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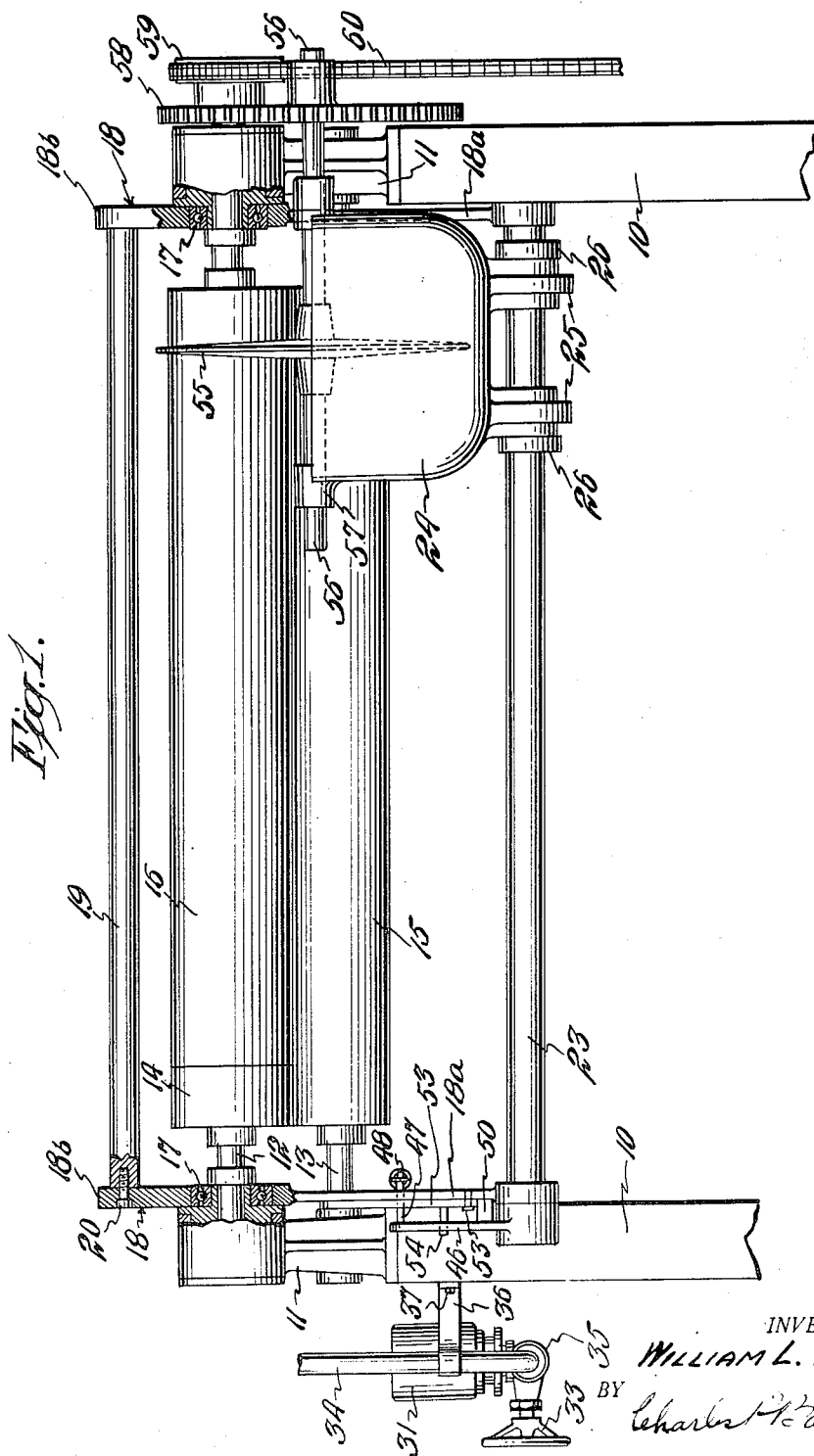
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LIQUID ADHESIVE APPLICATOR AND CONTROL APPARATUS THEREFOR

Filed July 10, 1948

2 SHEETS—SHEET 1



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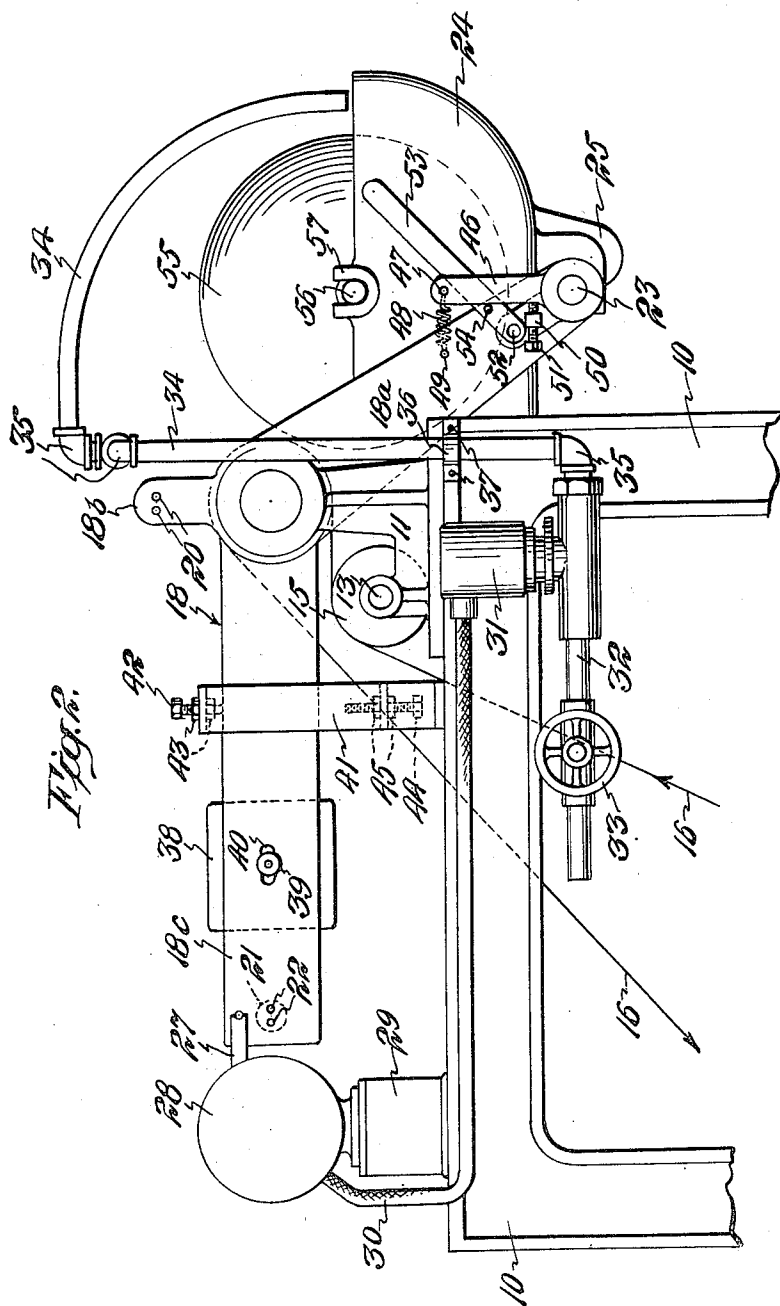
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2 SHEETS—SHEET 2



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LIQUID ADHESIVE APPLICATOR AND CONTROL APPARATUS THEREFOR

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The present invention relates to improvements in adhesive control apparatus and pertains to an apparatus for turning on or off the supply of adhesive to a receptacle in which the adhesive level is to be controlled. The invention is particularly applicable to the control of the adhesive level in paste pots on paper bag making machines, but is capable of use with other machines or apparatus where the adhesive level is to be controlled.

In paper bag making machines as the level of the adhesive gradually goes down it is common practice to refill the paste pots manually. This requires constant checking and often results in the machines operating without paste due to the failure of the operator to refill the pots in time. Consequently a certain number of bags go through the machine without proper adhesive and are unfit for use.

If the common and well-known form of float valve is used to maintain levels, the mechanism when inserted directly in a viscous adhesive becomes clogged and does not operate properly. This type of valve consequently is not suitable for use with the adhesives required on paper bag making machines. Similarly the electrode devices for maintaining levels are unsatisfactory because the adhesive piles up around the electrode and interferes with the functioning of the device. Furthermore, it has been found that various well known devices, satisfactory for water or similar liquid, which are mechanically actuated or depend for their operation on some kind of flexible connection, such as rubber hose or metallic conduit, or manually filled tanks, will not function or are not sensitive enough in operation for the viscous adhesives used in paper bag making machines.

The present invention provides an apparatus which overcomes such difficulties, maintains the supply of adhesive at all times and gives far less trouble than other known liquid control devices. A general object of the present invention is to provide an automatic apparatus which requires little adjustment and attention over long periods of time, is economic of manufacture and simple to install on a machine, and is well suited to the purposes for which it is intended.

More specifically it is an object of the present invention to provide an adhesive control apparatus having a beam pivotally mounted on a support, an adhesive receptacle carried by one end of the beam permitting the opposite end of the beam to swing in an arc as the adhesive level in the receptacle changes, a control device actu-

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ated by the movement of said beam, and a feed line for supplying adhesive to the receptacle, said line being opened and closed by the control device. When the adhesive level drops and the weight of the receptacle decreases to a given point the opposite end of the beam swings downwardly in an arc which closes a control switch causing a control valve to open the feed line and admit adhesive to the receptacle. As the adhesive level rises the oppositely end of the beam swings upwardly in an arc opening the control switch causing the control valve to close the feed line supplying adhesive to the receptacle. The entire apparatus other than the control valve does not come in contact with the adhesive so that the adhesive can in no way clog or affect the functioning of the apparatus.

Other objects of the invention will in part be obvious and will in part appear hereinafter.

The invention accordingly comprises the features of construction, combination of elements and arrangement of parts which will be exemplified in the construction hereinafter set forth and the scope of the invention will be indicated in the claims.

For a fuller understanding of the nature and objects of the invention reference should be had to the following detailed description taken in connection with the accompanying drawings, in which:

Figure 1 is a rear elevation of a portion of a paper bag making machine with the adhesive control apparatus embodying my invention applied thereto.

Figure 2 is a corresponding end elevation.

In the following description my invention is particularly described in connection with a paper bag making machine and with adhesive as the liquid, but it will be understood that this is merely for the purpose of illustration and that the invention is applicable to various systems and apparatus in which the maintenance of a level of adhesive or similar viscous liquid is required.

Referring more particularly to the drawings, a frame 10 carries stands 11 into which are journaled shafts 12 and 13 carrying rollers 14 and 15. A paper web 16 passes around the roller 14 and over the roller 15. The stands 11 are also provided with bearings 17 on which are pivotally mounted beams 18, consisting of arms 18a, 18b and 18c. The arms 18b are connected by a tie rod 19 secured to the arms by means of bolts 20, the arms 18c are similarly connected by a tie rod 21 and bolts 22, and the arms 18a are connected by and carry a paste pot bar 23. A paste

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pot 24, which may be generally referred to as an adhesive receptacle, is provided with mounts 25 through which pass the paste pot bar 23. Mounted on the bar and secured to the mounts are collars 26, so that the mounts and the paste pot may rotate only when the bar is rotated, but the position of the paste pot on the bar 23 may be adjusted by sliding the collars along the bar.

On the arm 18c is a lever 27 which actuates a control switch 28 secured to the frame by bracket 29. This control switch may be of any of the well-known types of switches for opening and closing a circuit. A cable 30 carries the circuit feeding electrical energy through switch 28 to an electrical control valve 31, which may be of any of the conventional types of valves suitable for opening and closing a liquid supply line. It will be understood that the control switch and control valve may be incorporated in a single unit so the movement of the lever 27 could directly actuate the valve for opening and closing the liquid supply line. It will be further understood that the liquid receptacle may be constructed to serve as a beam so that the movement of the receptacle may actuate the switch and the valve. At one side of control valve 31 is an inlet pipe 32 through which adhesive is fed under pressure. This pipe is provided with a hand shut-off valve 33, and on the other side of the valve is a line which runs to the paste pot, said line being made up of pipes 34 and fittings 35. This line is held to the frame by bracket 36 and bolts 37.

On each arm 18c is a weight 38 held by a clamp screw 39 and slidably adjustable in slot 40. By means of this weight the balance of beam 18 may be adjusted for adhesive of different weight. A bracket 41 secured to and extending from the frame 10 overlies the beam 18. A screw member 42, extending through the top of bracket 41 and held in position by nuts 43, can be screwed down against the upper portion of beam 18 when the paste pot is full and serves as a stop to limit the upward movement of the beam. Similarly the screw 44 held by nuts 45 serves as a stop to limit the downward movement of the beam.

Mounted on the end of the paste pot bar 23 is a lever arm 46 at the upper end of which is a spring stud 47 to which is attached one end of a spring 48. The opposite end of spring 48 is affixed to arm 18a by means of a spring stud 49. This spring serves to maintain the paste pot in upright position and holds the paste roll in contact against the paper web 16 running over the roller 14. In connection with this spring mechanism there is a screw mount 50 affixed to the arm 18a in which mount there is an adjustable screw 51, said screw serving as a stop to limit the movement of the lever arm 46. Secured to the arm 18a is a spindle on which is pivoted a trip lever 53, provided with a stud 54 which rests against the lever arm 46. When this trip lever is pressed downward the stud 54 moves the lever arm 46 out of its position against the screw stop 51. By pressing the trip lever downward as far as it will go the paste roll is locked in position out of contact against the paper web. This is particularly handy when a new roll of paper is threaded into the machine or on other occasions when it is desirable to keep the paste roll out of contact with the roller 14.

The seam paste wheel and the assembly for driving the wheel and the rollers which are shown in the drawings are of conventional construction, and it will be understood that other forms

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of paste applicators may be used in conjunction with the paste pot of the present invention.

The paste wheel 55 is mounted on the spindle 56, which is journaled in the bearings 57 provided on each side of the paste pot. The rim of the wheel depends into the adhesive in the paste pot and on rotation of the wheel makes contact with the paper web and applies the adhesive thereto. A gear 58 on the end of the spindle engages a gear on the shaft 12 of the roller 14 so that the paste wheel and the roller may be driven together at a given ratio. On the end of the shaft 12 there is a sprocket wheel 59 which engages a roller chain 60 driven by a motor or other form of power. It will be noted from the construction shown that the axis of the spindle 56 remains at a constant distance from the axis of the beams' pivots even though the beams may move up or down. Furthermore, since the roller 14 over which the paper web passes is on the same axis as the beams' pivots, the paste applicator maintains an even and uniform pressure on the paper web at all times regardless of the position of the beams.

The operation of the invention will be apparent from the foregoing description. When the adhesive level in the paste pot 24 drops the decrease in weight carried by the beams 18 causes the lever 27 to make contact in the switch 28 and close the electrical circuit which actuates control valve 31. This control valve is thus opened which admits adhesive to flow into the paste pot. As the adhesive level rises and the weight carried by beams 18 is increased the lever arm opens the circuit in switch 28 thereby closing the valve 31 and shutting off the supply of adhesive going to the receptacle.

While I have illustrated one particular embodiment of my invention and one particular application thereof, it will be understood that various changes and modifications may be made therein and the invention may be used in connection with various types of apparatus wherein levels of adhesive or similar viscous liquid are to be controlled and more especially those types of apparatus wherein the liquid employed is of such a nature that float valves or other available liquid control devices cannot be employed.

It will thus be seen that the objects herein set forth may readily and efficiently be attained and since certain changes may be made in the above construction and different embodiments of the invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

It is also to be understood that the following claims are intended to cover all of the generic and specific features of the invention herein described, and all statements of the scope of the invention which as a matter of language might be said to fall therebetween.

Having described my invention, what I claim as new and desire to secure by Letters Patent is:

1. An adhesive control device for a paper bag making machine comprising an adhesive receptacle pivotally supported, an adhesive applicator rotatably mounted on the receptacle for applying adhesive to a moving paper web, a roller carrying said web and having a common axis with the receptacle's pivot, a switch movable between on and off positions by the movement of the re-

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ceptacle, an adhesive supply line to the receptacle, an electrical valve to open and close the said line, and an electrical circuit to the valve for energizing the valve, the said switch being disposed in the circuit in such manner that the valve opens or closes the line according to whether the switch is on or off.

2. An adhesive control device for a paper bag making machine comprising a beam pivotally supported, an adhesive receptacle mounted on the beam, an adhesive applicator rotatably mounted on the receptacle for applying adhesive to a moving paper web, a roller carrying said web and having a common axis with the beam's pivot, the distance between the axes of the adhesive applicator and the beam's pivot remaining constant for all positions of the beam, whereby the applicator maintains a uniform pressure on the web at all times, a switch movable between on and off positions by the movement of the beam, an adhesive supply line to the receptacle, an electrical valve to open and close the said line, and an electrical circuit to the valve for energizing the valve, the said switch being disposed in the circuit in such manner that the valve opens or closes the line according to whether the switch is on or off.

3. An adhesive control device for a paper bag making machine comprising a pair of beams pivotally supported and held in spaced relationship by connecting rods, an adhesive receptacle mounted between the beams and carried by one of the connecting rods, an adhesive applicator rotatably mounted on the receptacle for applying adhesive to a moving paper web, a roller carry-

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ing said web and having a common axis with the beams' pivots, the distance between the axes of the adhesive applicator and the beams' pivots remaining constant for all positions of the beam, whereby the applicator maintains a uniform pressure on the web at all times, a switch movable between on and off positions by the movement of one of the beams, an adhesive supply line to the receptacle, an electrical valve to open and close the said line, and an electrical circuit to the valve for energizing the valve, the said switch being disposed in the circuit in such manner that the valve opens or closes the line according to whether the switch is on or off.

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