

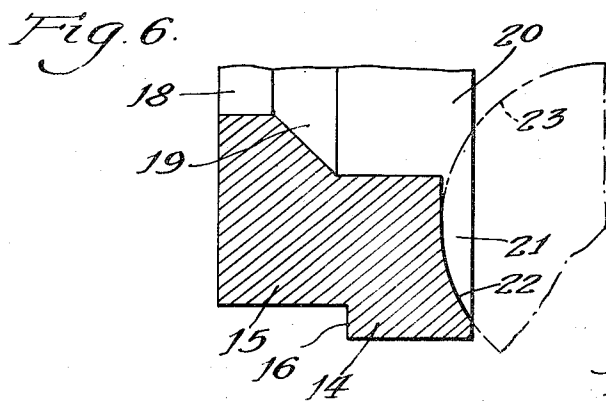
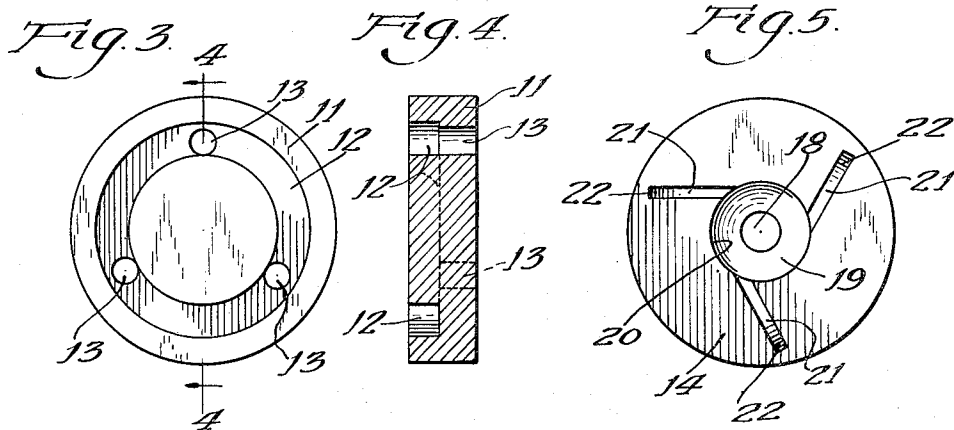
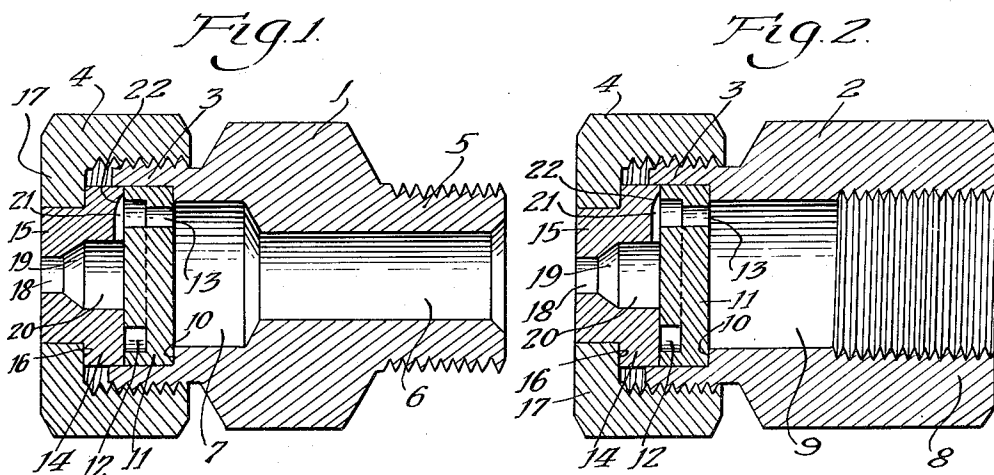
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ATOMIZING NOZZLE

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ATOMIZING NOZZLE

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3 Claims. (Cl. 299—120)

The present invention relates to nozzles and particularly the atomizing type of nozzles.

Among the objects of the invention is to provide a novel nozzle that is leak proof; one which is leak sealed to prevent the liquid reaching the threads of the nozzle and nozzle cap.

Another object of the invention is to provide a novel nozzle with a novel distributing means for the liquid to the tip member, and a novel tip member, either or both of which are readily replaceable by others of different capacity characteristics of spraying.

Other objects, advantages, capabilities, features and the like are comprehended by the invention as will later appear and as are inherently possessed by the invention.

Referring to the drawing:

Figures 1 and 2 are longitudinal sectional views of nozzles constructed in accordance with the invention;

Figure 3 is an end view of the distributing member or ring used in the nozzle;

Figure 4 is a sectional view taken in a plane represented by line 4—4 in Figure 3 of the drawing;

Figure 5 is an end view of a nozzle tip member; and

Figure 6 is a fragmentary sectional view, on an enlarged scale, of the nozzle tip member.

Referring more in detail to the drawing the embodiments chosen to illustrate the invention are shown as comprising a body 1 or 2 each having a forward neck portion 3 suitably threaded for the reception of a nozzle cap 4, as shown. The body 1 has a rear externally threaded shank portion 5 provided with a passage 6 leading to a chamber 7, and the body 2 has a rear internally threaded shank portion 8 leading to a chamber 9. Forwardly of the chamber 7 or 9 is provided a shoulder 10 for the seating in sealing contact of a distributing member or ring 11.

This distributing ring 11, shown more particularly in Figures 2 and 3, is provided in its forward face with an annular channel 12, and in its rear portion with a plurality of ports 13 which are in communication with the channel 12 and the chamber 7 or 9. The forward face of the ring 11 is well within the neck 3 and rearwardly of the forward end of the neck 3.

Forwardly of the distributing ring 11 is a nozzle tip member 14 which is circular and has a rear face abutting with a sealing contact with the forward face of the ring 11 and with its rear portion fitting closely within the forward portion of the neck 3, as shown in Figures 1 and 2. The forward

end of the tip member 14 has a reduced diameter portion 15 providing a shoulder 16 for abutment of an internal flange 17 of the cap 4. The portion 15 has an orifice 18 communicating by way of a tapered passage portion 19 with a chamber 20 in the rear part of the member 14.

In the rear face of the member 14 is provided one or more channels or slots 21 arranged axially or tangentially to the chamber 20. The inner ends of the channels 21 are open to the chamber 20 but their outer ends have curved portions 22 which end in the rear face of the member 14 and well within the outer periphery of the member 14. These channels 21 may be cut by a rotary cutter or the like 23 as shown in Figure 6.

By having the outer ends of the channels 21 end radially within the periphery of the member 14 the rear face of the member 14 has a sealing contact with the forward face of the ring 11 radially beyond the radially outer ends of the slots or channels 21, thus preventing passage of liquid from the interior of the nozzle parts to the neck 3 and hence to the threads of the neck 3 and cap 4. In addition, the outer peripheries of the member 14 and the ring 11 fit with a sealing contact within the neck 3 further insuring prevention of passage of liquid to the threads of the neck 3 and cap 4. Also, by reason of the ring 11 having a sealing contact with the shoulder 10, there is a further prevention of passage of liquid to the neck 3 and hence to the threads of neck 3 and cap 4.

In operation, the liquid passes through the chambers 6 and 7 (Figure 1) or chamber 9 (Figure 2) to and through the ports 13 to the channel 12 to be distributed to the channels 21 whence the liquid is projected to produce a whirl in the chamber 20 and to pass with a whirling action to and through the orifice 18.

When spraying different liquids or at different pressures, whereby different sizes of orifices and different sizes of channels 21 would be used, the tip member 14 may be readily replaced by another having a different size orifice and a different size channel to meet the different conditions of spraying. Likewise the rings 11 may be as readily interchangeably used with different sizes of ports 13 and channels 12.

While we have herein described and upon the drawing shown illustrative embodiments of the invention, it is to be understood that the invention is not limited thereto but comprehends other constructions, details, arrangements of

parts, features, and the like without departing from the spirit of the invention.

Having thus disclosed the invention, we claim:

1. In an atomizing nozzle structure of the character disclosed comprising a tubular body having an open forward end portion and a nozzle cap detachably connected to said forward end portion and having a forward internal flange; in combination therewith of a nozzle tip member having a forward portion engaging said flange and provided with an orifice and a rear portion engaging said forward end portion of the body and provided with a chamber communicating with said orifice, and a separable and replaceable distributing member engaging said rear portion of said nozzle tip member, said forward end portion of the body having a cylindrical chamber, and said distributing member and said nozzle tip member having peripheries which are in sealing contact with the wall of said cylindrical chamber, the wall of said cylindrical chamber extending axially along a portion of said periphery of said nozzle tip member for providing a clearance between said internal flange of said nozzle cap and the forward end of said cylindrical chamber portion of said body, said nozzle tip member having an annular rear face, and said distributing member having an annular forward face in sealing contact with said annular rear face of said nozzle tip member, the rear end of said nozzle tip member being provided with a secantly disposed slot extending in said annular rear face from a point radially within said periphery of said nozzle tip member and in communication with said chamber, the forward end of said distributing member being provided with an annular channel radially within said periphery of said distributing member and said annular forward face and being disposed to communicate with said slot, and said distributing member having an axial and concentric passage extending from said channel to the rear side of said distributing member.

2. In an atomizing nozzle structure of the character disclosed comprising a tubular body having an open forward end portion and a nozzle cap detachably connected to said forward end portion and having a forward internal flange; in combination therewith of a nozzle tip member having a forward portion engaging said flange and provided with an orifice and a rear portion engaging said forward end portion of the body and provided with a chamber communicating with said orifice, and a separable and replaceable distributing member engaging said rear portion of said nozzle tip member, said forward end portion of the body having a cylindrical chamber provided with an annular shoulder rearwardly of the opening of said forward end portion of the body, said distributing member and said nozzle tip member having peripheries which are in sealing contact with the wall of said cylindrical chamber, said distributing member having a rear face adjacent the periphery thereof in sealing contact with said shoulder, said nozzle tip member having an annular rear face adjacent the periphery thereof, and said distributing member having an annular forward face adjacent the periphery thereof in seal-

ing contact with said annular rear face of said nozzle tip member, the wall of said cylindrical chamber extending axially along a portion of said periphery of said nozzle tip member for providing a clearance between said internal flange of said nozzle cap and the forward end of said cylindrical chamber portion of said body, the rear end of said nozzle tip member being provided with a secantly disposed slot extending in said annular rear face from a point radially within said periphery of said nozzle tip member and in communication with said chamber, the forward end of said distributing member being provided with an annular channel radially within said periphery of said distributing member and said annular forward face and being disposed to communicate with said slot, and said distributing member having an axial and concentric passage extending from said channel to the rear side of said distributing member.

3. In an atomizing nozzle structure of the character disclosed comprising a tubular body having an open forward end portion and a nozzle cap detachably connected to said forward end portion and having a forward internal flange; in combination therewith of a nozzle tip member having a forward portion engaging said flange and provided with an orifice and a rear portion engaging said forward end portion of the body and provided with a chamber communicating with said orifice, and a separable and replaceable distributing member engaging said rear portion of said nozzle tip member, said forward end portion of the body having a cylindrical chamber provided with an annular shoulder rearwardly of the opening of said forward end portion of the body, said distributing member having a rear face adjacent the periphery thereof in sealing contact with said shoulder, said distributing member and said nozzle tip member having peripheries which are in sealing contact with the wall of said cylindrical chamber, said nozzle tip member having an annular rear face adjacent the periphery thereof, and said distributing member having an annular forward face adjacent the periphery thereof in sealing contact with said annular rear face of said nozzle tip member, the wall of said cylindrical chamber extending axially along a portion of said periphery of said nozzle tip member for providing a clearance between said internal flange of said nozzle cap and the forward end of said cylindrical chamber portion of said body, the rear end of said nozzle tip member being provided with a secantly disposed slot extending in said annular rear face from a point radially within said periphery of said nozzle tip member and in communication with said chamber, the forward end of said distributing member being provided with an annular channel radially within said periphery of said distributing member and said annular forward face and being disposed to communicate with said slot, and said distributing member having a passage extending from said channel to the rear side of said distributing member.

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