

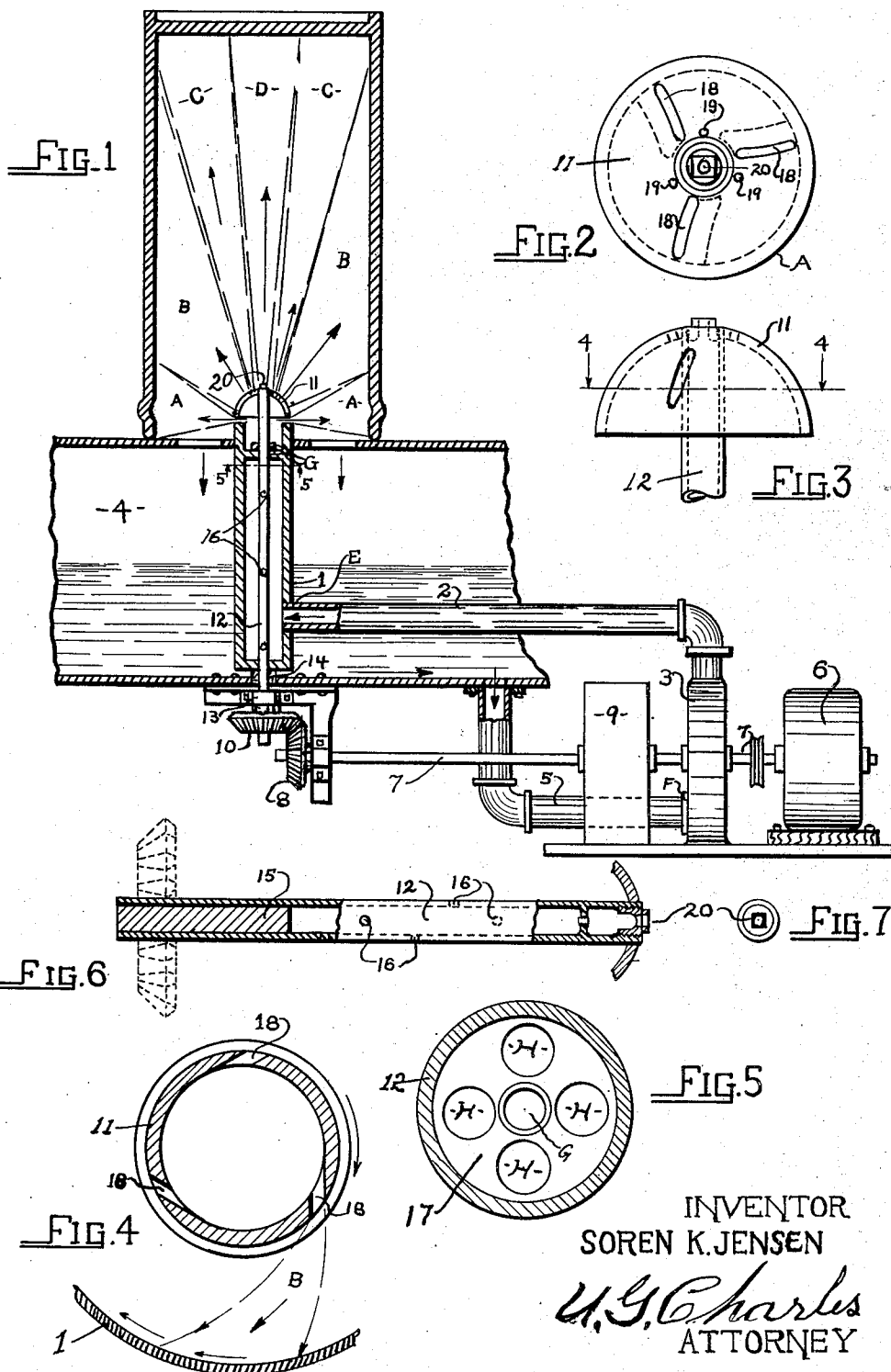
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CAN WASHING APPARATUS

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CAN-WASHING APPARATUS

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My invention relates to improvements in can washing apparatus.

The object of my invention is to provide a nozzle that will cause the water to circulate peripherally on the inside of the can.

A further object of my invention is to provide a nozzle with water exits as distributing means for different actions of the water when contacting the inside of the can.

A still further object of my invention is to provide a nozzle rotatably mounted and having means for actuating the same.

A still further object of my invention is to provide a nozzle having a compression chamber that may be attached to any standard machine operating means for can washers, the said chamber functioning as supporting means for the nozzle.

Referring to the drawings:

Fig. 1 is a vertical section through the valve mechanism, the can and a fragmentary portion of the tank, also the circulating means and the motor.

Fig. 2 is an enlarged top plan view of the nozzle.

Fig. 3 is an elevation of Fig. 2, showing a portion of the stem.

Fig. 4 is a cross section taken on line 4—4 in Fig. 3.

Fig. 5 is a cross section taken on line 5—5 in Fig. 1.

Fig. 6 is a side view of the stem partly in section for convenience of illustration.

Fig. 7 is a view of the apertured end of the stem, the concave nozzle being removed.

In the following description, like characters will apply to like parts in the different views.

The mechanism herein disclosed consists of a compression chamber 1, having an aperture threadedly engaging with an aperture in the pipe 2 as at E, the said pipe being the outlet from a centrifugal pump 3 as circulating means for the washing fluid contained in the tank 4, the said fluid returning from the can as indi-

cated by the arrows positioned in the tank; it being understood that the said tank is of considerable length so that a plurality of nozzles may be spaced longitudinally therein. The said tank may have partitions so that the compartments formed thereby will contain different kinds of washing and rinsing fluids, and the mechanism herein disclosed is adaptable and placed in each of the compartments.

The pipe 5 is connected at the bottom of the tank compartments extending to and connecting with the base of the circulating pump, as shown at F in Fig. 1.

While the drawings show a motor 6 directly connected to a circulating pump, an arrangement may be made whereby one motor will function as the power actuating means for a plurality of washing and circulating means, as would be the case ordinarily, but for convenience of illustration to explain the principle of my invention I have assembled the parts including the motor as a single unit; therefore I do not confine the invention to such an arrangement alone.

From the motor 6 is shown a shaft 7 extending and connecting to the said centrifugal pump circulating means 3, and from thence to a beveled gear 8, the speed of said gear being regulated through the medium of a speed reducing gear encased as shown at 9. The speed, however, may be reduced by varying the size of the bevel gears; that is to say, the gear 8 may be much smaller than the gear 10, as it will now be understood that the rotations of the nozzle 11 will be very slow.

Through the medium of gear 10 and stem 12, the said nozzle is made to rotate in the direction of the arrow shown in Fig. 4. The said stem axially extends through the said compression chamber 1 having its upper bearing near the top end of the compression chamber as at G, and the opposite end extends through said chamber engaging in a bearing 13. Note that a stuffing box 14 is arranged

for the stem as a waterproof means to prevent leakage from the tank.

The stem 12 is hollow, having the lower end closed by a plug 15, the said plug functioning as a closing and reinforcing means at the point of engagement for the gear 10; spaced longitudinally along the stem are apertures 16 functioning as inlets for the washing fluid for the purpose hereinafter described.

Positioned near the upper end of the compression chamber is a spider 17, functioning as a bearing in which the stem rotates as formerly stated, the spider being so arranged that the fluid will pass through the openings H as shown in Fig. 5.

The nozzle 11 is a concave member rigidly attached to the stem, rotatable therewith, and being spaced a short distance from the upper end of the compression chamber, constitutes means to dispense the fluid radially contacting the lower end of the can wall peripherally as shown at A—A in Fig. 1. A plurality of slots 18 are positioned in the wall of the nozzle tangentially extending therethrough, as shown in Fig. 4, and being positioned so that the fluid being forced rapidly therethrough will contact the side walls of the can tangentially, as shown by the arrows and dotted lines B in Fig. 4, and having a longitudinal expanse as shown at B in Fig. 1; the nozzle rotating as indicated by the arrow in Fig. 4 is means to apply the force of the water continuously around the wall of the can.

The bottom of the can is washed by the water passing through the apertures 19 alternately positioned to the slots in the nozzle, which range to the corner as shown at C; and a stream of fluid is thrown axially to the bottom of the can through an aperture 20 connecting with the stem 15, the last said stream supplied by the fluid passing through the hollow of the stem, which is supplied by the compressed fluid flowing through apertures 16 as heretofore described. All other streams are direct from the compression chamber through the concave portion of the nozzle and between the peripheral edge of the nozzle and the end of the compression chamber.

The above described method of introducing the fluid into the can is means by which the inner walls of said can come in contact with the full force of the streams and special attention is directed to the tangentially applied streams which tend to wash the side walls with greater force, carrying the sediment in one direction until removed.

While I have shown a concave nozzle structure, I do not confine the said nozzle to the shape herein disclosed alone; and furthermore I have shown a can being washed, having practically straight sides longitudinally. This may also be modified, as other shapes,

such as milk cans, may be treated with the same efficiency.

Such modifications may be employed as lie within the scope of the appended claims.

I claim:

1. In a can washing apparatus, in combination with a motor and a pump, a compression chamber connected with said pump, and having an open upper end, a hollow apertured stem axially trunnioned in said chamber, a slotted nozzle mounted on the upper end of the stem and carried thereby, the lower edge of the nozzle being spaced from the end of said chamber whereby an annular fluid exit is provided, and drive means to rotate the stem from the motor.

2. In a can washing apparatus, in combination with a motor, a pump and a tank, a compression chamber having an open upper end positioned in the tank and pipe connecting means from the pump to the tank and said chamber so that a circulation of the fluid in the tank will pass through said chamber, a hollow apertured stem rotatably and axially positioned in said chamber, a slotted and apertured concave member mounted on the upper end of the stem and rotatable therewith as distributing means for the fluid while washing a can, means to dispense the fluid from the stem and between the nozzle and the adjacent end of said chamber simultaneously, and drive means to rotate the stem simultaneously with the operation of the pump.

3. In a can washing apparatus, in combination with a motor, a centrifugal pump and a fluid tank, a compression chamber having an open upper end vertically positioned in the tank and a pipe connecting said chamber to the pump, and a second pipe connecting the tank to said pump as circulating means for the fluid through the compression chamber, a hollow stem having a plurality of perforations through the wall thereof as communicating means from the chamber into the hollow of said stem, the stem being axially positioned in said chamber and having means to rotate the same, a nozzle rigidly attached to the upper end of the stem so the peripheral rim thereof is spaced a short distance from the end of said chamber, whereby an annular exit for the fluid is provided, said nozzle having tangentially positioned slots through the wall thereof and apertures intermediately positioned to the slots, said stem having an axially positioned aperture, all functioning as distribution means for the fluid on the interior of a can as washing means therefor, drive means to rotate the stem, and means to reduce the speed between the motor and the rotating element of the stem.

4. In a can washing apparatus, a compression chamber of the kind described, the chamber having an open upper end, an axially positioned rotatable hollow stem having apertures spaced longitudinally therein and an

axially positioned aperture in the upper end,
all as dispensing means for the fluid from the
compression chamber, a concave member con-
centrically mounted on the upper end of the
stem and rotatable therewith, the said mem-
ber having a plurality of elongated tangen-
tially positioned slots therethrough and a plu-
rality of apertures alternately positioned to
the slots, the tangentially positioned slots
opening toward the direction of the rotation
of the said concave member.

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