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MEANS FOR DISPENSING GLUE OR ADHESIVES IN PREDETERMINED
VOLUMES, PARTICULARLY FOR USE IN THE MANUFACTURE OF
PACKAGES OF CARDBOARD
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MEANS FOR DISPENSING GLUE OR ADHESIVES IN PREDETERMINED VOLUMES, PARTICULARLY FOR USE IN THE MANUFACTURE OF PACKAGES OF CARDBOARD

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4 Claims

ABSTRACT OF THE DISCLOSURE

Application of glue or other adhesives to cardboard blanks which are to be formed into cardboard boxes or other types of packages is made by means of movable members having recesses for reception of a predetermined volume of adhesive when moved into same, the adhesive being applied to the blank by an air burst supplied to the recesses through channels in said members.

The invention is related to means for applying glue or similar adhesive on various parts of blanks of cardboard for packages in the manufacture of cardboard boxes and similar containers, which finally may be closed and sealed.

The conventional types of glue for this purpose are of a comparatively high viscosity due to the working principles of the machines, and these types of glue need a long drying time which necessitates large machines. This difficulty may be overcome by using types of glue which are solid at ordinary temperature and which are applied in hot condition, the glue solidifying so rapidly that the excessive drying time is eliminated. A well suited glue of this type is marketed under the name "hot melt," and the purpose of the invention is to provide means, utilizing this or other types of glue which are to be transferred to the cardboard blank in hot condition immediately prior to folding of the blanks to boxes. This is in accordance with the invention by placing the hot glue in one or in a plurality of small predetermined portions on a dispensing member cooperating with the container for the glue, the dispensing member being provided with channels which through a valve is connected to a source of gas under pressure, from which a gas burst at the glue container is provided the glue portions on to the correct location on the cardboard blank, which immediately and prior to solidifying of the glue, is folded to the required box, while the glue still is sticking. The applicator device comprises a heated container for the glue, the container being provided with the dispensing member preferably in the form of a round bar or shaft which on the surfaces is provided with recesses of a volume corresponding to the desired volume of the glue portion, the member being so supported in the container that the recesses may be brought into a desired position in relation to that part of the cardboard blank on which the glue portions are to be placed. The recesses are through channels in the dispensing member in connection with a source of air under pressure, from which powerful air burst at the right moment will "shoot" the glue portions from the recesses on to the blank which has been brought into a desired position in the machine. The dispensing member is thereafter moved in such a manner in relation to the glue container that the recesses in its surface may be filled with new portions of glue and then again it returns to position for "shooting" of the glue on to the succeeding cardboard blank.

The container is provided with thermostatically controlled heating elements, the sensing component of which being located in the material of the container so that it will not contact the glue and consequently overheating of the glue is avoided.

The invention will in the following be described more in detail with reference to the drawing on which:

FIGURE 1 is a section through an embodiment of the invention, with the dispensing member in filling position in the container.

FIGURE 2 is a corresponding section where the dispensing member is in "shooting" position.

FIGURE 3 is a section through another embodiment of the invention, the section being taken along the line III—III on FIGURE 4.

FIGURE 4 is a section taken along the line IV—IV on FIGURE 3, and

FIGURE 5 is a section through the dispensing member to an enlarged scale.

On FIGURES 1 and 2 the glue container 1 with a certain volume of glue 2 is provided with a dispensing member 3, which in this embodiment has the form of a slide.

The slide has on its surface a recess 4 in communication with a centrally located channel 6 which by means of a flexible hose is in connection with a source of compressed air (not shown). In the bottom of the container 9 there is provided a heating element 10 which is thermostatically controlled, the temperature sensing means 11 being connected to a control device by means of a thin tube 12. When the slide is in the position shown on FIGURE 1, the glue will fill the recess 4, and when the slide is moved out of the container, as shown on FIGURE 2, the glue portion in the recess will be in correct position above a cardboard blank 8 and the glue will by a released air burst as indicated by the arrow 7, through the channel 6 be "shot" onto the cardboard blank as a spray of droplets distributed on the blank in a circular area. The slide is then again moved into the container to the position shown on FIGURE 1 in order to refill the recess with another portion of glue. Simultaneously with the feeding of the succeeding cardboard blank the slide is moved out of the container to the position shown on FIGURE 2, and the glue portion will be shot down on to the blank by another air burst.

The synchronization of the feeding of the cardboard blanks and the advance of same, with the reciprocal action of the slide and the air bursts from the source of compressed air, is carried out by means of microswitches actuated by the advanced cardboard blanks or by any of the other components in motion, the microswitches giving bursts to electromagnetic valves controlling the compressed air to and from the various pneumatic cylinders in the machine.

On FIGURES 1 and 2 the slide is shown with only one recess, but the number of recesses may be adjusted to the purpose in each case. The slide may further be rotated 90° or 180° if it is advantageous to be able to shoot the glue on to cardboard blanks having such positions that the glue has to be shot in other directions than downwardly as shown on the drawing.

FIGURES 3 and 4 discloses an embodiment of the invention in which a row of glue dots is applied to a blank in one operation. The dispensing member 15 is provided with five recesses 17 and the dispensing member 15 is rotatable in the bottom section 19 of the glue container, the rotation bringing the recesses 17 into alignment with a row of apertures 20 in the bottom of the container when the dispensing member is in position for transfer of the glue to the cardboard blank. FIGS. 3 and 4 show the rotatable dispensing member 15 in the discharge position. The recesses are, through channels 27 (FIGURE 5) and 16, in communication with a source of compressed air (not shown). The supply of compressed air is controlled.
by an electromagnetically operated air valve having a
time relay. The valve is operated by a micro switch when
the advanced cardboard blank touches the switch when
the blank is in correct position under the dispensing
member. The rotatable dispensing member 15 is provided
with a gear wheel 18 which by means of a rack (not
shown) may be rotated 180° about its axis, so that the
dispensing member after each dispensing of glue onto
the cardboard blank 21 is rotated 180°. Thus the recesses
will be directed up into the container 13 and they will be
filed with glue.

The electric heating element 22 with leads 23 are
diagrammatically shown on FIGURE 4, connected to a
controller 26 which, through the thin tube 25, is con-
ected to a temperature sensor 24.

FIGURE 5 is a section through the dispensing mem-
bers 3 and 15 with the centrally located air channel 6
(16) and the transverse channel 27 with the recesses 4.
The recesses are shown semispherical, but may also be of
a conical shape or design in any other suitable manner.

Due to the effective distribution of the glue on the
cardboard blank obtained with the described means, the
quantities of glue used may be reduced, and it is possible
to employ glue types which previously could not be used
due to their high viscosity.

The term "glue" includes in this case any adhesive suit-
able for this particular purpose.

I claim:

1. Apparatus for dispensing a fluid adhesive in small
proportions onto a surface to be adhered, particularly
for the manufacture of packages and boxes of cardboard
and similar materials, said apparatus including a container
for the fluid adhesive, a rotatable dispensing member
rotatably supported in the container with its surface in
engagement with a portion of the wall of the container,
said portion of the container wall in engagement with the
rotatable dispensing member being provided with a dis-
charge aperture for fluid adhesive, the surface of the
rotatable dispensing member being provided with a recess
for receiving a portion of adhesive when the recess is in
a position facing into the fluid adhesive in the container,
a passageway for gas under pressure located in the rotat-
able dispensing member, a channel connecting said pas-

dageway with the inner portion of said recess, said recess
being adapted to register with the aperture in the con-
tainer wall when the rotatable dispensing member is
rotated from said position to a position in which the recess in the rotatable dispensing member is in
alignment with the discharge aperture, said recess then
being in a position to receive a gas burst from said pas-
segwage for shooting a portion of adhesive in the recess
through the discharge aperture onto the surface to be ad-
hered.

2. Apparatus as claimed in claim 1, wherein the port-
ton of the container wall in engagement with the rotat-
able dispensing member is provided with a row of dis-
charge apertures, and wherein the rotatable dispensing
member is provided with a row of recesses for receiving
adhesive, said recesses being adapted to be brought into
alignment with the respective apertures in the container
wall.

3. Apparatus as claimed in claim 2, wherein the dis-
tances between adjacent apertures and recesses are less
than the diameter of each of the applied adhesive dots
so that the dots in the row overlap each other.

4. Apparatus as claimed in claim 1, including an elec-
tric heating element mounted in the bottom wall of the
container, a controller connected by leads to the heating
element, a temperature sensor located in the bottom wall
of the container in spaced relation to the heating element,
and means connecting the temperature sensor to the con-
troller.

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222—194, 368