

[54] **TAPE DISPENSER**

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[58] Field of Search **156/523, 577, 353, 281, 156/389, 536**

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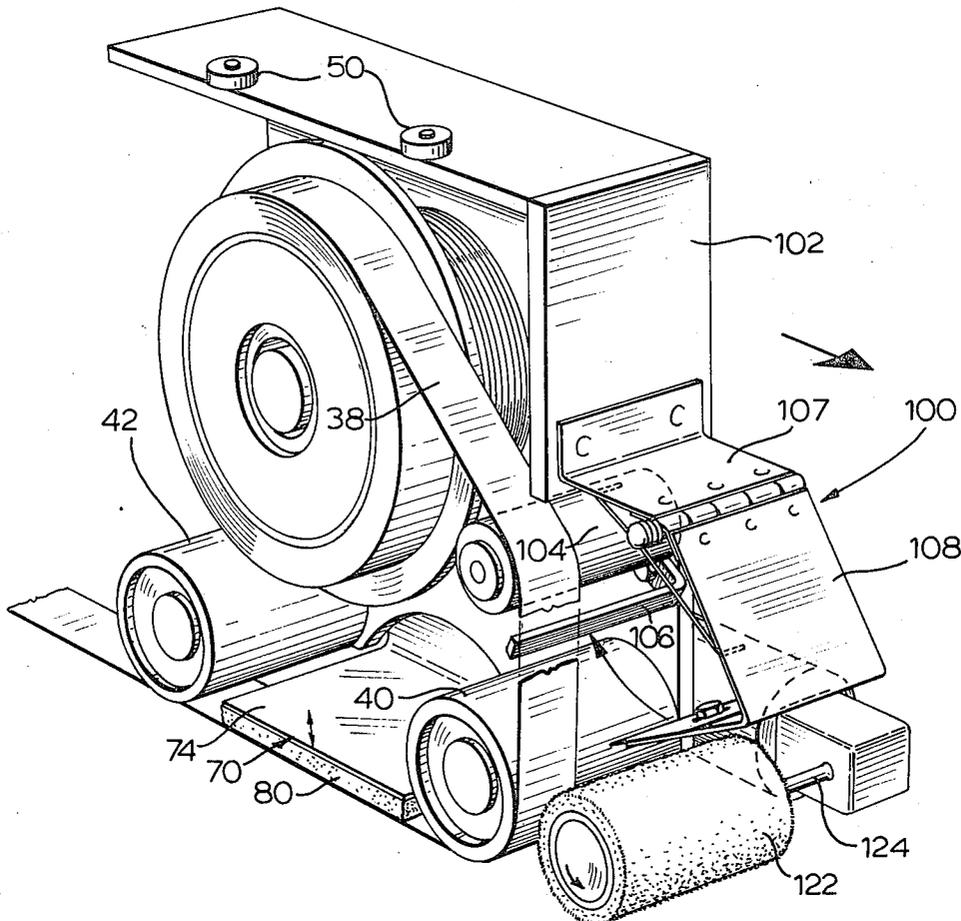
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[57] **ABSTRACT**

A tape dispenser applicator including a body having

spacers located a substantial distance above the lower end of the body for spacing the dispensing plane of the side edges of the tape from an adjacent side wall. The spacers permit free rotation of the spool from which the tape is dispensed. A pressure pad is also provided for applying a bonding pressure to the tape immediately behind the first applicator roller to ensure that the tape is firmly secured prior to cutting of the end of the tape. A cutter blade assembly is also provided in advance of the body for cutting the tape in response to movement of the body towards an abutting end wall. The cutter assembly includes a cutter bar disposed on one side of the path of the tape and a cutter blade disposed on the other side of the path of the tape, the cutter bar and cutter blade cooperate with one another to cut the tape in use. The location of the cutter blade assembly with respect to the first applicator roller is such that when the tape is cut, a sufficient length of tape projects beyond the first applicator roller to permit the tape to extend to the wall which caused the cutting action to take place. In addition, a small rotary brush assembly is provided in advance of the first applicator roller to clean the ledge on which the tape is applied immediately before the application of the tape.

10 Claims, 4 Drawing Figures



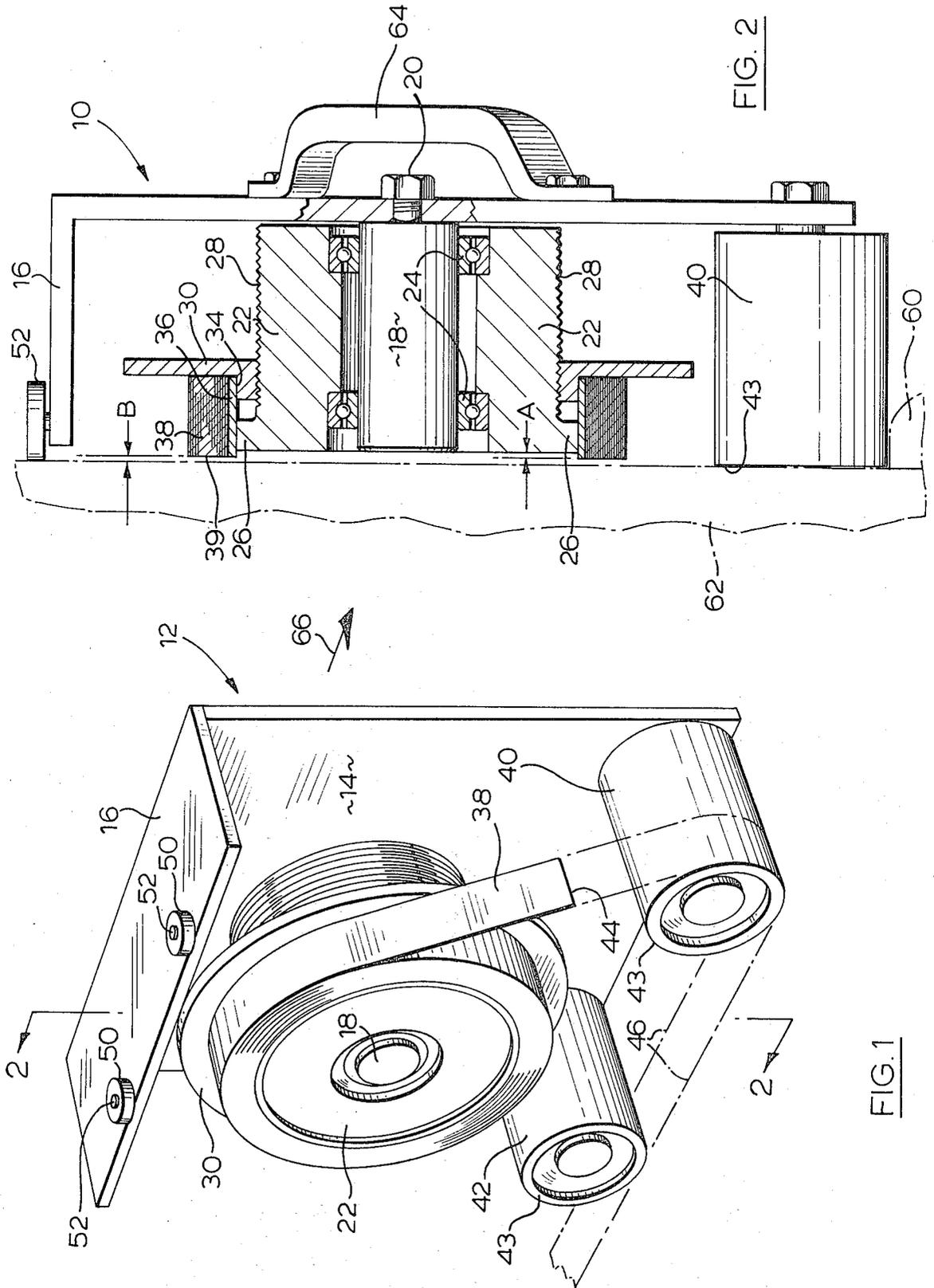
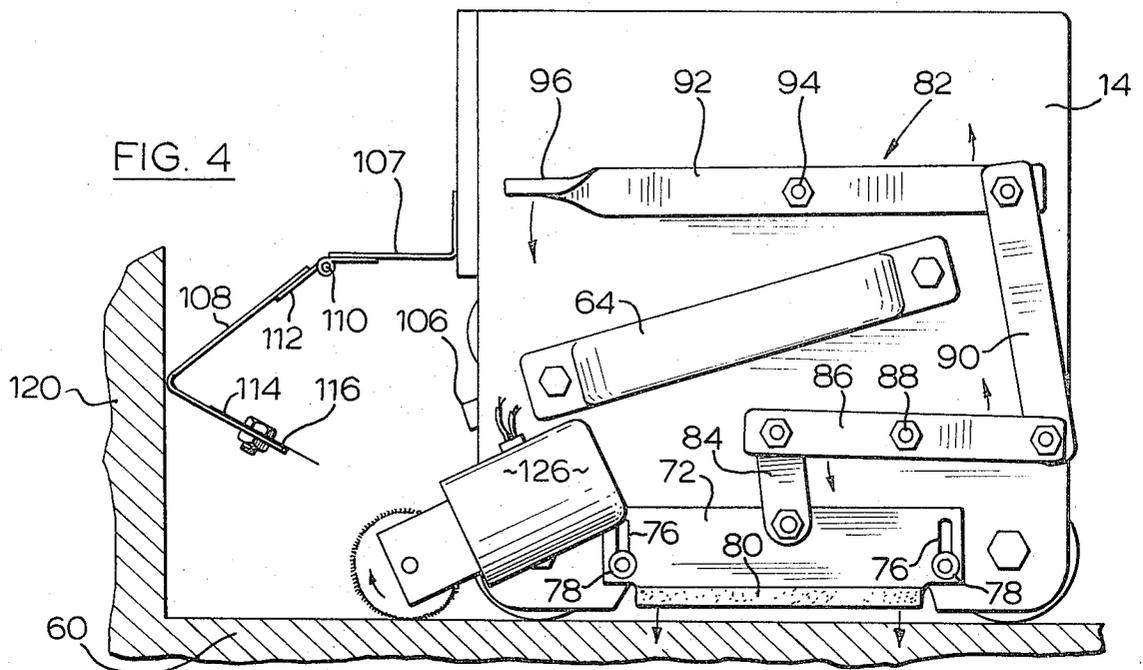
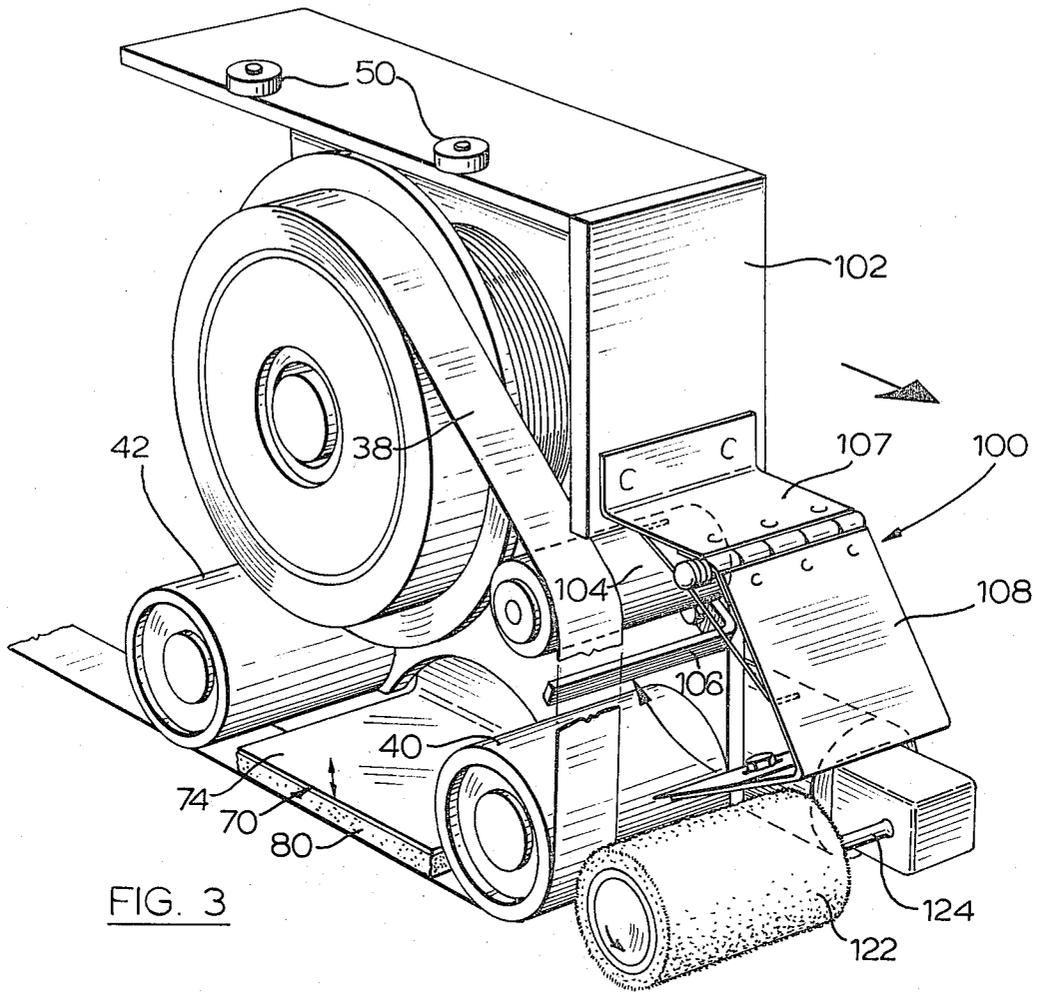


FIG. 2

FIG. 1



TAPE DISPENSER

FIELD OF INVENTION

This invention relates to tape dispenser applicators. In particular, this invention relates to a tape dispenser applicator suitable for applying a masking tape to a ledge such as a window ledge or the like prior to painting.

PRIOR ART

Considerable difficulty has been experienced in developing an automatic tape dispenser applicator suitable for use in the application of a masking tape prior to painting. While a number of tape dispenser applicators have previously been developed, these devices have enjoyed only limited success in ensuring that the tape is laid down in a straight line path. While a number of guiding devices have been built into tape dispensers, it has been found that the known dispensers do not adequately control the position of the dispensing spool with respect to the ledge on which the tape is being applied to prevent wandering of the tape when it is applied.

A further difficulty which has been experienced in known tape dispensers is in the pressure sealing of the terminal end portion of the tape after it is cut to the required length. This difficulty results from the fact that the terminal end is usually located closely adjacent an abutting end wall so that it is difficult to make the applicator operate effectively up to the abutting end wall. The tape applicators are generally operated until the applicator approaches an end wall, at which time the tape is cut and extended by hand over the remaining length of the ledge to the end wall. This can result in inaccurate location of the tape and also it has been found that it is necessary to pull the applicator away from the end wall a considerable distance before cutting the tape so that a considerable length of tape must be laid down by hand to extend the tape into the corner area. The corner areas are the most difficult areas in which to attempt manual manipulation of the tape so that this deficiency is of considerable significance. Even if the tape applicator device was provided with an automatic tape cutting mechanism, the known devices would continue to be rendered inoperative over a substantial portion of the end of the tape which is to be fitted into a corner because of the difficulty of applying an adequate bonding pressure.

While cutting devices for automatically cutting a tape to the required length on approaching an abutting end wall have previously been provided, these devices have applied the cutter blade directly to the tape which is to be cut using the tension of the tape as the only support for cutting. It has been found that these devices do not operate effectively due to the fact that most adhesive tapes have a substantial shear strength and tend to distort and buckle unless cut between two shear blades.

In the preparation of a surface for applying a masking tape or the like such as prior to wall painting, it is customary to brush off the surfaces which are to be masked to remove dust and the like. If this precleaning is not carried out, difficulty may be experienced in obtaining adequate adhesion between the masking tape and the surface to which it is applied. Frequently, however, the cleaning is carried out in a general way and considerable time may elapse between the general cleaning and the time in which the tape is applied.

While the cleaning removes much of the coarse dust which was previously present on the surface which is to be taped, much of the dust is held in suspension in the atmosphere and a portion of the dust resettles on the ledges prior to the application of the tape. In certain instances, this may constitute a substantial coating which unless removed may also adversely affect the adhesion of the tape.

SUMMARY

The present invention overcomes the difficulties of the prior art described above with respect to the accurate positioning of the tape by providing spacer means located a substantial distance above the lower end of the body of the applicator for spacing the plane in which the unwinding edge of the tape is located outwardly from any adjacent planar wall surface or the like. According to an embodiment of the present invention, a tape dispenser applicator for dispensing and applying a tape to a ledge projecting outwardly a substantial distance from a planar surface comprising a body having an upper end and a lower end, and means for mounting a tape spool for unwinding rotation thereon with an edge of the spool disposed in an exposed outwardly directed first plane at one side of the body. The body also has applicator guide roller means for guiding the unwinding tape in an application path with the outer edge of the unwinding tape disposed in said first plane. The body has spacer means located a substantial distance above the lower end thereof for spacing the first plane outwardly from the planar surface whereby the tape is free to unwind without frictional interference from the planar surface.

The present invention also overcomes the difficulty of adhesively securing the end portions of the unwinding tape in close proximity to the corner of an abutting wall at the end of a ledge. This is achieved by providing a pressure pad closely adjacent the point at which the tape is cut in use. The pressure pad is carried by the body of the applicator and is movable with respect to the body of the applicator in a direction towards and away from the tape application path.

According to a further embodiment of the present invention, a tape dispenser applicator of the type described above includes a first applicator roller at the lower end of the body for receiving an unwinding tape and applying a tape to a ledge in use. A pressure pad is mounted on the body rearwardly of the first applicator roller for movement with respect of the body towards and away from the tape which is being applied to the ledge. The pressure pad serves to apply pressure to a portion of the unwinding tape downstream of and adjacent the first applicator roller means.

According to a still further embodiment of the present invention, a tape dispenser applicator of the type described includes an automatic cutter assembly for cutting the tape to the length required in order to extend the tape to a terminal end wall in use.

According to a still further embodiment of the present invention, a rotary brush is provided in advance of the tape applicator means for cleaning the surface of the ledge to which the tape is to be applied immediately ahead of the first applicator roller means.

The invention will be more clearly understood after reference to the following detailed specification read in conjunction with the drawings, wherein

FIG. 1 is a pictorial view of a tape applicator according to an embodiment of the present invention;

FIG. 2 is a cross-sectional view of the tape applicator of FIG. 1 taken in the direction of the arrows 2—2 of FIG. 1;

FIG. 3 is a pictorial view of a tape applicator illustrating further embodiments of the present invention; and

FIG. 4 is a side view of the applicator of FIG. 3 illustrating the side of the applicator which is hidden in FIG. 3.

With reference to FIGS. 1 and 2 of the drawings, the reference numeral 10 refers generally to a tape dispenser applicator according to one embodiment of the present invention. The applicator consists of a body generally identified by the reference numeral 12 which consists of a side wall plate 14 and a top wall plate 16 which are arranged in a generally inverted L-shaped configuration. The body may be made from plastic or metal or any other suitable material. A shaft 18 is rigidly secured with respect to the side wall 14 by means of a bolt 20. A sleeve 22 is mounted for rotation on the shaft 18 by means of a pair of ball bearings 24. An annular lip 26 projects radially from the outer end of the sleeve 22. The cylindrical surface 28 of the sleeve 22 is threaded. A face plate 30 is threadably mounted on the threaded portion 28 of the sleeve 22 for movement thereacross. The face plate 30 has a narrow boss 34 of the same diameter as the lip 26. The boss 34 cooperates with the lip 26 to support a tape bearing spool 36. The position of the face plate 30 with respect to the lip 26 is adjustable by rotation of the face plate so that the device may be adapted to accommodate tape spools of different widths while always ensuring that the outer edge of the tape spool is located in alignment with or outwardly from the outer edge of the sleeve 22. This construction is particularly important in a tape dispenser applicator of the type of the present invention wherein there is provided a structure which permits accurate spacing of the edge of the unwinding spool with respect to an adjacent planar wall.

The conventional tape dispenser spool consists of an inner core 36 around which a plurality of turns of tape 38 are wound. A first applicator roller 40 and a second applicator roller 42 are mounted for rotation with respect to the side wall 14. The first applicator roller 40 is mounted adjacent the forward end of the dispenser and the second applicator roller is mounted adjacent the trailing end of the dispenser so that the unwinding tape is fed over the first roller 40 in the direction of the broken line 44 and between the rollers 40 and 42 in the direction of the applicator path illustrated by the broken lines 46. Preferably the outer surface of each roller 40 and 42 has a resilient coating of a plastic material, rubber or the like so that it will not damage the surface along which it is running and also to provide a resilience for applying a binding pressure to the tape in use.

An important feature of the present invention is the provision of a pair of small rollers 50 on the top wall 16 of the body. The rollers 50 are mounted for rotation on shafts 52 which project upwardly from the top wall.

In use, the applicator device is adjusted to receive a tape spool by moving the face plate to a position wherein the outer edge 39 of the tape spool is spaced a distance A from the outer end of the sleeve 22. The distance A is sufficient to align the outer edge of the spool 39 with the outer ends 43 of the rollers 40 and 42.

The distance A need only be in the range of zero to .010 inches.

The rollers 50 are mounted on the top wall 16 in a position such that they project a distance B outwardly from the outer end of the tape spool when in use. Again, the distance B may be adjusted by adjustment of the face plate 30. The distance B need only be sufficient to ensure free rotation of the sleeve and tape spool with respect to the body of the applicator in use. Again, the distance B may be of the order of about 0.010 inches.

In a common use of the tape applicator of the present invention, the tape is to be applied to a ledge 60 which projects outwardly from the planar surface of a wall 62 or the like. A typical use of a tape applicator is in the application of a masking tape to a skirting board molding or the like. The tape 38 is fed over the applicator rollers 40 and 42 and held manually in position so that it is initially secured with respect to the ledge 60. By adjusting the position of the tape dispenser support collar as previously described, the outer edge of the tape spool is aligned with the outer ends 43 of the applicator rollers 40 and 42. The rollers 52 serve to space the edge of the spool from the planar surface of the wall 62 so that the spool is free to rotate with respect of the shaft 18 without frictional interference from the planar surface of the wall 62. The handle 64 may then be manually engaged and the applicator driven in the direction of the arrow 66 to apply the tape to the ledge 60.

It has been found that as in the case of the devices of the prior art if, through maladjustment of the facing plate 30, the end face of the tape spool projects a sufficient distance to encounter frictional resistance from the wall 62, the tape will not dispense in a straight line onto the ledge. The tape is dispensed unevenly and considerable difficulty is experienced in effectively using the applicator. This is attributed to the fact that the tape is stretched and distorted resulting from the frictional resistance to unwinding. If the operator attempts to avoid this problem by holding the applicator a sufficient distance out from the wall to prevent frictional engagement between the wall and the spool, the tendency is to over-compensate with the result that the tape is applied at a substantial angle with respect to the corner and, again, the tape will not readily dispense in a straight line.

It will be understood that whereas the present invention discloses a structure wherein means is provided for adjusting the width of the tape receiving compartment in order to accommodate various different tape widths, it would be possible to obtain the advantages of the roller spacers 52 in a structure wherein the width of the tape receiving receptacle was constant when only one width of tape is to be used. In most cases, however, it is desirable to provide the adjustable face plate in order to accommodate various widths of tapes in view of the fact that various masking tape widths are frequently in use.

With reference to FIG. 3 of the drawings, it will be seen that a pressure pad generally identified by the reference numeral 70 is mounted on the side wall 14 intermediate the rollers 40 and 42. The pressure pad 70 consists of an L-shaped plate the has a back wall 72 and a bottom wall 74. A pair of elongated slots 76 are formed in the back wall 72 and pins 78 serve to slidably mount the back wall 72 with respect to the side wall 14 of the housing. A rubberized pad 80 is located on the

underside of the bottom wall 74. Vertical movement of the pressure pad 70 is achieved by a lever mechanism, generally identified by the reference numeral 82 in FIG. 4. The lever mechanism consists of a first lever arm 84 which is pivotally connected at one end to the back wall 72 of the pressure pad and pivotally connected at the other end to one end of the lever 86. The lever 86 is pivotally mounted on the side wall 14 of the housing by means of a fulcrum pin 88. The other end of the lever arm 68 is pivotally connected to one end of a third lever arm 90. The other end of the lever arm 90 is pivotally connected to one end of a fourth lever arm 92. The lever arm 92 is pivotally mounted on the side wall 14 of the housing by means of a fulcrum pin 94. The other end of the lever arm 92 is shaped and formed to provide a thumb engaging flat 96. In use, the operator may press down on the flat 96 and thereby cause the pressure pad 80 to be forced downwardly into engagement with a tape 38 extending between the applicator rollers 40. The pressure applied by the pressure bar 80 is released by moving the free end of the lever 92 upwardly. The pressure pad 80 serves to adhesively secure a portion of the tape which has not passed under the final applicator roller 42 and is, therefore, not necessarily adequately secured to the ledge 60.

In the embodiment of the invention illustrated in FIG. 3, a cutter assembly generally identified by the reference numeral 100 is also illustrated. The body of the applicator device is provided with an additional front wall 102. A third guide roller 104 is mounted for rotation on the side wall 14 upstream of the first applicator roller 40. The tape 30 is fed over the roller 104 and is then fed to the applicator roller 40. A cutter 106 is mounted on and projects outwardly from the side wall 14 in a position to underlie the path of the tape extending from the roller 104 to the roller 40. The bracket 107 is mounted on the front wall 102 of the body and projects forwardly therefrom. A second bracket 108 is hingedly mounted with respect to the first bracket 107 by means of a hinge 110. A spring 112 serves to urge the second bracket 108 outwardly and away from the housing. The bracket 108 has an inwardly directed leg portion 114 at the end of which a cutter blade 116 is mounted. The cutter blade 116 may be in the form of a razor blade or the like. The bracket 108 is mounted to pivot about the hinge 110 from the position shown in FIG. 4 to a position wherein the cutter blade 116 cooperates with the cutter bar 106 to shear the tape located therebetween. The cutting action is effected in response to forward movement of the body of the dispenser resulting in contact between the outer bracket 108 and an end wall 120 as shown in FIG. 4. The brackets are proportioned and assembled so as to cut the tape at a length from the point of contact of the applicator roller with respect to the ledge 60 which is equal to the distance from the point of contact of the applicator roller to the abutting wall 120. This provides a sufficient length of tape to complete the masking of the full length of the ledge 60. While the cutting device of the present invention may be used to advantage in a number of different designs of tape dispenser applicators, it is used to great advantage in a structure which includes, in combination, the pressure pad assembly previously described. The cutter assembly eliminates the need to draw the tape back a substantial distance from the corner to effect the cutting of the tape and the pressure pad serves to ensure that when the tape is not

drawn back for cutting, it is adequately pressed into adhesive contact with the ledge closely adjacent the cut end of the tape.

In order to remove dust from the ledge to which the tape is to be applied, a small rotary brush 122 is mounted on a shaft 124 of a small motor 126 so as to extend across the path of the advancing applicator so as to remove dust and the like from the ledge 60 in use. The motor 126 may be driven by a suitable battery or from a D.C. outlet.

From the foregoing, it will be apparent that the present invention provides a number of substantial advantages over the devices of the prior art. In particular, the present invention provides a tape dispenser applicator wherein the position of the dispensing tape coil may be accurately determined with respect to a planar wall on which the ledge to which the tape is being applied projects. In addition, the present invention provides a simple and effective pressure pad assembly for applying a pressure to a portion of the tape closely adjacent the terminal end of the tape required to cover the length of the ledge which is being taped. The present invention also provides a simple and efficient cutter blade assembly for cutting the tape to the required length as the tape applicator approaches the abutting end wall. In addition, the device of the present invention provides a simple and effective mechanism for cleaning the ledge to which the tape is to be applied immediately in advance of the first applicator roller.

Various modifications of the present invention will be apparent to those skilled in the art without departing from the scope of the invention.

The embodiments of the invention in which an exclusive property of privilege is claimed are defined as follows:

1. A tape dispenser applicator for dispensing and applying a tape to a ledge projecting outwardly from a substantially planar surface comprising:
 - a. a body having an upper end and a lower end,
 - b. a body having means for mounting a tape spool for unwinding rotation thereon with an edge of the spool disposed in an exposed outwardly directed first plane at one side of said body,
 - c. said body having applicator roller means for guiding and unwinding a tape in an application path with the outer edge of the unwinding tape disposed in said first plane, said applicator guide roller means including at least one applicator roller located at the lower end of said body for receiving and unwinding tape and applying the tape to a ledge in use,
 - d. spacer means located a substantial distance above the lower end of said body for spacing said first plane outwardly from said planar surface whereby said tape is free to unwind without frictional interference from said planar surface, and
 - e. pressure plate means mounted on said body rearwardly of said applicator roller for movement with respect to said body towards and away from said ledge to apply a pressure to a portion of an unwinding tape downstream of and adjacent said first applicator roller.
2. A tape dispenser applicator as claimed in claim 1 wherein said applicator guide roller means includes a second applicator roller at the lower end of said body rearwardly of said first applicator roller for receiving and guiding an unwinding tape in an application plane

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extending between said rollers, said pressure pad means being mounted on said body intermediate said first and second roller means.

3. A tape dispenser applicator as claimed in claim 2 including handle means mounted on said body and pressure pad actuator lever means pivotally mounted on said body and having a manually engageable free end disposed adjacent said handle means whereby said pressure pad may be activated by hand of the operator used to engage the handle for movement of the device.

4. A tape dispenser applicator as claimed in claim 1 including cutter means projecting forwardly from said body and operable in response to engagement with a wall obstructing forward movement of the body to cut the tape being dispensed upstream of said applicator roller means a distance equal to the distance between the lower face of the applicator roller means and the obstructing wall in use.

5. A tape dispenser as claimed in claim 4 wherein said cutter assembly includes cutter roller means disposed upstream of said applicator roller means and cutter bar means disposed between said cutter roller means and said applicator roller means underlying the path of the tape extending between said cutter roller means and said applicator roller means and cutter blade means disposed outwardly of the path of the tape extending between the cutter roller means and the applicator roller means, said cutter blade means being movable towards said cutter bar means to cooperate with said cutter bar means to cut a tape extending thereacross.

6. A tape dispenser applicator as claimed in claim 5 wherein said cutter blade means is hingedly mounted on a bracket projecting forwardly of said body for movement in an arc towards said cutter bar means when the forward movement of the bracket is obstructed by an obstructing wall.

7. A tape dispenser applicator for dispensing and applying a tape to a ledge projecting outwardly from a substantially planar surface comprising:

- a. a body having an upper end and a lower end,
- b. spool support means carried by said body and projecting laterally therefrom to support a tape spool for unwinding rotation thereon about a first axis with an edge of said spool exposed at a tape dispensing plane at one side of said body,

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c. a pair of applicator rollers mounted for rotation with respect to said frame about second axes extending parallel to said first axis, said second axes being disposed below said first axis and arranged one in advance of said first axis and one rearwardly of said first axis in the direction of travel of the applicator in use, said applicator rollers having outer ends disposed in said tape dispensing plane,

d. a pair of spaced rollers mounted for rotation with respect to said frame about third axes extending perpendicularly with respect to the plane of said first and second axes, said third axes being disposed above said first axis and arranged one in advance of and one rearwardly of said first axis, said spacer rollers having outer peripheral faces tangentially disposed with respect to said tape dispensing plane,

e. said pair of applicator rollers cooperating with said pair of spacer rollers to provide four point support stability for said applicator in said dispensing plane while said two applicator rollers also provide rolling two point support in the tape application plane.

8. A tape dispenser applicator as claimed in claim 7 wherein said means for mounting said spool comprises a sleeve having a spool mounting surface thereon and means for adjusting the width of said spool mounting surface to accommodate various tape widths with their outer edges disposed in said first plane.

9. A tape dispenser applicator as claimed in claim 7 wherein said means for mounting said spool includes a sleeve having a spool receiving surface extending inwardly from the outer end thereof and a face plate projecting radially therefrom defining the inner end of said spool receiving surface, said face plate being threadably mounted with respect to said sleeve for movement towards and away from the outer end of said sleeve to variably adjust the width of said spool receiving surface.

10. A tape dispenser applicator as claimed in claim 7 wherein said means for mounting said spool comprises a sleeve having a spool receiving surface thereon and means for adjusting the width of said spool receiving surface, said sleeve being mounted for free rotation with respect to a shaft projecting from said body by means of friction reducing bearing means.

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