

Nov. 1, 1938.

F. L. DREW

2,134,709

NONDRIP NOZZLE

Filed Oct. 22, 1937

2 Sheets-Sheet 1

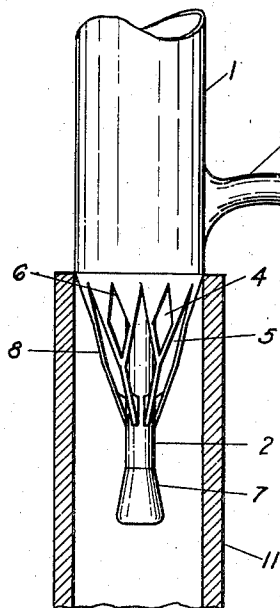


FIG. 1

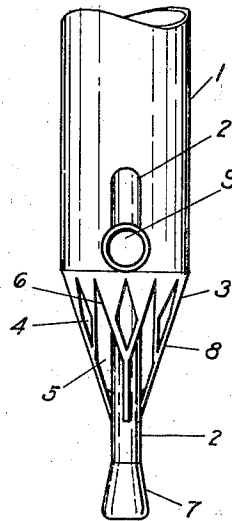


FIG. 2

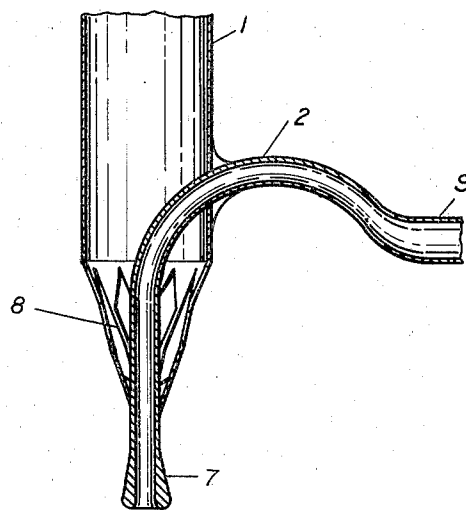


FIG. 3

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2 Sheets-Sheet 2

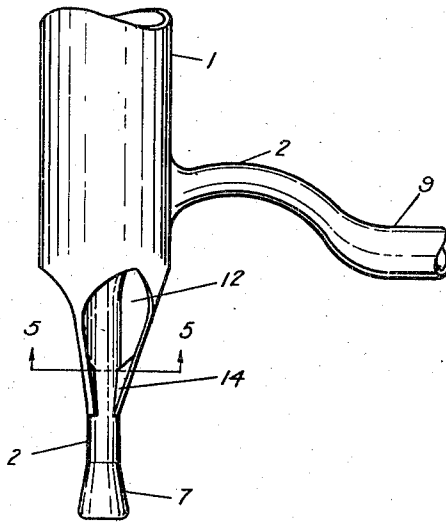


FIG. 4

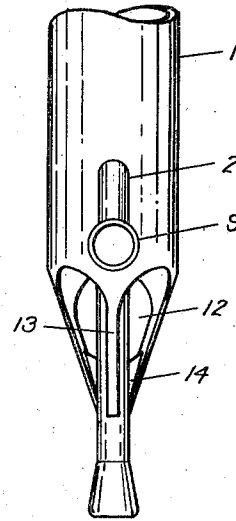


FIG. 5

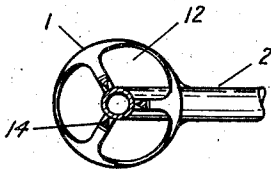


FIG. 6

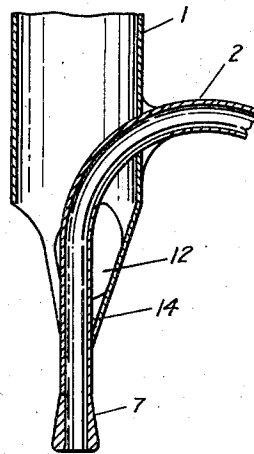


FIG. 7

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UNITED STATES PATENT OFFICE

2,134,709

NONDRIP NOZZLE

Frank L. Drew, Aberdeen, Md.

Application October 22, 1937, Serial No. 170,401

5 Claims. (Cl. 221—84)

(Granted under the act of March 3, 1883, as amended April 30, 1928; 370 O. G. 757)

The invention described herein may be manufactured and used by or for the Government for governmental purposes, without the payment to me of any royalty thereon.

5 This invention relates to a non-drip nozzle whereby liquids may be passed therethrough to containers without possibility of loss of liquid or contamination of the containers or supporting structure by dripping of the liquid.

10 One object of this invention is to provide a nozzle whereby dripping from the nozzle is avoided.

Another object of the invention is to provide a nozzle in which the flow of liquid is so arranged
15 that splashing of the liquid is avoided.

These and other objects of the invention will be apparent from the following description and claims.

In the drawings

20 Fig. 1 is an elevation of the nozzle projected into a receptacle to be filled.

Fig. 2 is another elevation of the nozzle.

Fig. 3 is a longitudinal section.

25 Figs. 4 and 5 are elevations of another form of the invention.

Fig. 6 is a section on line 5—5 of Fig. 4.

Fig. 7 is a longitudinal section.

Referring to the drawings, the dispensing pipe 1 is adapted for the flow of any liquid. Pipe 1 has its lower end tapered inwardly as at 3, to converge around an inner air suction pipe 2 which enters and passes downwardly in the center of pipe 1. The tapered end 3 of pipe 1 is provided with a plurality of openings 4 and 5 around the cone 3.
30

Openings 4 are preferably as shown; that is, diamond shaped, with the intervening openings 5 generally diamond shaped with their lower ends not contacting. Thus openings 5 are slots having their upper ends of diamond shape and their lower ends open, the solid portion between openings 5 forming narrow bars 8 which merge into the exterior of central pipe 2.
40

The edges 6 of the openings all slope downwardly toward the enlarged head 7 of pipe 2. As seen in Fig. 1, pipe 2 passes through the side wall of pipe 1 and has an enlargement 9 to provide for passage of air after the liquid is drawn past the high point of pipe 2. The shape of the enlarged head 7 may vary with the particular liquid being handled. Preferably the valves, not shown, for controlling flow through pipes 1 and 2 are interconnected so that when the valve in pipe 1 is closed the valve in pipe 2 is opened and vice versa.
50

55 When filling a container such as shown at 11,

Fig. 1, the end of the nozzle is inserted into the container. The liquid control valve is opened and the air valve closed, and liquid flows out of openings 4 and 5 and around the exterior of pipe 2. When the valves are reversed, liquid flow will stop and there will be no dripping, since the drops will collect on the head 7 and be drawn into tube 2, by the air suction. The head 7 is so shaped that any collected drops will approach the center of the nozzle before falling and thus be sucked back into pipe 2.
10

In the form shown in Figs. 4, 5, 6 and 7, pipes 1 and 2 are arranged as previously described. Instead of the diamond-shaped openings, however, pipe 1 has a plurality (three as shown) of openings 12 which are substantially oval or circular at their upper ends, and have curved side walls which join tube 2 near enlargement 7. Thus between adjacent openings 12 are strips or bars 13.
15

In order to prevent the liquid from impinging against strips 13 where these strips join tube 2, fillers 14 are secured between each strip 13 and tube 2. These fillers are the same width as strips 13 at the lower ends and taper upwardly to form a narrow edge. This upper edge spreads the liquid outwardly and causes an even flow over and around inner pipe 2.
20

The suction pipe 2 functions as previously described to prevent dripping at the nozzle.
25

In both forms of invention it is preferable to weld, braze or otherwise secure the converging portion of the discharge pipe to the vacuum pipe.
30

It will be understood that the invention is not limited to the details of construction shown for illustrative purposes, since many changes and variations may be made therein without departing from the invention, nor exceeding the scope of the claims.
35

I claim:

1. A non-drip nozzle comprising a liquid discharge pipe, a smaller pipe within said discharge pipe and connected to a source of vacuum, said discharge pipe converging inwardly into contact with and being stationary with respect to said vacuum pipe, said discharge pipe having a plurality of openings the side walls of which slope downwardly and inwardly toward the vacuum pipe, whereby discharged liquid flows over the exterior of the vacuum pipe and all drops collect on the end of the vacuum pipe and are drawn back by the air suction.
40

2. The invention as defined by claim 1 wherein the lower end of the vacuum pipe is provided with
55

an enlarged tip to thereby collect drops of liquid.

3. A non-drip nozzle comprising a vacuum pipe, a liquid discharge pipe around the vacuum pipe, said liquid discharge pipe having its lower end
5 converged into contact with and secured to the vacuum pipe, said converging end having a plurality of substantially diamond shaped openings with the side walls thereof converging downwardly, whereby the drops collecting at the lower
10 end of the discharge pipe are drawn back into the vacuum pipe.

4. A non-drip nozzle comprising a vacuum pipe, a liquid discharge pipe enclosing a portion of said vacuum pipe, the lower end of said discharge pipe
15 having a plurality of openings and being converged into contact with the vacuum pipe, and fillers between the solid portions of the lower end

of the discharge pipe and the vacuum pipe whereby liquid may flow over the exterior of the vacuum pipe without splashing, and the drops collecting at the lower end of the discharge pipe
5 are drawn back into the vacuum pipe.

5. A non-drip nozzle comprising a discharge pipe, a vacuum pipe positioned within the discharge pipe and having its lower end projecting beyond the discharge pipe, the lower end of the discharge pipe having a plurality of elongated
10 slots therein, the solid portions between said slots being in engagement with the outer wall of the vacuum pipe, and wedge-shaped fillers between the vacuum pipe and said solid portions, whereby
15 the liquid flows downwardly over the outer surface of the vacuum pipe without splashing.

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