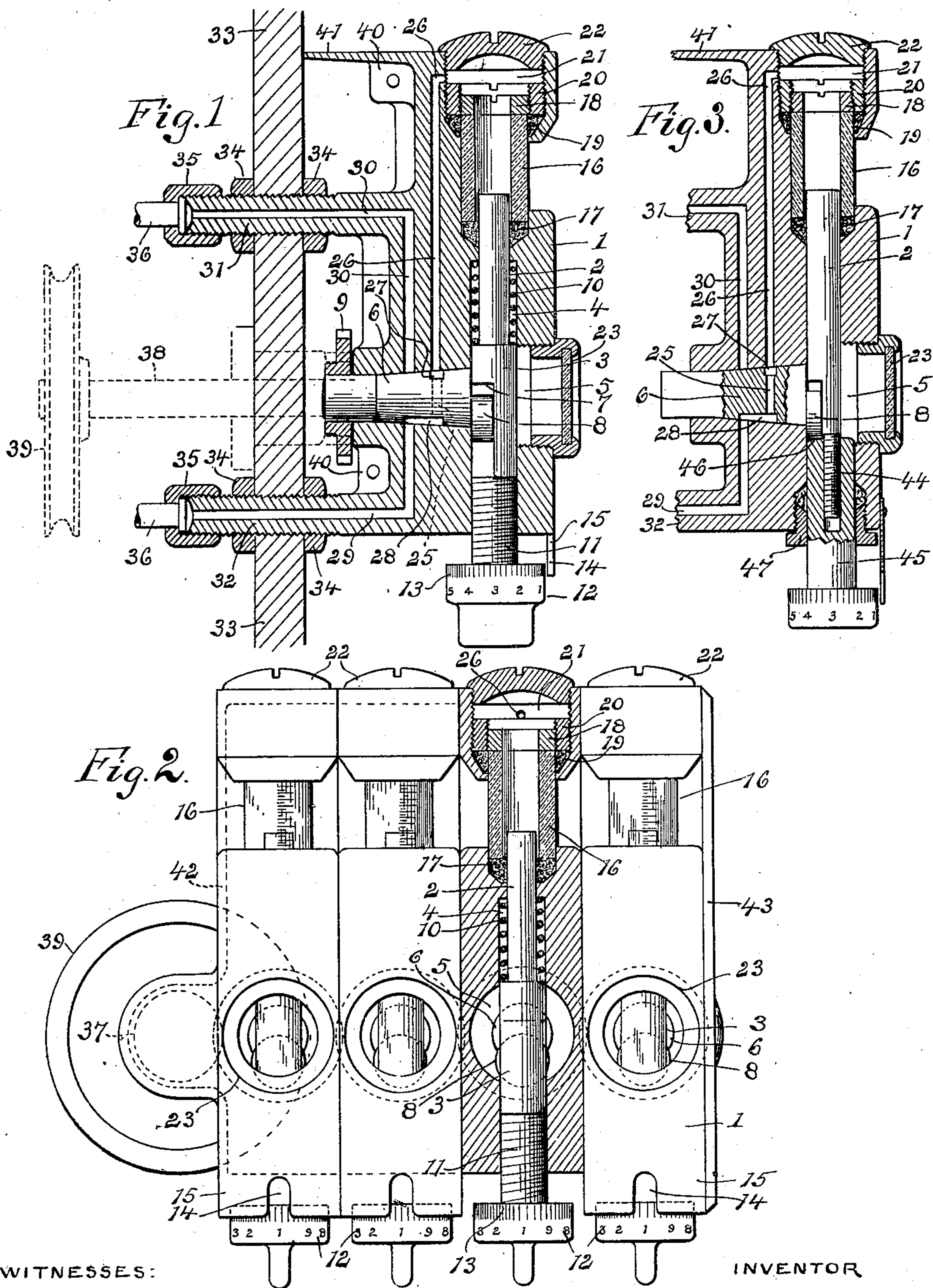


No. 891,132.

PATENTED JUNE 16, 1908.

G. D. BANTA.
FORCE FEED LUBRICATOR.
APPLICATION FILED JAN. 25, 1907.

2 SHEETS—SHEET 1.



WITNESSES:

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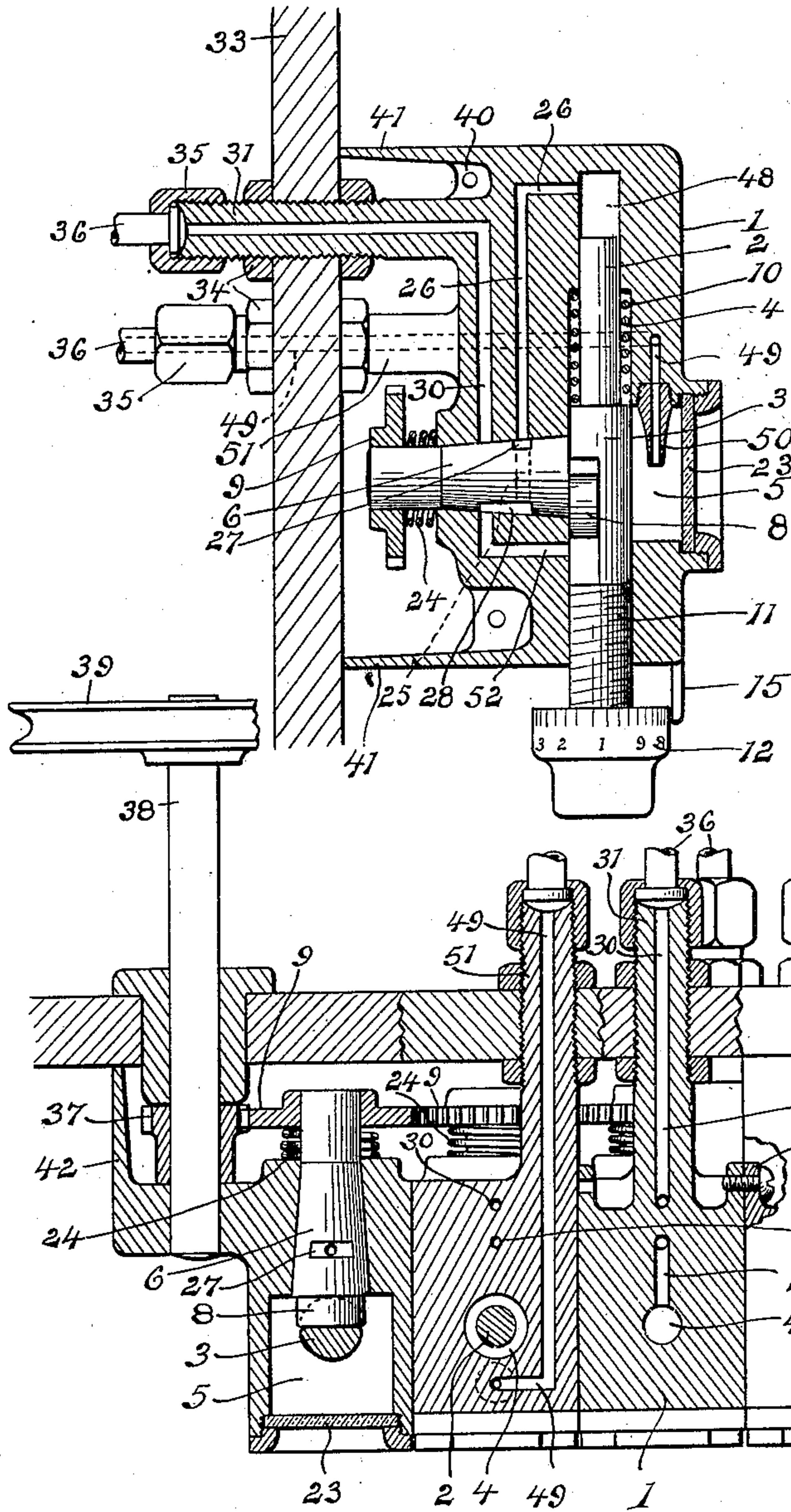


Fig. 4.

Fig. 5.

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UNITED STATES PATENT OFFICE.

GEORGE D. BANTA, OF DETROIT, MICHIGAN, ASSIGNOR OF ONE-FOURTH TO HARRY S. BLUMENTHAL AND ONE-FOURTH TO FRANK V. NICOL, OF DETROIT, MICHIGAN.

FORCE-FEED LUBRICATOR.

No. 891,132.

Specification of Letters Patent.

Patented June 16, 1908.

Application filed January 25, 1907. Serial No. 353,944.

To all whom it may concern:

Be it known that I, GEORGE D. BANTA, a citizen of the United States of America, residing at Detroit, in the county of Wayne and State of Michigan, 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 drawings.

10 This invention relates to improvements in mechanical or force-feed lubricators and its object is to provide a very simple, cheap and compact device which forms a complete and independent unit with which other similar
15 units may be easily and quickly combined to increase the capacity of the lubricator, and further to provide each unit with simple and efficient means for regulating the amount of oil delivered and to so construct said units
20 that their operation may be plainly seen.

It is also an object of the invention to provide certain other new and useful features, all as hereinafter more fully described and shown in the accompanying drawings, in
25 which:—

Figure 1 is a transverse vertical section of a device embodying the invention; Fig. 2 a front elevation of the same with one of the units in transverse vertical section; Fig. 3 is
30 a view similar to that of Fig. 1 showing a modification in the construction; Fig. 4 is a transverse vertical section showing a further modification; and Fig. 5 is a sectional plan view of the same showing three of the units
35 in section on different horizontal planes.

As shown in Figs. 1 and 2, 1 is a suitable rectangular shaped metal block or body which is bored vertically inward from its lower end to receive a rod forming a piston 2
40 having an enlarged end or shank 3 fitting within said bore 4 and sliding freely therein. A horizontal bore extends inward from the front of the casing and forms a chamber 5 across which the piston shank extends and in
45 the axis of this chamber extending horizontally therefrom through the back of the casing is a tapering bore forming a seat for a tapered plug valve 6. The piston shank 3 is notched or cut away at one side from its
50 lower end upward to form a shoulder 7 thereon adapted to be engaged by an eccentric 8 formed integral with the inner end of the valve 6 which when revolved by a gear 9

secured upon the rearwardly projecting end or stem of the valve which extends through a
55 bearing boss on the back side of the casing, turns the eccentric within the inner end of the chamber 5 into engagement with the shoulder 7, thus lifting the piston against the action of a coiled spring 10 sleeved on
60 said piston between the shoulders formed by the enlarged lower end or shank 3 and the upper end of the bore 4 in which the shank slides. An adjusting screw 11 is turned into
65 the lower end of the bore 4 to engage the lower end of the piston shank and limit the downward movement of the piston, and said screw is provided with a head 12 having
70 graduation marks 13 which show through a slot 14 in an apron 15 extending downward from the front of the casing and by means of
75 which marks the screw may be accurately adjusted to regulate the movement of the piston and thus determine the amount of oil to be pumped.

The upper end of the piston fits in a bore in the casing and projects upward there-
through into the lower end of a glass sight
80 tube 16 set in a suitable bore extending downward from the top of the casing, which casing is cut away at its forward side into
85 said bore to expose the tube so that the operation of the piston may be seen there-through. Packing 17 is placed below the lower end of the sight tube to make a tight
90 joint and the tube is pressed down upon the packing by an externally screwthreaded ring 18 engaging the upper end of the tube. Around the upper end of said tube is placed
95 in a suitable recess packing 19 which is compressed therein to prevent leakage around the tube, by an internally and externally screw-threaded ring 20 which is screwed into
a screw-threaded bore in the casing forming
100 a chamber 21 at the upper end of the sight tube, the ring 18 being screwed into the ring 20 down hard upon the upper end of said tube. The upper end of the chamber 21 is closed by a screwcap or plug 22 and the forward or outward end of the eccentric
105 chamber 5 is closed by a bullseye sight glass 23 through which the operation of the eccentric may be seen.

The tapered plug valve 6, which, as shown in Fig. 4, may be held to its seat by a coiled
110 spring 24 sleeved on its stem between the

end of its bearing and the gear 9, is formed with a transverse passage 25 cutting its axis and adapted to register with the lower end of a passage 26 leading upward into the chamber 21. In the side of said valve at one end of the passage 25 is cut a narrow notch 27 so that said passages 25 and 26 may be in communication for a considerable portion of the revolution of the valve and a similar notch 28 is cut in the opposite side of the valve which notch is elongated longitudinally of the valve so that it will register in one position of the valve with an intake passage 29 and form a communication between said passage and the passage 25, and when said valve is turned with said notch at the upper side thereof, will connect said passage 26 with a discharge passage 30 extending upward in the casing and outward through an elongated stud or nipple 31 projecting from the rear side of the casing. A similar stud 32 extends rearwardly from the casing at its lower end, through which stud the intake passage 29 extends. These elongated studs form means for attaching the lubricator to a suitable support such as the dashboard 33 of a motor vehicle, they being externally screw-threaded to receive binding nuts 34 to engage the sides of the board, and on their extreme ends are packing nuts 35 to secure suitable tubes 36 thereto for conducting the lubricant to the lubricator and therefrom to the parts to be lubricated.

The valve 6 may be turned continuously by any convenient means engaging the gear thereon, as by a pinion 37 secured upon the end of a driving shaft 38 mounted in a bearing projecting from one side of the casing and turned by a pulley 39 secured upon its opposite end which projects through the dashboard; or the stem of the valve may be extended and provided with a pulley.

As shown in Fig. 2, a series of these devices or units may be combined or united to form a lubricator of any desired capacity, the casing of each being formed with ears 40 as shown in Figs. 1 and 5, having screw holes to receive screws for securing the casings together, and the gears 9 are of such a diameter that when the casings are secured together they mesh with each other and motion is thus transmitted from the driving shaft to the valves of the several units, only one of said units being provided with a driving shaft. From the top and bottom of each casing a flange 41 extends rearwardly to engage the dashboard, and the casing having the shaft bearing is provided with a similar flange 42 down one side, so that by securing a plate 43 to the side of the casing at the opposite end of the series, the parts are all inclosed and the several units are combined into a rectangular structure having a very neat and compact appearance when secured

in place upon the dashboard. The construction permits of the adding of one or more units at any time and a lubricator of any desired capacity may be made up at any time, thus obviating the necessity that the dealer carry a large stock of lubricators of various sizes.

As the piston is moved downward to the position shown in Fig. 1 by the spring 10, oil is drawn into the sight tube thereby through the inlet passage 29, passage 25 and notches 27 and 28 in the valve, and the passage 26; and when said piston is forced upward by the eccentric on the valve, the oil in said sight tube is forced therefrom through said passage 26 and, the valve having been turned bringing the large notch therein at its upper side, said oil will pass through said notch into and out through the discharge passage 30.

The flow of oil may be observed through the sight tube which may also be provided with graduation marks to show the amount of oil which is being discharged by any length of stroke of the piston.

The construction shown in Fig. 3 is the same as that shown in Figs. 1 and 2 except that the piston is moved positively in both directions by the eccentric, the piston being provided with an extended screw-threaded lower end 44 to engage a screw-threaded bore in an adjusting screw 45 which forms a lower shoulder 46 on the piston adapted to be engaged by the eccentric. The screw may be turned to increase or decrease the distance between the two shoulders on the piston and said screw moves with the piston sliding in a stuffing box 47 in the casing.

In the modified construction shown in Figs. 4 and 5 the sight tube is dispensed with, the piston sliding in a smooth bore 48 extending upward in the casing from the upper end of the bore 4, and the bullseye 23 is utilized to show the feeding of the oil, by forming an inlet passage 49 in the casing which opens at one end through a nipple 50 extending downward from the upper side of the chamber 5 just inside the glass and extends upwardly and rearwardly past one side of the bore 4 and out through a stud 51 projecting from the rear of the casing and forming means for securing the lubricator to the dashboard. From the chamber 5 the oil is conducted through a passage 52 to the lower side of the valve and enters the upper end of the piston bore 48 through the passage 26 as in the construction shown in Fig. 1. The oil entering through the supply passage thus drops from the nipple 50 to the bottom of the chamber past the bullseye so that the operator may quickly observe whether the required amount of oil is being fed or not. The oil in said bore 48 is forced therefrom through said passage 26 and, the valve having been turned bring-

ing the large notch therein at its upper side, said oil will pass through said notch into and out through the discharge passage 30.

Having thus fully described my invention what I claim is:—

1. A force-feed lubricator comprising a series of independent detachable casings, a pump in each casing, a gear carried by each casing adapted to actuate the pump therein, the gear on each casing being adapted to mesh with the gears carried by the adjacent casings when said casings are secured together, and means for actuating one of said gears.

2. In a force-feed lubricator, the combination with a casing having an inlet and a discharge passage, of a rotary valve controlling said passages, a piston in the casing, an eccentric on the valve to engage and actuate the piston, and an adjusting screw to engage the end of the piston and regulate its stroke.

3. In a force-feed lubricator, the combination of a casing having a chamber and inlet and discharge passages in communication with said chamber, a rotary valve controlling said passages, a piston movable in a bore communicating with said chamber, an eccentric on the valve to engage and move the piston in one direction, a spring to actuate the piston in the opposite direction, and means for limiting the movement of the piston.

4. In a force-feed lubricator, the combination of a casing having a vertical bore and an opening in the forward side of the casing opening into said bore said casing being provided with intake and discharge passages communicating with said bore, a valve to control said passages, a sight-glass tube secured in said bore across the opening, a piston projecting into one end of said tube, and means operating in timed relation to the valve to actuate the piston.

5. In a force-feed lubricator, the combination of a casing having a vertical bore forming at one end a piston chamber and a transverse bore intersecting the vertical bore and forming a tapering valve seat, said casing being also formed with inlet and discharge passages communicating with the piston chamber and opening into the valve seat; a piston in the piston chamber; a tapering valve in the valve seat having a passage to register with the inlet and discharge passages; means for rotating said valve; means on the valve to engage and actuate the piston.

6. In a force-feed lubricator, the combination of a casing formed with a bore for a piston and with a seat for a rotary valve and with passages communicating with said bore and opening through the seat at opposite sides thereof, a rotary valve engaging said seat and formed with a passage extending transversely therethrough and with a transverse notch in each side of the valve at each

end of the passage therein, means for continuously rotating the valve, a piston in the bore, and means for actuating the piston in timed relation to the rotation of the valve.

7. In a force-feed lubricator, the combination of a casing formed with a vertical bore, a chamber intersecting the bore, there being a valve seat at the rear end of said chamber, and passages opening through the valve seat and communicating with the bore; a piston in the bore having a shank portion cut away at one side to form a shoulder; a rotary valve in the seat; an eccentric on the end of the valve within the chamber adapted to engage the shoulder on the piston shank; an adjusting screw in the lower end of the bore to engage the piston shank; and a cap to close the upper end of the bore.

8. In a force-feed lubricator, the combination of a casing formed of two or more independent detachable units, means on each unit for detachably securing the same to a suitable support, there being top and bottom flanges on each unit extending rearwardly to engage the support and a similar side flange on one of the end units of the series, a plate adapted to be secured to the side of the other end unit of the series, said flanges and plate forming the sides of a rectangular casing inclosing the lubricator when the units are secured in place, and means in each unit for forcing a lubricant.

9. In a force-feed lubricator, the combination of a casing formed of two or more detachable units, means for detachably securing the units together into a series, there being studs projecting from the rear side of said units and formed with inlet and discharge passages and also adapted to form means for attaching the casing to a suitable support, top and bottom flanges on each unit adapted to engage the support, a similar side flange on one of the end units of the series, a bearing on one of said end units, a plate adapted to be secured to the side of the other end unit, a shaft mounted in said bearing and extending rearwardly from the casing, a pinion on said shaft, pumping means within each unit for drawing in and discharging a lubricant through the said passages in the studs, and a gear carried by each unit in mesh with each other to transmit motion from the pinion on the shaft to the said pumping means.

10. In a force-feed lubricator, the combination of a casing provided with a vertical bore forming a piston chamber and also provided with a horizontal bore forming a valve seat and with a passage leading from the bore to one side of the valve seat; a piston in the bore; there being studs projecting from the rear of the casing each formed with a passage leading to the valve seat at opposite sides thereof; a rotary valve in said

seat formed with a transverse passage adapted to register with the passage leading from the bore and also formed with a notch in one side extending longitudinally from one end of
5 said passage to connect the same in one position of the valve with one of the passages extending through one of the studs and in another position of the valve, to connect the other passage extending through the other

stud with the passage leading from the bore; 10 and means on the valve for actuating the piston.

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

GEORGE D. BANTA.

Witnesses:

OTTO F. BARTHEL,
OLIVER E. BARTHEL.