April 16, 1963 E. WALTZ 3,085,727

TAPE DISPENSER

Filed Aug. 10, 1960 2 Sheets-Sheet 1

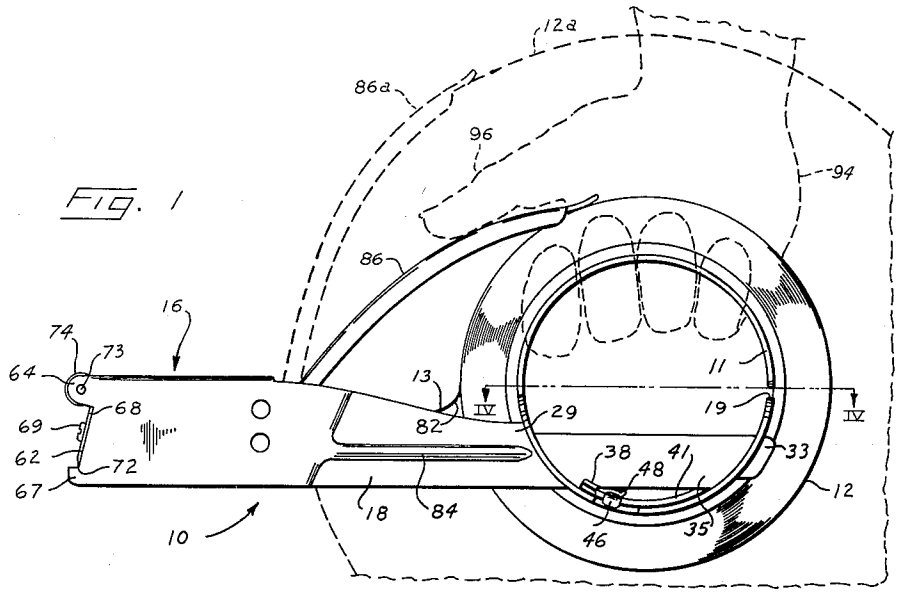


FIG. 1

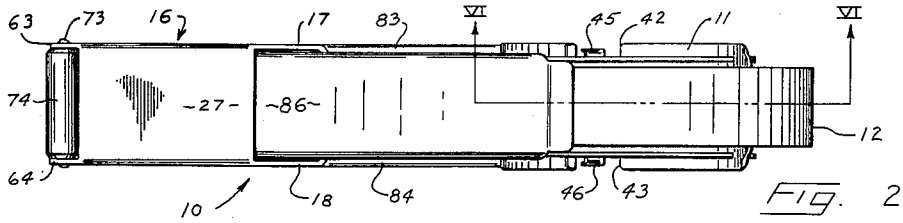


FIG. 2

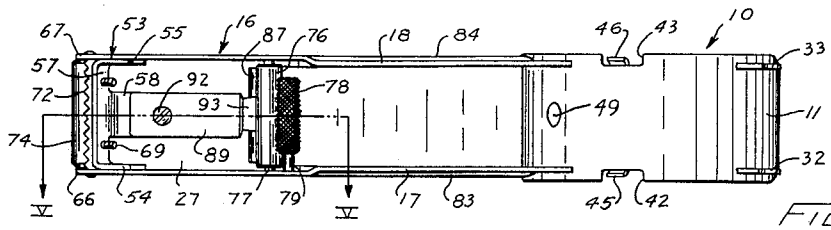


FIG. 3

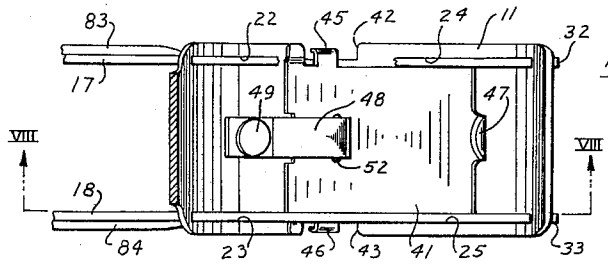


FIG. 4

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TAPE DISPENSER

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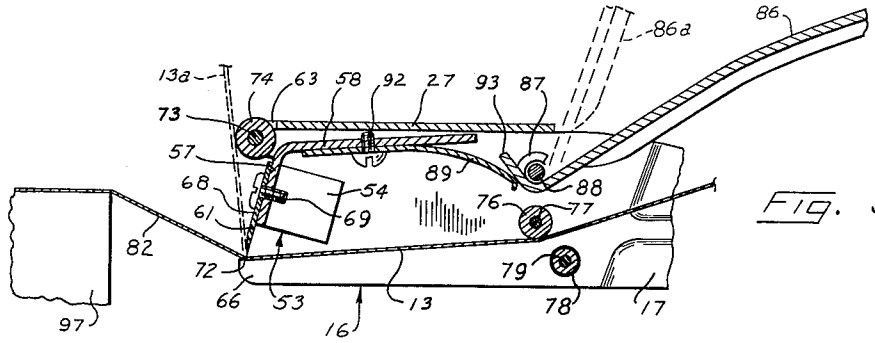


Fig. 5

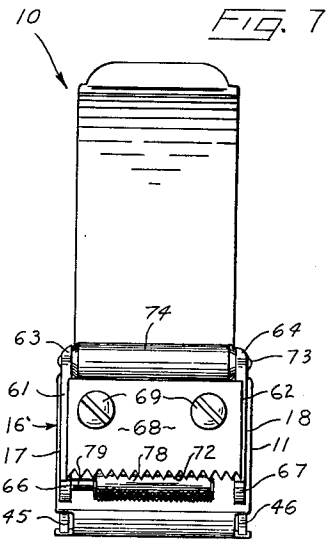


Fig. 7

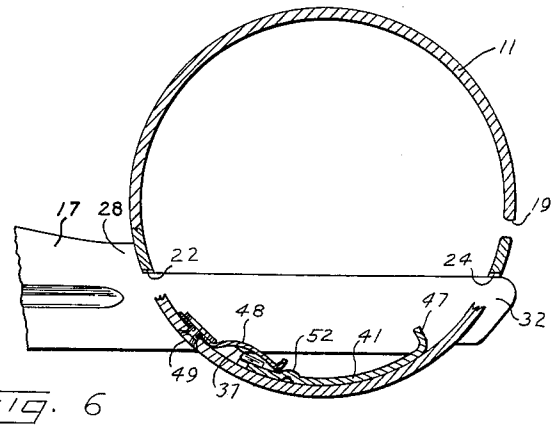


Fig. 6

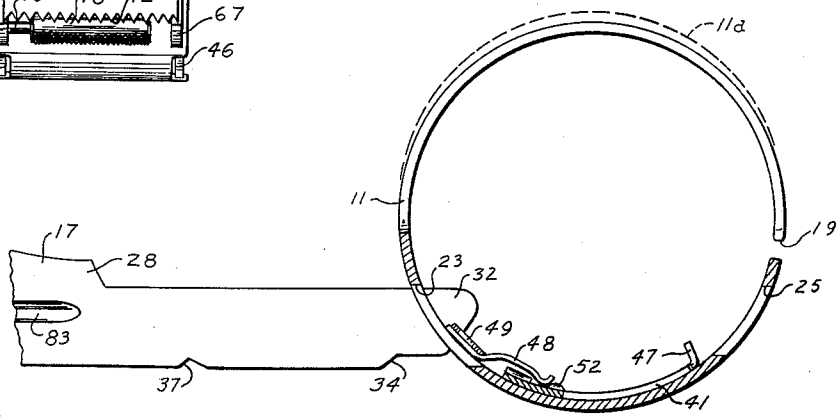


Fig. 8

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United States Patent Office 3,085,727 Patented Apr. 16, 1963

3,085,727

TAPE DISPENSER

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Filed Aug. 10, 1960, Ser. No. 48,746
3 Claims. (Cl. 225—66)

This invention relates in general to a portable device for dispensing a strip of material from a roll thereof and, more particularly, to a device which can be conveniently and comfortably held and used by one normal adult hand for the purpose of dispensing and applying adhesive tape from a roll thereof, and thereafter severing the dispensed portion from the remainder of the roll.

Adhesive tape of the type which is supplied in a roll for immediate application, has long been used in commerce and industry for a variety of purposes, such as packaging and masking, for example. Many attempts have been made to facilitate these operations by providing some type of tape-holding device from which the tape can be dispensed and applied with a minimum of effort and time. For this purpose, both portable dispensers and stationary dispensers have been devised in a wide variety of forms.

For many uses, such as said packaging and masking operations, the hand-held dispenser is more efficient than the stationary dispenser. As a result, a substantial number of portable devices, which can be hand-held for the purpose of dispensing tape from the roll thereof, have been developed. However, I have found that existing, portable dispensers have not been completely acceptable because they are often too heavy and uncomfortable to handle, too costly to manufacture, or they are incapable of use with relatively large rolls of tape. Moreover, some such devices are ineffective in severing the dispensed portion of certain types of tape, particularly when the device is being operated by one hand. However, in many operations involving the application of adhesive tape, it is important that the portable dispenser be capable of complete operation by one hand, thereby freeing the other hand for the purpose of handling the object to which the tape is being applied.

It is common practice for manufacturers of adhesive tapes to provide dispensers with the tape at cost or even for no charge. Thus, the manufacturer is anxious to provide the least expensive dispenser which is relatively easy to operate and fool proof in such operation. Moreover, it is also important that the dispenser be capable of quick and easy reloading, thereby encouraging refill orders from the same manufacturer.

Accordingly, a primary object of this invention has been the provision of a portable device for dispensing tape from a roll thereof, wherein said device can be comfortably and conveniently held and operated by one normal adult hand, thereby freeing the other hand of the user for handling the object to which the tape is being applied.

Another object of this invention has been the provision of a tape-dispensing device, as aforesaid, which will accommodate a large roll of tape, which is relatively inexpensive to fabricate, which is sturdy in construction, which is capable of safe operation, which is neat in appearance, which requires a minimum of maintenance, and which can be comfortably held in one hand for easy dispensing of the tape and equally easy severing of the dispensed portions.

Other objects and purposes of this invention will become apparent to persons familiar with this type of device upon reading the following descriptive materials and examining the accompanying drawings, in which:

FIGURE 1 is a side elevational view of a dispensing device embodying the invention.

FIGURE 2 is a top plan view of said dispensing device.

FIGURE 3 is a bottom view of said dispensing device.

FIGURE 4 is a sectional view taken along the line IV—IV in FIGURE 1.

FIGURE 5 is a sectional view taken along the line V—V in FIGURE 3.

FIGURE 6 is a sectional view taken along the line VI—VI in FIGURE 2.

FIGURE 7 is a front end elevational view of said dispensing device.

FIGURE 8 is a sectional view taken along the line VIII—VIII of FIGURE 4.

For convenience in description, the terms "upper," "lower" and derivatives thereof will have reference to the dispensing device of the invention and parts thereof as appearing in FIGURES 1 and 7. The terms "front," "rear" and words of similar import will have reference to the left and right ends, respectively, of the dispensing device as appearing in FIGURES 1, 2 and 3. The terms "inner," "outer" and words of similar import will have reference to the geometric center of said dispensing device and parts thereof.

General Description

The objects and purposes of the invention, including those set forth above, have been met by providing an inexpensive and uncomplicated device which can be easily held in and used by one adult hand for the purpose of dispensing adhesive tape from a roll thereof which is supported upon the dispensing device. The dispensing device includes an elongated body member and a substantially cylindrical drum which is removably mounted upon the body member to support the roll of tape.

The cylindrical drum has two pairs of spaced and circumferentially elongated openings, one pair of openings being circumferentially aligned with the other pair of openings. The drum is axially split near a pair of openings, and both pairs of openings are preferably disposed on one side of a plane passing through said split and diametrically through said drum.

The dispensing device also includes a body member having a pair of flat, parallel and elongated arms slidably receivable into and through the openings in said drum in one direction only. The body member supports a cutting blade on the end thereof remote from the drum, said blade being arranged transversely of the body member. A lever is pivotally supported near one end upon the body member between the blade and the drum for engagement near its other end with a roll of tape supported upon the drum between said arms. Roller means are provided on the body member for guiding said tape across the cutting edge of said blade. Lock means is provided upon and between the arms of the body member and said drum for positively and releasably opposing relative movement therebetween.

Detailed Construction

The dispensing device **10** (FIGURES 1, 2 and 3), which has been selected to illustrate a preferred embodiment of the invention, includes a substantially cylindrical drum **11** for supporting a roll **12** of tape **13** and a body member **16** having parallel arms **17** and **18** upon which the drum **11** is removably supported. The drum **11** has a split **19**, preferably in its rear side, and the edges of the drum defining said split are spaced from each other. At least they are so spaced when said drum is in its unstressed condition. Thus, when the drum is encircled by a roll **12** of tape (FIGURE 1) of the proper inside diameter, the drum can be compressed slightly, whereby the roll **12** is held snugly but rotatably upon the drum.

The drum **11** (FIGURES 3, 6 and 8) has two pairs of circumferentially elongated and spaced openings **22** and

23, and 24 and 25 (FIGURE 4), each pair being aligned axially of the drum. Both pairs of openings are preferably spaced downwardly (FIGURE 8) from a substantially horizontal plane including the central axis of the drum 11 and passing through the drum 11 adjacent the split 19 therein. The rearward openings 24 and 25 are of circumferential length equal to each other but are preferably of less circumferential length than the front openings 22 and 23 which are in turn of circumferential length equal to each other. Each pair of said openings is spaced so that a roll of tape 12 can be supported upon the drum 11 between the openings in each pair.

The body member 16 (FIGURES 2 and 5) includes a connecting plate 27 which is preferably integral with and extends perpendicularly between the front ends of the arms 17 and 18 along the upper edges thereof. Thus, said plate 27 is preferably parallel with the lengthwise extent of the arms 17 and 18. The arms 17 and 18 are of reduced width throughout approximately the rearward one third thereof to provide the upwardly extending shoulders 28 and 29 (FIGURES 1 and 6), which bear against the front side of the drum 11 when said arms are inserted into and through the front openings 22 and 23. Said arms 17 and 18 also have rear end portions 32 and 33 which are further reduced in width (FIGURES 1 and 8) to provide downwardly projecting shoulders 34 and 35, respectively, which are engageable with the inner surface of said drum 11 when the end portions 32 and 33 are projecting into and through the rear openings 24 and 25. The shoulders 28 and 29, 34 and 35 are arranged so that they engage the drum 11 at the same time and thereby limit rearward movement of the arms 17 and 18 through the drum 11. Moreover, the said shoulders also serve to prevent improper, reverse mounting of the drum 11 upon the body member 16.

The arms 17 and 18 have notches 37 and 38 (FIGURES 8 and 1, respectively), in their lower edges which are located adjacent the inner surface of the drum 11 on the front side thereof when the shoulders 28 and 29 are snugly against the drum 11. A latch member 41 (FIGURES 4, 6 and 8), which comprises an arcuate plate having substantially the same radius of curvature as the drum 11, is slidably mounted upon the inner surface of said drum at the bottom thereof. The latch member 41 is of approximately the same width as the distance between the openings 22 and 23 or 24 and 25 (FIGURE 4) through the drum 11.

The lower portion of the drum 11 (FIGURE 4) has a pair of axially aligned notches 42 and 43 disposed in the axial edges of the drum for reception of a pair of outwardly and downwardly extending ears 45 and 46 on the latch member 41. Said ears 46 and 45 serve to guide the sliding movement of the latch member along the drum 11. The latch member 41 has an integral, upwardly extending tab 47 at its rearward end which is manually engageable for effecting said sliding movement of the latch member 41. A resilient element, such as the leaf spring 48, is secured upon the inner surface of the drum 11 between the front openings 22 and 23 by means of a rivet 49. Said spring 48 extends rearwardly over the adjacent edge of the latch member 41 and onto the upper surface thereof for the purpose of pressing said latch member firmly against said drum 11. Said latch member has an upward projection 52 near its frontward edge which is engaged by the rearward end of the leaf spring 48 for the purpose of resiliently resisting movement of said latch member away from either its forward or its rearward position toward the opposite position. Accordingly, engagement of the projection 52 by the spring 48, as shown in FIGURE 6, tends to hold the latch 41 in its open or retracted position whereby the arms 17 and 18 can be freely moved through their respective openings in the drum. However, when said leaf spring 48 and projection 52 cooperate as shown in FIGURE 1, they hold said latch 41 in the closed position where its front edge is disposed within the notches 37 and 38, thereby preventing movement between said drum 11 and said body member 16.

As shown in FIGURES 3 and 5, the body member 16 includes a substantially U-shaped bracket 53 having a pair of flanges 54 and 55 which are secured, as by welding, to the opposing surfaces of the arms 17 and 18, respectively, below the front end of the plate 27. The bracket 53 is preferably arranged so that the web 57 thereof slopes downwardly and frontwardly at an angle of approximately 75 degrees to the lengthwise extent of the arms 17 and 18, hence with respect to the plate 27 thereon. However, it will be apparent that this particular angular relationship has been selected because of its demonstrated utility and, within the scope of this invention, may be varied, if desired or required. The U-shaped bracket 53 (FIGURE 5) has an upwardly and rearwardly extending stem 58 which is integral with the central portion of the web 57 and is disposed directly beneath the plate 27 for reasons appearing hereinafter.

As shown in FIGURES 1, 5 and 7, the front ends of the arms 17 and 18 have recessed edges 61 and 62 which preferably lie within the plane defined by the front, outer surface of the web 57. The recessing of the edges 61 and 62 produces forwardly projecting upper and lower ears 63, 64 and 67, 66 respectively. A cutting blade 68 (FIGURE 7) is mounted upon the web 57 by means of a pair of screws 69 which extend through the blade 68 and are threadedly engaged with the web 57. Said blade preferably extends sidewardly onto both front edges 61 and 62, so that the cutting edge 72 of said blade 68 is adjacent to and, therefore, protected by the lower ears 66 and 67. Although the cutting edge 72 is herein disclosed as serrated (FIGURE 7), other types of cutting edges may be found equally advantageous under certain circumstances.

The upper ears 63 and 64 on said arms 17 and 18 project forwardly beyond the sloped edges 61 and 62 for the purpose of supporting a roller shaft 73 therebetween. A roller 74 is mounted upon the shaft 73 for rotation around the axis thereof with respect to the body member 16. The roller 74 is disposed sufficiently forward of the blade 68 that the tape 13, when it is in its broken-line position 13*a* of FIGURE 5 against the cutting edge 72 and roller 74, will not contact the screws 69. When the outer end of the tape 13 is in its broken-line position 13*a* it will be substantially perpendicular to the portion of the tape 13 extending between the cutting edge 72 and a guide roller 76 which is rotatably supported upon and between the arms 17 and 18 by means of the roller shaft 77 located approximately below the rearward end of the plate 27 (FIGURE 5). A third roller 78 is rotatably supported upon a shaft 79 which is secured to the arm 17 below, and slightly rearwardly of, the roller shaft 77 and preferably parallel therewith. The roller 78 is knurled to present a minimum amount of external surface engageable by the downwardly-facing, adhesive coated surface 82 of the tape 13. The arms 17 and 18 may be strengthened by integral, lengthwise ridges 83 and 84.

A channel-shaped lever 86 (FIGURES 1, 2, 3 and 6), which is curved slightly throughout its length, has one end bent into a semicylindrical shape to form a hinge 87 through which a hinge pin 88 is slidably received. Said hinge pin 88 is secured upon and between the arms 17 and 18 between the guide roller 76 and the rear edge of the plate 27 in this particular embodiment. Said lever 86 is pivotable between the upwardly-extending, broken line position shown in FIGURE 1 at 86*a* and the rearwardly-extending, solid line position of FIGURE 5. It will be apparent that such movement of the lever 86 will be restricted by the presence of the roll 12 and/or the drum 11 upon the body member 16. The broken line 12*a* (FIGURE 1) indicates the periphery of the largest tape roll which can be accommodated by the dispenser 10 beneath the lever 86.

A leaf spring 89 (FIGURE 5) is secured to the lower surface of the stem 58 by a screw 92 and extends rearwardly therefrom to a point below the front edge of the hinge 87 on the lever 86. Said lever 86 has an integral tab 93 which extends substantially frontwardly from the central portion of the hinge 87 for engagement with the upper surface of the leaf spring 89 whereby said lever 86 is continuously urged toward the solid line position in FIGURE 5. It will be apparent that, whenever a tape roll 12 is supported upon the drum 11, the outer free end of the lever 86 (FIGURE 1), which may be flared gently outwardly, will be urged against the outer surface of said tape roll by said spring 89. The entire dispenser 10 with tape roll 12 mounted thereon may, as shown in FIGURE 1, be grasped by an adult hand, indicated in broken lines at 94, so that the thumb 96 extends downwardly along the upper surface of the lever 86 in a comfortable position for exercising positive control over the cutting action, after the tape 13 (FIGURE 5) has been applied to an object 97.

Operation

In preparing the dispenser 10 for use, the drum 11 is removed rearwardly from the body member 16 after the latch member 41 has been moved rearwardly out of the notches 37 and 38 in the body member 16 (FIGURE 1). The drum 11 is compressed slightly and roll 12 of tape 13 is placed upon the drum 11 between the openings for the arms 17 and 18. With the roll 12 thus located centrally of the drum 11, the lever 86 is moved upwardly toward its broken line position 86*a* of FIGURE 1, against the contrary urging by the leaf spring 89 (FIGURE 5), and the rearward end portions 32 and 33 of the arms 17 and 18 are inserted first through the openings 22 and 23 and then through the openings 24 and 25, respectively, until the shoulders 28, 29 and 34, 35 bear against the surfaces of the drum 11. The arms 17 and 18 will now be on opposite sides of the roll 12 and the latch member 41 can be moved into the notches 37 and 38 to prevent accidental disengagement of the body member 16 from the drum 11. Release of the lever 86 will permit it to move into its solid line position of FIGURE 1 against the outer surface of the roll 12. The tape roll 12 is rotated around the drum 11 as the free end thereof is pulled away from the remainder of the roll and fed between the rollers 76 and 78 and forwardly thereof to a point near the cutting edge 72.

The natural curvature in most tapes 13 will tend to cause the tape to drape around the lower roller 78. However, the knurled surface of the roller 78 minimizes contact between said roller and the adhesive surface 82 of said tape. Under normal circumstances, application of the tape 13 to an object 97 (FIGURE 5) is effected merely by manually moving the dispenser 10 into a position where the adhesive surface 82 of the tape will come into contact with the object. Then, by moving the dispenser 10 in a rearward and somewhat downward direction, the adhesive surface 82 will continue to adhere to the object and at the same time the tape 13 will unwind from the roll 12 under the guide roller 76 and beneath the cutting edge 72 of the blade 68. When it becomes desirable to separate the portion of the tape adhering to the object 97 from the remainder of the tape, the front end of the dispenser 10 is moved downwardly until the cutting edge 72 contacts same. Then by applying a downward movement of the front end of the dispenser, while preferably tilting the dispenser sidewardly, the cutting edge will sever the tape. The tilting of the dispenser tends to cause one end of the cutting edge 72 to penetrate the tape first, thereby facilitating the severing operation, particularly on tapes having substantial resistance to cutting. However, it will be apparent that certain types of tapes will not require this special treatment, and special blades may make it unnecessary.

Having severed the dispensed portion of the tape, the dispenser 10 is immediately ready for additional and further use.

As shown in FIGURE 5, there may be occasion when the tape dispensed is of such strength and has such resistance to severance that it will be necessary to move the tape into the broken line position 13*a* in order to obtain a maximum amount of force transversely of the cutting edge 72. Moreover, the roller 74 will also serve to move along the severed portion of the tape 13, adjacent its severed end, and thereby assure the contact of its adhesive surface with the object to which it is being applied.

Although a particular preferred embodiment of the invention has been disclosed above in detail for illustrative purposes, it will be understood that variations or modifications of such disclosure, which come within the scope of the appended claims, are fully contemplated.

What is claimed is:

1. A portable device for dispensing tape from a roll thereof, comprising: an axially split, substantially cylindrical drum for rotatably supporting the roll of tape, the edges of said drum defining said split being spaced apart when said drum is in the unstressed condition, said drum having a central aperture for receiving the fingers of a normal adult hand, and said drum having two pairs of circumferentially elongated and axially spaced openings located on one side of a plane including the central axis of said drum and passing through said drum adjacent the split therein, one pair of openings being adjacent the split, being circumferentially aligned with the other pair of openings and being of smaller circumferential length than said other pair of openings; an elongated body member having a pair of flat, substantially parallel arms and a connecting member secured to and extending between said arms near one end of each, said arms being slidably extendable through said other pair of openings in said drum and having end portions of reduced size extendable into the one pair of openings, whereby movement of said arms through said drum is limited; a notch in each of said arms disposed within said aperture and remote from said plane when said end portions are snugly disposed in said other pair of openings; a latch member slidably supported upon said drum within said aperture for movement circumferentially thereof into and out of a position within said notches for positively opposing lengthwise movement of said arms with respect to said drum; a cutting blade having a cutting edge, and means on said body member supporting said cutting blade between said arms near said one end thereof, said cutting edge being near to and spaced from the edges of said arms, said blade being disposed at an angle of between 65 and 85 degrees to said plane; a lever pivotally supported near one end thereof upon and between said arms adjacent said connecting member, said lever being movable between a first position extending away from and transversely of said body member and a second position extending lengthwise of said body member; resilient means on said body member urging said lever toward said second position, whereby the other end of said lever is resiliently urged against a roll of tape supported upon said drum between said arms; first roller means rotatably supported upon and between said arms near said one end of said lever for guiding tape from the roll to said cutting edge; and second roller means rotatably supported upon said one end of said body member outwardly of said cutting blade for guiding tape away from said cutting edge.

2. A device for dispensing tape from a roll thereof, comprising: a substantially cylindrical drum for rotatably supporting the roll of tape, said drum having a central aperture for receiving the fingers of a normal adult hand, and said drum having two pairs of circumferentially elongated and axially spaced openings through the periphery thereof and located on one side of a plane including the central axis of said drum, one pair of openings being

circumferentially aligned with the other pair of openings; an elongated body member having a pair of flat, substantially parallel arms and a connecting member secured to and extending between said arms near one end of each, said arms being slidably extendable through said openings in said drum and having shoulders engageable with said drum for limiting movement of said arms in one lengthwise direction through said drum; a notch in the edge of each of said arms remote from said plane when said arms are disposed in said openings; a latch member slidably supported upon and within said drum for movement circumferentially thereof into and out of a position within said notches for positively opposing lengthwise movement of said arms with respect to said drum in the other lengthwise direction; a cutting blade having a cutting edge, and means on said body member supporting said cutting blade between said arms near said one ends thereof, said blade being disposed at an angle larger than about 60 degrees to said plane; a lever pivotally supported near one end thereof upon and between said arms near said connecting member, said lever being movable between a first position extending away from and transversely of said body member and a second position extending substantially lengthwise of said body member; resilient means on said body member urging said lever toward said second position, whereby the other end of said lever is resiliently urged against a roll of tape supported upon said drum between said arms; first guide means supported upon and between said arms near said one end of said lever for guiding tape from the roll to said cutting edge; and second guide means supported upon said one end of said body member near said cutting blade for guiding tape away from said cutting edge.

3. The structure of claim 2 wherein one of said pairs of openings is smaller than the other pair of said openings and said arms each have end portions of reduced size snugly receivable into and through said one pair of openings for positively limiting movement of said drum along said arms toward said cutting means; and wherein said latch means includes lock means for releasably holding said latch means in said notches.

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