June 6, 1944. M. A. NICOLAS 2,350,694

BAG CLOSING DEVICE

Filed Nov. 5, 1942 2 Sheets-Sheet 1

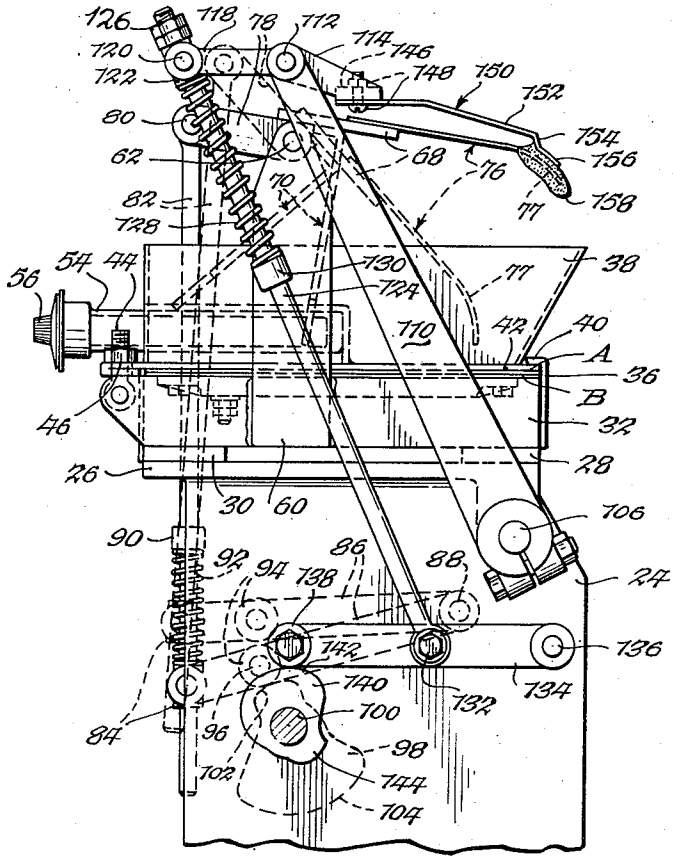


Fig. 1.

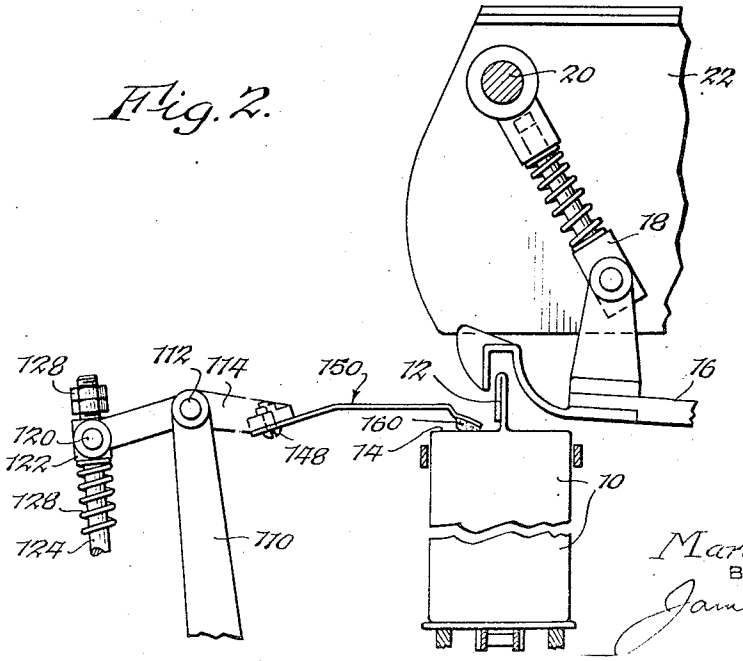


Fig. 2.

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Filed Nov. 5, 1942 2 Sheets-Sheet 2

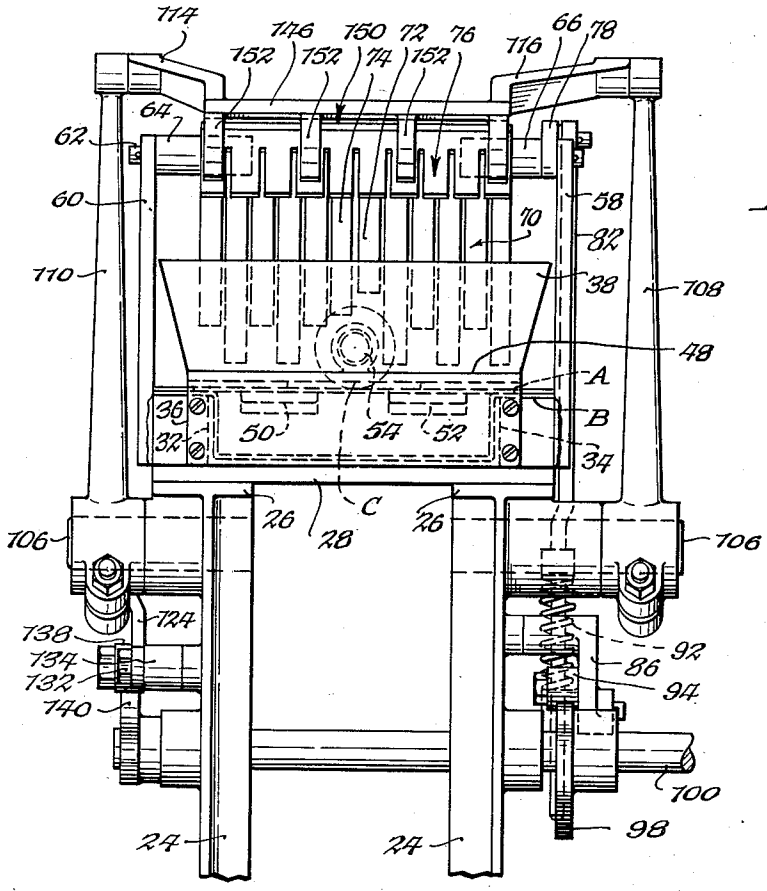


Fig. 3.

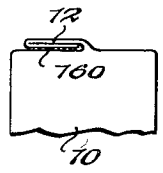


Fig. 6.

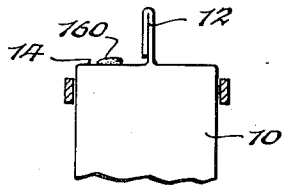


Fig. 4.

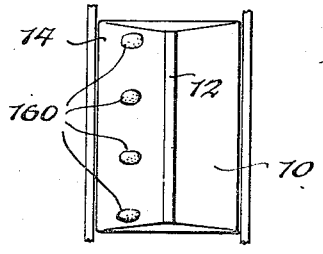


Fig. 5.

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2,350,694

UNITED STATES PATENT OFFICE

2,350,694

BAG-CLOSING DEVICE

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Application November 5, 1942, Serial No. 464,585

9 Claims. (Cl. 91—47)

The present invention relates to the closing of paper bags and, more particularly, to apparatus for automatically applying adhesive to a partially closed bag in such position that the closure may be completed and the adhesive will serve to secure the closure in its completed condition.

The present invention will be described in connection with bag closing machines of the type shown in United States Patent No. 2,175,557 granted October 10, 1939 to Cundall and in United States Patent No. 2,256,526 granted September 23, 1941, to Nicolas. Obviously, the invention may be applied to machines of entirely different type inasmuch as the function performed by the apparatus of this invention is applicable in any situation requiring the application of controlled quantities of adhesive to secure rapid and efficient bonding between two surfaces.

In the machines described in the Cundall and Nicolas patents, a filled paper bag has its mouth portion collapsed and folded once upon itself as it stands upright relative to the bag body. The folded-over bag mouth is then folded down upon the shoulder of the bag body into contact with adhesive which has been applied to the shoulder. In the patented machines, the adhesive is applied to the bag shoulder by means of a plate or series of fingers which are brought into contact with a roller rotating in a bath of adhesive. These fingers or the plate are then moved into contact with the bag shoulder and are dragged across the shoulder whereby to spread the adhesive. In the Nicolas patent, a plurality of flexible fingers are employed in order to assure even distribution of adhesive over bag shoulders which may be somewhat irregular in contour.

The adhesive applying apparatus of the Cundall or Nicolas patents is entirely satisfactory for many grades of adhesive, particularly those which are relatively slow to set. Such adhesives include those which are used in aqueous condition or those in solvents which are not highly volatile. Certain other adhesives of the temperature sensitive type, which are relatively slow in setting, are also successfully used in these patented machines. As shown particularly in the patent to Cundall, the machine includes a rotary drying table to which the bags are delivered after the closure is completed and which includes a sufficient number of stations to insure drying or cooling or other setting of the adhesive to a point where the closure is held with reasonable security by the action of the adhesive.

There are certain types of adhesive which have not been availed of on the patented machines or any machines of the same general class because they set so rapidly as to lead to the likelihood of the adhesive being in non-tacky condition by the time the closure is folded down into contact therewith. These rapid setting adhesives are of the type which become flowable and tacky when maintained at a relatively high temperature. Upon cooling, they set to a sufficient extent to hold the closure securely.

Experiments with these rapid setting temperature sensitive adhesives demonstrate that it was necessary to apply the adhesive in sufficient thickness as to cause it to retain its elevated temperature until the closure folding operation was complete. Obviously, these experiments led to the conclusion that it would not be commercially satisfactory to so alter the Cundall or Nicolas machines as to cause them to apply a sufficiently thick coating of adhesive. If this procedure were to be followed, an excessive quantity of adhesive would be employed for each bag and the cost would be completely out of line with commercial requirements. There was discovered a further objection to such modification of the Cundall and Nicolas machines in that the closures formed by the application of large areas of thick adhesive were exceedingly difficult to break for opening of the package. The adhesive bond was much stronger than the material from which the bag was formed and it was found that such closures led to the destroying of the package when attempt was made to open the same.

Accordingly, it is an object of the present invention to provide an apparatus applicable to bag closing machines of the general type represented by the Cundall and Nicolas patents, for the purpose of applying a rapid setting adhesive in such controlled thickness and area as to permit machines to form a satisfactory closure not unduly difficult to open and not likely to cause spoilage of the bag upon opening.

It is a further object of the present invention to provide apparatus for handling of rapid setting adhesives which will maintain such adhesive in flowable condition until such time as it is applied to a package.

It is a further object of the present invention to provide apparatus for the handling of quick setting adhesives which will rapidly and efficiently apply suitable quantities of such adhesives to a series of rapidly presented packages passing through a closing machine.

Other and further objects of the present invention will become more apparent from a reading of the following specification which contains a de-

tailed description of a preferred but obviously not the only form of embodiment of such invention taken in connection with the drawings forming a part of this specification.

In the drawings:

Fig. 1 is a side elevation with parts in section of one form of apparatus embodying the present invention;

Fig. 2 is a somewhat schematic elevational view with certain parts in section and certain parts broken away illustrating the cooperation between the device shown in Fig. 1 and a bag positioned within a machine of the type shown in the patent to Cundall;

Fig. 3 is a front elevation of the device shown in Fig. 1;

Figs. 4 and 5 illustrate a preferred manner in which quick setting adhesive is applied to a bag by the apparatus shown in Fig. 1; and

Fig. 6 is a side elevation of a bag having a completed closure of the type formed by the apparatus illustrated in Figs. 1 and 2.

Referring now to the drawings wherein similar characters of reference indicate similar parts throughout the several views, there is illustrated an embodiment of the present invention particularly adapted for application to the machine illustrated in the patent to Cundall 2,175,557. In said Cundall machine, filled bags are moved by an intermittent conveyer through a plurality of stations and they are brought to an adhesive applying and closure completing station in the condition illustrated at 10 in Fig. 2. In this condition, the unfilled mouth portion of the bag has had the gussets tucked inwardly and the front and rear walls of the bag collapsed upon the intucked gussets to form a flattened bag neck. The bag neck has been folded once upon itself along a line approximately midway of the height thereof as illustrated at 12 in Fig. 2. In the condition thus illustrated, the bag is ready to have adhesive applied to the shoulder 14 thereof after which the folding shoe 16 is moved to the left as viewed in Fig. 2 to fold the neck 12 down into contact with the shoulder 14 and the adhesive which has been applied thereto. The apparatus for affecting these operations is fully illustrated in the Cundall patent aforesaid and it will be understood that the folding shoe 16 is guided in its leftward motion by the action of the extensible link 18 pivoted at 20 upon the frame 22 of the machine.

In the machine of the Cundall patent, adhesive is supplied to a tray or container within which is located a constantly rotating roller dipping into the supply of adhesive and rotating for the purpose of carrying a film of adhesive to proper position to be picked up by adhesive applicator devices. These latter devices transfer a portion of the film from the roller to the bag shoulder. When quick setting adhesives are used in the Cundall machine, it has been observed that the film formed upon the roller is very likely to assume a partially set condition during its travel. During long continued operation, the film is likely to become increasingly thick unless elaborate and extensive equipment is provided for maintaining the roller at such a temperature to avoid any cooling of the film thereon.

Accordingly, it is a feature of the present invention that the roller mechanism in the Cundall patent is superseded by an adhesive pickup device which avoids difficulties encountered as a result of premature cooling or setting of the adhesive. This improved adhesive pickup device also includes an efficient provision for agitation of the supply of adhesive which has heretofore been a required function of the rotating roller. To this end, there is supported upon the bag closing machine, at the adhesive applying station thereof, the device illustrated in Fig. 1. This device is supported upon a frame 24 which is in turn supported in any suitable manner upon a bag closing machine. As shown in Fig. 3, the frame 24 may conveniently comprise two frame members upon whose upper portions 26 is secured a strip 28 forming a forward support for the adhesive supply structure. A strip 30 similar to the strip 28 is secured across the frame members 24 as shown in Fig. 1 to constitute a rear support for the adhesive supply device. The supporting strips 28 and 30 carry oppositely disposed side plates 32 and 34 respectively (see Fig. 3) joined at their forward end by a plate 36. The upper surfaces of the plates 32 form supports for an adhesive containing tray 38. The plate 36 has formed on its upper edge an inwardly turned flange 40 adapted to overlie flanges 42 formed around the adhesive tray 38. At the rear edge, the flanges 42 are slotted (not shown) for the purpose of receiving swivelled bolts 44 having locknuts 46 thereon which are adapted to bear upon the flange 42 in cooperation with the ledge 40 to hold the flanges and the adhesive tray in detachable position upon the machine.

The tray 38 may be of any conventional shape and, as shown in the drawings, is provided with a bottom 48 lying generally within the plane of the upper surfaces of the side plates 34, 36. Beneath this general plane, there is located a plurality of heaters 50, 52 which are secured to the bottom of the tray and which are suitably energized to apply heat to the contents of the tray. If desired, a suitable thermostatic heat controlling device 54 may be positioned within the tray in actual contact with the adhesive therein. This thermostatic heat control is, of course, wired to the heaters in such a manner as to control their energization to maintain a predetermined temperature. As shown in the drawings, the thermostatic heat control includes a suitable dial 56 which may be adjusted to predetermine the temperature which is to be maintained.

All of the structure thus far described is illustrative of a suitable adhesive supplying device with which the apparatus of the present invention may cooperate. It will be appreciated that the details of structure thus far described are immaterial insofar as the present invention is concerned.

A suitable quantity of adhesive is placed within the tray 38 and may be maintained at proper level by any desired apparatus. If the adhesive is of the temperature sensitive type, the heaters and thermostatic control above described may be availed of to maintain the adhesive in suitable flowable condition.

A pair of vertical supporting brackets 58 and 60 is secured in any suitable manner upon the frame 24. These brackets are located on opposite sides of the tray 38 as shown in Fig. 3 and at their upper ends they are perforated to receive a cross shaft 62. The cross shaft 62 carries at its left-hand portion, as viewed in Fig. 3, a hub 64 and, at its right-hand portion, a hub 66. The hubs 64 and 66 support between themselves a plate-like structure which includes a plate 68 shown in Fig. 1. Preferably, this plate is secured by suitable means, to the hubs 64 and 66 respectively, for rotation therewith in the manner to be described.

The plate 68 has secured thereto two sets of fingers so positioned as to extend downwardly into the body of adhesive within the tray 38. The rearward set of fingers 70 may be relatively closely spaced and may include fingers of alternately differing lengths relatively closely spaced through substantially the entire width of the adhesive tray. Of the set of fingers 70, those fingers near the center and identified as 72 and 74 have been shortened to provide clearance for the thermostatic heat control 54. The forward set of fingers 76 is disposed within a plane substantially normal to the plane of the set of fingers 70. Rotation of the hub 66 and the associated plate 68 and fingers secured thereto to a limited extent will serve to agitate the adhesive within the tray 38. The fingers 70 constantly serve this purpose and will be referred to herein as agitator fingers. The fingers 76 serve this purpose while immersed within the adhesive and also serve their principal function of transferring the adhesive from the tray to position to be picked up by applicator devices.

Reference to Fig. 3 will reveal that the set of transfer fingers 76 includes a plurality of relatively closely spaced elongated fingers preferably curved downwardly at their free ends as indicated at 77 in Fig. 1. The closely spaced fingers are arranged to dip into the adhesive carried within the tray 38 and when they are swung upward to carry on their free ends a film of such adhesive. The close spacing of the fingers thus provides for a film which is practically continuous and the width of the tray. From this film, any suitably arranged pattern of adhesive may be picked up by the applicator devices.

The agitator fingers 70 and transfer fingers 76 are actuated by the following mechanism. The hub 66 (see Fig. 3) has formed thereon a lever 78 which extends rearwardly, as seen in Fig. 1, and which is perforated at its outer end to receive a pin 80 which connects the lever 78 with a link 82 extending downwardly through a pivoted sleeve 84 located on the extremity of a lever 86 pivoted at 88 upon the frames 24. The link 82 has a collar 90 secured thereon between which and the pivoted sleeve 84 is located an expansive spring 92 which serves to urge the link 82 upwardly with respect to the lever 86.

The lever 86 is provided intermediate its ends with a roller 94 freely pivoted upon a stud 96 carried by the lever 86. This roller follows a cam 98 carried by a shaft 100 constantly rotated during operation of the machine by suitable power means not shown. The cam 98 is shaped to impart reciprocating motion to the link 82 whereby to swing the fingers 70 and 76 about the shaft 62 for the performance of their respective functions.

The cam 98 is provided with a dwell 102 which, when it is positioned in contact with the follower 94, will maintain the transfer fingers 76 in the position illustrated in full lines in Fig. 1. The length of this dwell is so chosen as to permit sufficient time for the applicator devices to pick up a suitable quantity of adhesive. The cam 98 is shaped to lead the follower to another dwell portion 104 which, when it is in contact with the follower 94, will maintain the transfer fingers 76 in the dotted line position of Fig. 1. It is obvious, of course, that the agitator fingers 70 will also move betwen their full and dotted line positions in Fig. 1 along with the fingers 76. In this later dwell period, both sets of fingers are immersed in the body of adhesive and they remain in this position for a relatively much greater period of time than in the full line position. This provides an ample length of time for heating the fingers to such a temperature as to avoid any possibility of accumulation of the adhesive thereon beyond the film of desired thickness. In the motion of both sets of fingers between the two extreme positions, they serve to agitate the body of adhesive as discussed above.

From an inspection of Fig. 1, it will be apparent that the movement of the two sets of fingers 70 and 76 extends substantially throughout the body of adhesive contained within the tray 38. The close spacing of these fingers and the narrow slots therebetween insure thorough and widely extensive agitation of the adhesive upon each operative stroke of the machine.

The adhesive applicator devices will now be described. In general, these devices are very similar to those disclosed in the Cundall and Nicolas patents and in certain instances the description herein will be curtailed in view of the fact that the aforementioned patents include a full and detailed disclosure.

A shaft 106 is rotatably mounted within the frame 24 and this shaft is rocked to and fro by mechanism (not shown herein) which is fully disclosed in the patent to Cundall. The extent of the rocking motion of the shaft 106 is so selected as to carry the applicator device from a position over the adhesive supply tray 38 to a position in which contact is made with a bag. During each cycle of the machine, the shaft 106 makes one complete to and fro rocking movement. Secured to the shaft 106 at its opposite ends (see Fig. 3) is a pair of arms 108, 110. The arms 108, 110 rock with the shaft 106 between the position shown in Fig. 1 and the position shown in Fig. 2.

At their upper ends, the arms 108 and 110 carry pins or studs 112 upon which are freely pivoted the opposite members 114 and 116 of the frame upon which the applicator is carried. The frame member 114 has a rearward extension 118 thereon which extends generally behind the arm 110. The extension 118 is pivoted through a pin 120 to a collar 122 loosely slidable upon a cylindrical link 124. The collar 122 is confined to the upper end of the link 124 by means such as a pair of locknuts 126 threadably received on the end of the link 124. An expansive spring 128 is confined between the collar 122 and a collar 130 secured upon the link 124. The arrangement just described is such that upward motion of the link 124 will be yieldably transmitted to the frame 114, 116 through the spring 128. Adjustment of the locknuts 126 may be availed of to vary the relationship between the frame 114, 116 and the link 124.

At its lower end, the link 124 is pivoted as by a stud 132 to a lever 134 pivoted in turn upon a stud 136 carried by the frame 24. At its free end, the lever 134 carries a roller 138 which is adapted to follow a cam 140 secured upon the shaft 100. Rotation of the cam 140 will cause a predetermined rocking motion to be imparted to the lever 134 and thus a predetermined reciprocation to be imparted to the link 124. The cam 140 is provided with a dwell 142 which, when it is in contact with the roller 138, holds the frame 114, 116 in the position illustrated in Fig. 1. The cam 140 is also provided with a dwell 144 which, when it is in contact with the roller 138, holds the frame 114, 116 in the position illustrated in Fig. 2. It

will be understood that the design of the cam 140 and the dwells and rises therein must be coordinated with the swinging motion of the arms 108, 110 in order to impart to the frame 114, 116 the motions necessary to pick adhesive from the fingers 76 and carry it forward into contact with a bag.

The frame upon which the applicator is carried includes, in addition to the members 114, 116, a cross-bar 146 which joins the members 114, 116. The cross-bar 146 may be provided with apertures to receive nuts and bolts 148 which serve to secure the applicator head to the frame. The applicator head 150 is shown thus secured to the cross-bar 146 in Fig. 1. The applicator head 150 comprises in general a plurality of fingers, and it may conveniently be formed from a single plate suitably cut out to leave a desired number of fingers 152 as shown in Fig. 3. In the latter figure, there are shown four such fingers 152 and they are shown evenly spaced throughout the width of the transfer fingers 76. It will be noted that there are a great many more transfer fingers 76 than there are applicator fingers 152. Thus, the applicator fingers may be arranged in any spacing deemed suitable for a particular bag and any number thereof may be used with the assurance that transfer fingers 76 will be available for transfer of adhesive to the applicator fingers irrespective of their number and distribution. This particular feature renders the adhesive applying device of the present invention capable of use with almost any form of adhesive. When the quick-setting adhesives discussed above are to be used, it is desirable to use a relatively small number of widely spaced applicator fingers 152 as illustrated in the drawings. If it is desired to use a different form of adhesive, which requires a great number of applicator fingers as shown, for example, in the Nicolas patent, it is only necessary to substitute a new applicator head having suitable fingers.

Referring now to Fig. 1, it will be observed that the forward end of the applicator fingers 152 are bent rather sharply downwardly at 154 and the tips 156 thereof are rebent to form gently downwardly curving portions extending generally in the direction of the main body of the fingers 152. The curvature of the tips 156 is preferably generally parallel with the curvature of the tips 77 of the transfer fingers 76. Thus, a film of adhesive carried by the transfer fingers may be transferred to the applicator fingers when the two sets of fingers are brought together as shown in full lines in Fig. 1. The adhesive thus transferred to the applicator fingers is carried thereby to the bag.

The operation of the device with particular reference to the use thereof with a quick-setting adhesive will now be described. The drive shaft 100 is rotated at a constant speed suitable for producing one revolution thereof for each bag which is to be presented for the application of adhesive. The rock shaft 106 is timed to complete one rocking cycle for each bag thus presented. A suitable quantity of adhesive is placed within the tray 38 and, as described above, necessary adjustments are made in the heating and thermostatic control devices to maintain the adhesive in the desired flowable condition. Filled bags are brought successively to the position illustrated by the bag 10 in Fig. 2 by suitable intermittently operable conveying mechanism timed with the remainder of the machine.

Starting from the position illustrated in Fig. 1 wherein the transfer fingers 76 have a supply of adhesive 158 on the tips thereof and wherein the applicator fingers 152 are in contact with such adhesive 158, continued rotation of the drive shaft 100 will permit the follower 138 to lower, whereby to raise the fingers 152. The arms 108 and 110 will rock in a clockwise direction during the raising motion of the fingers 152 whereby the fingers are swung forwardly and upwardly to a position somewhat above the level of the shoulder 14 of the bag 10. Continued forward rocking of the arms 108 and 110 coupled with resting of the roller 138 on the dwell 144 of cam 140 will result in a downward motion at the tips 156 of the fingers 152. This downward motion brings the film of adhesive carried by the fingers into contact with the shoulder of the bag. Continued rotation of the cam 140 brings the dwell 144 beyond the roller 138 whereby to raise the tips of the fingers 152 away from the bag, leaving spots of adhesive at each point where contact occurred between the fingers and the bag. At about this time, the arms 108 and 110 begin to rock in a counterclockwise direction whereby to withdraw the fingers 152 from the vicinity of the bag and the upstanding bag mouth 12 may be folded over by the shoe 16 into contact with the freshly applied adhesive. Continued counterclockwise swinging of the arms 108, 110 will bring the fingers 152 back to the position illustrated in full lines in Fig. 1.

In the meantime, rotation of the cam 98 will result in the raising of the follower roller 94 and of the link 82 whereby to swing the two sets of fingers 70 and 76 in a counterclockwise direction from the full line position of Fig. 1 into the dotted line position thereof. This swinging motion moves the agitator fingers 70 through the rearward portion of the adhesive within the tray 38 and it brings the fingers 76 down into the body of adhesive for further agitation thereof and for the acquiring of a fresh film of adhesive on the ends of each of the fingers 76. Continued rotation of the cam 98 beyond the dwell 104 will swing the fingers 70 and 76 in a clockwise direction whereby to further agitate the adhesive and to bring the freshly covered fingers 76 up into contact with the applicator fingers 152 as they arrive in the full line position shown in Fig. 1.

When the adhesive is of the quick-setting type and of a relatively viscous nature under the conditions of temperature maintained in the tray 38, the fingers 76 will pick up a relatively thick film of adhesive. This thick film is transferred in part to the tips 156 of the fingers 152 and there will be formed on each of these tips a relatively thick gob 160. The gobs 160 are rapidly carried forward, as described above, to the bag shoulder and when applied to the bag remain quite thick and concentrated as indicated in Figs. 4 and 5. It is important that the gobs 160 be of this thick, concentrated form in order that they may retain sufficient heat to keep the adhesive therein in active condition for a sufficient time to permit retraction of the applicator fingers and folding of the bag mouth 12 into contact therewith.

To this latter end, the particular motions of the applicator fingers 152 have been selected. These fingers carry their gobs 160 of adhesive rapidly forward and bring them down upon the shoulder of the bag, after which the fingers rise substantially vertically to leave the gobs in substantially the shape illustrated in Figs. 4 and 5. The action of the applicator fingers herein dif-

fers from that of the Cundall and Nicolas patents in that no spreading or wiping action is permitted to occur. As pointed out above, if such spreading or wiping action were permitted to occur, the adhesive would be spread out into a thin film which would cool and set much too rapidly to permit of the formation of a satisfactory closure. Furthermore, such thin film of adhesive is likely to stick to the applicator fingers and thus form "threads" when the fingers are retracted.

After the folding shoe 16 has folded the bag mouth 12 downwardly and has pressed it into contact with the adhesive, the adhesive will flow to a certain extent, and it is possible to obtain a flow of the adhesive into the form diagrammatically illustrated in Fig. 6 wherein the gobs have spread the full width of the folded bag mouth 12. It may not be desirable to achieve spreading to this extent inasmuch as this particular adhesive is exceedingly strong and it may not be desirable to secure adhesion of such a wide area. This is a matter of choice to be decided upon in each individual instance.

The agitator fingers 70 and the transfer fingers 76 are particularly designed for operation in connection with these quick-setting adhesives and constitute a definite improvement in this regard over the rotating rollers heretofore used with other types of adhesive. However, these fingers 70 and 76 are equally well adapted for use with any of the types of adhesive with which the roller has formerly been used. Accordingly, the machine modified by the application thereto of the present adhesive handling apparatus is not limited in its capability of handling those types of adhesive heretofore handled by machines of this general type. The present invention serves to expand the capabilities and versatility of the machine. In connection with the use of the present apparatus with slower setting and perhaps weaker adhesives, it may be desirable to alter the motions of the applicator blades 152 whereby to drag them across the bag shoulder to secure wider distribution of such adhesives.

It will be apparent from the above description that there is provided a structure which attains the objects of the invention. While for the purposes of compliance with the patent statutes a detailed description of such structure has beeen made, it is obvious that modifications and variations may be resorted to by those skilled in the art, and it is therefore to be understood that such descriptions shall be taken in an illustrative rather than in a limited sense and that the scope of the invention shall be limited only by the appended claims.

I claim:

1. An adhesive-handling apparatus of the class described comprising, a container having a supply of adhesive in flowable condition therein, a plurality of fingers, means to move said fingers through the adhesive contained in said container to agitate the same and to move a predetermined number of said fingers out of said adhesive whereby to carry from said container films of adhesive adhering thereto, applicator means, and means to move said applicator means into contact with a predetermined number of said films of adhesive whereby to transfer adhesive from said fingers to said applicator means.

2. In an adhesive-handling device of the class described, the combination with a container having an adhesive supply therein of a plurality of transfer fingers, means to move said fingers into and out of said supply, applicator means, and means to move said applicator means into contact with a predetermined number of said fingers when they are out of said adhesive supply.

3. In an adhesive-handling device of the class described, the combination with a container having an adhesive supply therein of transfer means, means to move said transfer means bodily into and out of said supply, applicator means, and means to move said applicator means into contact with said transfer means when the same is out of said adhesive supply.

4. In an adhesive-handling device of the class described, the combination with a container having an adhesive supply therein of transfer means, means to move said transfer means bodily into and out of said supply whereby to form a film of adhesive upon said transfer means, applicator means, and means to move said applicator means into contact with a predetermined portion of the film of adhesive on said transfer means when the same is out of said adhesive supply.

5. In an adhesive-handling device of the class described, the combination with a container having an adhesive supply therein of transfer means; means to move said transfer means bodily into and out of said supply whereby to carry from said supply a film of adhesive adhering to said transfer means; means for agitating said adhesive supply, said agitating means being movable concurrently with the movement of said transfer means; applicator means; and means to move said applicator means into contact with a predetermined portion of the film of adhesive adhering to said transfer means when the same is out of said adhesive supply.

6. In an adhesive-handling device of the class described, the combination with a container having a supply of adhesive in flowable condition therein, of a plurality of agitator fingers, a plurality of transfer fingers and a plurality of applicator fingers, means to move said agitator fingers and said transfer fingers within the body of adhesive and to move said transfer fingers out of the body of said adhesive whereby to carry a quantity of said adhesive from said container, and means to move said applicator fingers into contact with the adhesive upon a predetermined number of said transfer fingers when said transfer fingers are moved out of said body of adhesive whereby to transfer a portion of said adhesive from said container to said applicator fingers.

7. In an adhesive-handling device of the class described, the combination of a container having a body of adhesive in flowable condition therein, a plurality of fingers, means to move said fingers through said body of adhesive to agitate the same and to move a predetermined number of said fingers from a position within said body of adhesive to a position outside said body of adhesive whereby to carry from said container films of adhesive adhering to said fingers, applicator means, and means for moving said applicator means in timed relation with the movement of said fingers whereby to bring said applicator means into contact with the film of adhesive upon a predetermined number of said fingers each time said fingers are moved outside said body of adhesive.

8. In a device for applying adhesive to filled bags, the combination of means for supporting a filled bag in condition to be closed, means for maintaining a supply of quick-setting, temperature-sensitive adhesive at such elevated temper-

ature as to render said adhesive flowable and relatively highly viscous, means bodily movable into and out of said supply of adhesive for transferring a relatively thick film of said adhesive from said supply to a position outside said supply, applicator means, means for moving said applicator means into contact with predetermined portions of said film of adhesive whereby to transfer to said applicator means a relatively thick gob of adhesive, means for moving said applicator means toward said filled bag to bring said gob of adhesive into contact therewith, and means for removing said applicator means from said bag whereby to leave said gob of adhesive in relatively thick cohesive condition wherein the elevated temperature thereof will be retained for a sufficient period of time to permit final closure of said bag while said gob of adhesive remains in flowable condition.

9. In a device for applying adhesive to filled bags, the combination of means for supporting a filled bag in condition to be closed, means for maintaining a supply of quick-setting temperature-sensitive adhesive at such elevated temperature as to render said adhesive flowable and relatively highly viscous, means bodily movable into and out of said supply of adhesive for transferring a plurality of relatively thick films of said adhesive from said supply to positions outside said supply, a plurality of widely spaced applicator fingers, means for moving said applicator fingers into contact with predetermined portions of said films of adhesive whereby to transfer to said applicator fingers relatively thick gobs of adhesive, means for moving said applicator fingers toward said filled bag to bring said gobs of adhesive into contact therewith, and means for removing said applicator fingers from said bag whereby to leave a plurality of widely spaced gobs of adhesive in relatively thick cohesive condition wherein the elevated temperature thereof will be retained for a sufficient period of time to permit final closure of said bag while said gobs of adhesive remain in flowable condition.

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