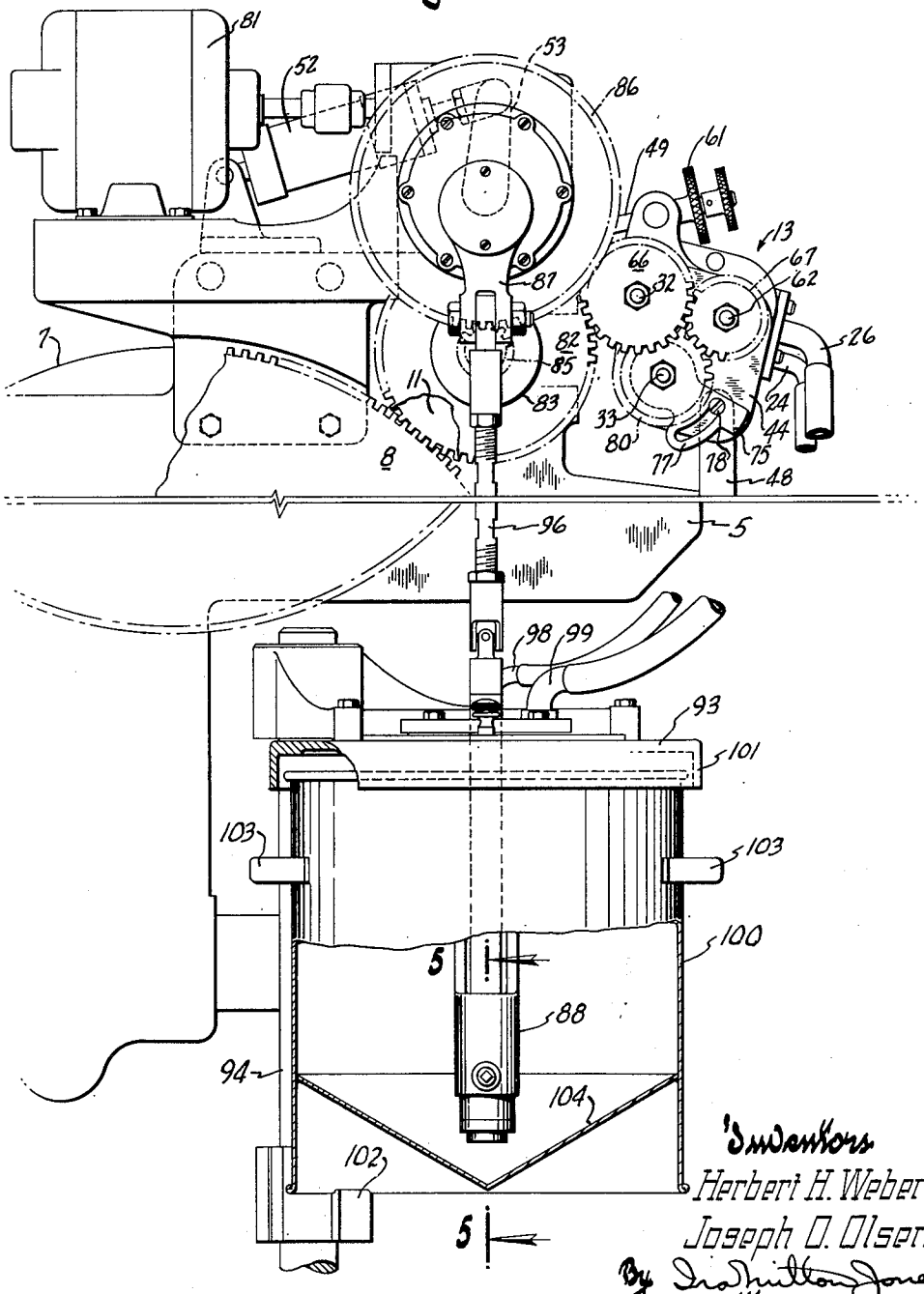
Oct. 5, 1954 H. H. WEBER ET AL 2,690,732

PASTE APPLICATOR FOR BAGMAKING MACHINES

Filed April 2, 1952 4 Sheets-Sheet 1

Fig. 1.



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PASTE APPLICATOR FOR BAGMAKING MACHINES

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Fig. 2.

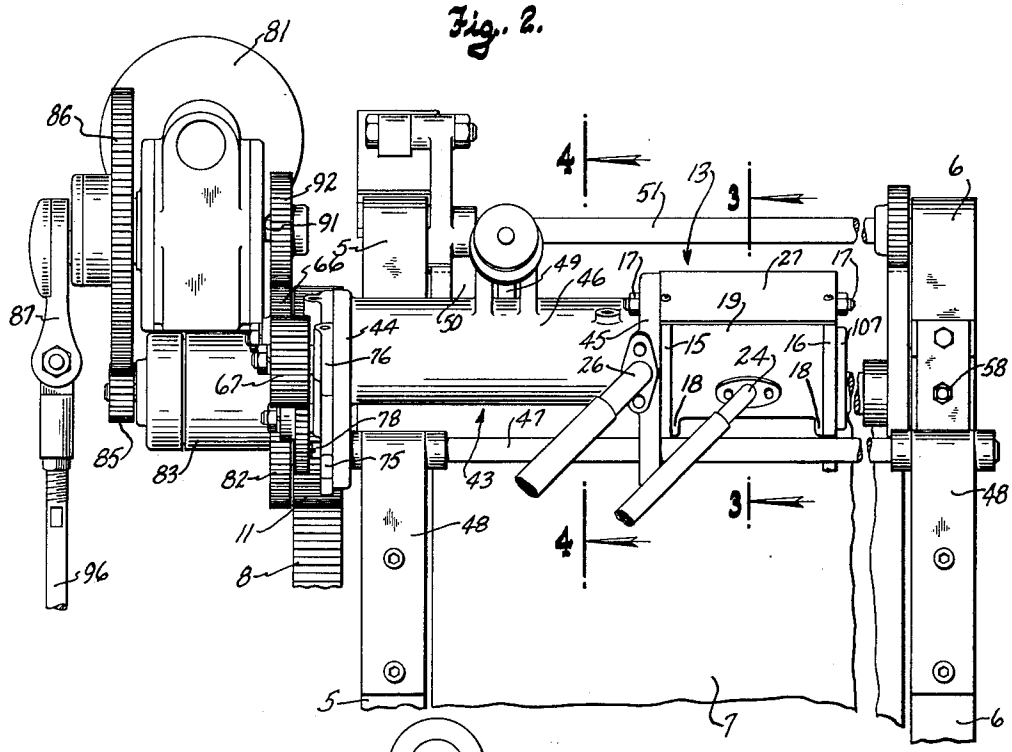
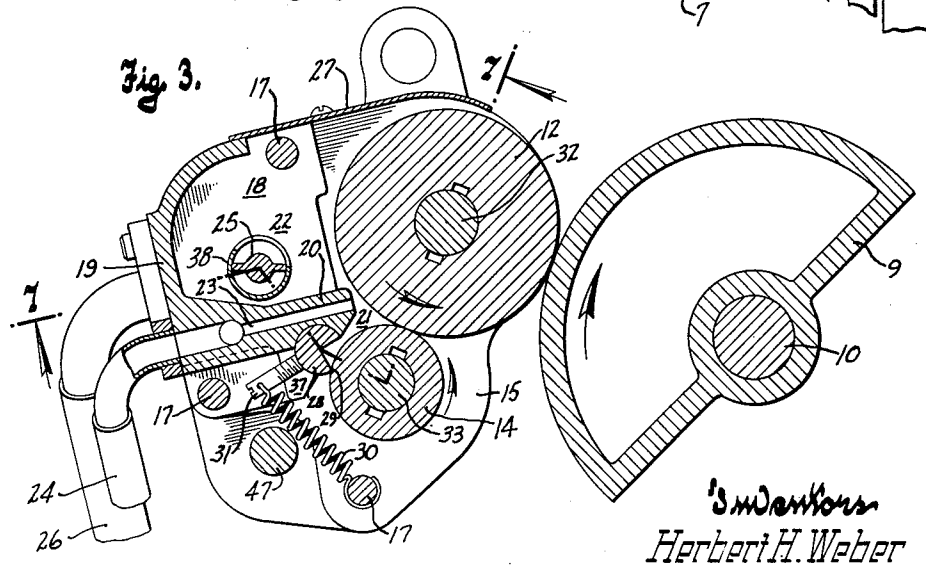


Fig. 3.



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PASTE APPLICATOR FOR BAGMAKING MACHINES

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Fig. 4.

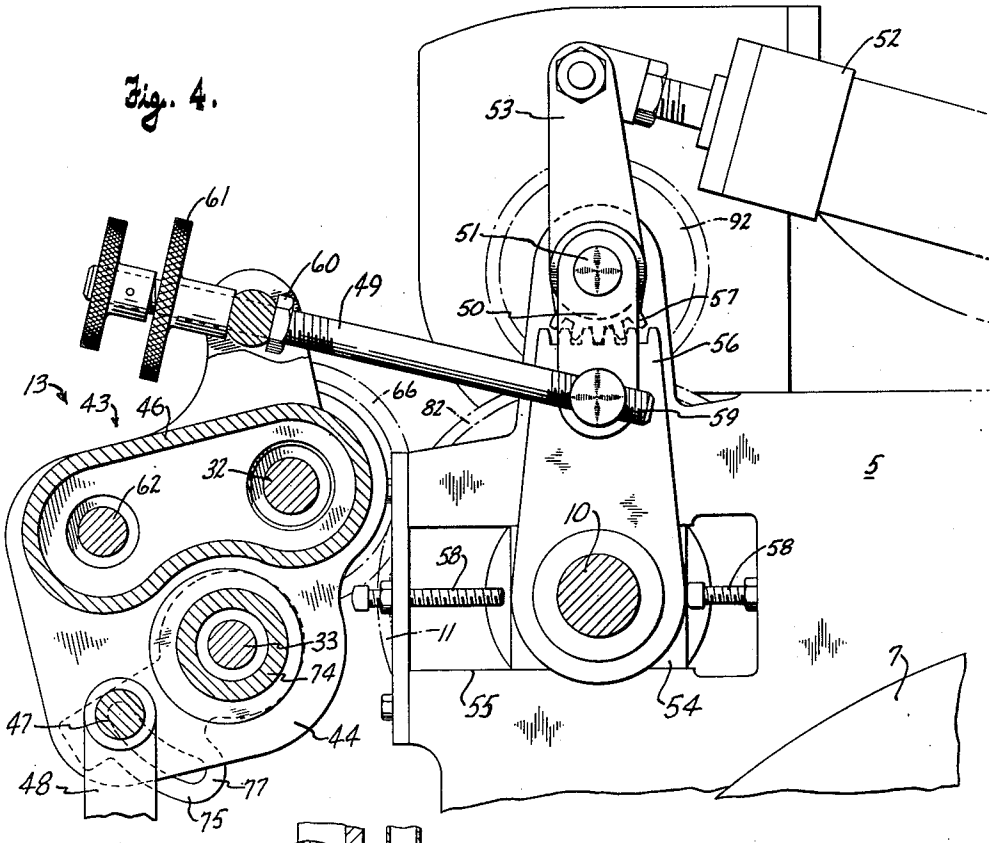


Fig. 5.

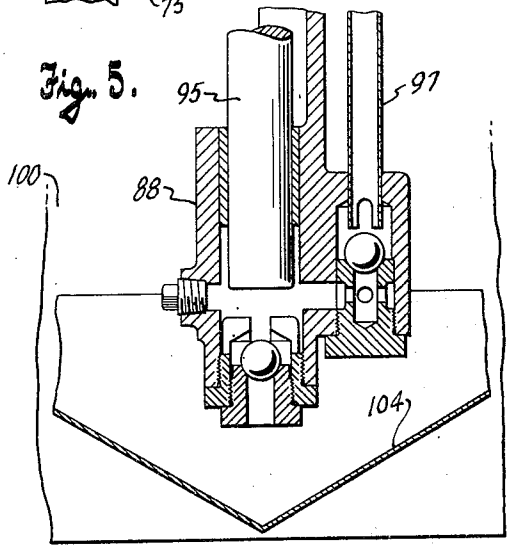
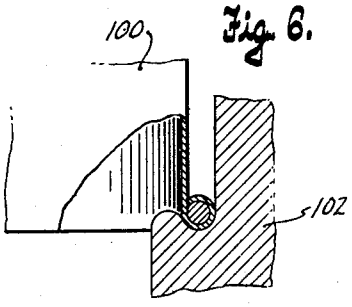


Fig. 6.



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PASTE APPLICATOR FOR BAGMAKING MACHINES

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Fig. 7.

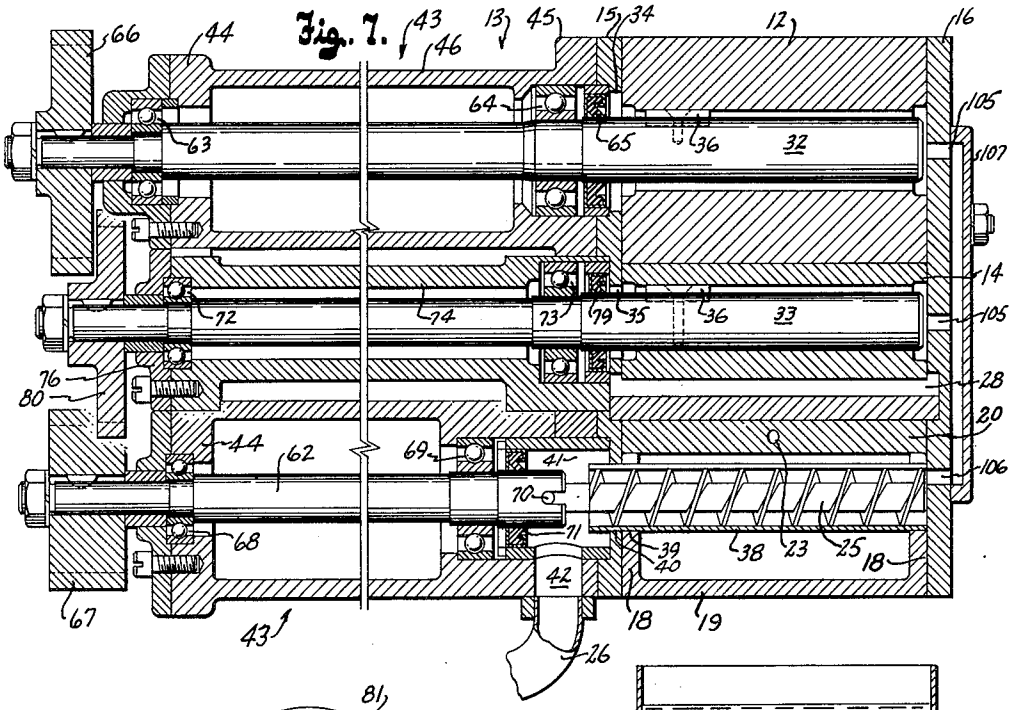


Fig. 8.

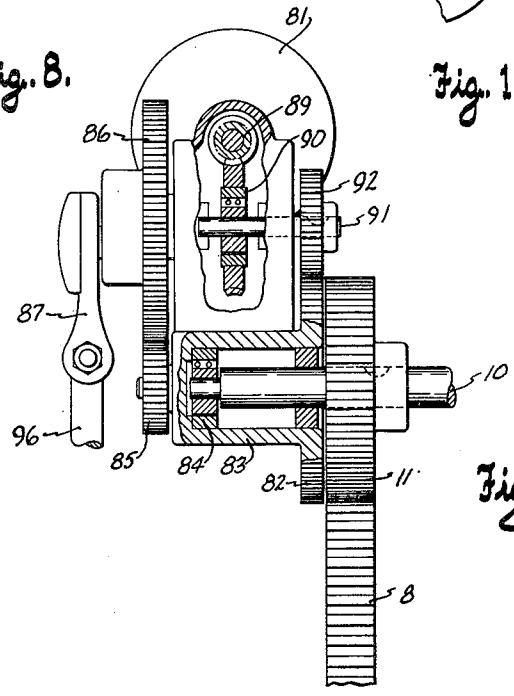


Fig. 10.

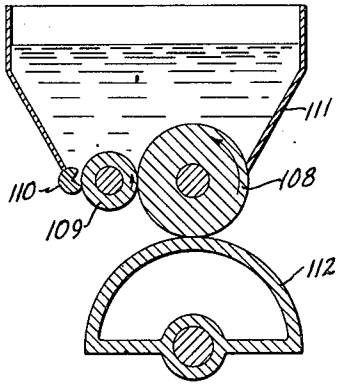
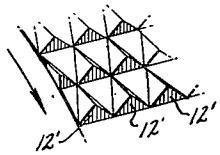


Fig. 9.



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Patented Oct. 5, 1954

2,690,732

UNITED STATES PATENT OFFICE

2,690,732

PASTE APPLICATOR FOR BAGMAKING MACHINES

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Application April 2, 1952, Serial No. 279,988

10 Claims. (Cl. 118—212)

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This invention relates to applicators for flowable material such as paste and refers more particularly to a paste applicator for use in bag making machines and the like.

This invention is closely related to that of the copending application of Herbert H. Weber and Allen O. Sohn, Serial No. 205,972 filed January 15, 1951, now Patent 2,641,220, in that the present invention also contemplates a paste applicator wherein the paste may be fed to the applicator per se under pressure from a remotely located reservoir with the excess paste returning to the reservoir.

One of the purposes of the present invention is to improve the applicator of the aforesaid copending application, particularly with respect to the manner in which the doctoring function is performed and to this end it is an object of this invention to provide an applicator for flowable material such as paste wherein the doctoring function is performed by a roller contiguous to the applicator roller and revolving in the same direction as the applicator roller so that the contiguous surfaces of the two rollers move in opposite directions. It has been found that this manner of doctoring the film of flowable material adhering to the applicator roller assures a more uniform distribution of the material over the roller and in general greatly improves the operation of the device.

With a view toward further improving the doctoring functioning and assuring uniformity in the film of material carried by the applicator roller, it is a further object of this invention to provide the surface of the applicator roller with unidirectional serations facing in the direction of rotation of the roller.

Another object of this invention is to provide an arrangement whereby the receptacle or reservoir for the paste may be readily removed and replaced with another such receptacle or reservoir without in anywise affecting the operativeness of the machine so that changes from one type of paste or flowable material to another can be quickly made, and an entire day's supply of paste or other flowable material to be applied may be prepared beforehand and then mounted in position on the machine when the day's operation is to begin.

Another object of this invention is to provide a paste applicator for bag making machines and the like wherein the rotatable parts of the applicator per se and the pump for delivering the paste thereto may be driven either from the bag making machine itself or by an auxiliary drive

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motor with the two driving sources so connected to the driven instrumentalities as not to interfere with one another.

Still another object of this invention is to provide a simple manner of quickly retracting the applicator per se from the customary transfer sector by which the paste is transferred from the applicator to the portions of the bags to be coated and simultaneously moving the transfer sector away from the bag closing drum with which it normally coacts when the bag making machine is stopped.

It is a further object of this invention to provide a paste applicator for bag making machines and the like which is quickly and easily disassembled and detached from its driving means to facilitate cleaning.

With the above and other objects in view, which will appear as the description proceeds, this invention resides in the novel construction, combination and arrangement of parts substantially as hereinafter described and more particularly defined by the appended claims, it being understood that such changes in the precise embodiment of the hereindisclosed invention may be made as come within the scope of the claims.

The accompanying drawings illustrate two complete examples of the physical embodiments of the invention constructed according to the best modes so far devised for the practical application of the principles thereof, and in which:

Figure 1 is a side view of a portion of a bag making machine illustrating the application of this invention thereto;

Figure 2 is an end view of the upper portion of that part of the bag making machine shown in Figure 1;

Figure 3 is a cross sectional view taken through Figure 2 on the plane of the line 3—3;

Figure 4 is a cross sectional view through Figure 2 on the plane of the line 4—4;

Figure 5 is a detail sectional view taken through Figure 1 on the plane of the line 5—5;

Figure 6 is a fragmentary detail view illustrating the manner in which the paste reservoir is removably supported in position;

Figure 7 is a longitudinal sectional view through Figure 3 taken on the planes of the zig-zag line 7—7;

Figure 8 is an end view with parts broken away and in section illustrating part of the drive transmission for the pump and applicator unit;

Figure 9 is a fragmentary perspective view on an enlarged scale illustrating a portion of the surface of the applicator roller; and

Figure 10 is a cross sectional view through a modified form of applicator unit.

Referring now particularly to the accompanying drawings in which like numerals indicate like parts throughout the several views, the numerals 5 and 6 designate the side frames of a bag making machine, only a portion of which has been shown. As is customary such machines include a relatively large diameter bag closing drum rotatably mounted between the side frames, a portion of which is shown as at 7. The manner in which this drum is mounted and the way in which it coacts with bag closing instrumentalities (not shown) to close the ends of the bags in formation form no part of this invention and hence are not illustrated. For present purposes it is sufficient to note that this large bag closing drum 7 is positioned substantially midway between the side frames 5 and 6 and that a large gear 8 overlying the side frame 5 rotates with the drum, the pitch diameter of the gear being substantially equal to the diameter of the drum.

The bags being made and more particularly in the process of having their bottoms closed are carried by the drum 7 under a paste transfer sector 9. This transfer sector 9, as is customary, is adapted to have a pattern plate (not shown but somewhat in the nature of the plate of a printing press) mounted on its cylindrical surface, and rotates in timed relation with the drum 7 to apply paste to a predetermined area of the bags travelling with the drum. To assure the transfer sector operating in timed relation with the drum its shaft 10 is geared to the drum gear 8 through a pinion 11.

As will be hereinafter described, the transfer sector is bodily movable away from its position of coaction with the drum 7 so that whenever it is necessary to run the machine without actually carrying work therethrough and forming bags on the drum there will be no application of paste by the sector to the surface of the drum. It is important to observe, however, that when the sector is retracted from the drum, the pinion 11 and gear 8 must not be pulled entirely out of mesh. Otherwise the timing between the sector and the drum would be disturbed.

The paste to be transferred by the sector to the bag bottoms is applied to the sector or more particularly to the pattern plate mounted on its curved surface, by a paste applicator roller 12 which forms part of an applicator unit indicated generally by the numeral 13. The applicator unit 13 is somewhat like that of the aforesaid copending application Serial No. 205,972 in that it is adapted to have the paste fed thereto under pressure from a remotely located reservoir and is so constructed that the paste in excess of the required amount flows back into the reservoir.

In the present applicator unit, however, the manner of doctoring the film of paste which is carried on the applicator roller and by it is applied to the transfer sector is materially improved through the use of a rotating doctor roller 14 which revolves in the same direction as the applicator roller so that the contiguous surfaces of the two rollers move in opposite directions. The relationship between these two rollers and the transfer sector is illustrated in Figure 3 where the directions of rotation of the two rollers and the sector are indicated by direction arrows.

The applicator roller 12 and the doctor roller 14 are of the same length and span the distance between two end plates 15 and 16 with the ends of the rollers flush with the inner faces of these

plates. Tie rods 17 hold the end plates together, and two of these rods also pass through the end walls 18 of a nozzle body 19 which is clamped between the end plates 15 and 16.

The nozzle body 19 in coaction with the applicator and doctor rollers and the end plates 15 and 16 defines a closed chamber adapted to hold a quantity of paste. This chamber has a substantially horizontal partition wall 20 extending across the length thereof with the outermost edge thereof in juxtaposition to but spaced slightly from the cylindrical surface of the applicator roller 12. The partition wall, as will be seen, divides the paste receiving chamber into an inlet or feed zone 21 and an outlet zone 22, the former merging with the zone of contiguity between the two rollers and the latter being essentially above the partition wall 20.

The paste is fed to the inlet or feed zone 21 through a port 23 which is located in the medial portion of the partition wall 20 and has a supply duct 24 connected therewith. In operation the paste fed under pressure into the zone 21 fills the same and, of course, contacts the cylindrical surfaces of the applicator roller and the doctor roller, and paste in excess of that which leaves the inlet zone or chamber as a film adhering to the applicator roller flows across the edge of the partition wall 20 into the outlet zone 22. The partition wall 20 thus functions as a weir.

The material which enters the outlet zone 22 is discharged therefrom by a conveyor screw 25 mounted for rotation about an axis parallel to the axes of the applicator and doctor rollers and arranged to discharge through an outlet port in the end wall 18 of the nozzle body and adjacent to the end plate 15 for passage to a return duct 26. Since the excess paste flowing across the weir into the relatively large outlet chamber 22 is no longer under the pressure which obtains in the inlet or feed zone 21 and since the conveyor screw 25 operates in the bottom of this chamber there is small likelihood of the paste filling and building up a pressure in the outlet chamber. Hence, the top of the outlet chamber need not be securely closed. Nevertheless it is preferable to close the same as by a cover plate 27 which reaches around the top of the applicator roller as shown in Figure 3.

For convenience the doctor roller is shown in Figure 3 as bearing directly on the surface of the applicator roller, but those skilled in this art will appreciate that a slight clearance exists between the contiguous surfaces of these rollers and that the extent of this clearance determines the thickness of the film of paste carried away by the applicator roller for application to the pattern surface on the transfer sector. To enable adjustment of this clearance the doctor roller is bodily shiftable toward and from the applicator roller in a manner to be hereinafter described.

For the doctor roller to perform its doctoring function it is, of course, necessary that the surface thereof approaching the zone of contiguity between the rollers be clean. A scraper 28 performs this function. This scraper is conveniently formed as a cylindrical bar with a segment thereof cut away for its entire length to provide an edge 29. The cylindrical bar is rotatably mounted in the nozzle body under its partition wall 20 with its edge 29 bearing against the surface of the doctor roller 14. A tension spring 30 having one end hooked to an arm 31 extending radially from the scraper bar and its other end

attached to one of the tie rods 17 yieldingly holds the scraper edge 29 against the surface of the doctor roller to thus clean this surface and also keep the doctor roller from carrying paste out of the inlet or feed chamber 21.

The movement of the contiguous surfaces of the applicator roller and doctor roller in opposite directions of itself affords good assurance against the possibility of lumps being carried along by the applicator roller, but to further guard against such possibility and to continually keep the paste broken up and smooth, the surface of the applicator roller is preferably serrated as shown in the fragmentary detail view, Figure 9. As here shown the entire surface of the applicator roller is covered with rasp-like projections 12' facing in the direction in which the applicator roller revolves.

It is, of course, important that the entire applicator unit be quickly and readily dismantled to facilitate cleaning, and with this objective in view the ends of the applicator and doctor rollers 12 and 14, respectively, are flat and merely ride flush upon the inner faces of the end plates 15 and 16 which, as indicated hereinbefore, are readily separably held together by the tie rods 17. The rollers are held in place by being mounted upon drive shafts 32 and 33, respectively, which project through holes 34 and 35 in the end plate 15 to enter axial bores in the rollers. Keys 36 fixed to the shafts engage in appropriate keyways in the rollers to provide readily separable driving connections between the shafts and the rollers.

Also, with a view toward enabling complete disassembly of the parts to facilitate cleaning, the cylindrical scraper bar 28 merely fits in a substantially semi-cylindrical socket in the underside of the partition wall 20 of the nozzle body and in sockets of somewhat larger angular extent formed in pads 37 on the end walls 18 of the nozzle body.

The conveyor screw 25 is readily removably mounted in an open topped semi-cylindrical trough 38 which extends across the length of the outlet chamber 22 and protrudes through a hole 39 in the end wall 18 of the nozzle body adjacent to the end plate 15 and through a hole 40 in this end plate to discharge into a short sleeve 41 from which an outlet port 42 leads for connection with the return duct 26.

The tie rods 17 in addition to holding the applicator unit together also readily removably mount it, cantilever fashion, upon the end of a drive unit indicated generally by the numeral 43, and from which the shafts 32 and 33 protrude. Removal of the tie rods 17 thus enables quick detachment of the entire applicator unit and ready disassembly of the component parts thereof to facilitate cleaning.

The drive unit 43 comprises a casting having spaced end walls 44 and 45 connected by a tubular housing 46. The two end walls project downwardly beneath the housing 46 and are hingedly mounted upon a transverse supporting shaft 47 supported from the side frames of the machine by brackets 48.

Inasmuch as the applicator unit is carried by the drive unit by being bolted to the end wall 45 it follows that it partakes of any movement of the drive unit about the supporting shaft 47 and such movement is utilized to adjust the applicator roller to the transfer sector and also to retract the applicator unit from the transfer sector when it is desired to shut down the machine but still keep the rollers of the applicator unit in operation.

To shift the connected drive and applicator units about the shaft 47 for the purpose of retracting the applicator unit from the transfer sector or bringing it back to operative position, the drive unit is connected through a link 49 with a lever 50 fixed on a transverse rock shaft 51 journalled in the side frames 5 and 6. Rocking movement is imparted to the shaft 51 by an air cylinder 52, the piston of which is connected to an actuating lever 53 fixed to the shaft 51 and preferably cast integral with the lever 50.

The rocking movement of the shaft 51 is also utilized to move the transfer sector slightly away from the drum 7 which motion however, as hereinbefore brought out, must not be so great as to disengage the pinion 11 from the gear 8. To accomplish such limited movement of the sector concomitantly with the swinging movement of the connected drive and applicator units the bearings 54 in which the sector shaft is journalled are slidably mounted in guideways 55 in the side frames and have racks 56 connected thereto and meshing with pinions 57 fixed to the shaft 51. Adjustable stop screws 58 limit the translation of the bearings 54.

The adjustment of the applicator roller toward and from the transfer sector is accomplished by having the connection between the link 49 and the lever 50 threaded as at 59. Rotation of the link 49 thus either increases or decreases its effective length and thereby shifts the applicator roller from or towards the transfer sector. Locking nuts 60 and 61 serve to hold the link 49 against rotation once the adjustment has been made.

The drive unit 43 mounts the shafts 32 and 33 and a third shaft 62 which drives the conveyor screw 25. As best shown in the longitudinal sectional view, Figure 7, which view, it should be noted, is taken on several planes, the shaft 32 is journalled in bearings 63 and 64 mounted on the end walls 44 and 45, respectively. These bearings are, of course, axially aligned, and in the conventional manner hold the shaft 32 against endwise displacement.

Where the shaft protrudes beyond the end wall 45 for projection into the applicator unit a suitable seal 65 is provided to prevent leakage of paste from the applicator unit.

The opposite end of the shaft 32 projects beyond the end wall 44 and has a gear 66 fixed thereto. This gear meshes with a wide faced gear 67 fixed to the conveyor driving shaft 62 which, like the shaft 32, is journalled in bearings 68 and 69, respectively, carried by the end walls 44 and 45. The end of the shaft 62 adjacent to its bearing 69 is socketed and projects beyond this bearing into the sleeve 41 to receive the end of the shaft of the conveyor screw. A pin through the conveyor screw shaft and notched in the socketed end of the shaft provides a readily separable driving connection 70 between the shaft and the conveyor screw. A seal 71 is also preferably provided to preclude the loss of paste from the end of the sleeve adjacent to the bearing 69.

The shaft 33 which carries the doctor roller is journalled in bearings 72 and 73 which, however, are not mounted directly on the end walls 44 and 45 but instead are fixed in the opposite ends of a bearing sleeve 74. This bearing sleeve is rotatably journalled in the end walls 44 and 45 for rotation about an axis eccentric to the drive

unit 43 and consequently its shaft 33 so that rotation of the bearing sleeve bodily moves the doctor roller toward or from the applicator roller. To facilitate rotating the bearing sleeve 74 to effect the desired adjustment between the applicator and doctor rollers a lever 75 is cast integrally with the bearing cap 76 which is fixed to the end of the bearing sleeve over the bearing 72. This lever and an arcuately slotted flange 77 overlie the outer face of the end wall 44; and a clamping screw 78 which passes through the arcuate slot in the flange 77 locks the sleeve in adjusted position.

The shaft 33, of course, protrudes from the wall 45 and where it passes therefrom a packing seal 79 is preferably provided to prevent the loss of paste from the applicator unit.

The opposite end of the shaft 33 has a gear 80 fixed thereto which meshes with the wide faced gear 67. The wide faced gear 67 is thus interposed between the gears 66 and 80 and as a result the shafts 32 and 33 and consequently the applicator roller and the doctor roller revolve in the same direction.

The shafts 32, 33 and 62 are driven either from the large gear 8 of the machine or a small auxiliary motor 81, suitable overrunning clutches being provided to prevent interference between these two sources of power. The shaft 32 constitutes the power input shaft for the drive unit and hence its gear 66 meshes with a gear 82 which, as best shown in Figure 8, is on the flange of a cup-like clutch housing 83 rotatably supported on the sector shaft 10. A unidirectional or overrunning clutch 84 provides for the transmission of torque from the shaft 10 to the clutch housing when the drive is from the main gear 8.

Thus, when the shafts of the drive head are to be driven from the machine the clutch 84 is engaged and the chain of power transmission is from the large gear 8 to the gear 11 which is fixed to the shaft 10, from the shaft 10 through the clutch 84 into the clutch housing 83 and by its flange gear 82 to the gear 66. At the same time a pinion 85 fixed on the outer end of the clutch housing and meshing with a gear 86 drives a crank 87 which in turn operates a paste pump 88 by which the paste is pumped into the applicator unit.

The drive transmission from the auxiliary motor 81 to the pump and the shafts of the drive head 43 is through a worm gear transmission 89 which incorporates an overrunning or unidirectional clutch 90 by which the wheel of the worm gear connection is drivingly connected to a shaft 91. The shaft 91 has a pinion 92 fixed thereto which meshes with the flange gear 82 of the clutch housing 83 and thus transmits torque both to the gear 66 of the drive unit and to the gear 86 of the pump actuating crank. As will be readily apparent the two overrunning or unidirectional clutches 84 and 90 operate in such directions that either or both power sources may be in operation at the same time.

The pump 88 by which the paste is fed, under pressure, to the applicator is fixed to and depends from the underside of a horizontal cover casting 93. This cover casting is fixed to an upright pedestal 94 which is rigidly connected to the frame of the machine. As best shown in Figure 5 the pump 88 is of the reciprocating type and has a plunger 95 connected through a link 96 with the crank 87. The customary valving arrangement is provided and a discharge tube 97 leads from the outlet of the pump to a hose fitting 98 on the top of the cover casting 93 and to which the inlet duct 24 is attached.

The return duct 26 connects with a hose fitting 99 fastened to the top of the cover casting 93 over an appropriate port therein so as to discharge down through the cover casting into a container 100 positioned under the cover casting. The container 100 is open topped and is of a size to fit under the cover casting 93 where it is removably held by the coaction between a depending flange 101 on the cover casting and a supporting bracket 102 on the pedestal 94. Handles 103 are preferably provided on the container to facilitate lifting the same onto and off its supporting bracket 102, and preferably the bottom 104 of the container is pitched down toward the center.

With this arrangement the container 100, which provides a reservoir for the paste or other flowable material being applied, is quickly and easily mounted in position or replaced by another such container unit without in anywise disturbing the operating mechanism. This enables making up the paste beforehand and keeping it in a suitable storage room, and by eliminating the need for refilling paste fountains usually located in some hard-to-get-at and generally elevated spot on the machine, eliminates one of the sources of inconvenience heretofore experienced in the operation of bag making and similar machines.

Though in practice it has been found that there is very little likelihood that paste will leak out of the inlet chamber 22 of the applicator unit between the ends of the applicator and doctor rollers and the end plate 16, to positively preclude disgorging of paste at this point the plate 16 has ports 105 therein in line with the axes of the applicator and doctor rollers and another port 106 opening to the conveyor screw. All of these ports are connected by the space under a dished cover plate 107 secured to the outer face of the end plate 16. Consequently any paste which might possibly flow between the rollers and this cover plate will be conducted back to the conveyor screw.

While this invention is particularly concerned with a paste applicator in which the paste is pumped to the applicator unit from a remotely located reservoir, the advantages of the rotatable doctor roller coacting with the applicator roller can be utilized in an open fountain type paste applicator such as that more or less diagrammatically illustrated in Figure 10. As here shown an applicator roller 108 similar to the previously described applicator roller coacts with a doctor roller 109 and a scraper 110 to close the bottom of an open topped trough 111 which contains a supply of paste or other flowable material.

As hereinbefore described, the rollers 108 and 109 rotate in the same direction so that their contiguous surfaces move in opposite directions, and the direction of rotation is such that the surface of the applicator roller 108 which faces upwardly travels toward the zone of contiguity between the two rollers.

The applicator roller 108 applies the thin film of paste or other flowable material spread thereon by the doctor roller directly to the surface of the work to be coated or onto a transfer sector 112 which in turn coats the surface of the work as hereinbefore described.

From the foregoing description taken in connection with the accompanying drawings it will

be readily apparent that this invention provides an applicator for flowable material such as paste which has many advantages over devices for this purpose heretofore used on bag making machines and that it eliminates much of the inconvenience experienced in the operation of such machines.

To a large degree the advantages possessed by the present invention result from the manner in which the applicator unit specifically illustrated in Figure 3 functions; and for convenience a brief recapitulation of its operation is as follows:

The paste to be applied is pumped into the feed zone 21 through the inlet port 23 and fills the same so that the cylindrical surfaces of the rotating applicator roller 12 and the doctor roller 14 are continuously brought into contact with the paste. Since both rollers turn in the same direction their contiguous cylindrical surfaces travel in opposite directions. This, plus the rasp-like serrations 12' which cover the surface of the roller 12, assures that paste carried out of the feed zone 21 as a film or layer adhering to the applicator roller will have a uniformly smooth consistency. The thickness of this adhering film or layer is determined by the clearance between the applicator roller and the doctor roller, and so that the doctor roller 14 will properly perform its doctoring function the surface thereof approaching the zone of contiguity between the rollers is kept clean by the scraper 28.

The paste carried from the feed zone 21 by the applicator roller is applied to the transfer sector 9 and by it is applied to the work. The rate at which the paste is pumped into the feed zone 21 exceeds that at which it is carried therefrom by the applicator roller, and the excess paste flows across the weir formed by the forward edge of the wall 20 into the outlet zone 22 from which it is discharged by the conveyor 25 and returned to the reservoir by the duct 26.

What we claim as our invention is:

1. In a bag making machine, the combination with a bottom closing drum and the mounting frame thereof: of a paste applicator including a chamber to hold a quantity of paste and an applicator roller forming one wall of the chamber; a transfer sector between the applicator roller and the bottom closing drum for transferring paste from the applicator roller to work carried by said drum; bearings in which the shaft of the transfer sector is journalled; means mounting said bearings for translation along a plane intersecting the bottom closing drum so that by movement of said bearings the transfer sector may be shifted into and out of operative position with respect to the drums; means mounting the paste applicator for bodily swinging movement thereof about a fixed axis toward and from the transfer sector; power means for rotating the applicator roller; and common power actuated means for simultaneously swinging the paste applicator on its mounting to carry its applicator roller away from the transfer sector and for moving the bearings of the transfer sector in the direction to carry the transfer sector away from its operative position.

2. The combination set forth in claim 1 further characterized by the fact that said last named means comprises a rock shaft mounted to rock about a fixed axis parallel to the axis of the transfer sector; a gear and rack connection between said rock shaft and the bearings for the transfer sector through which rotary motion of the rock shaft imparts translatory motion to the bearings; a lever fixed to the rock shaft; a link connecting the lever with the paste applicator so that rotary movement of the rock shaft swings the paste applicator on its mounting; and power means for imparting rotary motion to said rock shaft.

3. In a bag making machine, the combination of: a paste applicator including a paste receptacle adapted to hold a quantity of paste, and an applicator roller forming one wall of the receptacle; a transfer sector for transferring paste from the applicator roller to a surface to be coated; bearings in which the shaft of the transfer sector is journalled; means mounting said bearings for movement to carry the transfer sector to and from its operative position; means mounting the paste applicator for bodily swinging movement toward and from the transfer sector; and common means for moving the bearings for the transfer sector and swinging the paste applicator, comprising a rock shaft mounted to turn about a fixed axis parallel to the transfer sector shaft and the axis about which the paste applicator swings, a rack and gear connection between said rock shaft and the bearings for the sector shaft, a lever on the rock shaft and a link connecting the lever and the paste applicator, said lever being longer than the radius of the pitch circle of the gears of said rack and gear connection, and power means drivingly connected to the rock shaft to rock the same.

4. In a bag making machine: a paste applicator including an applicator roller and a closed chamber of which the applicator roller forms one wall; a supply duct leading to said closed chamber through which paste may be fed to the chamber; a return duct for carrying excess paste from the closed chamber; a pump connected to said supply duct; a fixed mounting for the pump including a horizontal wall, said wall having a port therethrough connected with the return duct, the pump being suspended from the underside of said wall; an open topped container of a size to fit under said horizontal wall and when in position thereunder to have its open top covered by said wall, the depth of the container being such that when it is in position under said horizontal wall with the wall forming a cover therefor the pump is located in the container with its inlet near the bottom of the container so that paste in the container can be pumped to the applicator and excess paste from the applicator chamber returns to the container; and means for readily removably supporting the container in position under said horizontal wall with the wall forming a cover for the container.

5. In a bag making machine having a paste applicator including an applicator roller and a closed chamber of which the applicator roller forms one wall: a pump having an inlet and an outlet; a fixed support for the pump including a cover plate, the pump depending from the underside of said cover plate; duct means connecting the outlet of the pump with the closed chamber of the applicator and through which the pump may feed paste under pressure into said chamber, said duct means including a tube extending from the outlet of the pump through the cover plate; an open topped container of a size to fit under said cover plate and be closed thereby with the pump positioned in the lower portion of the container; and means for readily

removably supporting the container in position under the cover plate at an elevation such that the cover plate closes the open top of the container and the pump inlet is near the bottom of the container to draw paste from the container so that said container provides a readily removable and replaceable reservoir for paste to be fed by the pump to the applicator and the cover plate serves the dual function of providing a cover for the paste reservoir and a mounting for the pump.

6. A device for applying flowable material, comprising: a nozzle body having a forwardly projecting elongated wall thereon; means defining an elongated collecting chamber closed at its ends and located at one side of said wall; an applicator roller; a doctor roller; means rotatably mounting said rollers with their axes parallel to said wall and their cylindrical surfaces contiguous and with the cylindrical surfaces of the applicator roller in juxtaposition to but spaced slightly from the forward edge of said wall; means on the nozzle body at the side of said wall opposite the collecting chamber cooperating with the wall and said rollers to define an elongated feed chamber into which the material may be fed for application to the surface of the applicator roller, said feed chamber being substantially coextensive in length with the rollers and being closed except for an inlet port leading thereto, the clearance between the two rollers and the space between the cylindrical surface of the applicator roller and the forward edge of the wall, the space between the forward edge of the wall and the adjacent surface of the applicator roller being greater than the clearance between the two rollers so that the wall provides a weir between the feed chamber and said collecting chamber across which excess material in the feed chamber may escape therefrom into said collecting chamber; duct means connected with the inlet port of the feed chamber for feeding the flowable material thereto; and means for rotating the applicator roller and the doctor roller in the same direction with the surface of the applicator roller moving across the weir toward the zone of contiguity between the rollers.

7. A paste applicator for bag making machines and the like, comprising: a drive head comprising a rigid frame having rigidly connected opposite end walls; a first pair of coaxial bearings mounted in said end walls; a second pair of coaxial bearings mounted in said walls with the common axis thereof parallel to that of the first designated bearings; a bearing sleeve journalled in the end walls with its axis of rotation parallel to the axes of said first and second pairs of bearings; coaxial bearings mounted in said bearing sleeve with the common axis thereof eccentric to the axis of rotation of said sleeve; drive shafts journalled in all of said bearings; an applicator unit including coacting applicator and doctor rollers, and a conveyor screw; means readily removably mounting the applicator unit on one end wall of said frame; readily separable driving connections between the applicator roller and the conveyor screw and the drive shafts journalled in the first two pairs of bearings; the drive shaft journalled in the bearings carried by the bearing sleeve extending beyond said end wall of the drive head frame and being received in a bore in the doctor roller so that the doctor roller is supported by said shaft to be adjusted toward and from the applicator roller by rotation of the bearing sleeve; and a readily separable driving connection between the doctor roller and its drive shaft.

8. A paste applicator for bag making machines and the like, comprising: an applicator unit including coacting applicator and doctor rollers and rigidly connected end plates between which said rollers are located with the ends of the rollers flush with the inner faces of the end walls; a nozzle body connecting said end plates and with the end plates and rollers defining a chamber adapted to hold a quantity of paste, the cylindrical surfaces of the rollers contacting the contents of the chamber and each roller having an axial bore to receive a drive shaft, one of the end walls having holes through which drive shafts may be inserted into the bores of the rollers; a driving head for the applicator unit comprising a frame having rigidly connected end walls, two sets of coaxial bearings carried by said end walls, and a drive shaft journalled in each set of bearings and having an end portion projecting beyond one of the end walls, said projecting end portions of the drive shafts being insertable through the holes in the end wall of the applicator unit and into the axial bores of the rollers; means readily removably securing the applicator unit to said designated end wall of the frame with the projecting end portions of the drive shafts received in the bores of the rollers; and readily separable driving connections between the rollers and their drive shafts.

9. The paste applicator set forth in claim 8 further characterized by the fact that the bearings for the drive shaft of the doctor roller are mounted in a bearing sleeve which in turn is journalled in the end walls of the driving head for rotation about an axis eccentric to the axis of the bearings in the sleeve so that the doctor roller is bodily adjustable toward and from the applicator roller by rotation of the bearing sleeve.

10. The paste applicator set forth in claim 8 further characterized by the fact that the end plates of the applicator unit are readily separably though rigidly connected so that the entire applicator unit may be quickly dismantled for cleaning.

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