

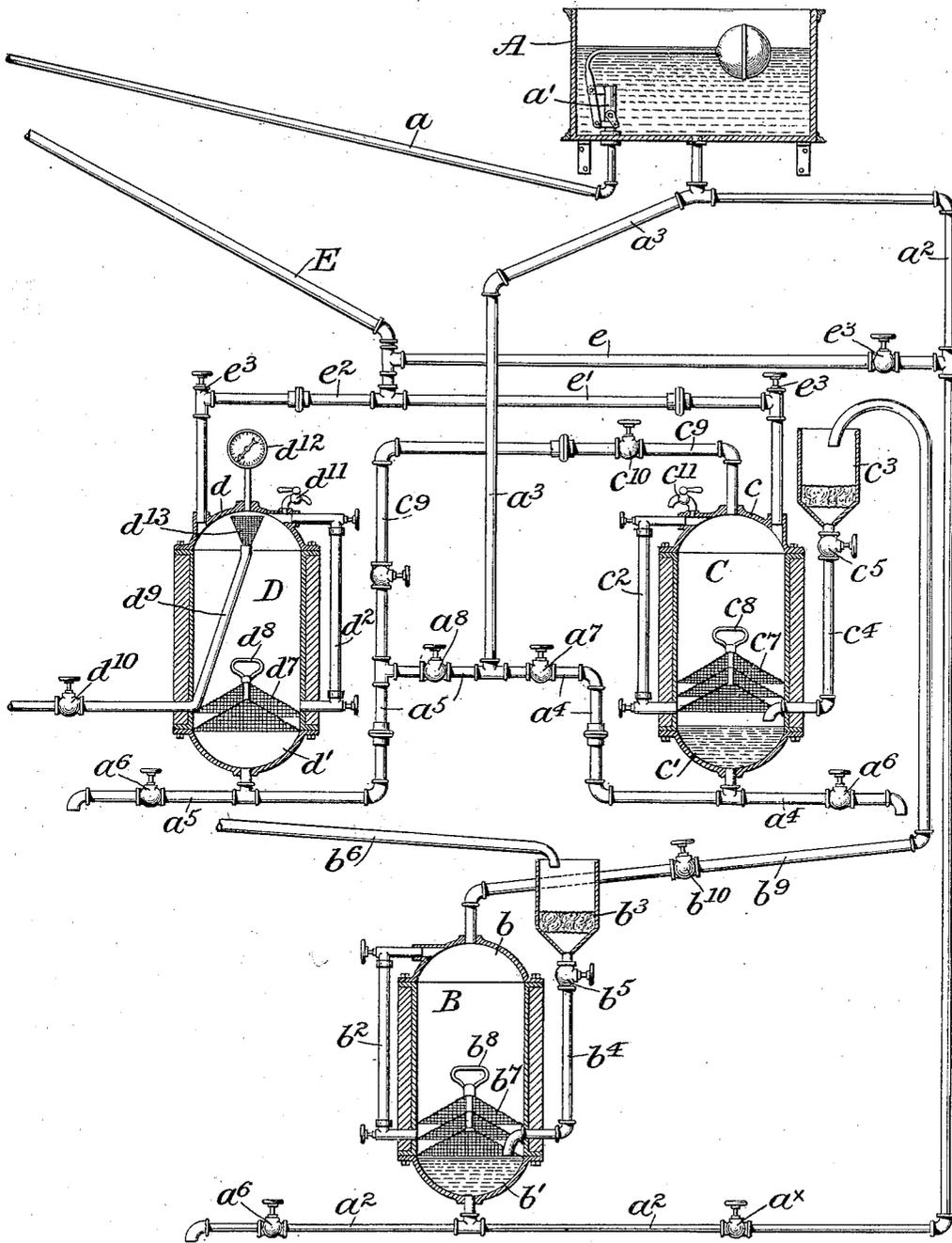
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Patented June 26, 1900.

A. ERBOR.
LUBRICATOR.

(Application filed June 14, 1899.)

(No Model.)



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UNITED STATES PATENT OFFICE.

ANDREW ERBOR, OF COPLAY, PENNSYLVANIA.

LUBRICATOR.

SPECIFICATION forming part of Letters Patent No. 652,354, dated June 26, 1900.

Application filed June 14, 1899. Serial No. 720,473. (No model.)

To all whom it may concern:

Be it known that I, ANDREW ERBOR, a citizen of the United States, residing in Coplay, in the county of Lehigh, State of Pennsylvania, have invented certain new and useful Improvements in Lubricators, of which the following is a specification, reference being had to the accompanying drawing, forming a part hereof.

This invention relates to lubricating apparatus of that class in which the lubricant is distributed under a suitable pressure direct from a tank or reservoir through pipes to the various bearings where it is required. It has been proposed heretofore in such apparatus to provide for the collection and return to the main tank or reservoir of the waste oil or oil which drips from the bearings with the object of effecting an economy in the consumption of the oil.

It is the object of the present invention to improve the construction of such apparatus so that it can be easily managed and controlled perfectly at all times; that the oil shall be maintained always under a uniform pressure of sufficient degree which shall not be subject to variation; that the waste oil shall not only be returned to the main or distributing tank or reservoir, but shall be cleared of all particles of foreign matter before it reaches such tank or reservoir; that the oil shall not be at any time subjected to any churning action or other agitation which would interfere with the proper filtration of the oil, and that the entire apparatus may be easily and thoroughly cleaned from time to time.

The improvements will be more fully described hereinafter with reference to the accompanying drawing, which shows an approved form of the apparatus, partly in section and partly in side elevation.

The apparatus represented in the drawing comprises a water-tank A, which is placed at a sufficient elevation to give the degree of fluid-pressure required to cause the oil to move, as hereinafter explained, a closed filtering and separating tank B, a second closed filtering and separating tank C, and a distributing-tank D, also closed. One of the tanks B or C might be dispensed with; but in practice it is found that the use of both

gives better results. The water-tank A is connected with a convenient water-supply, as by a pipe *a*, and is provided with a float-valve *a*¹ or other usual or convenient means for maintaining the water in the tank at a substantially-uniform level. Connection is established between the water-tank and the bottoms of the several tanks B, C, and D, as by pipes *a*² and *a*³ and the branch pipes *a*⁴ and *a*⁵. The pipe *a*² and the branch pipes *a*⁴ and *a*⁵ are carried beyond their respective connections with the tanks B, C, and D to afford a convenient means for drawing off from time to time the contents of the several tanks to permit of the thorough cleansing of the system, and each of such extensions is provided with a stop-valve *a*⁶ to prevent the escape of water or oil while the apparatus is in use. Stop-valves *a*⁷ and *a*⁸ are also provided in the branch pipes *a*⁴ and *a*⁵, respectively, to control the application of the water-pressure as may be required.

The tank B may be of any convenient shape and size, but preferably has a body of uniform section with a spherical or rounded top and bottom *b* and *b*¹ to facilitate cleansing and in the case of the bottom to permit the contents of the tank to be drawn off completely. The tank is also provided with an ordinary sight-glass *b*², and a filter *b*³ is connected, through a pipe *b*⁴ and stop-valve *b*⁵, with the lower portion of, the tank. The waste oil may be returned from the bearings through a pipe *b*⁶ and delivered to the filter *b*³, from which it passes to the bottom of the tank B. Within the tank and above the opening of the pipe *b*⁴ is a separator, which consists of one or more conical wire screens *b*⁷, which may be secured to a suitable handle *b*⁸, by means of which the separator can be lifted out when the top *b* of the tank is removed. The screen or separator serves to separate from the oil, which rises through it, such particles of foreign matter as might be carried up with the oil, and the inclination of the wire screen, owing to the conical form, prevents such foreign particles from clogging the interstices of the screen. A pipe *b*⁹ leads from the top of the tank B to deliver the oil to the next tank in order. These separating-tank C is also provided with a rounded top and bottom *c* and *c*¹, a sight-glass *c*², a filter *c*³, connected with the

bottom of the tank through a pipe c^4 and stop-valve c^5 , a separator c^7 c^8 , also in the form of a conical wire screen, and a delivery-pipe c^9 from the top of the tank. The several parts
 5 just referred to have the same functions as like parts in the tank B and need not be further described herein. The pipe c^9 communicates, through a stop-valve c^{10} , with the bottom of the tank D, being conveniently
 10 connected to the branch pipe a^5 before referred to. A vent-cock c^{11} is also provided for the tank C to permit the escape of the contained air.

The distributing-tank D, like the tanks B
 15 and C, is provided with a rounded top and bottom d d' , a sight-glass d^2 , a separator d^7 d^8 , likewise in the form of a conical wire screen, and a delivery-pipe d^9 , provided with a stop-valve d^{10} . It may also have a vent-cock d^{11} and a pressure-gage d^{12} . The delivery-pipe d^9 preferably rises within the tank toward the top, and at its upper end is provided with a screen d^{13} , of wire-gauze, in the form of an inverted cone.

For the purpose of permitting the thorough
 25 cleansing of the entire apparatus from time to time a steam-pipe E is connected by a branch e with the pipe a^2 and by branches e' and e^2 with the tanks C and D, respectively,
 30 stop-valves e^3 being provided in the several branches.

In starting the operation of the improved apparatus the valves a^6 , a^7 , a^8 , a^x , and e^3 are closed and the tank A is filled with water.
 35 The tank C is then filled with fresh oil through the filter c^3 , the vent-cock c^{11} being open. The stop-valve a^7 is then opened, the cock c^{11} and the valve c^6 having been closed, and the water, entering the bottom of the tank C,
 40 forces the oil through the pipe c^9 into the tank D. When the tank D is full, the valves a^7 and c^{10} are closed and the valves a^8 and d^{10} are opened. The water-pressure then forces the oil out through the pipe d^9 , the distribution of the oil to the several bearings being
 45 effected by suitable pipes, not necessary to be shown or referred to herein.

The waste oil which drips from the bearings may be collected and brought in any convenient manner to the tank B, being introduced into the bottom of the same through the connected filter, the water-pressure being at the time shut off from the tank. As the oil accumulates it rises through the separating-screens and when a sufficient quantity has accumulated the water-pressure is admitted to the tank and the oil is forced up into the tank C through its connected filter. The purified oil is then driven over into the
 50 tank D in the manner already described.
 55

Whenever it is desired to thoroughly cleanse the apparatus, the water-pressure is cut off, the various valves are opened, and steam is admitted by the described connec-

tions to all parts of the apparatus, the tanks
 65 having been first emptied by opening the valves provided for that purpose in the pipe extensions.

It will now be clear that the oil is delivered
 70 to the bearings under the requisite pressure free from particles of foreign matter and without being subjected to any agitation which would be liable to cause particles of foreign matter to be carried onward with the oil. Such particles of foreign matter as are separated from the oil sink into the rounded bottoms of the tanks, from which they are easily and completely removed whenever necessary.

It will be evident that various changes may be made in the details of construction and
 80 arrangement as may be desirable to suit different conditions of use without departing from the spirit of the invention.

I claim as my invention—

1. A lubricating apparatus comprising a
 85 separating-tank in which the oil is received, a distributing-tank, a delivery-pipe leading from the upper part of said distributing-tank, a connection from the upper part of the receiving-tank to the distributing-tank, an elevated water-tank connected to the bottom of said receiving-tank and to the bottom of said distributing-tank, and valves to control the admission of water to said receiving and distributing tanks, substantially as shown and
 90 described.

2. A lubricating apparatus comprising a receiving-tank, a distributing-tank, a separating-screen in said distributing-tank, a delivery-pipe leading from the upper part of said
 10 distributing-tank, a connection from the upper part of the receiving-tank to the distributing-tank below said screen, an elevated water-tank connected to the bottom of said receiving-tank and to the bottom of said distributing-tank, and valves to control the admission of water to said receiving and distributing tanks, substantially as shown and
 105 described.

3. A lubricating apparatus comprising a
 110 tank for the reception of waste oil, a separating-tank, and a distributing-tank, connections to deliver oil from the top of the first-named tank to the bottom of the separating-tank and from the top of the separating-tank
 115 to the bottom of the distributing-tank, a delivery-pipe from the top of the distributing-tank, a screen interposed in said separating-tank, a water-tank connected to the bottoms of said tanks, and valves to control the admission of water to said tanks, substantially as shown and described.

This specification signed and witnessed this
 120 27th day of May, A. D. 1899.

ANDREW ERBOR.

In presence of—

H. B. YINGLING,
 J. O. YINGLING.