W. DIETZ.

FORCE FEED LUBRICATOR.

APPLICATION FILED FEB. 15, 1908. RENEWED OCT. 27, 1911.

1,011,331. Patented Dec. 12, 1911.

2 SHEETS—SHEET 1.

Fig. 1.

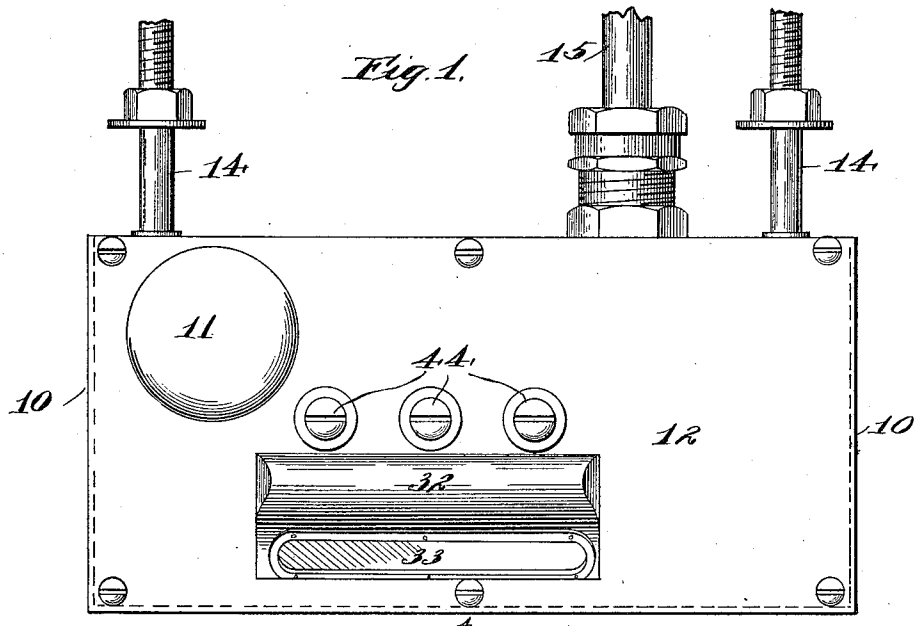
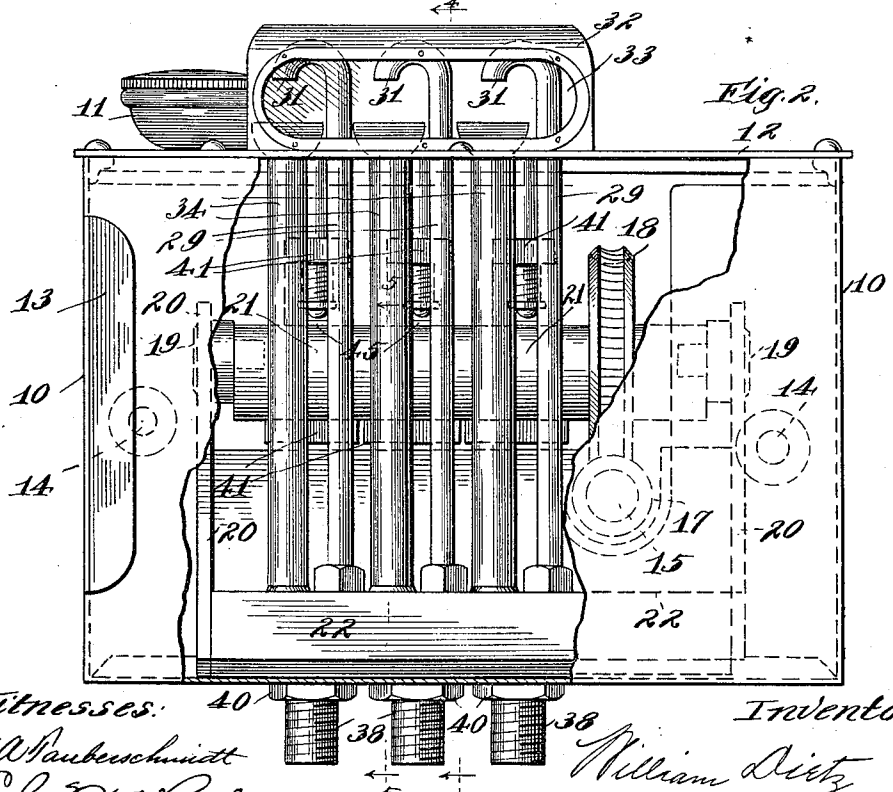


Fig. 2.



Witnesses:
G. A. Sauberschmidt
C. G. McRoberts

Inventor:
William Dietz
By Coburn & McRoberts
his Attys

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

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2 SHEETS—SHEET 2.

Fig. 3.

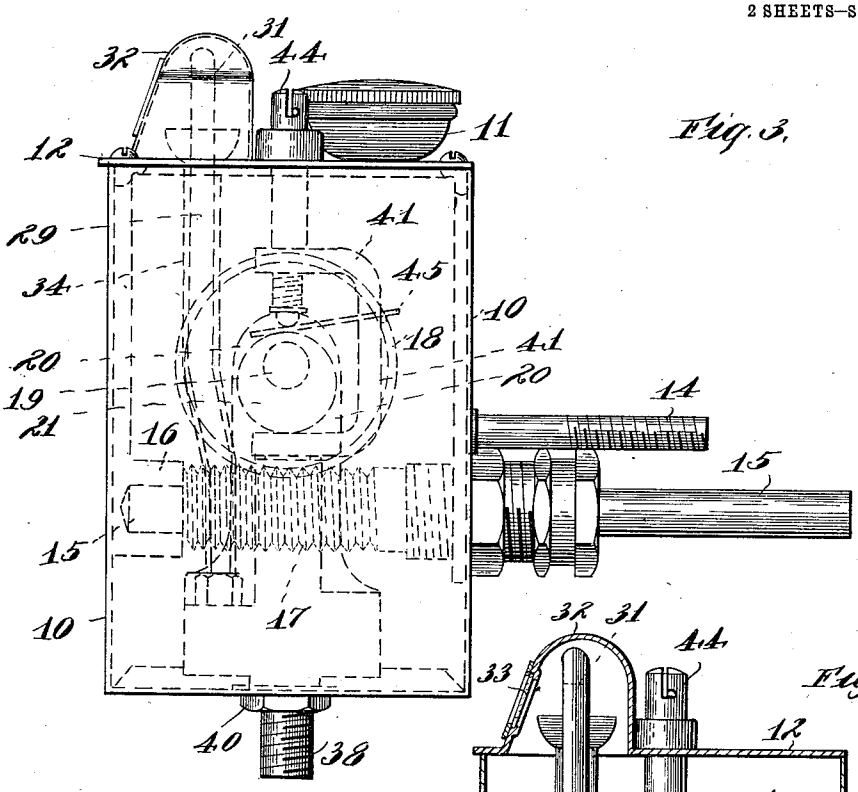


Fig. 4.

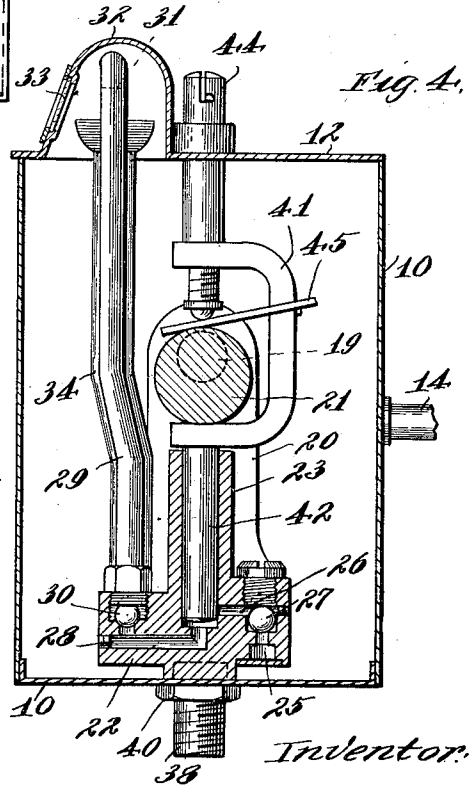
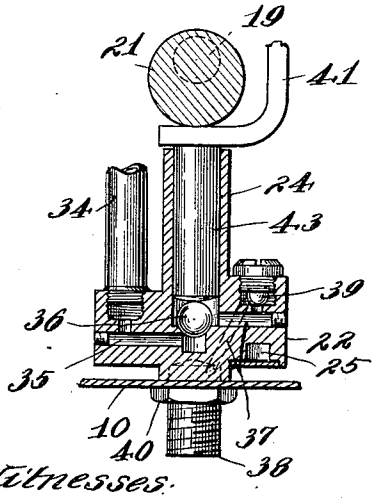


Fig. 5.



Witnesses.

G. A. Rauberschmidt

C. G. McRoberts

Inventor.

William Dietz

By Coburn & McRoberts
his Attys.

UNITED STATES PATENT OFFICE.

WILLIAM DIETZ, OF CHICAGO, ILLINOIS, ASSIGNOR TO McCORD & COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF NEW JERSEY.

FORCE-FEED LUBRICATOR.

1,011,331. Specification of Letters Patent. Patented Dec. 12, 1911.

Application filed February 15, 1908, Serial No. 415,996. Renewed October 27, 1911. Serial No. 657,042.

To all whom it may concern:

Be it known that I, WILLIAM DIETZ, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Force-Feed Lubricators, of which the following is a specification, reference being had therein to the accompanying drawing.

My invention relates to force feed lubricators, and especially to that class or type in which the pumps are arranged in pairs with a sight-feed intermediate the primary or suction pump and the secondary or delivery pump of each pair.

The objects of the invention will appear from the disclosure, and the invention consists in the arrangements and organizations of parts hereinafter described and pointed out in the claims.

In the accompanying drawings illustrating a three-feed lubricator embodying the present invention, Figure 1 is a plan view of the lubricator showing the reservoir, sight-feed opening and connecting parts; Fig. 2 is a view of the same in front elevation with the wall of the reservoir broken away to better illustrate the pumping mechanism; Fig. 3 is an end view of the device of Fig. 1; Fig. 4 is a vertical sectional view on the line 4—4 of Fig. 2 through the primary or suction pump; and Fig. 5 is a detail sectional view on the line 5—5 of Fig. 2 through the secondary or delivery pump.

In the drawings the reference numeral 10 indicates a pump-casing, preferably rectangular in shape and of any suitable size depending upon the number of pumps employed and preferably forming the oil-supply reservoir for which purpose it is provided with a filler-cap 11 in its removable top 12 and with a sight-glass 13 at any convenient point in one of its walls. The casing is adapted to be suitably secured to a support, as the dash-board of any automobile, by convenient means such as the screw-bolts 14, and a suitable power shaft 15 extends through a gland or packing-box in its rear wall and is journaled in a bearing 16 on the inner face of the front wall. The shaft is provided with a worm 17 which engages a worm-wheel 18 on a drive shaft 19 extending longitudinally of the casing and journaled in suitable standards or upright bearing plates 20. The shaft 19 is provided with an eccentric portion 21 for the purpose of reciprocating the pump plungers as hereinafter fully described.

A casting 22, substantially inverted T-shape in cross-section, is secured on the bottom or floor of the casing, and the stem of this casting is suitably bored to provide the pump-barrels or cylinders while the lateral flanges or wings are bored to provide the necessary passages and valve-chambers and valve seats as hereinafter disclosed. The casting is preferably in line with the drive shaft 19, and the bearing-plates 20 for the shaft are preferably secured to the ends of the casting, which does not extend the entire length of the casing in order to leave a maximum oil-space therein. While the casting need not extend beyond the right hand pump of Fig. 2 I prefer to extend it as shown in order to secure the corresponding plate 20 to it at a point beyond the worm-wheel, the casting being suitably cut-away as shown in Fig. 2 to accommodate the shaft 15. The bores for the primary or suction pumps 23 and for the secondary or delivery pumps 24 are arranged in pairs and preferably side by side in the line of the casting, the bore of the secondary pumps being preferably somewhat larger than that of the primary. The rear flange of the casting is provided in its under side with a longitudinal supply channel 25 communicating with the interior of the casing or other source of oil-supply, and by means of angular inlet ports 26 with the primary pumps near their lower ends, the ports being provided with ball-valves 27 in the usual manner. Associated with each primary pump is an outlet port 28 at its lower end, leading forwardly and upwardly in the front flange or wing and communicating with a sight-feed discharge pipe 29, a ball-valve 30 being seated at the joint or union. Each pipe 29 extends upwardly through an opening in the cover 12 and terminates at its upper end in a reverse bend 31 providing a sight-feed discharge, these discharges being located in an upwardly projecting housing 32 on the cover 12 having a sight-glass 33 in its front side through which the rate of discharge or feed of the pipes 31 may be observed. The hous-

ing is preferably rectangular in shape to accommodate a plurality of sight-feeds and is alined with the pumps in order that the several discharge-pipes therefrom may be similarly disposed.

Each sight feed discharge is associated with and discharges into the open upper end of a return pipe 34, preferably flared at its upper end as shown in Fig. 2, and leading to the front flange of the casting where it communicates with an angular inlet-port 35 of one of the secondary pumps, it being understood that the pipe 29 of each primary pump is associated with the pipe 34 of its companion secondary pump. Each inlet 35 leads to the lower end of the cylinder or barrel 24 of the associated secondary pump, a suitable ball-valve 36 being seated therein below its plunger as shown in Fig. 5, and a suitable outlet 37 is provided for each secondary pump in the rear flange of the casting communicating with the secondary pump above the valve 36 and leading by angular disposition to discharge pipe 38 extending to a part to be lubricated. Each outlet 37 is provided with a back-pressure valve 39 in any suitable manner. The pipes 38 pass through the floor of the casing and are in threaded engagement with the bottom of the casting at the terminals of the outlets 37, and suitable nuts 40 threaded on the pipes secure the casting in place in the casing.

The cylinders of each pair of primary and secondary pumps being arranged side by side, the pistons of each pair may be operated by the same means. For this purpose I provide a yoke 41 for each pair of pumps, arranged to be reciprocated by the eccentric 21, which may of course be of suitable length to operate a varying number of yokes according to the number of pairs of pumps employed, and the lower arm of each yoke is made of sufficient width to suitably connect with the adjacent pistons 42 and 43 respectively of the primary and secondary pumps of a pair to reciprocate the latter as the shaft revolves. Each yoke may be provided with an adjusting stem 44 operated in any suitable manner to vary the stroke of the associated plungers; in this respect the adjustment mechanism disclosed in United States Patent No. 822,900 dated June 5, 1906, may be employed, to which reference is accordingly made for more complete disclosure of this feature. In practice I prefer to employ a buffer plate 45 on each yoke intermediate the stem 44 and eccentric for the purpose of obviating any liability of the stem to be turned by the wiping contact of the eccentric; this buffer plate may be of suitable form and is secured to the yoke in any desired manner and is claimed in my companion application filed February 14th, 1908, and bearing Serial Number 415,824.

When oil is supplied and the drive-shaft 19 operated, the upstroke of the piston 42 of each primary pump draws oil from the reservoir or other supply past the valve 27 into its cylinder 23, from whence it is forced by the down stroke of the piston through the associated sight-feed discharge pipe 29 by which it is discharged at the intermediate sight-feed into the associated return pipe 34, thereby indicating the rate of feed of the oil. The pipe 34 forms a receptacle for the oil which is drawn or pumped therefrom to the part to be lubricated by the secondary or delivery pump, whose upstroke draws the oil past the valve 36 into cylinder 24 and whose down-stroke forces it past the valve 39 to the discharge pipe 38.

The pumps of each pair coöperate in the same manner, and it is of course obvious that any number of pairs may be employed. By the arrangement and disposition of the parts disclosed, I may utilize pumps arranged in pairs in the casing with an intermediate sight-feed with largely increased economy in the size of the casing even when it forms the oil-reservoir, and thereby reduce the size of the reservoir for any given system or number of pumps so that it will take up the minimum space in front of the dash and be out of the way of the driver or chauffeur; the pumps of each pair being preferably arranged side by side, and all the pumps being in line and being under the shaft reduce the cross-sectional area of the reservoir itself and occupy less space in the reservoir than individual or detached pumps.

Having described my invention, I claim:

1. In a lubricator, an oil-reservoir, a casting therein providing a plurality of alined pump-cylinders having inlets and outlets, pistons in the cylinders connected up in pairs; a sight-feed intermediate the cylinders of each pair of pistons, a bearing-plate on each end of the casting, and a shaft mounted in the plates and connected to the pistons.

2. In a lubricator, an oil-reservoir, a shaft in the reservoir, a casting below the shaft and having a stem in the line of the shaft providing pump cylinders, pistons in the cylinders, means coöperating with the shaft to move the pistons in pairs, a sight-feed on the reservoir between the pumps of each pair, and a bearing-plate for the shaft on each end of the casting.

3. In a lubricator, an oil-reservoir, a casting therein providing a plurality of alined pump-cylinders having inlets and outlets, pistons in the cylinders connected up in pairs, a sight-feed casing on the reservoir, a series of sight-feed devices respectively between the pumps of each pair and adapted to show the rate of operation at the casing, a bearing-plate on each end of the casing extending above the same, a shaft mounted

in said plates above the casting, and means to actuate the pumps of each pair from the shaft.

4. In a lubricator, an oil reservoir, a casting therein of substantially inverted T-shape in cross-section and providing pump cylinders in its stem and inlets and outlets in its opposite flanges, a bearing-plate mounted on each end of the casting, a shaft mounted on the plates in line with the stem of the casting, pistons in the cylinders connected in pairs, each pair having a yoke actuated by the shaft.

5. In a lubricator, an oil reservoir, a casting therein of substantially inverted T-shape in cross-section and providing pump cylinders in its stem and inlets and outlets in its flanges, said stem being cut away at or near one end, a bearing-plate mounted on each end of the casting, a shaft mounted on the plates in line with the stem of the casting, pistons in the cylinders connected in pairs, each pair having a yoke actuated by the shaft, a worm-wheel on the shaft, and a counter-shaft in the cut-away portion of the stem and having a worm to drive the worm-wheel.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM DIETZ.

Witnesses:
ELIZABETH MOLITOR,
J. MCROBERTS.