Aug. 25, 1931. E. F. ENGEL 1,820,608

APPARATUS FOR WASHING BARRELS

Filed July 17, 1926 2 Sheets-Sheet 1

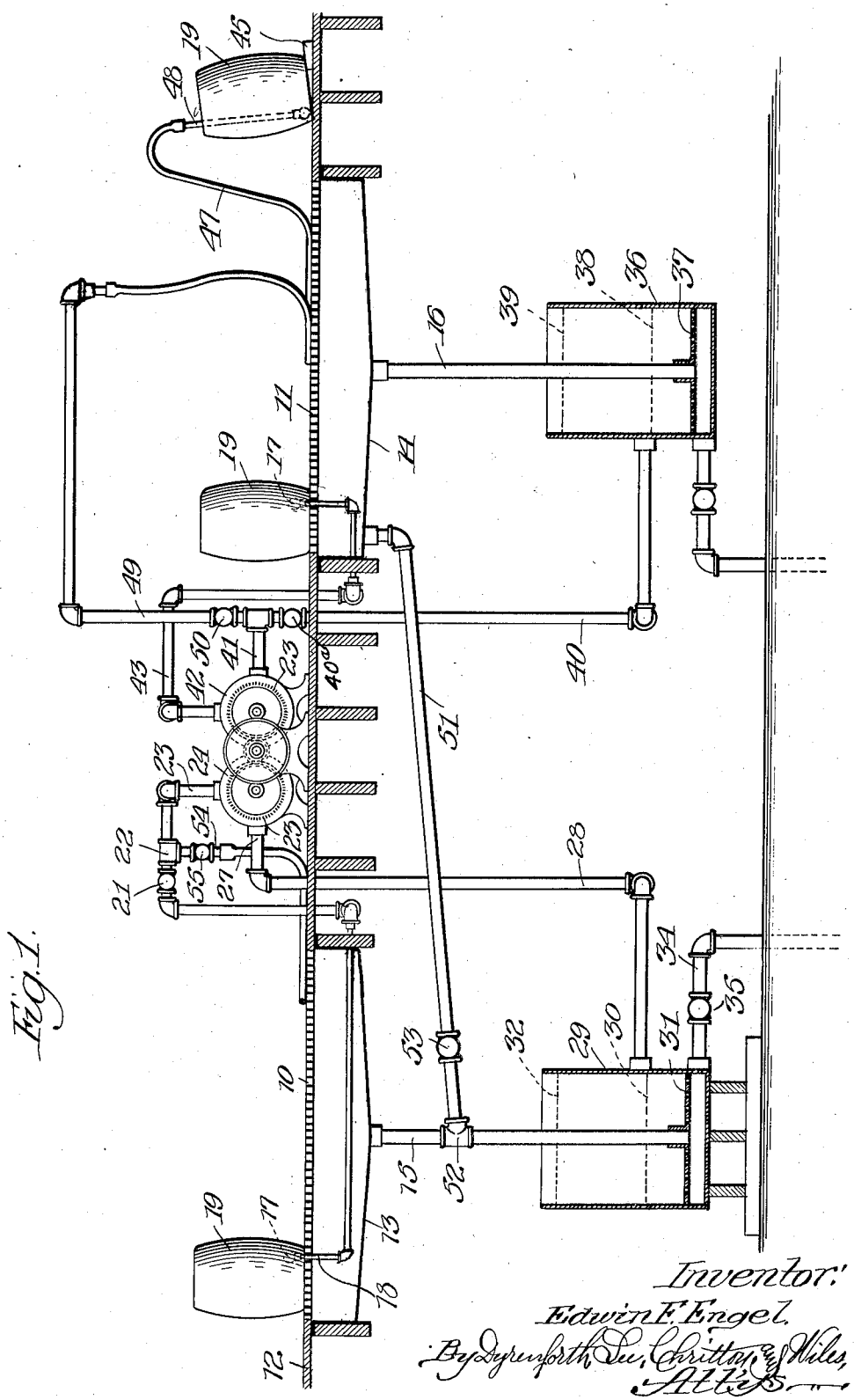


Fig. 1.

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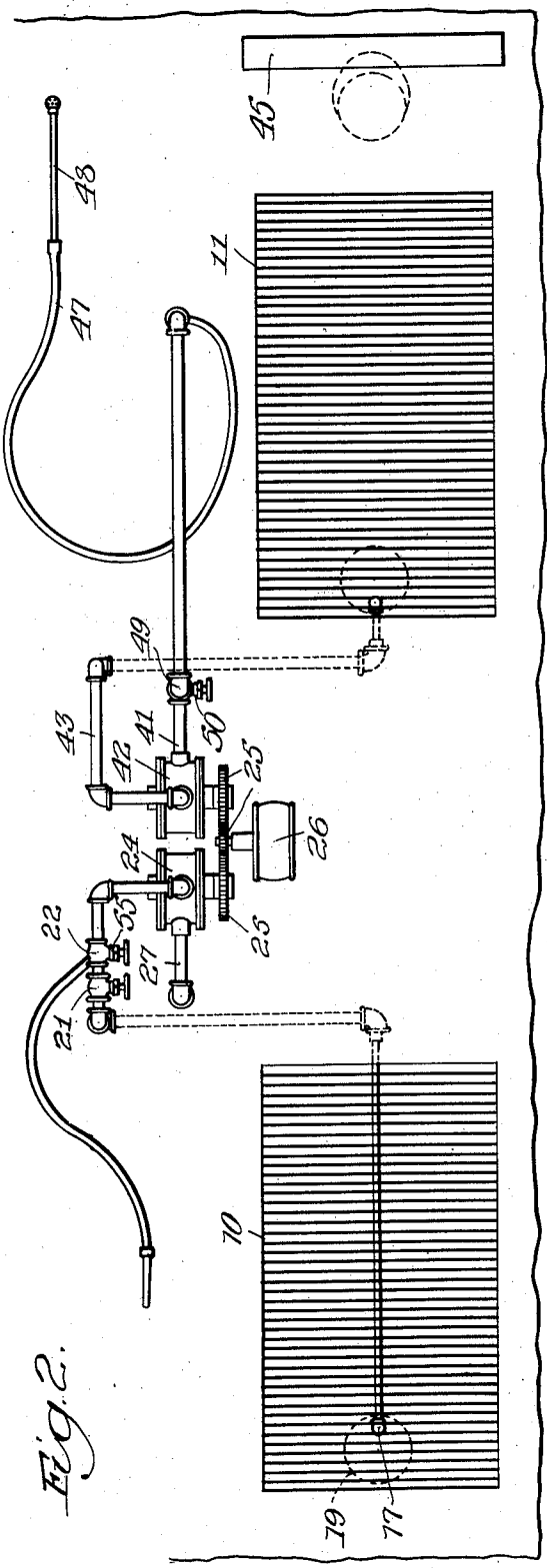


Fig. 2.

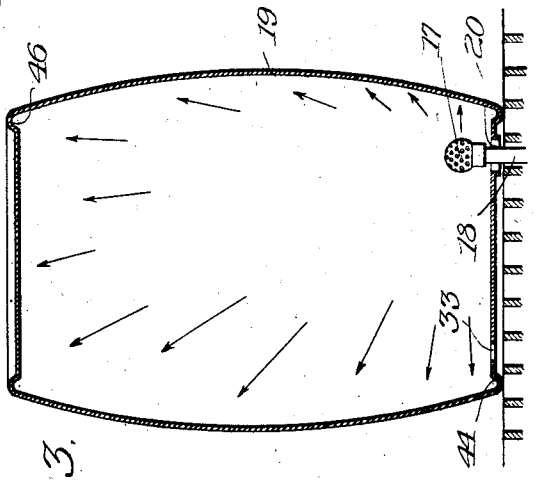


Fig. 3.

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UNITED STATES PATENT OFFICE

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APPARATUS FOR WASHING BARRELS

Application filed July 17, 1926. Serial No. 123,214.

My invention relates, more particularly, to apparatus for cleansing the interior, more especially, of oil barrels, which are commonly returned to refilling stations, not only with residue accumulations therein which should be removed before refilling, but also with foreign matter such as sand, dirt and other substances which become deposited in the barrels while in the hands of the user.

My object is to provide for the quick and effective cleansing of the interior of barrels and at the minimum expense of labor and washing fluid, the fluid commonly used being a hydrocarbon, such for example as kerosene, having the property of cutting the oil and also producing a flushing action; and to provide a novel, simple and economical apparatus for effecting such operation.

Referring to the accompanying drawings:—

Figure 1 is a view in vertical sectional elevation of an apparatus suitable for practicing my improved method and constructed in accordance with my invention; Fig. 2 is a plan view of the apparatus shown in Fig. 1 with certain parts of the barrel-washing-racks broken away; and Figure 3, a view in vertical sectional elevation of a portion of one of the racks showing thereon a barrel to be washed, this view showing the relation of the discharge nozzle of one of the washing-fluid-conducting pipes extending into the barrel.

According to the preferred, illustrated, embodiment of my invention, the apparatus comprises two grilles, or racks, 10 and 11 provided for supporting the barrels when being washed and rinsed, respectively. These racks are shown as forming sections of a floor 12 and are arranged directly above drip pans 13 and 14, respectively, which open, preferably at the centers thereof (the bottoms of these drip pans sloping toward their centers), into drain pipes 15 and 16, respectively.

The washing-fluid for effecting the initial washing of the barrels, is sprayed into the interior of the barrels through an upwardly-extending nozzle-head 17, shown as of the rose type and provided on the upper end of a vertical pipe section 18 which extends upwardly through the rack 10 and into a position in which it projects into the barrel, shown at 19, through the filler opening 20 therein, the barrel in this washing operation resting upon the rack 10 in inverted condition as shown. The pipe 18, valved at 21, opens into a T-coupling 22 connected with a pipe 23 communicating with the outlet of a pump 24, shown as of the intermeshing-gear type and driven, through the medium of reducing gearing 25, by an electric motor 26, the inlet pipe 27 of the pump 24 communicating with a pipe 28 which leads from the supply of washing-fluid.

In the arrangement shown, provision is made for collecting used washing-fluid, cleansing it and then returning it to the pump 24 for re-use in washing barrels, the apparatus, to this end, comprising a container 29 for water, the level of which may be that represented at 30, the receptacle 29 containing a perforated horizontal partition 31 located closely adjacent to, but vertically spaced from, the bottom of the receptacle 29, the pipe 15 extending downwardly through the receptacle 29 and opening downwardly through the central portion of the partition 31. The receptacle 29, above the water line 30 communicates, through an opening in its side wall, with the pipe 28.

It may be here stated that in the operation of the apparatus, in so far as it has been described, the receptacle 29 would be charged with washing-fluid, as for example kerosene which would become superposed on the water in the receptacle, the washing fluid, by way of example, extending up to the level indicated at 32, and upon operating the pump 24 the washing-fluid is drawn into the pump and thence discharged therefrom through the nozzle 17 to wash down accumulations and foreign matter in the barrel positioned on the rack 10 as shown in Figs. 1 and 3, the washing-fluid and the displaced substances, flowing out of the barrel through the space between the pipe 18 and the wall of the filler opening 20 and through the smaller, vent opening, 33 commonly provided in barrels, and thence into the drip pan 13, discharging

therefrom into the pipe 15 and thence discharging therefrom into the receptacle 29 below the perforated partition 31. The washing-fluid in rising from the point at which it discharges into the receptacle 29, passes upwardly through the perforations in the partition 31 and upwardly through the water bath in this receptacle, thus subjecting it to a washing and separating operation which causes the solid matter in the washing-fluid to be intercepted or precipitated in the receptacle 29, cleansing the washing-fluid and rendering it again usable for the washing of barrels, it being understood that the washing-fluid is thus caused to traverse a complete circuit for use in washing a number of barrels, until it becomes so contaminated that it is undesirable to further use it for washing. As a means for draining the receptacle 29 of the solid matter precipitated therein, a drain pipe 34, valved at 35, is provided, this pipe opening into the receptacle 29 through an opening in the side of the latter at the bottom thereof and leading to any suitable point of discharge, as for example a sewer.

The supplying to the barrels on the rack 11, of suitable fluid, as for example kerosene, for rinsing the interiors of the barrels, is effected, in the particular apparatus illustrated, by means like those shown and described for supplying washing water to the barrels on the rack 10, whereby the rinsing-fluid is caused to travel in a circuit and be repeatedly used in the rinsing of barrels, and in its travel is cleansed of solid matter with which it may become mixed in the rinsing operation. The rinsing-fluid-circulating means shown comprise a receptacle 36 having an apertured partition 37 as in the case of the receptacle 29, through the center of which the lower end of the pipe 16 opens, the dotted lines 38 and 39 indicating, by way of example, the water and rinsing-fluid levels, respectively, in the receptacle 36. An outlet pipe 40 opening into the receptacle 36 above the water level 38, and containing a manually operable valve 40a, connects with the inlet 41 of a pump 42 shown as of the intermeshing-gear type and driven by the motor 26 through the gearing 25, the outlet of this pump being connected with a pipe 43 which extends upwardly through the rack 11, its upper end being equipped with a spray-nozzle (not shown) but which may be like the one represented at 17, the barrel to be rinsed, setting upon the rack 11 in inverted position and over the nozzle referred to at the filler opening 33 in the barrel, as shown and explained in connection with the first-referred-to operation of washing.

After the washing and rinsing operations have been performed, it is desirable that the fluid which remains in the barrel, due to the chime 44 of the latter, be removed, and this is accomplished by inverting the barrel from the position it occupies in the washing operation to a position in which its bottom is lowermost and the barrel extends in tilted position, as for example by supporting it at one edge upon a block 45 in which position the fluid retained in the barrel as stated, runs into the chime 46 of the barrel at one side thereof, thereby concentrating this fluid at a relatively small area and permitting substantially all of it to be removed from the barrel, as for example by sucking it therefrom through a suction line. Such a suction line is shown in the drawings and comprises a flexible hose line 47 provided at its outer end with a pipe 48 adapted to be introduced into the barrel, preferably through its filler opening 33 and extend into the chime 46, the other end of the flexible line 47 being connected with a pipe 49, valved at 50 and opening into the pipe 40 and thus in communication with the suction end of the pump 42, it being understood that as a preliminary to the production of the suction action referred to the valve 40a is closed and the valve 50 opened.

In the apparatus shown provision is made for diverting from the rinsing-fluid course, and into the washing-fluid course, the rinsing-fluid after it becomes unfit for satisfactory use in rinsing barrels, but in such condition that it is usable in the initial washing of the barrels. To this end a pipe 51 communicates at one end with the pan 14 and at its other end with the pipe, 15 at a T-coupling 52 therein, the pipe 51 containing a manually-controlled valve 53 for controlling the passage of the washing fluid from the pan 14 to the pipe 15.

The apparatus also comprises means for removing from the receptacle 29 the washing-fluid to remove the same from the continuous course traversed by the washing-fluid and to salvage the same, as for example for use as fuel in a furnace, when this washing fluid becomes so contaminated that it is unfit for performing the washing function. The apparatus to this end is provided with a pipe 54 which opens into the pipe-line 18 between the valve 21 and the pump 24 and contains a manually operable valve 55; it being understood from the foregoing that in the normal operation of the apparatus the valve 55 would be closed and when it is desired to remove the washing-fluid from the receptacle 29 the valve 55 would be open and the valve 21 closed.

It will furthermore be understood that the washing and rinsing fluids are repeatedly used for performing their respective functions, the provision of the cleansing and separating devices interposed in the respective courses, greatly economizing in the use of these fluids, this economy being augmented by the use of the fluid in succession for the rinsing and washing purposes, respectively.

It will be understood that while certain

particular steps and certain particular apparatus are described and shown, I do not intend to limit the invention thereto as the same may be variously modified and altered without departing from the spirit of my invention.

What I claim as new, and desire to secure by Letters Patent, is:

1. In a barrel-washing apparatus, the combination of a receptacle for water, a source of supply of barrel-washing fluid in communication with said receptacle above the bottom thereof, means for conducting the washing fluid from said supply to a barrel to be washed, and means for conducting said barrel-washing fluid, after use for washing into said receptacle for passage through the water therein and to said source.

2. In a barrel-washing apparatus, the combination of a receptacle for water, a source of supply of barrel-washing fluid in communication with said receptacle above the bottom thereof, means for conducting the washing fluid from said supply to a barrel to be washed, and a pipe opening into said receptacle below the level of the water therein for conducting said barrel-washing fluid, after use for washing, into said receptacle for passage through the water therein and to said source.

3. In a barrel-washing apparatus, the combination of a receptacle for water, a perforated partition dividing the receptacle into upper and lower compartments, a source of supply of barrel-washing fluid in communication with said receptacle above the bottom thereof, means for conducting the washing fluid from said supply to a barrel to be washed, and a pipe opening downwardly through said partition for conducting said barrel-washing fluid, after use for washing, into said lower compartment for passage through the water therein and to said source.

4. In a barrel-washing apparatus, the combination of a pump for the washing-fluid, means connected with said pump for conducting the fluid to the barrel to be washed, a receptacle for water, means for conducting the used barrel-washing fluid into said receptacle for passage through the water therein, and means for conducting the cleansed washing-fluid after passing through the water back to said pump.

5. In a barrel-washing apparatus, the combination of a pump for the washing-fluid, means connected with said pump for conducting the fluid to the barrel to be washed, a receptacle for water, means for conducting the used barrel-washing fluid into said receptacle for passage through the water therein, and a pipe opening into said receptacle above the water therein and in communication with the inlet of said pump.

6. In a barrel-washing apparatus, the combination of a receptacle for containing a body of water and superposed thereon a body of barrel-washing fluid of lighter specific gravity than water, a pump the inlet of which is open to said body of barrel-washing fluid, a pipe communicating with the outlet of said pump for conducting the barrel-washing fluid to the barrel to be washed, and means for conducting the used barrel-washing fluid into said receptacle for passage through the body of water therein.

7. In a barrel-washing apparatus, the combination of a pump for the washing-fluid, means connected with said pump for conducting the fluid to the barrel to be washed, a receptacle for water, means for conducting the used barrel-washing fluid into said receptacle for passage through the water therein, means for conducting the cleansed washing-fluid after passage through the water back to said pump, and means whereby the washing-fluid discharging from said pump may be diverted, at will, from the circulating washing-fluid course.

8. In a barrel-washing apparatus, the combination of a pump for the washing-fluid, a pipe connected with the outlet of said pump for conducting the washing-fluid to a barrel to be washed, a receptacle for water, means for conducting the used barrel-washing fluid into said receptacle for passage through the water therein, means for conducting the cleansed washing-fluid after passage through the water back to said pump, a valve in said pipe and a valved pipe through which the washing-fluid discharging from said pump may be directed when said first-named valve is closed.

9. In barrel-washing apparatus, a receptacle for containing water and a body of barrel-washing fluid, one being superposed on the other, means for conducting the fluid from the receptacle to a barrel to be washed, and means for conducting the used fluid into said receptacle for passage through the water therein.

10. In a barrel-washing machine adapted to use a barrel-washing fluid and a bath for treatment of the latter, means to contain the bath and a supply of said fluid in communication with each other, means for conducting the washing fluid to a barrel to be washed, and means for conducting said barrel-washing fluid after use for washing to said bath for passage therethrough and for returning it to said supply.

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