Aug. 9, 1966 R. F. DI ILIO 3,264,675

CAN CLEANER

Filed Aug. 24, 1965

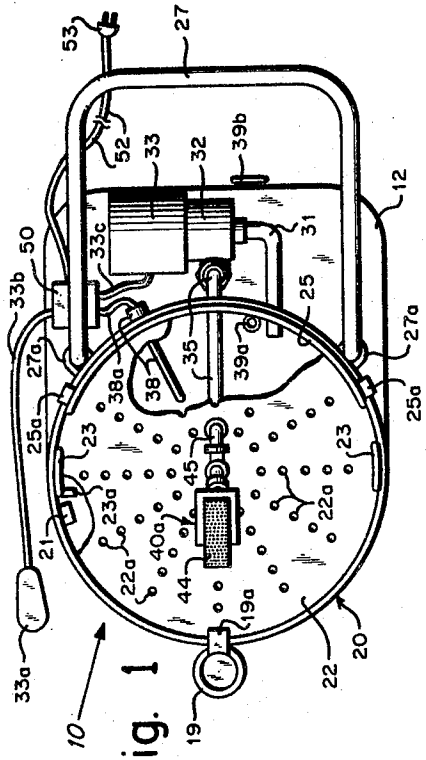


Fig. 1

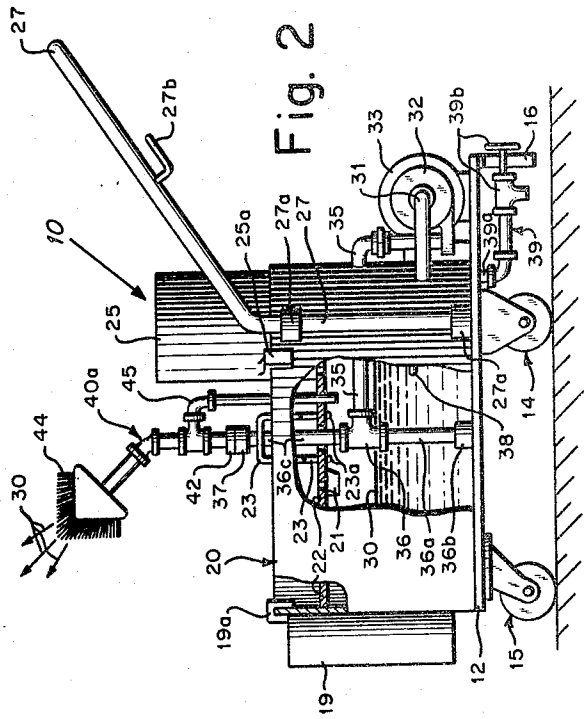


Fig. 2

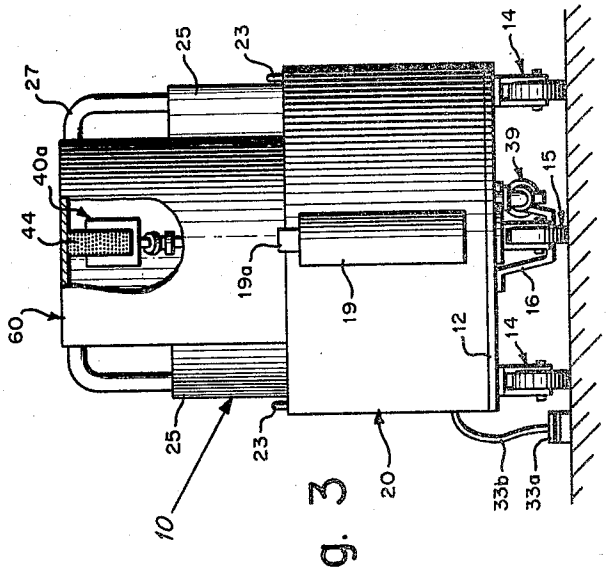


Fig. 3

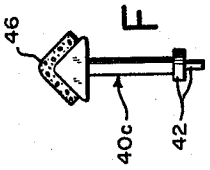


Fig. 5

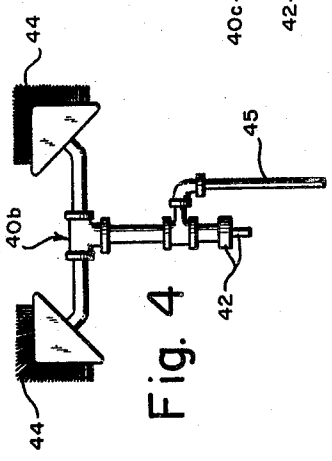


Fig. 4

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United States Patent Office 3,264,675 Patented August 9, 1966

3,264,675

CAN CLEANER

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Filed Aug. 24, 1965, Ser. No. 482,218
11 Claims. (Cl. 15—504)

This invention relates to an apparatus for the cleaning and flushing of cans and like containers. More particularly, it relates to a portable can cleaner. More particularly, it relates to a portable can cleaner having variout cleaning heads and means for quick and convenient change of these heads, whereby containers of different size and contour may be serviced.

It is an object to have this invention provide a can cleaner.

It is an object of this invention to provide a portable apparatus for heating and maintaining a cleaning liquid, including apparatus to spray said liquid, quickly disconnectable heads, and means for affixing said heads.

Other aims and objects of this invention are made apparent in the specification and claims.

There have been earlier expedients known to clean cans and similar containers. The present invention however is an improvement over these earlier known devices, in part because it has a greater degree of flexibility of operation. None of the known earlier expedients have the range of functions that are inherent in the presently disclosed structure. The present invention is completely portable, and it may conveniently and easily be used to effectively clean a large number of different sizes and types of containers, at the same time relying on a minimum of complexity in its own structure.

The invention is best understood in connection with the accompanying drawing in which like reference numerals refer to like parts and in which:

FIGURE 1 is a plan view of the can cleaner,

FIGURE 2 is a side view thereof, partly fragmented and partly in cross-section,

FIGURE 3 is front view thereof, partly fragmented and partly in cross-section,

FIGURE 4 is a side view of a cleaning head and its mounting structure, and

FIGURE 5 is a side view of another head.

The can cleaner generally designated **10** may be best broadly understood in connection with FIGURE 2. It comprises a large tank **20** which is generally circular in horizontal cross-section, and open at the top. The tank **20** rests on baseplate **12**. Baseplate **12** forms the bottom of the tank and also is extended beyond the limits of the tank for other purposes described below. A push handle **27** is provided. It is preferably a U-shaped structure conveniently made of steel piping, with the legs of the U bent as shown to form an obtuse angle. The vertical part of the push handle legs fit removably into a plurality of brackets **27***a* on the side of the tank. A wire hanger **27***b* is provided on the push handle **27** so that the required electrical cable may be hung thereon to keep it out of the way. The push handle **27** may be lifted out of its brackets **27***a* to make the entire can cleaner **10** more compact for storage. It may be re-inserted in the brackets with the angled extension from the vertical portion thereof facing in the opposite direction, that is, over the top of the tank **20**, to make the unit more compact for storage.

A splash guard **25** is provided. The splash guard is a vertical extension above the top rim of tank **20**. It is essentially a segment of a cylinder of the same diameter as that of tank **20**, and it extends upwardly from the upper edge of tank **20** for approximately one third of the circumference thereof. It is positioned on that part of the tank closest to the handle, the motor, and the operator. The splash guard **25** is removably affixed to the tank by

means of a plurality of lugs **25***a* which extend outwardly and downwardly from the guard and hook over the outside of the tank **20**. The splash guard **25** thus extends upward from the inside wall of tank **20**, as best seen in FIGURES 1 and 2, and therefore, the circumference of the circle of which the splash guard **25** is a segment is nominally slightly smaller than that of the tank itself. The splash guard can of course be removed for more compact storage.

A mop well **19** is hung on tank **20** by means of well hanger **19***a*. This mop well **19** is preferably a small cylindrical open top container in which a hand mop, or alternate brushes, nozzles, brush heads, or other items may be stored. The mop well **19** is also removable from the tank.

The can cleaner is made portable by means of a pair of rigid casters **14** and a swiveling caster **15**: The term rigid as applied here means non-swiveling, although of course the wheels of casters **14** are free to turn. As shown, the rigid casters are to the rear and the single swiveling caster is forward, which is preferable, although the front and rear locations could be reversed. This arrangement of casters provides a high degree of mobility. The unit can be turned in place. The casters **14** and **15** are affixed to bottom of baseplate **12**.

As best shown in FIGURE 1, the baseplate **12** extends rearwardly from the tank **20**, the extension having a generally rectangular outer configuration, although the corners are preferably rounded as shown. At the rear edge of this baseplate, and extending downwardly therefrom, a tilt-step **16** is provided. This tilt-step **16** is a generally U-shaped bracket, whose configuration is shown best in FIGURE 3. The operator, by stepping on tilt-step **16**, may tilt the can cleaner **12** rearwardly around casters **14** as a pivot point so that the unit tilts backwards. This tilt-step **16** is useful as a mobility controlling device, but is particularly useful to insure complete drainage of the tank through the drain, as is described below.

An electric motor **33** is provided on the extended portion of baseplate **12**. This motor is preferably close-coupled to a pump **32**. Pump **32** may preferably and conveniently be a centrifugal pump. Motor **33** is connected by means of line **33***c* to a junction box **50**. The junction box in turn is connected to a main line **52** which is provided with a standard plug **53** at the end thereof. Electricity for operating the entire unit is provided through main line **52**.

A foot control **33***a* is connected to junction box **50** through line **33***b*. The foot control **33***a* is connected so that current to operate electric motor **33** is provided through the motor line **33***c* only when foot control **33***a* is depressed. The foot control has a spring return, so that the possibility of accidental or undesired continued spraying is reduced.

A immersion heater of the electrical resistance sealed type **38** is provided. As best shown in FIGURE 1, this immersion heater extends into the interior of tank **20** through the wall thereof. It is connected to the junction box **50** by means of heater line **38***a*. The immersion heater **38** is operative as long as plug **53** is connected to the power supply, and is not interrupted or controlled by foot control **33***a*.

The bottom of the tank is provided with a drain **39**, which includes a drain pipe **39***a* extending from a hole through baseplate **12** near the rear of tank **20**, and a valve **39***b*. The water **30** in tank **20** may be drained by opening valve **39***b*. To insure that all the water **30** is drained, the tank may be tilted toward drain **39** by the operator pressing on tilt-step **16** has has been described. Conveniently, the tank is emptied by positioning drain **39** over a floor drain, although it can be connected to a hose line for remote disposal.

Pump **32** is provided with an inlet **31**. Inlet **31** extends into the interior of tank **20** through the wall thereof. The pump **33** is provided with an outlet **35** which extends into the interior of tank **20** through the wall thereof. The outlet **35** is connected to a vertical riser **36** which is centrally located in the tank. Riser **36** includes a stanchion **36***a* and a riser base **36***b* which rests on the baseplate **12**. It extends upwardly including a fixed pipe **36***c*, which terminates at its upper end in the fixed half of a quick-disconnect pipe coupling **37**. This fixed coupling means **37** is above the level of screen **22**. As a practical matter, the vertical riser may preferably consist of a T into which outlet **35** is threaded, and the stanchion **36***a* may be a section of pipe terminating in a flange or collar which forms riser base **36***b*. The pipe forming stanchion **36***a* is threaded into the T. The fixed pipe **36***c* is threaded into the remaining arm of the T.

The screen **22** is a generally circular sheet provided with a plurality of holes **22***a*. A pair of screen handles **23** are provided on the upper surface of screen **22** to facilitate its removal. The screen has a central opening to accommodate the fixed pipe **23**, and when that portion of the structure above fixed coupling **37** is removed, as is described below, it is apparent that screen **22** may be vertically raised or lowered freely. It rests at the proper height within the tank, below the upper edge thereof, on a plurality of screen support lugs **21**.

A removable spray head **40***a* is provided. This spray head has a vertical section which terminates at its lower end in the movable half of a quick-disconnect pipe coupling **42**, which may be also described as a movable coupling means. A spray head lock **45** extends from the vertical section of the spray head **40***a*, above the coupling means **42**. The lock **45** extends horizontally outward and then vertically downward to a point below the coupling **42**. As best shown in FIGURE 2, the lock **45** is an extension of such length so that when the coupling halves **42** and **37** are joined in coacting relationship, the lock **45** extends below the level of screen **22**. A hole is provided in screen **22** to receive the lock **45**.

As can be seen in the drawings, the structure of the piping in spray head **40***a* and in spray head lock **45** can conveniently be provided by an assembly of ordinary metal piping and various pipe couplings and elbows as required. The structure is not of course limited to such components, but is merely suggested as economic and preferred. The pipe of the spray head **40***a* then bends away from the vertical to form an obtuse angle, and terminates in a brush **44**. Brush **44** may conveniently have a vertical face of bristles and a horizontal face of bristles. The water is sprayed out through these bristles preferably through a plurality of holes in the base of the brush into which the bristles are set. The resulting spray of water **30** is shown by the arrows extending from brush **44** in FIGURE 2.

The coupling formed by the fixed and movable halves **37**, **42** is of the quick-disconnect type, many examples of which are well-known in the liquid conduit art in general. The coupling may conveniently be of the type which locks simply by pushing the halves together and which is unlocked by manually drawing back one of the coupling halves from its connection with the other and then moving the pipes apart.

The spray head lock **45** serves a minor purpose of furnishing additional support to the spray head **40***a*, and a major purpose of providing a locking means to prevent rotation of the spray head and the brush when a can or other container is placed over it and in contact with it. It is apparent that when a can is placed in close contact with a brush, and the brush is utilized by rotating the can, that there is a torque applied to the spray head which tends to rotate it.

FIGURE 4 shows an alternate form of removable spray head **40***b*. The movable coupling means **42** and the spray head lock **45** are structurally the same as that described in connection with spray head **40***a*. The difference between this embodiment and the one first described is that spray head **40***b* is provided with a T which separates the stream of water into two pipes, each terminating in a brush **44**, as shown.

FIGURE 5 shows another alternate interchangeable spray head **40***c* provided with the same removable coupling means as has been described. Instead of a brush, this alternate spray head is provided with a sponge **46***c* having a contour as shown in FIGURE 5, and at the upper end of a straight vertical pipe section. This alternate form of head is suitable for cleaning small containers. Because of the small, light nature of the containers to be cleaned with this type of head, it is not absolutely necessary to provide the head lock **45** although of course this lock could be used even on this embodiment, and in fact is omitted only for reasons of economy if not absolutely required. The showing of the alternate and interchangeable spray heads **40***b* and **40***c* are illustrative of the many different types of spray heads that can be utilized to meet the requirements of the exact can or other container to be washed. One of the advantages of the present invention is that the type and configuration of spray head can be quickly and easily changed so that the unit has great flexibility in cleaning all types of containers.

The term container as used herein includes for example such units as wastepaper baskets, trash cans, wall and floor stands, cigarette and cigar butt catchers, towel disposal containers, G.I. cans, oil drums, garbage cans, sanitary napkin disposal receptacles, and interliner containers. The can cleaner may desirably be used in such institutions as hospitals, schools, manufacturing buildings, and may sanitize, deodorize, scrub clean, and rust inhibit containers.

A convenient size for tank **20** is approximately 35 gallons. The water **30** is preferably heated to approximately 150 degrees F., and has added to it non-foaming detergent, disinfectant, and rust inhibitor. A seven foot three conductor safety type cable can be used for foot control line **33***b*. A thirty-five foot service three conductor cable with a ground line may be used for main line **52**. The immersion heating element keeps the water solution **30** hot to speed the drying of the cans and improve the cleaning and sanitizing function. The heater may be thermostatically controlled.

The mop well **19** may be used to contain a cleaning implement suitable for cleaning the outside of cans, as well as starting alternate heads.

In addition to utilizing the drain as described, it is possible to provide another alternate fitting equipped with a quick-disconnect coupler **42** as has been described, but intended to connect to a drain line. With such a fitting, it is possible to utilize the pump **32** to drain, or at least partially drain, the tank **20**.

The swiveling caster **15** may be provided with a lock and preferably be ball-bearing equipped.

The structure of the can cleaner is such that it may also be used to transport liquids of various types, and can be used for other cleaning purposes, such as degreasing. It can be used as a portable pump to pump out sumps or other reservoirs.

In operation, the can is placed over the spray head and the foot control **33** is operated. The pump then directs a stream of water into the interior of the can. The water drops back into the tank, passing through the screen which removes large solids. The number of holes in the screen may preferably be greater than that shown in FIGURE 1, and the individual holes **22***a* may be preferably smaller. Screen **22** is illustrated as in FIGURE 1 for ease of showing. However, the exact number and dimension of the holes is not critical. The nature of the materials added to the cleaning liquid **30** is not critical.

The scope of this invention is to be determined by the appended claims and is not to be limited by the foregoing description and drawings which are illustrative.

I claim:

1. A can cleaner comprising a baseplate on wheels, an open top tank on said baseplate, a motor and pump on said baseplate, a vertical riser in said tank, said pump having an inlet and an outlet, said outlet being connected to said vertical riser, said inlet extending into said tank, a removable screen over said tank, a hole in said screen to accommodate said vertical riser, said vertical riser passing through said hole, a fixed quick-disconnect coupling means on the upper end of said vertical riser, above said screen, and adapted to receive a spray head having a spray head lock and a spray head lock hole in said screen to accommodate a spray head lock.

2. A can cleaner as set forth in claim 1 wherein a spray head is removably affixed to said vertical riser, said spray head including a vertical pipe section having a movable quick-disconnect coupling at the lower end thereof, said movable quick-disconnect coupling coacting and coupling with said fixed quick-disconnect coupling.

3. A can cleaner as set forth in claim 2 wherein a spray head lock extends from said vertical section of said spray head, said spray head lock extending outwardly from said spray head lock and downwardly to a level below that of said coupling and below the level of said screen, extending into said spray head lock hole in said screen.

4. A can cleaner as set forth in claim 3 wherein said spray head is provided with a plurality of brushes, each brush having a pipe thereto from said vertical section of said spray head.

5. A can cleaner as set forth in claim 2 wherein said spray head has only a vertical pipe section and has a sponge at the upper end thereof.

6. A can cleaner as set forth in claim 2 wherein a drain and drain valve are provided through said baseplate into said tank, near said pump and motor, and a tilt-step is provided under said baseplate near said pump and motor, whereby by depressing said tilt-step, said tank is tilted toward said drain.

7. A can cleaner as set forth in claim 6 wherein an electric immersion heater is provided in said tank.

8. A can cleaner as set forth in claim 7 wherein a foot control is provided, said foot control being operatively connected to said motor to start said motor and said pump when said foot control is depressed, but said immersion heater being independent of said foot control.

9. A can cleaner as set forth in claim 8 wherein a removable splash guard is provided above said tank near said electric motor and a removable push handle is affixed to said tank by brackets, near said electric motor.

10. A can cleaner as set forth in claim 9 wherein a mop well is provided, said mop well having a well hanger removably fitting over the top of said tank.

11. A spray head, comprising a vertical pipe section, at least one brush connected by a pipe to the top of said vertical pipe section, said pipe opening through said brush, the lower end of said vertical pipe section being provided with a movable quick-disconnect coupling means, and a spray head lock extending from said vertical section to lock said spray head against rotation.

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