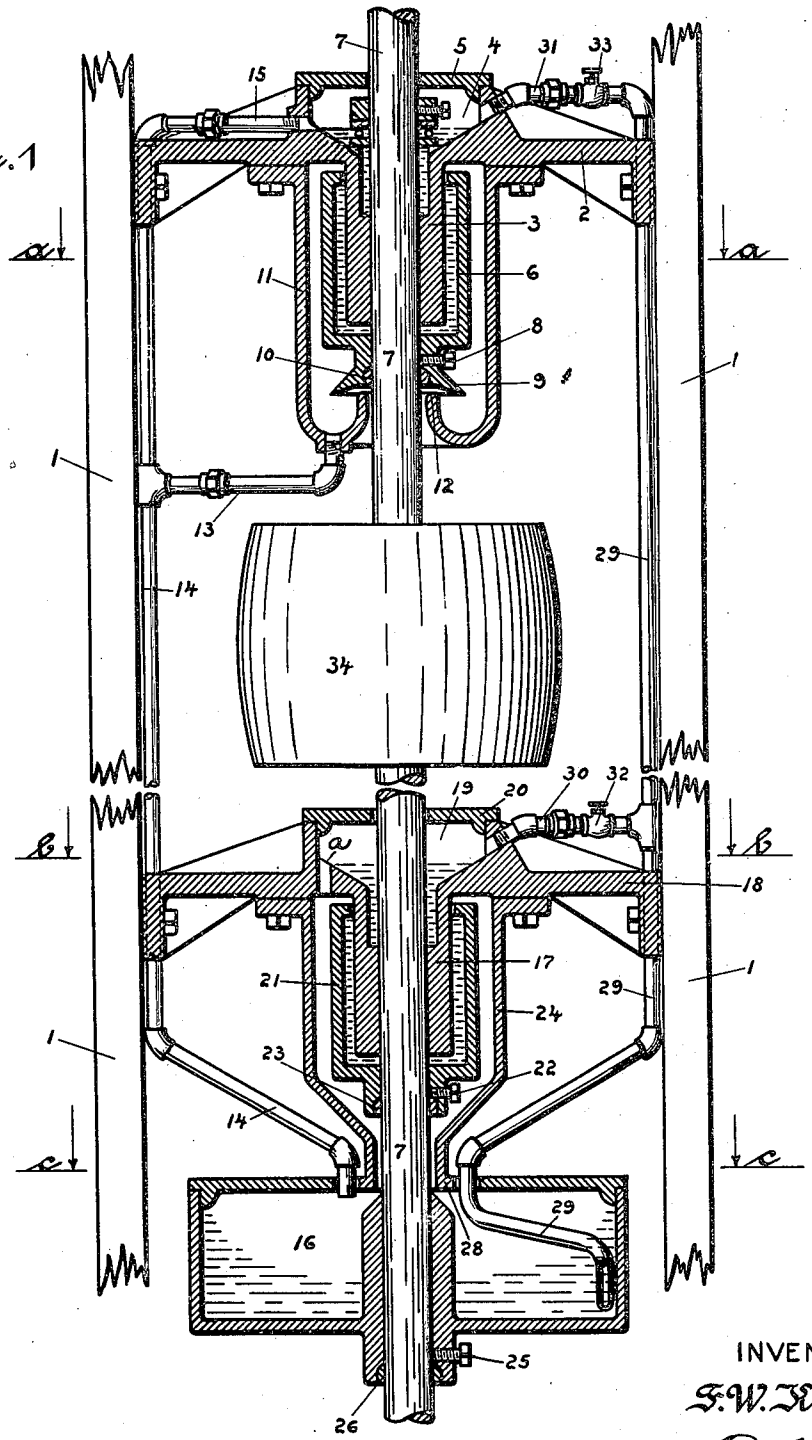
Jan. 1, 1924 1,479,304

F. W. KROGH

LUBRICATING SYSTEM FOR VERTICAL SHAFTS

Filed May 29, 1918 2 Sheets-Sheet 1

Fig. 1



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Fig. 2.

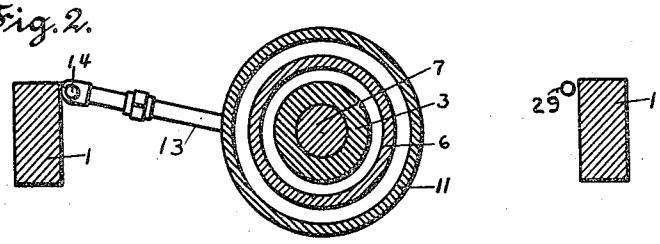


Fig. 3.

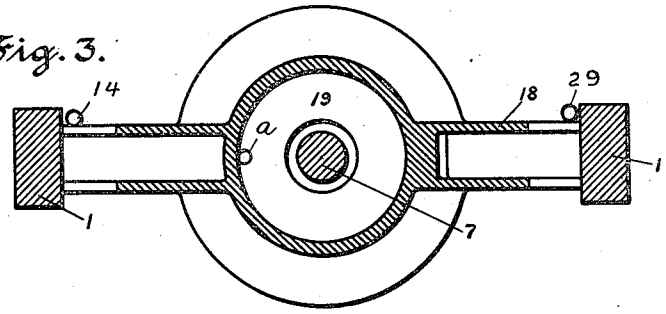
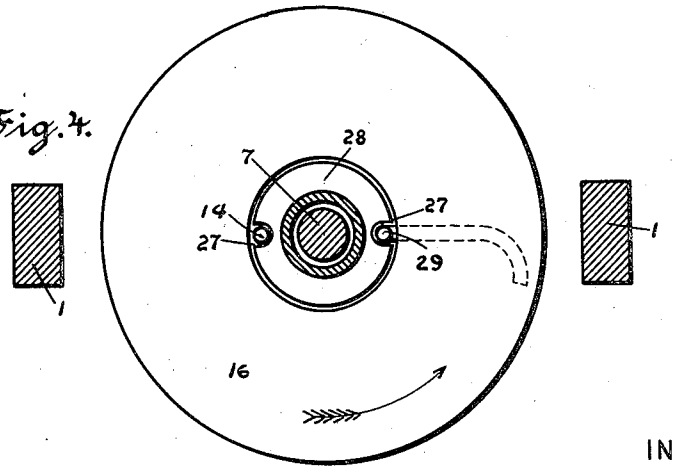


Fig. 4.



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UNITED STATES PATENT OFFICE.

FERDINAND W. KROGH, OF SAN FRANCISCO, CALIFORNIA; MARY L. KROGH, FANNIE J. CLARKE, C. A. KROGH, AND OSCAR POULSEN, LEGATEES BY COURT ORDER OF DISTRIBUTION OF THE ESTATE OF SAID FERDINAND W. KROGH, DECEASED, ASSIGNORS TO KROGH PUMP AND MACHINERY COMPANY, OF SAN FRANCISCO, CALIFORNIA, A CORPORATION OF CALIFORNIA.

LUBRICATING SYSTEM FOR VERTICAL SHAFTS.

Application filed May 29, 1918. Serial No. 237,631.

To all whom it may concern:

Be it known that I, FERDINAND W. KROGH, a citizen of the United States, of San Francisco, California, have invented certain new and useful Improvements in Lubricating Systems for Vertical Shafts, whereof the following is a specification.

This invention relates to enclosed lubricating systems for vertical shafts.

The invention comprises, inter alia, a lubricant supply tank at the bottom of the system, means for conveying the lubricant from said tank to the various points where it is desired, said tank being so connected to the shaft as to be rotated thereby, and a lubricant return connection, for returning the surplus lubricant from the receiving tanks to the supply tank.

In the accompanying two sheets of drawings I have illustrated the invention in its preferred form.

Figure 1 is an elevation, largely in section, of the complete system.

Figure 2 is a cross-section on the line *a*, *a* of Figure 1.

Figure 3 is a cross-section on the line *b*, *b*, of Figure 1.

Figure 4 is a cross-section on the line *c*, *c*, of Figure 1, showing also, in dotted lines, the entrance to the supply pipe.

In the figures:—1 represents a part of the frame of the apparatus, to which the various parts may be attached.

Near the top of the frame 1 is a bracket 2, which supports the upper bearing 3 and the receiving tank 4 above the same, the latter being provided with a cover 5. Surrounding the bearing 3 is a rotating receptacle 6, secured to the shaft 7, by a set screw 8, or otherwise, so as to be rotated thereby. The lower edge of the receptacle is petticoated, as at 9, and the joint between the shaft and the receptacle is caulked, as with lead packing 10. Surrounding the receptacle 6 is a cup 11, whose lower edge is upturned in an annular flange 12 under the petticoat 9. The lubricant working through the bearing 3 is caught by the receptacle 6, which is always full of lubricant and when tha overflows, by the cup 11, and passes from the latter, through pipes 13 and 14 into the supply tank 16. Overflow from the receiving tank 4 passes through pipes 15 and 14 to the supply tank 16. A similar overflow may be provided for receiving tank 19, or it may overflow through perforation *a* into the fixed chamber 24 and into the supply tank 16 below. The lowermost bearing of the system is represented at 17, as supported by a bracket 18. This bearing has above it a receiving tank 19, with a cover 20. Surrounding the bearing 17 is a receptacle 21, secured to the shaft by a set-screw 22, and packed at 23. A fixed chamber 24 encloses the chamber 21 and opens, below, into the supply tank 16.

The supply tank 16 is secured to the shaft so as to rotate therewith, by a set-screw 25, or otherwise, and is provided with a packing 26, to prevent leakage. The inlet and exit pipes enter the tank near its middle, through notches 27, as shown in Figure 4, in a flange 28 at the bottom of chamber 24. The exit or feed pipe 29, within the tank, approaches its circumference, and there has its mouth turned in a direction opposed to the direction of rotation of the tank, so that the centrifugal force of the contents of the tank force them up the pipe. Above the tank, the pipe 29 is provided with branches 30 and 31, connecting respectively with receiving tanks 19 and 4, and these branches have valves 32 and 33, respectively, to control the flow through them.

Any number of bearings may be interposed between the upper and lower bearings 3 and 17, according to the length of the shaft, and the necessities of the case. Such intermediate bearings will be mostly, as to their accessories, similar to the upper bearing 3.

A pulley 34 may be provided to drive the shaft.

Having thus described my invention, and an embodiment of it, in the full, clear and exact terms required by law, and knowing that it comprises novel, useful and valuable improvements in the art to which it pertains, I here state that I do not wish to be limited to the precise construction and ar-

rangement of the several parts, as herein set forth, as the same may be variously modified by a skilled mechanic without departing from the spirit of the invention.

What I claim and desire to secure by Letters Patent of the United States, is the following, to-wit:—

1. An enclosed lubricating system comprising a fixed closed receiving tank and a rotating supply tank, an overflow rotating receptacle therebetween, a stationary cup surrounding said receptacle and a pipe for delivering lubricant from said cup to said supply tank.

2. An enclosed lubricating system, comprising a bracket provided with a lubricant receiving tank, a rotating supply tank, a pipe connected to said receiving tank for conducting surplus lubricant therefrom directly to said supply tank and a pipe connected to said supply tank for conducting lubricant therefrom to said receiving tank.

3. An enclosed lubricating system for a vertical shaft, provided with a bearing, a supply tank for said bearing, a rotating overflow receptacle surrounding said bearing and a fixed receiving tank surrounding said overflow receptacle, a supply tank and an overflow pipe connected to said receiving tank and the supply tank for returning the surplus lubricant from the receiving tank back to the supply tank.

In testimony, that I claim the foregoing I have hereto set my hand this 24 day of May, 1918, in the presence of two witnesses.

FERDINAND W. KROGH.

Witnesses:
NICHOLAS KORUGOLD,
FLORENCE L. WOLFE.