Nov. 5, 1929. I. R. HIPPENMEYER 1,734,580

SPRAYING DEVICE

Filed Sept. 20, 1926

Fig. 1.

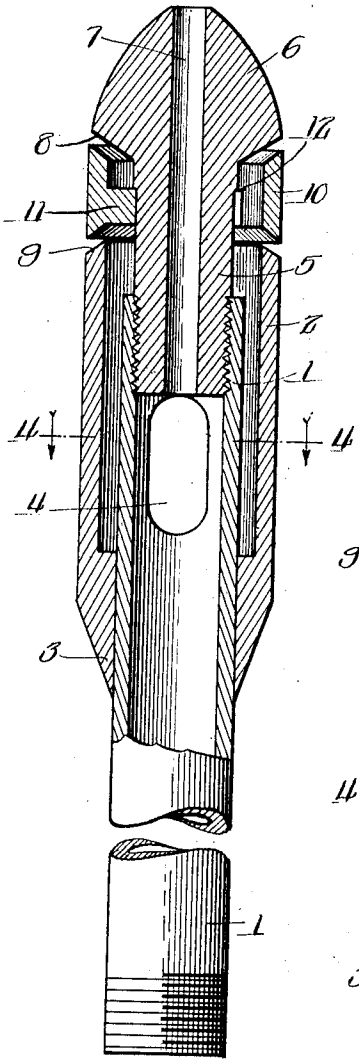


Fig. 2.

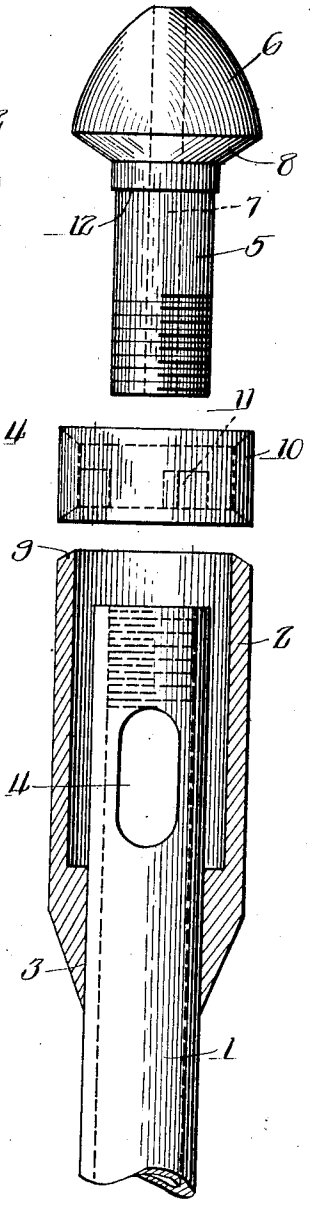


Fig. 3.

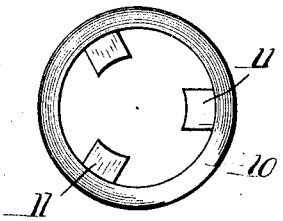
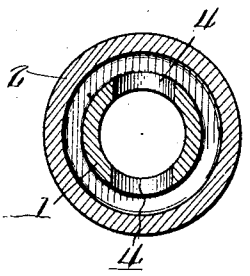


Fig. 4.



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UNITED STATES PATENT OFFICE

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SPRAYING DEVICE

Application filed September 20, 1926. Serial No. 136,410.

The invention relates to spraying devices, more particularly to pressure spraying jets as employed in bottle and can washing machines.

In the washing of milk bottles it is the practice to spray the interior of the bottles with a cleansing solution under pressure, the spray being discharged from movable jets passed into the bottles. It is desirable that the sprayed solution directly strike the surfaces of the bottle at all points to thoroughly remove the soil therefrom. As the spent solution is returned to the supply reservoir, it often happens that the jet orifices become clogged and lose their efficiency by reason of the accumulation about the orifices of sediment from the solution.

It is the principal object of this invention to provide an improved construction of spraying jet which minimizes clogging of the orifices by automatically clearing them during operation, and the parts of which are readily disassembled for cleaning. A further object is to provide a jet construction which discharges both a direct stream and continuous circular sheets of liquid at varied angles.

Other objects and advantages will be apparent in the following detailed description of a preferred embodiment of my invention which I have illustrated in the accompanying drawings. It will be understood, however, that various changes in form, construction and arrangement may be made by those skilled in the art without departing from the scope and spirit of the invention as expressed in the appended claims.

Referring to the drawings Fig. 1 is a sectional elevation of the device. Fig. 2 is a view in elevation of the parts in separated relation with a portion shown in section. Fig. 3 is a detailed plan view of the ring member forming the side orifices, and Fig. 4 is a cross sectional plan view taken on the plane of the line 4—4 in Fig. 1.

Referring to the drawings, the numeral 1 indicates a tube which, in a washing machine, is connected with a reservoir of washing or rinsing solution, and is usually carried by mechanism for passing the spraying devices carried by the tube into and out of the passing containers. This latter mechanism, being well known in the art, is not herein disclosed. The end portion of the tube 1 carries a sleeve 2 of dimensions sufficient to provide a space between the sleeve and the end portion of the tube extending within it. The sleeve 2 is secured at one end to the tube, as at 3, in sealed relation thereto, the other end of the sleeve terminating near and preferably outwardly of the end of the tube. A pair of ports 4 opening through the tube gives communication from the tube into the annular chamber between the tube and the sleeve.

The end of the tube 1 supports a member 5 preferably threaded into the tube end and forming a closure therefor, and carrying at its outer end an enlarged head 6, preferably of diameter similar to the outer dimension of the sleeve 2. The member 5 is provided with an axial passage 7 in communication with the interior of the tube 1 and extending through the end of the head 6. The inner face of the head 6 is preferably tapered upwardly and outwardly as indicated at 8, and the end of the sleeve 2 is preferably tapered downwardly and outwardly as at 9.

Positioned between the head face 8 and the sleeve end 9, is a ring 10 of substantially similar cross dimensions as the sleeve 2. The ring 10 is spaced from both the head and the end of the sleeve, the adjacent edges of the ring being tapered in similar angular form as the adjacent faces of the head and sleeve end respectively. The ring 10 is provided on its inner periphery with a plurality of supporting lugs 11, preferably integral with the ring and extending inward for bearing support upon the member 5. The lugs 11 support the ring 10 against lateral displacement but permit both rotative and longitudinal movement of the ring upon the member 5. The member 5 is provided with a shoulder 12 which is effective as a stop for the lugs 11, so that when the lugs are in position of contact with the shoulder 12 the ring 10 is positioned approximately equi-distant from the head face 8 and the end 9 of the sleeve.

In operation, washing solution is supplied to the tube 1 under pressure, and is discharged by the device herein described in a

direct stream from the passage 7, and also in a circular upwardly-directed continuous curtain of spray from the orifice between the ring 10 and the head face 8 and in a downwardly-directed continuous curtain of spray from the orifice between the ring 10 and the end 9 of the sleeve. It will thus be seen that in passing the device into the interior of a bottle or other container the upper stream strikes the bottom of the bottle with force while the circular curtains pass over the inner surface of the bottle at angles which reach all portions.

As the spray device is withdrawn from the bottle and the supply of solution cut off until the next bottle is in position, the ring 10 drops by gravity into contact with the end of the sleeve 2, thus breaking any accumulations of sediment which may have lodged upon any portion of the two circular orifices during the passage of the solution. When the solution is again delivered to the spraying device under pressure, the first effect is to sharply lift the ring until the lugs 11 contact with the shoulder stop 12, with the effect of loosening whatever sediment may be adhering to the ring. The ring also changes its position in operation by rotation which aids in preventing the accumulation of sediment on the member 5.

Whenever it is desirable to disassemble the device for thorough cleaning, the removal of the member 5 from the tube 1 permits the separation of all parts and gives access to all passages for cleaning.

I claim as my invention:

1. A device of the class described, comprising a tube, a spaced sleeve sealed at one end upon said tube and terminating adjacent the end of said tube, the space between said tube and said sleeve having communication with the interior of said tube, a member removably secured at the end of said tube having a head spaced from the end of said sleeve and having a passage therethrough communicating internally with said tube, and a ring loosely mounted on said member and positioned between said head and said sleeve end, said ring being adapted to form spray orifices with said head and said sleeve end.

2. A device of the class described, comprising a tube, a sleeve positioned about said tube and having one end in sealed attachment thereto, the other end of said sleeve terminating beyond and adjacent the end of said tube, said sleeve and said tube forming an endwardly open annular space therebetween, said tube having a port for communication between the interior of said tube and said space, a member removably secured at the end of said tube extending beyond the free end of said sleeve and having a head spaced longitudinally from the end of said sleeve, said member having a shoulder formed thereon beyond the end of said tube and facing toward said sleeve, and a ring operatively positioned between said head and said sleeve end normally in spaced relation to both said head and said sleeve to form spray orifices communicating with said annular space, said ring having a plurality of lugs loosely bearing upon said member and supporting said ring for movement longitudinally of said member, the movement of said ring being outwardly limited to normal orifice-forming position by abutment of said lugs with said shoulder.

In witness whereof I have hereunto attached my signature.

IRVING R. HIPPENMEYER.