Dec. 4, 1956 D. G. WILLIAMSON ET AL 2,772,653

APPARATUS FOR COATING STRIP MATERIAL

Filed May 12, 1955 4 Sheets-Sheet 1

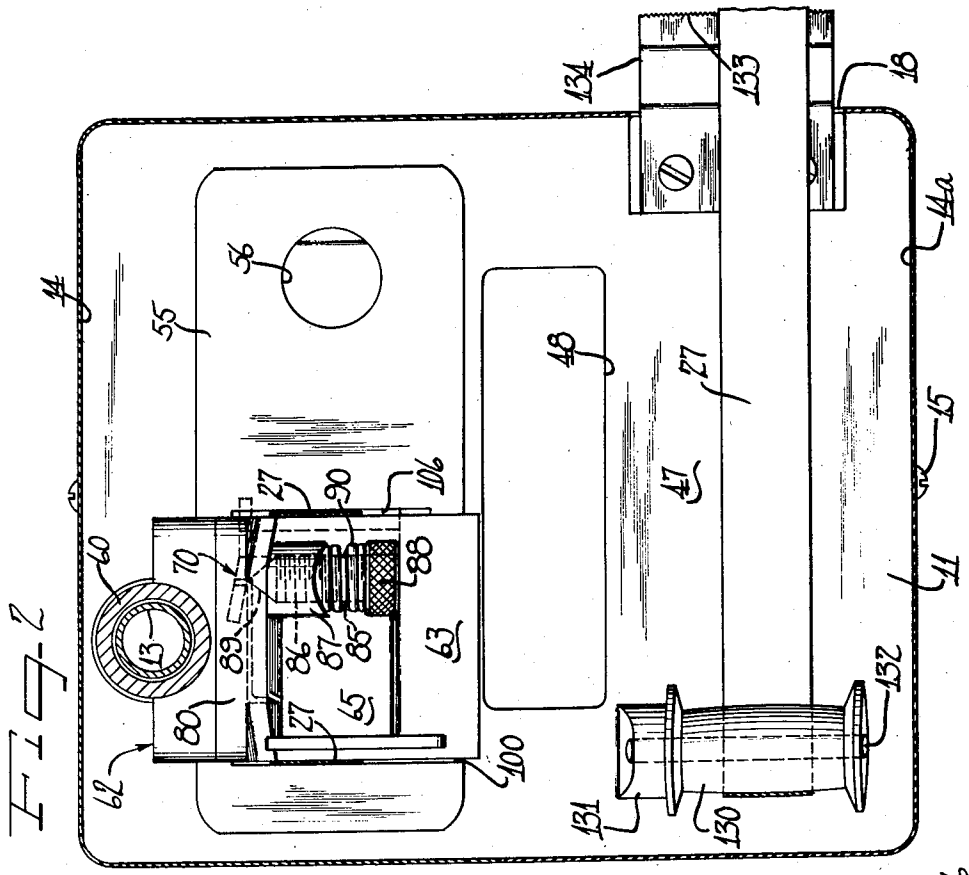


Fig. 2

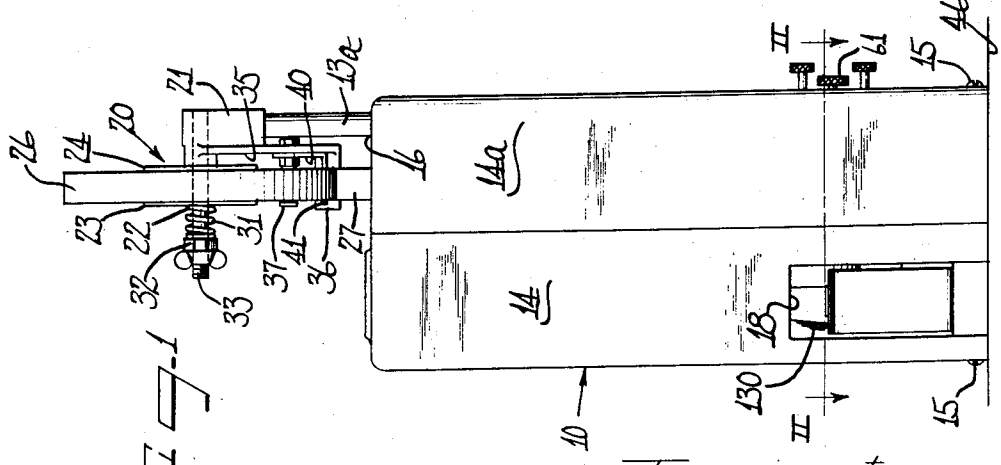


Fig. 1

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APPARATUS FOR COATING STRIP MATERIAL

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Fig. 6

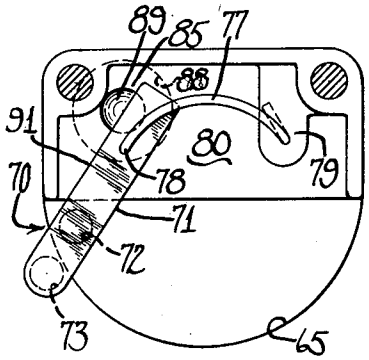


Fig. 3

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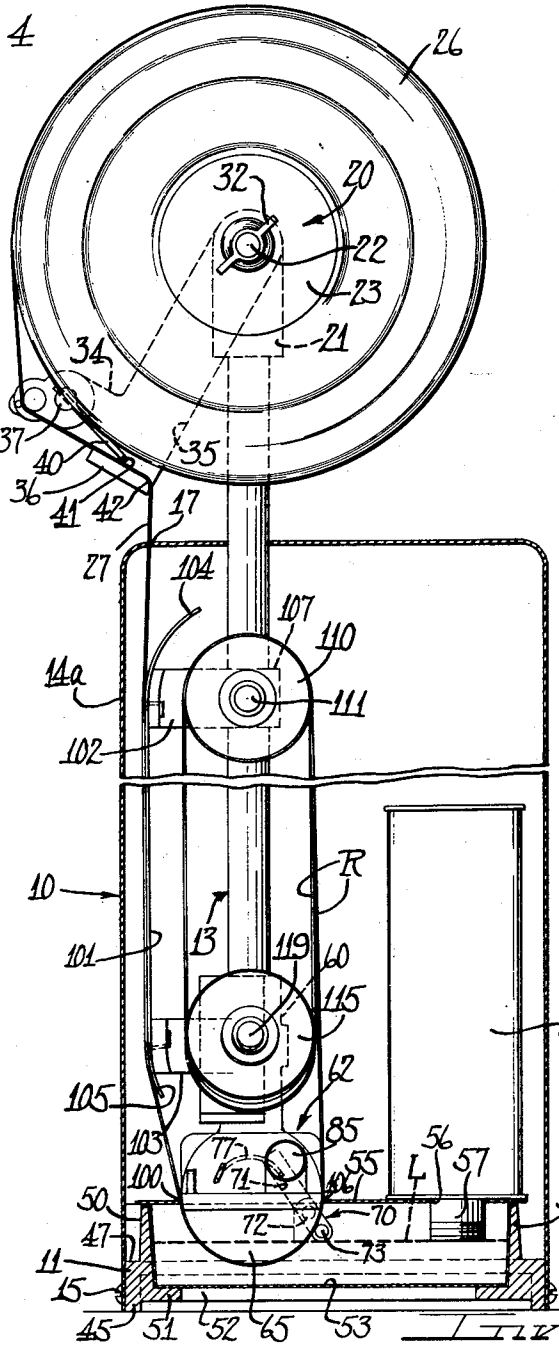
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APPARATUS FOR COATING STRIP MATERIAL

Filed May 12, 1955 4 Sheets-Sheet 3

Fig. 4



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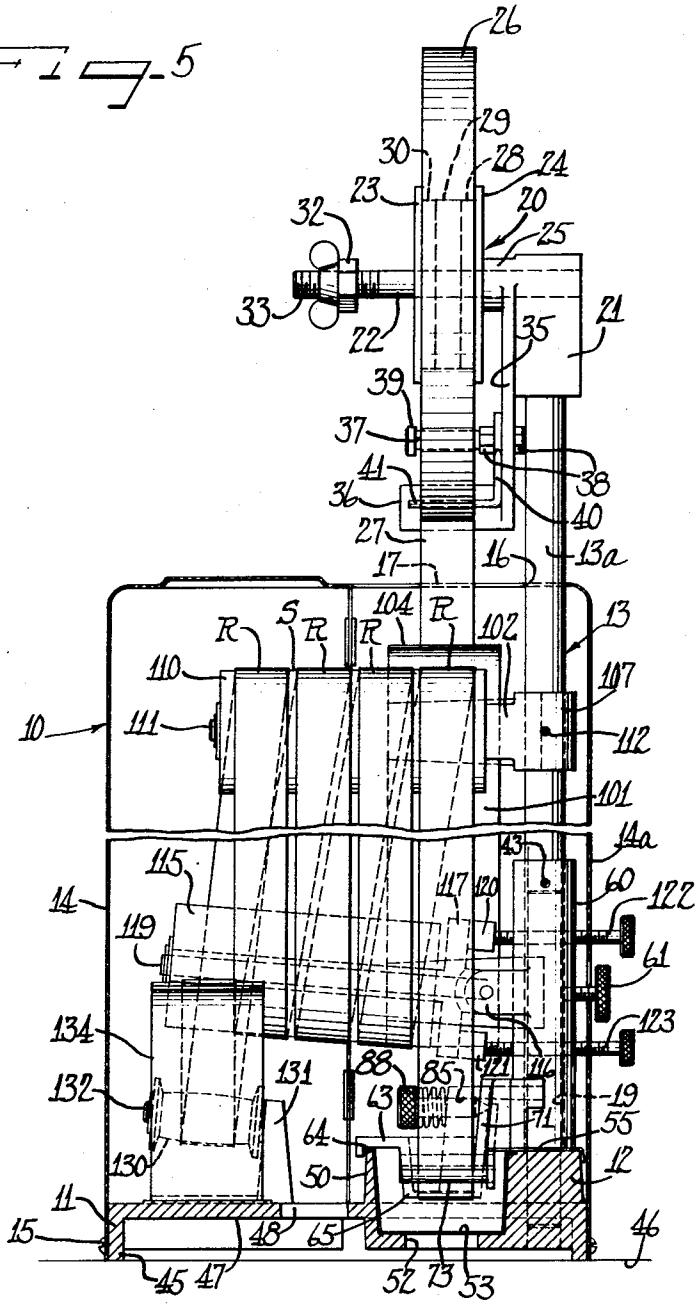
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APPARATUS FOR COATING STRIP MATERIAL

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Fig. 5



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2,772,653

APPARATUS FOR COATING STRIP MATERIAL

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Application May 12, 1955, Serial No. 507,794

10 Claims. (Cl. 118—43)

This invention relates to an applicator for and to a method of applying a liquid, or flowable adhesive composition, to flexible strip material. The applicator of our invention can be used for applying coatings of various types, including decorative, protective and adhesive coatings, or the applicator can be used for remoistening or activating an already coated flexible strip.

The applicator of our invention includes in one compact, portable device a combination of means for applying liquid to a flexible strip fed through the device and means for partially drying the coated strip by the time it is disposed for manual dispensing from the device for use on the spot. In the case of pressure sensitive adhesive tape, for which our applicator is particularly adapted, the portability of the device and ease and speed with which the adhesive tape can be made thereon are of great benefit from a cost standpoint where the adhesive tape is to be used on the job, since it can be made as needed and is ready for use as soon as it reaches the dispensing opening in the device. A great saving in cost results from obviating the necessity for winding the pressure sensitive adhesive tape in the form of rolls and wrapping and storing such rolls until ready to be used.

It is therefore an important object of this invention to provide a compact, portable applicator adapted for manual operation capable of making a coated flexible strip, such as pressure sensitive adhesive tape, as the same may be needed and in accordance with the operator's requirements, for immediate use on the job or at the spot where the applicator is located.

Other and further important objects of this invention will become apparent from the following description and appended claims, taken in conjunction with the accompanying sheets of drawings illustrating a preferred embodiment of our invention, in which:

Figure 1 is an elevational view of the device showing the delivery or dispensing end thereof.

Figure 2 is an enlarged sectional view taken substantially along the line II—II of Figure 1.

Figure 3 is a broken, enlarged view, similar to Figure 1, but with a part of the casing removed and with parts in section.

Figure 4 is an elevational view, similar to Fig. 3 but taken at right angles thereto and partly in section.

Figure 5 is a view similar to Figure 3 illustrating the operation of the device.

Figure 6 is an enlarged detail sectional view taken substantially on the line VI—VI of Figure 3.

The reference numeral **10** indicates generally an applicator embodying the principles of our invention. Said applicator comprises a base **11** having adjacent one side a boss **12** (Fig. 5) provided with a socket for receiving the lower end of a vertical two-part supporting post **13**. A sectional casing comprising sections **14** and **14***a*, formed of sheet metal or other suitable light-weight sheet material, is adapted to be removably mounted, as by screws **15** from the base **11**, which is enclosed thereby. Said two-part casing houses most of the operative mechanism

of the applicator, but the section **14***a* is provided with an opening **16**, through which the post **13** projects, and also with a slot **17** in its top wall, and the section **14** is provided with an opening **18**, in the wall that forms the delivery end of the device. Said post **13** comprises a tubular section **13***a* and an inner solid stub post **19** mounted in the boss **12**. The tubular section **13***a* is telescopically received by the stub post **19** and the two are secured together by a set-screw **43**. It will be noted that the two-part housing is divided along a vertical median line so that upon removal of the screws **15** the sections **14** and **14***a* may be lifted away to expose the operating mechanism of the device.

A roll, or spool, mounting, indicated generally by the reference numeral **20** is carried by the upper end of the post **13** above the two-part housing **14**, **14***a*. Said mounting includes a socket portion **21** fitted over the upper end of said post **13** and rigidly secured thereto, and provided with an outwardly projecting rod **22** that extends in a normally horizontal direction toward the opposite side of the device from that on which the post **13** is mounted. Said rod **22** is adapted to receive a pair of spaced hub sections **23** and **24** for free rotation about said rod as an axis. The hub section **24** is placed on said rod **22** to abut an inturned boss **25** formed integrally with said socket member **21**. A roll **26** of strip material **27** is next mounted on said hub section **24**, which is provided with an inwardly facing disc portion **28** for insertion into the central opening **29** of said roll **26**, and then the other hub section **23** is moved along the free end of the rod **22** against the other face of the roll **26**, with its central disc portion **30** inserted into said roll opening **29**. A spring **31** (Fig. 1) is confined against said hub section **23** by means of a butterfly nut **32** threaded upon the threaded end **33** of said rod **22**. When mounted as described, the hub sections **23** and **24** are rotatable about the rod **22** as an axis with a freedom of rotation that is controllable through the medium of the wing nut **32** and the coil spring **31**. By varying the amount of friction exerted by the spring **31** against the hub section **23**, more or less of a drag can be placed upon the roll **26** so as to give the desired amount of tension on the strip **27** as it is manually led through the applicator from the roll as a source of supply. The roll mounting means **20** also includes a guide arm **35**, which may be integral with the socket member **21** and which is provided at its lower end with a laterally extending guide flange **36**. A spool guide pin **37** is secured in a lateral extension **34** (Fig. 4) of said arm **35** to project in closely spaced relation across the face of the roll **26**. The pin is secured in position in the extension **34** by means of nuts **38** on either side thereof. The free end of said pin **37** is provided with an annular flange **39** serving as a guide for an edge of the flexible strip **27** as the same runs in contact with the cylindrical intermediate portion of said pin **37**. A wire **40** is suitably secured at one end to the pin **37**, as by means of the nuts **38**, and is provided at its other end with a laterally bent free end portion **41** that extends in closely spaced parallel relationship to the surface of the flange **36**. In unwinding the roll **26** in the first instance, the leading end is threaded between the flange **36** and the guiding end **41** of the wire **40**, as best shown in Figure 4. Said flange **36** has a smoothly rounded edge **42** over which the flexible strip **27** passes toward its vertical run through the opening **17** in the casing section **14***a*.

The base **11** of the device will now be more specifically described. Said base may suitably be in the form of a metal casting having down-turned flanges **45** for resting the device on a supporting surface **46**. A generally horizontal web portion **47** extends horizontally between the flanges **45** to provide a supporting base for some of the parts of the device about to be described. Said web

portion 47 may be provided with an elongated opening 48 that serves no particular purpose other than to reduce the weight of said base. The portion of the base casting previously referred to as the socket portion 12 for receiving the post 13 is provided with a generally rectangular recess 49 defined by upwardly sloping wall portions 50. The lower wall 51 of said recess 49 is provided with a rectangular opening 52 that serves a purpose presently to be described. A removable and disposable tray 53, suitably formed of metal foil and of the proper size and shape, is fitted into the recess 49 to provide a liquid impervious liner therefor. The tray 53 serves to hold a reservoir of the liquid that is to be applied to the strip material 27. A cover 55 overlies a portion of said tray 53 and is provided with a circular aperture 56 for receiving the neck or spout 57 of a can 58 in which the liquid that is to be used in the reservoir may be purchased. By turning the can 58 upside down and supporting the same on the cover 55 with the lower open spout 57 thereof extending into the interior of said tray 53, the contents of the can automatically flows into the tray or liner 53 to maintain a level of liquid therein, indicated by the reference character L, at substantially the level of the lower open end of said spout 57. This type of automatic fountain supply is well known, but its use in this connection eliminates the necessity of pouring the liquid into a special container, or the like, and that may be somewhat of a bother when the liquid is viscous and highly sticky, as in the case of a liquid pressure sensitive adhesive composition. By providing a removable and disposable liner, such as the liner 53, we also eliminate the disagreeable task of having to clean out the fountain from which the treating liquid is supplied to the applicating mechanism. Whenever it is desired to change the supply of liquid in the reservoir, or to clean it out, all that is necessary is to press upwardly with the fingers through the opening 52 against the bottom of the tray 53 and lift it out and throw it away.

The post 13 serves as a support for the operative elements of the device that will now be described. An elongated tubular sleeve 60 is slidably mounted upon the lower portion of the post 13 for adjustment into fixed position thereon by means of a knurled set screw 61. The lower end of said sleeve 60 carries as a part thereof, either integrally formed therewith or secured thereto, a sub-combination assembly 62 of several functional parts or elements. Said sub-assembly 62 includes a laterally extending plate-like portion 63 that serves as a cover, or partial cover, for that part of the recess 49 that is not covered by the closure 55. The plate-like cover portion 63 includes a down-turned flange 64 that overhangs an upstanding wall 50 of the recess 49 when the cover is in place.

Said sub-assembly 62 also includes an applicator element 65, which may suitably be an integral part of the closure 63. An intermediate portion of said closure 63 is formed as a dependent semi-cylindrical wall, and it is this wall that constitutes the applicator element 65. When the sub-assembly 62 is in its normal operative position (Figs. 4 and 5), the applicator element 65 extends into the recess 49 and a portion at least of its arcuate surface is submerged in the reservoir of liquid below the level L.

Said sub-assembly 62 also includes a doctor 70 for cooperation with the applicator element 65. Said doctor 70 comprises an arm 71, pivotally mounted as at 72 to a part of said sub-assembly mounting, and having at its lower end a laterally extending doctor bar 73, preferably cylindrical in form or at least having a rounded surface for cooperation with the arcuate surface of the applicator element 65. The pivotal mounting 72 is provided by a pivot pin that is secured at one end in the arm 70 and that extends through the end walls of the applicator element 65. The upper free end of said arm 71 is biased by means of a spring 77 so that the doctor bar 73 is continuously urged toward the arcuate surface of the actuator element 65 (Fig. 6). Said spring 77 comprises a bent wire, one end of which is secured in the upper end of the arm 71, as at 78, and the other end of which is secured, as at 79, in an end wall 80 of said applicator element 65. A threaded adjusting pin 85 is provided for determining the space or clearance between said doctor bar 73 and the arcuate surface of said actuator element 65. Said pin is threaded, as at 86 (Fig. 2) for a portion of its length for threading engagement with an internally threaded boss 87 formed integrally with said end wall 80. An enlarged, knurled head 88 is formed on the outer end of said stud 85, while the inner end thereof is formed into a smooth conical surface 89. A coiled spring 90 is mounted about the pin 85 between the knurled head 88 and boss 87 and serves to hold said pin in any position to which it is threadingly adjusted by virtue of the binding action upon the threads caused by the outward bias of said spring against said knurled head 88. The conical inner end 89 of said pin is so positioned (Fig. 6) as to be brought in contact with an adjacent edge 91 of the arm 71 when said pin 85 is threaded inwardly. Thus, by turning said pin 85 to thread the same inwardly, a camming effect between the lower conical end 89 and the edge 91 rotates the arm 71 about its pivot pin 32 against the bias of the spring 77 to hold the doctor bar 73 in the desired spaced relation to the arcuate surface of the applicator element 65. Once the adjusting pin 85 is in the proper position, it is held in that position by reason of the frictional binding of the interthreaded portions of the pin and boss 87 under the influence of the compression spring 90.

As best shown in Figure 2, the cover portion 63 of the sub-assembly 62 and the cover 55 for the remainder of the recess 49 provide an entrance slot 100 and an exit slot between their adjacent edges for the passage therethrough of a length of the flexible strip 27. A guide plate 100 (Fig. 4), carried by bracket arms 102 and 103 from the post 13, provides a generally plane vertical guiding surface over which the flexible strip 27 passes on its way downwardly toward the slot 100. The upper end of said guide plate 101 is inwardly curved, as at 104 to facilitate the guiding action, and the lower end of said plate is slightly inwardly curved, as at 105 for a similar purpose. The arm brackets 102 and 103 extend, respectively, from an upper roll support 107 adjustably mounted on the tubular post 13 and from the lower roll support, or sleeve, 60, adjustably mounted on the inner solid stub post 19. Said upper roll support 107 carries an idler roll 110 mounted upon a shaft 111 that is fixed at one end in said upper roll support 107. The roll 110 is sufficiently long to accommodate a plurality of spaced runs R (Fig. 5) of the flexible strip 27, and the axis of said roll 110 lies parallel to the axis of the supply roll 26. In other words, both the shaft 22 and the shaft 111 extend at right angles from the post 13 and lie in substantially the same vertical plane as that of the centerline of the post. The idler roller 110 is vertically adjustable along the height of the post 13, but is usually held in one position thereon by means of a set screw 112.

A lower idler roll 115 is mounted from the lower roll support 60 by means of a swivel mounting that includes a lug 116 integral with said lower roll support 60, a yoke 117, and a swivel pin 118 projecting from said yoke into a bar in the lug 116 for receiving the same. Said yoke 117 has a laterally projecting shaft 119 on which the roller 115 is mounted for free rotation. Said yoke 117 has formed thereon on the side facing the post 13 a pair of spaced, recessed bosses 120 and 121 that are internally threaded for receiving threaded adjusting screws 122 and 123. Said adjusting screws 122 and 123 are threaded through portions of said lower roll support 60 to abut their free inner ends against said bosses 120 and 121. By turning the adjustment screws 122 and 123 in the desired direction and to the necessary extent, the yoke 117 is caused to swivel about the pin 118 until the shaft 119

of said lower idler roller **115** assumes the desired angular relationship with respect to the shaft of the upper roller **110** to cause the runs R of tape automatically to space themselves in passing between said upper and lower rollers **110** and **115**. The amount of such spacing, as indicated by the reference character S (Fig. 5) can be controlled by adjusting this angular relationship between the axes of the upper and lower rollers.

As the flexible strip **27** passes in its final run R from the upper roller **110**, it is led under a spool **130** mounted at one end from an upright **131** (Figs. 2, 3 and 5) with the axis of shaft **132** in a slightly angularly cocked position. The spool **130** is mounted at such a height that as the flexible strip **27** passes under it, the strip can be carried in an upwardly sloping direction toward the opening **18** to pass over a serrated edge **133** of a cutter stand **134**. The leading edge of the strip **27** is drawn downwardly and twisted slightly to cause the strip to bear against the serrated edge **133** under sufficient tension to cause the edge to sever the strip. In this way, portions of the strip **27** are severed into the desired lengths for use on the spot, thereby eliminating the usual step of winding the strip into rolls for shipment and storage until they are to be used.

Operation of the applicator

In starting up the device for the first time, the lower roll support **60** is elevated, as shown in Figure 3, to raise the applicator element **65** clear of the recess **49** in the base. A roll of strip material, such as the roll **26**, is mounted in place upon the hub sections **23** and **24** and the desired drag placed thereon by adjustment of the wing nut **32**. The leading edge of the strip **27** is then threaded between the offset end **41** of the spring wire guide **40** and the laterally extending flange **36**. Still grasping the leading edge of the strip **27**, the strip is led downwardly along the guide plate **101**, under the applicator element **65** and between the arcuate surface thereof and doctor bar **73**. Since the doctor bar is urged by the spring **77** toward the applicator element **65**, the strip **27** will be held with more or less friction on its opposite surfaces depending upon the positioning of the adjustment pin **85**. The leading end of the strip is next passed in a plurality of runs R around the upper and lower rollers **110** and **115**, but preferably only one or two runs are formed and the end loosely held during the subsequent lowering of the lower roll support **60**. The can **58** can be mounted in filling position (Fig. 4) to fill the removable tray **53** to the level L, either before or after lowering the lower roll support **60** to its operative position.

As the sub-assembly **62** carried by the lower roll support **60** is lowered, the strip **27** automatically hugs the arcuate surface of the applicator element **65** so that even if the reservoir is filled with liquid to the level L there is no tendency of the liquid to get in back of the strip **27** to come in contact with the back surface thereof. After completing the lowering operation and securing the lower roll support **60** in its lowered position, the runs R of the strip are completed and the leading end of the strip is drawn under the spool **130** and out through the opening **18** until a coated surface of the strip appears at the opening, whereupon the coated surface is temporarily adhered to the upper surface of the cutter stand **134** with a free edge projecting therefrom for grasping purposes.

If the coating is not of the desired thickness, the doctor bar adjusting screw **85** is turned one way or the other until the correct adjustment is obtained. As the strip is withdrawn through the dispensing opening **18**, the runs R automatically assume the desired spaced relation if the angle of the lower roller **115** is correctly adjusted, and, if not, this is accomplished by turning the adjusting screws **122** and **123** until the proper angular relationship is obtained. Thereafter, the strip in moving through the device around the upper and lower rollers **110** and **115** automatically assumes the proper spacing S betweeen successive runs R, R. Since it is only the uncoated side of the strip that comes in contact with the rollers **110** and **115**, there is no tendency of the strip to stick thereto, yet there is sufficient tension on the strip from its adhered position near its free end upon the upper face of the cutter stand **134** back along its entire length to the roll **26**.

By virtue of the rather considerable length of strip **27** that is exposed while traveling in the offset runs R, a considerable amount of evaporation of any volatile solvent present in the coating liquid takes place. This is particularly important where a rubber, or a rubber-resin base pressure sensitive adhesive composition is used, as will be obvious to anyone skilled in that art. Even though some volatile solvent remains in the coating applied to the strip **27**, that does not interfere with its immediate use as fast as the strip can be drawn through the applicator by hand. The setting of the doctor bar **73** is such that any excess of liquid from the reservoir that is carried upwardly on the outer face of the strip **27** is prevented from continuing past the doctor bar but is caused to buildup against its lower rounded surface and to fall back therefrom into the reservoir. A very important feature of our invention is the provision of relatively opposed, stationary, curved surfaces on the applicator and doctor, since this arrangement insures a better operation and a more satisfactory gauging of the thickness of the liquid, or the amount thereof, spread over the surface of the strip to be coated. The doctor bar **73** serves to spread the liquid coating evenly over the exposed surface of the strip.

The applicator of the instant invention is capable of operating with liquids of various types and characteristics. A few examples of the various categories into which the liquids, or at least the flowable treating materials may fall are: coatings of a decorative, protective, or adhesive character; and surface activating or deactivating applications, which may include the remoistening or solvent activating of films or coatings already present on the flexible strip, or for deactivating other types of surfaces. An ordinary gummed strip may, for instance, be drawn through our applicator for moistening with water, which would then be the liquid L within the reservoir **11**.

Since our applicator may find its greatest use in connection with the application of adhesive coatings to flexible strip material, we shall briefly mention some of the various types of liquid adhesives which may be used. These would include water soluble adhesives of the dextrin, starchy, casein, animal glue or soluble gum or resin type; colloidal solutions of animal glue, starch, or the like; colloidal dispersions and emulsions, with either water or an organic solvent as the continuous liquid phase; resin solutions; hot melts or thermoplastic resins, waxes and elastomers, or mixtures thereof; and heat activating compositions, which may be combinations of resins having latent adhesive properties that are developed by the application of heat.

Some common adhesive compositions of the water soluble type are represented by the following:

EXAMPLE I

Materials:	Percent by weight
Dextrin	30.0
Borax	5.0
Sodium hydroxide	0.6
Preservative	0.2
Water	64.2

EXAMPLE II

Casein	16.0
26° Bé. ammonia	10.0
Preservative	0.5
Water	73.5

EXAMPLE III

Gum arabic	40.0
Preservative	0.2
Water	59.8

EXAMPLE IV

Animal glue	40.0
Liquefier, such as calcium chloride	10.0
Preservative	0.5
Water	49.5

EXAMPLE V

Rubber	15.0
Plasticizer	15.0
Naphtha	70.0

Among the self-supporting flexible materials that may be used in strip, ribbon, tape, or other more or less continuous web form may be mentioned paper, cloth, plastic, metal, and wood veneer. The metal, of course, would be in the form of thin sheets, foil, or the like, and would include steel, aluminum and lead.

One of the advantages of our applicator and dispenser is that of being conveniently adapted for use with intermittently run equipment, such as for example in box making equipment, where the flexible strip material may be treated, coated or the like only as and when needed. It is not necessary, therefore, to use ready-made tape that must be moistened before being applied, or expensive ready-made pressure sensitive tape. The latter is relatively more expensive because of all of the added steps of spooling and packaging, and in some instances supplying special release surfaces to facilitate unwinding without de-lamination.

It will be apparent to those skilled in the art that we have now provided a new and improved applicator for applying liquid to a flexible strip material. It will also be appreciated that the applicator of this invention can be used for applying coatings of various types, including decorative, protective, and adhesive coatings, as well as for the application of activating liquids for remoistening or solvent reactivating an already coated flexible strip.

This application is a continuation-in-part of application Serial No. 355,094, filed May 14, 1953.

It will, of course, be understood that various details of the invention may be varied through a wide range without departing from the principles of this invention, and it is, therefore, not the purpose to limit the patent granted herein otherwise than necessitated by the scope of the appended claims.

We claim as our invention:

1. In a device for applying a liquid to one surface only of a flexible strip, a casing forming a reservoir for said liquid and a unitary removable sub-assembly providing with said casing an entrance and exit for a flexible strip into and out of said casing, said sub-assembly comprising a member having an arcuate surface operatively immersed in said reservoir, a doctor mounted on said member and having a non-rotating convex portion in opposed closely spaced relation to said arcuate surfaced member at a point on the exit side thereof and oppositely acting resilent and adjustable stop means also mounted on said member for holding said convex doctor portion in gauged relation to said member, whereby a flexible strip moved over the said arcuate surface from said entrance to said exit and passing between said opposed convex portion and said arcuate surface comes into contact with said liquid on one side of said strip only.

2. In a device for applying a liquid to one surface only of a flexible strip, a casing forming a reservoir for said liquid and a unitary removable sub-assembly providing with said casing an entrance and exit for a flexible strip into and out of said casing, said sub-assembly comprising a member having a non-rotating arcuate surface operatively immersed in said reservoir, a rigid bar pivotally mounted on said member for movement into parallel closely spaced relation to said arcuate surfaced member at a point on the exit side thereof above the level of said liquid in said reservoir and having a convex doctor portion and means supported by said member for holding

said convex doctor portion in gauged relation to said member to spread said liquid over and limit the amount of said liquid coated onto said strip, whereby a flexible strip moved over the said arcuate surface from said entrance to said exit and passing between said opposed convex portion and said arcuate surface comes into contact with said liquid on one side of said strip only.

3. In a device for applying a liquid to one surface only of a flexible strip, a casing forming a reservoir for said liquid and a unitary removable sub-assembly including a partial closure for said reservoir providing with said casing an entrance and exit for a flexible strip into and out of said casing, said sub-assembly comprising a member forming a part of said partial closure and having an arcuate surface operatively and stationarily immersed in said reservoir, a doctor mounted on said member and having a convex portion in opposed closely spaced relation to said arcuate surfaced member at a point on the exit side thereof above the level of said liquid in said reservoir and means also mounted on said member for adjusting and holding said convex doctor portion in gauged relation to said member to spread said liquid over and limit the amount of said liquid coated onto said strip, whereby a flexible strip moved over the said arcuate surface from said entrance to said exit and passing between said opposed convex portion and said arcuate surface comes into contact with said liquid on one side of said strip only.

4. In a device for applying a liquid to one surface only of a flexible strip, a casing forming a reservoir for said liquid and a unitary removable sub-assembly including a partial closure for said reservoir providing with said casing an entrance and exit for a flexible strip into and out of said casing, said sub-assembly comprising a member forming a part of said partial closure and having an arcuate surface operatively and stationarily immersed in said reservoir, a doctor mounted on said member and having a convex portion in opposed closely spaced relation to said arcuate surfaced member at a point on the exit side thereof above the level of said liquid in said reservoir and means also mounted on said member for adjusting and holding said convex doctor portion in gauged relation to said member to spread said liquid over and limit the amount of said liquid coated onto said strip, whereby a flexible strip moved over the said arcuate surface from said entrance to said exit and passing between said opposed convex portion and said arcuate surface comes into contact with said liquid on one side of said strip only, and a post extending upwardly from said casing for mounting said sub-assembly thereon for movement as a unit therealong from an operative to an inoperative position to facilitate the threading of said strip around said arcuate surface and between said doctor and said arcuate surface.

5. In a device for applying a liquid to a flexible strip, a casing forming a reservoir for said liquid, a sub-assembly for cooperation with said casing and relatively movable with respect thereto, said sub-assembly comprising a supporting member, an arcuate member dependent therefrom in stationarily fixed relation thereto for partial submergence into the liquid in said reservoir, a doctor carried by said supporting member and having a convex portion in opposed closely spaced relation to a portion of said arcuate member above said liquid, and means also carried by said supporting member for adjustably maintaining the spacing between the relative portions of said arcuate and said convex portions to spread said liquid and gauge the quantity of a coating thereof applied to a strip drawn against and over said arcuate member through said reservoir and past said doctor out of said reservoir.

6. A device for applying a liquid to one side only of a flexible strip, comprising a portable stand including a casing providing a reservoir for said liquid and a post extending vertically thereabove, a sub-assembly adjustably mounted from said post and including a cover for said

reservoir providing slots for the entrance into and the exit from said reservoir of said strip, an arcuate member fixedly dependent from said cover for immersion in said reservoir, a doctor dependent from said cover and having a convex surface extending transversely of and in closely spaced relation to said arcuate member above the level of liquid in said reservoir, means for adjustably gauging and fixing said spaced relation, means for rotatably supporting a roll of said strip material mounted from said post, guide rolls also mounted from said post for the guiding of runs of said strip after passing through said exit slot to facilitate drying of the coating thereon and means in the path of said strip after leaving said guiding rolls for severing said strip during the dispensing thereof, whereby said strip may be unwound from said roll, inserted through said entrance slot, passed around and in contact with said arcuate member past said doctor, led out of said exit slot and trained around said guide rolls and severed by contact with said severing means, thus sequentially coating said strip on one side only, drying and severing the same.

7. A device for applying a liquid pressure sensitive adhesive composition to one side only of a flexible strip, comprising a portable stand including a casing providing a reservoir for said liquid, a removable disposable liner for said casing, and a post extending vertically thereabove, a sub-assembly including a cover for said reservoir adjustably mounted from said post and providing slots for the entrance into and the exit from said reservoir of said strip, an arcuate member fixedly dependent from said cover for immersion in said reservoir, a doctor dependent from said cover and having a convex surface extending transversely of and in closely spaced relation to said arcuate member above the level of liquid in said reservoir, means for adjustably gauging and fixing said spaced relation, means for rotatably supporting a roll of said strip material mounted from said post, guide rolls also mounted from said post for the guiding of runs of said strip after passing through said exit slot to facilitate drying of the coating thereon and means in the path of said strip after leaving said guiding rolls for severing said strip during the dispensing thereof, whereby said strip may be unwound from said roll, inserted through said entrance slot, passed around and in contact with said arcuate member past said doctor, led out of said exit slot and trained around said guide rolls and severed by contact with said severing means, thus sequentially coating said strip on one side only, drying and severing the same.

8. A device for applying a liquid pressure sensitive adhesive composition to one side only of a strip of flexible material, comprising a portable stand having a base providing an opening therethrough, a removable disposable lining for said opening providing a reservoir for said liquid, a sub-assembly adjustably mounted on said stand including a cover for said reservoir providing entrance into and exit from said reservoir for said strip, a member stationary relative to and carried by said cover having an arcuate surface for immersion in said reservoir, a doctor carried by said cover having a curved surface extending transversely of and in closely spaced relation to said arcuate surface, idler rolls mounted from said stand for training runs of said strip leaving said exit and severing means in the path of said strip after leaving said idler rolls, whereby a strip may be manually pulled through said device for sequential coating, drying and severing.

9. A device for applying a liquid to one side only of a flexible strip, comprising a portable stand including a casing providing a reservoir for said liquid and a post extending vertically thereabove, a sub-assembly adjustably mounted from said post and including a cover for said reservoir providing slots for the entrance into and the exit from said reservoir of said strip, an arcuate member fixedly dependent from said cover for immersion in said reservoir, a doctor dependent from said cover and having a convex surface extending transversely of and in closely spaced relation to said arcuate member above the level of liquid in said reservoir, means for adjustably gauging and fixing said spaced relation, means for rotatably supporting a roll of said strip material mounted from said post, guide rolls also mounted from said post and arranged in cooperating relationship for the guiding of runs of said strip about said guide rolls after passing through said exit slot to facilitate drying of the coating thereon, means for adjusting the angular relationship of the axes of said guide rolls for training said runs in parallel spaced relation and means in the path of said strip after leaving said guide rolls for severing said strip during the dispensing thereof, whereby said strip may be unwound from said supported roll, inserted through said entrance slot, passed around and in contact with said arcuate member past said doctor, led out of said exit slot and trained around said guide rolls and severed by contact with said severing means, thus sequentially coating said strip on one side only, drying and severing the same.

10. A device for applying a liquid pressure sensitive adhesive composition to one side only of a flexible strip, comprising a portable stand including a casing providing a reservoir for said liquid, a removable disposable liner for said reservoir, a post extending vertically thereabove, a sub-assembly adjustably mounted from said post and including a cover for said reservoir providing slots for the entrance into and the exit from said reservoir of said strip, an arcuate member fixedly dependent from said cover for immersion in said reservoir, a doctor dependent from said cover and having a convex surface extending transversely of and in closely spaced relation to said arcuate member above the level of liquid in said reservoir, means for adjustably gauging and fixing said spaced relation, means for rotatably supporting a roll of said strip material moutned from said post, guide rolls also mounted from said post and arranged in cooperating relationship for the guiding of runs of said strip about said guide rolls after passing through said exit slot to facilitate drying of the coating thereon, means for adjusting the angular relationship of the axes of said guide rolls for training said runs in parallel spaced relation and means in the path of said strip after leaving said guide rolls for severing said strip during the dispensing thereof, whereby said strip may be unwound from said rotatably supported roll, inserted through said entrance slot, passed around and in contact with said arcuate member past said doctor, led out of said exit slot and trained around said guide rolls and severed by contact with said severing means, thus sequentially coating said strip on one side only, drying and severing the same.

References Cited in the file of this patent

UNITED STATES PATENTS

704,434	Chevalier et al.	July 8, 1902
1,121,299	Sharrock	Dec. 15, 1914
2,053,730	Minkow	Sept. 8, 1936
2,226,155	Bjornson	Dec. 24, 1940
2,631,562	Gerard	Mar. 17, 1953

FOREIGN PATENTS

35,524	Denmark	Jan. 11, 1926