July 8, 1958 C. W. VOGT 2,842,201

TAPE DISPENSING AND CUTTING DEVICE

Filed June 30, 1955 2 Sheets-Sheet 1

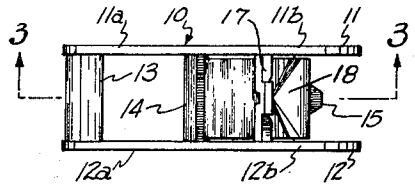


Fig. 1.

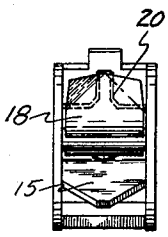


Fig. 2.

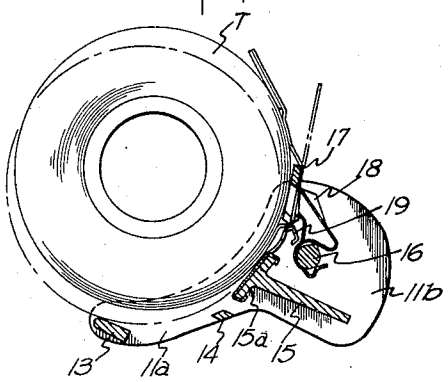


Fig. 3.

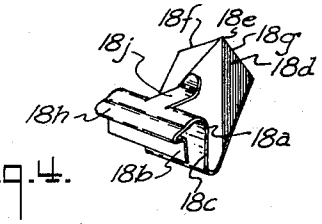


Fig. 4.

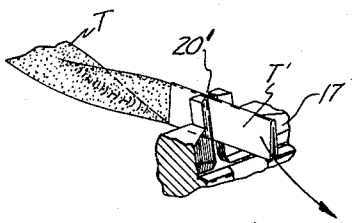


Fig. 6.

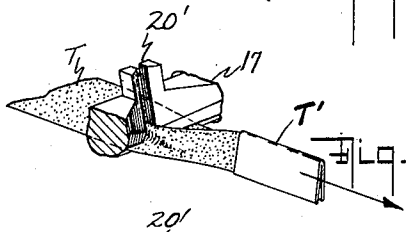


Fig. 7.

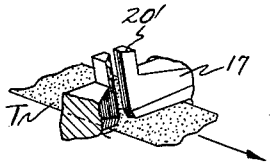


Fig. 8.

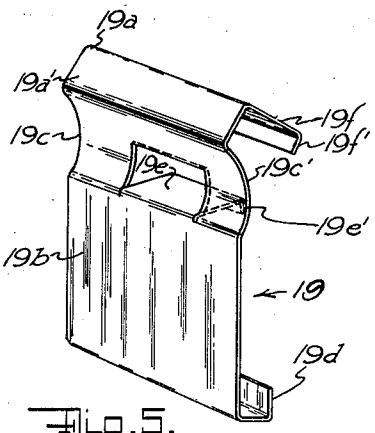


Fig. 5.

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TAPE DISPENSING AND CUTTING DEVICE

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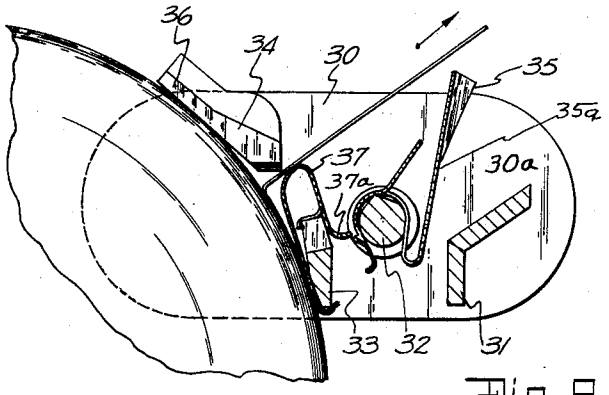


Fig. 9.

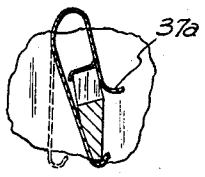


Fig. 13.

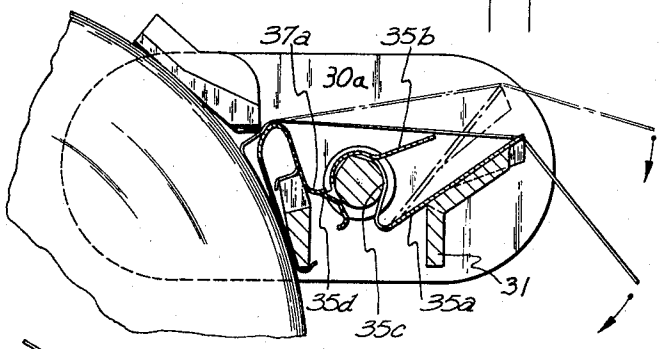


Fig. 10.

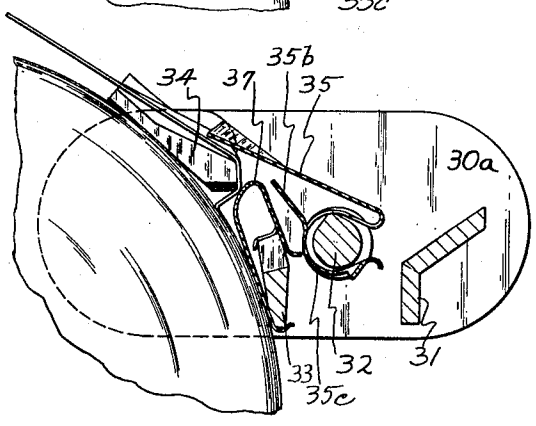


Fig. 11.

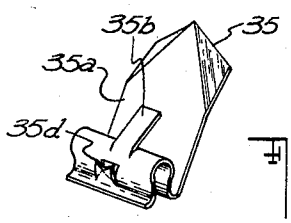


Fig. 12.

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TAPE DISPENSING AND CUTTING DEVICE

Clarence W. Vogt, Weston, Conn.

Application June 30, 1955, Serial No. 519,072

10 Claims. (Cl. 164—84.5)

This invention relates to devices for dispensing and cutting adhesive tapes, such as pressure-sensitive cellulose, fiber and plastic base tapes and it relates more particularly to improvements in tape cutting and dispensing devices of the type to be attached to a roll of adhesive tape, or used in a desk type of tape holder.

In the production of tape dispensing devices of the type which are given away or packaged with a roll of tape such as "Scotch" tape or the like, it is highly desirable to provide a device which is easily threaded with the tape as a part of the manufacturing and packaging operation so as to keep this phase of the manufacturing operation as inexpensive as possible. Moreover, it would be desirable to provide means in the tape cutting and dispensing device for preventing separation or disengagement of the roll of tape from the cutting device when they are removed from the package and put in use.

In accordance with the present invention, I have provided a tape cutting and dispensing device which includes means for facilitating the insertion of the end of a roll of tape into the device thereby making it possible to assemble a roll of tape and a cutting device quickly and with a minimum of manual dexterity. Moreover, I have provided in the new dispensing and cutting device a snubbing means whereby the projecting free end of the roll of tape is gripped and retained to prevent separation of the roll of tape from the dispensing and cutting device but, nevertheless, enabling free withdrawal of the tape from the roll for dispensing portions thereof. In addition, the snubbing means includes as a part thereof a surface which facilitates easy rotation of the roll of tape and also provides an unobstructed surface by means of which the tape can be bent back on itself and secured to the roll thereby to attach the dispensing and cutting device firmly to the roll when the device is not in use.

The provision of the above-noted features of the present invention enables the loading of the device with a roll of tape to be accomplished quickly and inexpensively as a part of a production cycle and the tape retaining means enables the assembled package to be handled during normal shipping or periods of use and storage therebetween without danger of disengagement of the roll from the cutting and dispensing device.

For a better understanding of the present invention, reference may be had to the accompanying drawings in which:

Fig. 1 is a plan view of a typical tape cutting and dispensing device embodying the present invention;

Fig. 2 is an end elevational view of the tape dispensing and cutting apparatus;

Fig. 3 is a view in section taken on line 3—3 of Fig. 1;

Fig. 4 is a perspective view of a cutting blade of the type used in the cutting and dispensing device shown in Figs. 1 to 3;

Fig. 5 is a perspective view of a tape snubbing element of a kind used in the tape cutting and dispensing device disclosed in Figs. 1 to 3;

Figs. 6, 7 and 8 are perspective views of a portion of a modified form of snubbing bar illustrating the manner in which the end of a roll of tape is inserted in the tape cutting and dispensing device;

Figs. 9, 10 and 11 are views in longitudinal section through a modified form of tape cutting and dispensing device illustrating the cutting and snubbing operation of the device;

Fig. 12 is a perspective view of the cutting blade for the device disclosed in Figs. 9 to 11; and

Fig. 13 is a view in cross-section through the snubbing member and support therefor of the device shown in Figs. 9 to 11.

As indicated above, a tape dispensing and cutting device has been provided which is particularly adaptable for use directly with a roll of adhesive tape to be packaged with the tape as a "give-away" or low cost cutting and dispensing device. The device may take any of a number of different configurations of which the form shown in Figs. 1 to 5 is typical. As shown therein, the device includes a frame **10** formed of a pair of side plates or sidewalls **11** and **12**, joined by means of a plurality of cross members **13**, **14**, **15**, **16** and **17** to be described in greater detail herein. As best shown in Fig. 3, the cross bars **13** and **14** are at the lower edges of elongated extensions **11***a* and **12***a* of the sidewalls while the cross bars **15**, **16** and **17** extend between generally squarish portions **11***b* and **12***b* of the sidewalls.

A roll of tape T is adapted to be received with at least a portion of its edge between the sidewalls **11** and **12**.

A cutting device **18** is mounted on the cross bar **16**, the latter forming a pivot shaft and camming member for the cutter. As shown in Fig. 4, the cutter is a strip of spring metal including a semi-cylindrical portion **18***a* rotatably receiving the pivot member **16** and having outwardly converging arms **18***b* and **18***c* thereon. The arm **18***c* is extended in a reversely curved direction to form a blade **18***d* having a pointed outer end **18***e* and converging edges **18***f* and **18***g*. The side portions of the blade are also bent out of the plane of the blade to stiffen it and to facilitate the cutting action of the blade. The blade as a whole is, however, resilient and grips the pivot member **16** resiliently so that its irregular or cam-like cross-section will normally tend to hold the blade against free pivoting movement.

On the opposite arms **18***b* of the blade and adjacent to the semi-cylindrical portion **18***a* is a raised rib or corrugation **18***h* which cooperates with a resilient snubber **19** shown in Figs. 3 and 5 mounted on the crossbar **15**. As illustrated in Fig. 3, the crossbar is generally of T-shaped cross-section and supports the snubbing member **19** on its cross-head **15***a*. The snubbing member **19** is formed of spring metal or springy plastic and includes a snubbing head portion **19***a* joined to the upper end of a plate **19***b* that rests against the head **15***a* of the bar **15**. The plate portion **19***b* has a reversely bent end **19***d* which engages the lower edge of the head **15***a* of the T-shaped bar **15**. An inwardly and downwardly curved portion **19***e* is lanced out of an upwardly extending concave portion **19***c* of the plate **19***b* and engages the opposite end of the head of the T-shaped bar **15**, as shown in Fig. 3. The arrangement of the springy flanges **19***e* and **19***d* is such that a flattened portion **19***a'* of the snubbing head portion normally bears against the lower snubbing edge of the cross or snubbing bar **17** and cooperates therewith to resiliently grip a portion of the tape which is peeled off of the roll T. The pressure of the surface **19***a'* is regulated by suitably stressing the curved portion **19***c* of the snubber. However, upon tension being exerted on the end of the tape drawing it away from the roll, the springy snubbing element **19** can be deflected inwardly to

release and allow relatively free movement of the tape. Such movement is facilitated by reason of the fact that the snubbing element **19** has a smooth surface against which the non-tacky or non-adhesive surface of the tape slides. Moreover, the tension on the tape draws the roll of tape T against the flange **19***b* which also has a smooth surface and thus enables easier rotation of the roll.

The springy nature of the snubbing element **19** will tend to cause it to grip the tape when the tension on the end of the tape is relieved so that the end of the strip of tape cannot back out from between the snubbing bar **17** and the snubber **19**, if the dispensing device should be inverted or positioned so that the weight of the roll T is suspended from the frame **10**.

Cutting of the tape is greatly facilitated if the tape on both sides of the cutting edge is maintained under tension. Tension is maintained on the tape during the cutting operation of the present device by pressure of the cutting device **18** against the snubbing element **19**. Thus, the rib **18***h* on the cutting device is adapted to engage a downwardly bent flange **19***f'* formed at the end of a rearwardly extension **19***f* from the upper edge of the snubber portion **19***a'* so that when the blade **18** is moved in a clockwise diretcion by pressure of the tape thereon, the rib **18***h* engages the flange **19***f'* and thereby forces the snubbing surface **19***a'* against the tape and the latter against the lower snubbing edge of the bar **17**. The snubber **19** also serves to lock the blade **18** on its pivot **16**. The end flange **19***f'* overlaps the rib **18***h* so that the blade cannot be detached until the snubber is released from the bar **15**.

The bar **17** is of unique formation in that it has a notch or slot **20** extending upwardly from its lower edge, as shown in Figs. 1 to 3 or the slot **20'** can extend completely through the bar **17'** as shown in Figs. 6, 7 and 8. This slot is provided to enable the lengthwise folded end of the strip of tape to be threaded through the slot. Usually, a roll of adhesive tape such as "Scotch" tape has a paper tab T' on the end to facilitate the location of the end of the tape. The tab T' as shown in Figs. 6, 7 and 8 is folded along the longitudinal center line of the tape and can then be passed through the slot **20'** until it is disposed below the cross bar **17'**. Pulling of the tape in the direction of the arrow will then spread and flatten out the following portion of the tape and dispose it below the bar **17'** ready for a dispensing operation. To facilitate spreading of the tape the edges of the bar **17'** at the lower end of the slot are filleted or rounded.

Figs. 9, 10 and 11 illustrate the action of the cutting and snubbing device in greater detail with a slightly modified form of apparatus in which the bar **13** and elongated extensions **11***a* and **12***a* are omitted. In this apparatus, the frame **30** may be the same as the frame **10** Fig. 1, but as illustrated it has generally oval shaped side plates **30***a* and, as illustrated, four cross bars **31**, **32**, **33** and **34**. The cross bar **32** serves as a pivot for the blade **35** while the cross bar **34** serves as the upper snubbing member and is also provided with a central slot **36** to admit the tape therethrough.

A snubber **37** is mounted on the cross bar **33** and the cross bar **31** serves as a stop for the cutting arm **35***a* of the blade **35**. The blade **35** differs somewhat from the blade **18** in that the blade **35** has a straight tongue **35***b* struck out of it near the hub portion **35***c* thereof and extending toward the blade, whereas the blade **18** has a tongue **18***j* having an upwardly bent end thereon. These tongues serve to prevent the tape from snapping down into and adhering to or bunching up in the back of the blade after the tape is cut.

The snubbing element **37** shown in Figs. 9 to 11, differs from the snubbing element **19** in that the actuating nose or lug **37***a* thereon is bent toward the blade **35** rather than outwardly and then inwardly as in the case of the nose **19***f* on the snubbing device **19**. As shown in Figs. 9, 10 and 11, when a strip of tape is to be dispensed and cut, it is pulled in the direction of the arrow as shown in Fig. 9, thereby slightly deflecting the snubbing member **37** and allowing tape to slide over it. The tape is pulled down against the end of the blade **35** which causes the blade to be rotated and sprung in a clockwise direction toward the stop **31** as shown in Fig. 10. At the same time, the tab **35***d* engages the nose **37***a* on the snubber and forces it in a counterclockwise direction to snub the length of tape between the snubber **37** and the lower edge of the cross bar **34**. As the tape is pulled downwardly, it will be seen that the flight of tape between the cutting edge of the blade and the snubbing element **37** is tensioned as is also the section of the tape outwardly of the cutting edge so that the tape is tensioned on both sides of the cutting edge of the blade. A part of the tensioning is due to the movement of the end of the blade away from the snubbing elements and another part is due to actual projection of the blade to the right as viewed in Figs. 9, 10 and 11 as it bends. The end of the blade actually moves outwardly from the axis of the bar **32** during a cutting operation. It has been found that maintenance of tension on both sides of the blade enables the blade to pierce and sever even strong fiber glass or plastic base tapes that are used for repairing and electrical insulation and other purposes. When the tape is severed, the spring action of the cutting blade snaps it in a counterclockwise direction thereby bending the projecting end of the tape backwardly over the outer face of the bar **34** and positioning it adjacent to the outer periphery of the roll of tape. By merely pressing the projecting end of the tape against the roll, it will adhere thereto and will secure the cutting and dispensing device firmly to the roll of tape until it is ready for further use.

It will be understood that tape dispensing devices of the type described can be used with desk type holders as described in my copending application Serial No. 465,903, filed November 1, 1954, or that it can be in the form of a small readily attachable and discardable element which is furnished with a roll of electrician's tape or the like.

The type of material of which the holder can be made may be varied widely but I have found that synthetic plastics are most suitable because they can be molded cheaply to produce the frame as essentially a one-piece unit.

In view of the modifications possible in the form and arrangement of the device, it will be understood that the specific forms of the invention disclosed herein are illustrative and should not be considered as limiting the scope of the following claims.

I claim:

1. A tape dispensing and cutting device comprising a frame having spaced side walls to receive therebetween at least the edge portion of a roll of adhesive tape, a bar extending between said side walls and having a snubbing surface to engage one side of said tape as it is unwound from said roll, said bar having a slot therein substantially perpendicular to said surface for receiving the end of said tape when said end is folded lengthwise to facilitate insertion of the tape into said frame, a cutting blade pivotally mounted in said frame on an axis transverse to said frame, a snubber mounted in said frame for movement toward and away from said snubbing surface, means normally biasing said snubber toward said snubbing surface to grip the tape therebetween, and motion-transmitting means on said snubber and said cutting blade for urging said snubber toward said snubbing surface when said tape is pressed against said cutting member to maintain the tape between said snubber and said cutting blade under tension during cutting of said tape.

2. A tape dispensing and cutting device comprising a frame having spaced side walls, to receive therebetween the edge of a roll of adhesive tape, a bar extending be-

tween said side walls and having a snubbing surface to engage one side of said tape as it is unwound from said roll, said bar having a slot therein substantially perpendicular to said surface to admit said tape therethrough to facilitate threading it through said frame, a support in said frame spaced from said bar, a resilient snubber mounted on said support and resiliently engaging said tape to press it against said snubbing surface, said resilient snubber being deflected away from said snubbing surface by tension exerted on said tape to unwind it from said roll, a cutting member movably mounted in said frame and having means thereon engageable with said snubber to force the latter toward said snubbing surface upon engagement of said tape with said cutting member to maintain the tape between said snubber and said cutting member under tension during cutting of said tape.

3. A tape dispensing and cutting device comprising a frame having spaced side walls, to receive therebetween the edge of a roll of adhesive tape, a bar extending between said side walls and having a snubbing surface to engage one side of said tape as it is unwound from said roll, a support in said frame spaced from said bar, a resilient snubber mounted on said support and resiliently engaging said tape to press it against said surface, said resilient snubber being deflected away from said snubbing surface by tension exerted on said tape to unwind it from said roll, a cutting member movably mounted in said frame and having means thereon engageable with said snubber to force the latter toward said snubbing surface upon engagement of said tape with said cutting member to maintain the tape between said snubber and said cutting member under tension during cutting of said tape.

4. A tape dispensing and cutting device comprising a frame having spaced side walls to receive therebetween the edge of a roll of adhesive tape, a snubbing bar extending between said side walls and having a first surface to engage the periphery of said roll and a second surface to engage tape unwound from said roll, a support in said frame spaced from said snubbing member, a snubber having resilient arms detachably engaging said support, and urging a portion of said snubber into tape gripping relation with said snubbing member, one of said arms having a smooth surface engageable with said roll to facilitate its rotation, and a cutting member between said side walls for severing tape drawn between said surface and said snubber to maintain the tape between said snubber and said cutting member under tension during cutting of said tape.

5. A tape dispensing and cutting device comprising a frame having spaced side walls to receive therebetween at least the edge portion of a roll of adhesive tape, a snubbing bar extending between said side walls and having a surface to engage one side of said tape as it is unwound from said roll, said bar having a slot therein substantially perpendicular to said surface for receiving the end of said tape when said end is folded lengthwise to facilitate insertion of the tape into said frame, a cutting blade pivotally mounted on said frame on an axis

transverse to said frame for cutting said tape, a snubber mounted in said frame for movement toward and away from said snubbing surface, means normally biasing said snubber toward said snubbing surface to grip the tape therebetween to grip said tape and maintain the tape between said cutting blade and said snubber under tension while said tape is being cut.

6. A tape dispensing device comprising a frame having spaced apart side walls, a snubbing bar between said side walls to engage one surface of a strip of tape, a support extending between said side walls, a snubber detachably mounted on said support, said snubber including a strip of resilient material having a curved portion adjacent to said snubbing member and resilient arms engaging said support and biasing said curved portion into tape-gripping relation to said snubbing member.

7. The device set forth in claim 6, in which said snubber comprises a strip of spring metal bent transversely to form said curved portion and substantially parallel arms, said arms having laterally bent portions thereon to engage said support and retain said snubber thereon.

8. A tape dispensing and cutting device comprising a frame having spaced apart side walls, a snubbing bar between said side walls to engage one surface of a strip of tape, a support extending between said side walls, a snubber including a strip of resilient material having a curved portion adjacent to said snubbing bar and resilient arms engaging said support and biasing said curved portion into tape-gripping relation to said snubbing bar, a cutting element movably mounted in said frame and having a portion engageable with said snubber to urge said curved portion thereof toward said snubbing bar in tighter tape-gripping relation thereto to maintain the tape between said snubber and said cutting element under tension during cutting of said blade.

9. The device set forth in claim 8, in which said snubber comprises a strip of spring metal bent transversely to form said curved portion and said arms, the latter having laterally bent portions thereon to engage said support and retain said snubber thereon.

10. A dispensing and cutting device for adhesive tape, comprising a frame, a transverse portion forming a snubbing surface adapted to engage the adhesive side of the free end of a roll of tape and resilient snubber means extending transversely thereof, and normally urged toward said snubbing surface to grip the tape therebetween as it is unwound from such roll, said transverse portion having a passageway therethrough extending outward from said snubbing surface, whereby the end of adhesive tape from such roll when folded lengthwise and introduced through said passageway with its edges toward the snubber will, when pulled, readily be flattened out against said snubber.

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