

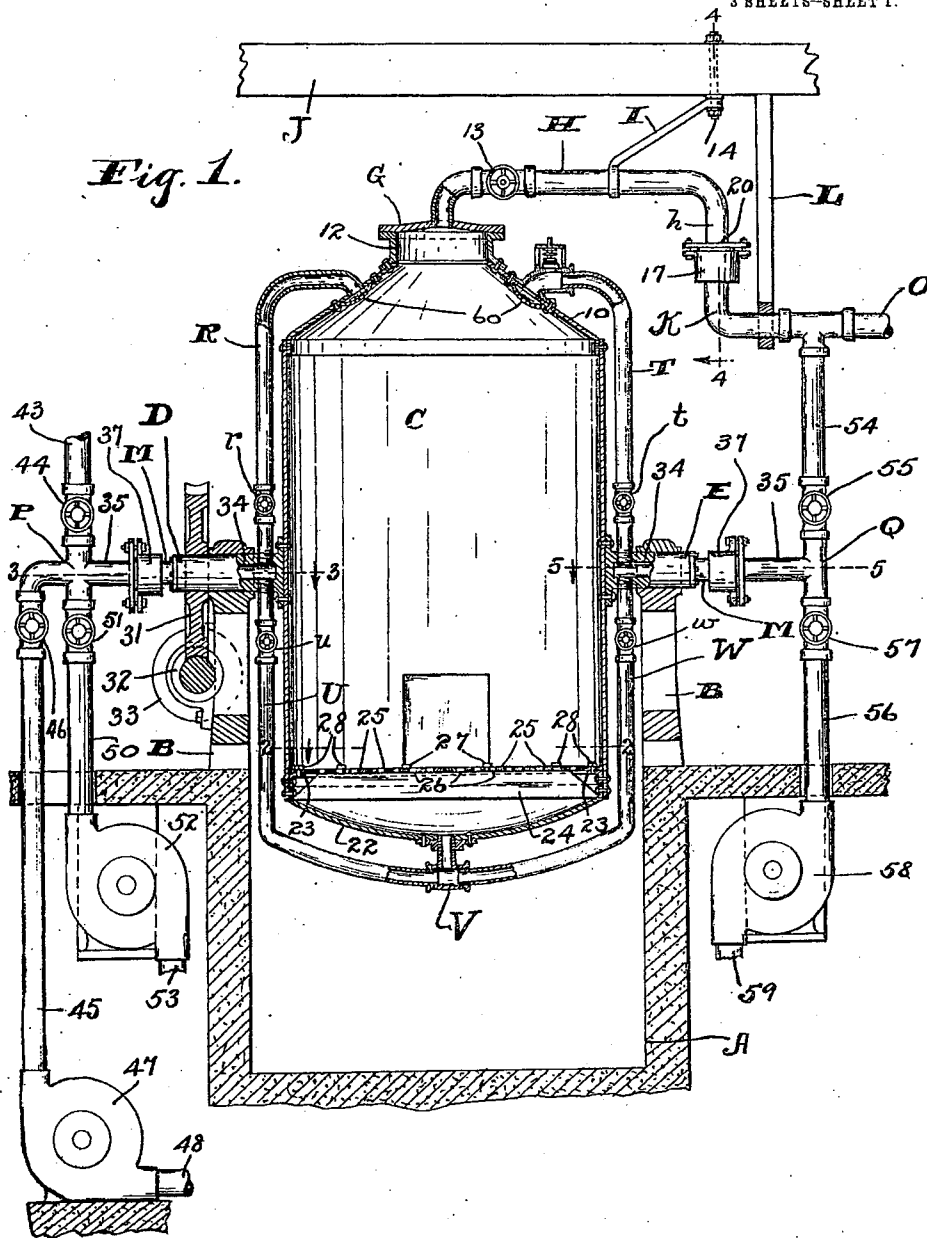
G. E. SHATTO.
PERCOLATOR.

APPLICATION FILED JAN. 15, 1912.

Patented Apr. 22, 1913.

1,059,574.

3 SHEETS-SHEET 1.



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3 SHEETS—SHEET 2.

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Fig. 2.

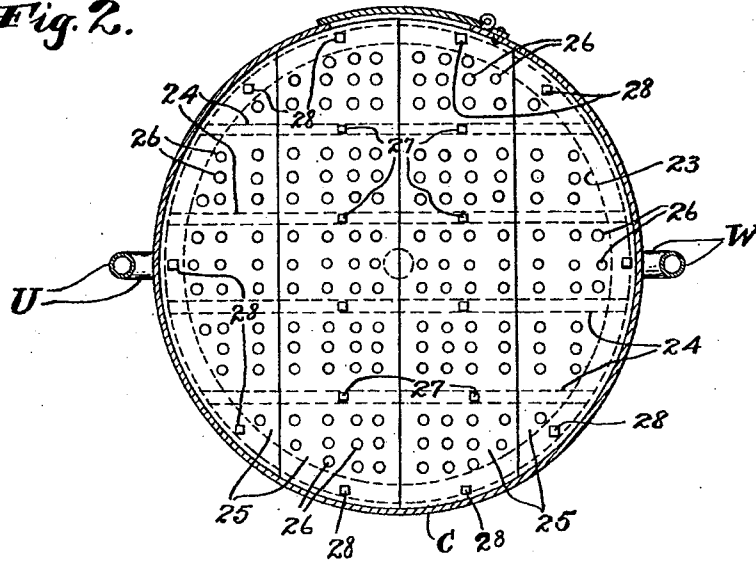
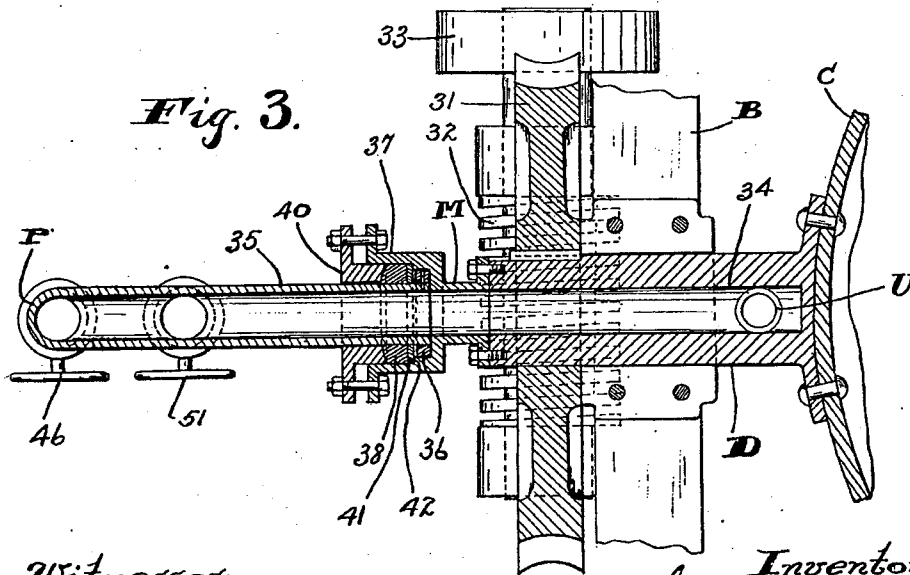


Fig. 3.



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3 SHEETS-SHEET 3.

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Fig. 4.

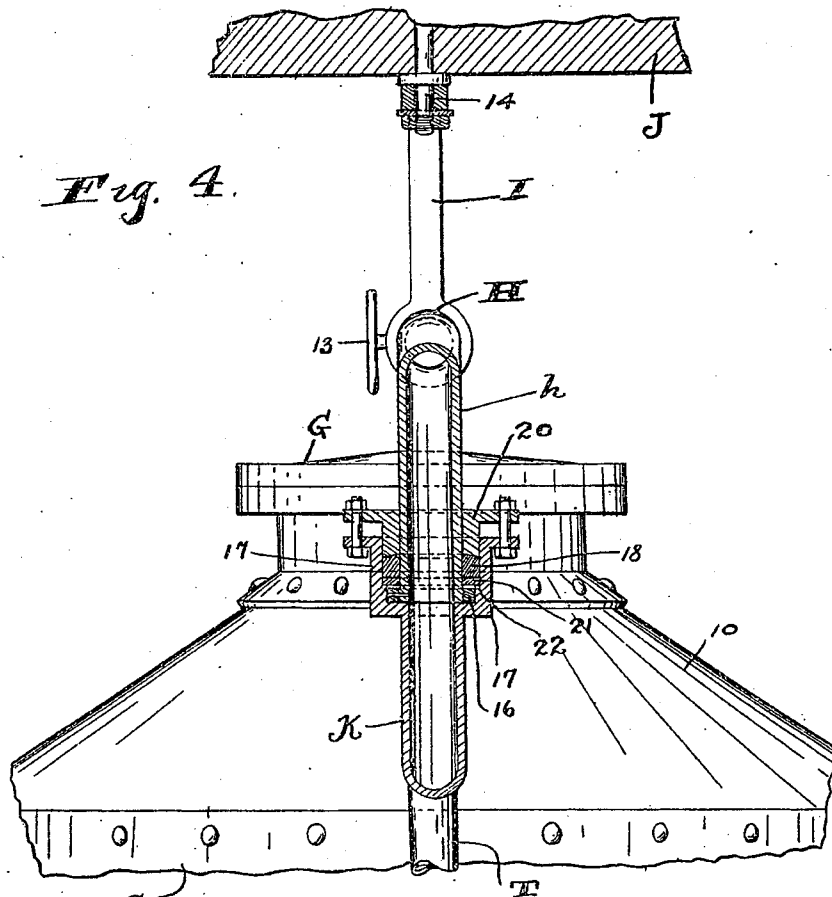
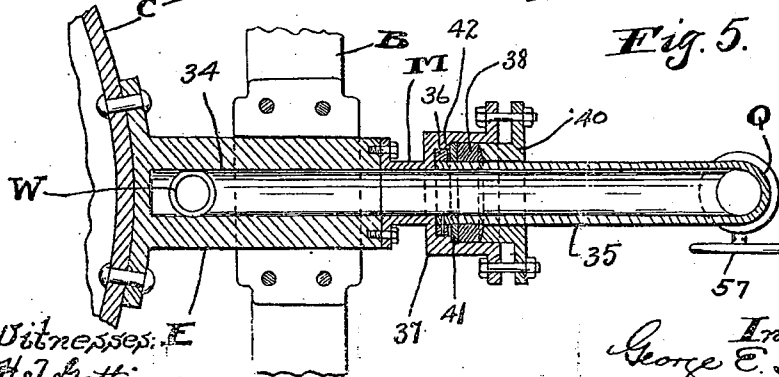


Fig. 5.



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UNITED STATES PATENT OFFICE.

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PERCOLATOR.

1,059,574.

Specification of Letters Patent.

Patented Apr. 22, 1913.

Application filed January 15, 1912. Serial No. 671,350.

To all whom it may concern:

Be it known that I, GEORGE E. SHATTO, a citizen of the United States of America, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Percolators; and I hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same.

This invention relates to improvements in percolators for extracting oil or grease from oil-yielding or grease-yielding material by the treatment of said material with a solvent, such, for instance, as naphtha.

The primary object of this invention is to produce a percolator comprising a pivotally supported dumping receptacle arranged to be swung or rotated in a vertical plane and provided at the top with a mouth adapted in the normal position of the receptacle to receive the material to be treated within the receptacle and arranged to be brought into a downwardly discharging position during the swinging or rotation of the receptacle.

Another object is to have said receptacle arranged to dump into a pit which forms a passageway along which the material dumped by said receptacle is to be conveyed, and to have the mouth of said receptacle project into said pit during the dumping of material by the receptacle, so that none of the material to be discharged from the receptacle is spattered externally of the pit but all of said material is dumped into the pit, and the material received by the pit from the receptacle is distributed by the receptacle longitudinally of the pit, thereby avoiding obstructing the free discharge of material from the receptacle and facilitating the conveying of the dumped material along the pit to the place desired.

Another object is to permit dumping of the receptacle without interfering with the means employed for supplying solvent to the receptacle at the top of the receptacle, with the means employed for supplying steam to the receptacle at the bottom of the receptacle, with the means employed for conducting vapor from the receptacle at the top of the receptacle, and with the means employed for pumping liquid from the receptacle at the bottom of the receptacle.

Another object is not only to provide a cover for the mouth of the receptacle, but to have said cover carried by a vapor-conducting pipe arranged to communicate with said mouth in the mouth-closing position of the cover, and to have said pipe movable out of the way preparatory to the actuation of the receptacle for dumping the contents of the receptacle.

Another object is to render a percolator of the character indicated simple and durable in construction and reliable in its operation.

With these objects in view, and to the end of realizing any other advantages hereinafter appearing, this invention consists in certain features of construction, and combinations and arrangement of parts, herein-after described, pointed out in the claims, and illustrated in the accompanying drawings.

In said drawings, Figure 1 is an elevation, largely in section, of a percolator embodying my invention. Figs. 2 and 3 are horizontal sections on line 2—2, and line 3—3, respectively; Fig. 1, looking downwardly. Fig. 4 is a vertical section on line 4—4, Fig. 1, looking in the direction indicated by the arrow. Fig. 5 is a horizontal section on line 5—5, Fig. 1, looking downwardly. Fig. 2 is drawn on a larger scale than Fig. 1, and Figs. 3, 4, and 5 are drawn on a larger scale than Fig. 2.

Referring to Fig. 1 of said drawings, A indicates a pit which forms a passageway along which material dumped into the pit is conveyed in any approved manner to the place desired, and two standards B and B are arranged above and at opposite sides respectively of said pit.

My improved percolator comprises a dumping receptacle C in which oil-yielding or grease-yielding material (not shown) is to be treated with a solvent, such, for instance, as naphtha. Said receptacle is cylindrical in cross-section. Said receptacle is supported from the standards B, being provided externally and centrally between its upper and lower ends with two trunnions D and E which are arranged horizontally at opposite sides respectively of the receptacle and in line endwise, which trunnions have bearing in opposite standards respectively. It will be observed therefore that the receptacle C is pivotally supported from the

standards B and arranged to be swung or rotated in a vertical plane between the standards.

The receptacle C has a conical top 10 (see Fig. 1) and is provided centrally of said top with a mouth 12, and G indicates a cover for closing said mouth, which cover is arranged above the receptacle and supported independently of the receptacle, as will hereinafter appear, and obviously any suitable means, such, for instance, as clamps (not shown) may be employed in tightly securing said cover to the receptacle in the mouth-closing position of the cover. Fig. 1 shows the cover G in its mouth-closing position. The cover G is carried by a vapor-conducting pipe H which is provided with a valve 13. The pipe H is shown mounted in a bracket I which is pivoted vertically, as at 14, to a stationary beam J. The pipe H has a vertically arranged pivotal outer end-portion *h* which projects downwardly and is provided at its lower or outer end (see Fig. 4) with a collar 16 mounted on and suitably fixed to said pivotal portion of said pipe.

A stationary vapor-conducting pipe K, which (see Fig. 1) is shown supported from a hanger L depending from and rigid with the beam J, communicates (see Fig. 4) with the cover-carrying pipe H at the lower or outer end of the pivotal portion *h* of said cover-carrying pipe and is provided with a stuffing-box 17 which extends circumferentially of said pivotal portion of said cover-carrying pipe and has its annular packing 18 surrounding said portion of said cover-carrying pipe and confined between the gland 20 of said stuffing-box and a ring 21 arranged at the inner end of the collar 16 and overlapping an upwardly facing shoulder 22 which is formed on and internally of the casing of said stuffing-box. It will be observed that the projection of the collar 16 of the pivotal portion *h* of the cover-carrying pipe into the stuffing-box 17 of the stationary pipe K insures the retention of said pivotal portion of said cover-carrying pipe internally of the packing of said stuffing-box. The axis of the bracket I and the axis of the pivotal portion *h* of the pipe H are coincident to permit swinging of said pipe in a horizontal plane.

By the construction hereinbefore described it will be observed that the vapor-conducting pipe H and the connected cover G are not only supported independently of the receptacle C but are swung in a horizontal plane during the actuation of the bracket I in opening and in closing said cover. The pivotal portion *h* of the pipe H permits swinging of said pipe without interrupting communication between said pipe and the stationary pipe K, and the stuffing-box comprising the packing 18 prevents leakage between said pipes. Of course the cover G is

swung into an open position and out of the way preparatory to actuating the receptacle C for dumping material into the pit A.

The receptacle C (see Fig. 1) has a dish-shaped bottom 22 and at the upper end of said bottom and internally is provided with a suitably constructed horizontally arranged screen which extends transversely of said receptacle and is secured in place in any approved manner and (see Figs. 1 and 2) consists of a vertically arranged metal ring 23, horizontally arranged bars 24 and plates 25 having perforations 26. The ring 23 rests on the bottom 22 and is secured in place in any approved manner. The bars 24 are spaced laterally and extend transversely of the receptacle C. The perforated plates 25 rest on the ring 23 and on the bars 24 to which one or more of said plates are bolted, as at 27, as shown in Fig. 2, and all of said plates are bolted, as at 28, to the ring 23. The oil-yielding or grease-yielding material to be treated in the receptacle C is fed into said receptacle at the mouth 12, and the aforesaid screen forms a seat for a body of such material.

The trunnions D and E extend through the standards B, and the trunnion D (see Figs. 1 and 3) is operatively provided at its outer end with a worm-wheel 31 which has its axis coincident with the axis of the receptacle C and meshes with a rotary worm 32 which is supported from the standard affording bearing to said trunnion and consequently independently of said receptacle, which worm is shown operatively provided with a driving-wheel 33 to which power is applied in any approved manner.

Each trunnion of the receptacle C (see Figs. 1, 3 and 5) is provided interiorly with a bore 34 which extends longitudinally of the trunnion from within the inner end-portion to the outer extremity of the trunnion. At the outer end of each trunnion is a tubular member M which is attached to and arranged in line endwise and rotates with said trunnion and communicates with the bore 34 in said trunnion. Adjacent the outer end of the tubular member M of the trunnion D is a stationary pipe-connection P. Adjacent the outer end of the tubular member M of the trunnion E is a stationary pipe-connection Q. The pipe-connections P and Q comprise each a stationary tubular member 35 which is arranged in line endwise and communicates with the tubular member M of the adjacent trunnion. Each stationary tubular member 35 is provided at its free end and externally (see Figs. 3 and 5) with a collar 36 mounted on and suitably fixed to said tubular member. The tubular member M of each trunnion is provided with a stuffing-box 37 which is rotatable with said trunnion and extends circumferentially of the tubular member 35 of the adjacent pipe-

connection, and the annular packing 38 of said stuffing-box surrounds said tubular member 35 of said pipe-connection and is confined between the gland 40 of said stuffing-box and a ring 41 which is arranged at the inner end of the collar 36 projecting into said stuffing-box and overlaps a shoulder 42 formed on and internally of the casing of said stuffing-box and facing in the direction of said packing, and it will be observed that the projection into said stuffing-box of the collar 36 of the tubular member 35 of said pipe-connection insures the retention of said member of said pipe-connection internally of the packing of said stuffing-box.

A steam-supply-pipe 43 (see Fig. 1) discharges into the pipe-connection P and is consequently placed in communication, through the medium of said pipe-connection and the tubular member M of the trunnion D, with the bore 34 in said trunnion. The steam-pipe 43 is provided with a valve 44.

A solvent-conducting pipe 45 (see Fig. 1) discharges into the pipe-connection P and is consequently placed in communication, through the medium of said pipe-connection and the tubular member M of the trunnion D, with the bore 34 in said trunnion. The pipe 45 is provided with a valve 46 and connects with the outlet of a suitably operated pump 47 whose inlet is connected with a pipe 48 for supplying a solvent, such, for instance, as naphtha.

A liquid-conducting pipe 50 (see Fig. 1) has its liquid-receiving end connecting with the pipe-connection P and therefore placed in communication through the medium of said pipe-connection and the tubular member M of the trunnion D with the bore 34 in the said trunnion. Said pipe 50 is provided with a valve 51 and connects with the inlet of a suitably operated pump 52 which has its outlet discharging into a pipe 53 which leads to a reservoir (not shown).

A vapor-conducting pipe 54 (see Fig. 1) connects at its vapor-receiving end with the pipe-connection Q and therefore said pipe is placed in communication through the medium of said pipe-connection and the tubular member M of the trunnion E, with the bore 34 in said trunnion. Said pipe 54 is provided with a valve 55. Said pipe 54 and the pipe K are connected to a pipe O in common, and the last-mentioned pipe leads to a condenser (not shown).

A liquid-conducting pipe 56 (see Fig. 1) connects at its liquid-receiving end with the pipe-connection Q and is consequently placed in communication, through the medium of said pipe-connection and the tubular member M of the trunnion E, with the bore 34 in said trunnion. The pipe 56 is provided with a valve 57 and connects at its discharging end with the inlet of a suitably operated pump 58 which has its outlet dis-

charging into a pipe 59 which leads to a reservoir (not shown).

The receptacle C (see Fig. 1) is provided with a solvent-conducting pipe R which is arranged at the exterior of said receptacle and provided with a valve r. The pipe R extends upwardly from the trunnion D to the top 10 of the receptacle and discharges at said top into the upper portion of the receptacle. The pipe R is attached at its lower and solvent-receiving end to the trunnion D and consequently arranged at said end in proximity to the axis of the receptacle C. The pipe R communicates at its last-mentioned end with the bore 34 in the trunnion D. Consequently said bore 34 in said trunnion D and the valved pipe R form a valved passageway which discharges into the upper portion of the receptacle C and has its receiving end arranged at the axis of said receptacle, and obviously the solvent-supply-pump 48, pump 47, pipe 45, pipe-connection P, and the tubular member M of said trunnion constitute means whereby fluid may be supplied to said passageway at the last-mentioned end of the passageway.

The receptacle C (see Fig. 1) is provided with a vapor-conducting pipe T which is arranged at the exterior of said receptacle and provided with a valve t. The pipe T extends from the top 10 of the receptacle C downwardly to the trunnion E and is attached at its upper end to said top and there communicates with and forms a vapor-outlet of said receptacle. The pipe T is attached at its lower end to the trunnion E and discharges into the bore 34 in said trunnion. Obviously therefore the valved pipe T and the bore 34 in the trunnion E form a valved passageway arranged to conduct vapor from within the upper portion of the receptacle C and has its lower and vapor-discharging end arranged at the axis of the receptacle, and the tubular member M of said trunnion E, the adjacent pipe-connection Q, and the pipes 54 and O constitute means for conducting off vapor from the last-mentioned end of said passageway.

The receptacle C (see Fig. 1) is shown provided internally, at the discharging end of the solvent-conducting pipe R and at the receiving end of the vapor-conducting pipe T, with suitably applied screens 60.

The receptacle C (see Fig. 1) is provided with a pipe U which is arranged at the exterior of said receptacle and extends from the bottom of the receptacle to the trunnion D and is placed in communication at one end, through the medium of a pipe-connection V with said receptacle at and centrally of the bottom 22 of the receptacle and communicates at its other end with the bore 34 in said trunnion. The pipe U is provided with a valve u. The pipe U is attached to the trunnion D and consequently extends at

one end into proximity to the axis of the receptacle C. It will be observed that the bore 34 in the trunnion D, the valved pipe U and the pipe-connection V form a valved passageway which communicates at one end with the receptacle at and centrally of the bottom of the receptacle and has its other end arranged at the axis of the receptacle, and that the tubular member M of said trunnion, the adjacent pipe-connection P, the pipe 50, and the pump 52 constitute means whereby liquid may be pumped from said passageway at the last-mentioned end of the passageway, and that said pipe-connection and said tubular member of said trunnion and the steam-pipe 43 constitute means for supplying steam to said passageway at said last-mentioned end of the passageway.

The receptacle C (see Fig. 1) is provided with a liquid-conducting pipe W which is arranged at the exterior of the receptacle and attached to and communicates at one end with the pipe-connection V. Said pipe W at its discharging end is attached to the trunnion E, and at the last-mentioned end communicates with the bore 34 in said trunnion. Obviously the pipe-connection V, the valved pipe W, and the bore 34 in the trunnion E form a valved passageway which is arranged to conduct liquid from within the receptacle at and centrally of the bottom of the receptacle and has its discharging end arranged at the axis of the receptacle, and the tubular member M of said trunnion, the adjacent pipe-connection Q, the pipe 56 and the pump 58 constitute means whereby liquid may be pumped from within the last-mentioned end of said passageway.

In using my improved percolator the receptacle C, upon opening the cover G, is charged at its mouth 12 with the oil-yielding or grease-yielding material which is to be treated in the receptacle. Upon charging the receptacle with said material the cover G is closed whereupon the pump 47 is operated to pump solvent, such, for instance, as naphtha, from the solvent-supply pipe 48 into the receptacle and said material is treated with said solvent to extract oil or grease therefrom. Of course, during the supply of solvent to the receptacle and during the treatment of the oil yielding or grease-yielding material in the receptacle with said solvent, the valves 46 and r are open and the valves 13, 44, 51, 55, 57, t, u and w are closed, and the oil or grease extracted from said material gravitates to the bottom 22 of the receptacle whence it is pumped by operating the pumps 52 and 58. Of course during the operation of the pumps 52 and 58 the valves 51, 57, u and w are open and the valves 13, 44, 46, 55, r and t are closed. When the treatment of the oil-yielding or grease-yielding material with

solvent has been completed and all oil or grease removed from the receptacle, steam is admitted to the receptacle through the pipe U, and of course during the supply of steam to the receptacle the valves 13, 44, 55, u and t are open and the valves 46, 51, 57, r and w are closed. Steam is employed to facilitate the escape of naphtha from the residue remaining in the receptacle after pumping oil and grease from the receptacle, and naphtha-vapors escape from the receptacle through the pipes H and T. After the naphtha in said residue has been vaporized the cover G is opened whereupon the receptacle is swung or rotated to dump said residue into the pit A.

What I claim is:—

1. In a percolator, the combination, with a receptacle provided exteriorly with two suitably supported trunnions arranged horizontally at opposite sides respectively of the receptacle and in line endwise, each trunnion being provided interiorly with a bore which extends longitudinally of the trunnion, said receptacle being provided at the top with a mouth and having two valved passageways which are formed exteriorly of the receptacle and communicate with the interior of the receptacle at and centrally of the bottom of the receptacle, one of said passageways communicating with the bore in one trunnion, and the other passageway communicating with the bore in the other trunnion.

2. In a percolator, the combination, with a receptacle provided exteriorly with two suitably supported trunnions arranged horizontally at opposite sides respectively of the receptacle and in line endwise, each trunnion being provided interiorly with a bore which extends longitudinally of the trunnion, said receptacle being provided at the top with a mouth and having two valved passageways which are formed exteriorly of the receptacle and communicate with the interior of the receptacle in proximity to the aforesaid mouth, one of said passageways being in communication with the bore in one of the trunnions and the other passageway being in communication with the bore in the other trunnion.

3. In a percolator, the combination, with a receptacle provided at each side and exteriorly with a suitably supported horizontally arranged trunnion which is provided interiorly with a bore extending longitudinally of the trunnion, said receptacle being provided with a valved passageway for establishing communication between the interior of the receptacle and the bore in said trunnion; and a stationary pipe-connection at the outer end of said trunnion, which pipe-connection comprises a tubular member which is arranged in line endwise and communicates with said trunnion and has a

collar at its free end, of a stuffing-box rotatable with said trunnion and extending circumferentially of said tubular member of said pipe-connection, the casing of the stuffing-box being provided internally with a shoulder facing in the direction of the outer end of the stuffing-box and arranged between said end and the aforesaid collar but in proximity to said collar, and a ring surrounding said tubular member of said pipe-connection and overlapping said shoulder, the packing of the stuffing-box being confined between said ring and the outer end of the stuffing-box.

4. In a percolator, the combination, with a receptacle in which oil-yielding or grease-yielding material is to be treated with a solvent, which receptacle is provided at the top with a mouth and arranged to be swung or rotated in a vertical plane, and a cover for closing said mouth, of a vapor-conducting pipe carrying said cover and communicating with said mouth in the mouth-closing position of the cover, said pipe having a vertically arranged pivotal outer end-portion; a vertically pivoted bracket instrumental in supporting said pipe and supported independently of the cover, and a stationary vapor-conducting pipe communicating with the cover-carrying pipe at the outer end of the pivotal portion of said cover-carrying pipe, the axis of said pivotal

portion of said cover-carrying pipe and the axis of the aforesaid bracket being coincident.

5. In a percolator, the combination, with a receptacle in which oil-yielding or grease-yielding material is to be treated with a solvent, which receptacle is provided at the top with a mouth and arranged to be swung or rotated in a vertical plane, and a cover for closing said mouth, of a vapor-conducting pipe carrying said cover and communicating with said mouth in the mouth-closing position of the cover, said pipe having a vertically arranged pivotal outer end-portion; a vertically pivoted bracket instrumental in supporting said pipe and supported independently of the cover, which bracket has its axis coincident with the axis of said pivotal portion of the cover-carrying pipe, and a stationary vapor-conducting pipe communicating with the cover-carrying pipe at the outer end of the pivotal portion of said cover-carrying pipe and provided with a stuffing-box which surrounds said portion of said cover-carrying pipe.

In testimony whereof, I sign the foregoing specification, in the presence of two witnesses.

GEORGE E. SHATTO.

Witnesses:

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N. L. McDONNELL.