

May 16, 1933.

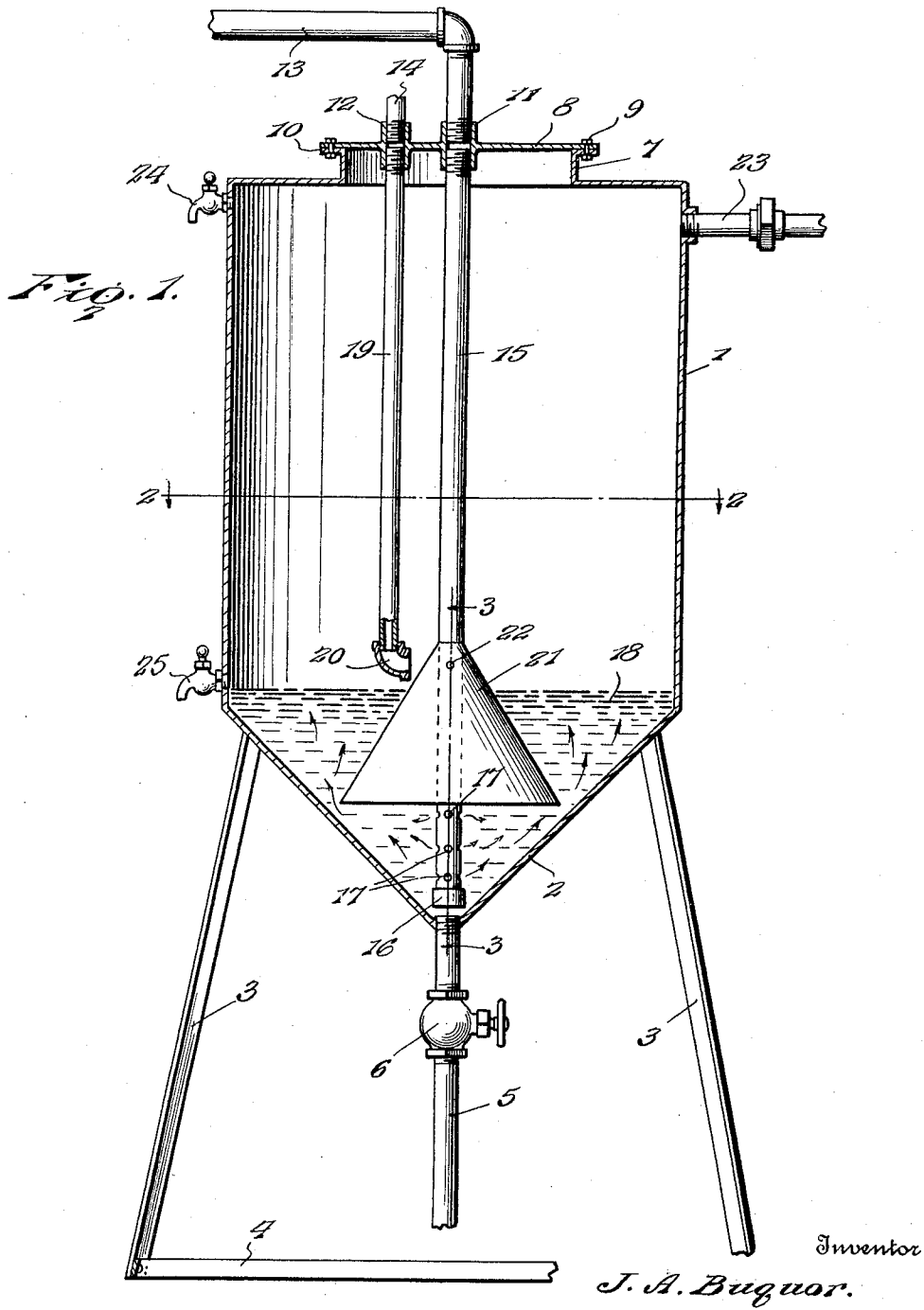
J. A. BUQUOR

1,909,656

WATER WASHER

Filed Jan. 20, 1932

2 Sheets-Sheet 1



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Fig. 2.

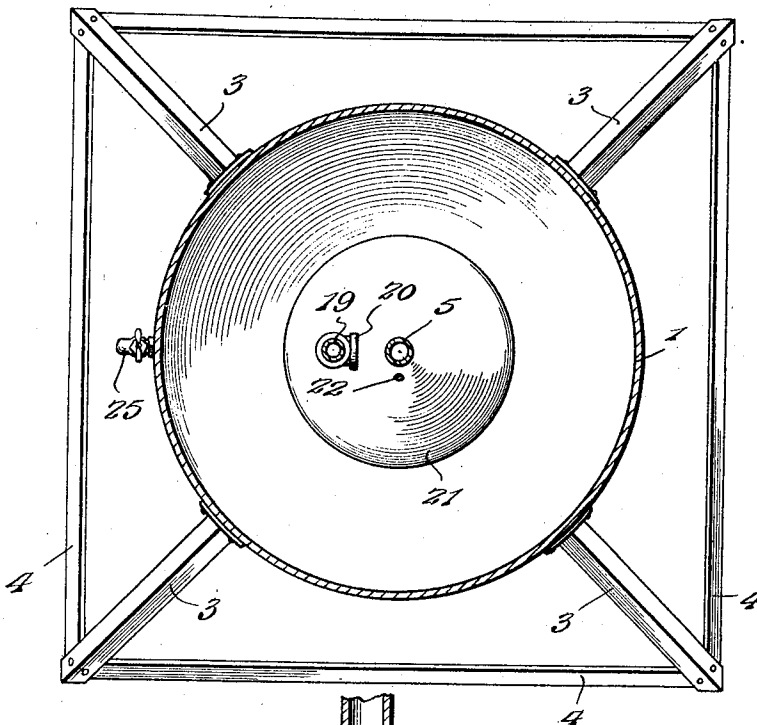
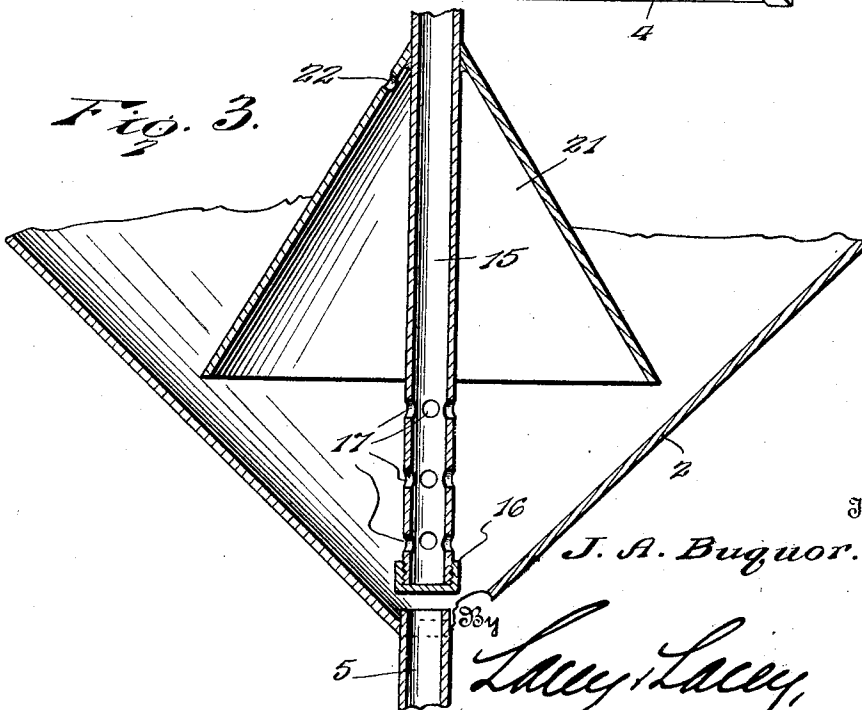


Fig. 3.



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WATER WASHER

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This invention is an apparatus for washing the gasoline or other solvent used in dry cleaning of clothes, fabrics and other articles. As is well-known, the solvent used in the dry cleaning process is clarified and filtered and then returned to the point of use where it is used over and over again. Many forms of apparatus have been suggested for cleaning and reclaiming the used and dirty solvent but all of them have been objectionable for one or another reason, either being inefficient in use or very expensive to produce and install and maintain. The object of the present invention is to provide a simple and efficient apparatus which will be easily operated and will prove efficient in use and which may be produced and maintained and operated at a low cost for washing the solvent which has been through some clarification process. The invention is illustrated in the accompanying drawings and will be hereinafter first fully described and then more particularly defined in the appended claims.

In the drawings,
Figure 1 is a view, partly in vertical section and partly in elevation, of an apparatus embodying the present invention,

Fig. 2 is a horizontal section on the line 2—2 of Fig. 1,

Fig. 3 is an enlarged vertical section on the line 3—3 of Fig. 1.

In carrying out the present invention, there is provided a container 1 which is preferably in the form of a cylindrical vessel having an inverted conical bottom 2 adapted to be filled with water. This container is supported by legs 3 which are preferably arranged in rectangular relation, as shown in Fig. 2, and have their lower ends connected by braces 4 so that a very firm and durable supporting frame will be attained. The container 1 is closed at its bottom except for an opening in which is closely fitted a draw-off pipe 5 provided with a cut-off valve 6 so that the sediment which collects in the bottom of the vessel may be withdrawn from time to time in an obvious manner. The end of the pipe 5 may be threaded or otherwise secured in the bottom of the container and any convenient means may be provided to prevent leak-

age around the pipe. At its upper end, the container is provided with a manhole defined by an upstanding rim 7 upon which is secured a closure plate 8 by bolts 9 inserted through the marginal portion of the plate and a flange 10 formed at the upper edge of the rim 7, as clearly shown in Fig. 1. The plate 8 is provided with nipples 11 and 12 and the supply pipe 13, which brings to the apparatus the solvent which is to be washed, is coupled to the nipple 11 while a water pipe 14 is coupled to the nipple 12. At the underside of the plate 8 a solvent pipe 15 extends from the nipple 11 to a point near the apex of the inverted conical bottom of the container and, at its lower end, is equipped with a cap 16, perforations 17 being provided in the pipe, above its lower end, as shown. The cap 16 prevents the solvent escaping in a stream through the lower end of the pipe while the perforations 17 permit it to escape in fine jets or sprays so that it will be divided and spread and thoroughly scattered within the bottom of the container, indicated at 18. Depending from the nipple 12, within the container, is a water pipe 19 equipped, at its lower end, with an elbow 20 turned inwardly so as to direct the inflowing stream of water onto a conical deflector 21. The deflector is secured at its small end upon the solvent pipe 15 above the perforations 17 and extends at the wide end contiguous to the wall of the inverted conical bottom. The wide end of the deflector is so disposed as to touch a plane intersecting the axis of the inverted conical bottom substantially midway between the ends of said bottom, whereby the lower portion of the deflector is disposed below the normal water level in the bottom of the container, as shown. A vent opening 22 in the deflector, near the apex thereof, provides for the escape of air and solvent which might otherwise be trapped, directly into the container.

An outlet pipe 23 leads from the container, at the upper end thereof, so as to convey the clarified and washed solvent to the filtering units which complete the process of reclaiming it. The container is also equipped with upper and lower test cocks 24 and 25 where-

by the level of water and the condition of the solvent therein may be tested, as desired.

From the foregoing description, taken in connection with the accompanying drawings, it is thought the operation of the apparatus will be readily understood. The used dirty solvent is supplied through the pipes 13 and 15, as stated, and will escape from the lower portion of the pipe 15 in a series of fine streams which will be directed toward the sides of the tapered bottom of the container and will be thereby deflected so as to be spread and thoroughly scattered in the lower portion of the container. The lower edge of the conical deflector is disposed very close to the bottom of the container so that there is a very restricted outlet for the solvent and this feature, in addition to said lower edge touching a plane that intersects the axis of the inverted conical bottom at about one-half the depth of said bottom, causes the solvent issuing from the perforations 17, while submerged in the water, to rise into the deflector and, while still submerged in the water, be directed laterally by the deflector to travel a circuitous course to the surface of the water, the solvent being thus caused by the deflector to travel a distance, while submerged in the water, substantially twice the depth of the water. This prolonged travel causes the suspended particles of foreign matter in the solvent to become water-logged, and take on weight, so as to be effectively caught and held by the usual film or scum of fats and other foreign matter that accumulates at the water level in the container. The water issuing from the elbow 20 will strike upon the outer surface of the deflector 21 so as to remove therefrom any impurities which might tend to collect thereon and the impact of the stream of water with the flaring surface of the deflector spreads the water in a highly efficient manner over the surface of the deflector to effectively wash accumulation of foreign matters therefrom. Eventually, the solvent will reach the level of the outlet pipe 23 and will escape therethrough to the filtering units in which it is subsequently further treated.

It is to be noted that the water supply and the solvent supply pipes are suspended from the manhole closure and that the water pipe 19 lies wholly within the lines of the deflector, that is, between the axis of the deflector and the wide marginal edge thereof. When the apparatus is in continuous use, it becomes necessary, at long intervals, to clean the parts within the container and in order to examine those parts all that needs be done is to remove the securing bolts 9 whereupon the plate 8, the pipes 15 and 19 and the deflector 21 may be readily withdrawn as a unit in a straight line from the container without requiring the entire apparatus to be disassembled. Should it be necessary or desirable to examine the

interior of the pipe 15, the cap 16 can be easily removed and any accumulation in the lower end of the pipe then quickly drawn out. The sediment which collects in the bottom of the container may be drawn off from time to time through the drain pipe 5 in an obvious manner.

The device is simple in construction and compact in the arrangement of its parts so that it is not apt to get out of order and it has been found to be highly efficient in actual use.

Having thus described the invention, I claim,

1. A device of the character described, including a container having an inverted conical bottom adapted to be filled with water, a pipe for conducting fluid to be treated into the container and provided near the apex of the bottom of the container with an outlet, and a conical deflector engaged at its small end with said pipe and extending downwardly into the conical bottom of the container, the large end of the deflector being disposed contiguous to the wall of the conical bottom and touching a plane intersecting the axis of the conical bottom at about one-half the depth of said inverted conical bottom whereby fluid issuing from said outlet will, while submerged in the water, rise into the deflector and, while still submerged in the water, be directed laterally by the deflector to travel a circuitous course to the surface of the water, the fluid being caused by the deflector to travel a distance, while submerged in the water, substantially twice the depth of the water.

2. A device of the character described, including a container having an inverted conical bottom adapted to be filled with water, a pipe disposed axially in the container for conducting into the container fluid to be treated and provided near the apex of the bottom with an outlet, a conical deflector carried by the pipe above said outlet and extending downwardly into the conical bottom of the container to substantially a plane intersecting the axis of the conical bottom at about midway between the ends of the conical bottom whereby the lower portion of the deflector is disposed below the normal water level in the conical bottom, and a water supply pipe entering the casing laterally of said fluid pipe and being provided with a nozzle for directing water onto the deflector at an angle in a direction substantially transverse to the axis of the deflector for washing the deflector.

3. A device of the character described, including a container provided at the top thereof with a manhole, a detachable closure for said manhole, an inverted conical bottom for the container, a pipe suspended from said closure and extending into said bottom and provided with an outlet near the apex of said

bottom for discharging fluid to be treated within the container, a substantially conical deflector carried by said pipe above said outlet for deflecting the fluid issuing from said outlet, the large end of the deflector being disposed contiguous to the wall of the bottom of the container and touching a plane intersecting the axis of the conical bottom substantially midway between the ends of said bottom whereby the lower portion of the deflector is disposed below the normal water level in said conical bottom, and a water supply pipe suspended from the closure and disposed throughout its length within the lines of said deflector, the deflector being of a size to pass in a straight line freely through said manhole whereby the closure, said pipes and the deflector may be freely removed bodily as a unit from the container.

4. A device of the character described, including a container having an inverted conical bottom, a pipe extending into the bottom of the container for discharging fluid to be treated within the container, said inverted conical bottom of the container being adapted to be normally filled with water, a conical deflector carried by said pipe and having its top normally projecting but a short distance above the top of said inverted conical bottom of the container, and a water supply pipe entering the casing and being provided with a nozzle for directing water onto the deflector said nozzle being disposed below the top of the deflector and adjacent to the plane of the top of said inverted conical bottom of the container whereby to wash the deflector without materially agitating the contents of the container above the water level.

In testimony whereof I affix my signature.

JOHN A. BUQUOR.