

June 17, 1969

J. E. TURNER

3,450,318

TAPE SHEAR

Filed Feb. 16, 1967

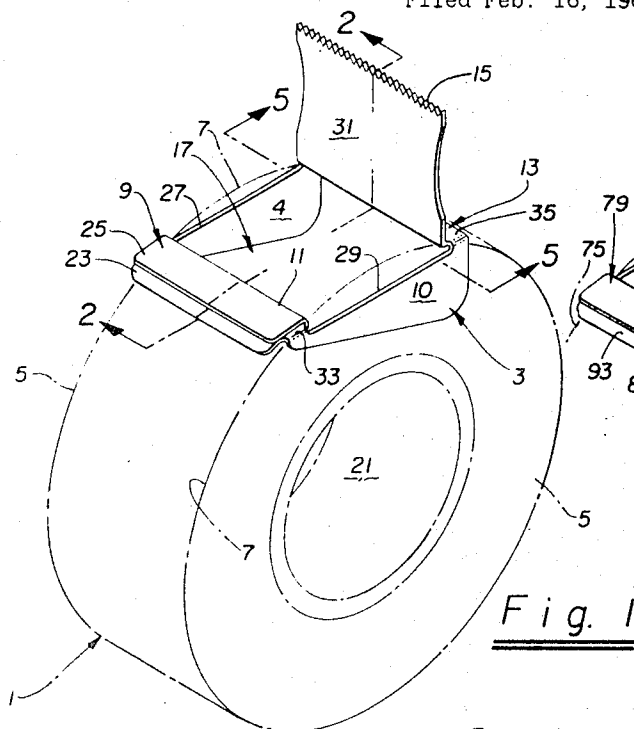


Fig. 1

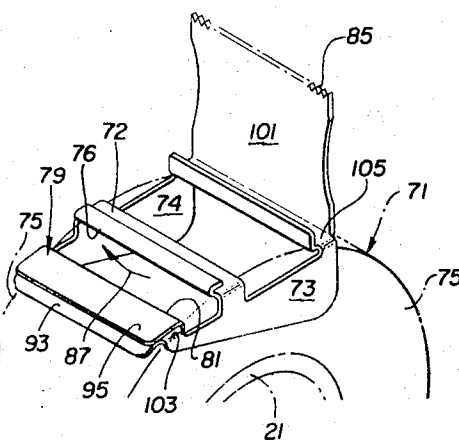


Fig. 4

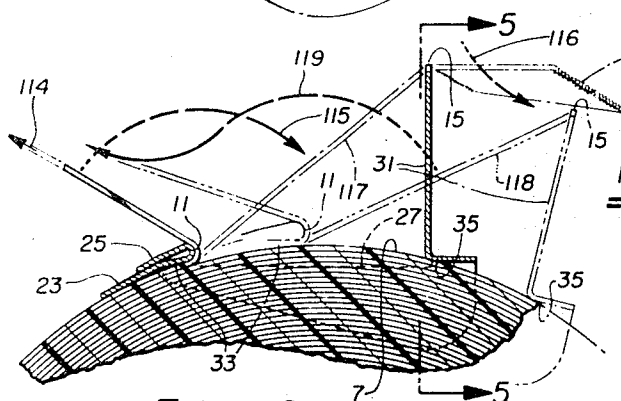


Fig. 2

Fig. 5

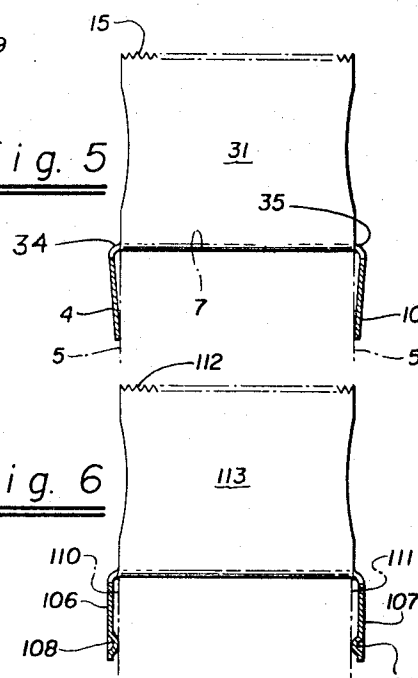


Fig. 6

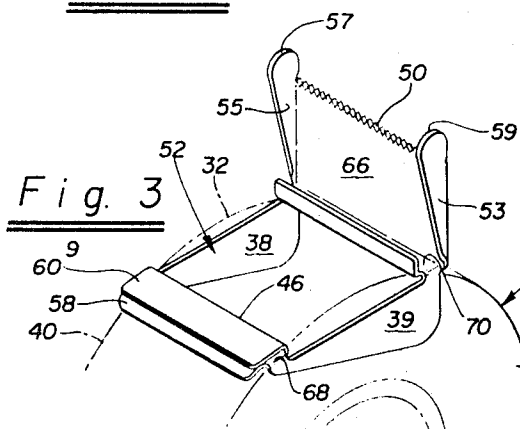


Fig. 3

INVENTOR

John E. Turner

BY *Harvey, Brooker
Cypher + Anglin*
Attorneys

1

3,450,318

TAPE SHEAR

John E. Turner, 57 Canyon Drive,
Port Costa, Calif. 94569

Filed Feb. 16, 1967, Ser. No. 616,673

Int. Cl. B65h 35/10; B26f 3/02

U.S. Cl. 225—65

2 Claims

ABSTRACT OF THE DISCLOSURE

A tape dispensing and cutting device including a frame having a first means engaging the opposed edges of the tape roll, second means for supporting an end of the device and including a tape engaging edge and a third means supporting the other end of the device and including a tearing edge. The device and the roll cooperate so that as the tape is peeled from the roll at the tape engaging edge, the device rides the circumference of the tape roll and is always in position for tearing a strip of tape from the roll.

Background of the invention

This invention pertains to roll tape cutting devices; particularly adapted for rolls of Scotch tape, drafting tape, adhesive tape, friction tape, bias tape, heat-sensitive tape, electrical tape, pressure tape, non-sealing tape or the like.

The prior devices such as Smith, 2,262,260, Gilbreth 2,734,575 and Reed 2,472,761 were mounted on the tape roll by interlocking with the core. Thus, as the amount of tape on the core decreased, provision had to be made for keeping the cutter on the periphery of the roll. In Reed and Gilbreth, the fastening means had to be altered as the amount of tape decreased. Smith solved the problem by the use of a pivoted arm. In addition to requiring a more expensive structure, the prior art devices had to be rotated to the proper cutting position after the desired amount of tape had been peeled from the core.

Summary

The gist of the invention is the discovery that a device would remain affixed to the periphery of a tape roll by friction effected by a springing of the device. The arrangement of the parts is such that the device is firmly reset by the pressure exerted downwardly during the tearing operation.

An object of the present device is to provide a shear which is affixed directly to the periphery of the tape roll and does not interlock with the core.

Another object is to provide a device which is moved along the circumference of the tape by the tape itself being peeled from the roll and is thus automatically positioned for the tearing operation.

Still another object is to provide a device in which the free tape end remains accessible for the next shearing operation so as to eliminate the bothersome task of separating the end of the tape from the roll.

A further object is to provide a device which may be affixed to many varieties of tapes, ribbon and the like and which is also suitable for use with large as well as small tapes.

Another object is to provide a device which requires

2

no adjustment to fit the roll as the tape is removed and the roll becomes smaller.

Still a further object is to provide a device which is light in weight, compact in size, simple to operate, and so inexpensive that it may be disposed of after a single use and yet rugged enough to be reused for additional tape rolls.

The invention possesses other objects and features of advantage, some of which of the foregoing will be set forth in the following description of the preferred form of the invention which is illustrated in the drawings accompanying and forming part of this specification. It is to be understood, however, that variations in the showing made by the said drawings and description may be adopted within the scope of the invention as set forth in the claims.

Brief description of the drawing

FIGURE 1 is a perspective view showing the device installed on a tape roll.

FIGURE 2 is an enlarged cross-sectional view of the device taken substantially along the line 2—2 of FIGURE 1 showing the device in two positions i.e. moving and cutting.

FIGURE 3 is a perspective view of another embodiment of the device.

FIGURE 4 is a perspective view of still another embodiment of the device.

FIGURE 5 is a cross-sectional view of the device taken substantially along the line 5—5 of FIGURE 1.

FIGURE 6 is another embodiment of the invention as it would appear in cross section if taken along the line 5—5 of FIGURE 1.

Description of the preferred embodiments

The tape dispensing and cutting device of the present invention is used with a tape roll 1 and consists briefly of a frame including first means 3 disposed on the rearward portion of the frame frictionally engaging the opposing edges 5 of the tape roll radially inwardly of the outer tape circumference 7; second means 9 disposed on the forward portion of the frame supporting a transverse tape engaging edge 11 at the outer circumference of the roll; third means 13 disposed on the rearward portion of the frame supporting a tearing edge 15 disposed radially outwardly from the outer circumference of the tape roll; the frame being formed to provide a transverse opening (indicated by arrow 17) for receiving the free end 19 of the tape therethrough; and the frame cooperating with the tape roll to move along the outer circumference of the tape as the free end is peeled from the tape and providing a firm support as the free end of the tape is moved downwardly across the tearing edge thereby effecting a separation of a portion of the free end of the tape from the roll.

The device may be constructed of sheet metal or a plastic having resilient characteristics. It is essential that the first means, here shown as transversely disposed flanges 10 and 4 be capable of being sprung inwardly to provide a biasing force on the opposing edges of the tape roll. There is no particular depth of flange required. A flange depth of $\frac{3}{8}$ of an inch on a 1 inch wide roll of masking tape has been found to be sufficient. The flange must spring substantially its entire depth so that when it

reaches the core 21 it will still remain in frictional engagement with the sides of the core.

The tearing edge 15 is preferably serrated, not only to improve the tearing characteristics but also to prevent removal of the device from the roll. The reason for the serration of the structure will be more fully explained below during the explanation of the operation of the device.

The second means 9 includes a member 23 adapted to engage the outer circumference of the tape roll as the tape is peeled from the roll and the device is pulled around the roll by the peeling action. The transverse member 23 may also provide the tape engaging edge but preferably the tape edge 11 should be rounded so as to prevent cutting of thin tapes and it is also desirable to raise the tape edge 11 above the transverse members so that a reverse leverage is provided to prevent the forward portion of the device from lifting away from the tape roll. A convenient structure for disposing the tape engaging edge radially outwardly from the outer circumference of the tape roll is to bend transverse member 23 back upon itself forming a top member 25 as shown in FIGURES 1 and 2.

As may be seen from the drawing, the device may be made from a single piece of sheet metal and formed in the shape shown. The opening shown by the arrow 17 results from cutting the device along edges 27 and 29 and flange 31 is bent upwardly providing the tearing edge 15 at its distal end. The device then rests on the front shoulder 33 and the rear shoulder 35 against the outer circumference of the tape roll.

FIGURE 3 shows another embodiment of the invention designed to prevent the tearing edge from scarring tables and other surfaces upon which the tape roll 36 is placed. The device consists briefly of flanges 38 and 39 bearing against the tape edges 40. The forward edge of the device rides the circumference 32 of the tape on second means 9 having a tape engaging edge 46. A tearing edge 50 is carried by a flange 66. A transverse opening indicated by the arrow 52 is formed between the front and rear portions of the device through which the free end of the tape is fed. The second means is here formed by member 58 and by top member 60. The device rides on front shoulder 68 and rear shoulder 70. Identical and opposed shoulders on the opposite side of the device are not shown.

The essential difference between the embodiments shown in FIGURE 3 and that of FIGURES 1 and 2 is the provision of guards 53 and 55 which extend radially outwardly of the tearing edge. Preferably the ends 57 and 59 are rounded to prevent scarring of surfaces upon which the device is laid. It should be understood that various shapes of guards may be provided.

Still another embodiment of the invention is seen in FIGURE 4. Here the device is shown attached to tape roll 71 by flanges 73 and 74 biased against the opposed edges 75 of the tape. The device is supported at the circumference at its forward end by second means 79 which include tape engaging edge 81. A tearing edge 85 is provided at the rear portion and the tape is received up through an opening shown by arrow 87. The second means also includes a transverse member 93 and a top member 95. The cutting edge is supported by flange 101 attached to the rear portion of the device. The device is thus supported by opposed shoulders here shown as front shoulder 103 and rear shoulder 105.

The primary difference between the device shown in FIGURE 4 and that shown in FIGURE 1 is the provision of a transverse member 72 disposed between the tape engaging edge 81 and the tearing edge 85 thereby preventing reengagement of the free end of the tape with the tape roll 71. Thus the tape would engage surface 76 instead of dropping back into the opening between the tape engaging edge 81 and the cutting edge 85.

FIGURE 5 shows flanges 4 and 10 engaging the respec-

tive edges 5 of the tape roll. Note that shoulders 35 and 34 engage the circumference 7 of the tape roll.

FIGURE 6 shows still another embodiment of the device in which the flanges 106 and 107 have been formed with indentations 108 and 109 on the distal portions of the flanges providing a point contact with the side edges 110 and 111 of the tape roll. As in the other embodiments the cutting edge 112 is supported by flange 113. The embodiment shown in FIGURE 6 may be, in all other respects, identical to the devices shown in FIGURES 1, 2 and 4.

In operation, the operator grasps the tape roll in one hand and the leading free edge of the tape with the other. The tape feeds up through the device between the cutting edge and the tape engaging edge and the device is pulled around the circumference of the roll at the point where the tape leaves the roll. The tape slides around and over the tape engaging edge and if the angle of the tape leaving the roll is less than about 45 degrees, the lead edge of the device does not lift off the circumference of the tape roll. The device itself will not generally leave the roll even at an angle of 90 degrees but this method of removing tape is not recommended and in fact is rather an awkward way of dispensing tape. Thus as seen in FIGURE 2 the tape is pulled in the direction of arrow 114 until a sufficient length of tape is peeled from the roll. The tape is then moved to the right and assumes the position indicated by arrow head 115. The end of the tape is forced down over the cutting edge 15 and free end 19 is then pulled in the direction of the arrow 116 in a generally twisting motion similar to the motion used in dispensing Scotch tape from the well-known "sleigh" design. The tape remains in the position shown by arrow 115 until ready for the next dispensing action. To dispense the next strip of tape, a finger is placed beneath the tape shown by number 117 and the tape is then moved in the same general direction as tape 118 was moved in starting the operation as shown by the curved arrow 119.

The forward portion of the device is forced downwardly on the periphery of the tape roll by the action of the peeling tape acting downwardly upon edge 11 and top member 25. There is little or no tendency for the rear portion of the device to rise off the circumference but any disengagement that occurs is counteracted by the resetting force which is automatically applied by the tearing of the tape downwardly across the cutting edge 15.

During the tearing step there is a slight tendency for the tension imposed by tape 117 to cause the front portion of the device to rise off the circumference 7 of the roll. Serrating the cutting edge substantially prevents this action by grasping the tape before a lifting tension is created in tape 117. The serrations also assist in holding the leading edge of the tape at the cutting edge so that a finger can be placed beneath the tape forwardly of flange 31.

I claim:

1. A tape dispensing and cutting device for use with a tape roll comprising:

a frame including:

first means disposed on the rearward portion of said frame including transversely disposed depending flanges in close fitting relation to the sides of said tape roll frictionally engaging and gripping the opposing edges of said tape roll at a gripping point substantially radially inwardly of the outer tape circumference with a force sufficient to prevent dislodgement from said roll during normal operation of said device;

second means disposed on the forward portion of said frame supporting a transverse tape engaging edge in close relation to the outer circumference of said roll and including a member engaging the outer circumference of said roll;

third means disposed on the rearward portion of said frame supporting a tearing edge disposed radially

5

outwardly from the outer circumference of said tape roll and including a member engaging the circumference of said tape;
 said tearing edge being located within a projected segment formed by projecting radial lines through said gripping point and transverse tape engaging edge;
 said frame being formed to provide a transverse opening for receiving the free end of said tape there-through; and
 said frame cooperating with said tape roll to move along the outer circumference of said tape as the free end is peeled from said tape and providing a firm support as the free end of the tape is moved downwardly across said tearing edge thereby effecting a separation of a portion of the free end of the tape from said roll, both operations requiring no external support of said dispenser.

5

10

15

6

2. A tape dispenser and cutting device as characterized in claim 1 wherein:
 said first means includes a pair of transversely disposed flanges springing inwardly to provide a biasing force on the opposing edges of said tape roll.

References Cited

UNITED STATES PATENTS

2,576,404	11/1951	Krueger	225—19 X
2,578,519	12/1951	Double	225—65 X
2,676,658	4/1954	King	225—65 X
2,727,572	12/1955	D. Carlo	225—65

JAMES M. MEISTER, *Primary Examiner.*

U.S. Cl. X.R.

225—90