July 23, 1940. D. R. HILLIS 2,208,845

LUBRICATOR

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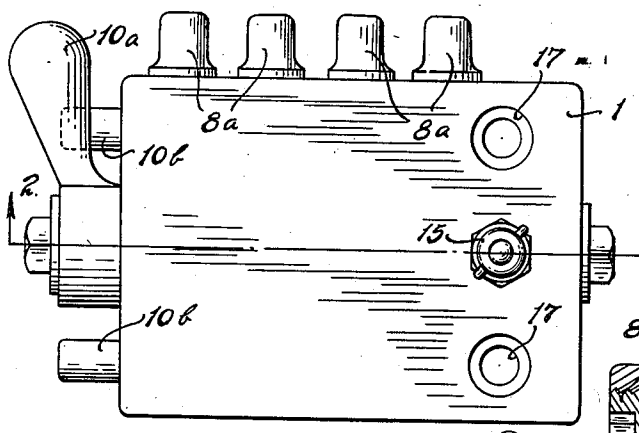


Fig. 1.

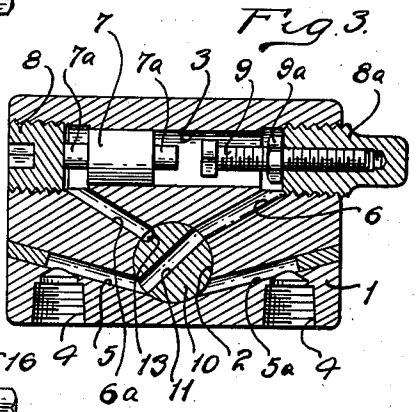


Fig. 3.

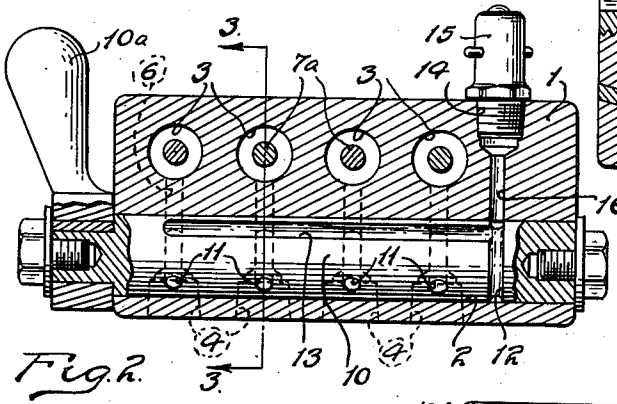


Fig. 2.

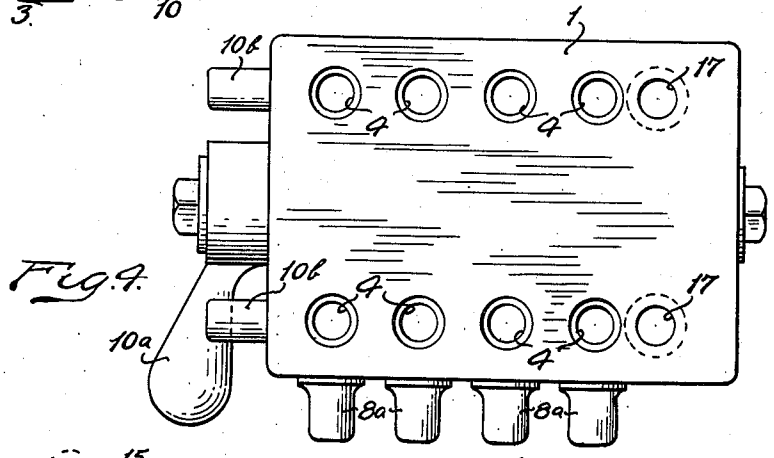


Fig. 4.

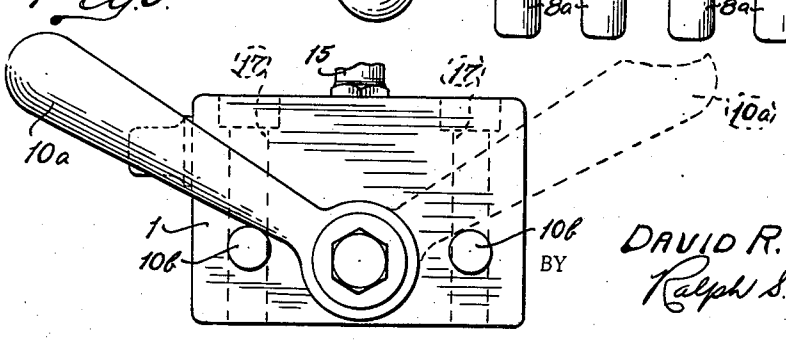


Fig. 5.

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LUBRICATOR

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Application January 31, 1938, Serial No. 187,859

4 Claims. (Cl. 184—7)

My invention relates to a measuring manifold for the distribution of liquids and the special object of my improvement is an apparatus for distributing a measured quantity of oil to each of a number of bearings.

In the accompanying drawing:

Fig. 1 is a plan view of an apparatus embodying my invention;

Fig. 2 is a section substantially on the line 2—2 Fig. 1, the cylindrical valve being shown mainly in elevation, part being in section;

Fig. 3 is a section on the line 3—3, Fig. 2;

Fig. 4 is a plan view, the apparatus being inverted, and

Fig. 5 is an end elevation looking from the left of Fig. 1.

1 is a metal block forming the body of the apparatus, having an approximately cylindrical bore 2 formed through it from end to end parallel to, and midway between, its side, and toward the bottom of said block.

3 indicates each of a series of cylindrical bores or measuring chambers in a plane above the bore 2, extending from side to side of the block 1 parallel, equally spaced from each other, and at right angles to the bore 2. Fig. 3 is a section in a vertical plane through the axis of each of the bores 3.

4 indicates screw-threaded openings extending inward from the bottom of the block 1, adapted to receive the conduits for conveying the lubricant to the different bearings.

In the example shown there are four bores 3, but as many as desired may be used depending upon the length of the block. There is an opening 4 under each end of each of the bores 3.

5 and 5*a* indicate canals connecting the openings 4 with the bore 2. 6 (see Fig. 3) indicates a canal connecting the right hand end of each of the bores 3 with the bore 2 and 6*a* indicates a like canal connecting the left hand end of each of the bores 3, with the bore 2.

7 designates a piston having spacing projections 7*a* at each end. One such piston 7, fits and is adapted to slide in each bore 3. The left hand ends of the bores 3 are closed by plugs 8 and the right hand ends by the plugs 8*a*. 9 is a stop screw threaded into a coaxial aperture in each of the plugs 8*a* and extending inward therefrom. The inner ends of the screws 9 limit the travel of the pistons 7. 9*a* is a nut for fixing the screws 9 at any adjusted position.

10 is a plug, or approximately cylindrical valve, fitting and adapted to oscillate in the bore 2 and 10*a* is a handle which may be turned between the stop-pins 10*b* to oscillate the valve 10 through a certain angle. 11 are diametrical passages through the valve 10 so located that their ends shall register with the inner ends of the passages 5 and 6 or 5*a* and 6*a*. 12 is a groove formed around the valve 10 at one end thereof, and 13, is a longitudinal groove formed in the surface thereof of parallel to its axis opening at one end to the groove 12 and extending far enough so that it may register with the inner ends of the canals 6 and 6*a*.

14 is a screw-threaded aperture in the upper surface of the block 1 adapted to receive the intake fitting 15. 16 is a canal connecting the apertures 14 with the bore 2 and groove 12.

17—17 are bolt holes through which bolts may be passed to secure the apparatus wherever required.

The operation of the above described apparatus is as follows:

Let us assume that the apparatus is filled and secured in the desired position with the various delivery apertures 4 connected with their respective bearings. The right hand ends of the bores 3 are full of lubricant, and the pistons 7 at the left hand ends of their travel, the plug or valve 10 is turned so that the handle 10*a* engages the left stop 10*b* and the groove 13 registers with the inner ends of the passages 6*a*, and the ends of the passages 11 register with the inner ends of the passages 5 and 6 as shown in Fig. 3. Lubricant under pressure is forced through the non-return valve of the fitting 15 and into the grooves 12 and 13. The pressure of the lubricant forces the pistons 7 to the right, forcing the lubricant in the right hand ends of the bores 3 out through the canals 6, through the diametral passages 11, through the canals 5 and out to the respective bearings through the conduits connecting with the apertures 4 upon the left hand side. When the pistons 7 have reached the right hand limit of their strokes, and the desired amounts of lubricant, controlled by the adjustable respective travels of the pistons 7, have been delivered to the respective bearings, the handle 10*a* is shifted to engage the other stop 10*b* and the groove 13 is caused to register with the inner ends of the canals 6 and the passage 11 connects the canals 5*a* and 6*a*. Consequently measured quantities of lubricant are delivered through the conduits from the apertures 4 on the right hand portion of the block 1. Usually a forcing apparatus is connected with the fitting 15 which in-

cludes an outwardly closing non-return valve. The instructions to the user are then substantially as follows:

Move handle to the full line position and pump up pressure. Shift the handle to the broken line position and again pump up pressure. Then shift to the neutral position marked N in Fig. 5. This will deliver a measured charge from each of the bores 3, first through the delivery conduits on one side of the body and next through the conduits on the other side and then put the apparatus in an inoperative position.

Aside from the specific embodiment of the invention herein shown and described, it will be understood that numerous details of the construction may be altered or omitted without departing from the spirit and scope of the invention as disclosed and claimed, and that I do not desire to limit the invention to the exact construction herein set forth.

I claim:

1. In an apparatus of the kind described, a body having a cylindrical valve bore therein, a valve fitting and adapted to turn in said bore, a plurality of bores in said body having pistons fitting and adapted to reciprocate therein, a groove around said valve, a groove in the surface of said valve extending longitudinally thereof and communicating with the first named groove, transverse passage in said valve, canals leading into opposite ends of each of said plurality of bores and means for receiving lubricant under pressure, said means communicating with the first named groove, means for turning said valve in its bore to alternately put said longitudinal groove in connection with one or the other of the canals leading to one or the other sides of each of said pistons, and for putting the transverse passages in connection with the other sides of said pistons, substantially as and for the purpose described.

2. In an apparatus of the kind described, a body having a cylindrical valve bore therein, a valve fitting and adapted to turn in said bore, a plurality of measuring chambers in said body, each having a piston fitting and adapted to reciprocate therein, a groove around said valve, a groove in the surface of said valve extending longitudinally thereof and communicating with the first named groove, transverse passages in said valve, a plurality of canals in said body connecting each end of each measuring chamber with said bore, each of said canals connecting one end of a measuring chamber with the bore, a corresponding number of discharge outlets leading from said bore, means for turning said valve in its bore to alternately put said longitudinal groove in connection first with one half and then with the other half of the canals and for alternately placing the transverse passages so as to connect first one half and then the other half of the canals, when not connected with the groove, first with one half and then with the other half of the discharge outlets, and means for receiving lubricant under pressure, said means opening into said longitudinal groove.

3. In an apparatus of the kind described, a body having a cylindrical valve bore therein, a valve fitting and adapted to turn in said bore, a plurality of bores in said body having pistons fitting and adapted to reciprocate therein, a fluid passage around said valve, a second fluid passage in said valve extending longitudinally thereof and communicating with the first named passage, transverse passages in said valve, canals leading into opposite ends of each of said plurality of bores and means for receiving lubricant under pressure, said means communicating with the first named passage, means for turning said valve in its bore to alternately put said longitudinal passage in connection with one or the other of the canals leading to one or the other sides of each of said pistons, and for putting the transverse passages in connection with the other sides of said pistons.

4. In an apparatus of the kind described, a body having a cylindrical valve bore therein, a valve fitting and adapted to turn in said bore between two predetermined extreme positions, a plurality of bores in said body having pistons fitting and adapted to reciprocate therein, transverse passages in said valve, canals leading from said bore into opposite ends of each of said plurality of bores, means for receiving lubricant under pressure, a fluid passage in said valve extending longitudinally thereof, said means being adapted to communicate with said longitudinal valve passage at all times, and means for turning said valve in its bore to alternately put said longitudinal passage in connection with one or the other of the canals leading to one or the other sides of each of said pistons and for putting the transverse passages in connection with the other sides of said pistons.

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