Aug. 19, 1930. C. H. LEUFSTADIUS 1,773,312

FORCED FEED LUBRICATOR

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Fig. 1.

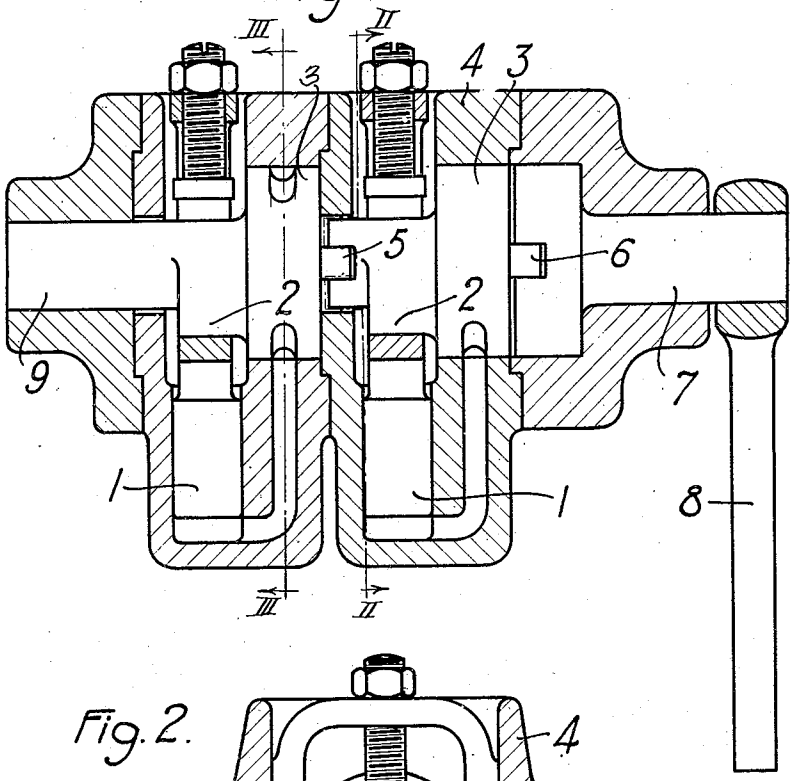
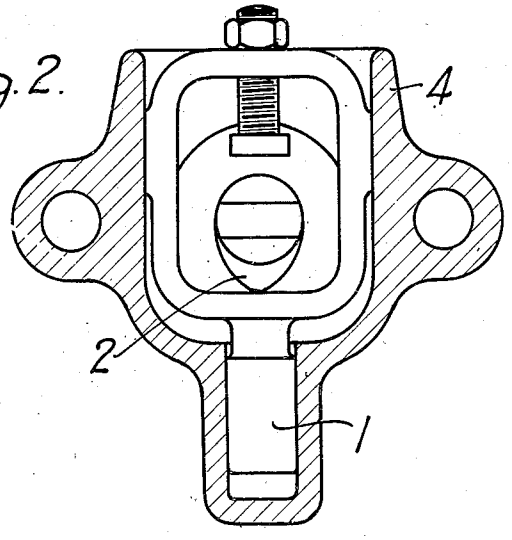


Fig. 2.



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FIG. 3.

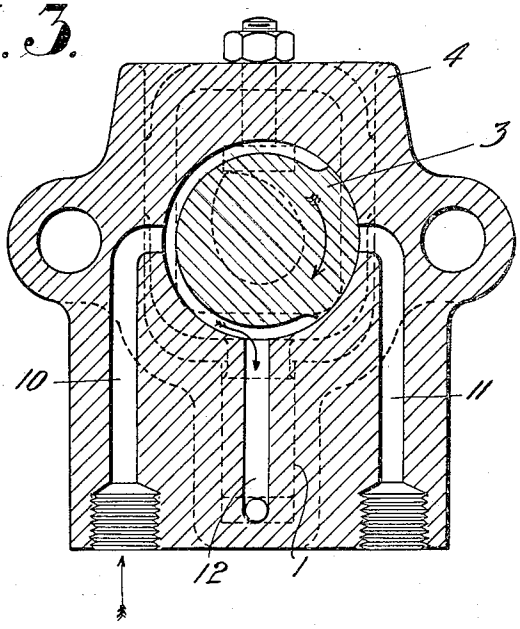
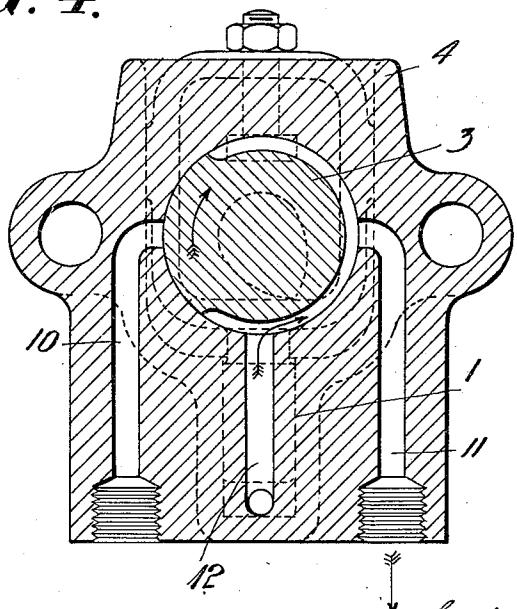


FIG. 4.



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FORCED-FEED LUBRICATOR

Application filed September 24, 1926, Serial No. 137,505, and in Sweden October 9, 1925.

This invention relates to forced feed lubricators of the type composed of separate complete units each comprising a pump plunger, a cam to drive said pump plunger, and a rotary regulating valve, and in which any desired number of such units may be combined to form a lubricator. In case of a great number of such units a lubricator of that type as hitherto constructed will have a great length rendering the convenient placing of the lubricator difficult.

The object of this invention is to enable a reduction of the length of the lubricator to a large extent at the same time simplifying the design and manufacture of the apparatus.

One feature of the invention relates to the provision of regulating rotary valves formed as bearing journals of the cams thereby rendering the use of separate journals unnecessary except at the ends of the lubricator.

In the accompanying drawing one embodiment of the invention is shown.

Fig. 1 is a longitudinal section of a forced feed lubricator according to the invention. Fig. 2 is a cross section thereof on the line II—II of Fig. 1, Figs. 3 and 4 are sections along one and the same line III—III of Fig. 1, Fig. 3 showing the rotary valve on the suction stroke, whereas Fig. 4 shows said valve on the pressure stroke.

The forced feed lubricator shown comprises for the sake of simplicity two complete units only. Any desired number of such units may, of course, be used.

Each unit comprises a pump plunger 1, a cam 2 to operate the plunger 1, a rotary regulating valve 3, and a pump casing 4. The regulating valve 3 is shown as formed integral with the respective cam 2 but may also be formed separately and connected thereto in any convenient way, so that the cam and rotary valve may rotate in common to allow the cam to transmit the pressure on the plunger as caused by the oil pressure to the regulating valve which is mounted in the pump casing like a journal. For the same purpose and in order to transmit rotary motion a power transmitting connection is provided between each cam and the regulating valve of the adjacent unit, as, for instance, by a claw clutch 5.

The regulating valve of one end unit (in the drawing that to the right) is shown connected by a similar clutch 6 to a driving journal 7 operated by a lever 8, while the cam 2 of the opposite end unit (that to the left) is shown provided with a separate journal 9 on the opposite side to that of the regulating valve.

Each rotary valve 3 is connected by means of an inlet channel 10 to the pressure oil supply, by means of an outlet channel 11 to the corresponding lubricating point, and by means of a channel 12 to the respective pump plunger cylinder, Figs. 3 and 4. On the suction stroke Fig. 3, oil is supplied from the oil source through the channels 10 and 12 into the pump cylinder, the plunger 1 being thereby raised which movement is permitted by the cam 2 connected with the rotary valve 3. In the continued rotation of the rotary valve 3 the communication between the channels 10 and 12 is cut off, see Fig. 4, and the channel 12 is connected with the outlet channel 11, whereby the plunger 1 under the influence of the cam 2 will press the oil through said outlet channel 11 to the respective lubricating polnt.

In case of a greater number of lubricating points the necessary number of units similar to that shown to the right in Fig. 1 may be added.

Due to the fact that no separate journals are required for the cams the axial length of the lubricator will be a minimum while at the same time the design and manufacture of the lubricator will be simplified.

What I claim is:

In a forced feed lubricator, a series of pump units, including an end unit, comprising a casing element, a shaft element rotatably mounted in said casing element, clutching means on the inner end of said shaft element, another end unit, comprising a casing element, a shaft element rotatably mounted in the latter, a cam on the last named shaft element formed integral therewith, a disk shaped regulating valve on the latter shaft element formed in-

tegral therewith, a boring in the second end casing element at right angles to said last named shaft element, a pump plunger in said boring, a strap on said pump plunger embracing said cam, clutching means on the inner end of the last named shaft element, intermediate units to be inserted between said end units, each comprising a casing element, a shaft element rotatably mounted in the intermediate casing element, a cam formed integral with the last named shaft element, a disk shaped regulating valve formed integral with the latter, a boring in the intermediate casing element at right angles to the shaft element therein, a pump plunger in the last named boring, a strap on the last named pump plunger embracing the cam on the intermediate shaft element, clutching means on both ends of the intermediate shaft element to engage the clutching means of adjacent shaft elements, and means in connection with the shaft element of one end unit to impart motion thereto.

In testimony whereof I have signed my name.

CARL HERMAN LEUFSTADIUS.