United States Patent [19]

Ames

[11] **3,785,535**

[45] **Jan. 15, 1974**

[54] **SELECTIVE OUTLET PUMP FOR FILLING DIFFERENT TYPES OF MASTIC-APPLYING TOOLS**

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[73] Assignee: **Bliss Laughlin Industries, Incorporated,** Oak Brook, Ill.

[22] Filed: **Sept. 7, 1971**

[21] Appl. No.: **178,340**

[52] **U.S. Cl.** **222/331,** 222/380, 222/482

[51] **Int. Cl.** **G01f 11/42**

[58] **Field of Search** 222/380, 485, 482, 222/483, 484, 330, 331, 266, 3; 239/394

[56] **References Cited**

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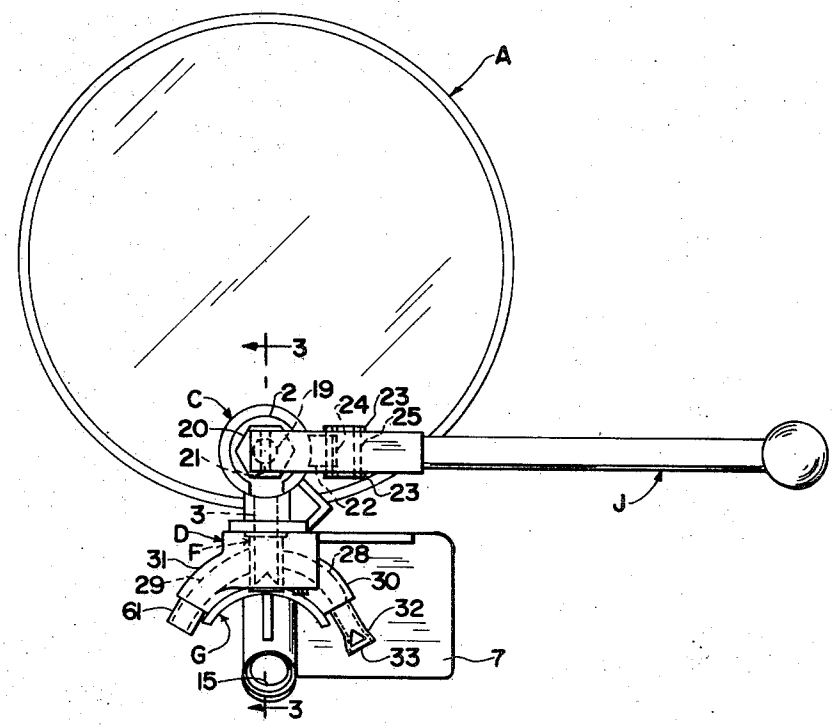
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Assistant Examiner—Joseph J. Rolla
Attorney—William R. Piper

[57] **ABSTRACT**

A selective outlet pump for filling different types of mastic-applying tools in which a three-way valve is mounted in the outlet of the pump for directing the mastic to issue from the desired outlet orifice. Different types of mastic-applying tools require different methods for filling the tools with mastic and this in turn requires specially designed outlet nozzles that can be used for this purpose. The three-way valve will deliver mastic to only one outlet at a time.

4 Claims, 9 Drawing Figures



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SHEET 1 OF 3

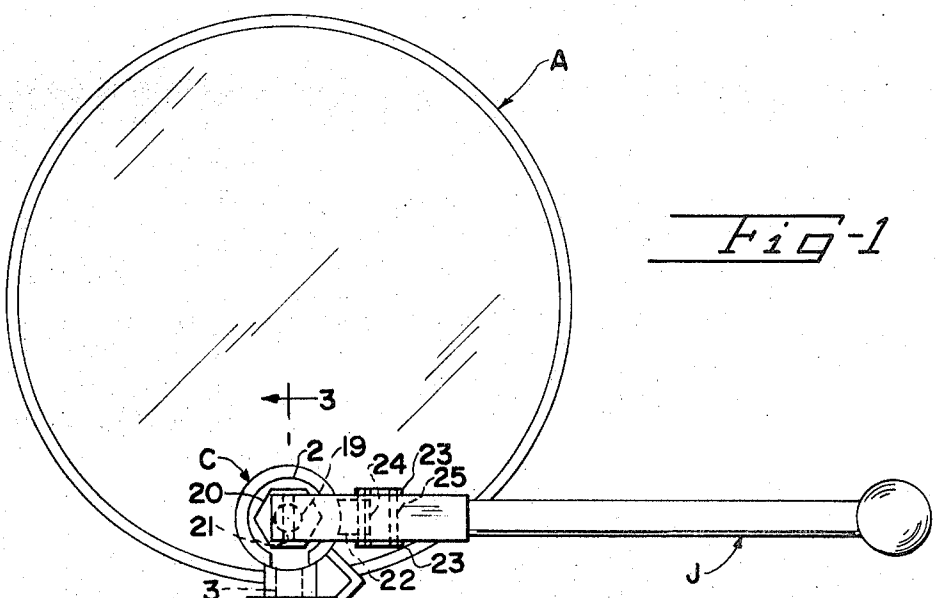


Fig-1

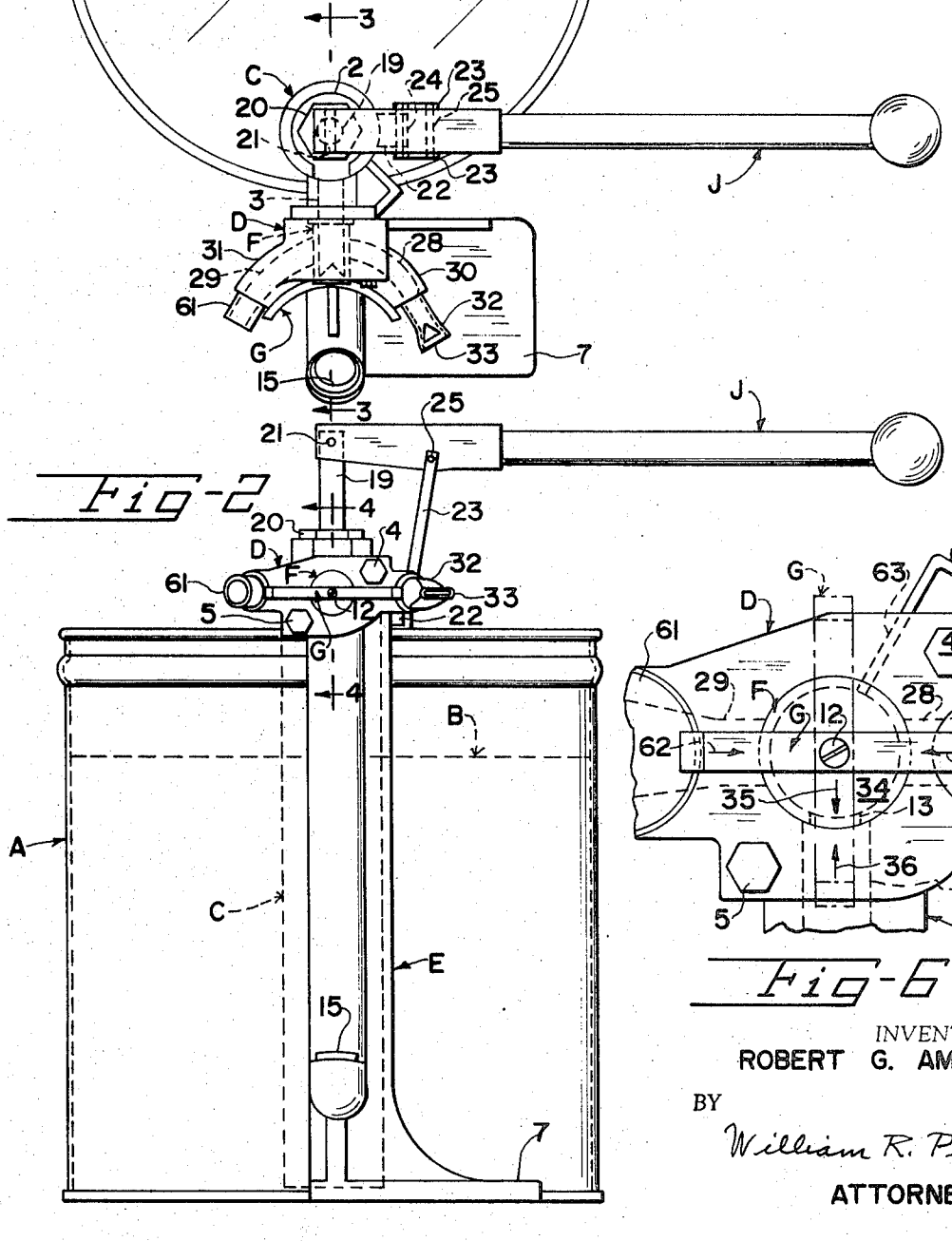


Fig-2

Fig-6

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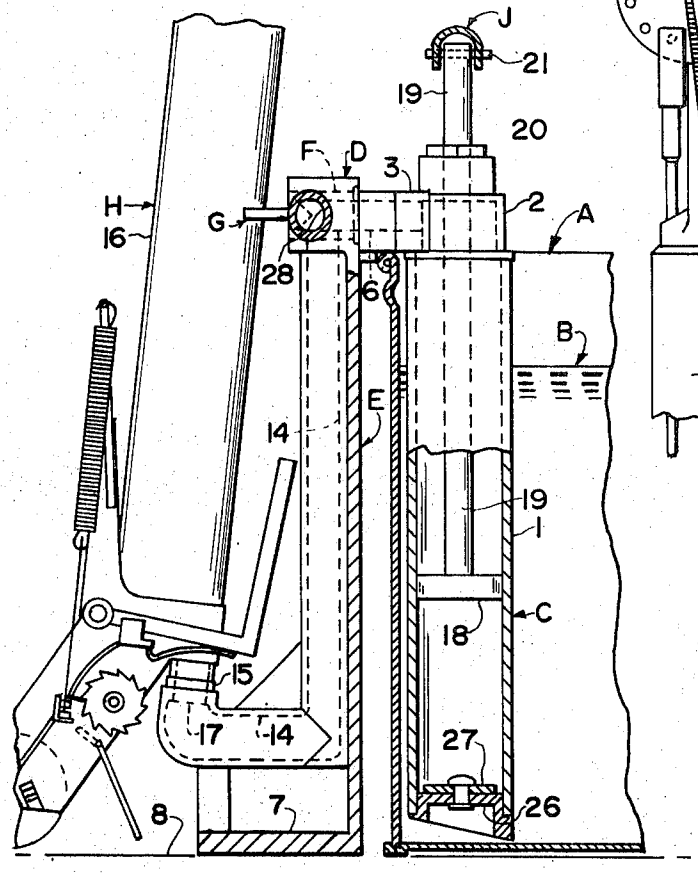


Fig-3

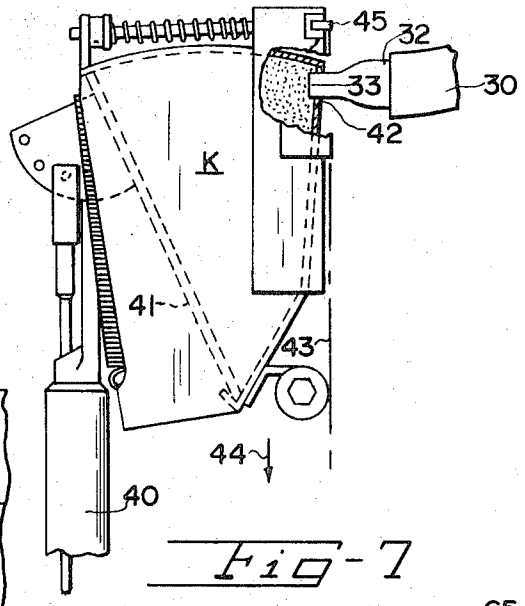


Fig-7

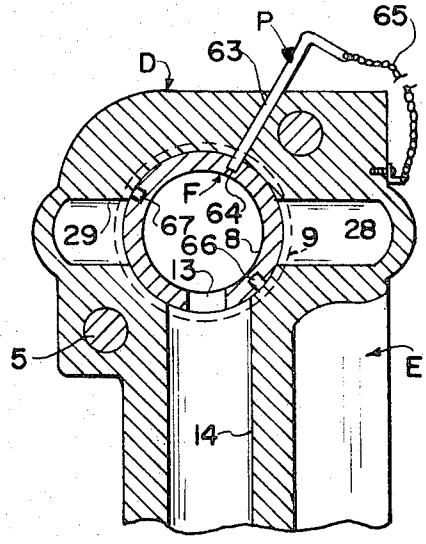


Fig-5

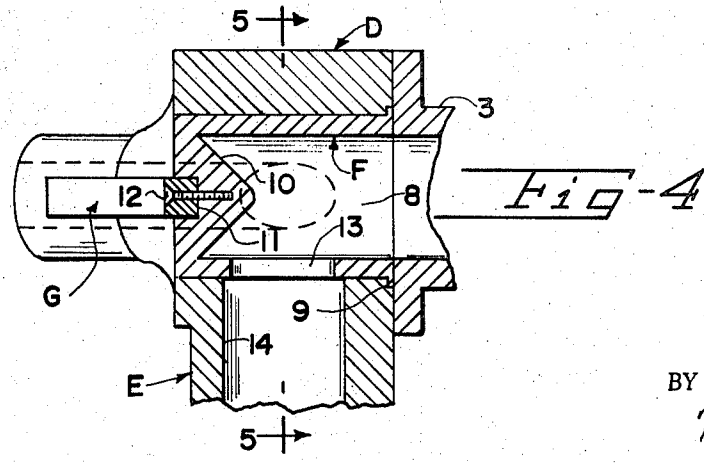


Fig-4

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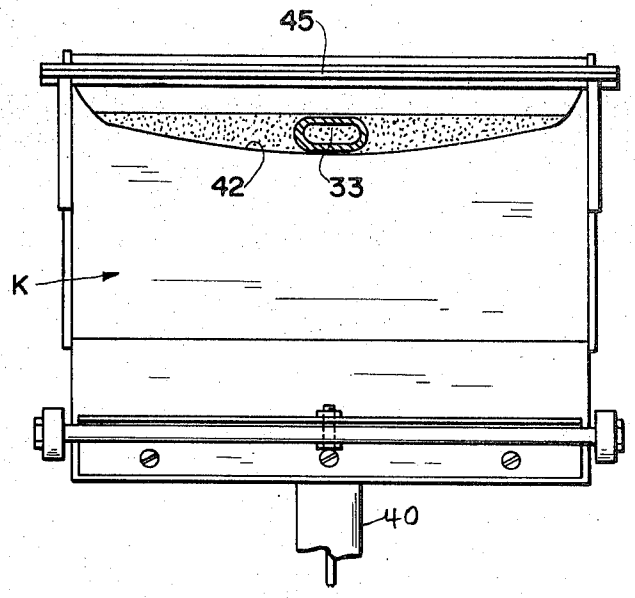


Fig-8

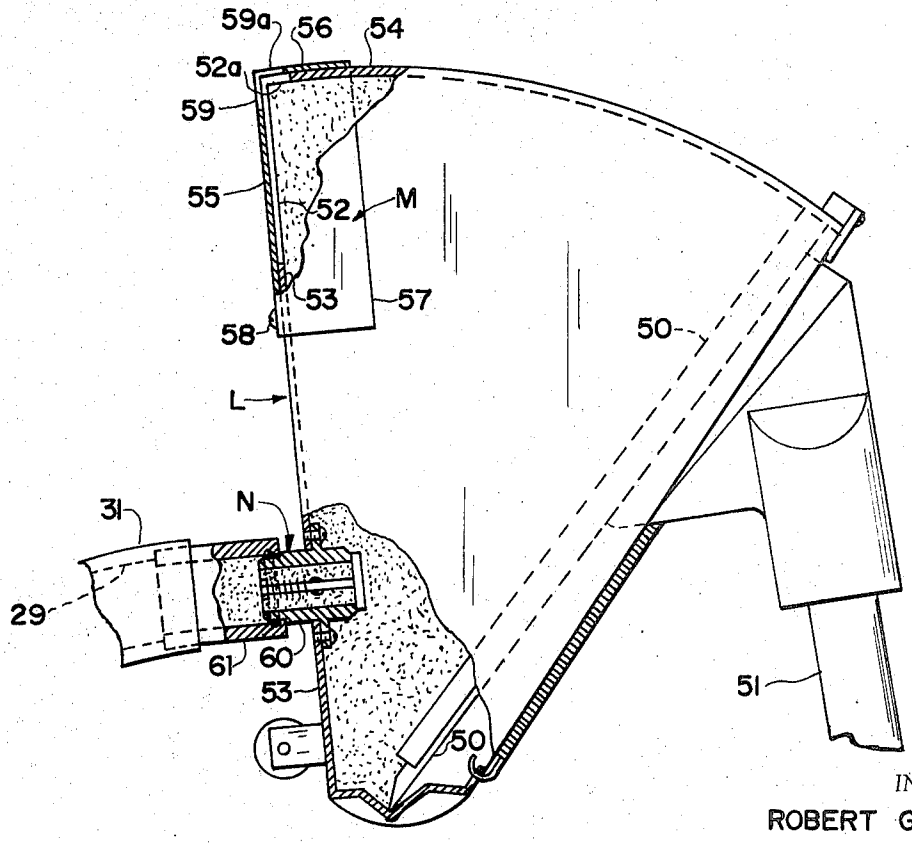


Fig-9

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SELECTIVE OUTLET PUMP FOR FILLING DIFFERENT TYPES OF MASTIC-APPLYING TOOLS

BACKGROUND OF THE INVENTION

1. Field of the Invention

The various types of mastic-applying tools must be filled with mastic when empty. These mastic-applying tools can be divided into three general groups, each group requiring a special type of mastic delivering orifice so as to fit the tool. It is well known that mastic, which is used for providing a covering over wall board joints, has the characteristic of being quite viscous. Experience has shown that is is difficult for the operator to fill the tools with mastic since considerable pressure must be exerted in order to fill them. I obtained a patent on a pump for filling mastic-applying tools, U.S. Pat. No. 2,889,857, issued June 9, 1959. The pump had a mastic delivery pipe designed to fill the interior of a hollow body of a self-contained dry wall taper through an inlet check valve provided at one end of the body. When other types of tools were to be filled with mastic it was necessary to remove the pipe from the pump and attach other forms of mastic outlet nozzles that were especially designed to fill the tools with mastic.

2. Description of the Prior Art

My patent, U.S. Pat. No. 2,889,857, referred to above, discloses a pump for filling mastic-applying tools. The pump was designed to be placed in a container for holding mastic and it had a standard extending on the outside of the container and provided with a step on which the operator could place his foot for steadying the pump while operating the pump handle. A rigid delivery pipe for the mastic was removably secured to the pump by bolts and the pipe extended downwardly on the outside of the mastic container and had a U-shaped end that turned upwardly and had a Nylon gland at its end for removably receiving the inlet check valve of a self-contained dry wall taper shown in my patent U.S. Pat. No. 2,815,142, issued Dec. 3, 1957. The weight of the dry wall taper was sufficient to cause its inlet check valve to make a tight seal so that there would be no leakage of mastic during the filling operation. Also a curved saddle near the upper end of the rigid delivery pipe received the cylindrical hollow body of the dry wall taper and kept it in position while the hollow body was being filled with mastic by the operator actuating the pump handle.

When it was necessary to fill another type of mastic applying tool, such as disclosed in my patent U.S. Pat. No. 2,824,442, issued Feb. 25, 1958, on a mastic applicator and finishing tool, it was necessary to remove the rigid delivery pipe from the pump by removing the pipe securing bolts and to substitute a different type of outlet nozzle to the pump and secure it in place by the bolts. This required considerable time and effort.

My present invention does away with the necessity of changing outlet nozzles when filling different types of mastic-applying tools. This is accomplished by providing the pump with a three-way outlet and a different type of outlet orifice or nozzle for each outlet and then providing a three-way valve that can be selectively rotated to place any one of the outlet orifices or nozzles in communication with the pump. The handle for operating the valve is also formed into a semi-circle to provide a saddle that will receive the cylindrical body of the self-contained dry wall taper when this type of tool was to be filled.

SUMMARY OF THE INVENTION

An object of my invention is to provide a mastic delivery pump that has three different types of outlet orifices and nozzles and a three-way valve for permitting the operator to place the desired outlet in communication with the pump, the chosen outlet being the one required to fill the particular mastic-applying tool that is to be filled with mastic. With this arrangement it is not necessary to physically change an outlet and to substitute another type of outlet when filling different types of tools with mastic.

A further object of my invention is to provide a handle for the valve that is also formed into a saddle that is turned into the proper position for receiving the cylindrical body of a self-contained dry wall taper when the valve connects the proper mastic outlet for the taper with the pump.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a top plan view of the device when shown operatively applied to a container having mastic therein.

FIG. 2 is a front elevation of FIG. 1 and shows both the mastic delivering pump and the container of mastic.

FIG. 3 is a vertical section through the pump, portions being shown in elevation, and the view is taken along the line 3—3 of FIG. 1.

FIG. 4 is a full size vertical section through the valve and it is taken along the line 4—4 of FIG. 2.

FIG. 5 is a full size vertical section through the valve and it is taken along the line 5—5 of FIG. 4 and at right angles to that Figure.

FIG. 6 is a full size front elevation of the valve housing and associate parts and it illustrates the three different positions of the valve handle for selectively placing the desired mastic outlet in communication with the mastic delivering pump.

FIG. 7 is a side elevation of a mastic applying tool, a portion being shown in section to illustrate an inlet opening that can receive an oval-shaped mastic injection nozzle which is another one of the three mastic outlets connectible to the mastic pumps by the three-way selective valve.

FIG. 8 is a bottom plan view of the same mastic-applying tool shown in FIG. 7, and illustrates in section the oval-shaped mastic injection nozzle and its position in the elongated opening in the tool.

FIG. 9 is a side elevation of another type of mastic-applying tool and the inlet valve for the tool is shown in section and also another mastic injection nozzle is illustrated in section and removably connected to the inlet valve. This injection nozzle is placed in communication with the masticpump by a selective adjustment of the three-way valve.

DESCRIPTION OF THE PREFERRED EMBODIMENT

In carrying out my invention, I make use of a container A for holding mastic, indicated generally at B in FIG. 3. A mastic delivering pump C is shown in FIGS. 1, 2 and 3 and the pump is immersed in the mastic, as clearly shown in FIG. 3. The pump C comprises a cylindrical barrel 1, and a closure cap 2 is secured to and closes the upper end of the barrel. The closure cap has

a mastic-conveying outlet 3 and a valve housing D is attached to the closure cap by means of cap screws 4 and 5, see FIG. 2, or other suitable fastening means. The valve housing D has a passage 6 communicating with the outlet 3 in the closure cap 2.

The valve housing D is integral with a standard E that extends downwardly from the valve housing and is provided with a foot or step portion 7 that contacts with the same supporting surface 8 on which the container A rests, see FIG. 3. The valve housing and the standard may be made from a single casting. A full size section of a portion of the outlet 3 for the closure cap 2 is shown in FIG. 4 and the valve housing D is also shown in section in this Figure. Since the standard E is integral with the valve housing D, the upper portion of the standard is shown in section in FIG. 4. A cylindrical valve plug F is shown rotatably mounted in the valve housing D and the plug has a cylindrical and axially aligned recess 8 that communicates with the mastic outlet 3 for the closure cap 2. The valve plug F has an annular flange 9 that is rotatably received in an annular recess provided in the valve housing D. The left hand end of the valve plug F is closed, as shown in FIG. 4 at 10, and a semi-circular shaped handle G, see also FIGS. 1 and 2, has its mid-portion received in a groove 11 and a screw 12 secures the handle to the closed end 10.

The cylindrical valve plug F has an opening 13 in its cylindrical that is shown in FIGS. 4 and 5, registering with a bore 14 provided in a part of the standard E, see also FIG. 3. The lower end of the bore 14 extends to the left in FIG. 3 and then is provided with an upturned end that has a plastic seat 15. The arcuate-shaped handle G lies in a substantially horizontal plane when the valve opening 13 registers with the bore 14. The handle G performs an additional function when it is in this horizontal position because it acts as a cradle for receiving the cylindrical body 16 of the self-contained dry wall taper H disclosed in my patent U.S. Pat. No. 2,815,142, issued Dec. 3, 1957. FIG. 11 of the drawings in this patent and FIG. 3 of the present case illustrate how a mastic inlet check valve 17 provided at one end of the cylindrical body 16 of the dry wall taper is removably received in the plastic gland 15. The weight of the tool is sufficient for the inlet check valve 17 to maintain a mastic tight seal during the filling operation, which will be described more in detail hereinafter.

Before describing the other two mastic-delivering outlets that communication with the valve D, it is best to describe the mastic pump C more in detail. In FIG. 3, I show a piston 18 slidably mounted in the pump barrel 1. A piston rod 19 is slidably received in a packing gland 20 that is mounted in the closure cap 2 and the lower end of the rod in connected to the piston 18. The piston 18 carries a check valve, not shown, that will open when the piston rod 19 and piston are moved downwardly in the barrel 1 and will close when the piston is moved upwardly. A handle J has one end pivotally connected to the top of the piston rod 19 by a journal pin 21, see also FIGS. 1 and 2. A bracket 22 extends from the side of the closure cap 2 and a pair of parallel links 23—23 have their lower ends pivotally secured to opposite sides of the bracket by a pin 24 and have their upper ends pivotally secured to opposite sides of the handle J by a pin 25.

Again referring to FIG. 3, I show a foot valve 26 disposed at the lower end of the pump cylinder 1 and it carries a disc valve 27 that will close when the piston 18 is moved downwardly in the cylinder and will open when the piston moves upwardly, thus permitting the piston and its closed check valve, not shown, to draw mastic into the lower end of the cylinder 1 from the mastic in the container A. It will be seen that an operator can swing the pump handle J up and down about the pivot pin 25 and this will draw mastic B from the container A and force it into the mastic outlet 3 that leads to the valve D.

As already stated, the valve D has two other outlets in addition to the bore 14 that communicates with the plastic seat 15. In FIGS. 5 and 6, I show these two mastic-conveying outlets at 28 and 29. FIG. 1 illustrates how the valve housing D has tubular extensions 30 and 31 for the mastic-conveying outlets 28 and 29, respectively. An outlet nozzle 32 communicates with the passage 28 and is carried by the tubular extension 30. This nozzle 32 has an oval-shaped outlet 33, see also FIG. 2. The front face 34 of the valve plug F has an arrow 35 that indicates where the opening 13 is located on the cylindrical portion of the valve plug. When this arrow registers with a lower arrow 36 which is marked on the face of the valve housing D, see FIG. 6, the operator knows that the outlet opening 13 in the valve plug F registers with the bore 14 in the standard E and an actuation of the pump handle J will cause the pump to deliver mastic from the container A to the Nylon seat 15. The valve handle G is in a horizontal position when the arrow 35 registers with the arrow 36 and since the handle is arcuate in shape, as shown in FIG. 1, it will act as a cradle for receiving the cylindrical body 16 of the dry wall taper tool H. The mastic inlet check valve 17 is first placed into the Nylon seat 15 and then the body 16 of the tool H is placed against the arcuate valve handle G.

A different type of mastic applicator is illustrated in FIGS. 7 and 8. This tool is entitled as a Mastic Applicator and Finishing Tool and I received a patent on it on Feb. 25, 1958, U.S. Pat. No. 2,824,442. The tool K has a housing for holding mastic and a handle 40 is connected to a fulcrummed and spring-biased pressure plate 41 for forcing the plate into the housing for ejecting mastic out through an elongated outlet opening 42 that is coextensive with the width of the tool. In operation the tool is moved over a surface 43, see FIG. 7, in the direction of the arrow 44 and the operator applies pressure on the handle 40 for swinging the pressure plate 41 inwardly and forcing mastic out through opening 42 and against the surface 43. A spring-biased trowelling bar 45 determines the depth of the mastic layer and also determines the outer contour of the layer. The tool is generally used to apply a finishing layer of mastic over a tape, not shown, and a lower layer of mastic, not shown, that covers a joint lying between adjacent sheets of wallboard.

FIGS. 7 and 8 illustrate how the mastic-applying tool is filled with mastic. Of course, the tool is removed from the surface 43 while being filled and is held against the oval-shaped outlet 33 of the outlet nozzle 32 so that the end of the nozzle enters the elongated outlet opening 42 in the tool. The valve handle G has been rotated counterclockwise from its full line position shown in FIG. 6, into the dot-dash line position where the arrow 35 on the face of the valve plug F will register with the arrow 46 on the face of the valve housing D and shown by dot-dash lines because it is hidden by the valve handle G in its full line position in FIG. 6.

This will move the valve opening 13 out of registration with the bore 14 in the standard E and into registration with the outlet passage 28, whereby an actuation of the pump handle J will deliver mastic into the tool K.

The particular type of mastic applicator K, shown in FIGS. 7 and 8, is given by way of example. The same oval-shaped mastic outlet 33 is used for filling other tools on which I have received patents; namely, a nail spotter disclosed in my U.S. Pat. No. 2,809,513, issued Oct. 15, 1957 and titled Recess-Filling Mastic Applicator; and in mastic applying flat finishers, such as disclosed in my U.S. Pat. No. 3,343,202, issued Sept. 26, 1967 and titled Swingable Arcuate Trowelling Blade for Mastic Applicator.

Still another group of mastic-applying tools require a different type of outlet nozzle so that they can be filled with mastic. In FIG. 9, I illustrate one of these tools L and a U.S. Pat. No. 2,889,699, issued Sept. 9, 1959, was granted to me, the title of the patent being Mastic Applicator with Removable Heads. The applicator L has a housing for receiving mastic and a spring-biased and fulcrummed pressure plate 50 to which a handle 51 is attached. The mastic outlet opening 52 in the base plate 53 extends a short distance at 52*a* into the arcuate wall 54 of the housing. A removable head M has a bottom plate 55 that covers the opening 52 and an integral flange 56 covers the extended opening 52*a* that is in the arcuate wall 54. The removable head M also has integral side flanges 57 and screws 58 removably secure the head to the tool L. The bottom plate 55 has a plurality of slots 59 arranged parallel to one another and the slots have portions 59*a* extending into the end flange 56. Therefore, when the tool L is used with this type of head M on it, the swinging of the pressure plate 50 inwardly will force ribbons of mastic out through the parallel slots 59 and the end portions 59*a*.

The mastic applying tool L has a mastic inlet check valve N that is mounted in the base plate 53 and the valve has a cylindrical body 60 with an annular recess in its outer end. A cylindrical outlet nozzle 61 communicates with the mastic passage 29, see FIGS. 1 and 9, and it is carried by the arcuate tubular extension 31. When the tool L is to be filled with mastic, the operator moves the reduced cylindrical end of the check valve N into the cylindrical outlet nozzle 61 and an "O" ring in the nozzle will form a mastic tight seal. The operator rotates the valve handle G, in FIG. 6, through 90° in a clockwise direction from the full line position shown in this Figure into the dot-dash line position where the arrow 35 on the face of the valve plug F will register with the dot-dash arrow 62, which is marked on the face of the valve housing D. This will move the valve outlet 13 into registry with the passage 29 and an operation of the pump handle J will force mastic into the tool L.

The tool L is given as one example of a group of mastic-applying tools that have cylindrical mastic intake check valves. Two other tools having such a type of intake valve are the corner applicator disclosed in my U.S. Pat. No. 2,889,965, issued June 9, 1959 and titled Mastic Applicator and Corner Finishing Tool; and the flat applicator tool disclosed in my U.S. Pat. No. 3,103,033, issued Sept. 10, 1963 and titled Mastic-Feeding Tool with Compressible Mastic-Holding Compartment.

In FIGS. 5, I show a removable valve-locking pin P that is received in a bore 63 in the valve housing D and can enter a recess 64 in the valve plug E for preventing the accidental rotation of the plug. A chain 65 permits the pin P from becoming lost when removed from the bore 63. The valve plug F has two additional recesses 66 and 67 for receiving the pin P when the valve plug has been rotated into either one of its other two positions.

I claim:

1. A pump for filling mastic applying tools comprising;

a pumping unit operable to pump mastic;

a means for supporting said pumping unit in a container having mastic therein;

a valve housing connected to said pumping unit;

a rigid standard connected to said valve housing and extending downwardly therefrom on the outside of said mastic container and terminating in a foot portion, said standard having a downwardly extending first mastic conveying passage connected to said valve housing and terminating in an upwardly extending first outlet spaced from said foot portion, said first outlet provided with a gland adapted to receive a tubular nipple of a mastic applying tool inserted therein to form a liquid tight seal therebetween;

said valve housing having a second and third mastic conveying passage each of which terminates in a different shaped outlet;

a rotatable valve plug positioned in said valve housing and having an opening therein for communicating with said mastic conveying passages;

an arcuate shaped handle connected to said plug and adapted to embrace a mastic applying tool and positioned above said gland so that when the arcuate handle is rotated so as to lie in a horizontal plane to receive and embrace the mastic applying tool, the opening in said plug places the pumping unit in communication with said first mastic-conveying passage;

2. The combination as set forth in claim 1 wherein said second mastic conveying passage terminates in a cylindrical shaped outlet that is disposed above said gland so that a rotation of said handle into a position for registering said plug opening with said second passage will cut off any flow of mastic to said first passage.

3 The combination as set fort in claim 1: and in which

a. said vave housing valve a third opening communicating with a third mastic-conveying passage that terminates in an outlet nozzle that is oval-shaped so that a rotation of said handle into a position for registering said plug opening with said third valve housing opening, the plug will cut off the other two valve housing openings and permit mastic to flow only through said third passage.

4. The combination as set forth in claim 3: and in which

a. the face of said valve plug is exposed and is provided with a mark indicating the position of the mastic outlet opening in said valve plug;

b. said valve housing having markings indicating the three postions into which said valve plug can be rotated so that when the mark on said valve plug registers with any one of the three markings on the valve housing, the operator will know which one of the three mastic-conveying passages is in registration with the plug opening.

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