No. 715,047. Patented Dec. 2, 1902.

A. H. FRANKE.

OIL FILTER.

(Application filed Aug. 18, 1902.)

(No Model.)

Fig. 1.

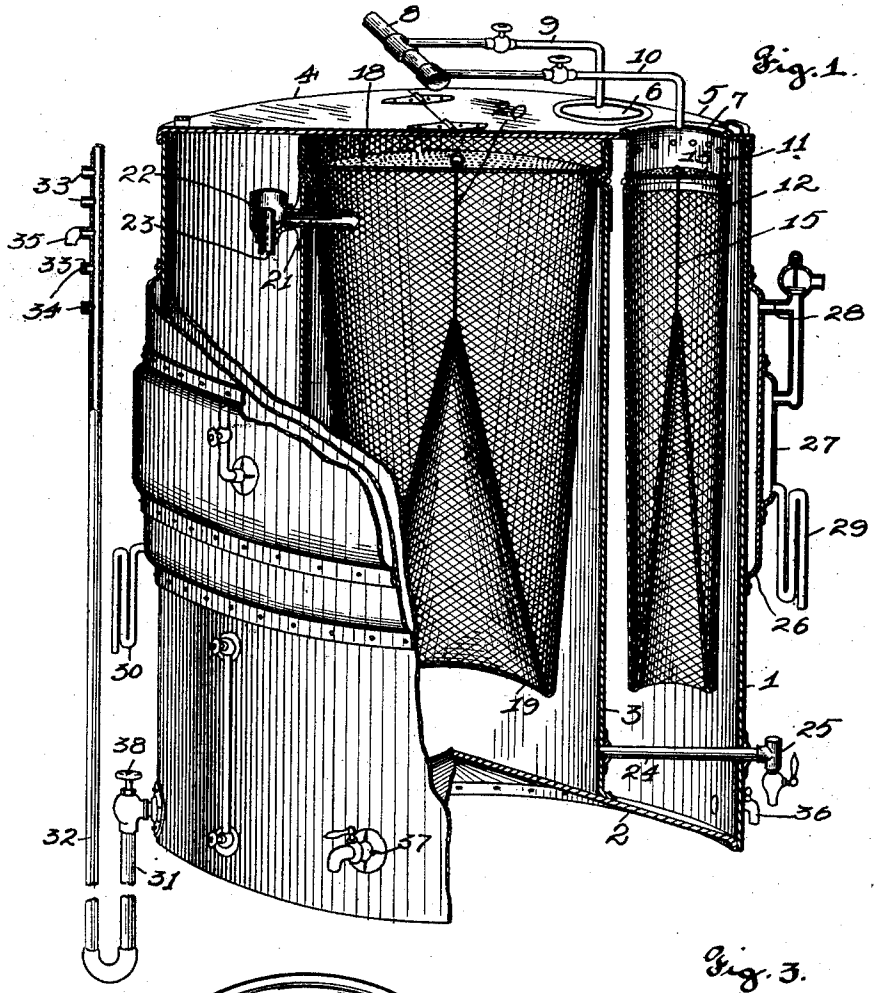


Fig. 2.

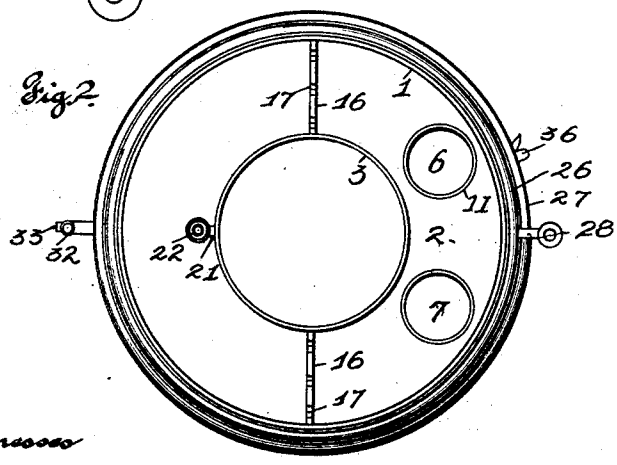
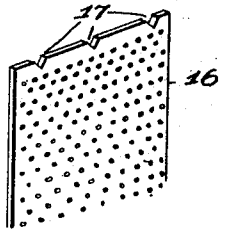


Fig. 3.



Witnesses
Alfred O. Eicher
Edw. Hennington.

Inventor
August H. Franke
by Higdon & Longan attys

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

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

OIL-FILTER.

SPECIFICATION forming part of Letters Patent No. 715,047, dated December 2, 1902.

Application filed August 18, 1902. Serial No. 119,984. (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 of the novel construction, combination, and arrangement of parts hereinafter shown, described, and claimed, and which will be more fully understood by reference to the accompanying drawings, in which—

Figure 1 is a vertical sectional view of an oil-filter embodying my invention. Fig. 2 is a cross-section. Fig. 3 is a detail of construction.

In the construction of my improved oil-filter I employ a tank having an outer wall 1; a cone-shaped bottom 2, sloping upwardly and inwardly to a central point; an inner wall 3, thereby forming an outer chamber surrounding an inner chamber; a hinged lid 4, which is hinged to a removable cover 5, which extends across a portion of the top of the tank and is provided with openings 6 and 7, leading into the outer chamber. The oil to be filtered, which is usually mixed with water impurities, is poured or led by pipes 8, 9, and 10 into the removable strainer-receptacles 11, which are placed in the openings 6 and 7. After passing through the coarse strainer-plate 13 the oil is then passed through the straining-cloth bag 12, which hangs in the right-hand side of the outer chamber. This straining-bag 12 is simply a long V-shaped bag with its pointed end turned upward and inward and held up by the rod 15, which is fastened to the strainer-plate 13. The strainer-bag 12 consists of cheese-cloth or other suitable material. The strainer-receptacle 11 has a series of overflow-holes near its upper end. The partially-cleaned oil then enters the outer chamber, which is always almost full of oil. The oil then passes through the perforated vertical metallic straining-partitions 16, which divide the outer chamber and extend from the bottom to near the top of the outer chamber. These perforated partition-walls 16 are provided along their upper edges with vertical notches 17, the function of the notches 17 being to permit the flow of the oil to be continued into the opposite side of the outer chamber if for any reason the perforations in the vertical straining-plate 16 become clogged. The oil then passes, at a point opposite to the straining-bags 14, through the passages 23 and 22 and through the inlet-pipe 21, which projects through and into the filtering-bag 19, which hangs in the inner chamber. The filtering-bag 19 is a long V-shaped bag having its pointed end turned inward and upward and held up by the rod 20, which is fastened to the plate 18 or may be fastened to the cover 5. The outer edge of this filter-bag 19 may be fastened to and suspended either from the plate 18 or the upper end of the wall 3 or in some other suitable manner. The filtering-bag 19 consists of canton-flannel cloth with the fuzzy side turned in, or it may consist of other suitable material. After passing through the filtering-bag 19 the oil then enters the inner chamber, from whence it may be withdrawn through the pipe 24, which extends from it through the outer wall 1 and is provided with the faucet 25.

As I have heretofore described and shown in the following Letters Patent heretofore granted to me and the numbers and dates whereof are as follows, to wit: No. 582,467, issued May 11, 1897; No. 603,327, issued May 3, 1898, and No. 651,137, issued June 5, 1900, it is desirable and necessary to apply heat to the oil during the process of filtration. To this end I have improved in my present invention upon the devices heretofore patented to me by providing the wall 1 of my tank with the inner jacket 26 and the outer jacket 27 and a removable connecting-pipe 28. When these jackets are connected by the tube 28, the result is a compound steam-chamber. When the connection is cut off by the removal of the tube 28, the inner jacket may be provided with oil or water for purposes of heat diffusion and the heat applied by the introduction of steam to the outer chamber 27. When it is desired to use the jackets 26 and 27 in connection with a compound steam-jacket, the outer jacket is provided with a water-trap 29 and the inner jacket is provided with a water-trap 30.

When the inner jacket is used as an oil or water jacket, the water-trap 30 is removed and its outlet closed.

In order to automatically discharge the precipitated water from the outer chamber and at the same time safely maintain the water-level in the outer chamber close to the bottom of this outer chamber without danger of discharge of oil, I provide a water-discharge trap consisting of a pipe 31, which issues from the bottom of the outer chamber and extends downward below the bottom of the outer chamber then joined to the vertical pipe 32. The upward discharge-passage 32 is provided with the series of reduced outlets 33. These outlets are for the purpose of raising or lowering the dividing-line between the water and the oil for heavy-body oils or light-body oils, all for the purpose of safely maintaining the water-level close to the bottom of the outer chamber. The water-level by this means is so governed that it shall at all times be above the inlet to the pipe 31 in order that the discharge through the pipes 31 and 32 shall include all of the precipitated water, but without any admixture of oil. When a light-body oil is being filtered, the water-outlet must be maintained at a point lower than is the case when a heavy-body oil is being filtered. The outlets 33 are therefore provided with the plugs 34, which are intended to be screwed into all of the outlets below the one which is in use, and the one in use is provided with a nozzle 35. The precipitated impurities are withdrawn from the right and left hand side of the outer chamber through the faucets 36 and 37.

The water-discharge trap may be shut off by the valve 38. A gage shows the dividing-line between the water and the oil in the outer chamber.

By the use of my particularly-constructed filtering-bag I am enabled to use a bag having nearly twice the filtering-surface which would be possible by a bag of ordinary construction, thus effecting economy in the size of the filtering-tank employed.

Having thus described my invention, what I claim as new, and desire to have secured to me by Letters Patent, is—

1. In an oil-filter, a suspended collar containing a horizontal perforated straining-plate, and a filtering-bag having its edges held about the periphery of the straining-plate, and a rod suspending the center of the bottom of the filtering-bag from the center of the straining-plate, substantially as and for the purposes herein specified.

2. In an oil-filter, an outer inclosing wall, an inner wall, a filtering-bag suspended between the inner and outer walls by having its edges held about and suspended from a perforated straining-disk, a rod whereby the center of the bottom of the filtering-bag is held to and supported from the center of the straining-disk, vertical perforated straining-partitions dividing the space between the inclosing wall and the inner wall through which the oil must pass after leaving the outer filtering-bag, an inlet extending through the inner wall and into an inner filtering-bag, a filtering-bag suspended within the inner wall, and an outlet-pipe extending from the bottom of the inner chamber through the inner and outer walls, and provided with a cock, substantially as and for the purposes specified.

3. In an oil-filter, an outer inclosing wall, an inner wall, a filtering-bag suspended between the inner and outer walls by having its edges held about and suspended from a perforated straining-disk, a rod whereby the center of the bottom of the filtering-bag is held to and supported from the center of the straining-disk, vertical perforated straining-partitions dividing the space between the inclosing wall and the inner wall through which the oil must pass after leaving the outer filtering-bag, an inlet extending through the inner wall and into an inner filtering-bag, an inner filtering-bag attached at its edges to and suspended from a disk, a rod connecting the center of the bottom of the inner filtering-bag to the center of the disk, an outlet-pipe extending from the bottom of the inner chamber through the inner and outer walls, the outer wall of the filter being provided with a double heating-jacket, composed of inner and outer jackets each of which is provided with a water-trap; and a water-discharge trap mounted upon the outer wall of the filter and near the lower edge thereof and adjustably adapted to draw off the water precipitated from the oil during the process of filtration, substantially as set forth.

4. An oil-filter, an outer inclosing wall, an inner wall, a filtering-bag suspended between the inner and outer walls by having its edges held about and suspended from a perforated straining-disk, a rod whereby the center of the bottom of the filtering-bag is held and supported from the center of the straining-disk, vertical perforated straining-partitions dividing the space between the inclosing wall and the inner wall through which the oil must pass after leaving the outer filtering-bag, an inlet extending through the inner wall and into an inner filtering-bag, an inner filtering-bag attached at its edges to and suspended from the top of the inner wall, a rod whereby the center of the bottom of the filtering-bag is held up and supported from the center of a disk or bar, an outlet-pipe extending from the bottom of the inner chamber through the inner and outer walls, the outer walls of the filter being provided with a double heating-jacket composed of inner and outer jackets each of which is provided with a water-trap, said jackets being separably connected in order that they may be used as separate jackets or as a compound jacket, and a water-discharge trap mounted upon the outer wall

of the filter and near the lower edge thereof and adapted to draw off the water precipitated from the oil during the process of filtration, and suitable discharge-outlets for impurities in and near the bottom of the outer wall, substantially as and for the purposes specified.

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

AUGUST H. FRANKE.

Witnesses:
M. G. IRION,
ALFRED A. EICKS.