March 14, 1944. E. G. STAUDE 2,344,427

ADHESIVE APPLYING MECHANISM

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FIG. 1

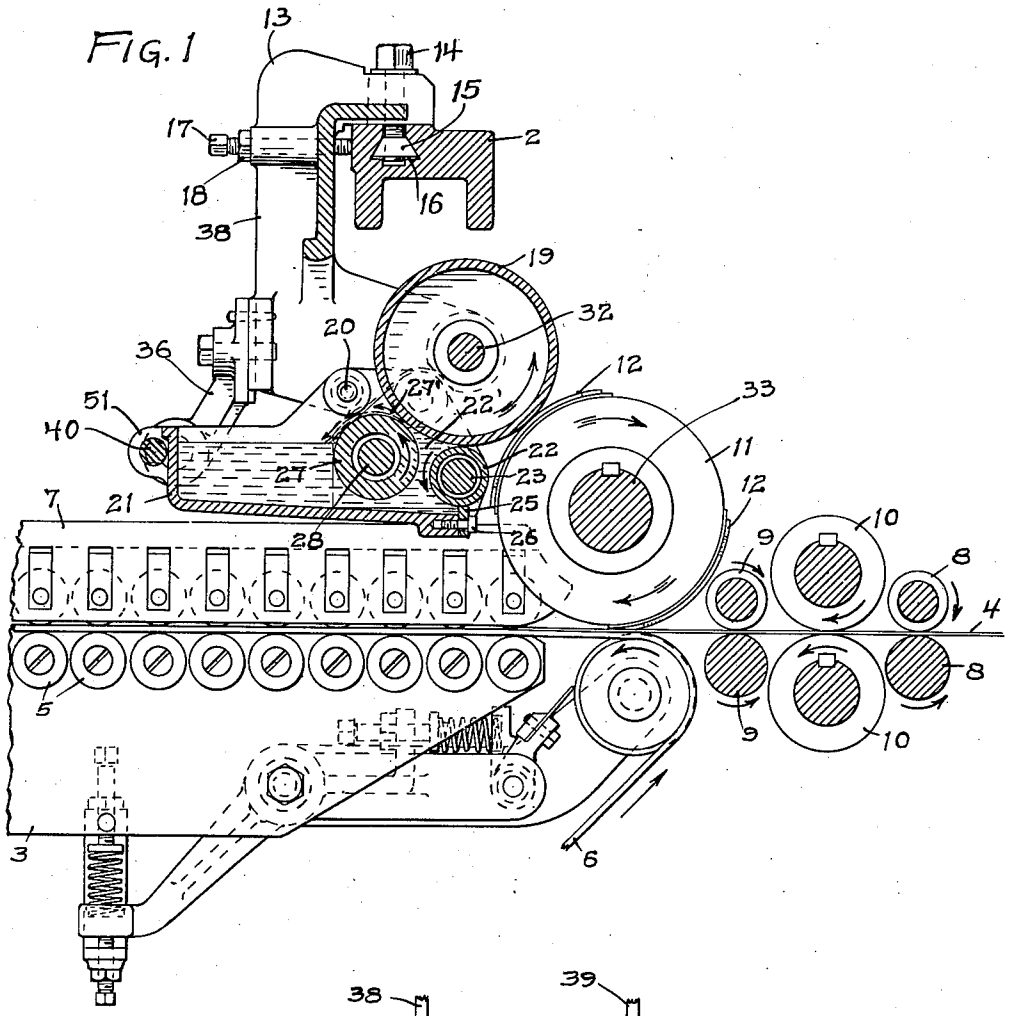

FIG. 5

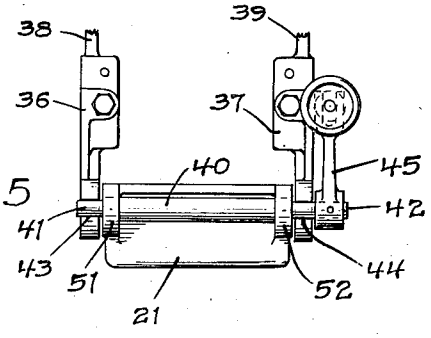

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FIG. 2

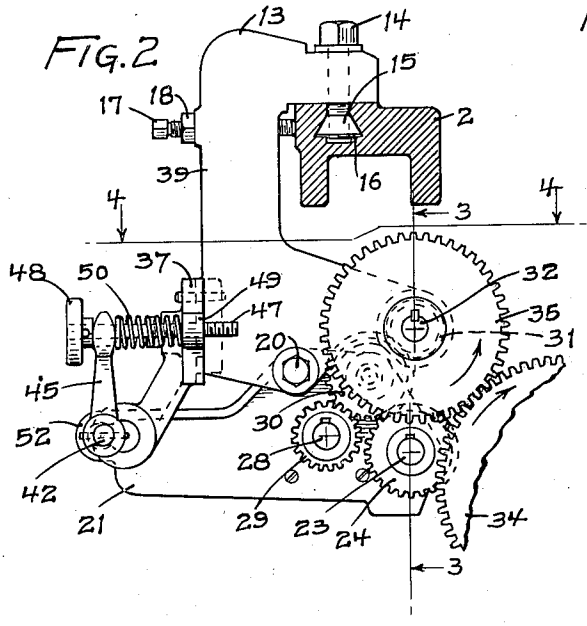
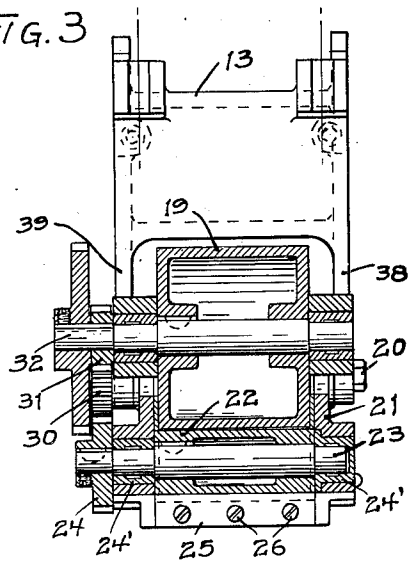


FIG. 3



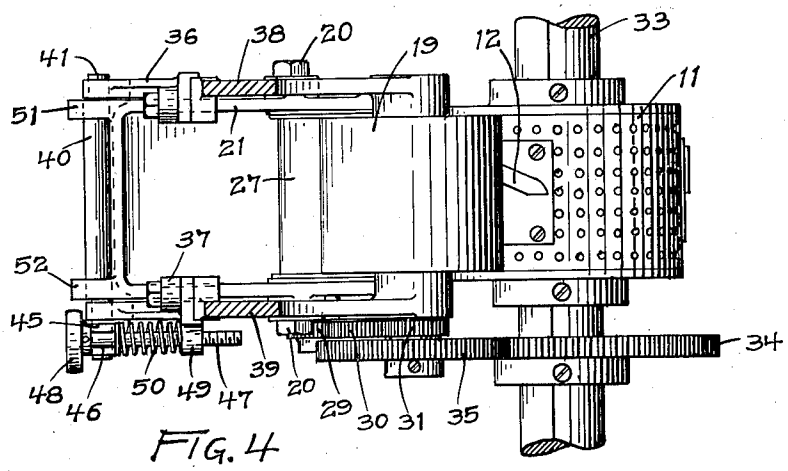


FIG. 4

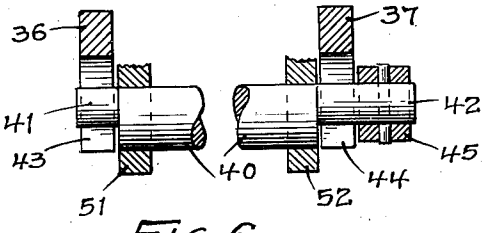


FIG. 6

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2,344,427

ADHESIVE APPLYING MECHANISM

Edwin G. Staude, Minneapolis, Minn.

Application September 21, 1942, Serial No. 459,088

6 Claims. (Cl. 91—50)

This invention relates to adhesive applying mechanism as used in paper box and envelope making machines and is an improvement on the mechanism shown and described in my Patent No. 1,935,731 dated November 21, 1933.

In comparing my present invention with that shown and described in Patent No. 1,935,731, I want to point out certain important distinctions.

First, in order to obtain the advantages herein claimed, the adhesive applying mechanism must be mounted on the opposite side of the adhesive applying drum, from that shown in Patent No. 1,935,731.

Second, because the adhesive applying mechanism is mounted on the opposite side of the adhesive applying drum from the intake side of the blank to permit quick adjustment and easy access of the blank creasing members, the function of the adhesive transfer drum and the drip collecting roller is quite different, because in the Patent No. 1,935,731 the adhesive applying drum and the adhesive transfer drum revolve towards the drip collecting roller whereas, in the present invention, the adhesive applying drum and the adhesive transfer drum revolve away from the drip collecting roller.

In order not to collect and build up adhesive on the edges of the adhesive applying pads, the surface speed of both the adhesive applying drum and the adhesive transfer drum should be the same.

This unity of speed applies particularly where the adhesive applying pads are intended to apply adhesive in spots or irregular outline gluing on the surface of a blank and is not so important where continuous straight line gluing is desired.

The adhesive applying mechanism herein shown and described is therefore particularly desirable for applying adhesive to open side envelope blanks, double wall collapsible web-corner boxes, etc., and also on machines where the bottom feed setup is close to the blank carrying belts.

The object of my present invention is to simplify the mechanism of the adhesive applying unit by combining in the drip collecting roller the further function of also regulating the supply of adhesive on the adhesive transfer drum.

A further object of my invention is to rearrange the location of the adhesive transfer drum with reference to the drip collecting roll and by the addition of a pumping roll permitting a much greater depth of adhesive in the adhesive reservoir and, thereby obtain a much more highly desirable supply volume than is possible where the adhesive transfer drum is located near the bottom of the adhesive reservoir.

A further object is to provide a space or chamber between the pumping roll and the adhesive regulating roll in which the pumping roll will create sufficient pressure so that when the adhesive is nearly drained from the reservoir, it will still maintain a sufficient pressure and volume in the chamber between the pumping roll and the adhesive regulating roll to cause sufficient adhesive to contact the adhesive transfer drum and prevent cavitation between the adhesive and the adhesive transfer drum which frequently runs at high speeds up to 1,000 R. P. M. when used on present high speed gluing and folding machines.

A further object is to provide a space between the pumping roll and the adhesive transfer drum so that any surplus will pass between the pumping roll and the adhesive transfer drum and return into the adhesive reservoir.

A further object of my invention is to provide a pivoted adhesive reservoir within which the adhesive controlling roll and the pumping roll are mounted, the said hinged or pivoted portion being provided in depending arms holding the bearings for the adhesive transfer drum and said adhesive reservoir being further provided with an adjustment so that adjustment of the flow of the thin film of adhesive on the adhesive transfer drum may be quickly, positively and accurately made.

Fig. 1 is a vertical section of my improved adhesive applying unit shown in position above the blank transferring mechanism of a paper blank gluing and folding machine.

Fig. 2 is a side view of my invention showing the train of gears which drive the several rolls within the adhesive reservoir and also the manner of adjusting or tilting at the pivot point the adhesive reservoir to regulate the flow of adhesive onto the adhesive transfer drum.

Fig. 3 is a cross-section taken on the line 3—3 of Fig. 2 and shows the location of the driving gears for the moving members within the adhesive reservoir.

Fig. 4 is a sectional plan view on the line 4—4 of Fig. 2, and Fig. 5 is a partial view of the rear of my glue flow adjusting device showing the adhesive reservoir tilting mechanism and the micrometer adjusting device for same.

Fig. 6 is a detailed drawing showing the eccentric adhesive reservoir tilting shaft and the manner of mounting the eccentric extensions

within the elongated slot of the supporting brackets.

As shown in the drawings, 2 represents a cross-bar between the two side frames of a conventional type of folding box or envelope blank gluing machine.

3 shows a lower carrying member for supporting the blanks 4 to which adhesive is to be applied. Said frame 3 is provided with a series of rollers 5, supporting an endless belt 6. In order to hold the blank 4 in tractive relationship with the endless belt 6, I provide a truck arrangement 7, provided with a series of idler rollers all of which are of conventional construction.

Pairs of feeding rolls 8 and 9 are provided between which may be mounted a pair of blank creasing rolls 10.

11 is the adhesive applying drum on the surface of which adhesive applying pads 12 may be cemented or secured in any convenient manner.

Mounted on the cross-spreader 2, I provide a bracket 13, said bracket being secured to a cross-spreader 2 by means of a cap screw 14, secured into a beveled nut 15, which beveled nut is adapted to slide along in a beveled groove 16. A set screw 17 is provided with a jam nut 18 and is adapted to regulate the in and out position of the adhesive transfer drum 19 against the pad 12 on the adhesive applying drum 11.

The said adhesive transfer drum 19 is accurately adjusted so that the thin layer of adhesive, probably .002 of an inch in thickness, will be accurately transferred to the adhesive pads 12, which requires very accurate adhesive control.

Pivoted at a point 20 on depending arms 38 and 39 of the bracket 13, I provide an adhesive reservoir 21 and within said adhesive reservoir mounted in suitable bearings, I provide an adhesive flow regulating roller 22, said roller being driven by shaft 23 through a gear 24 and mounted in bearings 24'. (See Figs. 1, 2 and 3.)

In order to prevent the adhesive from flowing out between the bottom of the adhesive reservoir and the roller 22, I provide a slightly adjustable scraper 25, which is set against the surface of the roller 22 and secured by suitable cap screws 26.

In order to cause the adhesive to flow against the adhesive transfer drum 19, I provide a pumping or adhesive advancing roller 27 driven by the shaft 28 mounted in suitable bearings within the adhesive reservoir 21, which shaft 28 is driven by the gear 29 which in turn is driven from the idler 30. The idler 30 is driven by the pinion 31 on the shaft 32, to which the adhesive transfer drum 19 is secured.

The roller 22 and the roller 27 are spaced some distance apart to form a space or chamber 22' into which space the roller 27 causes the adhesive to accumulate, the surplus adhesive being permitted to pass over the roller 27 through the passage 27' and from there back into the reservoir 21 to return again to the space or chamber 22'.

This cycle of the adhesive into the chamber 22' insures a sufficient amount of adhesive bearing against the adhesive transfer roll at all times regardless of the level of the adhesive in the reservoir 21.

The shaft 33 supports the adhesive applying drum 11, and the gear 34 on the shaft 33 meshes with the gear 35 on the shaft 32, which in turn transfers motion to the adhesive transfer drum 19.

The gear 31 on the shaft 32 in turn drives the gear 30 as hereinbefore stated.

In order to regulate the space between the roller 22 and the adhesive transfer drum 19, I provide brackets 36 and 37 secured to the depending walls 38 and 39 of the bracket 13.

At the lower end of the brackets 36 and 37, I provide an elongated slot 43 and 44 within which slot I provide a rotatable shaft 41 and 42. Shafts 41 and 42 are eccentric to and connected by the part 40 which is rotatably mounted in lugs 51 and 52, which lugs are secured to the reservoir 21.

On the extensions of the shaft 42, I provide an arm 45. The upper end of arm 45 is provided with a slot 46 adapted to receive a bolt having a threaded end 47; said bolt 47 is provided with a thumb end wheel 48 on one end and the threaded end of the bolt 47 is adapted to be screwed into a threaded portion of a lug 49 on the bracket 37.

The spring 50 is inserted between the slot 46 and the lug 49 to prevent rattling, also to hold the arm 45 against the thumb wheel 48 and thereby cause pressure to hold the roller 22 away from the transfer drum 19, so that positive adjustment of the thumb wheel 48 at all times controls the amount of adhesive on the surface of the adhesive transfer drum 19.

The mechanism for holding the blank 4 against the pad 12 so as to secure an accurate transfer impression of the adhesive on the pad 12 to the blank 4 is not described herein because it is shown and described in my Patent No. 2,294,520 dated September 1, 1942.

It will be apparent to those skilled in the art that the embodiments herein described may be variously changed and modified, without departing from the spirit of the invention, and that the invention is capable of uses and has advantages not herein specifically described; hence, it will, therefore, be understood that my invention is not strictly limited to the precise construction shown, but rather to any adhesive applying mechanism having a moving end wall of an adhesive reservoir which end wall may be adjusted to control the flow of adhesive to the adhesive transfer drum.

I claim:

1. An adhesive applying mechanism including an adhesive applying means; an adhesive transfer means adapted to transfer adhesive to the adhesive applying means; a pivoted adhesive reservoir; a revolving roller mounted within said reservoir adjacent to said adhesive transfer means and located to form the end wall of said reservoir, the periphery of said revolving roller and said adhesive transfer means being mounted to move in opposite directions; means for tilting said reservoir on said pivot to adjust said revolving roller towards or from said adhesive transfer means for regulating the flow of adhesive to said adhesive transfer means.

2. An adhesive applying mechanism including an adhesive applying means; an alhesive transfer means for transferring adhesive to the adhesive applying means; an adhesive reservoir; a revolving roller located within said reservoir adjacent to said adhesive transfer means; means for adjusting said revolving roller towards or from said adhesive transfer means for regulating the flow of adhesive to said adhesive transfer means; revolving means located within said reservoir near said revolving roller; said revolving means, said revolving roller and said adhesive transfer means being separated from each other to form a chamber between them, said revolving

means being positioned to force adhesive into said chamber to cause said adhesive to contact said revolving roller and said adhesive transfer means; said revolving means and said adhesive transfer means being provided with a space between them to permit surplus adhesive within said chamber to return to said reservoir.

3. An adhesive applying mechanism including an adhesive applying means; an adhesive transfer means adapted to transfer adhesive to the adhesive applying means; a pivoted reservoir; a revolving first roller located within said reservoir adjacent to said adhesive transfer means; a second revolving roller located within said reservoir; said first roller, said second roller and said adhesive transfer means being located to provide a chamber between them, said second roller being positioned for advancing adhesive into said chamber to prevent cavitation; means for tilting said reservoir and said first roller to regulate the flow of adhesive to said adhesive transfer means.

4. An adhesive applying mechanism including an adhesive applying means; an adhesive transfer means adapted to transfer adhesive to said adhesive applying means; an adhesive reservoir; a revolving first roller located within said reservoir adjacent to said adhesive transfer means; a second revolving roller located within said reservoir; said first roller, said second roller and said adhesive transfer means being positioned to provide a chamber between them; said second roller revolving in a direction to advance adhesive into said chamber; adhesive overflow means located over the top of said second roller; means for varying the opening between said first roller and said adhesive transfer means.

5. An adhesive applying mechanism including an adhesive applying means; an adhesive transfer means adapted to transfer adhesive to said adhesive applying means; a reservoir for holding a supply of adhesive; means adjustable for controlling the flow of adhesive to said adhesive transfer means; means located within said reservoir for advancing said adhesive towards said adhesive transfer means and said means adjustable for controlling the flow of adhesive to said adhesive transfer means to prevent cavitation when said adhesive transfer means operates at high speed.

6. An adhesive applying mechanism including an adhesive applying means; an adhesive transfer means adapted to transfer adhesive to said adhesive applying means; a reservoir for holding a supply of adhesive; an adhesive regulating and drip collecting roller located within said reservoir and forming one end of said reservoir; an adhesive pumping roller; a chamber formed by said adhesive transfer means, adhesive regulating and drip collecting roller and the adhesive pumping roller; said pumping roller causing adhesive from the bottom of said reservoir to flow into the said chamber for the purpose specified.

EDWIN G. STAUDE.