Sept. 15, 1931. L. J. WILLIAMS 1,823,635

SPRAY NOZZLE

Filed May 4, 1929

Fig. 1.

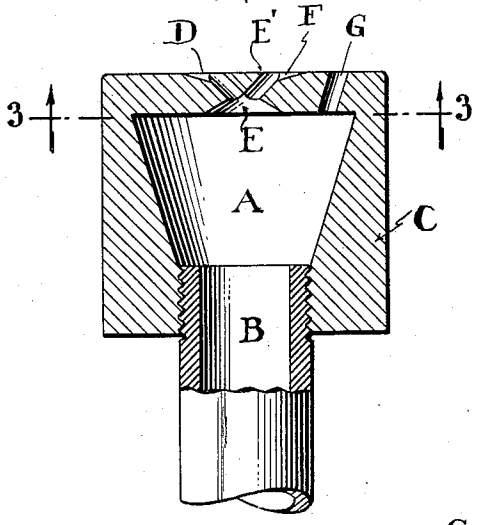


Fig. 2.

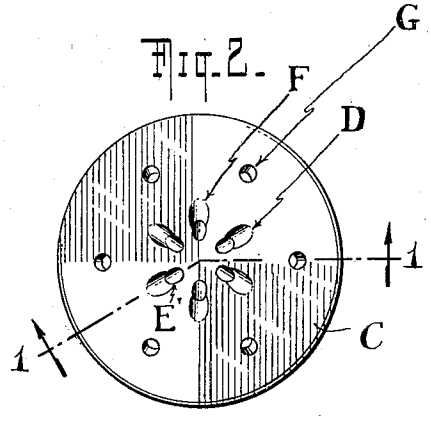
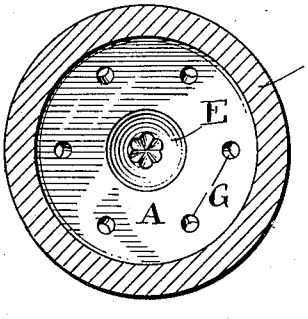


Fig. 3.



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UNITED STATES PATENT OFFICE

LESTER J. WILLIAMS, OF CANASTOTA, NEW YORK, ASSIGNOR TO CARL BRAUN INC., OF CANASTOTA, NEW YORK, A CORPORATION OF NEW YORK

SPRAY NOZZLE

Application filed May 4, 1929. Serial No. 360,350.

This invention relates to spray nozzles and has more special reference to a nozzle adapted for use in machines for cleaning and sterilizing dairying utensils, more particularly milk cans and their covers and its object is to provide a nozzle which lends itself to economical production, which will withstand high pressure and which will efficiently perform its designed purposes.

In order to clean utensils of the character above described, the nozzle must afford jets of comparatively high velocity to break down the "caked" material and at the same time provide a curtain of sterilant so that substantially all parts of the utensil may be cleaned. It has been found that very efficient results are obtainable with the structure shown in the accompanying drawings, in which one embodiment of the invention is shown to afford a clear understanding of the underlying principles of the invention so that they may be readily understood by those skilled in the art without, however, limiting the invention to the precise details shown in the drawings.

The structure shown in the drawings (comprehensively stated) comprises a flared expansion chamber, having radially disposed openings or orifices located in the nozzle face for directing a series of jets laterally, and with more vertically directed openings or orifices located near the periphery of the expansion chamber for directing a series of jets upwardly, the laterally directed jets passing between the vertically directed jets so as not to impinge on each other, and thus lessen their velocity.

The present invention is more particularly applicable to cleaning the so called "forty quart" milk cans which usually are passed in inverted position over the nozzles so that the cleansing fluid will continuously drain from the interior of the can. The can part which is least accessible to cleansing is that in the region of the shoulder. In order to effectively clean this region of the can, the present invention directs a series of powerful jets in a lateral direction so as to impinge near the shoulder and these powerful laterally directed jets are achieved by the unique construction of the central orifices which are located directly opposite to the inlet of the expansion chamber and thus utilize its maximum pressure head. It is also essential that a spray be directed toward the bottom of the can. Inasmuch as this portion of the can does not require jets of such high velocity, the periphery of the expansion chamber is utilized for the jets as will be apparent from an inspection of the drawings.

In said drawings:

Fig. 1 is a section of the nozzle and its inlet partly fragmentary on the line 1—1 Fig. 2.

Fig. 2 shows a top plan view of the nozzle; and

Fig. 3 shows a section of Fig. 1 on the line 3—3.

Continuing now by way of a more detailed description, an expansion chamber A of substantially frustro-conical shape flares outwardly from an inlet pipe B which is threaded in one end of a cylindrical casing C toward the nozzle face. A plurality of radially disposed openings or orifices D are located near the center of the nozzle head and in substantially concentric axial alignment with the inlet pipe B. These jet openings D have their lower ends communicating with a dished auxiliary mixing or collecting chamber E and diverge to the outer face, terminating in spoon-shaped openings F which form the outlets for the jets. The nozzle head wall is comparatively thick in order to withstand the high pressures used, and the chamber E in conjunction with spoon-shape openings F enables the jets issuing from the spoon-shaped openings to be thrown nearly horizontally and thereby avoid the necessity of the so-called forty-quart milk cans being lowered over the nozzles any appreciable distance. An auxiliary set of peripheral openings G diverge in the expansion head in a direction which corresponds to the surface of a cone having its apex near the inlet orifice of pipe B, the divergence of the last named orifices being less however than the centrally located orifices and are staggered

with respect to the latter to throw their jets between the jets thrown from the central orifices to provide a complete fluid curtain for washing the utensils.

It is claimed:

A spray nozzle for washing dairy utensils or milk cans comprising a casing having a nozzle face at one end and a frustro-conical expansion chamber located within the casing and adjacent to the nozzle face, the casing having an inlet orifice at one end of the spray nozzle communicating with said expansion chamber and an auxiliary dished collecting chamber in the nozzle face on the side facing the expansion chamber, the collecting chamber being coaxially located with respect to the inlet and having its concave side facing said inlet, the nozzle face having a plurality of radially disposed orifices, each of said orifices having one end communicating with the collecting chamber and the other end terminating in a spoon-shaped depression formed in the face of the nozzle, the spoon-shaped depression extending outwardly from the center of the nozzle face and a plurality of jet orifices disposed around the periphery of the nozzle face and located between the radially disposed orifices terminating in the spoon-shaped depressions so that the jets thrown upwardly by the last named orifices pass between the jets thrown laterally from the radially disposed orifices terminating in the spoon-shaped depressions.

In testimony, whereof, I have signed my name to this specification this 25th day of April, 1929.

LESTER J. WILLIAMS.