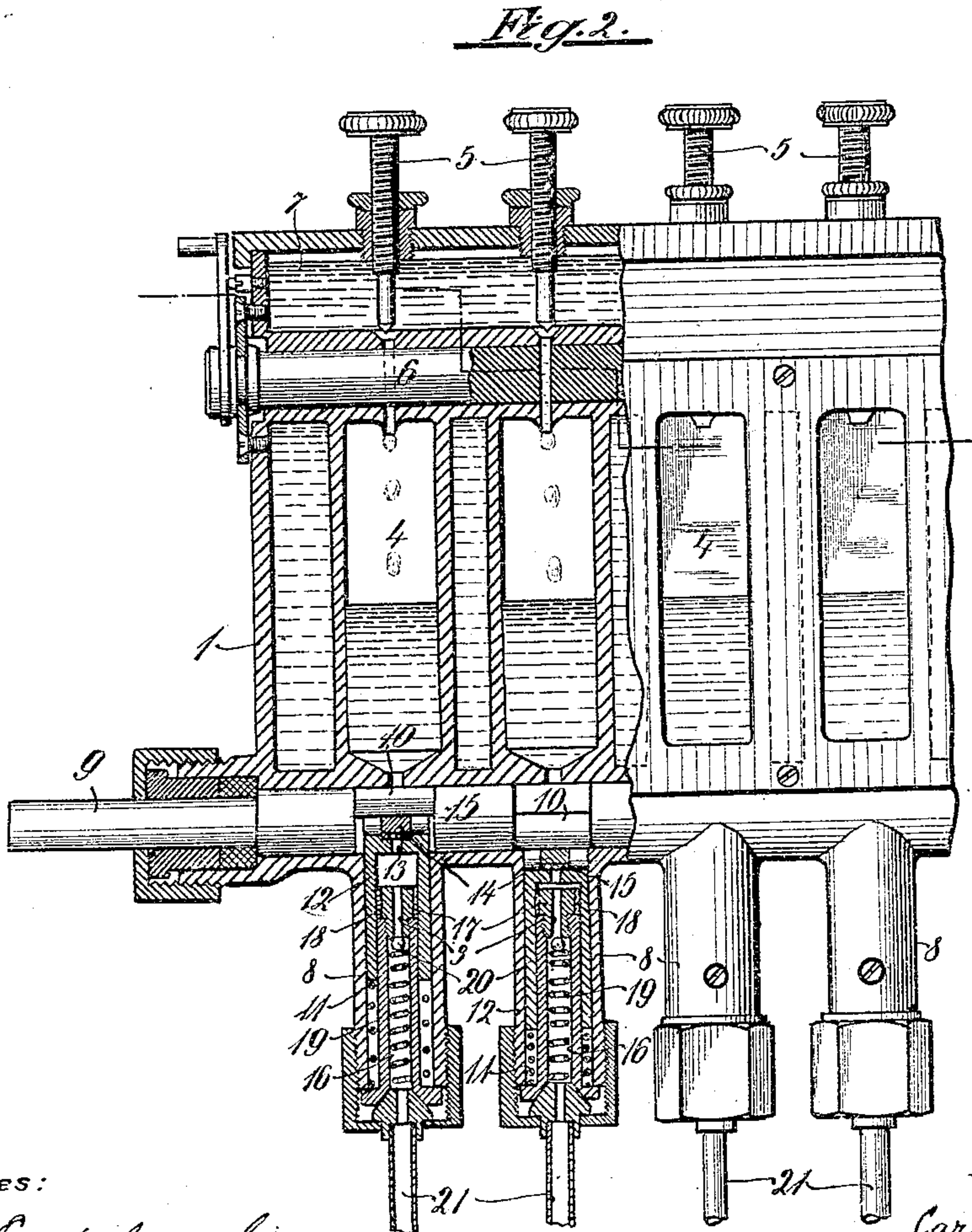
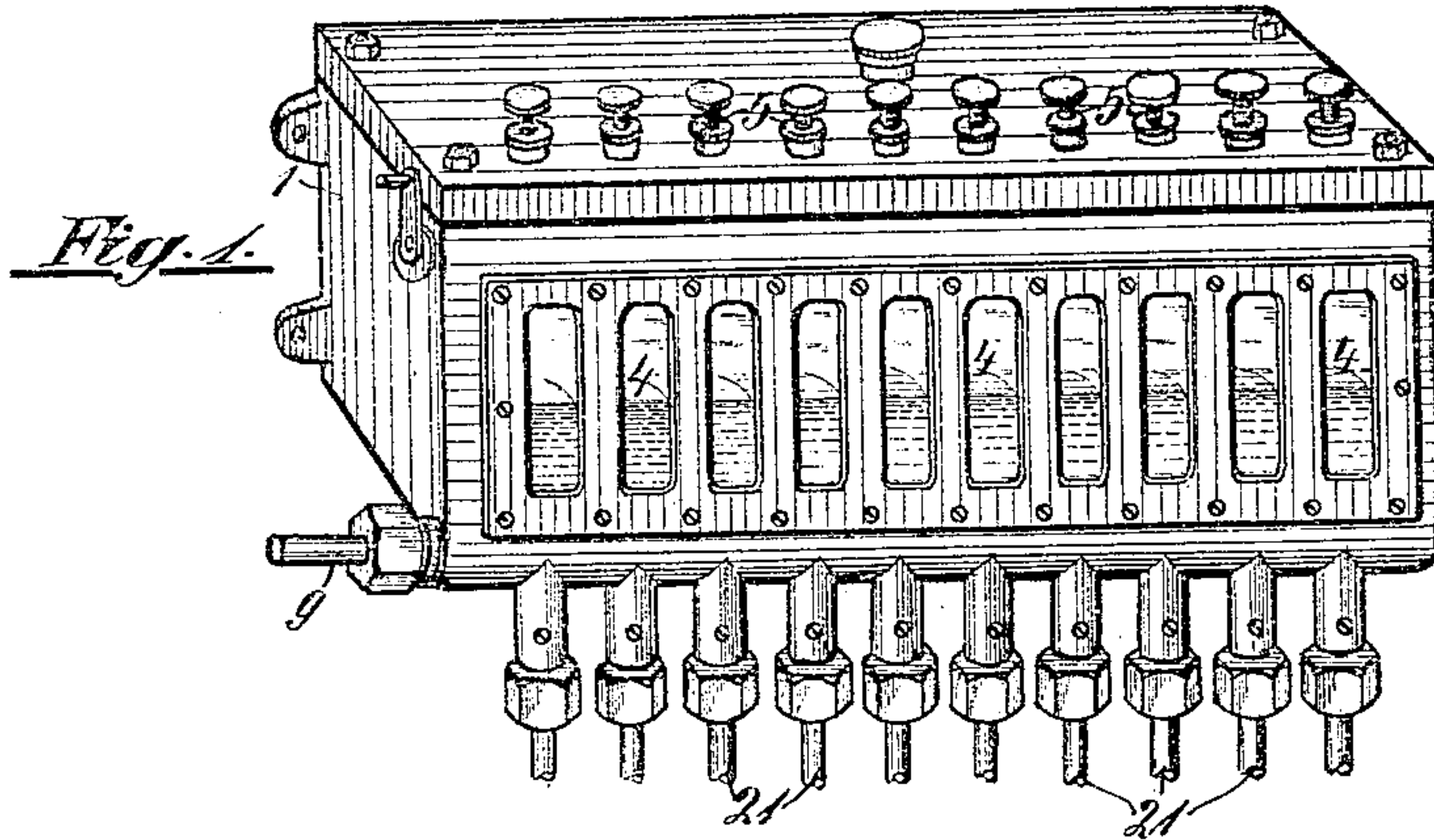


DR. LUBRICATORS,
Lubricators, Force Feed,
Pumps, Mechanically operated.

905,717.

C. LANG.
LUBRICATING PUMP.
APPLICATION FILED NOV. 9, 1906.

Patented Dec. 1, 1908.
3 SHEETS—SHEET 1.



Witnesses:

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Carl Lang.
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his Attorneys

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Fig. 3.

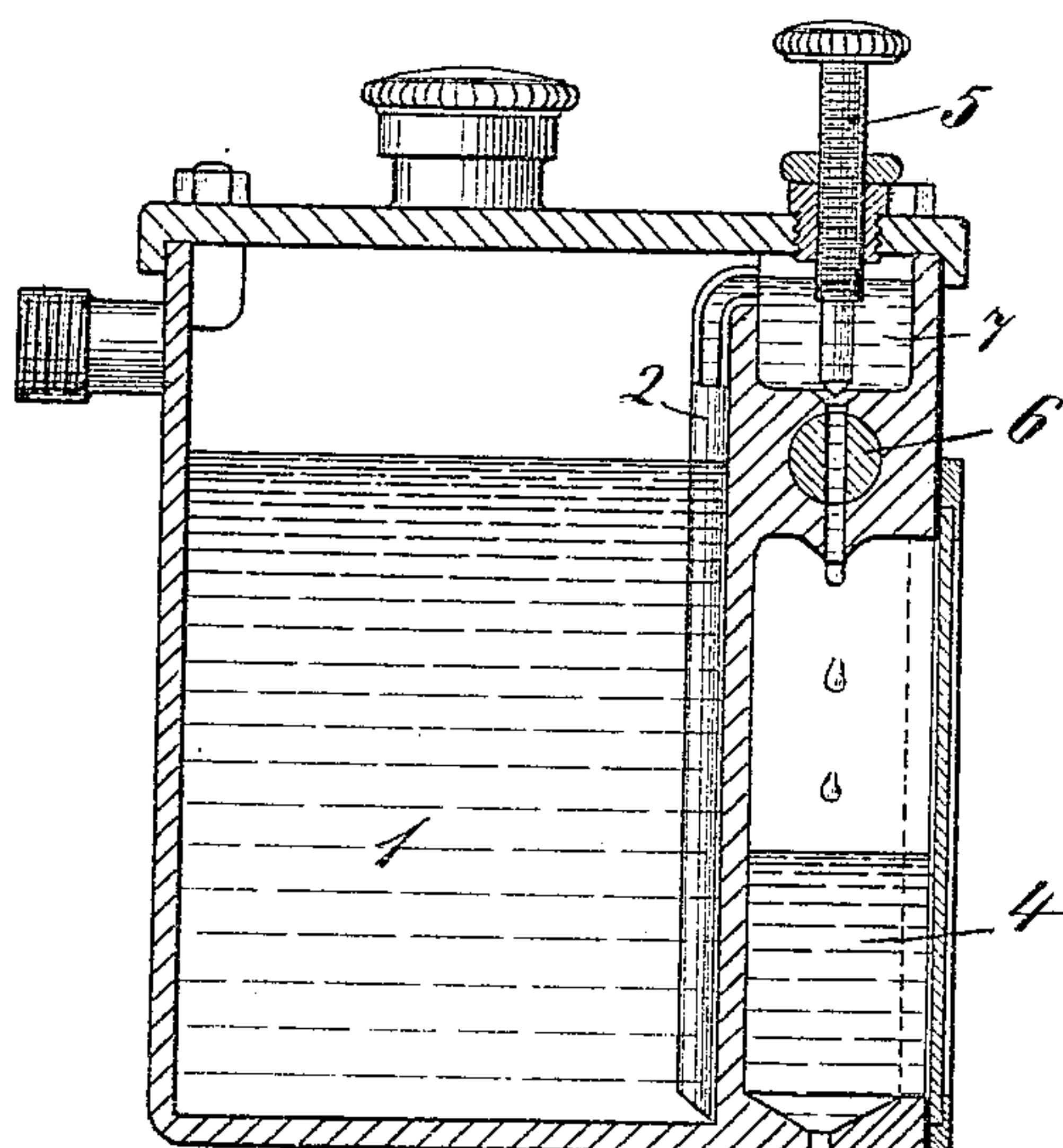


Fig. 5.

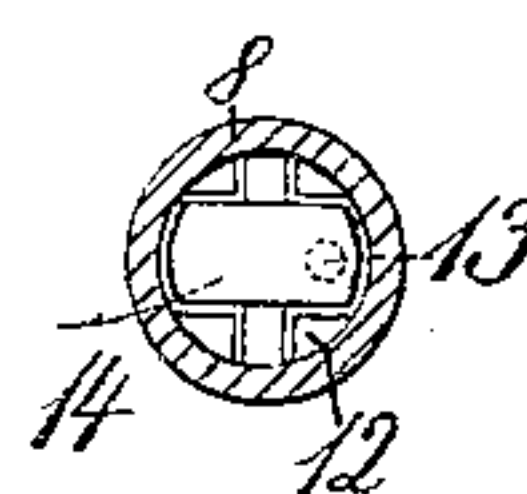


Fig. 6.

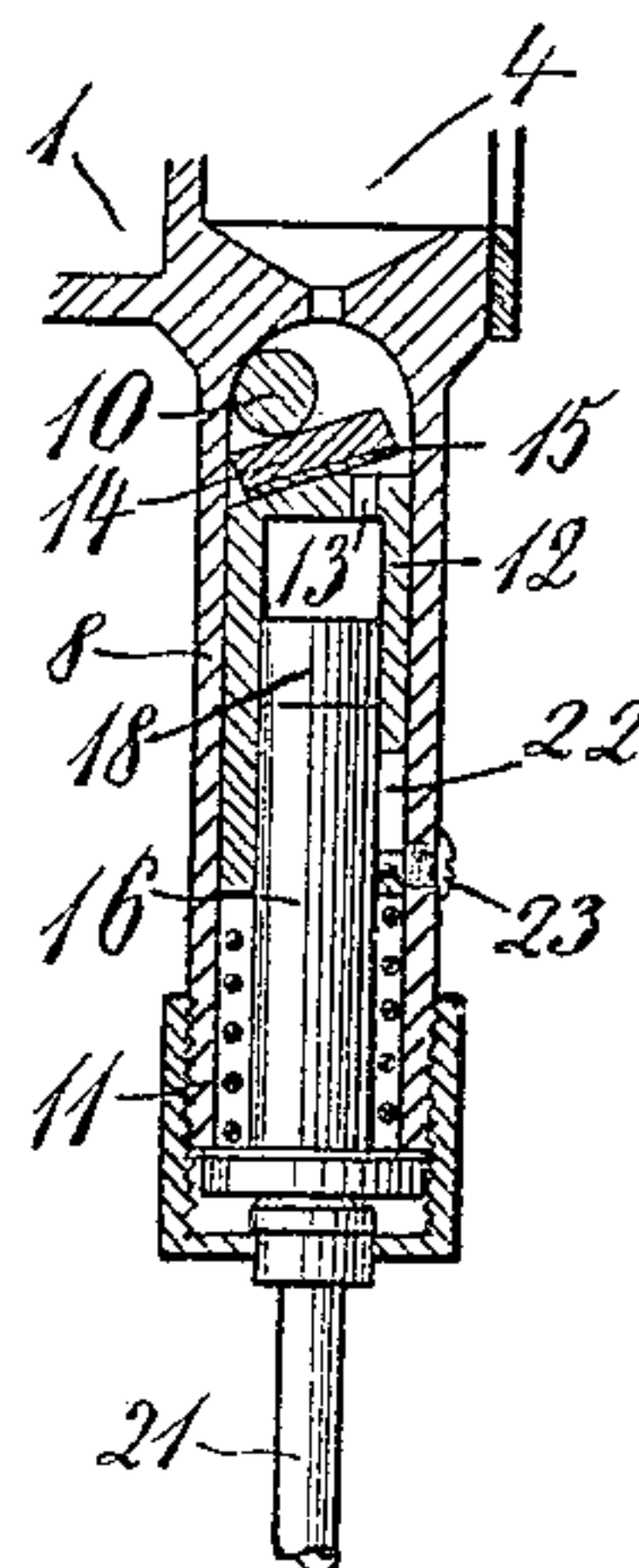


Fig. 7.

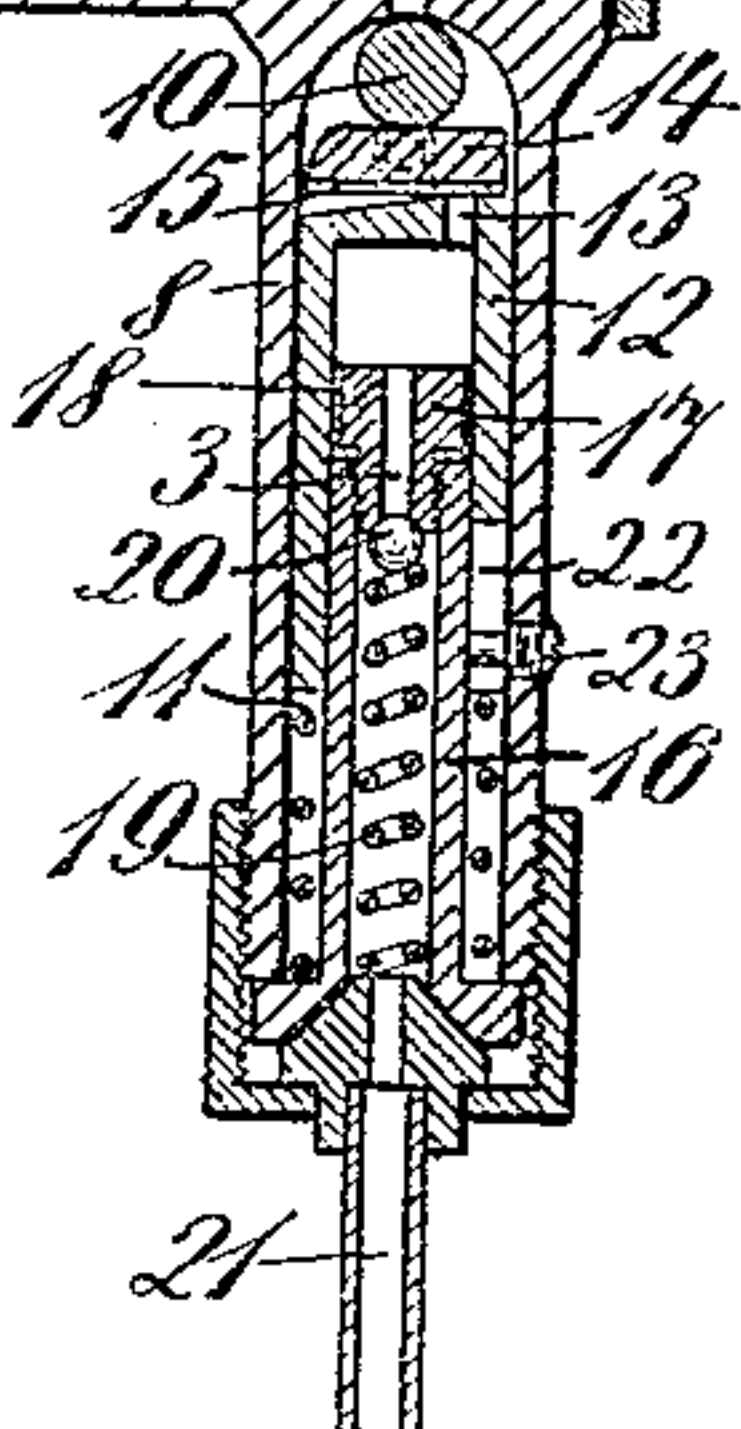
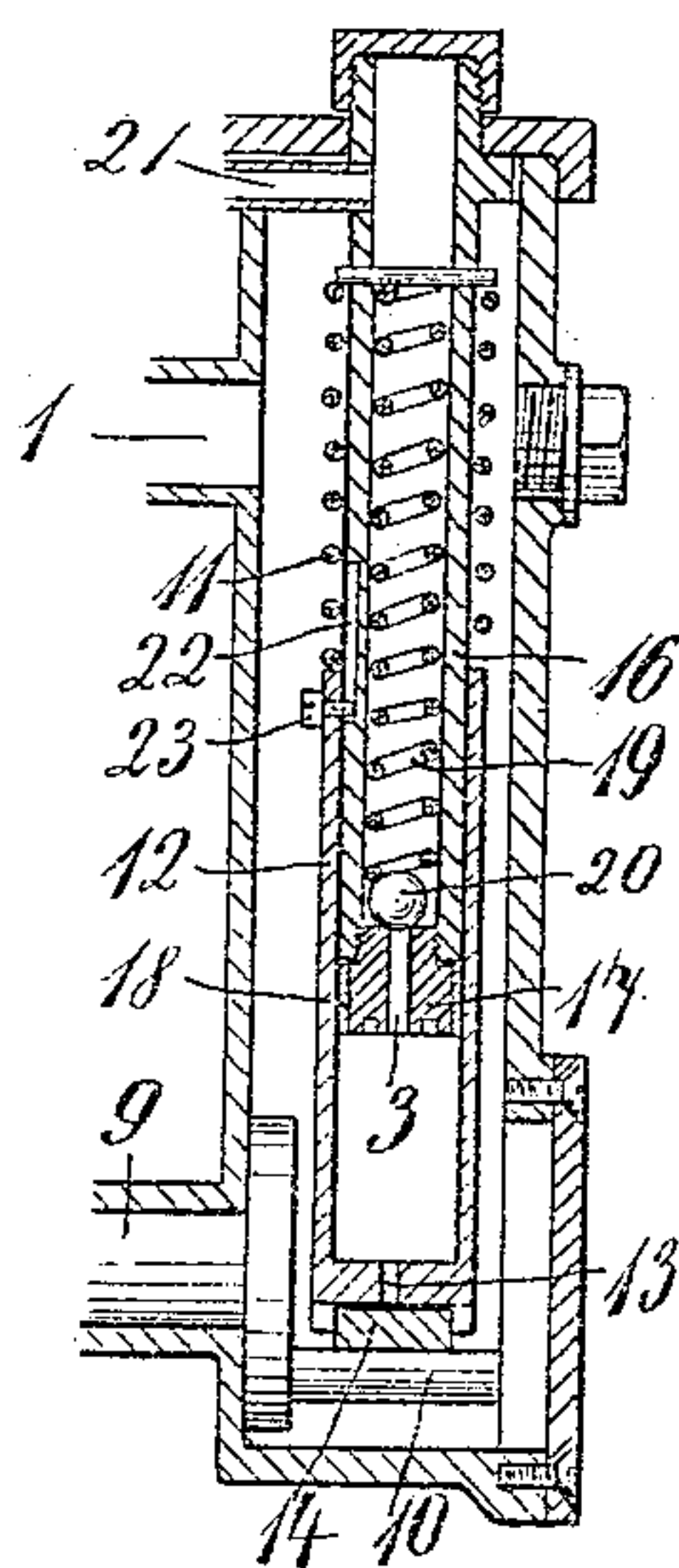
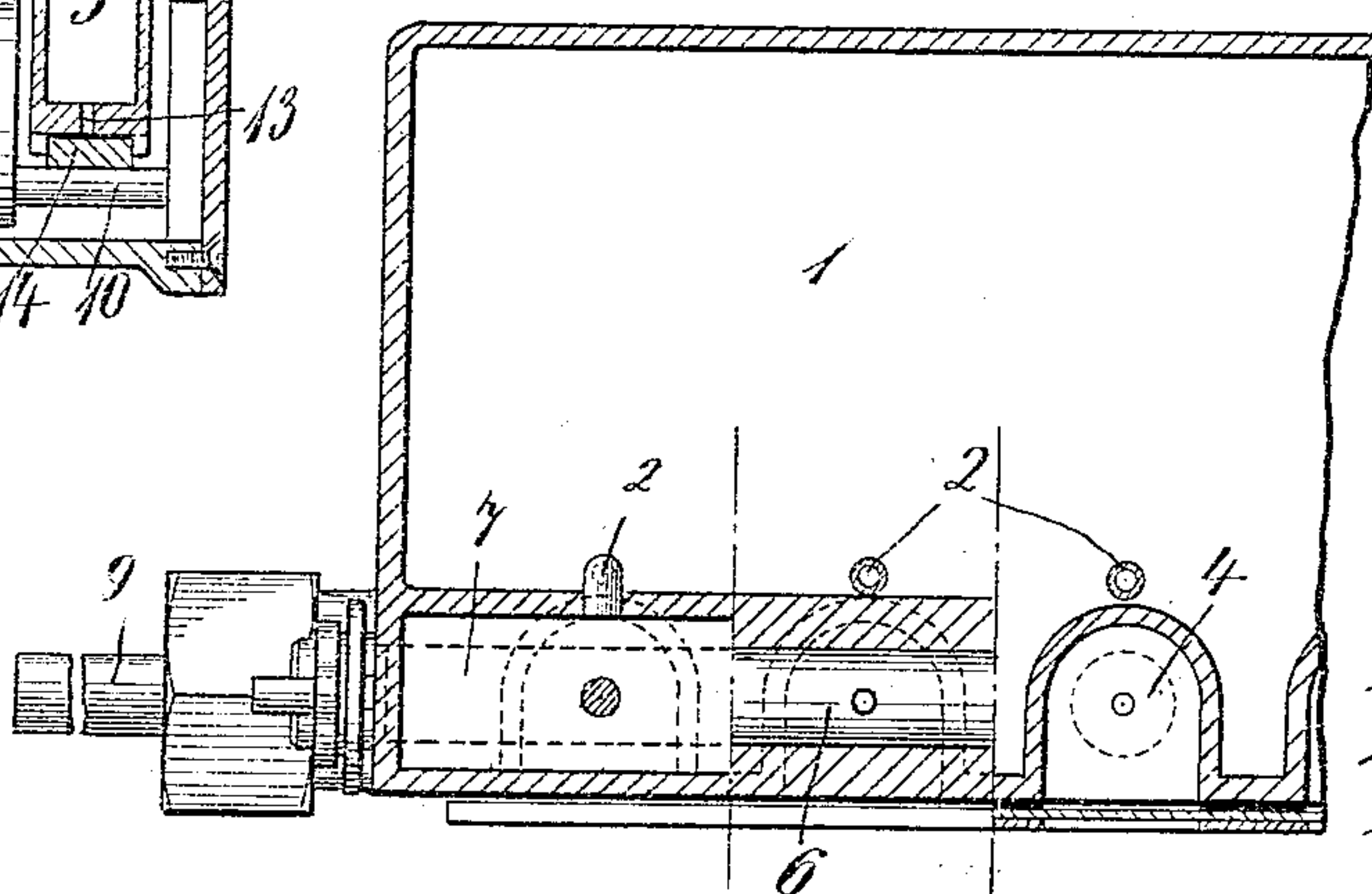


Fig. 4.



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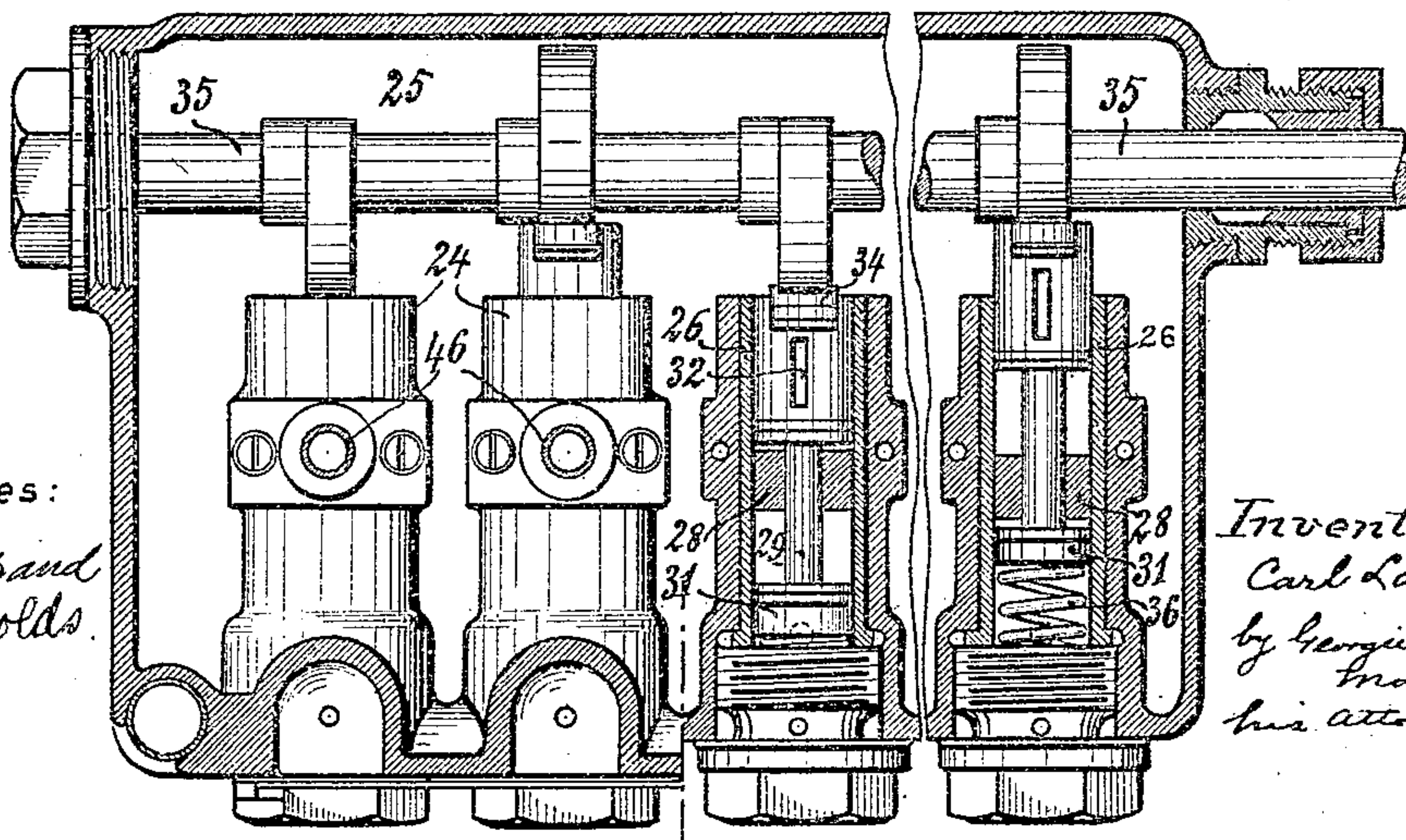
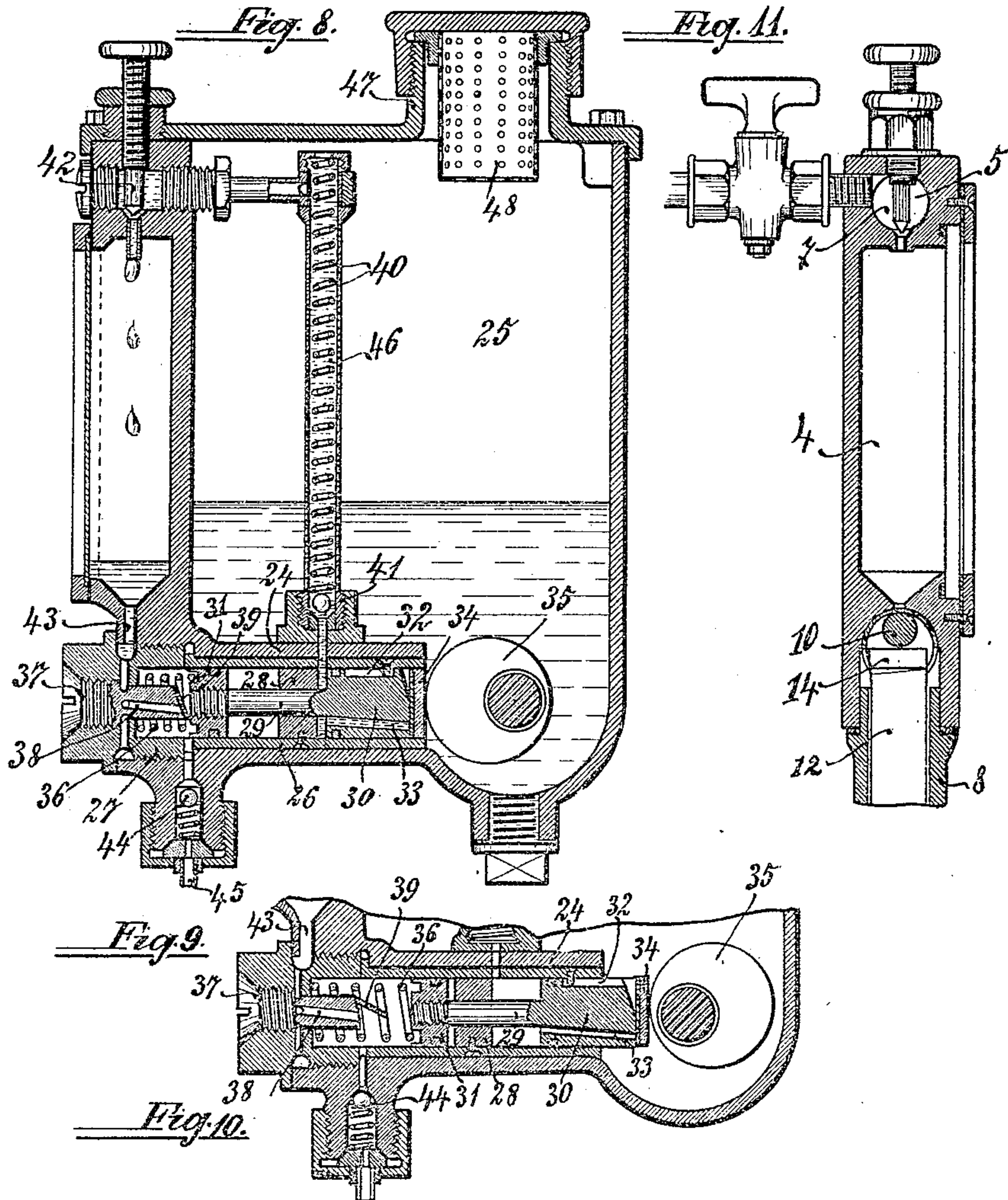
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UNITED STATES PATENT OFFICE.

CARL LANG, OF CANNSTATT, GERMANY.

LUBRICATING-PUMP.

No. 905,717.

Specification of Letters Patent.

Patented Dec. 1, 1908.

Application filed November 9, 1906. Serial No. 342,706.

To all whom it may concern:

Be it known that I, CARL LANG, a subject of the King of Würtemberg, residing at Cannstatt, in the Kingdom of Würtemberg, have invented certain new and useful Improvements in Lubricating-Pumps; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to pumps and particularly a pump for supplying lubricating fluid to one or several points of utilization.

The invention has for its object the provision of means whereby the supply of lubricant to each place may be independently or collectively regulated and accurately gaged.

Preferred and modified embodiments of the invention as hereinafter fully described and as particularly set out in the claims are illustrated in the accompanying drawings, in which

Figure 1 is an elevation of a battery of pumps; Fig. 2 is a partial longitudinal vertical section; Fig. 3 is a transverse vertical section; Fig. 4 is a horizontal section; Fig. 5 is a horizontal section through one of the pump barrels above its piston; Fig. 6 is a detail vertical section through one of the pumps; Fig. 7 is a vertical section through a modified form of the pump; Fig. 8 is a vertical transverse section through a modified form of pump; Fig. 9 is a partial view of Fig. 8 with the piston in a different position; Fig. 10 is a horizontal section showing certain pumps in elevation and others in section; and Fig. 11 is a cross section of a still further modification.

In the form of construction shown in Figs. 1 to 6 inclusive an oil reservoir 1 is equipped with rising pipes 2 corresponding in number to the pumps to be employed. These pipes 2 lead by way of chambers 7 to collecting vessels 4 through vertical passages, each controlled by individual needle valves 5 and collectively by a valve 6, whereby the supply of oil to the collecting vessels 4 may be independently or jointly regulated or shut off entirely. These reception vessels 4 may advantageously be provided with windows in their front to enable visual inspection of their contents. From the lower portion of these collection receptacles the oil is conducted to the interior of a pump barrel 8 through a small uncontrolled inlet opening.

Within the upper portion of each pump barrel revolves an arm of a crank shaft 9, the arms 10 of the respective pumps being in some cases advantageously arranged at an angle of 180° to each other as shown in Fig. 2. Within each pump barrel 8 a hollow piston 12 is pressed forward by the spring 11 and the piston head is provided with a small bore 13 at one side of its axis, the front face of the piston head being beveled upon the other side of the piston axis. A valve plate 14 provided preferably with a pad 15 rests loosely within the pump barrel upon the face of the piston head and between said piston head and the crank arm 10. A stationary hollow guide-rod 16 is fitted snugly within the hollow piston 12 and is in turn provided in its head 17 with a small passage 3 controlled by a rearwardly opening ball-valve 20 influenced by the spring 19. The interior of this guide-rod 16 is in communication with the outlet pipe 21 which conducts the lubricant to the point of consumption. The piston 12 is slotted at 22 and prevented from rotating with relation to the guide-rod 16 by a screw 23 within said slot.

The operation of the individual pump which is the same for the others in the battery, is as follows: The oil is fed by gravity assisted by suction from the collecting vessel 4 into the pump barrel at its upper portion above the plate valve 14. Assuming the space about the crank arm to be filled with oil, and also the space within the hollow piston above the guide-rod, as the crank arm 10 revolves to the right and downward from its position as shown in Fig. 3 it holds the plate valve 14 firmly in place upon the bore 13 and presses the plate and piston downward against the tension of the spring 11. The oil confined in the space between the guide-rod and the piston head is thereby forced past the ball-valve 20 against the action of the spring 19 into the discharge pipe 21. As soon as the crank arm 10 reaches its lowest position and begins to ascend, at the same time wiping across the plate-valve to the left, the spring 11 advances the piston and presses the plate-valve between the head of the piston and the crank arm, tilting the plate on to its beveled face and uncovering the bore 13 as shown in Fig. 6. Thus the oil flows by gravity and suction through the bore 13, filling the space within the hollow piston vacated by the oil previously discharged therefrom. As the crank arm

ches its uppermost position, as shown in Fig. 3, and starts to descend in its second revolution, the plate-valve is again brought to its horizontal position controlling the bore and the operation of discharging the oil pumped within the hollow piston is repeated, thus in cycle.

In the modification shown in Fig. 7 the pump is reversed so that the crank shaft by its arm acts upon the plate-valve and piston from below, the oil being discharged from above.

The operation of that form of device shown in Fig. 11 is substantially the same as that described with reference to Figs. 1 to 6 inclusive, it differing from the construction shown in Fig. 7 by the making of the supply pipe 1 separate from instead of integral with the pump, the rising pipes 2 being dispensed with.

In Figs. 8 to 10 the pump-barrels 24 are arranged in a horizontal position within the chamber 25 and contain pump cylinders inserted from the left and held in place by plugs 27. A plug 28 divides each cylinder into two chambers, this plug also serving as a ring and guide for the piston rod 29 of the double piston 30, 31, the piston 30 being also guided by a screw projecting from the cylinder 26 into a groove 32 formed in said piston. The piston 30 is provided with a longitudinal bore 33 controlled by the plate-valve 34 alternately opening and closing said bore by reason of the beveled face of the piston and wiping across said valve of a crank arm carried by the crank shaft 35. This piston likewise pressed forward as in the previous one by a spiral spring 36 abutting to the rear upon the nipple 27. The nipple 27 accommodates also a screw 37 provided with a longitudinal bore 38 and radial bores leading from the bore 38 to an annular space communicating with the channel 43. The inner end of this screw 37 is preferably beveled and controlled by a rearwardly opening flap valve 39 hinged thereto. In the present case, as distinguished from the construction shown in Figs. 1 to 7 inclusive, the oil is led from the space between the guiding plug and the forward piston indirectly by a transverse passage to a rising pipe 46, this passage being controlled as in the former case by a rearwardly opening ball-valve 41 under the influence of the spring 40. From this rising pipe 46 the oil goes to the channel 43, being controlled in its passage by a needle valve 42. From the channel 43 the oil flows through the annular chamber and the radial passages to the bore 38, past the flap check-valve 39 and the ball check-valve 44 to the discharge pipe 45. The relative position of the valves and other parts is controlled by the position of the crank arm on the shaft 35 as in the previously described analogous construction and as illustrated in Figs. 8, 9 and 10.

Obviously the supply reservoir 1 may be formed integral with the collecting vessels and pump barrels or independently therefrom, and the sight openings for the inspection of interior conditions may be placed at any point of the oil passage. The supply reservoir may be replenished at the opening 47 provided with a strainer 48 or in any other ordinary manner and may be advantageously equipped as illustrated with a discharge tap for flushing the same.

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

1. In a pump, the combination of a pump barrel provided with a fluid inlet, a piston reciprocating therein and provided with a longitudinal bore, a plate-valve resting on the face of the piston head over its bore, means to tilt the plate to uncover the bore as the piston advances and to forcibly hold the plate in its normal position covering the bore as the piston recedes, a fluid discharge port at the rear of the piston head, and a check-valve in said discharge.

2. In a pump, the combination of a pump barrel provided with a fluid inlet, a piston reciprocating therein and provided with a longitudinal bore, a piston head beveled at one side of its bore, a plate-valve resting against the front of the piston head, a crank shaft wiping across the plate to force the piston and plate backward and hold the plate seated on the bore to close the same during such backward movement, a spring pressing the piston and plate forward as the crank shaft retreats and tilting the plate on to the beveled portion of its seat to uncover the bore during such forward movement, a fluid discharge port at the rear of the piston head, and a check-valve in said discharge.

3. In a pump, the combination of a pump barrel provided with a fluid inlet, a hollow piston reciprocating therein and provided in its head with a longitudinal bore to one side of its axis, the head of said piston beveled on the side of its axis opposite the bore, a plate-valve resting against the piston head, a crank shaft wiping across the plate to force the piston and plate backward and holding the plate seated on the bore to close the same during such backward movement, a spring pressing the piston and plate forward as the crank shaft retreats and tilting the plate on to the beveled portion of its seat to uncover the bore during such forward movement, a guide-rod within the hollow piston and provided with a longitudinal passage, a rearwardly opening check-valve controlling said passage, and a fluid discharge pipe leading therefrom.

4. In a pump, the combination of a supply reservoir, a collecting vessel fed thereby, means to control the passage of the fluid from the reservoir to the collecting vessel, a pump barrel provided with a fluid inlet from the

collecting vessel, a hollow piston rod reciprocating within the barrel and provided in its head with a longitudinal bore, a mechanically operated check-valve controlling said
5 bore to open the same as the piston advances and to close the same as the piston recedes, a guide-rod within the hollow piston and provided with a longitudinal passage, a rearwardly opening check-valve controlling said
10 passage, and a fluid discharge pipe leading therefrom.

5. In a pump, the combination of a supply reservoir, a plurality of collecting vessels fed thereby, means to control the passage of the
15 fluid from the reservoir to each collecting vessel independently, means to control the passage of the fluid from the supply reservoir to all of the collecting vessels collectively, a plurality of pump barrels each provided with
20 a fluid inlet from a collecting vessel, each pump barrel having a piston reciprocating therein and provided with a longitudinal bore, a valve controlling said bore to open the same as the piston advances and to close
25 the same as the piston recedes, a fluid discharge port at the rear of the piston head, a check-valve in said discharge, and means for driving the several pistons.

6. In a pump, the combination of a supply
30 reservoir, a plurality of collecting vessels fed thereby, means to control the passage of the

fluid from the reservoir to each collecting vessel independently, means to control the passage of the fluid from the supply reservoir to all of the collecting vessels collectively, a plurality of pump barrels each provided with a fluid inlet from a collecting vessel, each pump barrel having a hollow piston reciprocating therein and provided in its head with a longitudinal bore to one side of its axis, the head of said piston beveled on the side of its axis opposite the bore, a plate-valve resting against the piston head, a crank shaft wiping across the plate to force the piston and plate backward and holding the plate seated on the bore to close the same during such backward movement, a spring pressing the piston and plate forward as the crank shaft retreats and tilting the plate on to the beveled portion of its seat to uncover the bore during such forward movement, a guide-rod within the hollow piston and provided with a longitudinal passage, a rearwardly opening check-valve controlling said passage, and a fluid discharge pipe leading therefrom.

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

CARL LANG.

Witnesses:

ERNST ENTENMANN,
KARL BOSCH.