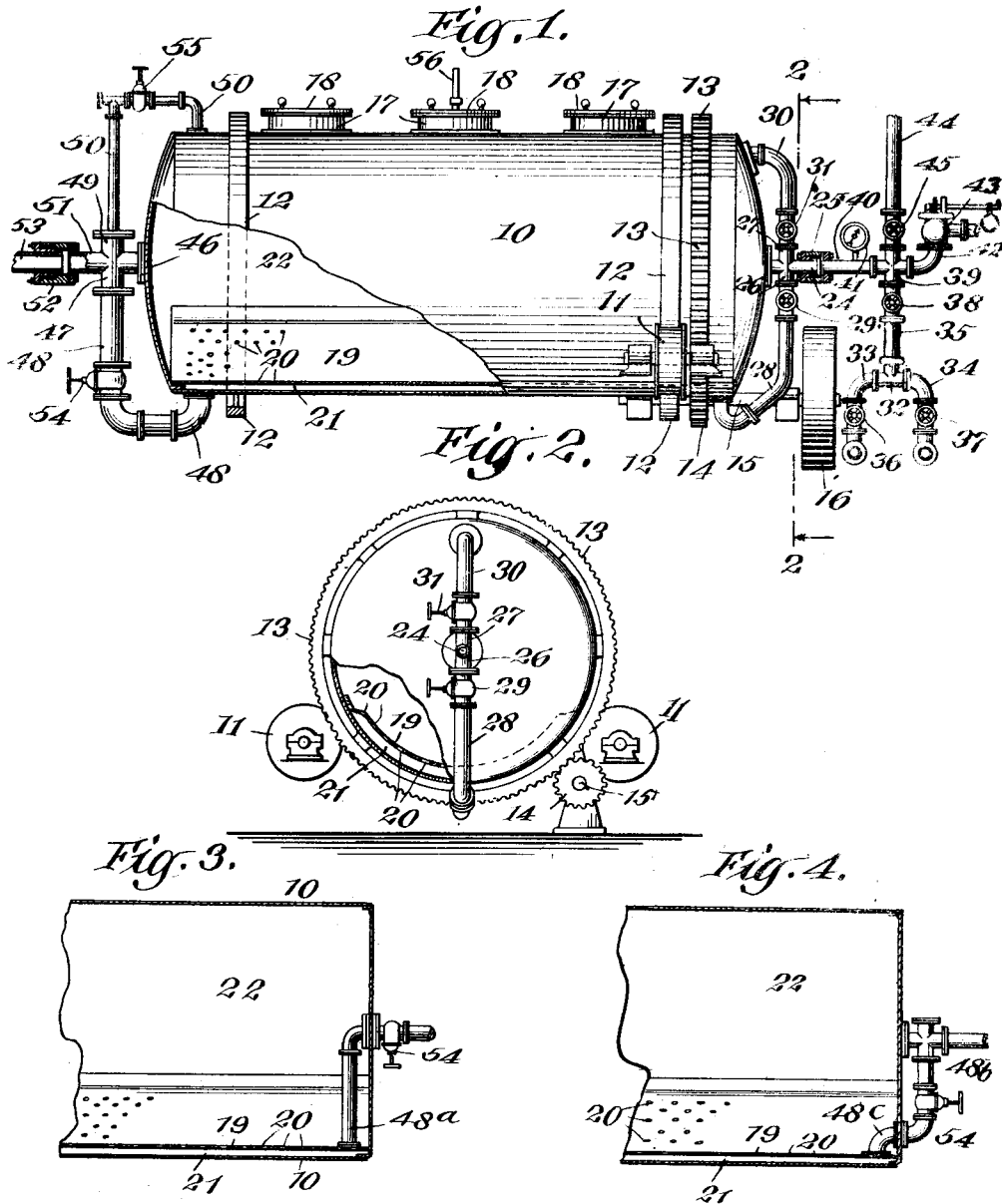


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PERCOLATOR.
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WITNESSES
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PERCOLATOR.

1,063,951.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, IRVING BLOUNT, a citizen of the United States, and a resident of the borough of Brooklyn, city and State of New York, have invented certain new and useful Improvements in Percolators, of which the following is a specification:

This invention relates to improvements in apparatus wherein the fluid and solid constituents of a mass of material containing both of such constituents are separated from each other by subjecting said material to the action of an extracting fluid, as naphtha, for example; and to the action of a cleansing, or cleansing and drying fluid, as steam or air, for example.

The invention consists in the peculiar correlation of parts shown in the accompanying drawings and set forth in the following description.

The most important object of the present invention is to provide an apparatus of the kind herein stated, which will be of maximum efficiency. This object and others which will herein after appear are fully accomplished by the construction illustrated in the accompanying drawings to exemplify what is at present regarded to be the best detail embodiments of the invention. The invention however is not restricted to the particular detail embodiments illustrated in the accompanying drawings, as changes may be made in the details without departing from the spirit of the invention, or the scope of the subjoined claims.

In said drawings, wherein like characters of reference designate like parts in the several views: Figure 1 is an elevation of an apparatus containing the present improvements, showing a part thereof broken away to disclose parts which otherwise would be concealed. Fig. 2 is a transverse section on the line 2-2 of Fig. 1, with a part of the container broken away. Fig. 3 is a view illustrative of a slight modification, and Fig. 4 is a view of another slight modification.

10 designates a closed container or tank which may be of any suitable material, size and shape. This container is rotatably mounted and preferably is supported at each end by suitably disposed rotatable bearing devices as the wheels 11 engaging wear bands 12 encircling the container. A desirable means for rotating it comprises a circular

rack 13 mounted on the circumference of the container and engaged by a driving gear 14 mounted on a shaft 15 having a pulley 16 by which it is connected with a suitable source of power for driving said shaft.

The container 10 is provided with a suitable number of manholes 17 through which it is charged with material to be treated. Three of these manholes are herein shown. They are arranged along the length of the container and each has a tightly fitted cover 18. Arranged opposite to the manholes and extending lengthwise of the container within the interior of the latter, is a plate 19 having perforations 20 preferably throughout its area. This plate is so disposed as to provide between it and the adjacent part of the container a conduit chamber 21. This chamber 21 has communication with the treating chamber 22 of the container, through the perforations 20.

Secured to one of the heads, as 23, of the container is a union having a hollow member 24 which is journaled in a stuffing box 25. Said union also has other members, 26 and 27, the former of which is connected to a pipe 28 having a valve 29, while the member 27 is connected to a pipe 30 having a valve 31. The pipe 28 opens into the conduit 21 of the container while the pipe 30 opens into the chamber 22.

32 designates a T-union serving to connect two pipes 33 and 34 with a third pipe 35. The pipe 33 has a valve 36; the pipe 34 has a valve 37, and the pipe 35 has a valve 38 and is connected with one member of a union marked 39. Another member of this union is connected to a pipe 40 which leads to the stuffing box 25 and is provided with a pressure gage 41; another member of said union is connected to a pipe 42 having a safety valve 43; and the remaining member of the same is connected to a pipe 44 having a valve 45.

The pipe 33 is, in practice, connected to a suitable source of naphtha or other suitable extracting fluid or solvent of the oily and fatty content of the material to be treated; the pipe 37 is connected to a collecting tank, not shown; and the pipe 44 is connected to a suitable source of supply of steam, air or the like, adapted to recover the solvent and to separate the oily and fatty matter remaining in the material after the same has been treated by the solvent, and preferably

also to dry the solid residue. The head 46 at the other end of the tank is connected to a union having a member 47 which is connected by a pipe 48 with the conduit 21: a member 49 which is connected by a pipe 50 with the chamber 22, and a member 51 which is journaled in a stuffing box 52 from which leads a pipe 53. The pipe 48 has a valve 54 and the pipe 50 has a valve 55. In the use of this particular embodiment of the invention for the extraction of the oily and fatty contents of garbage, fish or animal tankage, for example; the container 10 is turned to a position wherein its chamber 22 may be conveniently supplied with the material to be treated through the manholes 17. The manhole covers 18 are tightly closed when the container has been charged with said material. With the valves 37, 45, 29 and 54 closed, and valves 36, 38, and 31 open, naphtha, or other solvent used is pumped into the treating chamber 22 from its source of supply, not shown, reaching said chamber by way of the pipes 33, 35, 40 and 30. After the material in the chamber 22, has undergone treatment the required length of time, the valves 36 and 31 are closed and the valves 37 and 29 are opened, the other valves remaining as before. The treating fluid and the extracted material are now drawn from the container, the material which has settled in the conduit 21 reaching the collecting tank (not shown) by way of pipes 28, 40, 35 and 34 and the material which is in the treating chamber 22 being drawn into said conduit through the perforations and thence passing to said tank through said pipes. When this step in the operation of the machine has been completed, valves 29 and 38 are closed and valves 45, 31 and 54 are opened. Steam will now be supplied to the treating chamber 22 of the tank, through the pipes 44, 40 and 30 said steam, together with the oily and fatty matters which it has extracted from the material undergoing treatment, and also the treating fluid recovered by said steam leaving said chamber 22 by way of the perforations 20, conduit 21, pipe 48 and 53 to a separating tank or condenser not shown. The last step of the operation may be continued until all the treating fluid has been recovered and the material undergoing treatment has been reduced to a dry and solid mass.

When the solvent naphtha is being supplied to the container, the air valve 55 is opened to permit the air to escape from the container. When the air has escaped this valve is preferably closed, a safety valve 56 on one of the manhole covers 18 serving to prevent too high a pressure in the container. This valve 55 is also open while the extracting fluid as naphtha is being withdrawn from the tank container to prevent vacuum. At the end of the operation, the

container may be turned pivotally, on the supporting wheels 11. This turning of the container is intended to facilitate the operation of removing the solid residue of the material by arranging said tank so that it will be open downward when the manhole covers 18 are removed: but it is apparent that the container may be turned either constantly, or from time to time, during the treating operation, in order to keep the material in a comparatively loose condition, so that the treating fluid may most effectively reach all parts thereof. It will be noted that the co-relation of the pipes to each other and to the container is such that the flow of the fluids into and out from the container through said pipes is not prevented while the container is being turned.

In the particular embodiment shown in Figs. 1 and 2, the pipes 28 and 48, as are all the other pipes, are shown as being entirely outside the container and as opening into the container through the wall of the latter. This is a preferable arrangement for the reason that it leaves the interior of the container unobstructed by any pipes. But any or all of the pipes may extend into the container if desired, without departing from the spirit of the invention. This is particularly true with reference to the pipes (as 28 and 48) which open into the chamber or conduit 21. Thus, illustrating this with reference to the pipe through which the cleansing and drying fluid flows from the container, which pipe is designated 48 in Fig. 1 and is therein shown as being outside the container having its inlet at the wall of the latter, the corresponding element of Fig. 3, namely the pipe marked 48^a may be disposed within the container with its inlet at the perforated wall or plate 19; while in Fig. 4, the corresponding pipe, marked 48^b is partly outside of the container and has a branch, 48^c which extends through the adjacent head of the latter at a place near the perforated wall 19, said branch having the inlet for the pipe at said perforated wall or plate. Moreover, the pipe 50 may be disposed with, if desired, as indicated in Fig. 3, and many other changes in the details may be made, as is apparent.

From the foregoing it will be seen that I have provided an apparatus of maximum efficiency for the purposes for which it is intended to be used, the co-relation of the parts being such that the treating fluids may be used in an effective manner and are delivered to and from the tank through a most simple system of pipes.

Having now described the invention, what I believe to be new and desire to secure by Letters Patent, is:

1. An apparatus of the kind set forth comprising a rotatably mounted closed container having therein a longitudinal con-

duit extending partway around the same, near the wall thereof, said conduit having a perforated wall through which it has communication with the treating chamber of the container; and means for delivering fluid to said container and for conducting fluid away from the same, comprising hollow trunnions which are fixedly connected to opposite ends of the container, a plurality of valve-controlled pipes having connection with one of said trunnions and respectively open to said conduit and to the treating chamber of the container; valve-controlled pipes having communication with said trunnion and respectively arranged for the conduct of a solvent and steam or the like, the trunnion being rotatable relatively to the latter pipes; a valve-controlled steam exhaust pipe having connection with the conduit and with the other of said trunnions, and means for conducting fluid away from the latter trunnion, the trunnion being rotatable relatively to said means.

2. An apparatus of the kind set forth comprising a rotatably mounted closed container having therein a longitudinal conduit extending partway around the same, near the wall thereof, said conduit having a perforated wall through which it has communication with the treating chamber of the container; and means for delivering fluid to said container and for conducting fluid away from the same; a pair of conducting pipes for a solvent and steam or the like, respectively; a pipe common to said conducting pipes and communicating with said trunnion, the trunnion being rotatable relatively to the latter pipe; separate branches leading from the solvent-conducting pipe, means whereby the flow of the solvent through either of said branches and the flow of the steam or the like, through its pipe are controlled a valve-controlled outflow pipe leading from the conduit to the other of said trunnions; and a pipe having communication with the latter trunnion for conducting fluid away from the latter, said trunnion being rotatable relatively to the last-named pipe.

3. An apparatus of the kind set forth comprising a rotatably mounted container provided with heads and with openings through which it is supplied with material to be treated and through which the treated material is drawn, means for closing said openings; a perforated wall arranged inside the container in such relation to the wall of the latter as to provide a conduit extending longitudinally of the container and only partway around the same; and means for delivering fluid to the container and for conducting fluid away from the same, comprising a system of valve-controlled pipes having a member

into the container at a place outside of the conduit; a second member which opens to the conduit; and a third member which opens to the conduit.

4. An apparatus of the kind set forth comprising a rotatably mounted container provided with heads and with openings through which it is supplied with material to be treated and through which the treated material is drawn, means for closing said openings; a perforated wall arranged inside the container in such relation to the wall of the latter as to provide a conduit opposite said openings, said conduit extending longitudinally of the container and only partway around the same; and means for delivering fluid to the container and for conducting fluid away from the same, comprising a system of valve-controlled pipes having a member which opens into the container at a place outside of the conduit; a second member which opens to the conduit; and a third member which opens to the conduit, said system of pipes also comprising trunnions which are fixedly secured to the heads of the container, one of said trunnions being fixedly connected to the first and second members; and the other of the trunnions being fixedly connected with the third of said members; a pair of members for conducting a solvent and steam or the like, respectively; a member common to the latter members and through which the same have communication with one of said trunnions, the latter being rotatable relatively to said members; the solvent-conducting member having separate branches, means whereby the flow of either of said branches and the flow of steam or the like, through its pipe are controlled; and means whereby fluid is conducted away from the trunnion which is connected to said third member, the latter trunnion being rotatable relatively to said means.

5. An apparatus of the kind set forth comprising a rotatably mounted container provided with heads and with openings through which it is supplied with material to be treated and through which the treated material is drawn, means for closing said openings; a perforated wall arranged inside the container in such relation to the wall of the latter as to provide a conduit extending longitudinally of the container and only partway around the same; means for delivering fluid to the container and for conducting fluid away from the same, comprising a system of valve-controlled pipes having a member which opens into the container at a place outside of the conduit, a second member which opens to the conduit, and a third member which opens to the conduit, said system of pipes also comprising trunnions which are fixedly secured to the heads of the container, one of said trunnions being fixedly connected to the first and second mem-

bers, and the other of the trunnions being fixedly connected with the third of said members.

6. An apparatus of the kind set forth, comprising a rotatably mounted container provided with heads and with openings, through which the container is supplied with material to be treated and through which the treated material is withdrawn; means for closing said openings, a perforated wall arranged in such relation to the wall of the container as to provide a conduit extending longitudinally of the container and part way around the same; means for delivering fluid to the container and for conducting fluid away from the same, comprising a system of valve-controlled pipes

having a member which opens into the container outside of the conduit; a second member which opens to the conduit, and a third member which opens to the conduit, said system of pipes also comprising trunnions fixedly secured to the container, one of said trunnions being fixedly connected to the first and second members, and the third trunnion being fixedly connected to the third member.

In witness whereof I have hereunto set my hand at the city, county and State of New York, this first day of August, 1911.

IRVING BLOUNT.

In presence of—

HENRY N. DIKEMAN,
JOHN J. RANAGAN.