A. L. HAWKESWORTH.

OIL PUMP.

APPLICATION FILED JULY 10, 1918.

1,296,077.

Patented Mar. 4, 1919.

2 SHEETS—SHEET 1.

Fig. 3.

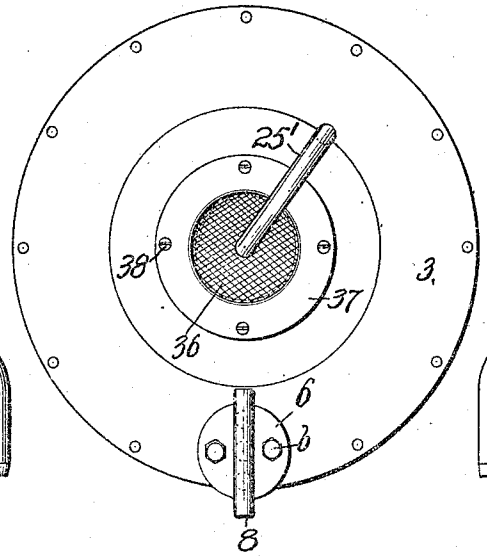


Fig. 1.

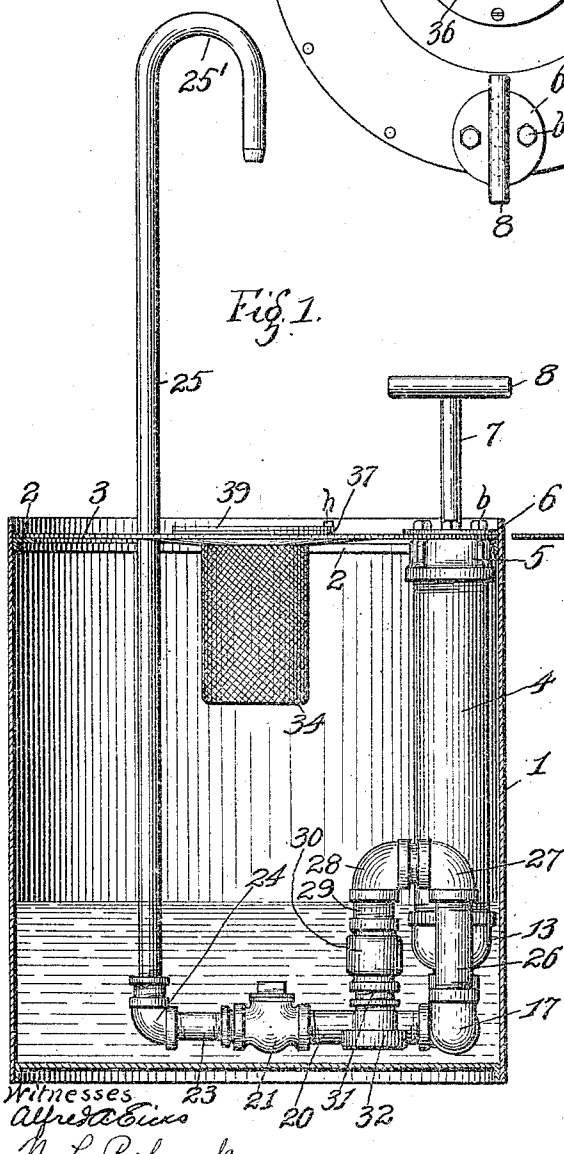
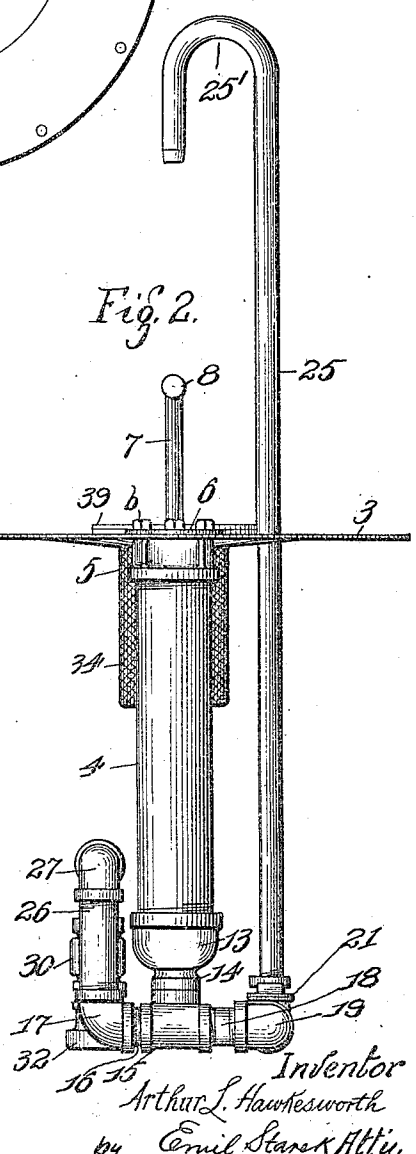


Fig. 2.



Witnesses
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2 SHEETS—SHEET 2.

Fig. 4.

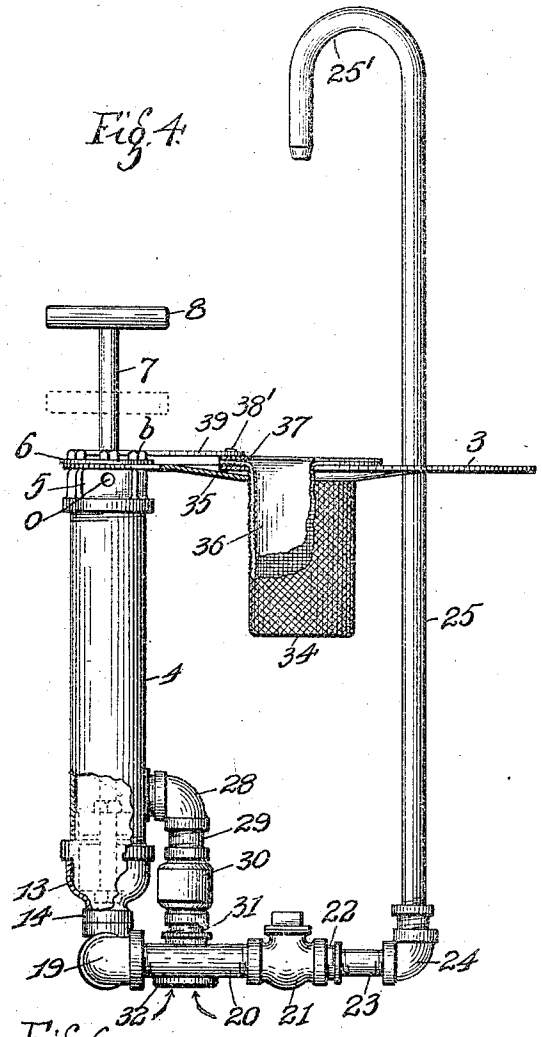


Fig. 5.

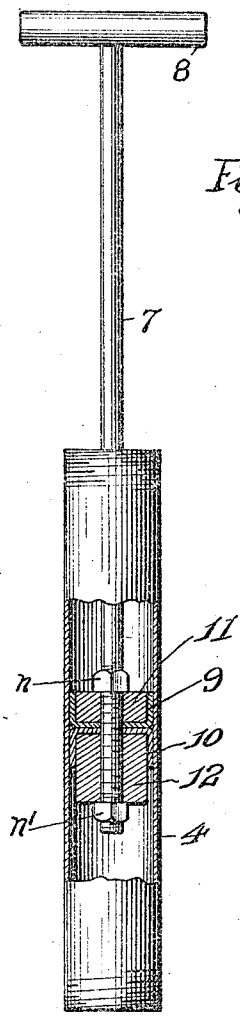


Fig. 6.

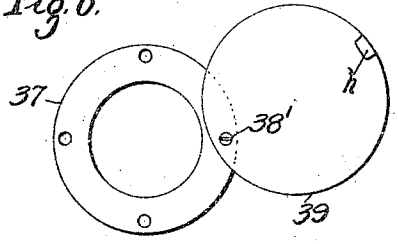


Fig. 7.

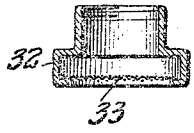
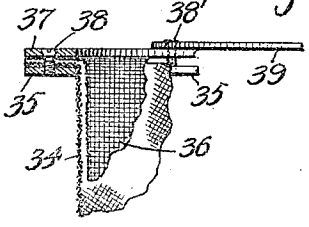


Fig. 8.



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UNITED STATES PATENT OFFICE.

ARTHUR L. HAWKESWORTH, OF BUTTE, MONTANA.

OIL-PUMP.

1,296,077. Specification of Letters Patent. Patented Mar. 4, 1919.

Application filed July 10, 1918. Serial No. 244,217.

To all whom it may concern:

Be it known that I, ARTHUR L. HAWKESWORTH, a citizen of the United States, residing at Butte, in the county of Silver Bow and State of Montana, have invented certain new and useful Improvements in Oil-Pumps, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

The present invention is directed to improvements in oil pumps (though of course not necessarily restricted thereto) and particularly to pumps of the reciprocating piston type, the object of the invention being to construct a pump which shall be simple, the same being composed in the main of standard fittings; one which shall be kept primed at all times thereby preventing the drying out of the leather or equivalent cup-packing entering into the construction of the piston; one in which the piston makes a tight joint with the walls of the cylinder or pump barrel; one capable of ready attachment to the tank or container from which the oil is to be pumped; one making adequate provision for filtering the oil before the oil enters the pump cylinder; and one possessing further and other advantages better apparent from the following detailed description in connection with the accompanying drawings in which—

Figure 1 represents a side elevation of the pump and the tank cover or removable head and filter screen thereof, the tank being in vertical middle section; Fig. 2 is a view of the pump and tank cover at right angles to Fig. 1; Fig. 3 is a top plan of the tank cover detached, showing the portions of the pump appearing above the cover, and showing the filter screen suspended from the cover; Fig. 4 is an elevation of the pump and tank cover or head taken at right angles to Fig. 2 and from the side opposite to Fig. 1; Fig. 5 is a detached elevation of the pump barrel or cylinder and operating piston or plunger therefor, with a part of the cylinder wall broken away; Fig. 6 is a top plan of the reinforcing washer for the flange of the filter screen, showing the swinging lid therefor; Fig. 7 is a vertical middle section of the intake fitting of the suction member of the pump showing the filtering screen therein; and Fig. 8 is a vertical sectional detail showing the construction of the filter screen bag carried by the removable cover or head of the tank.

Referring to the drawings, 1 represents a tank or container open on top and provided on the inside near its upper end with a flange formed by the horizontal leg of an angle bar 2, said flange serving to support and have bolted thereto the removable cover or head 3 of the tank as shown. The pump-barrel or cylinder 4 terminates at the top in a hollow fitting or cap 5 provided with a peripheral vent opening *o* (Fig. 4), said cap being directly securable to the cover 3, a washer 6 being preferably interposed between the cover and the heads *b* of the cap screws by which the parts are secured together. Traversing the cylinder 4 is a piston rod 7 terminating at the upper end in a handle 8, the inner end of the rod carrying the leather or equivalent cups 9, 10, placed back to back, the upper cup being provided with a washer 11 terminating substantially flush with the edge of the cup, and the lower cup 10 being provided with a washer 12 which extends a suitable distance below the edge of the cup, the extended washer being necessary to prevent the bottom cup 10 from striking or fouling the inner wall of the reducer 13 secured to the lower end of the pump barrel or cylinder 4. The members 9, 10, 11, and 12 collectively form a piston of which the cups 9, 10, may be considered as the packing elements, the washers 11 and 12, being held in position by the nuts *n*, *n*^{1}, or in any other suitable mechanical manner.

The reducer 13 is provided with a nipple 14 which connects it to a T 15, one end of the horizontal leg of said T being coupled by means of a nipple 16 to an elbow 17, the opposite end being similarly coupled by means of a nipple 18 to an elbow 19, the latter connecting through a horizontal nipple 20 with the horizontal discharge check-valve 21; a reducer 22 connecting the same with a nipple 23 which is coupled to an elbow 24 from which leads upward (through the cover 3) the discharge pipe 25 terminating at the top in the goose-neck 25′. The elbow 17 is coupled to a vertical nipple 26 which terminates at the top in an elbow 27 coupled in turn to a similar elbow 28 which, by means of a nipple 29 is connected to the vertical intake check valve 30. The casing of the valve 30 is coupled by means of a

nipple 31 to the intake fitting or half-pipe union 32 provided with a screen 33.

The tank cover 3 is provided with a central opening through which there is suspended from the cover a wire screen bag 34 the free end of which is formed with a stiffening flange 35, the wire being folded over the flange as shown (Fig. 8). The wire screen is adapted to receive a correspondingly shaped filter cloth 36 whose free end is likewise folded over the wire and over the flange 35, the parts being subsequently clamped together by a stiffening ring or reinforcing washer 37, suitable screws 38 holding the parts together. The composite filter bag thus formed is then dropped through the cover 3, the flanged portion 35 (with its washer 37) loosely resting on the cover as shown and holding the filter in position above the oil in the tank. One of the fastening screws (38′) may serve as a pivot for a swinging lid 39 with which the filter screen may be provided, said lid being swung around on top of the filter to keep rocks and dirt out of the filter when being taken down into a mine or similar places where the pump is to be used. Preferably the lid 39 is provided with a lug or finger hold *h* by which the same may be manipulated. The lid 39 may be removed when the screen is in position on the cover 3 and the pump is in service, or it may be swung to one side as shown in Fig. 4.

The oil supplied to the tank 1 may be either new, or it may be waste oil from different machinery requiring filtration, the tank 1 being placed below the machinery to permit the waste oil to drain thereinto through the filter bag 34, 36. The filtered oil is then pumped through suitable pipes (not shown) into a tank above (not shown). In mines and shops the goose neck delivery 25′ is used for filling small cans, any waste or drippings being caught in the filter and returned to the tank. The tank 1 takes the place of old style cans provided with a faucet at the bottom and which is often left open or gets knocked open allowing the oil to go to waste. Where the filter 34, 36, is employed the screen 33 of course is not necessary, but the screen is availed of in cases where the pump is used for drawing oil from the tank or from a barrel without a filter. Again, should the filter 34, 36, become punctured for any reason, the screen 33 would at once come into use and filter the oil before the same entered the pump cylinder. The check valves 21 and 30 may be of any approved type on the market and are herein shown conventionally and without any attempt at details. The parts 17, 26, 27, 28, 29, 30, 31 and 32 form collectively an inverted U-shaped suction member the crown or highest point of which is considerably above the intake end of the fitting 32 and above the lowest point reached by the piston, the check valve 30 at all times maintaining in the said member and in the bottom of the cylinder a sufficient quantity of oil to keep the pump well primed, thus preventing the drying out of the leather cups 9 and 10 when the pump is idle. It is obvious of course (Fig. 5) that on the downstroke the cup 10 operates to expel the oil from the cylinder or barrel and that on the upstroke the cup 9 prevents outside air from entering the barrel below the piston, the vacuum thus formed below the piston causing the oil from the tank to enter the cylinder 4 past the check valve 30, to be expelled past the check-valve 21 on the downstroke. Obviously I may change the details of the pump in many particulars without a departure from the spirit of the invention, and I may use the pump for operating on any liquids whatsoever, the same not being restricted to the pumping of oil.

Having described my invention what I claim is:

1. In a pump of the character described, a suitable cylinder, a reciprocating piston therefor, an inverted U-shaped suction member connected to the intake end of the cylinder, the intake leg of the suction member being provided with a valve positioned between the free end of said leg and the crown of the suction member, the said crown being disposed above the lowest point reached by the piston, a discharge valve at the bottom of the cylinder, and a discharge pipe leading from said valve.

2. In a pump of the character described, a suitable cylinder, a piston therefor, an inverted U-shaped suction member, a reducer connecting said member to the intake end of the cylinder, the intake leg of the suction member being provided with an intake valve positioned between the free end of said leg and the crown of said suction member, the said crown being disposed above the lowest point reached by the piston, a discharge valve coupled to the reducer, and a discharge pipe leading from said valve.

3. A pump of the character described, comprising a cylinder, a piston therefor, a reducer terminating the lower end of the cylinder, a T coupled to the reducer, an inverted U-shaped suction member coupled to one end of the horizontal leg of the T, the crown of the suction member being above the lowest point reached by the piston, an intake valve in the intake or free leg of the suction member, a pipe leading from the opposite end of the T, a discharge valve coupled to said pipe, and a discharge pipe leading from said valve, the parts operating substantially as, and for the purpose set forth.

4. In a pump of the character described, a suitable cylinder, a piston therefor, a piston

rod for the piston, an inverted U-shaped suction member connected to the intake end of the cylinder, the intake leg of the suction member being provided with an intake valve positioned between the free end of said leg and the crown of the suction member, the said crown being disposed above the lowest point reached by the piston, a discharge valve at the bottom of the cylinder, a discharge pipe leading from said valve to a point beyond the upper end of the cylinder, and a rigid connecting member between the discharge pipe and said upper end of the cylinder.

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

ARTHUR L. HAWKESWORTH.

Witnesses:

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NEIL G. MCLEOD.