

July 19, 1932.

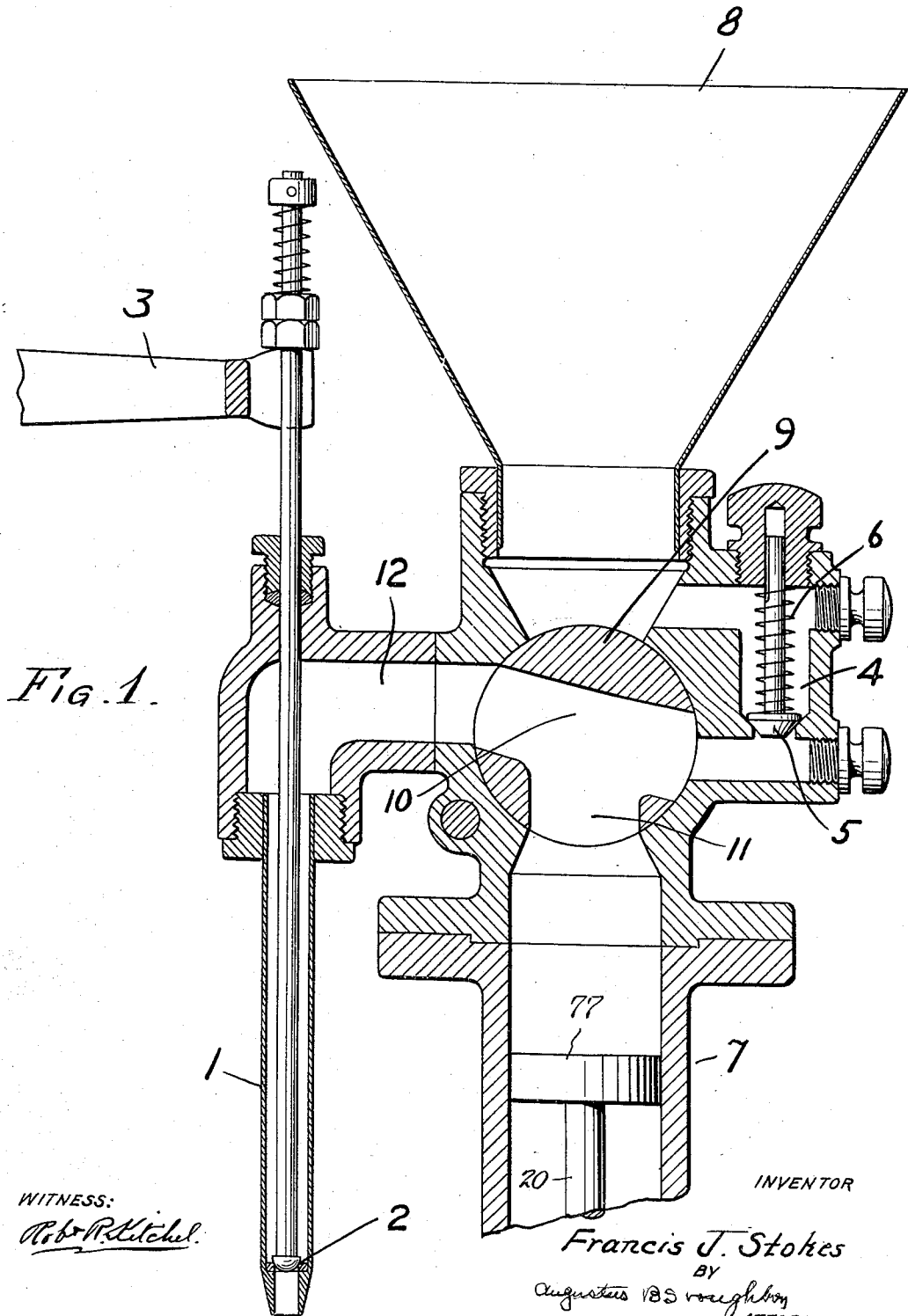
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FILLER MECHANISM FOR TUBES AND THE LIKE

Filed June 9, 1928

2 Sheets-Sheet 1



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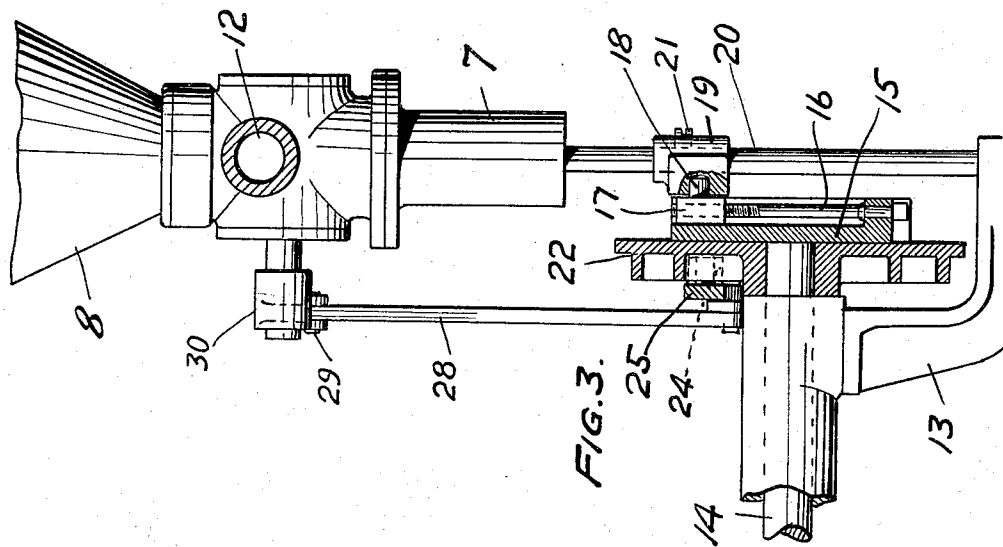


FIG. 3.

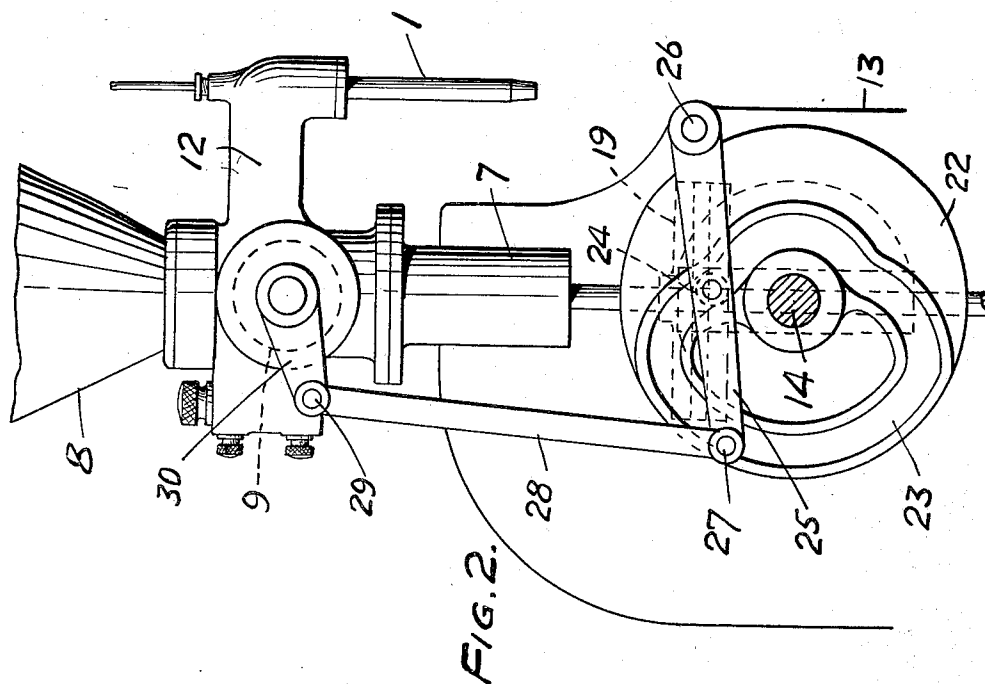


FIG. 2.

WITNESS:

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FILLER MECHANISM FOR TUBES AND THE LIKE

Application filed June 9, 1928. Serial No. 284,186.

The present invention relates to mechanism by which measured quantities of a more or less fluid substance or material are introduced under pressure into tubes or other
5 containers.

The principal objects of the present invention is to provide a comparatively simple, reliable and efficient mechanism for machines for accomplishing that object.

10 Generally stated, the invention comprises filling means such as a pump, a filling nozzle to which said means feed and from which material is delivered in measured quantities to tubes or containers, a cutoff for the nozzle,
15 means for periodically working the cut off, and a by-pass for the feeding means operative to relieve pressure when the cutoff is closed.

The invention also comprises the improvements to be presently described and finally
20 claimed.

In the following description reference will be made to the accompanying drawings.

25 Fig. 1 is a view principally in central section.

Fig. 2 is a side elevation of my device, and Fig. 3 is a side elevation at right angles to Fig. 2 with parts in cross section.

In the drawings 1 is a nozzle adapted to
30 deliver more or less fluid material to tubes or other containers. 2 is a cut off for the nozzle and it is opened and closed periodically as by means of the oscillating arm 3. Arm 3 may be caused to oscillate or reciprocate by a cam or in any other desired way.
35 4 is a by-pass and it is provided with a normally closed valve 5 adapted to be opened by pressure applied to it in opposition to the action of the spring 6 which tends to close it. The tension of spring 6 may be
40 adjusted by the nut in which valve 5 is guided.

The feeding means chosen for illustration happen to be a reciprocating pump 7
45 which receives its supply from the hopper 8 through a rotary plug valve 9 which is turned on the instroke of the pump to permit of the passage of material from the hopper 8 through the port 10 to the pump 7, and on the outstroke to permit of the passage of

material from the pump through the port 11 to the passage 12 and thence to the nozzle 1. This is the position shown in the drawings and in it the pump chamber communicates through the port 10 with the by-pass 4 which
55 also communicates with the hopper 8. The feeding means as stated happen to be a reciprocating pump which involves the use of the movable plug valve. In the case of a continuously acting pump it will be understood
60 that the provision of the described ports communicating with the emission side of the pump and with the nozzle 1 and with the by-pass is sufficient provided of course that the by-pass communicates with the hopper on in-
65 take side of the pump.

In use the cutoff 2 opens the nozzle 1 for intervals of time appropriate for delivering the required quantity of the substance or material and then closes it. When the cut-
70 off is closed excess pressure is relieved by the opening of the valve 5 and the flow of the material through the by-pass 4.

In Figs. 2 and 3 there is illustrated the means for operating pump 7 and valve 9.
75 These means are shown as consisting of a frame 13 which supports the entire machine. In this frame there is mounted a shaft 14 adapted to be driven from any suitable source of power. On the inner end of shaft
80 14 there is mounted a crank disk 15 which bears a screw adjustment 16 thereon. Screw adjustment 16 carries at its upper end a crank block 17 which carries in its inner end a crank pin 18. Crank pin 18 cooperates
85 with a cross head 19 which is detachably but tightly secured to rod 20 in any suitable manner as by screw 21. Rod 20 carries at its upper end piston 22 of pump 7.

There is also mounted on shaft 14 a valve
90 cam 22 having a valve groove 23 therein. In valve 23 is located cam follower 24 which is pivotally mounted on arm 25. Arm 25 is pivotally mounted on frame 13 at 26. At its opposite end arm 25 has a pivotal con-
95 nection 27 with link 28 which in turn has pivotal connection 29 with arm 30 connected to valve 9.

It will thus be seen that rotation of shaft
100 14 causes crank disk 15, and with it pin 18

to rotate. This causes pin 18 to reciprocate in a groove in cross head 19 and simultaneously to cause vertical reciprocation of cross head 19 and rod 20, thereby actuating pump 7.

Rotation of shaft 14 also causes cam 23 to rotate which causes vertical movement of follower 24 in groove 23. This actuates valve 9 through arm 25, link 28 and arm 30.

It will be obvious to those skilled in the art to which the invention relates that modifications may be made in details of construction and arrangement and matters of mere form without departing from the spirit of the invention which is not limited to such matters or otherwise than the prior art and the appended claim may require.

I claim:

1. A filling machine for tubes or the like including in combination a feeding hopper for material to be fed, a feeding nozzle for introducing the material to the tube to be filled, a cut off for said nozzle, means independent of the tube to be filled for opening and closing said cut off, a pump for conveying the material to be fed from said hopper to said nozzle, a mechanically actuated valve alternately opening connection between said hopper and said pump or between said pump and said nozzle, and a by-pass between said valve and said hopper for returning excess material to said hopper, said valve intermittently opening an unobstructed connection between said pump and said by-pass.

2. A filling machine for tubes or the like including in combination a feeding hopper for material to be fed, a feeding nozzle for introducing the material to the tube to be filled, a cut off for said nozzle, means independent of the tube to be filled for opening and closing said cut off, a pump for conveying the material to be fed from said hopper to said nozzle, a mechanically actuated valve alternately opening connection between said hopper and said pump or between said pump and said nozzle, a by-pass between said valve and said hopper for returning excess material to said hopper, a valve in said by-pass, means urging said valve in said by-pass to closed position against the flow of material from said pump to said hopper, and means for adjusting the tension of said last mentioned means, said valve intermittently opening an unobstructed connection between said pump and said by-pass.

3. A filling machine for tubes or the like including in combination a feeding hopper for material to be fed, a feeding nozzle for introducing the material to the tube to be filled, a cut off for said nozzle, means independent of the tube to be filled for opening and closing said cut off, a pump for conveying the material to be fed from said hopper to said nozzle, a valve casing having separate ports connected respectively to said

hopper and to said nozzle and to said pump, a rotary valve seated in said casing and having orifices therein and mechanically actuated to alternately open connection between said hopper and said pump or between said pump and said nozzle, a by-pass in said casing connected to said hopper, and a valve in said by-pass stressed to closed position against pressure towards said hopper, said orifices in said valve opening unobstructed connection between said pump and said by-pass when said pump is in communication with said nozzle.

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