Aug. 28, 1962 S. DOMENY 3,050,853

TAPE DISPENSER

Filed Sept. 26, 1960

FIG.1

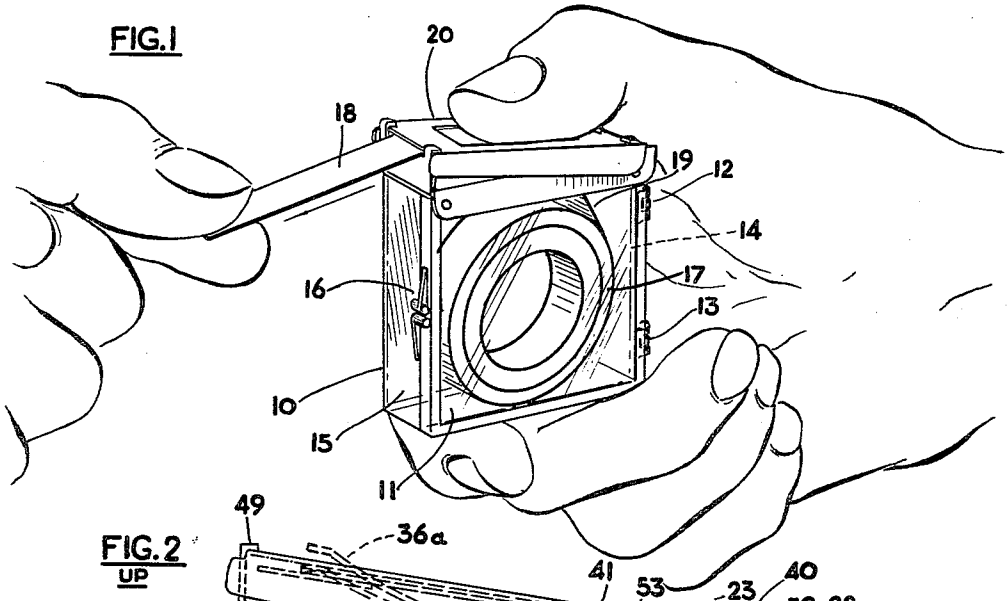


FIG.2
UP

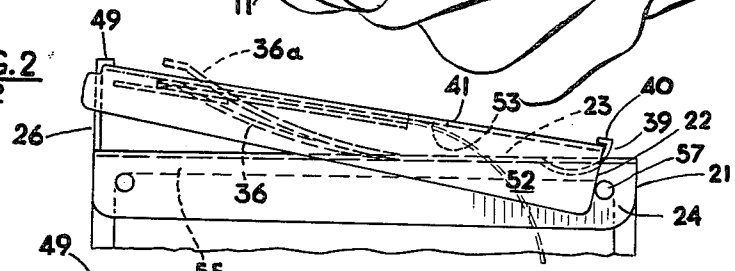


FIG.3
DOWN

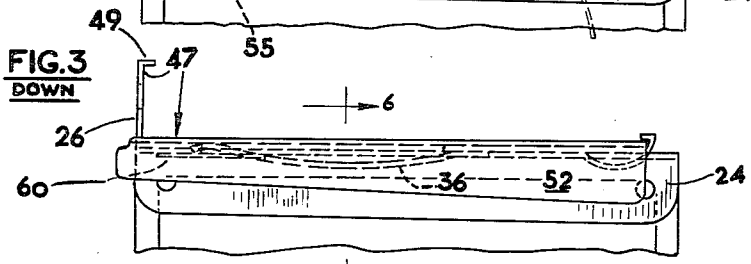


FIG.4
TOP

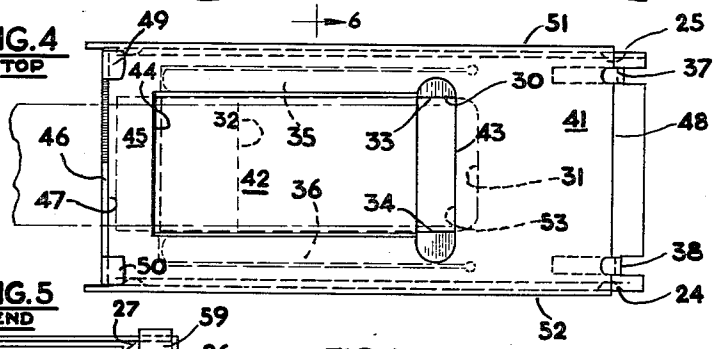


FIG.5
END

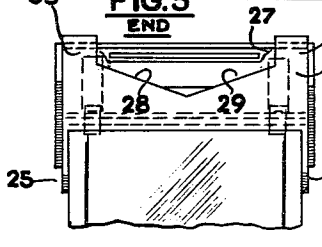
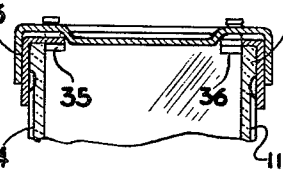


FIG.6



INVENTOR.
Steven Domeny
BY
Charles J. Vaytush
Atty

United States Patent Office

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TAPE DISPENSER

Steven Domeny, Chicago, Ill., assignor to Crane Packing Company, Morton Grove, Ill., a corporation of Illinois

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7 Claims. (Cl. 30—131)

This invention relates to dispensers for tape or ribbon made of material which is resilient and therefore difficult to tear.

It is an object of this invention to provide a tape dispenser equipped with a sharp cut-off device, said dispenser being portable so that it can be carried about by a workman, but which, nevertheless, is constructed in a manner to safeguard the workman against injury from the cut-off device.

Another object of this invention is the provision of a combination receptacle and cut-off tool for tape wherein the cut-off tool is made from a minimum number of parts and without the use of pin-type hinges.

As a specific object, this invention has within its purview the provision of a cut-off tool adapted to be mounted on a receptacle and forming a part of the enclosure thereof, said cut-off tool comprising two simple inter-fitting stampings.

Another specific object of this invention is to provide a tape dispenser for tapes of the non-tacky variety but which possess sufficient resilience and toughness to resist tearing, said dispenser including as a part thereof a shear device, with means for resiliently maintaining a pressure on the cooperating parts of the shear device in a direction transverse to that in which the shearing action takes place, and with means for protecting the user of the device from injury through contact with the cutting edges thereof.

It is also among the general objects of this invention to provide a transparent dispenser for tapes of the non-tacky and resilient type through which the amount of tape available may be readily determined and into which a fresh supply of tape may be readily inserted. Ease of assembly of the cutting device, economy of manufacture through simplicity of design and reasonable life are also general objects of this invention.

For purposes of illustration, this invention will be described with reference to its application to rolls of a tape of very thin cross section made from a material sold under the trade name of "Teflon" by du Pont de Nemours Company, Wilmington, Delaware, and technically known as polytetrafluoroethylene. Such tape may be only a few thousandths of an inch thick and under an inch in width. This invention, however, may also be used with tapes made from rubber compounds.

A typical embodiment of the invention is shown in the accompanying drawings in which:

FIG. 1 is a perspective view of a receptacle made in accordance with this invention and showing a roll of tape within the receptacle and an end of the tape passed through the shearing device;

FIG. 2 is a fragmentary side elevational view of the receptacle of FIG. 1 on an enlarged scale, showing principally the shearing device in an inoperative position;

FIG. 3 is a fragmentary side elevational view of the receptacle similar to that of FIG. 2, but showing the shearing device in an operated condition;

FIG. 4 is a plan view of the shearing device of the receptacle of FIG. 2;

FIG. 5 is an end elevational view of the shearing device of FIG. 2; and

FIG. 6 is an elevational view in section of the shearing device in its operated condition as shown in FIG. 3, the section being taken along line 6—6 and in the direction of the arrows at the ends thereof.

As shown in FIG. 1, the receptacle may take the form

of a rectangular box 10, one side 11 of which is hinged at 12 and 13 to the end wall 14 of the box along one edge thereof and is secured to the opposite end wall 15 by a clasp 16. Box 10 is preferably made of transparent material so that its contents may be readily observed. For purposes of economy the box and its hinged side 11 are made from a transparent molded plastic material which not only minimizes the machining and assembly problems involved in the manufacture of the box, but also provides the box with resistance to shock so that it may be dropped or otherwise roughtly treated without appreciable damage to itself. It is contemplated that other shapes than the rectangular one may be adopted, and that the invention is not intended to be limited to the shape shown.

The top of the receptacle as viewed in FIG. 1 has an elongated opening 53 thereinto. It is contemplated that a roll 17 of tape will be retained in the box, the width of the end walls 14 and 15 being larger than the width of the roll. The free end 18 of roll 17 is passed through the opening 53 in the top of the box where it may be seized and pulled to unwind a desired length of tape from the roll.

The tape is unwound from roll 17 as shown at 19 and after being threaded through opening 53, passes through a shearing device shown generally at 20 which is mounted over the top of the receptacle and from which the free end 18 extends. Said shearing device is comprised of two principal parts, namely, a stationary cover 21 and an oscillatable shearing blade 22 (FIG. 2).

Stationary cover 21 is comprised of a unitary stamping having a substantially flat top 23 and depending sides or flanges 24, 25 which fit snugly over the opposed sides of the box 10, including the hinged side 11. Both cover 11 and the side 54 (FIG. 6) opposite cover 11 have peripheral beads 55 and 56 respectively, which run under cover 21. Inwardly directed bosses 57 on flanges 24 and 25 are designed to latch under beads 55, 56 to hold the cover in place over the top of box 10. When cover 21 is thus mounted on box 10 it serves to hold the hinged side 11 in closed position.

One end 26 of cover 21 is bent upwardly and notched as shown in FIG. 5 at 27, said notch being V-shaped at its bottom to provide two sloping edges 28 and 29. The sloping edges 28 and 29 constitute the lower fixed shear element of the device.

Top 23 has a substantially rectangular opening 30 formed therein, said opening having a rear edge 31 and a forward edge 32. The side edges 33 and 34 are formed by the sides of elongated spring fingers 35 and 36, respectively, which extend from a region adjacent rear edge 31 forward to the forward edge 32. Said spring fingers 35 and 36 are formed to take the shape in their free state shown in dotted lines in FIG. 2 at 36*a* so as to exert normally an upward force when bent down into the plane of top 23. Said fingers 35 and 36, being formed integrally with stationary cover 21, are stamped out as, for example, in a progressive die in an automatic punch press. The function of the spring fingers will be described hereinafter.

At the rear of stationary cover 21 are formed additional spring fingers 37, 38 which are of idential form and are curved first downwardly from the plane of top 23 and then horizontally and upwardly in a smooth curve as shown in dotted lines in FIGS. 2 and 3 to terminate in an upwardly extending end region 39 and a horizontally extending end 40 to form forwardly facing hooks. These hooks, due to the curvature of the spring fingers 37 and 38, provide a fore-and-aft force, the purpose of which will likewise be made apparent hereinafter.

Spring fingers 37 and 38 are preferably made integral with stationary cover 21 by stamping operations in the aforesaid progressive die in an automatic press.

Oscillatable shearing blade **22** is a stamping having a flat upper surface **41** over the rear, side and front regions thereof and with a depressed area **42** disposed for the most part over the opening **30** in the stationary cover **21**, the depressed area **42** and flat surface **41** being separated at the rear by a slot **43**. A somewhat narrower slot **44** separates the forward edge of the depressed area **42** and the forward portion **45** of the shearing blade. The extreme forward edge **46** of the forward portion **45** is made to conform to the shape of the rear surface **47** of the upstanding end **26** of the cover **21**. Said extreme forward edge **46** forms the cutting edge of the oscillatable shearing blade and cooperates with the sloping edges **28** and **29** on stationary cover **21** to form a shear for cutting off tape disposed between the stationary and oscillatable portions of the shearing device.

The rear edge **48** of the oscillatable shearing blade **22** engages the under sides of the forwardly extending ends **40** of the spring fingers **37** and **38**, while the sides of said oscillatable shearing blade overlie spring fingers **35** and **36**. The latter exert an upward force upon oscillatable shearing blade **22** which imparts an upward movement thereto. The upwardly bent end **26** of cover **21** terminates in spaced tabs **58** and **59** extending upwardly adjacent the outer ends of sloping surfaces **28**, **29** and then backwardly to form stops **49** and **50**. Said stops are engaged by shearing blade **22** and determine the upper limit of movement of said blade.

The length of oscillatable shearing blade **22** between rear edge **48** and extreme forward edge **46** is slightly larger than the distance between surface **47** and the righthand surface, as viewed in FIGS. 2 and 3, of the upwardly extending region **39** on spring fingers **37** and **38** when the latter are in their free state. Therefore, when oscillatable shearing blade **22** is inserted between spring fingers **37**, **38** on the one hand and surface **47** on the stationary cover **21**, the said spring fingers **37**, **38** are extended to the rear of the device and thus exert a force upon shearing blade **22** in a forward direction to hold the cutting edge **46** of the oscillatable shearing blade against surface **47** adjoining the sloping edges **28** and **29** forming the stationary portion of the shearing device. This constant pressure insures a clean-cutting action between the two parts of the shearing device. For ease of production, it may be desirable to bend the spring fingers **37** and **38** after shearing blade **22** has been inserted between end **26** and said fingers.

Oscillatable shearing blade **22** is held against crosswise movement relative to fixed or stationary cover **21** by side flanges **51** and **52** which extend downwardly from the plane of the flat surface **41** on opposite sides thereof to overlie the depending sides **24** and **25** of the stationary cover **21**. Inasmuch as the forward end of the oscillatable shearing blade **22** is adapted to assume a raised position relative to the stationary cover **21** in the manner shown in FIG. 2 wherein the side flanges **51** and **52** are out of contact at the forward end with the depending sides **24** and **25**, additional guiding effect is obtained by causing said flanges **51** and **52** to extend forwardly beyond upstanding end **26** so that the sides of said upstanding end are engaged by side flanges **51** and **52** and guide said flanges during the critical movement of the oscillatable shearing blade over the sloping edges **28** and **29** of the stationary portion of the shearing device.

The unwound portion **19** of the roll of tape **17** is passed from the roll through opening **30** in stationary cover **21** and through slot **43** over the depressed area **42** of the oscillatable shearing blade and thence through the narrower slot **44** under the extreme forward edge **46** of the oscillatable shearing blade **22**. It may be pulled upwardly beyond edge **46** as far as necessary to provide the length of tape to be severed.

To sever the desired length from the roll after the tape has been threaded through the oscillatable cover, it is only necessary to press the oscillatable cover down against the resilient action of spring fingers **35**, **36**. The downward movement will be arrested when the depressed region **42** strikes the forward portion of the flat top of the stationary cover **21** adjacent end **26**. During the downward motion, the movable and stationary portions of the shearing device will have their cutting edges in intimate contact with one another to give a clean cut. Release of the oscillatable shearing blade permits it to spring upwardly against stops **49** and **50**. A rapid movement has been found to be most satisfactory. The sloping edges **28** and **29** provide a progressive cutting action in accordance with accepted shearing practice.

When the next length of tape is to be severed, the portion of tape overlying depressed region **42** is moved forward as, for example, by the user's thumb as shown in FIGURE 1 until the free edge thereof extends far enough beyond upstanding end **26** to be grasped by the other hand of the user whereupon the tape is then pulled outwardly until the desired length is measured off and said length is then severed by the rapid depression of the oscillatable shearing blade **22**.

Due to the pliability of the tapes with which the present device may be used, the unsupported end of the tape under the forward portion of the blade **22** may bend downwardly so that forward movement of the tape by the user's thumb merely causes the said end to curl under the blade where it cannot be grasped and guided over the lower shear blade. This condition is readily obviated by the use of a support comprising a section of plastic material **60** which is secured to the underside of the forward region of blade **22** in spaced relation thereto. The tape is inserted into said space and is held against curling or falling by said support **60**.

The amount of tape remaining on roll **17** is readily visible through the transparent material of box **10** and when it is completely exhausted, stationary cover **21** is removed from the box to enable the hinged side **11** to be swung open. A roll of tape is then inserted into the receptacle with the free end of the tape extending out of the opening in the top provided therefor, the hinged side **11** is closed, and the free end of the tape is threaded through opening **31** in stationary cover **21** and opening **43** in the oscillatable shearing blade **22**. Stationary cover **21** is then pressed into place over the open end of box **10** and the free end of the tape is passed over depressed region **42**, through narrow slot **44** and over support **60** out beyond upstanding end **26**.

Tapes of varying widths up to the width of the depressed region **42** may be used with a given box. Also, tapes of various compositions may be used, provided, however, that the side of the tape immediately adjacent depressed area **42** is not coated with a tacky substance. Thus, tapes made of rubbery material (though having a low coefficient of friction) as well as cloth tapes or ribbons may be readily housed in box **10** and dispensed therefrom through the shearing device **20**.

It may be observed that shearing device **20**, since it is made of only three parts, represents the ultimate in simplicity, particularly in view of the fact that no pin type hinge is used and hence an absolute minimum in assembly time is required to assemble said shearing device.

It is understood that the foregoing description is merely illustrative of the preferred embodiment of the invention and that the scope of the invention is not to be limited thereto but is to be determined by the appended claims.

I claim:

1. A tape dispenser comprising a container adapted to hold a roll of tape, said container having an opening thereinto, a cover for the opening, said cover having an opening therethrough in substantial alignment with the opening in the container to allow tape from said roll to pass to the exterior of the cover, a lower shear blade on the cover, an upper shear blade cooperating with the

lower shear blade to cut a segment of tape from said roll, means hingedly mounting the upper shear blade on the cover for movement past the lower shear blade, a pair of spaced openings through the upper shear blade through which the tape is threaded, resilient means in compression between the cover and upper shear blade tending to separate the shear blades, stop means on the cover limiting separation of the shear blades, and resilient means on the cover urging the blades laterally against one another.

2. A tape dispenser as described in claim 1, said tape being threaded through said openings in the upper shear blade in a manner to leave the free end of the tape under the said upper shear blade, and means on the underside of the shear blade directing the said free end of the tape toward the lower shear blade.

3. A tape dispenser as described in claim 1, said tape being threaded through said openings in the upper shear blade in a manner to leave the free end of the tape under the said upper shear blade, and means secured to the underside of the upper shear blade adjacent the lower shear blade and defining a slot with the upper shear blade through which the said free end of the tape is threaded and directed to the lower shear blade.

4. A tape dispenser as described in claim 1, said lower shear blade extending upwardly from the cover and said

means on the cover limiting separation of the shear blades comprising a tab extending upwardly from the end of the lower shear blade and then backwardly over the forward end of the upper shear blade.

5. A tape dispenser as described in claim 1, said upper shear blade having downwardly extending flanges adapted to embrace the cover therebetween and thus to be guided by said cover.

6. A tape dispenser as described in claim 1, said lower shear blade having tabs extending upwardly from the ends thereof, and said upper shear blade having flanges extending forwardly past the tabs and embracing the tabs to be guided thereby.

7. A tape dispenser as described in claim 1, said resilient means on the cover urging the blades laterally against one another comprising spring fingers on the cover having upwardly and forwardly extending end regions engaging the upper shear blade and serving as the hinged mounting for the upper shear blade.

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