Dec. 13, 1938. D. DANEKE 2,140,470

ADHESIVE APPLICATOR

Filed March 2, 1936

Fig. 1.

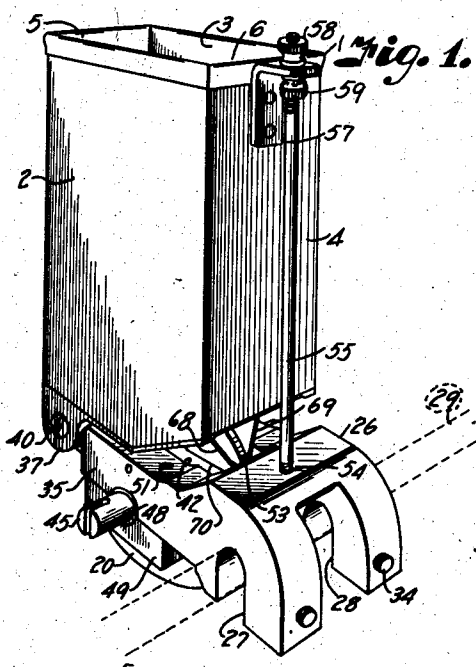


Fig. 2.

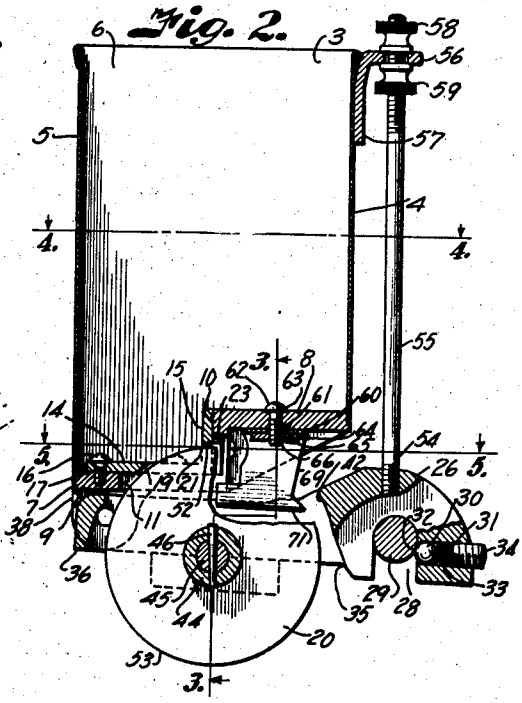


Fig. 3.

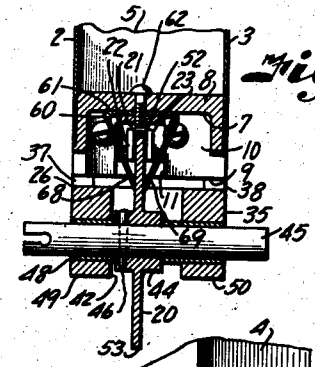


Fig. 4.

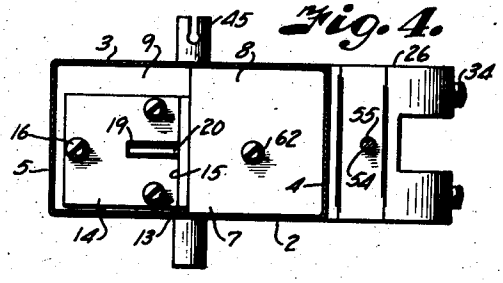


Fig. 6.

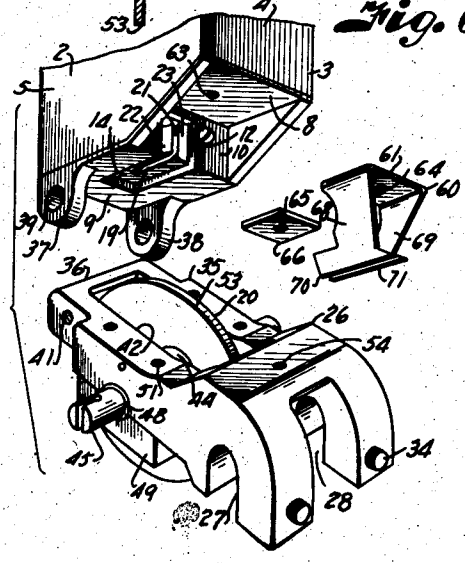


Fig. 5.

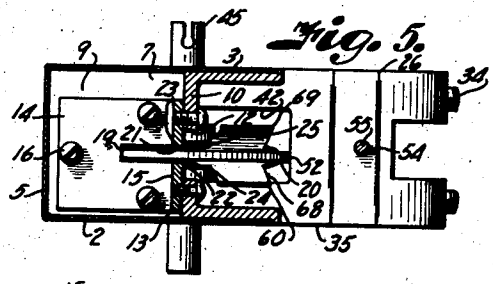
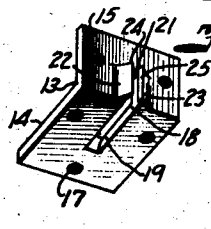


Fig. 7.



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ADHESIVE APPLICATOR

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Application March 2, 1936, Serial No. 66,536

7 Claims. (Cl. 91—12)

This invention relates to adhesive applicators, particularly of the type illustrated and described in United States Letters Patent No. 1,876,062, issued September 6, 1932, to William H. Kushera and Fred M. Brackett, and which are used for applying stripes of glue in stripping, tipping or gluing of signatures, sheet paper, tablets and the like.

Applicators of this character usually consist of a receptacle for containing a supply of adhesive and a disk having its periphery movable through a slot at the bottom of a container to pick up the glue and transfer the same to the work, consequently glue is picked up by the sides of the disk and is collected on the bottom of the receptacle from where it drops in gobs upon the work or the glue hardens and interferes with rotation of the disk. The glue also builds up on the side faces of the disk adjacent the periphery to interfere with smooth, even application of the glue to the work.

It is, therefore, the principal object of the present invention to provide a glue applicator of this character wherein the side faces of the disk are kept clean and free of the adhesive material.

It is also an important object of the present invention to accurately regulate thickness of the glue applied to the periphery of the disk.

In accomplishing these and other objects of the invention, I have provided improved details of structure, the preferred form of which is illustrated in the accompanying drawing, wherein:

Fig. 1 is a perspective view of a glue applicator embodying the features of the present invention.

Fig. 2 is a vertical longitudinal section through the applicator.

Fig. 3 is a detail section through the lower end of the applicator on the line 3—3 of Fig. 2.

Fig. 4 is a horizontal section through the applicator on the line 4—4 of Fig. 2.

Fig. 5 is a horizontal section on the line 5—5 of Fig. 2.

Fig. 6 is a detail perspective view of parts of the applicator shown in disassembled spaced relation to better illustrate their construction.

Fig. 7 is a perspective view of the plate for controlling withdrawal of adhesive from the receptacle by the disk.

Referring more in detail to the drawing:

1 designates a receptacle having side walls 2—3 and end walls 4—5, an open top 6, and a closed bottom 7. The bottom 7 is constructed of heavier material than the sides and includes upper and lower offset portions 8 and 9 connected by an intermediate connecting portion 10 located substantially midway between the end walls 4 and 5.

The offset portion 9 and the connecting portion 10 are provided with intersecting openings 11 and 12 that are normally covered by a control plate 13 that is mounted within the container and has a plate portion 14 fixed to the upper face of the lower offset 9 and a vertical plate portion 15 abutting against the inner side face of the vertical wall portion 10, the plate 13 being secured by fastening devices 16 extending through suitable openings 17 therein and in the adjacent portions of the bottom, as illustrated in Figs. 2 and 5.

Formed in the control plate 13 is a slot 18 having one end 19 formed in the portion 14 of the plate and of slightly greater width than the thickness of an applicator disk 20, later described. The opposite end 21 of the slot 18 extends upwardly into the plate portion 15, and is provided on its opposite sides with wings or primary scrapers 22 and 23 converging outwardly from the outer face of the plate and terminating in knife-like edges 24 and 25 for scrapingly engaging the side faces of the disk 20. The scraping edges of the wings, being brought to points, will not collect the glue that might leak thereby, for the reason that the glue will be transferred to the disk 20 before it can form in a large drop or lump, the theory being that a smaller amount will cling to a thin, pointed edge than will cling to a flat, blunt, or square edge.

The receptacle 1 is carried on a bracket 26 having downwardly opening notches 27 and 28 for engaging a suitable support, such as a rod 29, forming a part of the machine with which the applicator is associated. The bracket is latchingly retained on the rod by means of ball latches 30 that are seated in bores 31 extending through the arm and terminating slightly below the horizontal diameter of the rod in reduced openings 32 wherethrough portions of the balls project to frictionally engage the rod under latching influence of coil springs 33 having their bends bearing between the balls and plugs 34 that are threaded into the opposite ends of the bores, as illustrated in Fig. 2.

The bracket also includes an arm portion 35 extending under the bottom of the receptacle and terminating in a lug 36 that extends between spaced ears 37 and 38 depending from the lower offset portion of the bottom 7, as best shown in Fig. 6. The ears 37 and 38 are provided with openings 39 through which trunnion screws 40 are projected into threaded sockets 41 provided in the ends of the lug 36 to thereby pivotally

mount the receptacle for rocking movement upon the bracket.

Formed in the arm portion of the bracket, and in aligning registry with the slot 18, is an opening 42 of somewhat larger dimensions than the opening 11 to accommodate the applicator disk therein. The applicator includes a plate-like disk 20 provided with a hub 44 fixed to an axle shaft 45 by means of a tapered pin or the like 46 extending through the hub and shaft as shown in Fig. 3. The shaft 45 has its ends rotatably mounted in bushings 47 and 48 retained in the arm of the bracket by clamping blocks 49 and 50, the clamping blocks 49 and 50 being secured to the under face of the bracket by suitable fastening devices, such as screws, extending through the ends of the blocks and into threaded openings 51 in the arm, as best shown in Fig. 6.

The bushings 47 and 48 are of sufficient length to retain the disk centered within the slot 18 and with a portion of the periphery thereof projecting within the receptacle as shown in Fig. 2. The upper edge 52 of the slot 18 is adjusted to and from the periphery 53 of the disk incidental to pivoting of the receptacle on the trunnion screws 40, as now to be described. Mounted within a threaded opening 54 of the bracket, adjacent the end wall 4 of the receptacle, is a rod 55 having its upper end extending through an opening 56 that is formed in an ear 57 projecting from the upper edge of the receptacle, as shown in Fig. 2, the opening 56 being of sufficient diameter to permit slight tilting movement of the receptacle on its pivotal mounting.

The portion of the rod extending through the ear 57 is threaded to accommodate adjusting nuts 58 and 59 that are adapted to engage the respective sides of the ear 57, thereby cooperating with the pivotal mounting to support the receptacle in rigid but adjustable relation with its supporting bracket. It is obvious that by manipulating the nuts 58 and 59 the receptacle may be tilted on the bracket to regulate the spacing between the edge 52 and the periphery 53 of the disk, to thereby regulate the thickness of the glue that is picked up on the periphery of the disk and carried into transfer relation with the work which is moved relatively to the applicator.

As clearly illustrated in Figs. 2 and 3, the scraper wings 22 and 23 engage the side faces that move through the receptacle so as to prevent withdrawal of glue picked up by the side faces of the disk. It is, however, impossible to completely eliminate some withdrawal of the glue on the sides of the disk, and I provide the disk with a spreading member 60 to spread the escaped glue evenly in a thin layer on the sides of the applicator so that the glue thereon will be thin enough to pass the clearances at the sides of the slot 18 and be carried back into the receptacle, thereby permitting the applicator disk to rotate without collecting glue on the bottom of the receptacle and dropping onto the work being passed under the applicator. The supplementary scraper 60 is preferably formed of flat, spring material and has an attaching portion 61 that is fixed to the bottom of the upper offset portion 8 by means of a screw 62 extending through aligning openings 63 and 64, and into a threaded opening 65 of a retaining plate 66 which clampingly retains the attaching portion 61 against the offset portion of the bottom.

Converging downwardly from the ends of the attaching portion are arms 68 and 69, terminating in spreader shoes 70 and 71 adapted to engage the side faces of the disk at a point subsequent to the scraper wings 22 and 23. The arms 68 and 69 are of sufficient length so that the shoe portions thereof contact the side faces of the disk at a point below the lower offset 9 of the bottom 7, and the shoes are of sufficient length to extend from substantially the vertical diameter of the disk to the periphery thereof so that the spreading portions cover substantially a greater area than the portion of the disk moving through the receptacle.

The spreading portions are also inclined downwardly toward the periphery of the disk so that rotation of the disk causes the glue to be spread in a thin film toward the periphery where the surplus thereof is united with the glue carried on the periphery of the disk. Glue on the side face of the disk is thus kept thin enough so that it will pass through the clearances as the disk reenters the receptacle. Consequently there is no glue to collect and harden on the bottom of the control plate. Also since the spreading shoes are of sufficient length to extend beyond the areas of the disk which travel through the receptacle, none of the glue that collects thereon can flow onto the central dry portions of the disk.

In using an applicator constructed and assembled as described, the bracket arm is latched to the rod 29 so that the disk bears upon the work that is moved thereunder, and whereby the friction of the disk with the work causes rotation of the disk to carry the glue from the container and effect its transfer in a thin, even stripe upon the work. The thickness of the glue is adjusted by manipulating the nuts 58 and 59 to vary the spacing between the edge 52 and the periphery of the disk.

Upon rotation of the disk the periphery thereof pulls the glue out of the container, however, the wings 22 and 23, bearing against the sides of the disk, prevent pulling of the glue by the side faces of the disk, but should any of the glue pass the wings, it is caught by the shoes of the spreading device and the surplus is guided to the periphery of the disk, where it collects with that carried thereon, for application to the work pieces which are being fed through the machine.

From the foregoing it is apparent that I have provided an applicator wherein the side faces of the disk are kept free of adhesive which ordinarily tends to interfere with rotation of the disk. Since the sides of the disk are kept free of the glue, the glue is applied in a clean, even stripe, exactly conforming to the width of the disk.

What I claim and desire to secure by Letters Patent is:

1. An applicator of the character described including a receptacle having a bottom provided with a slotted opening, a vertical portion connected with the bottom having a slotted opening connected with the opening in the bottom, an applicator disk having side faces and an intermediate peripheral face portion, means rotatably supporting the applicator disk with the upper portion thereof projecting through said slotted opening into the receptacle with the peripheral face portion in spaced relation with the end of the slotted opening in the direction of rotation of said disk to provide an outlet through which liquid is drawn from the receptacle incidental to rotation of the applicator disk, primary scrapers supported interiorly of the receptacle and engaging said side faces on the respective sides of said outlet for limiting withdrawal of liquid to said

peripheral face portion of the applicator disk, and spreaders contacting said side faces of the applicator disk and supported directly below said outlet for spreading out any liquid passing the primary scrapers to prevent said liquid from collecting on said side faces of the applicator disk, so that the side faces of the disk are free of said liquid when the peripheral face portion of the applicator disk contacts a work-piece and the liquid is applied in a smooth ribbon corresponding to the width of the applicator disk.

2. An applicator of the character described including a receptacle having a bottom provided with a slotted opening and a vertical wall connected with the bottom and having a slotted opening connected with the opening in the bottom, an applicator disk substantially corresponding in width to said slotted openings and having side faces and an intermediate peripheral face portion, means rotatably supporting the applicator disk with the upper portion thereof projecting through said slotted openings into the receptacle with the peripheral face portion in spaced relation with the end of the slotted opening in the direction of rotation of said disk to provide an outlet through which liquid is drawn from the receptacle incidental to rotation of the disk, and spreaders contacting said side faces of the applicator disk and supported directly below said outlet for spreading any liquid passing from the slotted opening on the respective sides of the disk to prevent said liquid from collecting at the periphery of the applicator disk, whereby the peripheral face portion of the applicator disk may contact a work piece to apply the liquid in a smooth ribbon substantially corresponding in width to the peripheral face portion of the applicator disk.

3. In an applicator of the character described, a receptacle provided with a bottom having substantially horizontally disposed stepped portions connected by a vertical wall, said wall and the lowermost portion being provided with connected slots, an applicator disk, and means rotatably mounting the disk for extension of a portion of the disk through said slots and within the receptacle to withdraw material contained in the receptacle.

4. In an applicator of the character described, a receptacle provided with a bottom having substantially horizontally disposed stepped portions connected by a vertical wall, said wall and the lowermost portion being provided with connected slots, an applicator disk, means rotatably mounting the disk for extension of a portion of the disk through said slots and within the receptacle to withdraw material contained in the receptacle, and means engaged with the receptacle about said slots for controlling the quantity of material withdrawn from the receptacle.

5. In an applicator of the character described, a receptacle provided with a bottom having substantially horizontally disposed stepped portions connected by a vertical wall, said wall and the lowermost portion being provided with connected slots, an applicator disk, means rotatably mounting the disk for extension of a portion of the disk through said slots and within the receptacle to withdraw material contained in the receptacle, and means engaged with the faces of the disk adjacent said slots for uniformly spreading a film of material on said disk faces.

6. In an applicator of the character described, a receptacle provided with a bottom having substantially horizontally disposed stepped portions connected by a vertical wall, said wall and the lowermost portion being provided with connected slots, an applicator disk, means rotatably mounting the disk for extension of a portion of the disk through said slots and within the receptacle to withdraw material contained in the receptacle, means engaged with the receptacle about said slots for controlling the quantity of material withdrawn from the receptacle, and means engaged with the faces of the disk adjacent said slots for uniformly spreading a film of material on said disk faces.

7. In an applicator of the character described, a receptacle provided with a bottom having substantially horizontally disposed stepped portions connected by a vertical wall, said wall and the lowermost portion being provided with connected slots, an applicator disk, means rotatably mounting the disk for extension of a portion of the disk through said slots and within the receptacle to withdraw material contained in the receptacle, and means engaged with the faces of the disk adjacent said slots for uniformly spreading a film of material on said disk faces including a plate mounted on the receptacle and arms on the plate having edges resiliently engaged with the side faces of the disk, said edges extending approximately from the center of the disk to the periphery thereof.

DIETRICH DANEKE.