

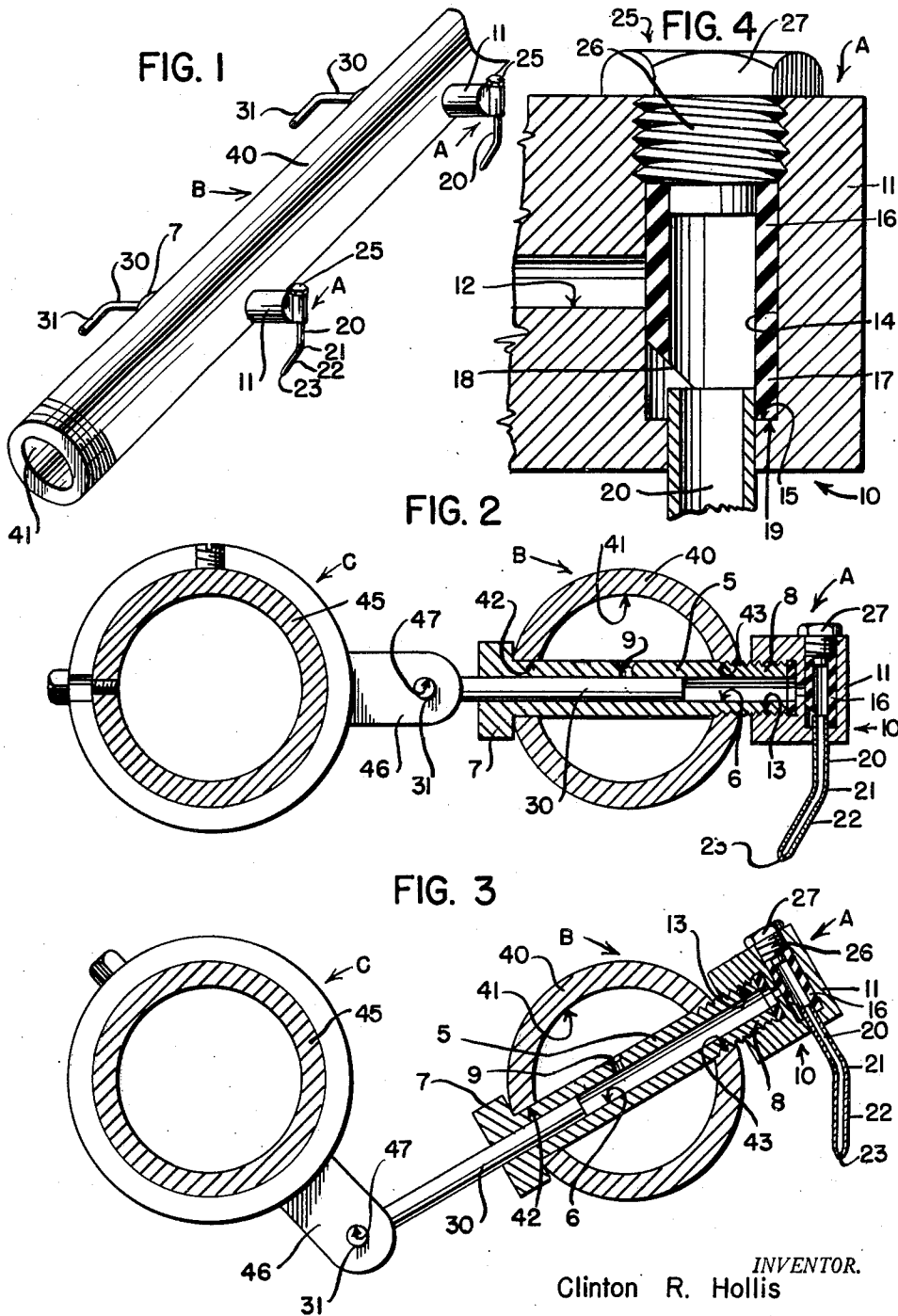
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PASTING MACHINE PASTE EJECTOR

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PASTING MACHINE PASTE EJECTOR

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Original application January 17, 1952, Serial No.
266,839, now Patent No. 2,674,978, dated April
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ber 28, 1952, Serial No. 322,878

11 Claims. (Cl. 118—315)

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This invention relates to ejectors for fluids and more specifically to ejectors adapted to eject liquids, such as adhesives in paste form. This application is a division of application Serial No. 266,839, filed January 17, 1952, now U. S. Patent 2,674,978, dated April 13, 1954; for a Spot Pasting Machine.

An important object of the invention is to provide a novel ejector which is free of springs, complicated parts or parts apt to get out of order. This is especially important where a plurality of the ejectors are employed, as in spot pasting a plurality of webs of material at the same time, and failure of even one ejector would be serious.

Another important object is to provide paste ejectors which do not contact the material to be pasted during operation of the ejectors.

Still another important object is to provide an ejector employing a novel tubular valve member of resilient material provided with a cut out portion associated with an adhesive exit mouth and a nozzle, the mouth being spaced from the cut out portion and the nozzle wall being in contact with the valve structure at the cut out portion to retain the valve member against rotation.

Additionally, an important object is to provide an ejector for association with an ejector-carrying and conduit member, to which the ejector is rigidly attached, and a rocker member to the latter of which a plunger of the ejector is operatively connected for reciprocation of the plunger and rocking of the ejector-carrying and conduit member in synchronism with the movements of the plunger so that pasting, as spot pasting may be efficiently accomplished.

Another object is to provide a readily replaceable valve member for an ejector for adhesive, which valve member is not apt to adhere to the valve housing because of the adhesive.

Other objects and advantages of the invention will be apparent during the course of the following detailed description of the invention, taken in connection with the accompanying drawing, forming a part of this disclosure and in which drawing:

Fig. 1 is a fragmentary perspective view of an adhesive ejector-carrying and conduit member upon which two of the ejector are mounted.

Figs. 2 and 3 are transverse vertical sections through an associated ejector-carrying and conduit member and a rocker member, with the ejector of this application shown in vertical section. Fig. 2 shows the parts in ejecting positions and Fig. 3, the parts in non-ejecting positions.

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Fig. 4 is an enlarged fragmentary section through a valve structure of the ejector.

In the drawing, wherein for the purpose of illustration is shown a preferred embodiment of the invention and wherein similar reference characters designate corresponding parts throughout the several views, the letter A designates the new ejector; B, an ejector-carrying and conduit member; and C, a rocker member associated therewith.

The ejector A includes an elongated preferably cylindrical portion or barrel 5, having a cylindrical bore 6 from end to end and the portion 5 having a wrench-hold end 7 and an exteriorly screw-threaded opposite end 8. Intermediate its ends, the portion 5 is provided with an adhesive intake port 9.

Mounted upon the outermost of the screw threads of the end 8 is a valve structure 10 including a valve housing 11 having an adhesive-receiving passageway or bore 12 extending, at its outer end, to a screw-threaded enlarged bore 13 with the screw threads thereof cooperating with the screw threads of the end 8 of the portion 5, so that the valve housing 11 may be detachably mounted thereon, with the bore 6 and passageway 12 in communication. The other or inner end of the bore 12 provides an exit mouth and extends to a bore 14, providing an adhesive discharge passageway, with its longitudinal axis substantially normal to the longitudinal axis of the bore 12. The bore 14 consists essentially of three portions: an upper closure-receiving bore portion, being preferably screw threaded to receive the exteriorly screw threaded depending shank portion 27 of a closure 25; to be described; an intermediate valve member-housed portion, for a valve member 16, next to be described; and a lower end portion to receive the inner end portion of a nozzle 20 to be later detailed. The lower end portion is less in diameter than the intermediate portion of the bore 14; whereby an upwardly facing shoulder 15 is provided.

The valve member 16 is a tube of a resilient material, as rubber, normally in snug resilient contact with the walls of the intermediate portion of the passageway 14 and covering the exit mouth of the adhesive passageway 12 with its lower end portion 17 when a plunger, to be described, begins and continues to move away from the passageway 12. The valve member 16 has a cut away portion 18 at the end portion 17 and spaced from the passageway 12, with the upper end or apex of the cut away portion 18 being spaced below the lowermost part of the passage-

way 12, substantially as in Fig. 4. From this apex the cut extends diagonally downwardly and inwardly to the bottom edge 19 of the valve member 16 which segmental edge 19 rests upon the shoulder 15.

A discharge way or nozzle 20 extends from the housing 11 to exteriorly thereof and comprises a tube of suitable material, as metal, bent intermediate its ends as at 21 and with its lower end portion provided with an adhesive discharge portion 22 having a vent 23. Its upper end portion extends through and upwardly of the reduced lower portion of the bore 14, into the cut away portion 18 and against the adjacent inner face of the valve member 16, as may be seen in Fig. 4 in a snug engagement therewith. The lower end portion of the discharge way 20 extends toward the direction of travel of a travelling web (not shown, but described in the application Serial No. 266,839, now U. S. Patent 2,674,978, dated April 13, 1954, referred to above) to be supplied with adhesive.

For closing the upper end portion of the bore 14, I provide a closure 25 having a screw threaded shank portion 26 with its screw threads cooperating with those at the upper end portion of the bore 14 and a head 27, exteriorly of the housing 11 and which may be provided with wrench-hold faces.

Reciprocable along the bore 6 is a plunger 30 which may be a cylindrical rod with its outer end portion 31 bent so that its longitudinal axis is substantially normal to the longitudinal axis of the main portion of the plunger. The plunger is snugly but slidably accommodated within the bore 6. At its greatest outward reciprocation (substantially as in Fig. 3), it uncovers the vent 9 and covers it as it reciprocates in the opposite direction, as is clear in Fig. 2.

The ejector-carrying and conduit member B is adapted to support the ejector A and provide a conduit or way for the adhesive so it may enter the ejector through the vent 9. The member B is fully described in my application referred to above, is of rigid material as metal, preferably tubular so that a cylindrical wall 40 and passageway 41 are provided extending there-through. At suitable intervals the wall 40 is pierced by suitable openings 42 and 43, with one opening 42 axially aligned with an opposite opening 43, and the openings 43 screw threaded for cooperation with the inner screw threads of the end 8 of the barrel 5. The member B alternately rotates, substantially 30° for example, on its longitudinal axis, clockwise and anti-clockwise, as is clear by referring to the application heretofore referred to, so that the nozzle 20 reciprocates upwardly and then downwardly.

To cause this rotation of the member B, employing portions of the ejector A to assist in this rotation, there is provided the rocker member C which is also fully described in my above-identified application. It preferably comprises an elongated rigid wall portion 45 with its longitudinal axis substantially paralleling the longitudinal axis of an associated member B and is adapted to rotate substantially 30° for example, alternately clockwise and anti-clockwise. It is provided with a suitable radially-extending rigid lug 46 for each ejector A, and the lug is provided with an eye 47 to rotatably receive the extremity of the outer end portion 31 of the plunger 30.

With the passageway 41 of the member B containing fluent adhesive to a level above the port 9, the member C is rotated as described. This

causes both reciprocation of the plunger 30 and rotation of the member B, synchronized with movements of the plunger. As the latter moves from its position in Fig. 2 to its position in Fig. 3, adhesive is drawn, by gravity as well as vacuum, into the bore 6 of the barrel 5 (the exit mouth of the passageway 12 being closed by the valve member 16). As the plunger 30 reaches its position as in Fig. 3 it begins its sliding movement into the adhesive-containing portion of the bore 6 causing rotation of the member B and, as it compresses the adhesive, the latter pushes the cut-out weakened portion of the wall of the valve member 16 to the right, as in Fig. 4, allowing the adhesive to flow downwardly and into the upper end portion of the discharge nozzle 20 and from there, through the nozzle and out the vent 22, preferably as a spot of adhesive. At this point, the parts are substantially as in Fig. 2 and the portion 22 of the nozzle is nearest the web to be spotted with adhesive. From this point, the plunger begins to move to the left (as in Fig. 3), rotating the member B, and the valve member 16 closes the exit mouth of the passageway 12, whereby the cycle is completed.

The dual-function plunger 30 provides an efficient way to eject and draw in a fresh supply of the adhesive and, in addition, assist in rotation of the member B at the same time.

As for the specific valve member 16, its alternate movements at both the exit mouth of the passageway 12 and the upper end portion of the nozzle 20 prevents adhesive from adhering and hardening at these locations. Providing a resilient, partly collapsible rubber valve member 16 in the form of a cut away tube, positioned as described, makes possible the use of relatively inexpensive valve structures despite the large number which are generally employed in spot pasting. The bend 21 in the nozzle provides an obtuse angular discharge way which extends to direct the discharge adhesive so it will be deposited upon the web as a spot rather than as a streak.

The upper end portion of the nozzle 20 in frictional contact with the valve member 16 prevents rotation of the latter yet a new valve member 16 may be inserted, particularly because its bottom edge 19 does not have to slip over the entire upper edge of the nozzle to engage the shoulder 15. Of course removal of the closure 25 permits withdrawal of the valve member 16 and replacement thereof.

Various changes may be made to the form of the invention herein shown and described without departing from the spirit of the invention or scope of the claims.

What is claimed is:

1. An adhesive ejector for a spot paster having a travelling web, said ejector including a housing having an adhesive passageway provided with an exit mouth, and an adhesive discharge passageway opening to said adhesive passageway and with the longitudinal axes of said passageways inclined one with respect to the other, an elongated barrel opening at one end to said adhesive passageway and provided with an adhesive intake port, a plunger slidable in said barrel to alternately cover and uncover said port and alternately extend towards and away from said adhesive passageway, a tube of resilient material within said adhesive discharge passageway, normally in resilient contact with the walls thereof and covering the exit mouth of said adhesive passageway with one end portion of said tube

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when said plunger extends away from said adhesive passageway, said tube having a cut away portion thereof at said one end portion of said tube and spaced from said adhesive passageway, and a nozzle having a discharge way extending from said cut away portion to exteriorly of said housing.

2. An adhesive ejector according to claim 1 characterized in that said cut away portion extends diagonally of said tube.

3. An adhesive ejector according to claim 1 characterized in that the free end portion of the nozzle is bent and extends toward the direction of travel of said web.

4. An adhesive ejector according to claim 1 characterized in that said adhesive discharge passageway is provided with an upwardly-facing shoulder, and the lower end edge of said tube is disposed upon said shoulder.

5. An adhesive ejector according to claim 1 characterized in that said adhesive discharge passageway is provided with an upwardly-facing shoulder, the lower end edge of said tube is disposed upon said shoulder, and said nozzle has an upper end portion in frictional contact with the inner face of said tube at said one end portion of said tube.

6. An adhesive ejector according to claim 1 characterized in that said adhesive discharge passageway is provided with an upwardly-facing shoulder, the lower end edge of said tube is disposed upon said shoulder, and said nozzle has an upper end portion in frictional contact with the inner face of said tube at said one end portion of said tube and at the lower end of said cut away portion.

7. An adhesive ejector for a spot paster having a travelling web, a rotatable hollow ejector-carrying and conduit member and a rocker member with the longitudinal axes of said members in substantial parallelism, said ejector including a housing having an adhesive passageway provided with an exit mouth, and an adhesive discharge passageway opening to said adhesive passageway and with the longitudinal axes of said passageways inclined one with respect to the other, an elongated barrel opening at one end to said adhesive passageway and provided with an adhesive intake port, a plunger slidable in said barrel to alternately cover and uncover

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said port and alternately extend towards and away from said adhesive passageway, and said plunger having an outer end portion, a tube of resilient material within said adhesive discharge passageway, normally in resilient contact with the walls thereof and covering the exit mouth of said adhesive passageway with one end portion of said tube when said plunger extends away from said adhesive passageway, said tube having a cut away portion thereof at said one end portion of said tube and spaced from said adhesive passageway, a nozzle having a discharge way extending from said cut away portion to exteriorly of said housing, securing means for securing said ejector rigidly to said ejector-carrying and conduit member with the hollow thereof in communication with said adhesive intake port, and means for pivotally connecting said outer end portion of said plunger with said rocker member so that said plunger will reciprocate upon rocking of said rocker member.

8. An adhesive ejector according to claim 7 characterized in that said intake port is in the intermediate portion of said barrel and said securing means disposes the intermediate portion of said barrel within the hollow of said ejector-carrying and conduit member.

9. An adhesive ejector according to claim 7 characterized in that said ejector extends transversely of said ejector-carrying and conduit member.

10. An adhesive ejector according to claim 7 characterized in that said barrel extends transversely through said ejector-carrying and conduit member and through the longitudinal axis of said ejector-carrying and conduit member.

11. An adhesive ejector according to claim 7 characterized in that said barrel extends transversely through said ejector-carrying and conduit member and through the axis of rotation of said ejector-carrying and conduit member.

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