(No Model.)

A. H. FRANKE.

OIL FILTER.

No. 582,466. Patented May 11, 1897.

Fig. 2.

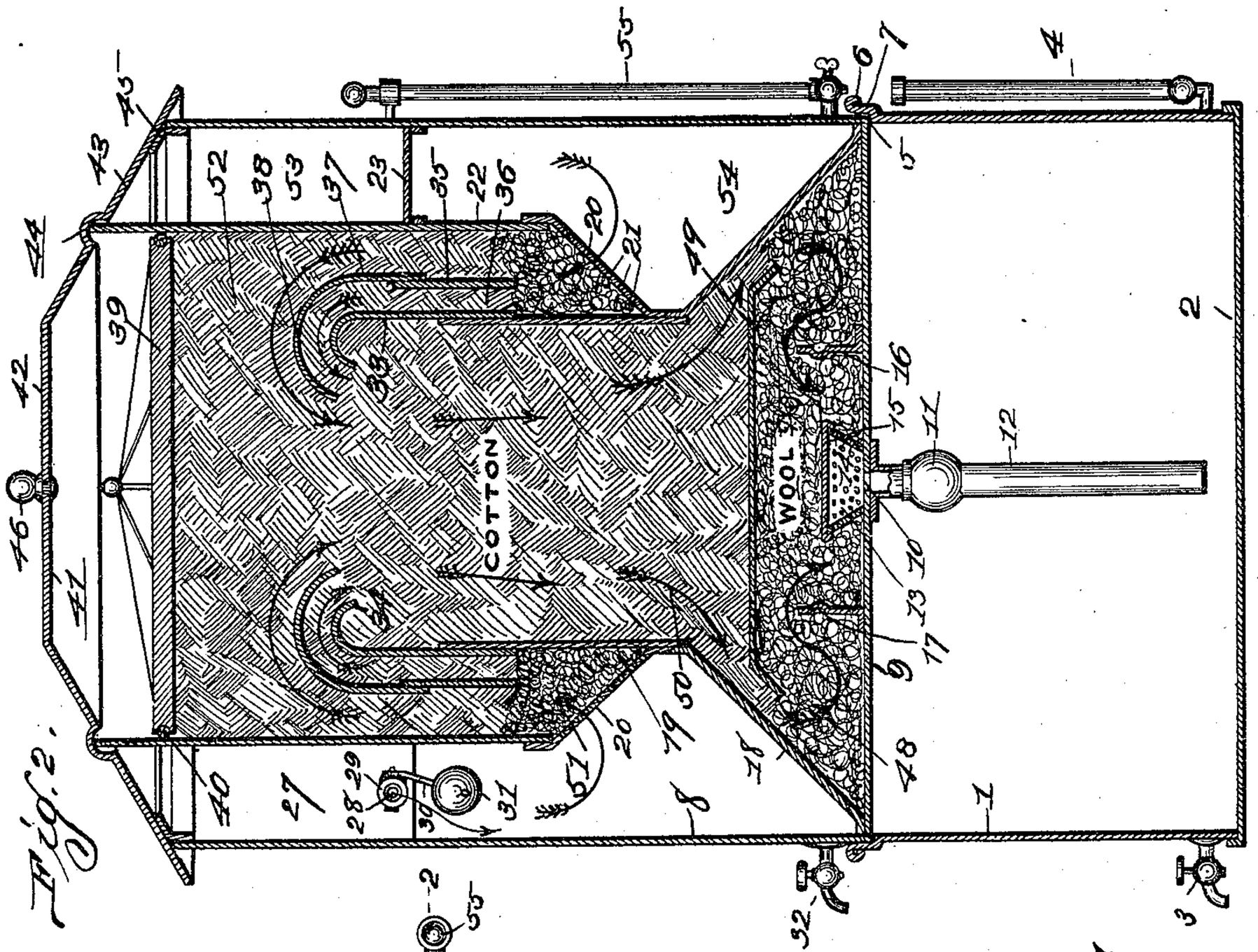


Fig. 1.

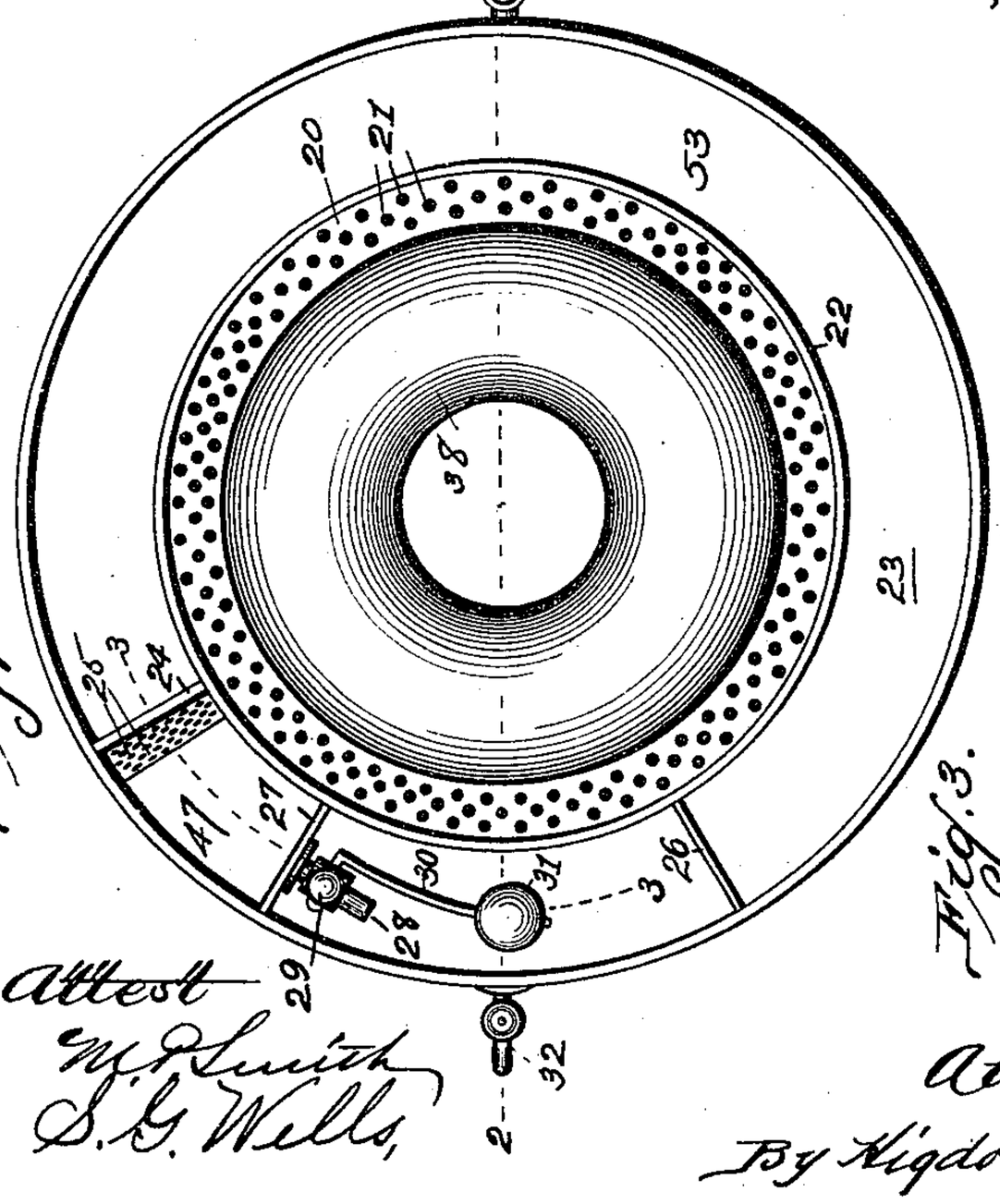
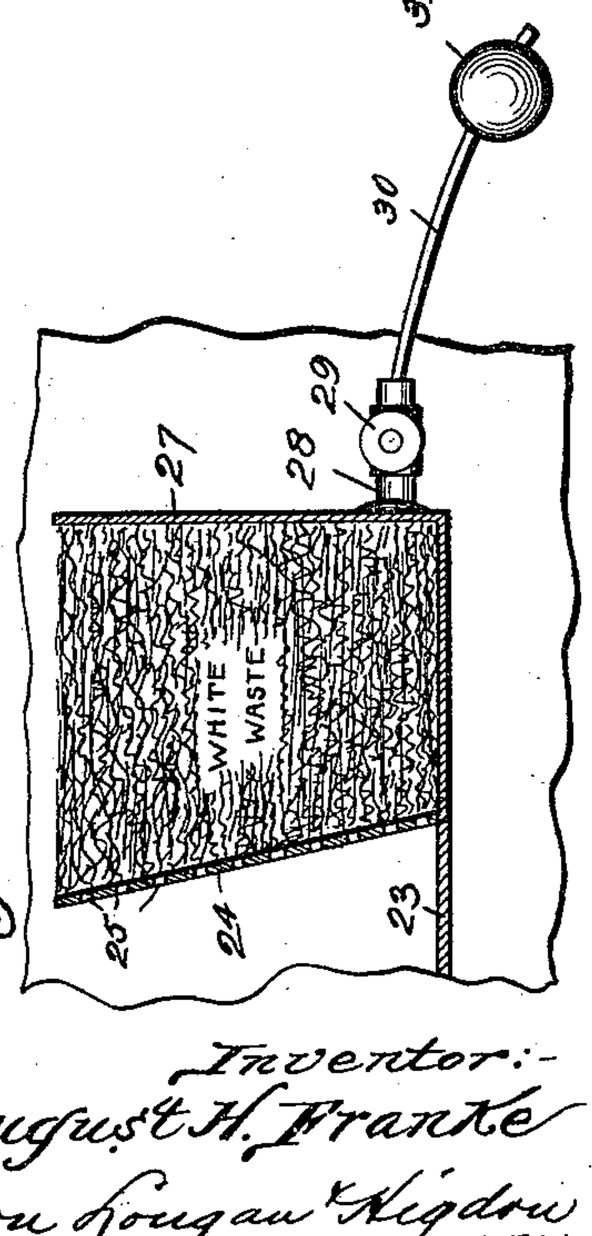


Fig. 3.



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UNITED STATES PATENT OFFICE.

AUGUST H. FRANKE, OF ST. LOUIS, MISSOURI.

OIL-FILTER.

SPECIFICATION forming part of Letters Patent No. 582,466, dated May 11, 1897.

Application filed August 17, 1896. Serial No. 603,073. (No model.)

To all whom it may concern

Be it known that I, AUGUST H. FRANKE, of the city of St. Louis, State of Missouri, have invented certain new and useful Improvements in Oil-Filters, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention relates to oil-filters; and it consists in the novel construction, combination, and arrangement of parts hereinafter shown, described, and claimed.

Figure 1 is a top plan view of an oil-filter constructed in accordance with the principles of my invention. Fig. 2 is a vertical sectional view on the line 2 2 of Fig. 1. Fig. 3 is a vertical sectional view on the line 3 3 of Fig. 1.

In the construction of my improved oil-filter I employ a lower tank consisting of the vertical wall 1 and the bottom 2. The faucet 3 penetrates the wall 1 near its lower edge and communicates with the interior of the lower tank. The sight-gage 4 is attached in a vertical position to the outside of the wall 1 and communicates with the interior of the lower tank. Near the upper edge of the wall 1 and upon the inner face thereof is formed a shoulder 5, and the upper edge of said wall 1 is rolled outwardly, thus forming the bead 6. Between the shoulder 5 and the bead 6 is a vertical portion 7. The upper tank, consisting of the vertical wall 8 and the flat bottom 9, is of such a size that it will fit within the vertical portion 7 and rest upon the shoulder 5 of the lower tank. In the center of the bottom 9 is an opening 10, and a section of pipe 12 is attached to said bottom communicating with said opening 10 and extends downwardly to a position near the bottom 2 of the lower tank. In the enlargement 11, formed in the pipe 12, may be placed a trap and valve of any suitable construction, which trap and valve will assist the siphonic action of the parts. A funnel-shaped strainer 13 is attached to the upper side of the bottom 9 and around the opening 10. The strainer 13 has inlet-apertures 14 formed in its sides, and its upper end is closed by the cap 15. The annular wall 16 is attached to the upper side of the bottom 9 in a position concentric with the strainer 13. The wall 16 extends upwardly to a point a short distance above the cap 15. A bead 17 is formed in the wall 16 at a position substantially on a level with the cap 15 and projects inwardly from said wall. The wall 18 is attached at its lower edge to the outer edge of the bottom 9 and is inclined inwardly and upwardly at an angle of about forty-five degrees. The wall 18 extends entirely around the wall 16. A vertical wall 19 has its lower edge attached to the upper edge of the wall 18. An inclined perforated wall 20 is attached to the lower end and upon the outside of the wall 19. The wall 20 is inclined outwardly and upwardly at an angle of about forty-five degrees and extends entirely around the wall 19, and said wall 20 has the inlet-apertures 21, thus forming a strainer.

A vertical wall 22 is attached to the upper end of the inclined wall 20 and extends upwardly to a position somewhat above the upper edge of the wall 8, and said wall 22 extends entirely around the wall 19. The horizontal wall 23 has its inner edge attached to the outer side of the wall 22 and its outer edge attached to the inner side of the wall 8 and extends about five-sixths of the way around said wall 22. Near one end of the wall 23 is a wall 24, which extends upwardly from the end of said wall 23 to near the upper edge of the wall 8, and the sides of said wall 24 are attached to the walls 22 and 8. Outlet-apertures 25 are formed in said wall 24, thus forming a strainer. A vertical wall 26 is attached to the opposite end of said horizontal wall 23 from the wall 24, and said vertical wall 26 extends upwardly to near the upper edge of the wall 8 and is securely attached at its sides to the walls 8 and 22. At the end of the wall 23, opposite the end to which the vertical wall 26 is attached, is a vertical wall 27, similar in every respect to the wall 26, and a pipe 28 is attached to the vertical wall 27 and upon the opposite side of said wall from the wall 24, and a cut-off valve 29 is positioned in said pipe. An arm 30 is attached to said cut-off valve for operating the same, and a float 31 is attached to the free end of said arm 30 for operating said arm. A faucet 32 penetrates the wall 8 near its lower edge and communi-

cates with the space above the wall 18 and within the wall 8.

A wall 33 surrounds the wall 19 and has a sliding telescoping connection with said wall 19. The upper edge 34 of the wall 33 is curved inwardly, thus forming a ring which is semicircular in cross-section. The wall 35 surrounds the wall 33, leaving a space 36 between said walls. The wall 37 has a sliding telescoping connection with the wall 35 and the upper edge 38 of said wall 37 is curved inwardly concentric with the curve of the edge 34 of the wall 33.

The compressing-piston 39 fits within the upper end of the wall 22, and the packing-ring 40 in the edge of said piston forms a tight joint with the inner surface of the wall 22.

The cover 41 consists of a horizontal center piece 42, which is surrounded by the inclined wall 43, the outer edge of which rests upon the upper edge of the wall 8, thus completely covering the upper end of the upper tank. A bead 44 is formed in the inclined wall 43 concentric with the upper edge of the wall 22, and said bead projects upwardly, thus forming a seat on its under side for the upper edge of said wall 22. The flange 45 is attached to the under side of the wall 43 and engages within the upper edge of the wall 8. A handle 46 is attached to the center of the cover.

The space 47 above the horizontal wall 23 and between the wall 24 and the vertical wall 27 is filled with white waste. The space 48 within the wall 18 and within the wall 16 is filled with wool. Then the baffle-plate 49 is placed in a horizontal position upon top of said wool and said plate is pressed downwardly, compressing the wool until said plate lies a slight distance below the upper edge of the wall 18. The space 50 above the baffle-plate 49 and below the compressing-piston 39 is then filled with cotton. The space 51 above the wall 20 and about one-half of the way to the top of the wall 19 is filled with wool. The space 52 above this wool is also filled with cotton.

In the practical operation of my improved oil-filter the cover is removed and the dirty oil is inserted into the space 53 between the walls 24 and 26 and the walls 22 and 8. The oil is strained through the perforations in the wall 24 and passes into the space 47, where it is filtered through the white waste contained in said space and passes outwardly through the pipe 28 into the space 54, which space is between the walls 26 and 27 and communicates with the space above the wall 18. The oil which passes out through the pipe 28 into the space 54 settles down into the bottom of the space 54 and the sediment of said oil is deposited upon the wall 18. As the space 54 fills with oil, said oil passes upwardly through the perforations 21 in the wall 20 and is strained by said perforations. When the oil raises in the space 54 to a level with the wall 23, the float 31 rises upon said oil and operates the cut-off valve 29. The oil, after passing through the wall 20, is filtered through the wool in the space 51, then passes upwardly and is filtered through the cotton in the space 52 upon each side of the walls 35 and 37. Then the oil passes upwardly between the walls 34 and 38 and downwardly into the space 50, and then through the cotton within the space 50 downwardly to the baffle-plate 49, then around the edges of said baffle-plate and through the wool under said plate, then through the perforations in the wall 14, then downwardly through the opening 10, then downwardly through the pipe 12, and is finally deposited in the lower tank, from which it may be drawn through the faucet 3.

A sight-gage 55 is attached to the outside of the wall 8 and communicates with the interior of the upper tank. The density of the wool and cotton within the tank may be regulated by increasing or diminishing the pressure upon the compressing-piston 39. If it is desired to filter a thin grade of oil perfectly, the pressure upon the compressing-piston should be greater than when a thick grade of oil is being run off.

The operation of the filter is greatly aided and accelerated by the capillary force exerted by the filtering material, and the parts are arranged with the view of increasing and assisting the capillary force as much as possible.

I claim—

1. In an oil-filter, an outer wall, a second wall inside of said outer wall, walls connecting said inner and said outer walls, and forming an inclosure, a perforated partition in said inclosure, filtering material in the space upon one side of said partition, a pipe leading from said filtering material, and a float-operated valve in said pipe, substantially as specified.

2. In an oil-filter, an outer wall, a second wall inside of said outer wall, walls connecting said inner wall and said outer walls and forming an inclosure, a perforated partition in said inclosure, filtering material in the space upon one side of said partition, a pipe leading from said filtering material, a float-operated valve in said pipe, a strainer between said pipe and the space within said second wall, filtering material within said second wall, and a compressing-piston upon said filtering material, substantially as specified.

3. In an oil-filter, an outer wall, a second wall inside of said outer wall, walls connecting said inner and said outer walls and forming an inclosure, a perforated partition in said inclosure, filtering material in the space upon one side of said partition, a pipe leading from said filtering material, a float-operated valve in said pipe, a strainer between said pipe and the space within said second wall, filtering material within said second wall, a compressing-piston upon said filtering material, a baffle-plate below said filtering material, a strainer below said baffle-plate, a

pipe leading from said strainer, and filtering material around said strainer, substantially as specified.

4. In an oil-filter, a vertical wall, a wall having a sliding connection with said vertical wall, filtering material within and without said walls, a vertical wall surrounding said first-mentioned walls and supported by said filtering material, a wall having a sliding connection with said last-mentioned walls, walls leading upwardly and inwardly from said sliding walls, and a piston for regulating the pressure upon said filtering material, substantially as specified.

5. In an oil-filter, a compartment for receiving the dirty oil, a strainer-partition in said compartment, filtering material upon one side of said strainer, a pipe leading from said filtering material to a second compartment, a strainer leading upwardly from said second compartment to a third compartment, filtering material in said third compartment and above said last-mentioned strainer, a piston for regulating the pressure upon said last-mentioned filtering material, a wall forming a fourth compartment within said third compartment, a wall having a sliding connection with said last-mentioned wall, filtering material within said fourth compartment, a strainer in the bottom of said fourth compartment, and a pipe leading from said strainer, substantially as specified.

6. In an oil-filter, a compartment for receiving the dirty oil, a strainer-partition in said compartment, filtering material upon one side of said strainer, a pipe leading from said filtering material to a second compartment, a strainer leading upwardly from said second compartment to a third compartment, filtering material in said third compartment and above said last-mentioned strainer, a piston for regulating the pressure upon said last-mentioned filtering material, a wall forming a fourth compartment within said third compartment, a wall having a sliding connection with said last-mentioned wall, filtering material within and without said fourth compartment, a wall outside of said fourth compartment-wall and supported by said filtering material, a wall having a sliding connection with said last-mentioned wall, and walls leading upwardly from said sliding wall and over into said fourth compartment, substantially as specified.

7. In an oil-filter, a compartment for receiving the dirty oil, a strainer-partition in said compartment, filtering material upon one side of said strainer, a pipe leading from said filtering material to a second compartment, a strainer leading upwardly from said second compartment to a third compartment, filtering material in said third compartment and above said last-mentioned strainer, a piston for regulating the pressure upon said last-mentioned filtering material, a wall forming a fourth compartment within said third compartment, a wall having a sliding connection with said last-mentioned wall, filtering material within and without said fourth compartment, a wall outside of said fourth compartment-wall and supported by said filtering material, a wall having a sliding connection with said last-mentioned wall, and walls leading upwardly from said sliding wall and over into said fourth compartment, a strainer in the bottom of said fourth compartment, a baffle-plate above said strainer, filtering material under and around said baffle-plate, and a pipe leading from said strainer, substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

AUGUST H. FRANKE.

Witnesses:
M. E. SPILLMAN,
S. G. WELLS.