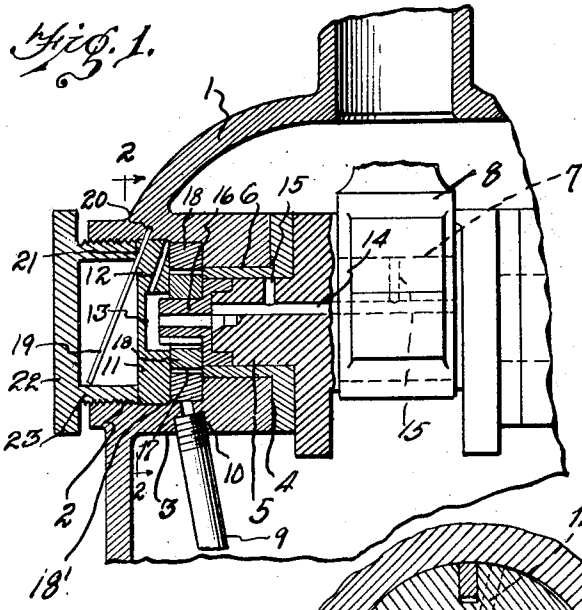
June 5, 1928. 1,672,360

T. C. WHITEHEAD

LUBRICATING SYSTEM

Filed Dec. 8, 1924

Fig. 1.



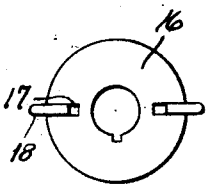


Fig. 4

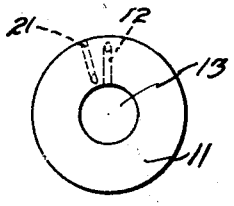


Fig. 3

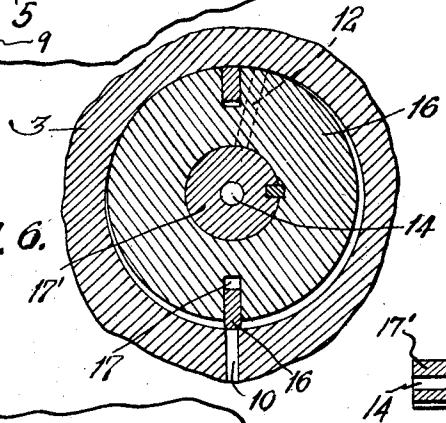


Fig. 6.

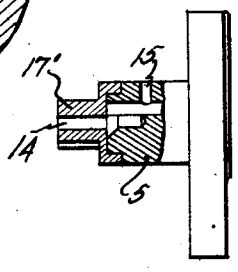


Fig. 5

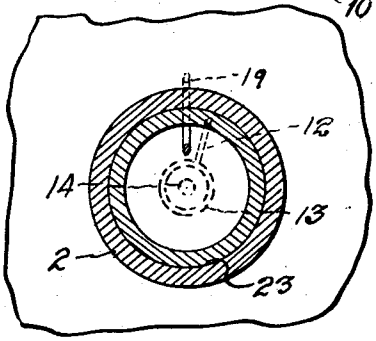


Fig. 2

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Patented June 5, 1928. 1,672,360

UNITED STATES PATENT OFFICE.

THOMAS C. WHITEHEAD, OF DETROIT, MICHIGAN.

LUBRICATING SYSTEM.

Application filed December 8, 1924. Serial No. 754,670.

This invention relates generally to lubricating systems and refers more particularly to means for lubricating the bearings for rotatable crank shafts and the like.

One of the essential objects of the invention is to provide a reliable lubricating system in which the lubricant is drawn from a suitable source of supply and is fed to the bearings by simple and effective means associated with the shaft.

A further object is to provide a compact lubricating system that is composed of relatively few parts which may be easily and quickly assembled or taken apart and can be manufactured at a comparatively low cost.

With the above and other objects in view, the invention consists in certain novel features of construction, combinations and arrangements of parts as will be more fully described and particularly pointed out in the appended claims.

In the accompanying drawing;

Figure 1 is a vertical sectional view through a crank case enclosing the lubricating system embodying my invention.

Figure 2 is a vertical sectional view taken on the line 2—2 of Figure 1.

Figure 3 is a front elevation of the end plate.

Figure 4 is a front elevation of the rotor.

Figure 5 is a fragmentary elevation of the crank shaft with parts broken away.

Figure 6 is an enlarged fragmentary sectional elevation taken through the rotor and the blades.

Referring now to the drawing in which like characters of reference designate corresponding parts throughout the several views, the numeral 1 designates a crank case, preferably of a pump casing of a domestic refrigerating apparatus, having an opening 2, and an inwardly extending tubular projection 3 at one end thereof. As shown, this projection is preferably in alignment with the opening 2 and is provided at its inner end with an annular flange 4 that receives one end of a suitable crank shaft 5. This shaft may be supported at its opposite end by any suitable means (not shown), but is preferably journalled in a bearing 6 that extends through the flange 4 of the projection 3.

In order that a suitable lubricant such as oil may be supplied to the bearing 6, as well as to the outer surface of the crank pin 7 upon which the lower end of the connecting rod 8 is mounted, I preferably provide a suitable intake pipe or conduit 9 that is connected to the projection 3 adjacent to the outer end of the flange 4. This conduit 9 may lead from any suitable source of supply but preferably threadedly engages the walls of a radical passage 10 in the projection 3. For conveying the oil from the projection 3 to the bearings, I preferably provide a circular end plate 11 having a radical passage 12 that inclines outwardly from the inner face of the plate and connects into a central recess or pocket 13 that communicates with a longitudinally extending passage 14 and the branch transversely extending passages 15 in the crank shaft 5. As shown, the short branch passages 15 in the crank shaft are preferably spaced the proper distance apart so that they will lead to the bearings for the shaft, including the bearing 6, and to the connecting rod 8.

In order that the oil will be supplied steadily to the bearings while the crank shaft is rotating, I preferably provide a rotor 16 that is preferably keyed to the reduced end portion 17′ of the crank shaft between the end plate 11 and the flange 5 and is provided at spaced points throughout its periphery with radial slots 17 in which suitable blades or wings 18 are adapted to slide for engagement with the inner walls of the projection 3. Thus, the arrangement is such that rotation of the shaft and rotor will cause the blades 18 to be thrown outwardly so that they will travel about the inner walls of the tubular projection 3. This will create a vacuum in the tubular projection and will have the effect of drawing the oil through the inlet passage 10 from the conduit 9 into the tubular projection 3. The oil will then be forced around the tubular projection by the blades 18 and expelled through the radial passage 12 in the end plate 11. Moreover, when the crank shaft is rotating rapidly, centrifugal action will thow outward any lubricant collecting in the branch passages 15 which will produce a suction that will be communicated through the longitudinally extending passage 14 to the central recess or pocket 13 in the end plate, consequently the lubricant will be supplied steadily to the bearings.

As shown in Figure 1 of the drawing, the end plate 11 preferably fits snugly in the tubular projection 3 against an annular

shoulder 18 thereof and is preferably held in position by means of a removable pin or rod 19 that extends through the plate and engages a suitable socket 20 in the tubular projection 3. This pin may be readily inserted into position or removed whenever desired by simply sliding the same in the passage 21 in the end plate 11. To prevent accidental displacement of the pin, I preferably provide a cap nut 22 having an annular flange 23 that preferably threadly engages the walls of the opening 2 and receives the free end of the pin 19.

While it is believed that from the foregoing description the nature and advantages of the invention will be readily apparent, I desire to have it understood that I do not limit myself to what is herein shown and described, and that such changes may be resorted to when desired as fall within the scope of what is claimed.

What I claim as my invention is:

1. In a lubricating system, the combination of a crank case having an inwardly extending tubular projection formed with an inlet passage for oil, a shaft journalled in the projection having a longitudinally extending passage for oil communicating with the passage aforesaid, a plate sleeved within the end of the tubular projection having a radial passage in communication with the longitudinal passage in the shaft and means for forcing the oil through the radial passage into the longitudinal passage including a rotor secured to the end of said shaft.

2. In a lubricating system, the combination of a crank case having an inwardly extending tubular projection formed with an inlet passage for oil, a shaft journalled in the projection having a longitudinally extending passage for oil communicating with the passage aforesaid, a plate sleeved within the end of said tubular projection and spaced from the forward wall of the projection forming an oil chamber, said plate having a pocket communicating with the longitudinal passage in the shaft and having a radial passage leading from the pocket into the oil chamber.

3. In a lubricating system, the combination of a crank case having an inwardly extending tubular projection formed with an inlet passage for oil, a shaft journalled in the projection having a longitudinally extending passage for oil communicating with the passage aforesaid, a plate sleeved within the end of said tubular projection and spaced from the forward wall thereof forming an oil chamber, said plate having a passage establishing communication between the oil chamber and the longitudinal passage in the shaft, and a rotor positioned upon the shaft and arranged within the oil chamber aforesaid to force oil through the passage in the plate into the longitudinal passage in the shaft.

4. In a lubricating system, the combination with a crank case, of a tubular projection on a wall of the crank case having a transverse inlet passage for oil and having a circumferentially extending shoulder adjacent to said inlet passage, a shaft journalled in the tubular projection having a longitudinally extending passage for oil and radial discharge passages leading from said longitudinal passage, a plate non-rotatably sleeved within said tubular projection abutting the circumferentially extending shoulder and cooperating with the tubular projection to form an oil chamber, and means disposed within said chamber and actuated by the shaft for drawing oil from the inlet passage in the tubular projection and expelling it into the longitudinal passage aforesaid.

5. In a lubricating system, the combination with a crank case, of a tubular projection on a wall of the crank case having a transverse inlet passage for oil and having a circumferentially extending shoulder adjacent to said passage, a crank shaft in the case having a longitudinally extending passage for oil, and a radial discharge passage leading from the longitudinal passage, a bearing for the shaft adapted to receive oil from the discharge passage in the shaft and means for supplying oil to the longitudinal passage in the shaft including a plate sleeved within said tubular projection and abutting said shoulder, said plate having a pocket communicating with the longitudinal passage and having a radial passage leading to the pocket, a rotor on the shaft having means for transferring oil from a suitable source to the passage in said plate, means for nonrotatably securing said plate in the tubular projection including a removable pin engaging the plate and case, and means for holding the plate in engagement with the circumferentially extending shoulder on the tubular projection including a closure for the latter having an annular flange engageable with one wall of the plate to hold the latter in engagement with the shoulder.

In testimony whereof I affix my signature.

THOMAS C. WHITEHEAD.