

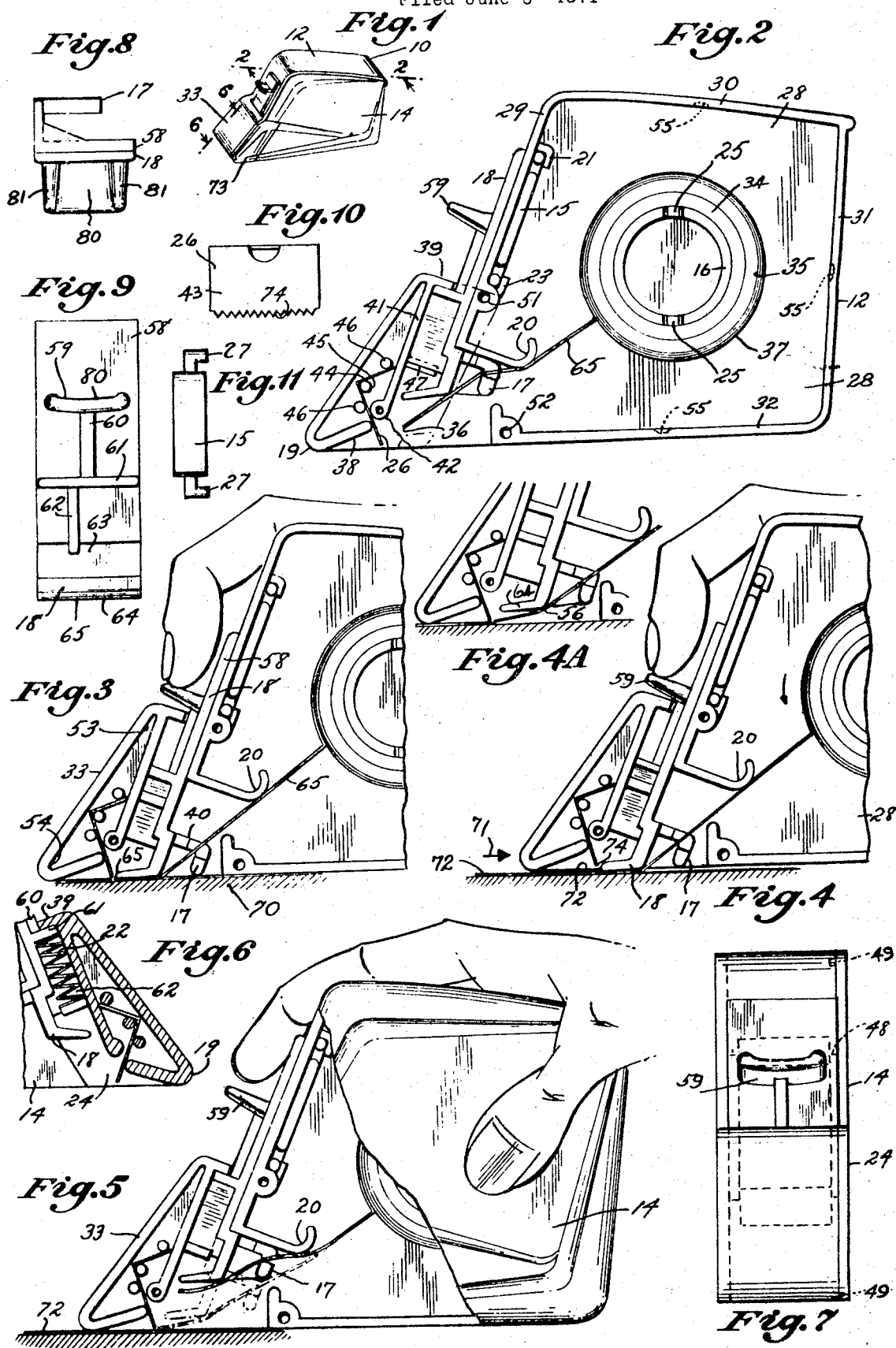
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TAPE DISPENSERS

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## TAPE DISPENSERS

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### ABSTRACT OF THE DISCLOSURE

A dispenser having a movable applicator element which presses an adhesive tape into contact with a surface to be secured. The movable applicator element includes means for engaging the adhesive surface of such a tape in retracted position so that a fixed cutter element is enabled to sever the tape supply from the applied tape.

### BACKGROUND OF THE INVENTION

#### Field of the invention

This invention relates generally to tape dispensers and more particularly to an improved pressure-sensitive adhesive tape dispenser.

#### Description of the prior art

In applying pressure-sensitive adhesive tape, particularly where the tape is composed of flexible transparent synthetic resinous material, such as for example cellophane tape, it is highly desirable that the tape be untouched by the user. This is so because the pressure-sensitive adhesive surface is difficult to release once it has been contacted, because it may lose some of its adhesive quality, and because said surface very easily picks up dirt and discoloration which it carries with it to be visible when the tape is used for sealing or when the tape is applied to an exposed surface.

A number of dispensers have been developed for the manual application of adhesive tapes. These dispensers have in common, means for storing rolls of tape, a surface for contacting the non-adhesive side and forcing it into contact with an area to be secured, and means for severing the applied tape from the roll. In general no fully satisfactory dispenser of this type has been previously developed because of excess complexity, questionable design, or unreliable operation when using one hand only.

### SUMMARY OF THE INVENTION

It is an object of the present invention to provide an improved device of the class described in which it is unnecessary for the user to touch the adhesive tape, and where during normal use the operator is prevented from contacting the tape.

In order to have the loose tape end ready for application, it is desirable to have the end initially pulled away from the roll on which it is supplied; however, when this is done there is a substantial portion of tape with the adhesive layer exposed. It is another object of the present invention to provide means for withdrawing this otherwise exposed length of tape within the principal housing of the device so that it is protected from inadvertent contact with exterior items.

Another object of the invention lies in the provision of an improved tape dispenser which is easily opened, closed, and/or refilled.

Another object of the invention lies in the provision of an improved tape dispenser having a minimum of elements and which can be conveniently and economically manufactured.

Still another object of the invention is to provide an improved tape dispenser capable of continuous and reliable operation.

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In accordance with an illustrative embodiment of the invention, there is provided a dispenser having a movable applicator element engageable with a first surface of an extended end from a roll of tape and a movable tape shifting member that moves in correlation with the applicator element and engages the other surface of the extended end.

The above mentioned objects, as well as further objects and features of the invention, will be more fully understood and appreciated from the following detailed description and drawings.

### BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a perspective view showing an illustrative embodiment of the invention;

FIG. 2 is a side elevation of the embodiment in FIG. 1 with the cover removed;

FIG. 3 is a partial elevation comparable to FIG. 2, but showing the applicator element in a lower starting position;

FIG. 4 is another partial elevation corresponding generally to FIG. 2, but showing the applicator element in a depressed tape applying position;

FIG. 4A illustrates a transient position of the applicator element during severance of the tape;

FIG. 5 is a side elevation of the embodiment, with the cover partially cut-away to expose the elements in their position after tape severance;

FIG. 6 is a partial vertical section view taken along the lines 6—6 on FIG. 1;

FIG. 7 is a front elevation of the embodiment;

FIG. 8 is a top view of the applicator element;

FIG. 9 is a front elevation of the applicator element;

FIG. 10 is a front view of the cutter element; and

FIG. 11 is an elevation of the spacing member.

### DESCRIPTION OF THE PREFERRED EMBODIMENT

In the drawing, to which reference will be made in the specification, similar reference characters have been employed to designate corresponding parts throughout the several views.

The illustrative tape dispenser 10, comprises broadly: a housing 12; a side cover 14; a roll support 16; an applicator element 18; a stationary tape guide 20; an applicator spring 22; and an auxiliary cover member 24 which may be permanently affixed to cover the cutter element 26.

The housing 12 may advantageously have the configuration shown in FIGS. 2 and 5, and may include a main side wall 28, a front wall 29, a top wall 30, a rear wall 31, a bottom wall 32, and a lower front wall 33. Projecting from the inner surface of main side wall 28 is a roll support 16, the effective external diameter of which is such that an easy sliding fit exists between support 16 and the inner surface of the core 34 normally found on roll tapes. This allows the tape 35 to unroll freely as the tape end 36 is pulled out. The stationary tape guide 20 may be a rearward extension from the lower portion of the front wall 29. Thus, the guide 20, walls 29, 30, 31, and 32 can be molded as lateral integral flanges with respect to the main side wall 28.

The bottom of lower front wall 33, is rounded to form a stationary applicator portion 19, and extending upward and to the rear therefrom, is a lower cutter element support 38. The top of front wall 33 extends rearward to form an upper detent 39 adapted to limit the upward travel of the applicator element 18, as explained herein-after.

A pair of integral brackets 21 and 23 extend inward from front wall 29 and are adapted to receive, and frictionally retain, a tape-roll support adapting member 15. As illustrated in the drawings, the dispenser has a roll 35

of  $\frac{3}{4}$ " tape therein. The member 15, shown in FIG. 11, may be mounted in notches 25 of tape support element 16 for effectively reducing the lateral width of the core and thereby adapting it to support either  $\frac{1}{2}$ " tape or  $\frac{3}{8}$ " tape. When adapted 15 is positioned within notches 25 it acts as a spacer because the offset legs 27 support the core member of the tape roll.

The upward travel of the applicator element 18 is also limited by the uppermost surface 40 of the movable tape shifting member 17 (an integral extension rearward of the applicator element 18) striking the under surface of the stationary tape guide 20. This is illustrated in FIG. 5.

Extending down from the upper detent 39 is an intermediate wall 41, the lower edge 42 of which coacts with the edge of support 38 to hold the portion 43 of cutter element 26 in operative position. The upper bent portion 44 of element 26 is adapted to be sprung between pins 45 and 46 which project perpendicularly from the main side wall 28.

The housing walls may be provided, as shown in FIG. 2, with indentations such as 51, 52, and 55 adapted to receive corresponding projections on the inner surface of the cover 14 and 24. Wall junctions 53 and 54 in lower front wall 33 (FIG. 3) frictionally receive corresponding projections on the auxiliary housing cover 24. Cover 24 serves to cover the cutter element 26 and also the lower terminal of the applicator element 18. Main cover 14 conceals and protects tape shifting member 17 and may be provided with a hub portion 48 which coacts with tape roll support 16. Cover 14 is detachable retained in a suitable manner on the walls 29, 30, 31, and 32, for example, by narrow lip 49 in FIG. 7, which fits within said walls. Lip 49 is provided with outwardly projecting protuberances adapted to detachably snap into the recesses 55.

As shown in FIGS. 8 and 9, the applicator element 18 has a generally rectangular body 58 with a forwardly extending finger pad 59, rib 60, and upper spring engaging plate 61; spring positioning partition 62; tape pressure applying foot 64; and extending rearward therefrom, the tape shifting member 17. Element 18 is preferably fabricated as a single molded part composed of material possessing resiliency, such as cellulose acetate, acetal, nylon and butyrate; or if made in two parts, it is important that the foot 64 be resilient so that pressure may be adequately distributed over the area of the tape end under the toe portion 65. This assures adequate anchoring of the tape end so that it will stay fixed as the device 10 is moved along during the application cycle.

The finger pad 59 has a special configuration, best seen in FIGS. 7, 8, and 9. The main surface 80 is concave, and there are two lateral forwardly converging ribs 81 which help to center the finger of the user and guide the needed finger pressure while reducing fatigue and making a taping operation both convenient and comfortable.

The rear surface of applicator element 18 is slidably supported on wall 29 and is guided for rectilinear reciprocation by the wall 28 at one side and the auxiliary housing 24 at the other; while in front it is guided by detent 39 and intermediate wall 41. A lower spring support 47 (FIG. 6) projects rearward from the intermediate wall 41 and inward from the main side wall 28, and a spring 22 urges element 18 upward, its normal position being shown in FIGS. 2 and 5, and its lower position being shown in FIGS. 3 and 4.

To charge the dispenser, cover 14 is removed and a roll 37 of tape 35 is placed upon the roll support 16. This is the case for tape of maximum width. Where narrower tapes are used, the roll support adapting member 15 is removed from the brackets 21 and 23, and placed in the notches 25, as explained above, before the roll 37 is put in place. The tape is regularly supplied with the adhesive layered surface 65 inward, and roll 37 is positioned to unwind upon rotating in a counterclockwise direction as viewed in FIG. 2. With applicator ele-

ment 18 in its down position, the loose end 36 of the tape is threaded under guide 20 and over shifting member 17, leaving a leader surplus of about one inch of tape. Applicator element 18 is then permitted to retract and the leader surplus is cut off by cutter 26, and removed. The device is now ready for normal operation and cover 14 should be replaced.

In a typical taping operation, the dispenser is placed upon an article or surface 70 to which tape is to be applied and finger pad 59 is pushed down (FIG. 3) so that the tape end 36 is caused to adhere to the surface 70. The dispenser is then moved rearward in the direction of the arrow 71 (FIG. 4) with pad 59 still depressed so that the applied strip 72 is put in place. The starting position of the tape end 36 is visually located by the user with an indicator 73 (FIG. 1) which is laterally aligned slightly to the rear of cutter 26.

As the dispenser is moved along with the applicator in the down position, tape is pulled from the roll, and the stationary applicator member in effect irons the applied strip 72 to increase adhesion. When the indicator 73 reaches the end of the area to be taped, the pad 59 is released and spring 22 forces the element 18 with attached shifting member 17, upward. As the upper surface of member 17 engages the adhesive surface 65, the tape 35 adheres to member 17, and gripped thereby, as the member 17 continues its upward movement, it pulls the tape 35 against the serrated edge teeth 74 (FIGS. 4A and 5). Just before the tape is cut, the tape is stressed between the heel 56 of the applicator element 18, the stationary tape guide 20, and the shifting member 17, so that sufficient pressure is obtained between layer 65 and member 17 to get adequate adhesion to retain the tape in correct position for the next starting stroke. The rearward movement of the dispenser is continued without lifting, so that a state of tension is created in the tape between the area already adhered to the surface 70 and the point of attachment between the tape 35 and the member 17. This further rearward movement causes the points of the teeth 74 to puncture the tape, and because of the tension; a rapid rupture ensues. Further movement in the same direction permits member 19 to iron the remainder of the tape onto the work surface and the operation is thus completed.

The trailing end 36 of tape 35 is drawn into the housing due to its adhesion to member 17, so that it is protected from damage and soil, and may take, for example, the position shown in FIG. 5, ready to begin the next application cycle.

It should be noted that the length of the area of contact of the tape against the surface 70 (lengthwise of the dispenser) produced by the toe 65 shall not be so long that the teeth 74 shall meet the tape in said area, as if this occurs the surface 70 if movable or distortable (such for example paper) will be pulled up to the teeth 74 and possibly damaged. The preferred positioning of teeth 74 is slightly above the lowermost edges of the housing 12 and cover 24, and cover 14, as shown. The lower the cutting edge, the closer will be the severance line to the last affixed area of the tape. Such low position is suitable, however, only where the tape is to be applied to a rigid smooth surface, because a soft or flexible surface may be caused to bulge upward into premature contact with the cutting edge; and thereby damaged.

A particular embodiment of the invention has been shown and described. It is understood the modifications will become apparent to those skilled in the art. All such modifications as come within the spirit and teachings of this application, are intended to be covered by the claims.

What I claim is:

1. A pressure sensitive tape dispenser having a movable applicator element engageable with one surface of said tape; a tape shifting member integral with said applicator element, movable in conjunction therewith, and engageable with the other surface of said tape.

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2. A pressure sensitive tape dispenser according to claim 1, including a housing having a support for a roll of said tape, said applicator element having a manually operable finger pad exposed outside of said housing.

3. A pressure sensitive tape dispenser according to claim 1, including a stationary applicator element disposed forwardly of said movable applicator element, and adapted for contact with said one surface of said tape.

4. A pressure sensitive tape dispenser according to claim 1, including a cutter element disposed adjacent said tape shifting member.

5. A pressure sensitive tape dispenser according to claim 1, including a stationary tape guide disposed between said tape shifting member and the supply of said tape.

6. A pressure sensitive tape dispenser according to claim 2, wherein said movable applicator element has a projected and a retracted position, including a spring urging said applicator element to said retracted position, said retracted position being within said housing.

7. A pressure sensitive tape dispenser according to claim 2, wherein said support includes adjustable means to accommodate tape rolls having different widths.

8. A dispenser for applying tape with adhesive on one side to a surface, comprising a manually operable applicator element disposed near one end of said dispenser and operative to contact the non-adhesive side of said tape and press the adhesive side of said tape onto said surface; a support for a roll of said tape; an affixed rearward projection on said applicator element positioned between said element and said support, the path of said tape bringing the adhesive side thereof over said rearward projection when

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said applicator element is in operative position; means for maintaining said applicator element in a non-operative position, said rearward projection being in contact with the adhesive side of said tape in said non-operative position.

9. A dispenser for applying tape in accordance with claim 8, including a cutter element located closer to said one end of the dispenser than said applicator element, said cutter element being located in close proximity to said surface.

10. A dispenser for applying tape in accordance with claim 9, including fixed means therein projecting rearwardly beyond said rearward projection, and positioned above said rearward projection, whereby said fixed means contacts the non-adhesive side of said tape in said non-operative position.

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