Nov. 17, 1925. 1,561,809

T. L. VALERIUS

HYDRAULIC WASHING APPARATUS

Filed Nov. 16, 1921 2 Sheets-Sheet 1

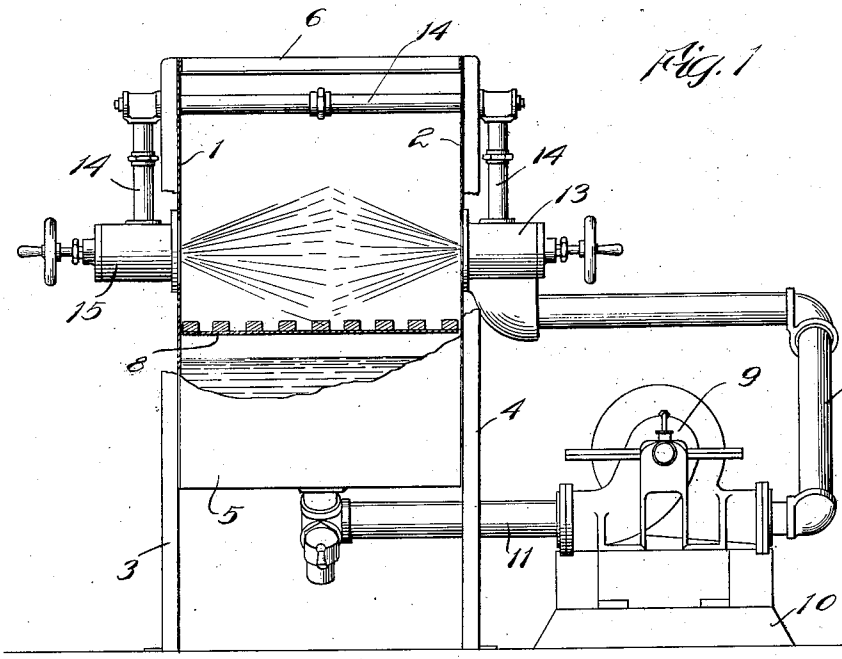



Fig. 1

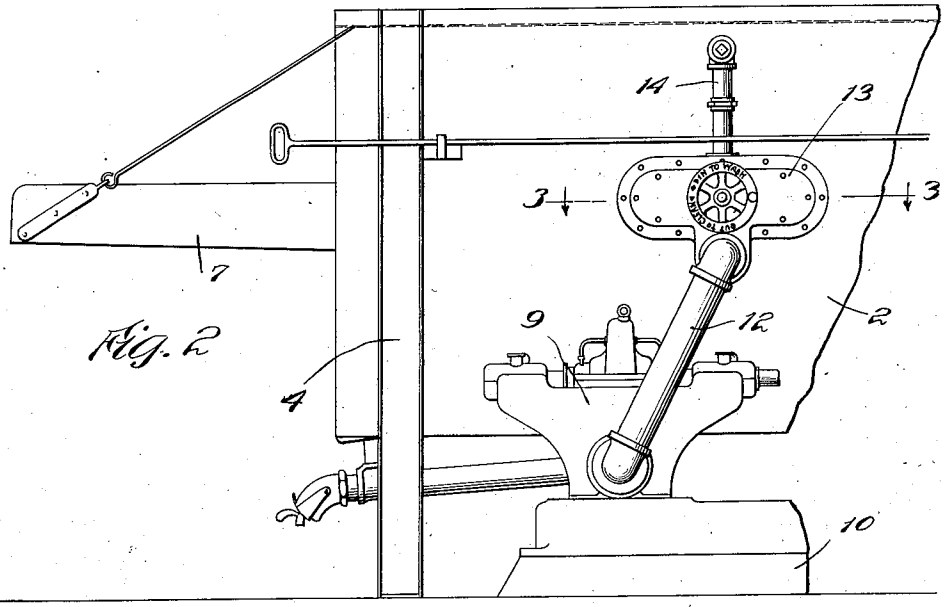



Fig. 2

Witness:
John E. Titus

Inventor
Theodore L. Valerius
by Hewitt & Dixon
Atty.

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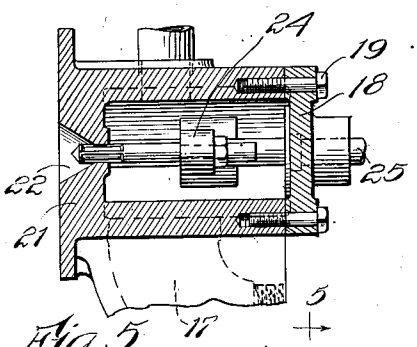



Fig. 5

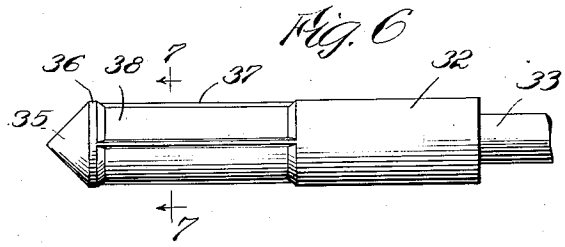



Fig. 6

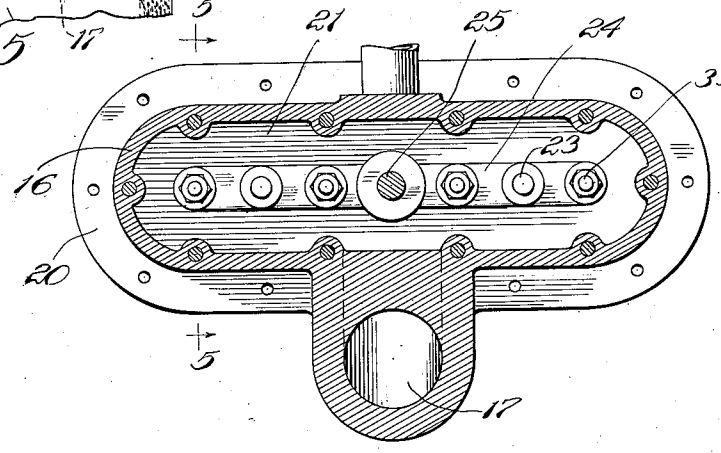



Fig. 4

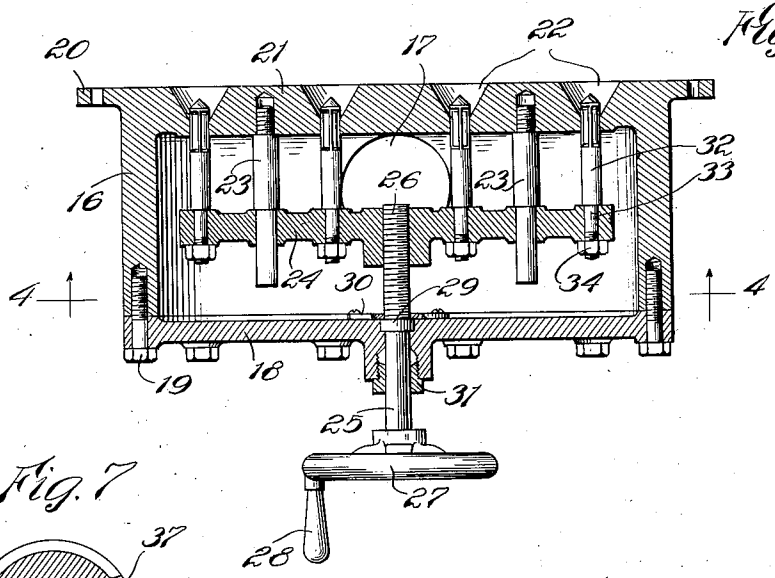
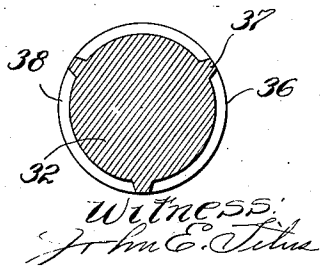



Fig. 3

Fig. 7




Witness:
Jr. Wm. E. Sutton

Inventor,
Theodore L. Valerius
by Hewitt & Dixon
Atty

Patented Nov. 17, 1925. 1,561,809

# UNITED STATES PATENT OFFICE.

THEODORE L. VALERIUS, OF FORT ATKINSON, WISCONSIN, ASSIGNOR TO THE CREAMERY PACKAGE MFG. COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

## HYDRAULIC WASHING APPARATUS.

Application filed November 16, 1921. Serial No. 515,497.

*To all whom it may concern:*

Be it known that I, THEODORE L. VALERIUS, a citizen of the United States, residing at Fort Atkinson, in the county of Jefferson and State of Wisconsin, have invented certain new and useful Improvements in Hydraulic Washing Apparatus, of which the following is a specification.

The invention relates to mechanical washing apparatus, more particularly to an improved spraying jet head, embodying mechanism for cleaning the jet openings, as employed in can washing machines.

Machines for washing cans of the type used in transporting and packing ice cream, milk and the like, frequently employ jets of cleansing liquid sprayed with considerable force upon the cans. The washing operation in such machines often is performed in an enclosed chamber wherein, for considerations of economical operation, the cleansing liquid is collected after being sprayed, and drained to a reservoir from which it is again pumped through the jet openings, the liquid being used in a circulating stream between the reservoir and the jet openings.

A difficulty in the operation of such mechanical washers occurs with the tendency of the grease and soil accumulations, washed from the cans and carried in the circulating cleansing liquid, to be deposited and adhere about the jet openings, clogging the latter and seriously reducing their effectiveness.

Cleaning the openings in the ordinary construction involves stopping the operation of the machine to disassemble the jet head, or to manually clear the openings with some instrument inserted from the discharge side.

The principal object of this invention is to provide a spraying jet head in which is incorporated mechanism for quickly and thoroughly clearing the jet openings at any time, without interrupting the operation of the machine and without inconvenience or the use of other devices.

Another object is to provide a jet head through which the cleaning liquid may be discharged periodically with an abnormally increased flow sufficient to clear the head of sediment accumulations.

A further object is to provide in connection with the cleaning devices means for regulating the spread and force of the spray jets of liquid discharged from the jet head.

Other objects and advantages will be apparent in the following description of a preferred embodiment of my invention which I have illustrated in the accompanying drawings.

In the drawings, Figs. 1 and 2 represent respectively an end and side elevation of a portion of a hydraulic can washing machine embodying a typical installation of my invention.

Fig. 3 is a horizontal section of the jet head taken on the plane of the line 3—3 in Fig. 2.

Fig. 4 is a vertical section taken on the plane of the line 4—4 in Fig. 3.

Fig. 5 is a cross section taken on the plane of the line 5—5 in Fig. 4.

Fig. 6 is a detail view of one of the jet pins, and Fig. 7 a cross section of the same taken on the line 7—7 in Fig. 6.

Referring to Figs. 1 and 2, wherein is represented the front end of a can washing machine, the numerals 1 and 2 indicate the side walls of a washing chamber, supported upon standards 3 and 4, the side walls being joined across their bottom edges and the lower portions of their end sections by other walls forming a reservoir 5. A cross member 6 secures the position of the upper portions of the side walls. A chute 7, suitably supported at the end and above the reservoir, leads to a rack 8 secured within the washing chamber. The rack 8 is adapted to support cans rolled thereon from the chute 7, and guide them through the washing chamber in position to be sprayed and cleansed by liquid supplied from suitably placed jets.

In the construction selected for illustration of the washing operation, I have shown mechanism for circulating a cleansing fluid, of which a supply is held in the reservoir 5, comprising a rotary pump 9, mounted on a suitable base 10, and having an intake pipe 11 communicating with the reservoir 5 through its bottom wall. A delivery pipe 12 carries the fluid under pressure from the pump to a jet head 13, set in the side wall of the washing chamber and provided with jet openings in its inner wall to spray the fluid upon the passing cans. A pipe connection 14, leading from the jet head 13, carries a portion of the cleansing liquid to another jet head 15 on the opposite side of the washing chamber.

It will be seen that as the cans pass the jet

heads, they are sprayed and washed, the washing fluid draining back to the reservoir 5 and carrying with it the dirt washed from the cans. While a suitable strainer may be mounted at the reservoir outlet to the pump intake, an appreciable amount of grease and solid matter will be carried in suspension in the liquid through the strainer and find lodgment in the jet heads. To obviate the clogging of the jet openings by this occurrence, I have provided the improved jet heads, indicated at 13 and 15, and which illustrate an embodiment of my invention.

Referring now to Figs. 3 to 7 inclusive, my preferred construction of the jet head includes a housing 16 enclosing a walled chamber for the reception of washing fluid delivered from the pump through the passage 17 in the bottom wall of the housing. The outer wall of the housing comprises a removable cover plate 18 preferably secured in sealed contact with the base portion of the housing by means of cap screws 19. The housing may be provided with a base flange 20, by which the jet head may be secured to the side wall of the washing machine, the latter being cut away to inwardly expose the center portion of the inner wall 21 of the jet head.

A series of jet openings 22, let into the inner wall 21, are preferably formed with a cylindrical portion communicating with the receiving chamber in the housing 16, and a conical portion flared toward the washing chamber in the machine. Mounted perpendicularly to the wall 21 within the jet head are a pair of guide pins 23 preferably secured by being threaded into the wall. A bridge 24 is slidably supported on the guide pins 23, the inward movement of the bridge on the pins being limited by stop shoulders formed on the pins.

To operate the bridge 24 on the guide pins, I have provided a shaft 25 journaled in the cover plate 18, and having its portion 26 within the jet head chamber in operative screw threaded engagement with the center portion of the sliding bridge. The outer end of the shaft 25 may be provided with a hand wheel 27 carrying a handle 28. To prevent longitudinal movement of the shaft in its bearing I have provided a collar 29 fixed on the shaft and operating within an enlarged portion of the inner end of the bearing. A washer 30 secured to the inner surface of the cover plate sustains the inward thrust of the collar 29 and prevents inward movement of the shaft. The outer end of the bearing also may be provided with a packing gland 31, to seal the bearing against leakage of washing fluid about the shaft.

Normally positioned in each of the jet openings 22 is a spray pin 32 rigidly secured in the movable bridge 24, as by means of the screw threaded end portion 33 of reduced cross section passing through the bridge and locked in position by the nut 34. Referring to Figs. 6 and 7, the main portion of the spray pins 32 are formed with a conical end 35 tapering from a base portion 36 of such diameter as to make a close sliding fit within the cylindrical portion of the jet opening 22. Rearwardly from the portion 36 the pins are longitudinally channelled between spaced ribs 37 for a sufficient distance to carry the channels 38 well within the receiving chamber of the jet head, the ribs 37 serving as spacing guides in contact with the wall of the cylindrical portion of the jet opening.

In operation, the spray pins and other parts are normally in the position illustrated in Fig. 3, the channels 38 extending substantially beyond both ends of the cylindrical portions of the jet openings, and the conical heads 35 being positioned in the conical portions of the openings. Upon supplying the receiving chamber with washing liquid under pressure, the liquid will flow out through the channels 38, meet and be deflected by the portion 36, and thence again be deflected by the conical wall of the opening 22. The spread and force of the spray jet thus discharged may be controlled by adjusting the distance between the portion 36 of the spray pin and the end of the cylindrical opening by moving the bridge in or out.

When the spray orifices become clogged and it is desired to clean them, it is only necessary to rotate the shaft 25 by its hand wheel, to move the bridge 24 outwardly on its guide pins and withdraw the spray pins 32 entirely from the openings 22. The head portion 36 removes all accumulation from the walls of the cylindrical opening as it passes through. With the pins entirely withdrawn, a flood of the liquid under pressure rushes through the jet head and the jet openings effectively clearing both of all deposit accumulations. By reversing the operation of the shaft 25, the spray pins are returned to their original positions and the normal operation of the spray jets resumed.

It will now be apparent that I have provided a simple durable jet head construction for washing apparatus which assures uniformly effective operation.

I claim as my invention:

1. A jet head for hydraulic washing apparatus comprising, in combination, a housing forming a chamber to receive fluid under pressure, discharge orifices in a wall of said chamber, a movable pin normally positioned in each of said orifices and having lateral recesses to permit a limited flow of fluid through said orifices, a connecting member having said pins attached thereto, guides mounted in said chamber and slidably sup-

porting said connecting member, and a shaft extending outwardly of said housing, said shaft having an operative connection with said pin connecting member whereby said pins may be moved into or out of said orifices.

2. A device of the class described, comprising in combination, a housing enclosing a fluid chamber having an inlet and having discharge openings in a wall thereof, said openings having a cylindrical portion and an enlarged portion, pins closely fitting the cylindrical portions of said openings and longitudinally slidable therein, said pins having longitudinal recesses in their portions engaging said openings, said recesses terminating a substantial distance from the engaging ends of said pins, a bridge slidably supported in said housing and having said pins secured thereto, and means for moving said bridge to adjustably position said pins in said cylindrical openings so that the ends of said recesses are uncovered to permit the flow of fluid therethrough, or to withdraw said pins from said openings whereby said end portions of said pins pass through said cylindrical openings in peripheral contact therewith at all points.

In witness whereof I have hereunto set my hand.

THEODORE L. VALERIUS.