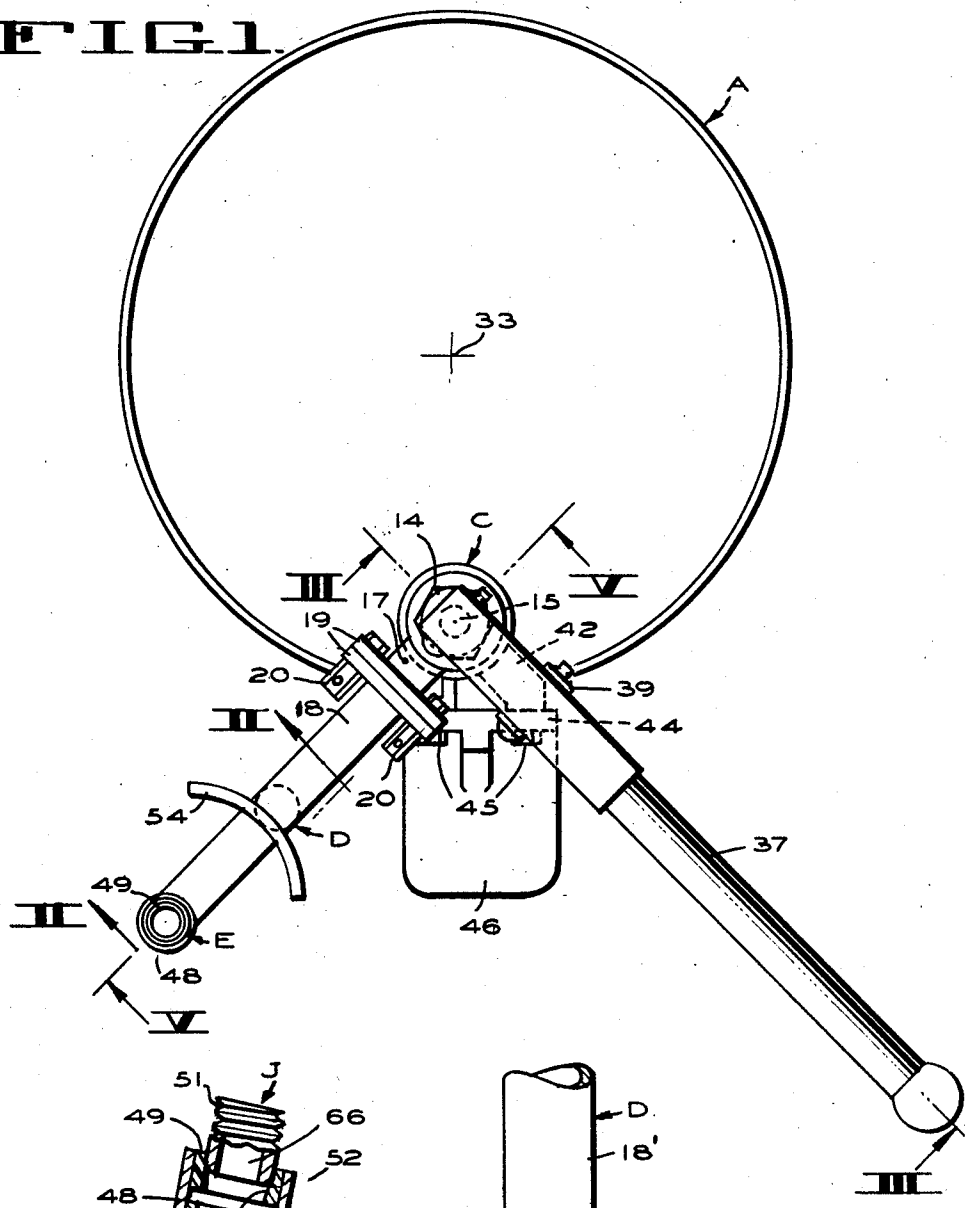
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PUMP FOR FILLING MASTIC-APPLYING TOOLS

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FIG. 1.



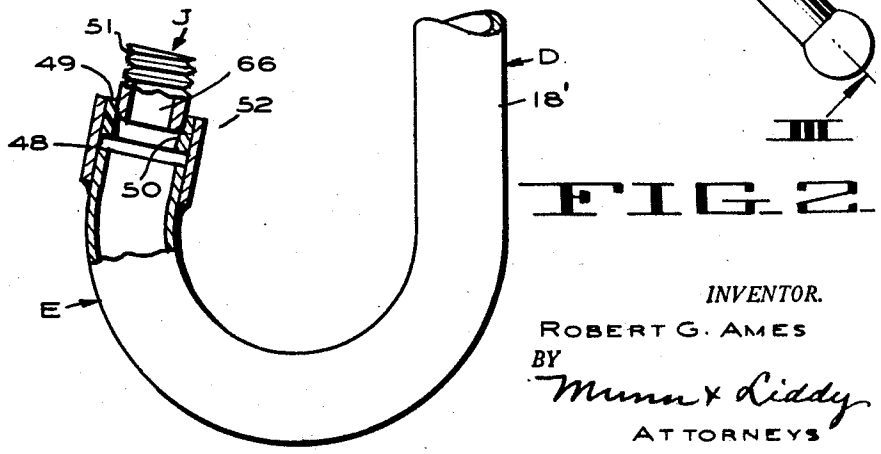


FIG. 2.

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FIG. 3

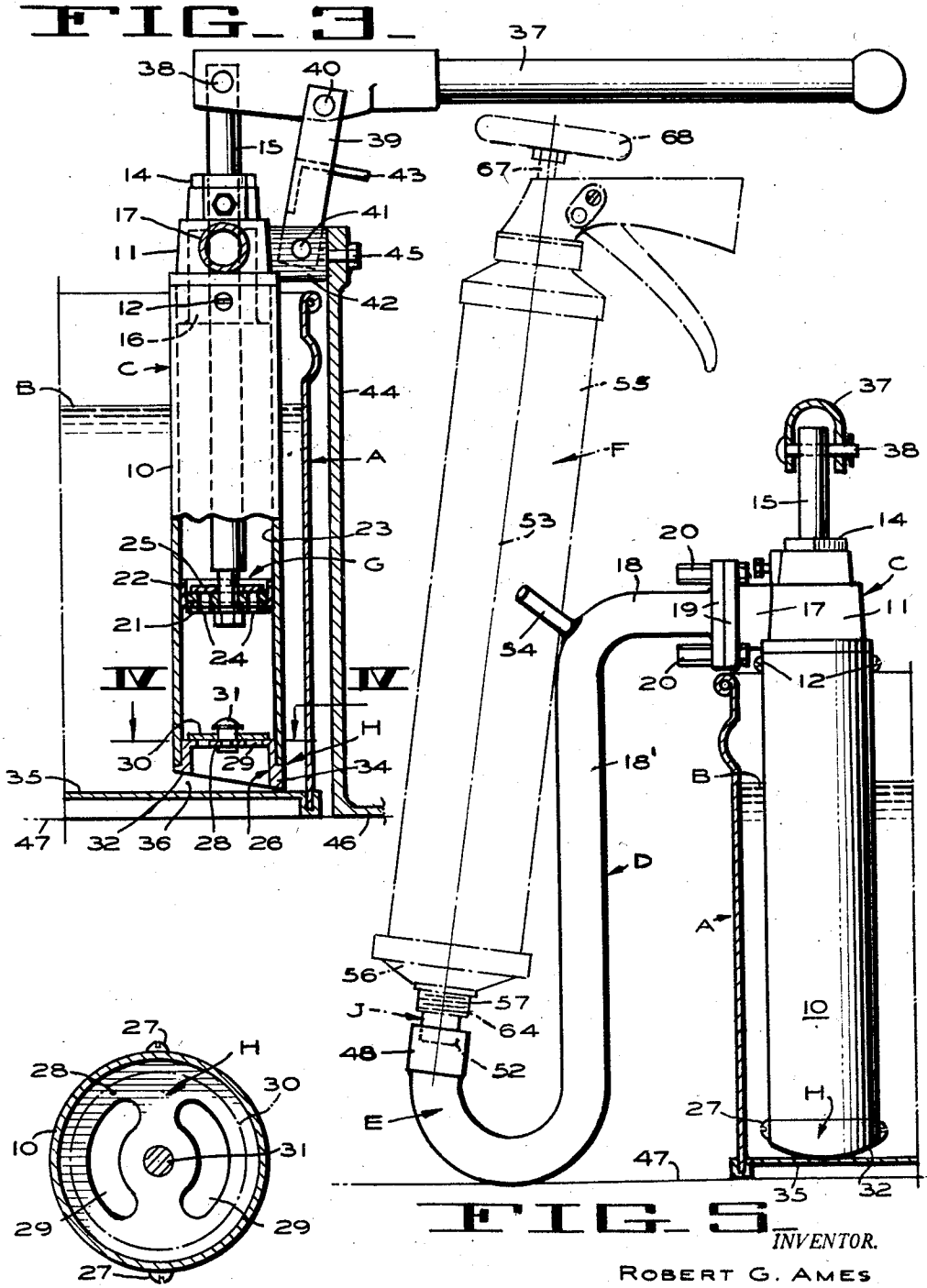


FIG. 5

FIG. 4

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PUMP FOR FILLING MASTIC-APPLYING TOOLS

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Application April 12, 1957, Serial No. 652,409

5 Claims. (Cl. 141—113)

The present invention relates to improvements in a pump for filling mastic-applying tools. It consists of the combinations, constructions, and arrangement of parts, as hereinafter described and claimed.

An object of this invention is to provide a pump for filling various types of mastic-applying tools, such as those shown in the following copending applications filed by me in the United States Patent Office:

(1) Self-Contained Dry Wall Taper, Serial No. 454,563, filed September 7, 1954 (now Patent No. 2,815,142, dated December 3, 1957);

(2) Mastic Applicator and Corner-Finishing Tool, Serial No. 476,219, filed December 20, 1954;

(3) Mastic Applicator With Removable Heads, Serial No. 506,278, filed May 5, 1955;

(4) Automatic Feed Caulking Gun, Serial No. 605,250, filed August 21, 1956, now Patent No. 2,862,382.

Moreover, my improved pump may be utilized for filling a caulking gun disclosed in the present application, which gun is provided with a special filling nipple that may be placed loosely in the outlet orifice of the pump that faces upwardly, the gun extending substantially vertically above the orifice so that its weight is sufficient to make the joint between the orifice and the nipple mastic-tight. No hold-down fittings are necessary.

It is a well-known fact that mastic, which is used for providing a covering over wall-board joints, has the characteristic of being quite viscous. Experience has shown that it is difficult for the operator to fill applicators and caulking guns with such mastic, since considerable pressure must be exerted in order to load these tools.

Accordingly, it is proposed to provide a pump for filling various types of mastic-applying tools with facility and ease, and without any leakage of the mastic occurring during the filling operation.

Other objects and advantages will appear as the specification continues. The novel features will be set forth in the appended claims.

Drawings

For a better understanding of the invention, reference should be had to the accompanying drawings in which:

Figure 1 is a top plan view of a container, illustrating my pump applied thereto;

Figure 2 is an enlarged sectional view disclosing a U-shaped portion of the mastic-delivering pipe, as seen from the plane II—II of Figure 1;

Figure 3 is a vertical sectional view taken along the plane III—III of Figure 1;

Figure 4 is an enlarged horizontal sectional view taken through the pump cylinder, along the plane IV—IV of Figure 3; and

Figure 5 is a vertical sectional view taken along the plane V—V of Figure 1.

While I have shown only the preferred form of my invention, it should be understood that various changes,

or modifications, may be made within the scope of the annexed claims without departing from the spirit thereof.

Detailed description

Referring to the drawings, there has been provided a container A, which is adapted to hold mastic B. As shown in Figures 1, 3 and 5, a pumping unit C is mounted in the container A, and it is provided with a rigid self-sustaining mastic-delivering pipe D. This pipe is disposed exteriorly of the container, and is fashioned with a U-shaped end E to which a caulking gun F may be coupled when the latter is being filled with mastic. Although I have selected this particular caulking gun for the purpose of illustration, it will be appreciated that the various tools disclosed in my copending applications, mentioned earlier, may be filled with mastic. Of course, the shape of the mastic-delivering pipe D may be varied to accommodate the different tools.

As to the pumping unit C, it is designed to handle mastic of heavy consistency, which is quite viscous and now utilized for covering wall-board joints and skimming the surfaces of such boards. A great deal of difficulty has been encountered in filling applicators and caulking guns with this mastic, since the latter will not flow readily.

Turning now to the structural features of the pumping unit C, it includes a cylinder **10** having a closure cap **11** secured to the top thereof by screws **12** (see Figures 3 and 5). This cap is provided with a packing gland **14** through which a reciprocable rod **15** extends in axial alignment with the cylinder **10**.

It will be noted that a combined piston and check valve unit G is carried by the lower end of the rod **15** (see Figure 3). This unit is designed to draw a quantity of the mastic B into the cylinder **10**, through a foot valve H at the bottom of the cylinder, during each up stroke of the rod **15**. During each down stroke of this rod, mastic will by-pass the unit G into a position above the latter. The mastic thus raised in the cylinder **10** will be forced through the hollow interior **16** of the closure cap **11** (see Figure 3), which communicates with an outlet pipe **17**. The latter is connected to the upper end **18** of the mastic-delivering pipe D by companion flanges **19** and bolts **20** (see Figure 5). This pipe has a depending section **18'** extending downwardly to the U-shaped end E.

As disclosed in Figure 3, the unit G includes a piston **21** having a cup-shaped gasket **22** secured thereto, the latter bearing against the inner wall **23** of the cylinder **10**. This piston is fashioned with slots or openings **24** through which the mastic B may pass. A disc valve **25** is guided on the rod **15** above the piston **21**, for up and down movement relative to the piston. When the latter is moved downwardly, the disc valve **25** may be raised by the mastic, thus uncovering the slots **24** to allow upward passage of the mastic. Quite obviously, when the piston **21** is raised, the disc valve **25** will cover the slots **24**, and this will allow the piston to raise the mastic disposed thereabove.

The details of the foot valve H are illustrated in Figures 3 and 4. As shown therein, it includes an inverted cup **26** which is inserted into the lower end of the cylinder **10** and secured thereto by screws **27** (see Figures 4 and 5). This cup defines a horizontal wall **28** having slots **29** extending therethrough for the passage of the mastic B into the cylinder **10**. A disc valve **30** overlies the wall **28**, and is guided for limited upward movement relative to this wall by a central stud **31**, the latter being fixed to the horizontal wall **28**. As the combined piston and valve unit G is raised, the disc valve **30** will be unseated, thus allowing the mastic to be drawn into the cylinder.

It should be observed from Figure 3 that the rim **32** of the inverted cup **26** is disposed on an incline, sloping upwardly toward the center **33** of the container A (see

Figure 1). This construction will permit a peripheral section 34 of the cup 26 to rest on the bottom 35 of the container, while providing space 36 through which the mastic B will be drawn from the center of the container.

For the purpose of reciprocating the rod 15, and thereby pump the mastic B from the container A to the mastic-delivering pipe D, there has been provided a handle 37. This handle is swingably connected to the top part of the rod 15 by a journal pin 38. In order to support the handle for rocking motion, a link 39 has been illustrated. This link is connected at its upper end to an intermediate portion of the handle 37 by a journal pin 40, while its lower end is connected by a journal pin 41 to a bracket 42, the latter being formed as part of the closure cap 11 (see Figure 3). A stop 43 is provided on the link 39 to limit the downward swinging movement of the handle.

As shown in Figures 1 and 3, a standard 44 is disposed exteriorly of the container A, and has its upper end secured by studs 45 to the bracket 42. The lower end of this standard has a step 46, which is disposed to rest on the floor or ground 47. During actuation of the handle 37, the operator may place one foot on the step 46 to thus hold the standard 44 and the pumping unit C in place.

It will be noted from Figure 1 that the mastic-delivering pipe D and the handle 37 are disposed substantially 90° apart, while the standard 44 is arranged therebetween. This will be found very convenient, since the operator may place his foot on the step 46 and actuate the handle 37 with one hand while grasping the applicator or caulking gun F in the other hand.

The U-shaped end E of the mastic-delivering pipe D rests on the ground 47 and has a sleeve 48 welded to its outlet end (see Figures 2 and 5). A nylon gland 49 (or other suitable resilient material) is mounted on the interior of this sleeve and is fashioned with a conical seat 50 that flares outwardly in an upward direction. This seat is dimensioned to have a tubular filling nipple J telescoped thereinto, when the caulking gun F or other mastic-applying tool is being filled with mastic B, with the nipple J having a liquid-tight seal with the gland 49. This nipple has a threaded upper end 51, which may be connected to the caulking gun.

It will be seen from Figures 2 and 5, that the nipple J has a rounded rim 52 at its bottom, which will permit the nipple to be rocked through small angular movements, while still maintaining a liquid-tight seal between the nipple and the nylon gland. This arrangement will permit the axis 53 of the caulking gun F to be inclined with respect to vertical, in a direction toward the pumping unit C, so that the gun (or other mastic-applying tool) will lean against the upper end 18 of the pipe D for support (see Figure 5). The U-shaped end E is greater than semi-circular so as to permit the gun to be inclined toward the pumping unit C.

For the purpose of further supporting the caulking gun or other mastic-applying tool during the filling thereof, a curved saddle 54 has been fixed to the upper part of the pipe D. This saddle is adapted to embrace the gun to steady the latter during the filling operation.

With respect to the caulking gun F, which is a commercial item now on the market, it defines a cylinder 55 having a cap 56 at its lower end. This cap is provided with a tube 57 into which the threads 51 of the nipple J may be screwed. The bore of this tube communicates with the interior of the cylinder 55.

In filling the caulking gun F with mastic B, the operator first inserts the lower rounded rim 52 of the nozzle J into the upwardly-facing conical seat 50 of the nylon gland 49. The seal is completed between the pump and the caulking gun merely by placing the nipple J loosely in the pump orifice 50. The weight of the gun, as it extends almost vertically above the orifice, is sufficient to render the joint between the nipple J and the conical seat 50 mastic-tight. No hold-down fittings are necessary to keep the connection from leaking.

Upon actuating the pumping unit C, the mastic B will be conveyed through the pipe D and a bore 66 of the nipple J so as to fill the cylinder 55 of the gun. As the latter is filled, the incoming mastic will force a piston rod 67 and its handle 68 upwardly.

At the present time, it is the conventional practice to, dip the lower end of the caulking gun F directly into the mastic B in the container A, and to pull the handle 68 upwardly in order to fill the gun. As previously mentioned, considerable force is required to draw the mastic into the gun because the rubber base mastic is quite viscous. Also, mastic will adhere to the exterior surface of the lower end of the gun. But, when my special nipple J is utilized, the operator can pump the mastic into the gun, obtaining the necessary pressure with the handle 37; and, moreover, the mastic will not spread over the exterior of the gun. A small amount of mastic on the exterior of the nipple is not objectionable.

I claim:

1. In a pump for filling mastic-applying tools: a pumping unit operable to pump mastic; means for supporting the pumping unit in a container having mastic therein; a rigid self-sustaining mastic-delivering pipe extending from the pumping unit, and having an upwardly-extending outlet end provided with a resilient gland; the latter defining a conical seat dimensioned to have a tubular nipple of a mastic-applying tool inserted thereinto with a liquid-tight seal therebetween; and a saddle secured to a section of the pipe at an elevation above the outlet end of the pipe, and being positioned to embrace said tool when the latter is inclined relative to vertical in a direction toward the pumping unit.

2. In a pump for filling mastic-applying tools: a pumping unit operable to pump mastic; means for supporting the pumping unit in a container having mastic therein; a rigid self-sustaining mastic-delivering pipe extending from the pumping unit, and having a depending section; said pipe having a U-shaped lower portion defining an outlet end, the latter extending upwardly; a resilient gland provided in said outlet end and being dimensioned to have a tubular nipple of a mastic-applying tool inserted thereinto with a liquid-tight seal therebetween; and a saddle secured to said pipe at an elevation above the outlet end of the pipe, and being positioned to embrace said tool when the latter is inclined relative to vertical.

3. In a pump for filling mastic-applying tools, as defined in claim 2; and in which said U-shaped lower portion of the pipe is positioned to rest on the surface on which the container rests to thereby provide an additional support for the pumping unit.

4. In combination: a pumping unit operable to pump mastic; a rigid self-sustaining mastic-conveying pipe extending from the pumping unit, and having an upwardly-extending outlet end provided with a resilient gland; the latter defining a conical seat; and a mastic-applying tool provided with a tubular filling nipple, which is dimensioned to be inserted against the conical seat with a liquid-tight seal therebetween; the nipple having a rounded rim for contacting with the conical seat, whereby the tool may be moved into angular positions relative to the outlet end of said pipe within limits, while maintaining the seal between the nipple and the gland.

5. In a pump for filling mastic-applying tools: means operable to deliver mastic under pressure; a rigid self-sustaining mastic-conveying pipe extending from said means, and having an upwardly-extending outlet end provided with a resilient gland; the gland defining a conical seat that flares outwardly in an upper direction; in combination with a tubular filling nipple connected to the lower end of a mastic-applying tool which is adapted to be arranged substantially vertically above the outlet

end of said pipe; the filling nipple being dimensioned to be inserted against the conical seat, with the weight of the tool holding the nipple in sealing-tight relation with the seat; the nipple having a rounded rim at its bottom which is located for contacting with the seat, whereby the tool and its nipple may be moved into angular positions relative to the outlet end of said pipe within limits, while the weight of the tool maintains the seal between the nipple and the conical seat of the gland.

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