

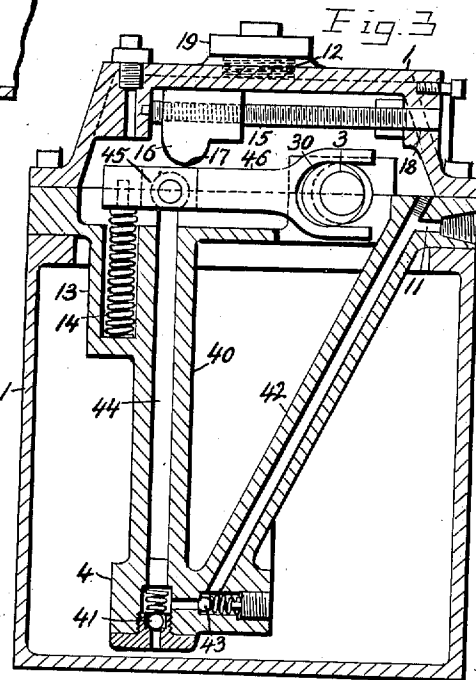
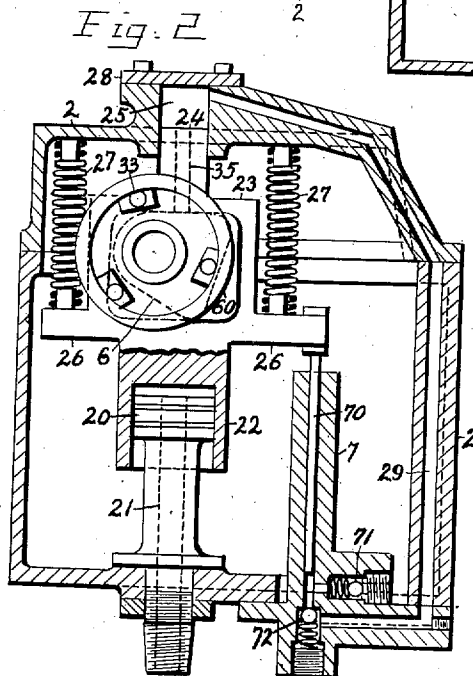
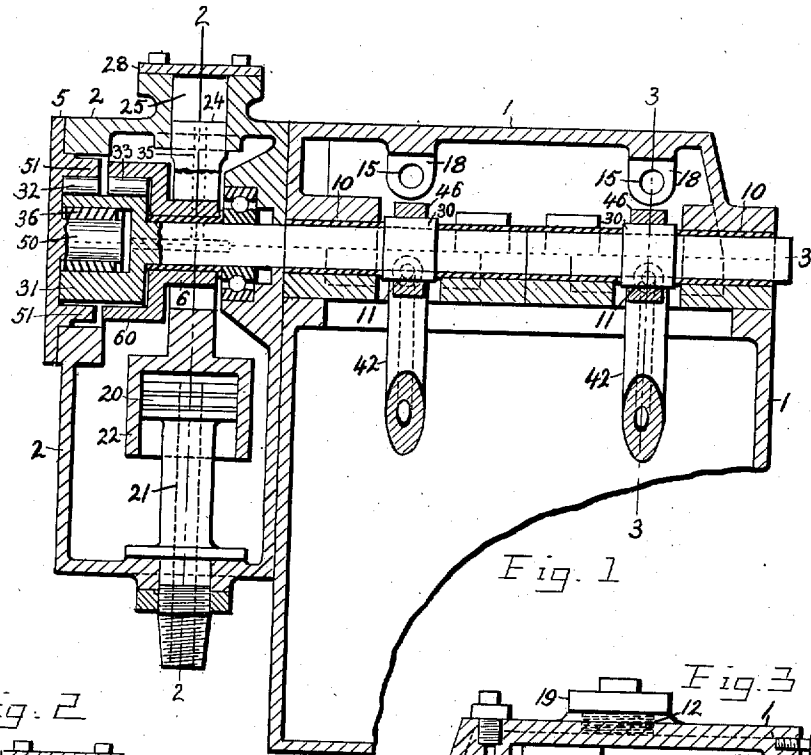
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M. F. BRODEN

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LUBRICATOR

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INVENTOR
M. F. Broden
BY *Hambury A. Sudden*
ATTORNEY

UNITED STATES PATENT OFFICE

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LUBRICATOR

Martin F. Broden, Montreal, Quebec, Canada

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3 Claims. (Cl. 184—27)

This invention relates to oil lubricators and particularly to those of the force feed type.

The object of the invention is to provide a novel form of lubricator mechanism adapted to operate one or more pumps at a very accurately controlled rate, in which the drive mechanism is self lubricating.

A further object is to provide a simple drive mechanism in which the movement required to rotate the shaft is slight.

A further object is to provide a pump stroke control of novel and simple construction whereby very accurate adjustment can be made from outside the device.

Further objects will be set forth hereinafter.

Reference is made to the accompanying drawing in which:

Figure 1 is a vertical cross section through the axis of the drive shaft.

Figure 2 is a vertical cross section on the line 2—2 of Figure 1.

Figure 3 is a vertical cross section on the line 3—3 of Figure 1.

The device as shown in Fig. 1 comprises two oil chambers secured together.

Chamber 1 is shown in Figures 1 and 3.

Chamber 2 is shown in Figures 1 and 2.

In chamber 1 bearings 10 journal the shaft 3 which extends into the chamber 2 and is there rotated in steps by mechanism to be described hereinafter.

Mounted in chamber 1 is a vertical plunger pump 4 with a ball inlet valve 41 adjacent the bottom of the chamber 1. Integral with the cylinder 40 of the pump 4 is an inclined tube 42 from a ball outlet valve 43 which terminates in an outlet 11 in the said wall of the chamber 1.

The chamber 1 has an inlet 12 in its top wall through which the oil is fed and has a stopper 19. The plunger 44 of the pump 4 at its upper end has an eye 45 by means of which it is pivoted to a rocking forked lever 46. Integral with the cylinder 40 and extending from the wall of chamber 1 is a spring cup 13. A coil spring 14 seated in the cup 13 bears upwardly on the lever 46. On the shaft 3 is mounted an eccentric cam 30 which rotates in the fork of the lever 46. Journalled in bearings 18 in the opposite side walls of the chamber 1 at right angles to the shaft 3 is a screw threaded bar 15 which meshes with the internally threaded bore of a fulcrum block 16. The block 16 has a rocking surface 17 which bears on the top surface of the lever 46. By rotating the bar 15 the position of the

rocking surface 17 of the block 16 can be varied and adjusted to provide very minute variations in the stroke of the pump 4 and therefore its output.

The drive mechanism comprises a stationary piston 20 mounted on the bottom of the chamber 2 through which a steam passage 21 runs. The cylinder 22 which extends upwards to a yoke 23 and an extension 24 which travels in a chamber 25 in the top of chamber 2. The yoke 23 has lateral extensions 26 on which are mounted coil springs 27 which bear on the top of the chamber 1 and force the cylinder 22 and its extensions normally downwards.

The end 31 of the shaft 3 is journalled about a pin 50 from a plate 5 bolted to the wall of chamber 2 and carries reversed sets of one way clutches 32 and 33. The plate 5 has a clutch ring 51 which bears on the outer set 32 of clutches. The inner set 33 of clutches bears on a ring 60 extending from a cam 6 journalled on the shaft 3 and travelling in the yoke 23. The extension 24, cam 6 and shaft 3 have a passage 35 bored through them to feed oil from the chamber 25 to bearing 36.

Extending upwards from the bottom of the chamber 2 and parallel with the piston 20 is a pump cylinder 7 in which a plunger 70 secured to one of the extensions 26 reciprocates with the cylinder 22. At the lower end of the cylinder 7 is an inlet valve 71 from the chamber 2, and an outlet valve 72 to a passage 29 which runs up the wall of the chamber 2, to the chamber 25. This pump provides lubrication to the drive mechanism. The chamber 25 has a removable cover 28 through which oil may be fed to the chamber 2.

With a construction as above set forth, the operation of the lubricator is as follows:

The chamber 1 is charged with oil through the inlet 12 and the chamber 2, through the chamber 25.

Steam in intermittent impulses is fed through the passage 21 to the cylinder 22, forces the cylinder 22 and yoke 23, upwards against the pressure of the springs 27. The yoke 23 oscillates the cam 6, and its ring 60 through the clutch 33 rotates the end 31 of the shaft 3 a step. The clutch 32 over-running the ring 51. When the steam pressure drops the springs 27 force the yoke 23 and cylinder 22 downwards while the clutch 32 holds the ends 31 of the shaft 3 from reverse rotation, the clutch 33 over-running.

By means of the frequent oscillation of the

cam 6, the shaft 3 is rotated by rapid steps. As the yoke 23 reciprocates it operates the plunger 70 and pumps oil to the chamber 25.

By the rotation of the shaft 3 the cam 30 oscillates the fork of the bar 45.

By the adjustment of the position of the fulcrum block 16 the stroke of the plunger 44 can be varied.

The spring 14 maintains the bar 46 in contact with the rocking surface 17 of the fulcrum block 16.

On the up stroke of the plunger 44 oil is sucked in through the valve 41 and on the down stroke the oil is forced through the valve 43 to the outlet 11.

In the above described mechanism I have set forth one means of reciprocating the yoke 23 by the movements of the cylinder 22. It is obvious that other means may be substituted for this purpose.

I have also shown only a single oil chamber with two pumps. By the insertion of a partition in chamber 1 each pump may operate in its own chamber and different lubricants may be fed at varied speeds owing to the independent adjustment.

What I claim is:

1. In a force feed lubricator the combination of a drive mechanism comprising a stationary piston, a steam passage therethrough, a reciprocating cylinder having a yoke, a shaft having a one way clutch, a cam journalled on the shaft and having a clutch ring and oscillated by the yoke and adapted to rotate the shaft, a reverse one way clutch mounted on the shaft and having a stationary clutch ring therefor and an oil cham-

ber having one or more plunger pumps actuated by the shaft.

2. In a force feed lubricator, a drive mechanism chamber, an oil chamber, a shaft journalled in the chambers, a drive mechanism comprising a stationary piston, a steam feed therethrough, a reciprocating cylinder having a yoke, springs bearing on the yoke, a one way clutch on the shaft, a cam journalled on the shaft and having a clutch ring and oscillated by the yoke, a reverse one way clutch mounted on the shaft, a stationary clutch ring therefor extending from the wall of the drive mechanism chamber, one or more plunger pumps operated by the shaft in the oil chamber and means to vary the output of the pumps.

3. In a force feed lubricator, a drive mechanism chamber, an oil chamber, a shaft journalled in the chambers, a drive mechanism comprising a stationary piston, a steam feed therethrough, a reciprocating cylinder having a yoke, springs bearing on the yoke, a one way clutch on the shaft, a cam journalled on the shaft and having a clutch ring and oscillated by the yoke, a reverse one way clutch mounted on the shaft a stationary clutch ring therefor extending from the wall of the drive mechanism chamber, a lubricating pump in the drive chamber, having a piston secured to the yoke, an inlet valve from the bottom of the drive chamber, an outlet valve to a passage leading to a chamber at the top of the drive chamber, a passage from this chamber to the rotating mechanism adapted to lubricate the rotating mechanism.

MARTIN F. BRODEN.