

(No Model.)

P. J. TRACY.
FILTER.

No. 348,869.

Patented Sept. 7, 1886.

Fig. 1.

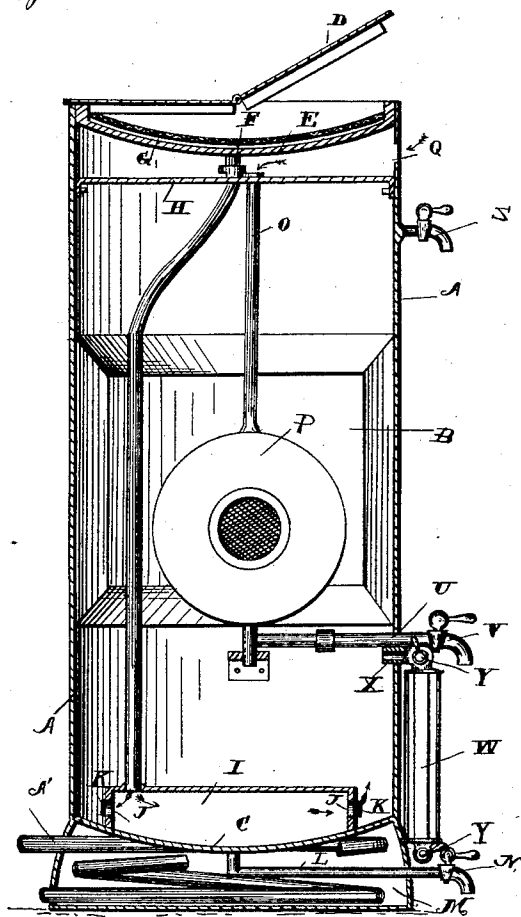
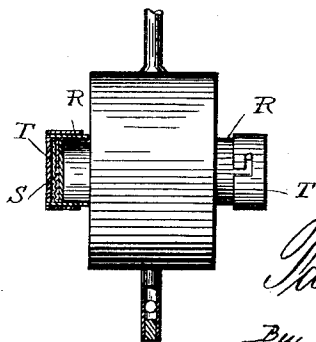


Fig. 2.



WITNESSES
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PATRICK JEROME TRACY, OF RACINE, WISCONSIN, ASSIGNOR OF ONE-HALF
TO W. T. LEWIS, OF SAME PLACE.

FILTER.

SPECIFICATION forming part of Letters Patent No. 348,869, dated September 7, 1886.

Application filed March 29, 1886. Serial No. 196,979. (No model.)

To all whom it may concern:

Be it known that I, PATRICK JEROME TRACY, a citizen of the United States, and a resident of Racine, in the county of Racine and State of Wisconsin, have invented certain new and useful Improvements in Filters; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a vertical sectional view of my improved filter for fluids of a less specific gravity than water, and Fig. 2 is a side view of the filtering-vessel, showing one filtering-tube in section.

Similar letters of reference indicate corresponding parts in both the figures.

My invention has relation to filters for filtering fluids of a less specific gravity than water, especially adapted for the purpose of filtering oil; and it consists in the improved construction and combination of parts of such a filter, in which the fluid to be filtered passes first up through a bath of water, in which it is washed, whereupon it is drawn through filtering material into a reservoir or vessel, from which it may be drawn, as hereinafter more fully described and claimed.

In the accompanying drawings, the letter A indicates a casing having a contracted central portion, B, and a rounded bottom, C, and the top of this casing is formed with a hinged lid or cover, D, and with a concavo-convex top, E, having a pipe, F, opening at its center and passing down through the casing. A strainer, G, corresponding in shape to the shape of the concavo convex top is secured above it, and a flat partition, H, is secured in the casing under the top. The lower end of the pipe passing from the concavo-convex top is secured in the flat top of a receiving-vessel, I, having the central portion of the bottom of the casing forming its bottom, and the sides of this vessel are provided with apertures J, covered with strainers K of wire-cloth or perforated sheet metal. The center of the bottom of the casing and receiving-vessel is provided with a

pipe, L, which passes out through the side of the base M of the casing, and is provided with a cock, N, for drawing off the contents of the vessel.

A pipe, O, has its upper end secured in the center of the upper partition of the casing, above which the sides of the casing are provided with air-inlets Q, and the lower end of the pipe is inserted in the upper side of a cylindrical reservoir, P, supported in the contracted portion of the casing. The heads of this reservoir are provided with sleeves R R at their centers, the open ends of which sleeves are provided with filtering-disks S, preferably made of bass-wood fiber or bass-wood fiber and felt, although other vegetable fiber may be used, and these filtering-disks are confined in the ends of the sleeves by means of caps T, fitting upon the sleeves and retained upon the same by means of L-shaped slots in the caps fitting upon pins projecting from the sleeves. The lower side of the reservoir has a pipe, U, entering it at a point diametrically opposite to the point at which the air-pipe O enters, and this pipe passes out through the side of the casing immediately below the contracted central portion of the same, where it is provided with a cock, V.

A gage-glass, W, is connected by means of tubes X X with the lower portion of the casing immediately under the reservoir-pipe, and with the pipe passing from the receiving-vessel, the said tubes having cocks Y Y, for stopping the flow of fluid into the glass, if it by accident should be broken, and the upper portion of the casing immediately below the flat partition is provided with a cock, Z.

The base may be provided with a suitable pipe-coil, A', connected to a steam-boiler or hot-air generator.

It will be seen that as the fluid to be filtered is poured into the top of the casing the coarser impurities will be filtered off by the strainer, and the fluid will descend through the pipe into the vessel at the bottom of the casing, from which it will pass out into a washing-fluid, which is contained in the lower portion of the casing, the fluid to be filtered being finely divided by passing through the perforated strainers in the apertures of the vessel, which

act as a distributor. The fluid will be partly purified by passing through the washing-fluid, and will float on the top of the same, filling the upper portion of the casing. From this portion of the casing the fluid will filter into the reservoir, from which it may be drawn as it is used. The air-pipe in the top of the reservoir will allow it to be filled, and will allow the fluid to be drawn freely from it, connecting the reservoir with the outside air. All the heavier impurities which are not strained off by the strainer at the top will sink to the bottom of the casing and distributing-vessel, from the bottom of which they may be drawn off through the cock and pipe connected thereto, and all light impurities which will float upon the top of the fluid to be filtered may be drawn off through the cock at the upper end of the casing, above which point the fluid is permitted to rise.

The washing-fluid, which is preferably water, in the case of oil being the fluid to be filtered, may be either acidulated, or may contain some alkali for the purpose of cleaning and deodorizing it, and the oil passing up through the water in the shape of small globules, being finely distributed by the strainers in the distributing-vessel, will be thoroughly washed by the water.

The gage will admit of examining the relative height of the washing-fluid and the fluid to be filtered, and in cold weather, when the oil would be liable to be thick and to flow sluggish, the casing and its contents may be heated by steam or hot air passing through the heating-coil.

Although this apparatus is preferably adapted for filtering oil, other fluids may be filtered and cleaned in the same, if the fluid to be filtered is of less specific gravity than the washing-fluid, and is of such a nature that it will not mix with the washing-fluid.

I am aware that it is not new to construct filters with an inlet-pipe provided at its top with a strainer, and passing down through the filtering material, whereby the fluid to be filtered is caused to pass back up through the filtering material, nor to provide the filtering reservoir with a faucet at its bottom and a pipe at its top for connecting it with the outside air, and I do not claim such construction, broadly; but

I claim and desire to secure by Letters Patent of the United States—

1. The combination of a casing having a washing-fluid at its lower portion, a receiving-vessel having a pipe extending to the bottom

of the casing through the washing-fluid, and a filtering-reservoir having connection with the outside air at its upper end, and having a pipe for drawing its contents off at the lower end, and having filtering-apertures for the entrance of the fluid, as and for the purpose shown and set forth.

2. In a filtering apparatus, the combination of a casing containing a washing-fluid in its lower portion of a greater specific gravity than the fluid to be filtered, a receiving-vessel or funnel having a pipe extending to the bottom of the casing, and having the lower end provided with a distributing-vessel having apertures covered by strainers, and a filtering-reservoir having connection at its upper end with the outside air, and having a pipe for drawing off its contents at its lower side and provided with filtering-apertures, as and for the purpose shown and set forth.

3. In a filtering apparatus, the combination of a casing having a contracted central portion, and having a concavo-convex bottom provided with a pipe and cock, and having a hinged lid and a concavo-convex top and a flat partition below the top, a strainer above the concavo-convex top, a pipe passing from the top to the lower end of the casing, a distributing-vessel upon the bottom of the casing, having the pipe entering it, and having apertures in its sides covered by strainers, a filtering-reservoir having sleeves provided with filtering-disks in its heads, and having an air-pipe passing up to the flat partition of the casing, and having a pipe at its lower end passing out through the side of the casing provided with a cock, a draw-off cock at the upper end of the casing, a gage-glass at the lower portion of the casing, and a heating-coil in the base of the casing, as and for the purpose shown and set forth.

4. In combination with a surrounding casing, a filtering-reservoir cylindrical in shape, and having an air-inlet pipe and a draw-off pipe at its upper and lower sides, and having sleeves at the centers of its heads, filtering-disks in the ends of the sleeves, and caps secured removably upon the ends of the sleeves, securing the disks, as and for the purpose shown and set forth.

In testimony that I claim the foregoing as my own I have hereunto affixed my signature in presence of two witnesses.

PATRICK JEROME TRACY.

Witnesses:

FRANK W. AINSWORTH,
MATT. H. LEAHY.