131,109

GUMMED PAPER TAPE APPLYING DEVICE

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Filed May 1, 1961, Ser. No. 106,687
6 Claims. (Cl. 156—526)

This present invention relates to the general art of tape holders and applying devices and more particular to a machine for dispensing a roll of gummed paper tape of the type normally referred to as water moistened. Means are provided for the moistening of the tape, for cutting off the tape to the required length and other means assure the expeditious and convenient handling of paper tape.

It is quite generally recognized that the water moistened gummed paper tape is not only the cheapest means of sealing a package but it also prevents tampering with the package after the water moistened glue has set. This is in distinction to many of the pressure sensitive tapes that are very convenient to use but which can also be removed and replaced and in most cases without showing any visible evidence of the fact that the package has been unsealed or tampered with in any way. The substitution of other types of tapes for the gummed paper tape has partly been accounted for, it is believed, by the difficulty of using it conveniently. The usual problem is the inconvenience of having moisture available to moisten the tape for sealing a package and so confining the water that it will not wet and contaminate the tape left in the dispensing device. In the past, in the dispensions observed, it has been necessary either to have the end remaining in the dispensing position left in a moistened condition or to cut off the first several inches of tape that would be dispensed because it was not wetted and could not therefore be used. In this present gummed paper tape dispensing device it is believed that many of the objectionable features encountered in the past have been overcome and a device provided which will make the handling of the gummed paper tapes a much more simple and convenient operation.

A principal object of this invention therefore is to provide means for feeding gummed paper tape through a dispensing device in which the tape is adequately guided so that the threading operation can be obtained without the use of tools or without taking the equipment apart.

A further object of this invention is to provide tape advancing means, manually operable from the outside of the device, which can be used in the threading of the device, but more particularly means which will feed a definite amount of tape into the position of use so that means can be provided for wetting the first tape that is passed through the machine to the position of application and have that tape ready for use.

A further object of this invention is to provide a spring actuated shear for cutting the tape at the optimum position and having this means manually releasable from the outside of the dispensing device.

A further object of this invention is to provide a watertight containing means for the water used to wet the tape and means for applying it to the gummed tape just prior to the time when the tape is passed out of the dispensing device either by draft where pieces of tape are being used

and are partly applied or by a tape propelling device which is manually operable.

A further object of this invention is to provide all the essential elements for the complete storage, handling, dispensing and application of gummed paper tape.

Other objects, advantages and capabilities will be apparent from the description and disclosure in the drawings or may be comprehended or are inherent in the device.

In the drawings:

FIGURE 1 is a perspective view with certain parts of the housing broken away so that the essential working parts of the device will be shown in their working positions.

FIGURE 2 illustrates a typical guide roll end bearing with the side frame of the dispenser shown in fragmentary form.

FIGURE 3 is a cross sectional view taken along the broken line 3—3 of FIGURE 2.

FIGURE 4 is a partial side elevation of this dispensing device with certain of the parts shown in section.

FIGURE 5 is a cross sectional view, shown on an enlarged scale, and taken along the line 5—5 of FIGURE 4.

FIGURE 6 is a cross sectional view, on an enlarged scale, taken along the line 6—6 of FIGURE 4.

FIGURE 7 is a vertical sectional view showing a portion of FIGURE 4 but on an increased scale and with the tape propelling device shown in the tape shearing position.

FIGURE 8 is a vertical cross sectional view similar to that shown in FIGURE 7 but showing functional parts in a different operational position.

FIGURE 9 is a fragmentary cross sectional view taken along the line 9—9 of FIGURE 6.

Referring to the drawings, throughout which like reference characters indicate like parts the numeral 12 designates generally the housing for this gummed paper tape dispensing device.

This housing may be variously constructed and is preferably provided with a bottom housing member 14 and a top housing member 16. These are preferably provided with marginal angles formed from the housing members as is indicated at 17 and 18 for the lower housing member 14, and at 20 and 21 for the upper housing member 16. This form is desirable in order that maximum strength be provided with minimum weight as the housing must be light in weight and should not exceed one pound in weight. Usually a device of this order must be handled with one hand and as the weight of a new roll of paper tape may be as much as seven pounds for a large roll or approximately half of that amount for a small roll, when this weight is added to the essential parts that are required for the device it could easily become so heavy as to be most unwieldy and very tiring for the operator to use. To complete the housing, light weight side plates 24 and 26 are suitably secured to members 14 and 16 by convenient means such as machine screws or sheet metal screws.

The underside of lower housing portion 14 is preferably padded as with plastic or rubber sponge indicated at 28 so that the grip 30, by which the operator supports the device with one hand, can be positioned substantially forward of the center of mass and thus the weight of the device and roll of tape 52 will rest preponderately on the operator's forearm without being uncomfortable.

Enclosing approximately one-third of the tape roll 32 is the tape magazine 34. The upwardly extending portions of opposite sides of magazine 34 provide bearings which are preferably reinforced for the paper roll axle 36. Axle 36 has reduced diameter bearing portions at each end. Any of the means normally employed to secure the axle of the usual paper roll dispensers can be applied so as to make the entry of the axle 36, carrying roll 32, convenient for insertion into the supporting bearings 38. One convenient way is to have the opening of the bearing, indicated at 40, of sufficient size so that axle 36 can be slid through the bearings and through the center of the roll and thus engage the opposite bearing. In order to position the roll and to apply braking effort on the roll so it will not over-run as it is being used, a brake shoe 42 is provided which is pivotably mounted at 44 and provided with a torsion spring 45 resiliently urging member 42 upwardly in contact with roll 32 until the tape is entirely used. The urgence of brake member 42 should be sufficient to overcome the weight of the roll 32 and to force the roller axle 46 off center in opening 40 and the reduced diameter bearing portion of the axle, forming an annular ledge 47, provides a means of preventing the retrograde movement of axle 36 after it is once put in place.

The paper tape T is led under a revolvable guide roll 48 and over the top closure member 16 of the housing until the tape is substantially over the guide means for the tape propelling means, indicated generally at 50, where the tape passes through an opening 51 in top plate 16 and is led over the guide rollers 52 and 53. These guide rollers act as a divided guide roller and are so arranged that torsion springs 54 and 56 may be led out of the space between the two portions 52 and 53 and thus serve as tape guide means after the showing in FIGURES 7 and 8. These springs have a further purpose which will be explained.

Rollers 52 and 53 are resiliently mounted on the guide roller shaft 58 which is preferably in the form of a bolt as indicated in FIGURE 5. Shaft 58 pivotably supports the tape propelling means 59. This means is a device provided with the spaced apart side plates 60 and 61 which are pivotably supported on shaft 58. The adjacent ends of springs 54 and 56 serve partly as tape guides, as shown in FIGURE 5 and the other end of both springs, after passing around shaft 58 are hooked over the movable side plates 60 and 61 to give spring biasing for knife 84.

Secured in operational engagement with side plates 60 and 61 and pivoted on shaft 58, is the U-shaped handle 62 which serves to operate the tape propelling device 50. Secured in each of the side plates is a detent or machine screw 64 engaging one leg of the handle 62 and disposed to pass through and along the arcuate slot 65 so as to provide an operating connecting means between operating handle 62 and the tape propelling device 50.

Disposed below shaft 58 is the clutch bearing bolt shaft 67. This shaft and the elements it supports are shown most clearly in FIGURE 6. The elements comprise the return spring 68 for returning the elements to their normal position as shown in the position of FIGURE 4, which is the dispensing position for this device. One end of spring 68 is fixedly secured to side frame 24 and the other end is secured in a longitudinal slot in bushing 73, which bushing is normally fixedly secured on shaft 67 as by set screw 73*a*.

Also disposed upon shaft 67 is the spring clutch member 70, the peripherally knurled tape dispensing disc 75, secured to spring anchor disc 76 by screw 77 and the cord spool 80. These parts have a function in operating the shear 82. This shear consists of the stationary blade 83 and a movable blade 84.

The Functioning of the Tape Shear

The start operation of the shear 82 is achieved first, by moving starting lever 62, which positively moves the tape propelling device and the movable shear knife blade 84 from the position of FIGURE 7 where the tape has been sheared to the position shown in FIGURE 4 which is the cocked position for knife 84. During this movement the tape propelling device 50 has been revolved after the showing of FIGURES 7 and 4 and in this operation a cord or other flexible member 85, having one end secured to the movable shear blade 84 and the opposite end to spool 80, has been pulled so as to revolve spool 80. To spool 80 is secured the peripherally knurled disc 75 and a positioning and spring anchor disc 76 which provides the anchor 72 for one end of clutch spring 70. The free end 71 of clutch spring 70 is normally in a contact grip with bolt shaft 67. When spring anchor 72 engages the hook at the end of spring 70, the spring is wound up on shaft 67 and as the coils are reduced in diameter, thus gripping shaft 67 and causing it to revolve with spring 70 and spool 80. This action revolves bushing 73. This action has the effect of causing bushing 73 to revolve with spring 70 and winding up the return spring 68, one end of which is secured to bushing 73 and the other end is secured fixedly by means of bracket 74 to side plate 24. The return spring is biased to unwind clutch spring 70 but is held compressed by the thumb operated latch 82 whose functioning is best shown in FIGURE 4, wherein the inner end of the latch engages an abutment 87 which holds the tape propelling device in the position indicated in FIGURE 4. When thumb pressure is applied upon the upper face of latch 78, then the return spring 68 is put into motion, assisting in swinging the propelling device around shaft 58 and finally bringing the movable blade 84 into coaction with the stationary blade 83 and cutting the tape as is indicated in FIGURE 7. The guide springs 54 and 56 provide the main source of return energy required and they are compressed by the movement of handle 62 away from paper tape roll 32.

Normally during the threading of the tape applying device the actual propelling means for the tape is the peripherally knurled disc 75 which is revolvably mounted on clutch bearing bolt 67 along with spring anchor block 76 and spool 80. The movement of handle 62 from the position shown in FIGURE 7 to that shown in FIGURE 4, pulls cord 85 and revolves disc 75 and its associated parts approximately 270° to 300° and winds up return clutch 68 by the action of spring 70, previously explained. When handle 62 is operated repeatedly as in initially threading tape through the tape applying device, it and the other displaced parts return to the position shown in FIGURE 8. Pressure is maintained on the latch 82 so that the starting lever or handle 62 can be successively operated as is required for the movement of tape T through the device.

To provide unhindered passage of tape through the device, during placing strips of the same in place, approximately 1/6 of the periphery is cut off by a 60° chord cut 81.

A special roller 98 is employed as backing for the tape during the tape moving periods. This roller must be spaced accurately from disc 75 and is preferably covered with a resilient covering as rubber.

A very important feature of this tape handling device is the tape moistening arrangement. First, it will be noted that the two knife blades, the stationary one 83 and the movable one 84, which provide a shear for the tape, cut the tape well above the tape moistening brush 86 and then, in the final operation of putting tape T in position, the very end of the tape, where it has been cut, is still moistened by brush 86 before it is applied to the package or carton being sealed. At the same time, as the tape is cut well above brush 86 there is no moistened tape

left within the machine. This has proven to be a very important feature in the continued successful operation of the equipment. The tape moistening arrangement is shown as enclosed within the substantially water-tight water storage container 88 and this complete unit can be taken entirely out of the machine, by removing bolt 89, and the sponge soaked in a vessel of water, after removing filling screw 88*a* by water passing through the opening provided and the brush slit or opening 91 until it has taken up its full capacity of water. The sponge is then allowed to drain for a short period with the brush opening 91 downward so that any excess of water can drain out of it. It will be noted that brush 86 extends transversely across the machine and is made of bristles of the general type used in a paint brush so that capillary attraction is actually the water conducting means that supplies the water, in controllable amounts, for the wetting operation. The sponge itself is made of two elements, one above the brush, 92 and one below the brush, 94. With this arrangement a properly moistened tape is supplied to the resiliently covered pressure roll 95 for the application to the cartons and the like which are to be sealed.

It is believed that it will be clearly apparent from the above description and the disclosure in the drawings that the invention comprehends a novel construction of gummed paper tape applying device.

Having thus disclosed our invention, we claim:

1. A gummed paper tape applying device for hand use, comprising: a light weight housing; a tape magazine in the upper end of said housing and a revolvable transversely disposed pressure roller, for the final pressure application of a gummed tape, in the lower end thereof; a hand grip for moving said housing, guide means for positioning a strip of paper tape and guiding it through said tape applying device to said pressure roller, the path of said tape being approximately vertical as it reaches said pressure roller; a tape propelling means; handle means operatively connected to said tape propelling means for operating the same; a tape moistening arrangement disposed rearwardly of said pressure roller and on a level therewith said arrangement including a water storage container positioned rearwardly of said pressure roller and horizontally disposed brush means extending from said water storage container forwardly to the vicinity of said pressure roller for applying water to the gummed surface of said vertically disposed portion of paper tape and a shear means for cutting a strip of gummed tape at a position spaced vertically above said brush, said shear means including a stationary blade and a coacting movable blade, said movable blade having spring means for biasing it to its coacting cutting position and also having releasable cocking means for holding said movable blade in a cocked position.

2. A gummed paper tape applying device for hand use, comprising: a light weight housing; a tape magazine in the upper end of said housing and a revolvable transversely disposed pressure roller, for the final pressure application of a gummed tape, in the lower end thereof; a hand grip secured to the lower surface of said housing and positioned forwardly of said tape magazine; a paper tape roll axle supported by said tape magazine and providing a revolvable positioning means for a roll of gummed paper tape; a resiliently positioned brake shoe disposed in the lower portion of said tape magazine to provide a securing and braking means for a roll of tape; guide rolls for positioning a strip of paper tape and guiding it through said tape applying device to said pressure roller, the path of said tape being approximately vertical as it reaches said pressure roller; a tape propelling means; a U-shaped handle pivoted on opposite sides of said housing and operatively connected to said tape propelling means for operating the same; a tape moistening arrangement disposed between said hand grip and said pressure roller and on a level therewith; said arrangement including a water storage container positioned rearwardly of said pressure roller and horizontally disposed brush means extending from said water storage container forwardly to the vicinity of said pressure roller for applying water to the gummed surface of said vertically disposed portion of paper tape and a shear means for cutting a strip of gummed tape at a position spaced vertically above said brush, said shear means including a stationary blade and a coacting movable blade, said movable blade being spring biased to its coacting cutting position and having releasable cocking means for holding it in its cocked position against the bias of said spring.

3. A gummed paper tape applying device for hand use, comprising: a light weight housing; a tape magazine in the upper end of said housing and a revolvable transversely disposed pressure roller, for the final pressure application of a gummed tape, in the lower end thereof; a hand grip for moving said housing; guide means for positioning a strip of paper tape and guiding it through said tape applying device; a tape propelling means; handle means operatively connected to said tape propelling means for operating the same; a tape moistening arrangement disposed rearwardly of said pressure roller and on a level therewith; said arrangement including a water storage container and a transversely disposed water conducting means for applying water to the gummed surface of said paper tape and shear means for cutting a strip of gummed tape at a position spaced vertically above said water conducting means, said shear means comprising; pivotably mounted and spaced apart side plates one adjacent each inner side of said housing; a transversely disposed movable knife blade secured to the movable ends of said plates; spring means biasing said side plates to move said movable knife blade to a tape shearing position; a latch disposed to engage said movable knife blade and hold it in its cocked position; a stationary knife blade disposed to coact with said movable knife blade to provide a shearing action to cut a paper tape when said latch is depressed and the movable knife blade swings into and through the tape.

4. A gummed paper tape applying device for hand use, comprising: a light weight housing; a tape magazine in the upper end of said housing and a revolvable transversely disposed pressure roller, for the final pressure application of a gummed tape, in the lower end thereof; a hand grip for moving said housing; guide means for positioning a strip of paper tape and guiding it through said tape applying device; a tape propelling means; handle means operatively connected to said tape propelling means for operating the same; a tape moistening arrangement disposed rearwardly of said pressure roller and on a level therewith; said arrangement including a water storage container and a transversely disposed water conducting means for applying water to the gummed surface of said paper tape and shear means for cutting a strip of gummed tape at a position spaced vertically above said water conducting means, said tape propelling means comprising; a side plate member pivotably mounted on a transverse guide roller shaft; said side plate member operatively secured to said handle and operated thereby; a clutch bearing bolt shaft disposed below and parallel to said guide roller shaft; a cord spool, a tape propelling disc and a spring anchor disc all operatively secured together and revolvably mounted on said bolt shaft; a flexible connector secured at one end to said side plate member and at its opposite end to said cord spool upon which it is successively wound; said tape propelling disc being peripherally knurled and disposed to engage said tape; and a backing means for pressing said tape against the knurled edge of said tape propelling disc when said disc is turned by the operation of said handle to partially revolve said cord spool and propel a section of said tape through said tape applying device.

5. The subject matter of claim 4 in which said tape propelling disc is operatively mounted to turn approxi-

mately 270° and said disc having substantially 90° of its periphery cut away by a chord cut to provide unhindered passage of tape through said tape applying device during the placing of tape strips in place during use of said device.

6. The combination according to claim 1 wherein said tape moistening arrangement, comprises: a substantially water-tight water storage container detachably secured within said housing; a horizontally and transversely disposed water conducting means extending the length of said container and passing, in part, out of said container to contact the gummed surface of said tape below said

tape shear; said water conducting means having a water storage sponge above and a sponge below it as a source of water for moistening said gummed surface.

References Cited in the file of this patent

UNITED STATES PATENTS

2,100,652	Shimer	Nov. 30, 1937
2,487,351	Marsh	Nov. 8, 1949

FOREIGN PATENTS

296,202	Germany	Jan. 26, 1917
444,092	Italy	Jan. 12, 1949