

Dec. 12, 1950

A. D. ZANETTI

2,533,704

LIQUID APPLICATOR FOR GLUING MACHINES

Filed April 2, 1949

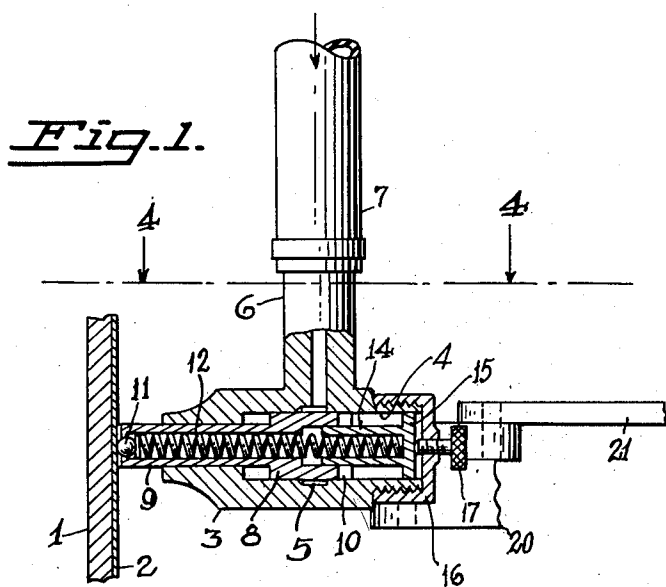
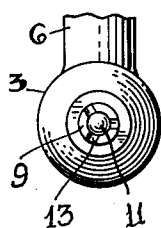
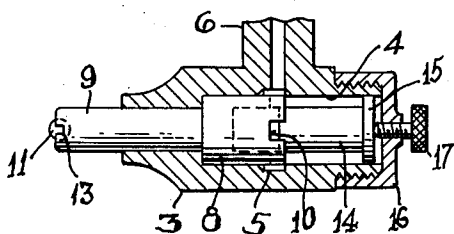
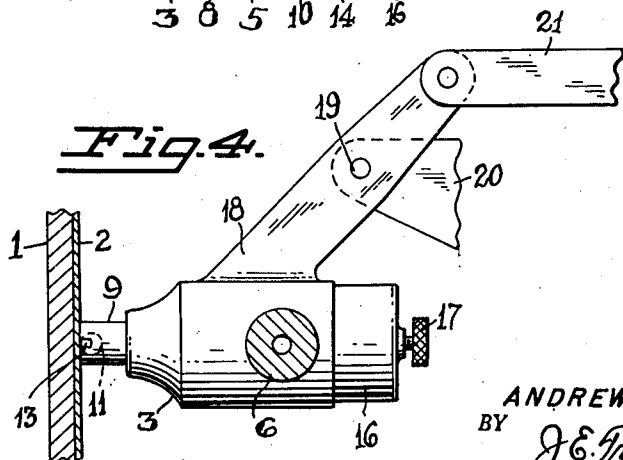


Fig. 3. Fig. 2.



INVENTOR.
ANDREW D. ZANETTI
BY *J. E. Trabucco*
ATTORNEY

UNITED STATES PATENT OFFICE

2,533,704

LIQUID APPLICATOR FOR GLUING
MACHINES

Andrew D. Zanetti, San Francisco, Calif.

Application April 2, 1949, Serial No. 85,071

4 Claims. (Cl. 91—12)

1

This invention relates to improvements in gluing machines.

In manufacturing certain types of cardboard cartons or paper baskets an adhesive material is applied at timely intervals to a moving sheet preparatory to its being formed into receptacles. It is of considerable importance that the adhesive material be applied in adequate quantities and at definite intervals to the moving sheet, otherwise the subsequently formed cartons or baskets will not hold firmly together. Adhesives ordinarily flow quite slowly, and it is necessary to employ suitable pressure means to insure the delivery of an adequate amount of an adhesive to the exposed surface of a moving sheet at timely intervals.

The present invention provides a novel glue applicator which functions in synchronized relation with respect to a moving sheet so that definite amounts of an adhesive are applied to the sheet at timely intervals.

In the accompanying drawings:

Fig. 1 is a side elevation partly in section of a gluing machine embodying the preferred principles of my invention, showing the glue applicator in operative engagement with a sheet;

Fig. 2 is a similar view showing the relative positions of the parts of the device when the applicator is not in engagement with a sheet;

Fig. 3 is an end view of the machine; and

Fig. 4 is a sectional view taken on the line 4—4 of Fig. 1;

Referring to the drawings, a vertical wall member 1 is shown positioned in backing relationship with respect to a slowly moving sheet 2 to which an adhesive material such as glue is to be applied at definite intervals in accordance with certain requirements incident to the manufacture of cartons, boxes or the like.

Mounted for movement toward and away from the sheet 2 is an applicator body 3 having a longitudinal bore or chamber 4, the sides of which are formed with an annular groove 5. Secured to the body 3 is a vertical tubular member 6 which is connected to a conduit 7 leading to a source of supply for liquid glue. The central opening through the tubular member 6 communicates with the annular groove 5.

Mounted for reciprocating movement in the chamber 4 is a closely fitting tubular piston 8 having an elongated tubular extension 9 extending forwardly through an axial opening in the body 3. The rear end of the piston 8 is slotted as at 10 to provide openings communicating with the annular groove 5, thereby allowing the liquid

2

glue to flow into the interior of the said piston.

Seated against an inwardly protruding flange formed at the extreme forward end of the tubular extension 9 of the piston 8 is a metal ball valve 11 which is urged in a forward direction by a helical compression spring 12. There is suitable clearance provided between the ball valve and the tubular extension 9 to allow glue to flow forwardly past the said ball. The forward end of the tubular extension 9 is slotted or cut away as at 13 to allow the liquid glue to be expelled from the tubular extension when the ball is unseated. The rear end portion of the compression spring 12 extends through a tubular extension 14 forming a part of an adjustable plunger 15. The rear end of the compression spring abuts the plunger 15, and the outer peripheral edges of the latter slidably engage with the side walls of the chamber 4. An end cap 16 screwed on the rear end of the body 3 encloses the chamber 4. A set screw 17 adjustably extending through a threaded axial opening in the end cap 16 provides means for adjusting the position of the plunger 15 in the chamber 4, thereby making it possible for the tubular extension 14 thereof to be selectively positioned so the slotted openings 10 of the piston 8 are increased or decreased in size to permit a larger or smaller amount of liquid glue to flow into the interior of the piston. The forward end of the extension 14 of the plunger 15 slidably fits in the axial bore of the piston 8.

The applicator body 3 is formed with a rigid arm 18 which is pivotally mounted between its ends as at 19 on a support 20. An actuating member 21 arranged for synchronized movement with the sheet advancing mechanism (not shown) moves the applicator body toward and away from the moving sheet 2 at timely intervals.

As the applicator body 3 is moved forwardly the ball valve 11 engages with the sheet 2 and becomes unseated, thereby allowing glue to pass through the slots 13. Directly after the unseating of the valve 11 the tubular extension 9 also engages with the sheet 2 and is thereby stopped in its forward movement as the body 3 continues to move forwardly toward the said sheet. The piston 8, being rigidly secured to the tubular extension 9 also moves rearwardly in the chamber 4 as the body 3 moves forwardly. Since the tubular extension 14 of the adjustable plunger 15 is fixed to the body 3 and is carried forwardly therewith, the piston 8 changes its position with respect to said tubular extension as the body moves forwardly, thereby causing the slotted

3

openings 10 to close and temporarily discontinue the flow of glue into the piston. With the closing of the said openings 10 there is a pressure applied to the glue inside the piston and the tubular extension 9 as the said piston changes its position as aforesaid in the chamber 4. The glue is thereby forced past the unseated ball valve 11 and out through the slots 13 in the forward end of the tubular extension 9. The ejected glue is thereupon applied to the moving sheet 2 since the ball and also the forward end of the tubular extension 9 are in contact with the sheet 2.

When the body 3 moves away from the sheet 2 the spring 12 returns the ball valve 11 toward and into engagement with its seat, thereby preventing the glue from being further discharged from the tubular extension 9. The spring 12 also moves the piston 8 forwardly inside the body 3 to a position wherein the slotted openings 10 register with the annular groove 5, thereby allowing glue to be fed by gravity to the interior of the said piston.

It is to be understood that the present invention may be used to apply various liquid materials other than glue to surfaces.

What I claim is:

1. In a liquid applicator, a tubular body having a liquid inlet opening in its side, a tubular reciprocating piston mounted in the body and having a tubular extension at one end, the said extension projecting from one end of the body and having an inlet at its inner end communicating with the hollow piston and an outlet at its opposite end, the said piston having liquid inlet means at its opposite end, a valve member positioned in the outlet of the said extension and arranged to close and open the outlet of the tubular extension, the said valve member when in its closed position being arranged to project beyond the outlet end of the tubular extension, a helical spring positioned inside the tubular extension for yieldably urging the valve member toward its closed position, an adjustable member secured within the tubular body and extending into the tubular piston, the said adjustable member being arranged to close the inlet means of the piston when the body is moved to a position wherein the valve member and the tubular member engages with a surface to which the liquid is to be applied.

2. In a liquid applicator, a tubular body having an inlet opening at its side, a tubular piston mounted for reciprocating movement in the body and having inlet means at one end in communication with the inlet opening of the body, a tubular extension carried by the piston, the said extension having an outer end projecting through an opening in an end of the body and having an inlet opening in communication with the interior of the piston, a valve member mounted in the tubular extension and arranged to normally project beyond the outer end thereof, the said valve member normally closing the outer end of the tubular extension, an adjustable member secured within the body and slidably fitting in the piston and arranged to close the inlet means thereof when the piston is in one extreme of its reciprocatory movement, and spring means interposed between the valve member and the

4

adjustable member for closing the valve member and for returning the piston to a position wherein its inlet means is open.

3. In a liquid applicator, a hollow body having liquid inlet means, a hollow reciprocating piston mounted in the body, inlet openings in the piston for the passage of liquid from the body to the interior of the piston, a tubular extension carried by the piston, the said extension projecting through one end of the body and having a liquid discharge opening at its said projecting end and an inlet opening in its opposite end communicating with the interior of the piston, a valve member mounted in the tubular extension for normally closing the discharge opening, the said valve member being normally positioned with a portion projecting beyond the tubular extension, whereby when a pressure is applied to the valve member in a direction toward the piston it will open the discharge opening in the extension, a projecting member secured within the opposite end of the body and arranged to control the inlet openings of the piston as the piston is reciprocated, and a compression spring interposed between the valve member and the projecting member for yieldably holding the valve member in a closed position and the piston in a position wherein its inlet openings are open, the said projecting member and the piston being arranged so the inlet openings are closed when the tubular extension and the piston are moved in one direction of their reciprocatory movement.

4. In a liquid applicator, a hollow body having an inlet opening for liquid in its side, a hollow reciprocatory piston mounted in the body and having inlet means communication with the interior of the body, the said piston having a tubular extension projecting through an end of the body, the said tubular extension having an inlet at its inner end in communication with the interior of the piston and an outlet at its outer end, a valve mounted in the tubular member and arranged with a portion thereof projecting beyond the outer end of the tubular extension, the said valve being arranged to normally close the outlet end of the tubular extension and to be displaced to an open position upon a pressure being applied thereto in a direction toward the piston, a projecting member extending into the piston and arranged to close the inlet means thereof when the piston is reciprocated in one direction coincident with the valve being moved to an open position, and a helical compression spring interposed between the valve and the projecting member.

ANDREW D. ZANETTI.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,046,408	Voges	Dec. 3, 1912
1,250,851	Goldner	Dec. 18, 1917
1,936,906	Green	Nov. 28, 1933
2,062,900	Nagy	Dec. 1, 1936
2,290,363	Sirton	July 21, 1942
2,309,286	Wentworth	Jan. 26, 1943