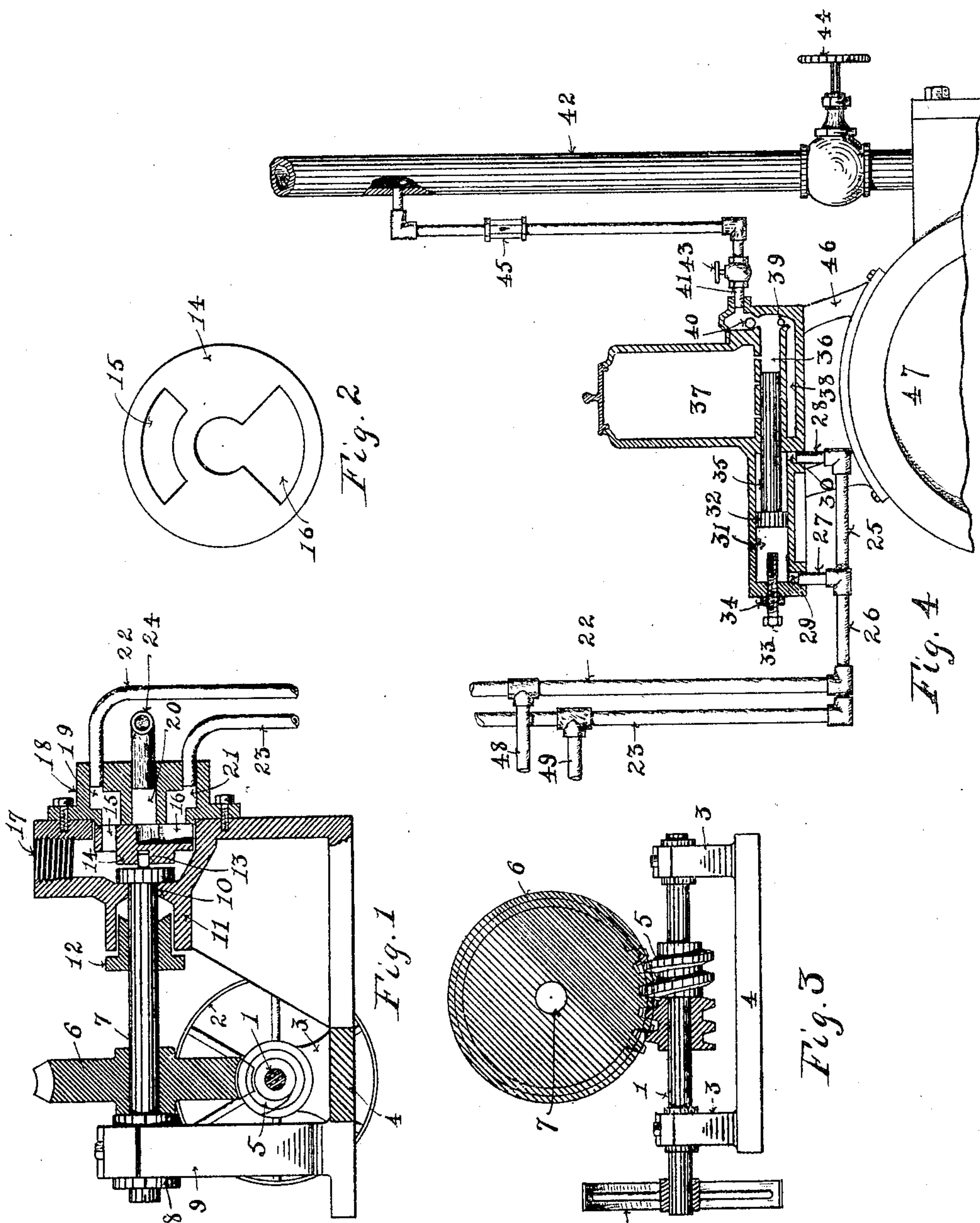


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LUBRICATING PUMP.  
APPLICATION FILED MAR. 10, 1904.





# UNITED STATES PATENT OFFICE.

GEORGE W. COLE, OF BUFFALO, NEW YORK.

## LUBRICATING-PUMP.

No. 804,384.

Specification of Letters Patent.

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*To all whom it may concern:*

Be it known that I, GEORGE W. COLE, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented a new and useful Improvement in Lubricating-Pumps, of which the following is a specification.

My invention relates to lubricating-pumps and means for operating them.

More particularly, it relates to means for lubricating engines or machines either singly or in series from a single source of power through the action of steam.

Among the advantages that result from the use of my device may be mentioned the following: First, my device is as adaptable for lubricating all of the engines or machines of a large plant as it is for lubricating but a single one; second, it is economical not only as regards the necessary amount of power to operate it, but in the efficient way in which it distributes the lubricant, and it is cheap to install; third, it is entirely automatic, and the operator is able to regulate very delicately the quantity of lubricant supplied to the engines or machines; fourth, it can be readily fitted to any size of engine or machine.

Referring to the accompanying drawings, consisting of one sheet, in which like characters of reference refer to like parts throughout the several figures, Figure 1 is a sectional elevation of my valve-controlling mechanism. Fig. 2 is a face view of my steam-controlling valve. Fig. 3 is an elevation, partly in section, of the worm and gear which operate my steam-valve. Fig. 4 is a sectional elevation of my lubricator, showing its steam and lubricator connections.

1 is the driving-shaft, to which power from any desired source is applied by means of the belt-wheel 2. The shaft 1 is journaled in any suitable standards 3, carried by a base 4. A worm 5, rigidly secured to the shaft 1, meshes with the gear 6, which in turn is rigidly secured to the driven shaft 7. Shaft 7 is journaled at 8 in the standard 9 and at 10 in the standard or frame 11. A stuffing-box 12 sits in the frame 11 and tightly surrounds the shaft 7. The said shaft 7 is provided with a feather 13, by means of which it is rigidly secured to the valve 14. The valve 14 is provided with the steam-inlet port 15 and the steam-exhaust port 16. A steam-inlet pipe 17 leads from any convenient source of supply to the port 15. A casting 18 is suitably secured to the frame 11 and is provided with the con-

ducting-ports 19, 20, and 21. A steam-conducting pipe 22 leads from port 19. Another like pipe 23 leads from port 21, and an exhaust-pipe 24 leads from port 20.

The pipe 22 leads by the branches 26 and 27 to the port 29, and the pipe 23 leads by the branches 25 and 28 to the port 30 of the cylinder 31. The piston 32 travels in the cylinder 31, and the length of its stroke is regulated by the set-screw 33. The set-screw 33 is locked by a lock-nut 34, which also acts as a stuffing-box for the set-screw. The piston-rod 35 closely fits cylinder 36 and acts as a stuffing-box for it.

Oil or other suitable lubricant is contained in the reservoir 37, and it is allowed to filter down and fill the subreservoir 38 and the space in the cylinder 36 which is not occupied by the piston-rod 35. An ordinary check-valve 39 controls the passage-way between subreservoir 38 and cylinder 36. Another check-valve 40 controls the passage leading from the cylinder 36 to the lubricating conducting-pipe 41. The pipe 41 conveys the lubricant to the steam-pipe 42, and it is then carried to the engine or machine to be lubricated. Suitable valves 43 and 44 are provided in pipes 41 and 42, and it is evident that valves for controlling the steam leading to the piston-cylinder can conveniently be placed wherever desired in the pipes 22 and 23. In order to be able readily to determine the amount of lubricant passing through the pipe 41, I provide a sight-gage 45.

My lubricant-reservoir, together with the cylinder and various described connecting parts, may be conveniently carried by a frame 46 and mounted in any suitable way on the cylinder-head 47 of the engine being oiled.

To pipes 22 and 23 at any convenient points there may be connected by suitable T connections steam-conducting pipes 48 and 49. It is evident that pipes 48 and 49 can be as readily connected to other piston-cylinders 31 as are pipes 22 and 23, and it is likewise apparent that any desired number of other branches can be as readily connected to said pipes 22 and 23 as to make it possible to connect the same to any desired number of engines or machines, and thereby lubricate them.

Having thus described the several parts of my device, I will now describe its operation.

Power is applied to the wheel 2, which drives shaft 1, thereby revolving the worm 5, and thus driving the gear 6 and the shaft 7. The revolution of the shaft 7 likewise revolves



the valve 14. Steam is led through pipe 17, and when port 15 of the valve 14 registers with port 18 the steam is conducted through pipes 22, 26, and 27 and port 29 into cylinder 31. This forces the piston 32 away from port 29 and drives piston-rod 35 toward the check-valves 39 and 40. The cylinder 36 being filled with the lubricant, the piston-rod 35 in moving ahead will close check-valve 39 and force the lubricant past check-valve 40, through pipe 41, into steam-pipe 42, whence it will be carried to the engine or machine to be lubricated. The port 30 during this stroke acts as an exhaust-port, and through it the exhaust is conducted by pipes 28, 25, and 23 into ports 21 and 16 and thence through port 20 into exhaust-pipe 24. The ports 15 and 16 of the valve 14 are so positioned that when port 15 registers with port 19 then port 16 will register with ports 21 and 20, and when port 15 registers with port 21 then port 16 will register with ports 19 and 20. The continued revolution of the shaft 7 will carry the port 15 so that it will register with port 21, thus cutting off the live steam from port 19. Live steam will then travel from pipe 17 through ports 15 and 21, pipes 23, 25, and 28 and port 30 into cylinder 31, thus forcing piston 32 and piston-rod 35 to travel toward port 29. During this piston-stroke port 29 will act as an exhaust-port, and the exhaust will travel thence through pipes 27, 26, and 22 and through ports 19, 16, and 20 into the exhaust-pipe 24. The last-mentioned movement of piston-rod 35 will by its suction close check-valve 40, open check-valve 39, and draw into cylinder 36 an additional amount of lubricant to be driven to the en-

gine on the next stroke of the piston, as hereinbefore described.

It is apparent that by the adjustment of set-screw 33 the length of stroke of the piston-rod 35 can be regulated at pleasure and that thereby the quantity of lubricant supplied to the engine is likewise under control.

From the above description it will be seen that by the use of my device any number of engines or machines can be supplied with lubricant simultaneously by but one of my steam-controlling valve mechanisms.

It is easily seen that my device is as adaptable for forcing any fluid to any desired point as it is for a lubricant. Thus it could be used for feeding boilers with water.

Having thus described my invention, what I claim is—

A lubricator comprising a reservoir, a cylinder receiving lubricant from said reservoir, a piston in said cylinder, means to conduct the lubricant from said piston-cylinder to any desired point, and piston-controlling means comprising a steam-operated rotary valve provided with ports and a coacting part provided with coöperating ports adapted to register with the first-named ports, and means for conveying the steam from said last-named ports to different portions of the before-mentioned piston-cylinder.

In testimony whereof I have hereunto set my hand in the presence of two witnesses.

GEORGE W. COLE.

Witnesses:

S. BROWN,  
E. R. BOSLEY.