Nov. 3, 1931. J. ETTL 1,830,316

GLUING MECHANISM

Filed Dec. 13, 1928 2 Sheets-Sheet 1

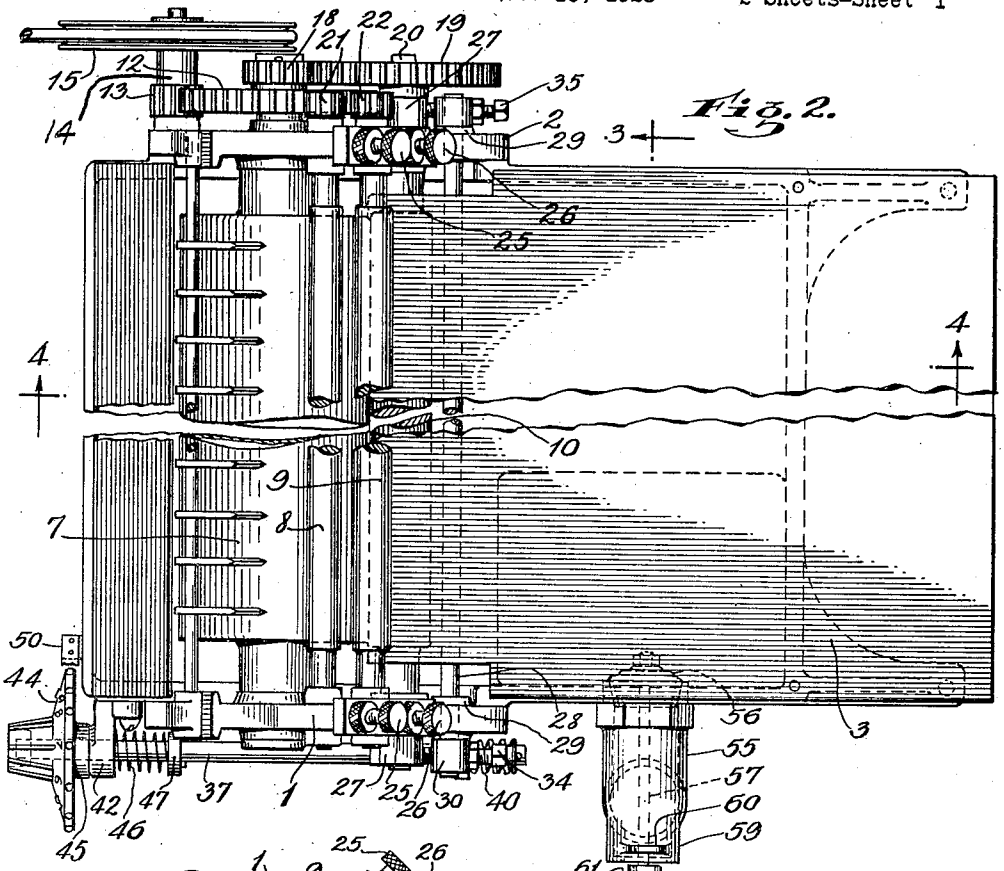


Fig. 2.

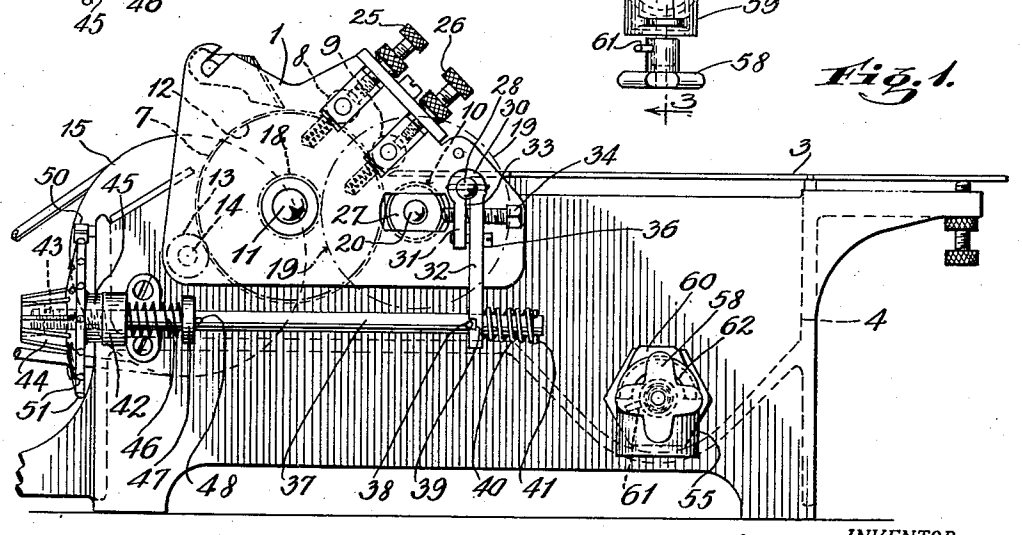


Fig. 1.

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Fig. 3,

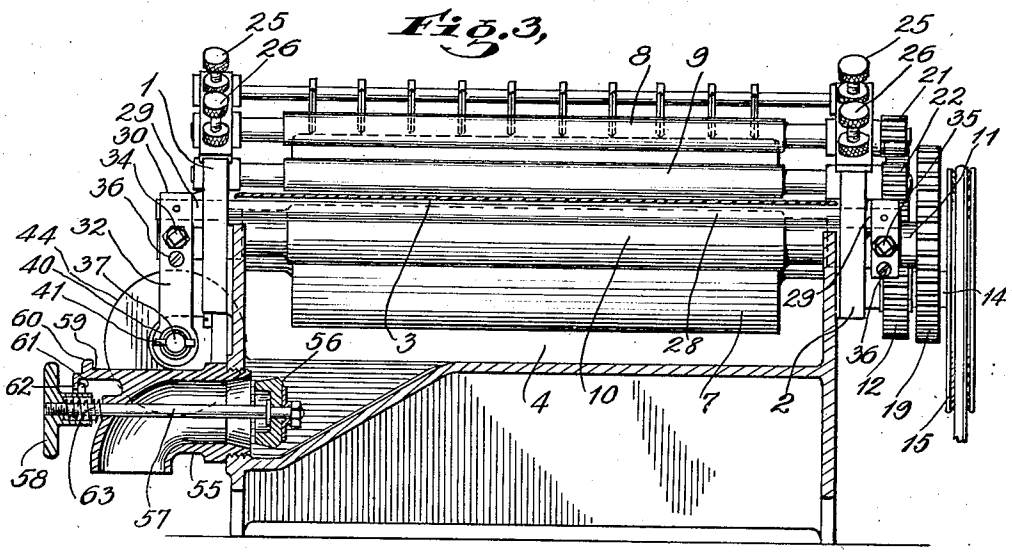


Fig. 5,

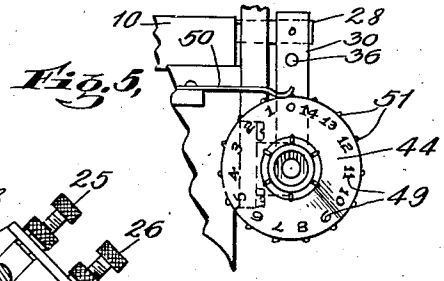
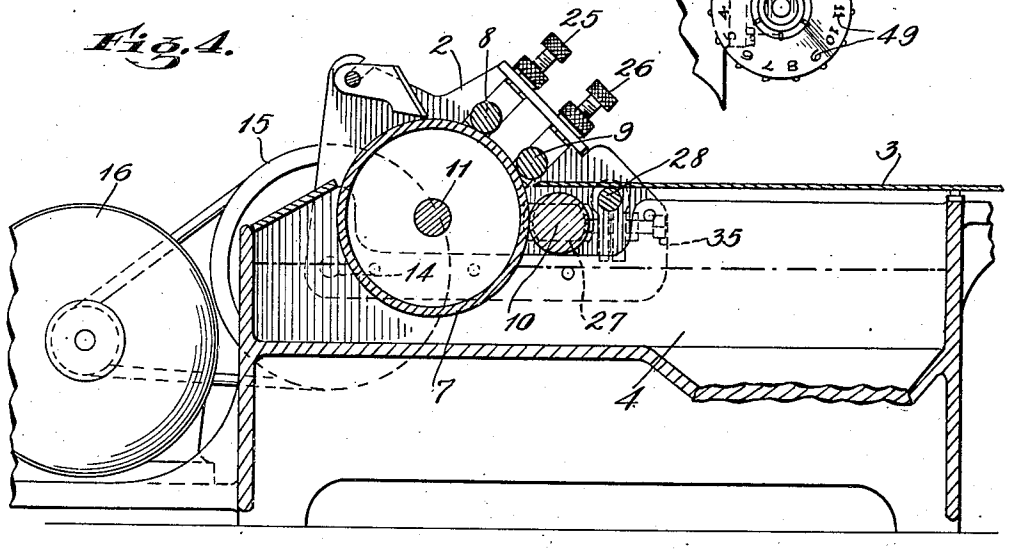


Fig. 4.



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UNITED STATES PATENT OFFICE

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GLUING MECHANISM

Application filed December 13, 1928. Serial No. 325,698.

This invention relates to an improvement in gluing machines and has for one of its objects the provision of a gluing machine wherein the ductor roller may be originally and readily set in exact parallelism with the glue or paste applying roller, means being provided whereby the ductor roller may then be quickly adjusted without disturbing its parallelism with respect to the gluing roller, thereby enabling the glue or paste coating to be instantly regulated to obtain perfect results. The regulating or adjusting mechanism for the ductor roller is calibrated so that the ductor roller always may be brought back to an original position should it have been changed for any reason or other. It is a simple matter, therefore, at any time to adjust the ductor roller so as to insure the proper application of the glue or paste to the material being handled.

A still further object of my invention is the provision of an apparatus of the character above indicated in which means are provided for preventing injury to the machine, such as springing of the ductor roller due to any foreign material entering between the ductor roller and the gluing or pasting roller.

A still further object of my invention is the provision of a machine of the general character above indicated wherein mechanism of an improved character is provided for the emptying of the glue or paste tank. Heretofore trouble has been experienced with the mechanism employed in that the valve or plunger which controls the discharge of the glue or paste from the tank is located exterior of the tank and for this reason if not moved for long intervals becomes coated with dry glue or paste, making it very difficult to unseat.

The present invention provides a construction whereby the valve or plunger is always immersed in the glue or paste, as the case may be, and for this reason is always in a moist condition and when it is desired to empty the tank there is no danger of the valve or plunger having become stuck due to drying of the glue or paste.

In the drawings accompanying this application,

Fig. 1 is a side elevational view of my improved mechanism;

Fig. 2 is a plan view;

Fig. 3 is a section on the line 3—3 of Fig. 2;

Fig. 4 is a section on the line 4—4 of Fig. 2; and

Fig. 5 is an enlarged view of the dial, etc. for regulating the position of the ductor roller.

Referring to the drawings in detail, my improved machine comprises side brackets 1 and 2 which mount the various rollers and other devices to be presently referred to. My machine, as is usual, also provides a table designated 3 along which the material to be glued or pasted is moved. 4 designates the glue or paste tank.

The side brackets 1 and 2 provide bearings for the gluing or pasting roller 7, feed rollers 8 and 9 and ductor roller 10. The gluing roller 7 is mounted on a shaft 11 which shaft carries a gear 12 meshing with a pinion 13 in turn mounted on a stud shaft 14 carrying the driving pulley 15. This pulley is driven through a belt for instance by an electric motor 16.

On the gluing roller shaft 11 is a small gear 18 which meshes with a gear 19 carried on a shaft 20 on which is mounted the adjustable ductor roller 10.

The gear 12 on the gluing roller shaft also meshes with two gears 21 and 22 for driving the feed rollers 8 and 9. These rollers are adjustable in their respective bearings by adjusting screws 25 and 26. The shaft 20 carrying the ductor roller is mounted in floating bearings at each side of the machine, these bearings being designated 27, whereby the shaft 20 along with the ductor roller 10 may be adjusted toward and away from the gluing roller 7.

To the rear of the ductor roller is a shaft 28 extending transversely of the machine and mounted in suitable bearings 29. Pinned to each end of this shaft is a strap 30 having two downwardly extending arms 31 and 32, these arms being spaced from each other a short distance as indicated at 33. Passing

through the arms 31 and 32 toward the ductor roller is an adjusting screw 34. A similar screw 35 is provided at the opposite end of the shaft 28. By adjustment of the screws 34 and 35 the ductor roller 10 may be moved into desired position relatively to the gluing roller 7 and be brought into exact parallelism therewith. After the ductor roller has been moved to the approximately correct position relatively to the pasting roller the small screw 36 appearing below the adjusting screws 34 and 35 is tightened up to jam the screws 34 and 35, whereby they are locked in place.

While the adjustment possible by the screws 34 and 35 is approximately accurate a still further and finer adjustment is provided for. This adjusting mechanism comprises an adjusting rod 37 extending lengthwise of the machine and plainly shown on Fig. 1.

This rod, that is to say the right hand end thereof as viewed in Fig. 1 passes through the long arm 32 of one strap 30 where it is provided with a pin 38 cooperating with a notch 39 cut in the arm 32. To the right of the arm 32, that is on the projecting end of the rod 37 is a coil spring 40, one end of which bears against the face of the arm 32 and the other end against a pin 41 which is carried by the rod 37.

The opposite end of the adjusting rod 37 passes through and projects from a fixed bearing 42, its projecting end being threaded as indicated at 43 and receiving an adjusting dial 44, the hub 45 of which bears against the face of the bearing 42. At the back side of the bearing 42 I provide a coil spring 46 on the adjusting rod 37, one end of this spring bearing against the face of the bearing 42, its opposite end bearing against a washer 47 carried by the adjusting rod and held against movement to the right as viewed in Fig. 1 by a pin 48.

The adjusting dial 44 is calibrated as shown at 49 and a spring pawl 50 is provided for cooperating with small lugs 51 carried by the periphery of the dial. The pawl 50 and lugs 51 and calibrations 49 are provided as a convenient means for setting the dial in any desired position and to enable the dial to be readily reset to that same position.

In operation after the ductor roller 10 has been set to its approximately correct position by the adjusting screws 34 and 35 the dial 44 is moved to bring the ductor roller into exact position with respect to the pasting roller, movement of the dial 44 retracting the adjusting rod 37, that is to say moving the rod to the left as viewed in Fig. 1 against the action of the spring 46, so that as the rod 37 is moved to the left the arm 32 is rocked to move the ductor roller toward the gluing roller.

I might say at this point that the spring 40 is of such a character that the ductor roller may not be moved with excessive pressure against the pasting roller, the spring 40 yielding before this pressure has been reached and any further rotation of the dial 44 causing the pin 38 to move out of the slot 49 in the arm 32 so that the rod 37 will then rotate instead of being retracted further until an excessive pressure is produced between the ductor roller and the gluing roller. This construction is of great importance in gluing machines when foreign materials enter the glue or paste. In machines as heretofore constructed the presence of such foreign materials frequently damaged the machine, these foreign materials passing with the glue between the gluing roller and the ductor roller causing the ductor roller to become sprung, necessitating replacement of the ductor roller with a new one. With the present arrangement by providing a spring 40 of proper tension it will be obvious that the ductor roller in the event of foreign material entering between the gluing roller and the ductor roller will be free to move away from the ductor roller without any damage to the machine, against the action of the spring 40.

The spring 46 above mentioned will always maintain the hub of the dial 44 in proper engagement with the face of the bearing 42.

It will be seen from the foregoing, therefore, that I have provided a gluing or pasting machine in which a very fine adjustment can be made of the ductor roller not only enabling the ductor roller to be properly adjusted initially with respect to the pasting roller but enabling the ductor roller always to be restored to its original position at any time desired.

This arrangement also provides for use of the ductor roller without damage to the mechanism of the machine in the event of foreign material entering or attempting to enter between the ductor roller and the pasting or gluing roller, thereby eliminating danger of springing of the ductor roller and consequent necessity of renewal thereof.

Another feature provided by the present invention is a construction wherein the glue or paste will be smoothly applied to the paper or other material being operated upon. I have already described the drive mechanism for the gluing roller 7 and ductor roller 10. In this connection I wish to state that this gear drive provides for a surface speed of the ductor roller much slower than the surface speed of the gluing roller 7. Actually in practice the surface speed of the gluing roller 7 is four times that of the surface speed of the ductor roller 10. This difference in surface speed provides an ironing or smoothing action on the glue or paste with the result that the latter is applied to the material in an absolutely smooth condition.

I might say to further emphasize the importance of this feature of my invention that the tendency of the glue or paste in prior machines is to build up ridges on the coating applied to the paper or other material being operated upon due to the relative speeds at which in such machines the gluing roller and ductor roller are driven. With the difference in surface speed between that of the gluing roller and that of the ductor roller, in the present instance four to one, the formation of these ridges or irregularities is overcome.

In stating above some of the objects of my invention I explained that the present machine provides for the quick discharge at all times of the glue or paste from the tank or reservoir containing the same. To this end one wall of the tank 4 is provided with a discharge spout 55 which may be screw-mounted in the tank wall. The inner end of this nozzle provides a discharge opening controlled by a valve or plunger 56 which is carried on the inner end of a stem 57 operable from the exterior of the tank by a hand wheel 58. The plunger 56 is always in the glue in the reservoir and hence will always be in a most condition which will prevent drying of the glue or paste on the valve and what in effect would amount to a gluing or pasting of the valve in closed position. This is the difficulty which has been experienced with existing valves for the same purpose, the valve becoming coated with glue or with paste, as the case may be, and when closed by reason of the valve being on the exterior of the reservoir this material hardened, making it very difficult to open the valve when desired. The present arrangement prevents this action taking place as will be understood.

The outer wall of the spout 55 is extended as indicated at 59 to provide a hook 60 from which may be suspended a bucket to catch the glue or paste being discharged from the tank through the discharge spout. I also provide the hub of the hand wheel 58 with a pin 61 cooperating with a flange 62 on the projection 59 of the discharge nozzle and on the stem 57 I provide a coil spring 63, the function of which is to hold the valve or plunger 56 in closed position normally. When it is desired to open this valve it is merely necessary to push inwardly on the hand wheel 58, and give the same a partial turn until the pin 61 engages the rear face of the flange 62, whereupon the valve will be prevented from closing until the hand wheel is turned to its original position to disengage pin 61 from flange 62.

This arrangement then provides a very simple construction by which the material in the reservoir 4 can be discharged quickly, the valve controlling the discharge of this material being located on the inside of the reservoir thereby insuring that the glue or paste in the reservoir will keep the valve in a moist condition to prevent the same from sticking.

Various modifications may be made in the construction above described within the purview of this invention.

What I claim is:—

In a gluing or pasting machine, the combination of a ductor roller, a strap connected thereto, an adjusting rod passing through said strap and projecting therefrom, a stop on the projecting end of said rod, a spring on said adjusting rod and intermediate said stop and said strap, a calibrated member threaded on the opposite end of said shaft for moving said shaft lengthwise, a connection between said strap and shaft for preventing turning of the latter, said spring cooperating with the strap and shaft to yield upon predetermined movement of the shaft whereby the latter is released for rotation and further longitudinal movement prevented.

This specification signed this 10 day of Dec., 1928.

JOSEPH ETTL.