

(No Model.)

C. M. LONG.  
LUBRICATING APPARATUS.

No. 326,304.

Patented Sept. 15, 1885.

Fig. 1.

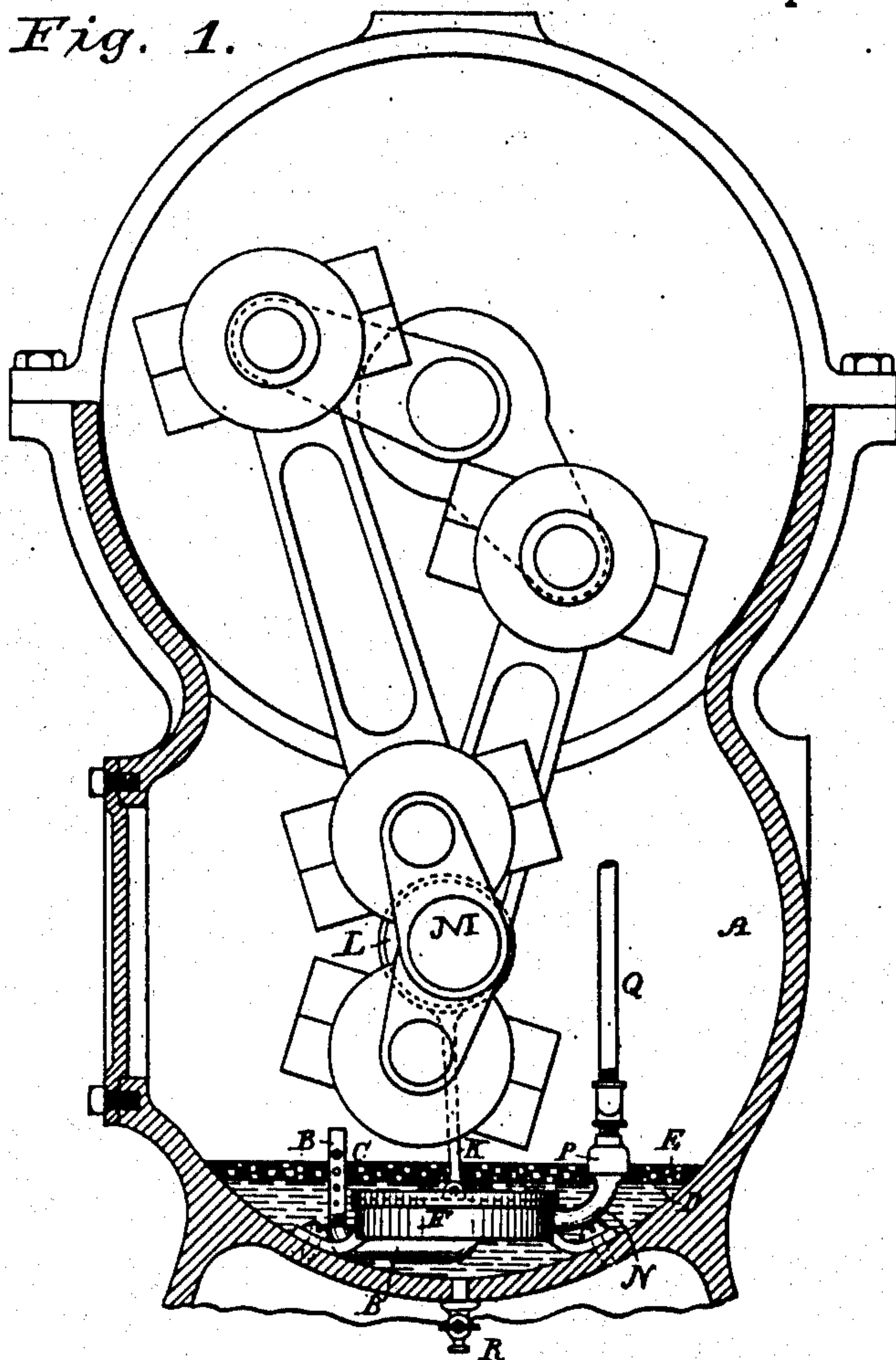
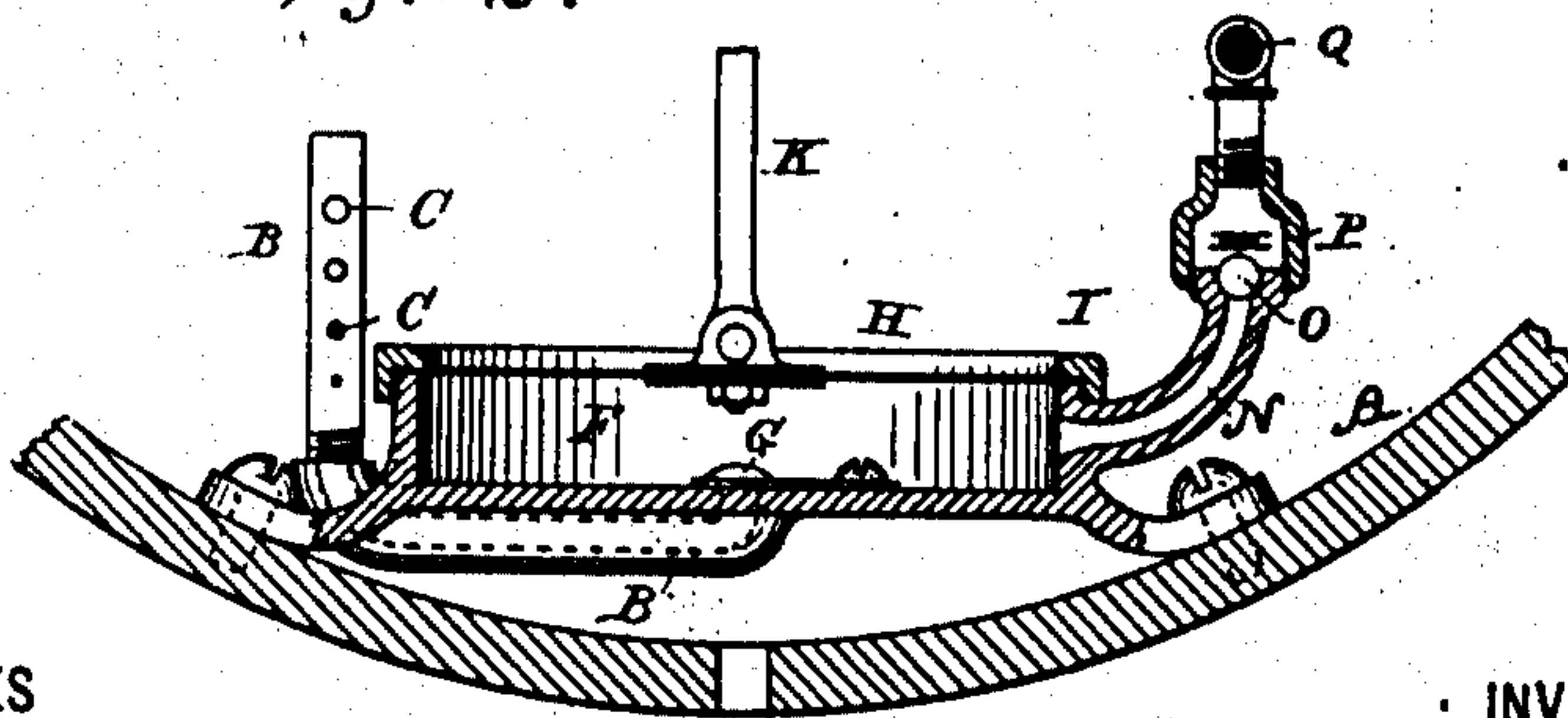


Fig. 2.



WITNESSES

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# UNITED STATES PATENT OFFICE.

CURTIS M. LONG, OF ALLEGHENY, PENNSYLVANIA.

## LUBRICATING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 326,304, dated September 15, 1885.

Application filed July 8, 1885. (No model.)

*To all whom it may concern:*

Be it known that I, CURTIS M. LONG, of Allegheny, in the county of Allegheny and State of Pennsylvania, have invented certain  
5 Lubricating Apparatus, of which the following is a specification.

I design my lubricating apparatus particularly to be used in engines of the class having oscillating pistons; but it is applicable to various other uses.

In the accompanying drawings, illustrating my improvements, Figure 1 is a side elevation, partly in section, of such an engine. Fig. 2 is a sectional view drawn on a larger  
15 scale, showing the details of my invention and its mode of operation.

Referring to the letters upon the drawings, A indicates the hollow casing or support containing the working parts of the engine and  
20 of the lubricating apparatus below.

B indicates an oil-inlet pipe, through which water or oil, or both, can be admitted. This pipe is perforated at C, as indicated, the upper perforations being intended to be above  
25 the water-line for the admission of oil, and being a little larger than the lower ones for the admission of water, which are to be below the water-line.

D indicates the water-line, and E the oil above it. Instead of having the inlet-pipe B extend above the oil, it might be cut off at about the water-line, so as to let the oil flow in at its open end, and the water flow in at the perforations below the water-line. This would  
35 be only a formal variation embodying the principle of action that I contemplate, which is that the oil mingled with water shall be admitted through a lower continuation of the pipe B into the cup F through valve G in its  
40 bottom. The valve G is of ordinary construction, so as to be normally closed by its own weight.

H indicates a flexible diaphragm secured around the rim of the cup by means of screw-nut I, as indicated, or in any usual or suitable  
45 manner.

K indicates a rod connected with an eccentric, L, working upon the main crank-shaft M of the engine, so as to operate the rod and  
50 vibrate the diaphragm in the manner of thumb-pressure upon the bottom of an ordinary small oil-can.

N indicates a pipe or passage from the oil-cup outward. This passage is provided with a ball-valve, O, normally tending to close it  
55 by gravity.

P is a screw-cap fitting over the outer end of the pipe, as shown, and serving to keep the ball-valve from getting out of place.

Q indicates jet pipes or nozzles extending  
60 out of the screw-cap, and directed toward different parts of machinery to be supplied with oil-jets and lubricated.

It will be observed that this lubricating apparatus is located in the bottom of the engine-  
65 case, where it is inclosed like the engine itself.

The theory and practical operation of my improved apparatus are as follows: The water being placed in the engine-case through any suitable opening for the purpose, so as to cover  
70 the lubricating apparatus about as indicated in the drawings, the oil is next poured in through an opening in the casing, so as to float upon the water about as indicated in the drawings. Now, the engine being started, the  
75 diaphragm of the oil-cup will immediately force the contents of the cup (which for a few strokes may be water) out through the jetting apparatus onto the working parts of the engine, the valve G being closed by each downward  
80 movement of the diaphragm, and the ball-valve being raised and opened at the same time. As the diaphragm rises, the valve G will be opened, the ball-valve will be closed, and the mingled oil and water will be drawn  
85 by suction into the cup. Each successive complete vibration of the diaphragm thus serves to fill and partially empty the cup in the same way. The vibrations being quite  
90 rapid, the oil and water intermingle by agitation and pressure and flow into the cup, and thus a continuous circulation is kept up.

In the operation of the engine there will be constantly some water supplied by condensation, which it is necessary occasionally to draw  
95 off, so as to preserve the water-line about as indicated. I therefore provide an ordinary water-cock, R, for this purpose. The water, being heavier and at the bottom, may be  
100 drawn off without material waste of the oil. The oil and water jet upon the engine will drip back and be again jetted, and so on continuously, so that a single supply of the oil will be automatically applied to the engine.



over and over again with very slight waste. The oil will only need to be replenished slightly at long intervals. The water serves to keep the oil in position above it where it may enter the pipe and go to the oil-cup, and also by intermingling with the oil it serves to keep the journals of the engine cool, which is a very important matter in high-speed engines.

I do not confine my invention to the details or particular form of embodiment herein illustrated and described, because the form of embodiment may be changed without departing from the substance of my invention.

In order to distinguish my improvements from what has gone before, I would say I do not claim, broadly, the use of an oil-jetting apparatus submerged in liquid within a receptacle and operated by the mechanism to be lubricated. Such an apparatus, for example, is shown in United States Patent No. 39,059, issued June 30, 1863. My improvements in this class of lubricating apparatus are intended specially to provide for the employment of mingled oil and water, although they are adapted to the use of oil alone, and they are confined to the construction and combination of parts specified in my appended claims.

What I claim to be new, and desire to secure by Letters Patent of the United States, is—

1. In combination with a revolving engine or other shaft, a suitable casing or receptacle for liquid, the perforated inlet-pipe B, the cup F, provided with diaphragm H and jet-pipe, the valves G and O, and the eccentric and rod for vibrating the diaphragm and agitating and forcing out the liquid, substantially as set forth.

2. In combination with a revolving engine or other shaft, a suitable casing or receptacle for liquid, the perforated inlet-pipe B, the cup F, provided with inlet and outlet valves G and O, and jet-pipe, the eccentric and rod, and a vibrating diaphragm, or equivalent mechanism, for forcing out the lubricant, substantially as set forth.

In testimony whereof I have hereunto subscribed my name.

CURTIS M. LONG.

Witnesses:

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