This invention relates to a portable tape dispenser, and, more particularly, to a device for dispensing gummed tape for use in closing cartons, and the like.

A variety of devices, for the most part complex, have been provided in the art for tapping closed paperboard cartons as the same issue from a filling line, or the like. In order to insure reliability of the taped closure, there must be adequate moistening means for the gummed tape, and this has resulted in reservoirs and other types of wetting means that limit the versatility of the device for accommodating cartons of different sizes. In particular, the previously employed water reservoirs have prevented the devices from being truly portable, i.e., usable in a variety of positions—vertically, horizontally, etc.

In general, it is an object of this invention to provide a novel gummed tape dispenser. More particularly, it is an object to provide a portable tape dispenser. Other objects and advantages of the invention may be seen in the details of construction and operation set down in the following specification.

The invention is explained in conjunction with an illustrative embodiment in the accompanying drawing, in which:

FIG. 1 is a perspective elevational view of the invention device;
FIG. 2 is another perspective view, but from the other side—as compared to FIG. 1;
FIG. 3 is a schematic elevational view similar to FIG. 1 and showing the parts in one condition of operation;
FIG. 4 is a view similar to FIG. 3, being schematic, but showing the parts in the condition in which they are disposed during application of the tape;
FIG. 5 is an enlarged sectional view of the device of FIGS. 1 and 2 such as would be seen along the section line 5—5 of FIG. 6, whereby the showing in FIG. 5 is partially in section;
FIG. 6 is a vertical sectional view taken along the line 6—6 of FIG. 5;
FIG. 7 is an enlarged sectional view of the lower right-hand corner portion of FIG. 6;
FIG. 8 is fragmentary sectional view taken along the line 8—8 of FIG. 7;
FIG. 9 is a view similar to FIG. 8 but showing the parts in a different operational condition;
FIG. 10 is an enlarged fragmentary perspective view, partially in exploded form, of a portion of the apparatus of FIGS. 1 and 2;
FIG. 11 is an enlarged sectional view taken along the line 11—11 of FIG. 10;
FIG. 12 is an exploded perspective view of a portion of the apparatus of FIG. 5 and which is designated by the numeral 12 therein; and
FIG. 13 is a fragmentary sectional view taken along the line 13—13 as applied to FIG. 5.

In the illustration given and with particular reference to FIG. 2, the numeral 20 designates generally a frame, which is seen to be relatively elongated and U-shaped in transverse section. The frame 20 is defined by sides 21 and 22 which upstand from a bottom wall 23, the bottom wall 23 being centrally apertured as at 23a (see FIG. 5). At one end, the frame 20, more particularly the upper portions of the walls 21 and 22, is equipped with slots 24 accommodating a shaft 25. The shaft 25 carries a roll of tape 26 which is applied by being threaded through a path under a friction wheel 27 over a moisture roll 28 and under a pressure roller 29. As can be best appreciated from FIG. 5, the moisture roll 28 is supplied with water from a reservoir 30 mounted on a superstructure generally designated 31 extending above the frame 20.

The step of tape application can be readily appreciated from a consideration of FIG. 4, wherein the frame 20 is tilted relative to the application surface 32. The pressure roller 29 is forced upwardly in the direction of the arrow 33 provided therein in FIG. 4 so as to pivot about a pivot point 33. This releases clamping pressure as at 34 on a flexible conduit 35 so as to permit gravity flow of water from the reservoir 30 to the moisture-applying roll 28. As the tape adheres to the surface 32, movement of the frame 20 to the left under the grasp of handle 36 causes more tape to unwind from the roll 34. This operation is continued until sufficient tape has been laid down, whereupon a cut-off knife 37 is energized (see particularly FIG. 10) to sever the tape, as is indicated in FIG. 5.

Returning now to FIG. 1, it is seen that the path of the tape T in being unwound from the roll 26 causes it to first pass under the friction wheel 27, which is equipped with a knurled surface at 27a (designated only in FIG. 5). The friction wheel 27 is fixed to a cross shaft 38 which is journaled in openings in the frame sides 21 and 22 as at 39 in FIG. 1. The shaft 38 is equipped at one end with a manipulating knob as at 40 in FIG. 2, permitting the same to be turned, whereby the friction wheel 27 feeds tape over the moisture-applying roll 28 and toward the pressure roller 29. This occurs after the tape has been severed by the knife 37 and preparatory to laying down another strip of the tape T on the surface 32.

Also mounted on the shaft 38 is a sprocket 41, about which is entrained a head-type chain 42 (still referring to FIG. 2). The chain 42 is entrained about a second and smaller sprocket 43 which is provided as part of the cross shaft 44 in which the moisture-applying roll 28 is mounted. This can be seen in enlarged scale in FIG. 13, wherein the roll 28 is seen to be constructed of absorbent rubber material and fixed about the hollow shaft 44 for rotation therewith. At one end, the shaft 44 is coupled to the conduit 35 as by a suitable fitting 45. The shaft 44 is apertured at 44a so as to permit flow of water from the conduit 35 out of the hollow shaft 44 and into the sponge-like roll 28. The roll 28 rotates faster than the wheel 27 to develop an advantageous wiping action on the tape T.

The shaft 44 is journaled in water-tight relation within the extension of the fitting 45 as at 46, and on the other side is journaled within a suitable bearing 47 provided within the wall 21.

The superstructure 31 is provided with a spring-loaded guide member as at 48 (see particularly FIGS. 1 and 5) for urging the tape T against the moisture-applying roll 28. For this purpose, a cross shaft 49 is mounted in the superstructure 31 and equipped with a spring 50 to extend between the side members 51 and 52 which are joined, respectively, to the sides 21 and 22 as by bolts 53 (compare FIGS. 5 and 6). The guide 48 is equipped with a concave lower end portion as at 48a for developing a line-type bearing against the surface of the moisture-applying roll 28.

The superstructure 31 also provides a connection for the handle 36, and for this purpose the side members 51 and 52 are angled inwardly relative to each other, as can be seen in FIG. 6, to define a support for the tubular sleeve 54 shown in dotted line at the extreme upper left-hand portion of FIG. 10. For this purpose, the side members 51 and 52 may be welded to the sleeve 54, which also provides a convenient mounting means for a ring generally designated 55 in which the tubular reservoir 30 is mounted. Extending rearwardly from the
sleeve 54 is the handle 36, which may be advantageously equipped with a bicycle grip, as illustrated particularly in FIGS. 1, 2 and 5. The sleeve 54 also provides a pivotal mounting for a latch member 56 which is seen to be equipped with a laterally-extending trip or depressible part as at 57 in FIG. 10. At its lower portion, the latch member 56 is notched as at 56a and receives a lug 58 constituting part of the knife 37.

The sleeve 54 (still referring to FIG. 10) is spring-loaded as by spring 59 on a longitudinally-extending shaft 60, whereby the knife is urged downwardly to coact with a lower knife edge 61 and thereby sear the tape in the fashion indicated in FIG. 5 wherein the knife 37 is seen in contacting relation with an anvil 61. The loading of the spring 59 is achieved by means of rotating the collar 62 (see FIG. 1) after the locking pin 63 has been temporarily retracted while still being supported within the cap 64 of the shaft 60.

In operation, and after a sufficient length of tape T has been laid down on a surface 32, the operator merely depresses the trip 57, which unlashes the knife 37 so as to transversely sever the tape T. Thereafter, the operator merely lifts the knife 37 as by the end handles 37a to relatch the lug 58 within the notch 56a. Urging the latch 56 toward latched position is a coil spring 65 (see FIG. 10), which is confined between the latch member 56 and the enclosed portion 65a of the ring 55.

The reservoir 30, as can be appreciated from a comparison of FIGS. 1 and 6, is equipped with a depending outlet 66 which is equipped with a valve cock 67. Leading from the valve cock 67 is the flexible conduit 35, which is seen resting on a platform 68 (see the lower portion of FIG. 6) before terminating in the fitting 45. As such, the conduit 35 can be compressed in the fashion shown in FIG. 7 by means of a clamping pin 34 provided as part of the lever 69 which is pivotally connected as at 33 to the frame 20. The lever 69 is seen to be pivotally mounted as at 70 (see FIG. 1) for the pressure roller 29, and is pivotally mounted as at 33 on the frame 20. The other end of the lever 69 (still referring to FIG. 1) is equipped with an upstanding bracket as at 71 to which is connected a coil spring 72. The coil spring 72 is anchored at its upper end to a post 73 provided on the frame 20. Thus, the coil spring 72 urges the roller 29 downwardly and the pin 34 into the compressive relation with the conduit 35 shown in FIG. 8. During the step of applying the tape T which is illustrated in FIG. 4, the pressure roller 29 is urged upwardly and against the action of the coil spring 72 so as to relieve the clamped condition of the conduit 35 which is illustrated in FIG. 9. Thus, liquid is enabled to flow from the reservoir 30 through the conduit 35 into the sponge-like moisture-applying roller 28.

As can be appreciated from a consideration of FIG. 2, the walls 21 and 22 (notably the wall 21 as seen in FIG. 2) are equipped with vertically elongated slots 74 in which a cross shaft 75 is received. The cross shaft 75 in turn is seen to be urged upwardly against the friction wheel 27 by means of a spring 75a suitably anchored to the wall 21. The unwinding of the tape T drives the applicator roll 28 and at a faster surface speed than the tape speed to develop an advantageous wiping action relative to the tape and insure proper moistening.

During the operation of threading, the tape T is temporarily supported on a bracket 76 (see FIG. 12), which is bolted to the anvil 61 (see particularly FIG. 5).

In the inventive dispenser, it will be seen that the reservoir 30 provides an advantageous means of confining the moistening liquid in a sealed chamber ready for metered discharge when required. The reservoir 30 is seen to be equipped with removable end caps as at 36a to facilitate filling. However, the dispenser frame 20 can be disposed in any orientation relative to a surface to be taped, i.e., vertical, horizontal, etc., without fear that liquid will spill out of the reservoir. It will be appreciated that moistening of the tape is a sine qua non for effective operation of a tape dispenser, and the instant invention ensures that moistening can take place irrespective of the orientation of the dispenser. Further, the coaction of the friction wheel 27 and its associated roller 73, with the moistening roll 28, develops the above-described advantageous wiping action to insure full moistening of the tape. Excellent results are obtained when the sponge-equipped roller 28 rotates at a speed about twice that of wheel 27.

While in the foregoing specification a detailed description of an embodiment of the invention has been set down for the purpose of explanation thereof, many variations in the details herein given may be made by those skilled in the art without departing from the spirit and scope of the invention.

I claim:

1. A portable gummed tape dispenser, comprising a manually-manipulable frame, means on said frame for providing a source of gummed paper, a pressure roller pivotally mounted on said frame positioned in the path of tape being withdrawn from said source means, moisture-applying means on said frame interposed in said path between said source means and said roller, a reservoir of water on said frame, flexible conduit means interconnecting said reservoir and moisture-applying means, a resiliently mounted lever means pivotally connecting said roller to said frame, said lever means being arranged to clamp said flexible conduit except when pressure is applied to said roller for dispensing tape.

2. The structure of claim 1 in which said moisture-applying means includes a roll journalized in said frame, friction wheel means on said frame for rotation with said moisture-applying roll, and means interconnecting said roll and wheel for joint rotation whereby advancement of said tape by rotation of said friction wheel necessarily presents a fresh adhesive surface on said roll for contact with said tape.

3. The structure of claim 2 in which said wheel is mounted on a shaft providing the journal for rotatably mounting said wheel on said frame, said shaft at one end being equipped with a manually-manipulable knob whereby said tape may be advanced over said roll, and guide means on said frame for directing said tape over said roll and toward said roller.

4. The structure of claim 1 in which said frame is generally elongated and U-shaped in cross section to accommodate a tape roll constituting said one tape end, said roller being positioned at the other frame end, said frame including a superstructure intermediate said ends and providing a mouth for said reservoir, and a handle secured to said superstructure extending longitudinally of said frame toward said one frame end.

5. The structure of claim 4 in which said superstructure is equipped with a spring-loaded knife for severing said tape between said source and moisture-applying means, and latch means on said superstructure for releasably holding said knife out of cutting relation with said tape.

6. The structure of claim 1 in which said lever means is coupled to a tape-supporting roller journalized in said frame for limited vertical movement, and a friction wheel journalized in said frame above said tape-supporting roller, engagement of said friction wheel and tape-supporting roller permitting advancement of tape toward said moisture-applying means.

7. A portable gummed tape dispenser, comprising a generally elongated, U-shaped frame, means for removably supporting a roll of gummed tape adjacent one end of said frame, a friction wheel unwind mechanism mounted on said frame intermediate said ends thereby positioned in the path of tape being unwound from said one frame end, a moisture-applying roller rotatably mounted on the other frame end and in the path of tape being unwound from said one frame end, a lever member extending from
said other frame end and having rotatably mounted thereon a pressure roller for pressing tape against an object to be sealed, tape in following a path from said friction wheel unwind mechanism to said pressure roller partially enveloping said moisture-applying roll for receipt of liquid therefrom to liquefy the adhesive on said gummed tape, a reservoir on said frame positioned above the path of travel of said tape, conduit means connecting said reservoir with said moisture-applying roll, said conduit means being positioned on said frame for clamping engagement by said lever member to limit flow of liquid through said conduit means except when said pressure roller is pressed against a surface to be sealed in a tape operation.

8. A portable gummed tape dispenser, comprising a manually-manipulable frame, means on said frame for providing a source of gummed paper, a pressure roller pivotally mounted on said frame positioned in the path of tape being withdrawn from said source means, a moisture-applying roll on said frame interposed in said path between said source means and said roller, a reservoir of water on said frame coupled to said moisture-applying roll, and means on said frame responsive to the movement of tape in said path for rotating said moisture-applying roll at a surface speed greater than the speed of said tape to develop a wiping action of said moisture-applying roll relative to said tape.

9. The structure of claim 8 in which said reservoir includes a releasably sealed container arranged for gravity flow therefrom of liquid to said moisture-applying roll, and means operably associated with said pressure roller for metering the gravity flow of liquid from said reservoir to said moisture-applying roll.

10. A portable gummed tape dispenser, comprising a manually-manipulable frame, means on said frame providing a source of gummed paper, a pressure roller pivotally mounted on said frame positioned in the path of tape being withdrawn from said roll source, a moisture-applying roll on said frame interposed in said path between said source means and said roller, a reservoir of water on said frame, flexible conduit means interconnecting said reservoir and moisture-applying roll, a resiliently mounted lever pivotally interconnecting said roller and said frame, said lever being arranged to clamp said flexible conduit except when pressure is applied to said roller for dispensing tape, roll means on said frame interposed in said path between said source means and said moisture-applying roll and adapted to be rotated by movement of tape in said path, and means interconnecting said roll means and moisture-applying roll for rotating said moisture-applying roll at a surface speed greater than the speed of travel of said tape in said path.

11. The structure of claim 10 in which a chain and sprocket arrangement interconnects said roll means and moisture-applying roll to develop a surface speed on said roll of the order of about twice the lineal speed of tape being withdrawn from said source means.

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