

[54] ADHESIVE APPLICATOR

[75] Inventors: **Raymond W. Hazuka**, West St. Paul; **Dorman N. Thompson, Jr.**, Oakdale, both of Minn.

[73] Assignee: **Minnesota Mining and Manufacturing Company**, St. Paul, Minn.

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[51] Int. Cl. **B29d 27/14, B32b 35/00**

[58] Field of Search **156/584, 577, 540**

[56] References Cited

UNITED STATES PATENTS

2,419,809	4/1947	Avery	156/584
3,077,919	2/1963	Krueger	156/584
3,274,038	9/1966	Karn	156/584
3,283,886	11/1966	Addis et al.	156/540
3,468,743	9/1969	Soriano	156/584
3,737,360	6/1973	Horn	156/577

Primary Examiner—Douglas J. Drummond
Attorney, Agent, or Firm—Alexander, Sell, Steldt & De La Hunt

[57] ABSTRACT

An adhesive applicator for manually dispensing varying lengths of adhesive supplied in the form of a transfer tape including a layer of pressure-sensitive adhesive releasably carried by a waste liner. The applicator supports a roll of transfer tape and defines a path for the transfer tape past an applying edge disposed along a dispensing edge of the body intermediate its ends and a deflecting member or plow directs the waste liner away from the edge as the tape is drawn about said applying edge. The deflecting member cannot be spaced too far from the dispensing edge of the applicator or too close to the applying edge or the liner is deflected too sharply and application of the adhesive is slowed. The deflecting member is shaped and mounted with respect to the body of the dispenser such that waste adhesive unavoidably carried past the applying edge on the liner does not cause the liner to become jammed in the deflecting path.

6 Claims, 5 Drawing Figures

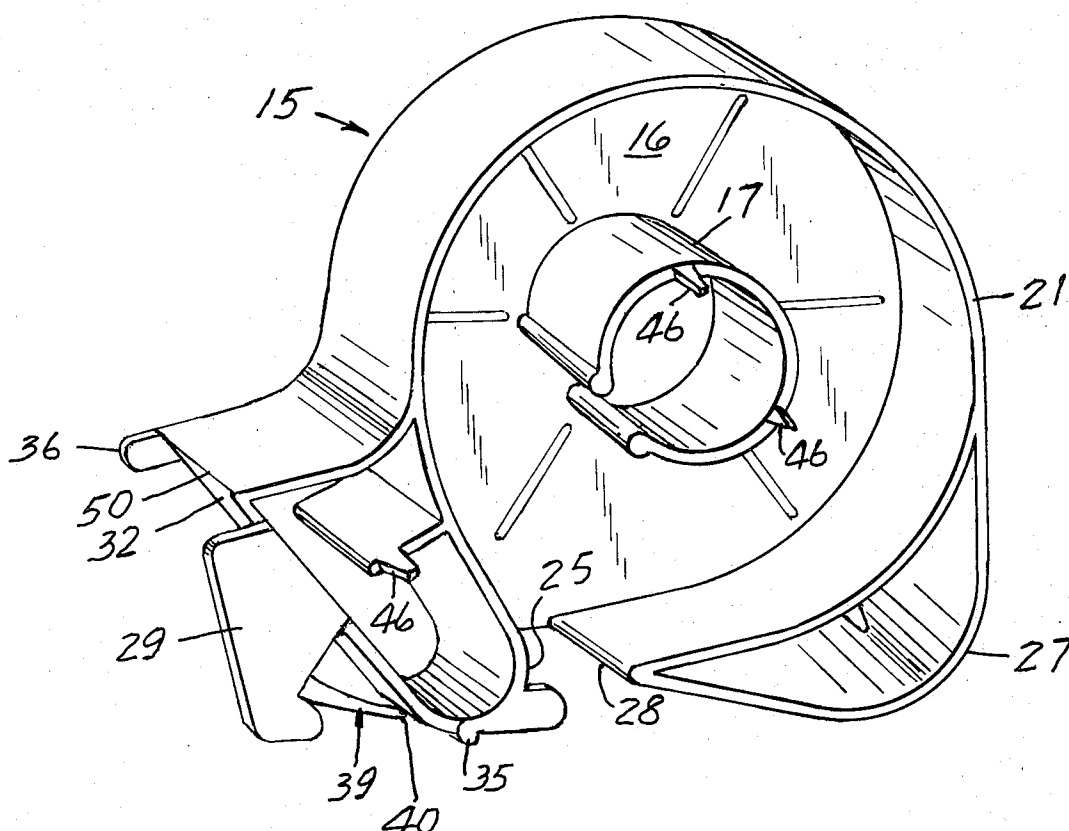


FIG. 1

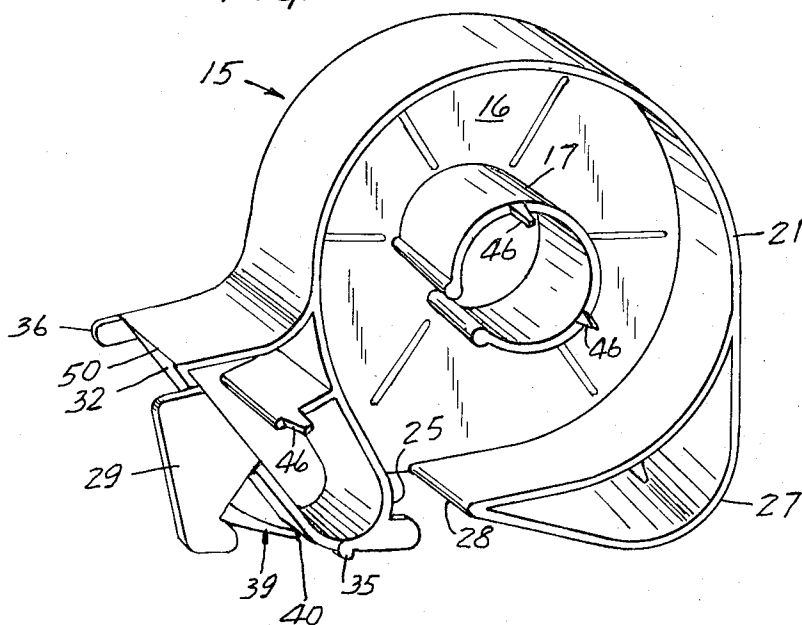


FIG. 2

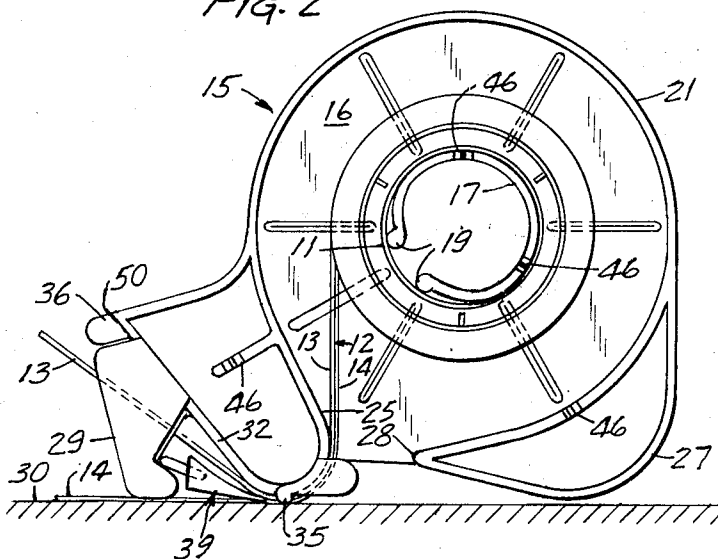


FIG. 3

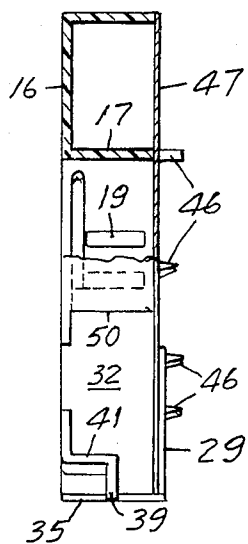


FIG. 5

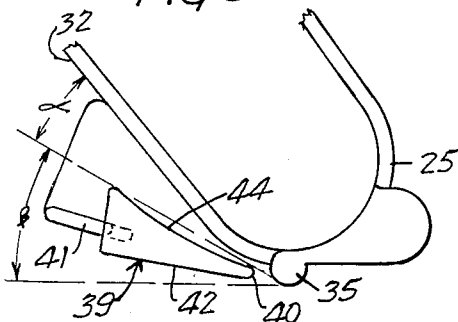
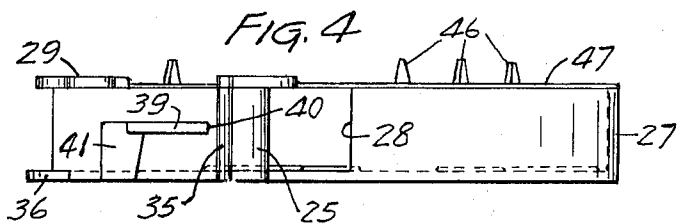


FIG. 4



ADHESIVE APPLICATOR

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to an adhesive applicator for dispensing varying lengths of pressure-sensitive adhesive to a surface and in one aspect relates to an improved hand applicator for dispensing and applying pressure-sensitive adhesive transfer tape which will afford the easy threading and continued operation even in the event of inadvertent carryover of the adhesive past the applying edge on the applicator.

2. Description of the Prior Art

While the art is replete with dispensers for applying manually desired lengths of pressure-sensitive tape to a surface there are fewer dispensers specifically designed for the easy application of a layer of pressure-sensitive adhesive which layer, prior to application, is releasably supported on a length of waste liner which is suitably coated on both surfaces with a back sizing such that the pressure-sensitive adhesive layer will be more easily released from the uncoated surface than the adhesive coated surface permitting the tape to be convolutely wound in a supply roll. A transfer tape dispenser is shown in U.S. Pat. No. 3,274,038, issued to A. B. Karn, Sept. 20, 1966. This dispenser comprises a body adapted to support a supply roll of tape material and to be operated by hand for manually applying a length of adhesive to a surface. The tape is withdrawn from the supply roll past an applying edge and operation of the dispenser causes the liner to be pulled from the adhesive and carried about the supply roll. In this device the tape is wound with the adhesive surface of the transfer tape on the outer surface of the roll and this adhesive pushes the waste liner out of the dispenser after the same has been drawn about the supply roll. This dispenser has several disadvantages. One apparent disadvantage is the threading of the supply of tape through the dispenser. If this threading operation is done by the manufacturer the same is difficult to accomplish mechanically. If the threading is to be handled by the consumer the threading will seldom be handled in a manner such that adhesive on the outer surface of the liner will not be forced into the guide path for the separated liner. Adhesive in this area will quickly cause the liner to become jammed and operation of the dispenser to be impaired. Further, the operation of the dispenser is such that the operator cannot readily view the layer of adhesive immediately upon application to a receptor surface.

Two dispensers for double coated tapes which utilize a waste liner which must be separated from the tape upon application of the tape are shown in U.S. Pat. No. 3,283,886, issued to E. C. Addis, et al., Nov. 8, 1966, and U.S. Pat. No. 3,468,743, issued to C. A. Soriano on Sept. 23, 1969. In each of these latter two patents the liner is separated from the tape and is directed through a confined pathway away from the tape such that the same may be severed and discarded. The dispensers do not afford the application of force against the liner to force the adhesive tape into contact with the receptor surface such that strips of a desired length may be applied by the dispenser as the tape is dispensed from the supply roll. Thus, these dispensers do not afford any teaching for modifying a transfer tape applicator such that the same will afford easy application of the adhesive,

assure separation of the liner from the adhesive immediately upon pressure application of the adhesive, and directing the waste liner along the path away from the receptor surface such that the adhesive may be applied at a reasonably moderate speed.

Dispensers having a restricted path for the liner causes the liner to become jammed when any amount of adhesive is inadvertently carried by the liner into the confined guide path and it is necessary with transfer tape that the adhesive be applied to the receptor surface simultaneous with the separation of the liner. Thus a dispenser such as disclosed by either Addis, et al., or Soriano does not afford any teaching for a person skilled in the art in the direction toward a simple dispenser such as that of applicants'.

SUMMARY OF THE INVENTION

The applying device of the present invention for applying an adhesive coating from an adhesive transfer tape having at least two separable layers, including a waste liner and a layer of pressure-sensitive adhesive comprises a monolithic molded body having means for supporting a supply roll of transfer tape, an applying edge along the dispensing edge of the applicator and a deflecting member or plow for deflecting the waste liner away from the adhesive immediately after application of the adhesive and outward from the dispenser. The dispenser is so designed that the operator can see readily the layer of adhesive applied as the dispensing device is drawn toward him. The applicator also affords the easy threading by the operator and is so designed that the liner cannot readily become jammed. The applicator is so designed that the inadvertent movement of adhesive past the applying edge and into the guide means for deflecting the liner will not cause the liner to become jammed. The deflecting member is positioned relative to the applying edge such that the liner movement is relatively unobstructed and threading and clearing the applicator of adhesive is handled with facile instruction. The deflecting member desirably does not exceed one-half of the width of the transfer tape and is a rigid wedge-shaped member having a separating edge positioned between a stripping surface and an edge surface. The edge surface is positioned close to the dispensing edge of the body member along which edge the applying edge is positioned. The stripping surface is disposed at an angle with respect to the dispensing edge to deflect the liner away from the receptor surface. The stripping surface is disposed at an angle to the dispensing edge not exceeding 45° such that there is substantially no opportunity for the liner to become folded, permitting the same to pass between the edge surface of the deflecting member and the receptor surface.

BRIEF DESCRIPTION OF THE DRAWING

The present invention will be more fully described in the following detailed description which refers to the accompanying drawing wherein:

FIG. 1 is a perspective view of the dispensing device of the present invention;

FIG. 2 is a side elevation view of the dispensing device of FIG. 1;

FIG. 3 is a front elevation view partly in section to show the support for the tape roll and showing a fragment of the display card;

FIG. 4 is a bottom view of the dispensing device of FIG. 1 showing also a display card; and

FIG. 5 is a detailed view of the liner deflecting member and adhesive applying edge.

DESCRIPTION OF THE PREFERRED EMBODIMENT

The applying device of the present invention is a molded monolithic member which desirably is economical enough to be sold with a roll of transfer tape and discarded after the roll of tape is depleted.

The roll of tape is usually supplied in a convolutely wound roll on a core 11 and the tape 12 comprises at least two separable layers, including a waste liner 13 upon one surface of which is releasably adhered a layer of pressure-sensitive adhesive 14. In the roll the liner is radially outward of the adhesive and the liner is suitably coated on its outer surface such that the pressure-sensitive adhesive coating will not adhere firmly thereto. The transfer tape may comprise a backing material, i.e., a paper waste liner, having a layer or coating of a solvent-free, tacky coherent material comprising a blend of polymers. One such tape combination is disclosed in U.S. Pat. No. 3,326,741, issued June 20, 1967.

The applicator of the present invention is generally designated by the reference numeral 15 and comprises a molded monolithic body including a generally planar plate portion 16 having an outline describing generally the shape of the dispenser and from which plate project in one direction side walls and support members to support and enclose a roll of transfer tape 12. Generally centrally of the plate portion 16 is a support member or mandrel 17 for supporting the core 11 of the transfer tape 12. As illustrated, the mandrel 17 comprises a generally cylindrical wall projecting from the plate 16. The wall is not continuous and is not supported from the plate adjacent the ends. Formed at the ends of the wall are bosses 19 which project outward from the wall for engagement with the core 11. The resilience of the end portions of the wall members force the projecting bosses into frictional engagement against the inner cylindrical surface of the core 11 to retard the free rotation of the core.

Other projecting wall members 21, 25, 27, and 32 form an outer wall about the tape and define a cavity within which the roll is positioned. This cavity has one opening 28 disposed along a lower or dispensing edge of the applicator. This dispensing edge is defined by the lower extremity of a heel and toe formed on the applicator. The opening 28 is defined by the end of wall 21 and by the smooth arcuate wall 25 defining an applying edge across which the liner 13 is directed, thus disposing the adhesive layer 14 for contact with a receptor surface 30, see FIG. 3.

The applying edge 25 is a rounded or radiused surface and defines an edge which is generally in a plane connecting the heel and the toe of the applicator or projects slightly outward from the plane such that as the liner is drawn across the applying edge the adhesive may be applied with greater pressure into engagement with the receptor surface. The radius on the applying edge may be about 0.37 inch. This applying edge may also have a small semicylindrical projection 35 with a radius of about 0.06 inch to project beyond the dispensing edge a distance substantially equal to the radius. This applying edge 25, 35 permits the placement

of a deflecting member in closely spaced relation thereto as will be hereinafter described.

The applicator heel is formed by the wall 27 projecting away from the wall 21 at the rear of the applicator and connecting again to the wall at the opening 28. The toe 29 is supported from the forward end of the applicator and extends toward the dispensing edge terminating in a position spaced on the side of the applying edge 25 opposite from the heel.

The wall 32 forms part of a guide means for directing the liner away from the receptor surface 30 upon application of the adhesive. The wall 32 projects at an incline forwardly relative to the dispensing edge of the applicator and defines one side of a path for the waste liner. The toe 29 is supported on one side of this wall 32 to guide the liner and a forwardly projecting tab 36 is disposed on the opposite side of the wall surface 32 to guide the opposite edge of the liner.

The guide surface 32 on the body of the applicator is positioned on an incline with respect to the bottom edge of the applicator at an angle of approximately 60°. A deflecting member or plow generally designated 39 is positioned in spaced relationship from the surface of the applying edge where the liner can first be lifted from the adhesive by a separating edge 40 connecting an edge surface 42 that is spaced from the dispensing edge of the body and a stripping surface 44. The separating edge 40 of the plow is spaced from the nearest surface permitting a lifting of the liner by at least 0.035 inch and not more than about 0.25 inch. In a preferred example it is positioned in spaced relation from the rounded projection 35 by 0.049 inch along the line connecting the center of the rounded applying edge 35 and the center of the radius defining the separating edge 40 of the plow 39. The plow is generally wedge-shaped. It has a width of about 0.06 inch and this width preferably does not exceed one-half of the width of the transfer tape and is centrally positioned along the path of the tape. The plow is cantilevered mounted at its forward end, opposite the stripping edge 40 by an L-shaped bracket 41. The plow is supported with sufficient rigidity to avoid displacement by movement of the liner over its separating edge and stripping surface. The separating edge 40 should not be spaced from the dispensing edge more than 0.028 inch. The stripping surface 44 of the plow, which is in a plane disposed at an angle α of at least 20° with relation to the guide wall 32 of the applicator is disposed at an angle β relative to the edge of the applicator which angle β should not exceed 45°. The stripping surface is preferably located so that the liner to be stripped is not folded at an angle greater than 45° from the applying edge. The separating edge of the plow has a radius of about 0.016 so that it will not tend to penetrate the liner and small enough that the liner is not folded too sharply between the surface of the applying edge and the stripping surface of the plow. The angle α permits a broad opening along the guide means such that any adhesive carried by the liner inadvertently past the applying edge will not tend to jam the liner between the guide surface and the plow.

In the applicator illustrated a number of wedge-shaped projections 46 extend from the open side of the applicator and are designed to penetrate a support card 47, a fragment of which is shown in FIG. 2. This card will support the applicator for display and will be perfo-

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rated along a line conforming to the outline of the plate 16 to form a back for the body.

During operation the operator places the applying edge 25, 35 against the receptor surface as shown in FIG. 3 and draws the applicator toward him. The movement peels the tape from the roll and the applying edge and the deflecting member separates the liner from the adhesive and drives it out of the applicator. The wall 32 and wall 21 can intersect at a definite edge 50 which can serve as a cutting edge for the liner.

Having thus disclosed the present invention with reference to a preferred embodiment it will be appreciated that the invention is not limited thereby and that modifications can be made without departing from the invention as described in the following claims.

We claim:

1. An adhesive applicator for dispensing and applying an adhesive of a transfer tape including a layer of pressure-sensitive adhesive releasably carried by a waste liner to a receptor surface, said applicator comprising

a monolithic molded body comprising
support means defining a support surface for a convolutely wound roll of adhesive transfer tape wherein the liner is on the outer exposed surface,

an applying edge means spaced from said support means and disposed along a dispensing edge of said body intermediate the ends of said applying edge means for engaging transversely the outer surface of said liner and for applying the adhesive layer to a receptor surface, and
guide means mounted on said body for deflecting said liner from a said receptor surface as the liner

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moves past said applying edge means, said guide means comprising a deflecting member having a separating edge connecting a stripping surface, disposed in spaced relationship from a further guide surface on said body, and an edge surface spaced from said dispensing edge of said body, and said deflecting member projecting from a support toward said applying edge means and defining between said stripping surface and said further guide surface a path for said liner, said stripping surface being disposed at an angle of not greater than 45° relative to the dispensing edge of said body and positioned in a plane disposed at an angle of at least 20° in relationship to said further guide surface on said body.

2. An applicator according to claim 1 wherein said separating edge is positioned within 0.028 inch of said dispensing edge of said body.

3. An applicator according to claim 1 wherein said applying edge means comprises a support and a projecting semicylindrical lower edge having a radius of about 0.063 inch.

4. An applicator according to claim 1 wherein said separating edge of said deflecting member is spaced at least 0.035 inch from the forward edge of the applying edge means and not more than 0.25 inch.

5. An applicator according to claim 1 wherein the width of said stripping surface does not exceed one-half the width of the tape.

6. An applicator according to claim 4 wherein said separating edge is defined by a radius surface having a radius of about 0.016 inch.

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