

(No Model.)

2 Sheets—Sheet 1.

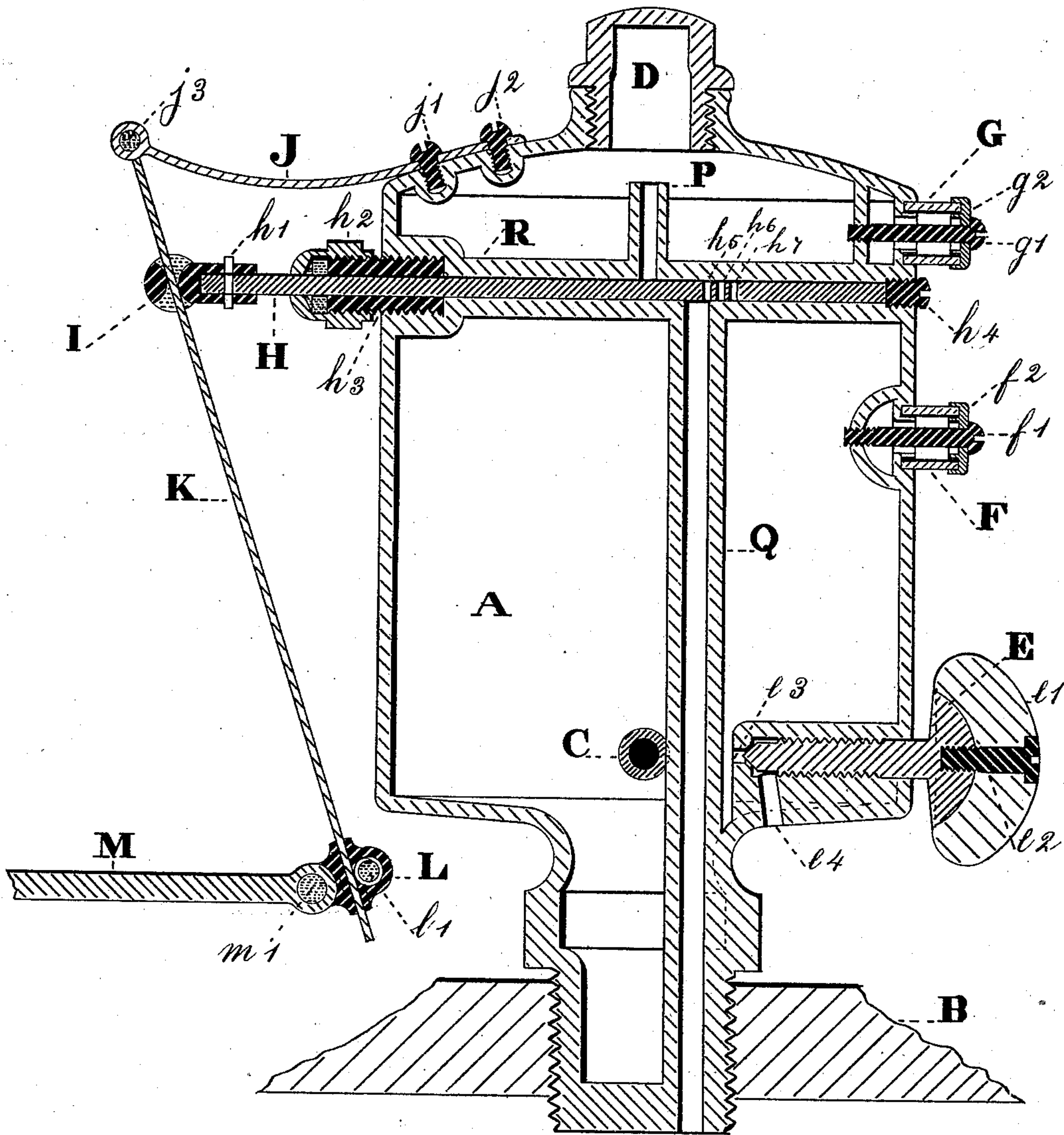
J. V. RENCHARD.

LUBRICATOR.

No. 285,432.

Patented Sept. 25, 1883.

Fig. 1.



Witnesses:

E. E. Renchard.

A. M. Graham.

Inventor,

J. Vincent Renchard.

(No Model.)

2 Sheets—Sheet 2.

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Fig. 2.

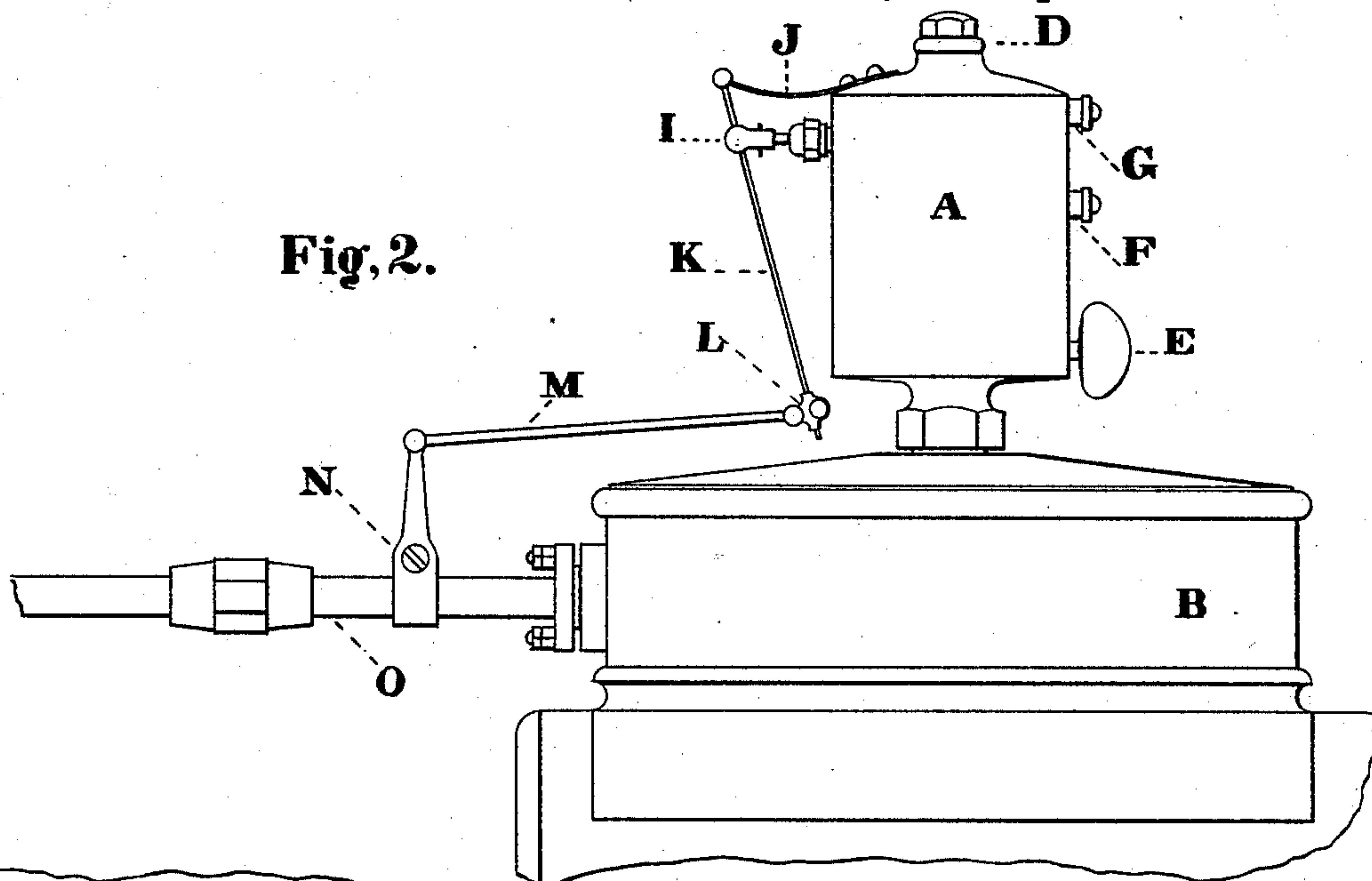
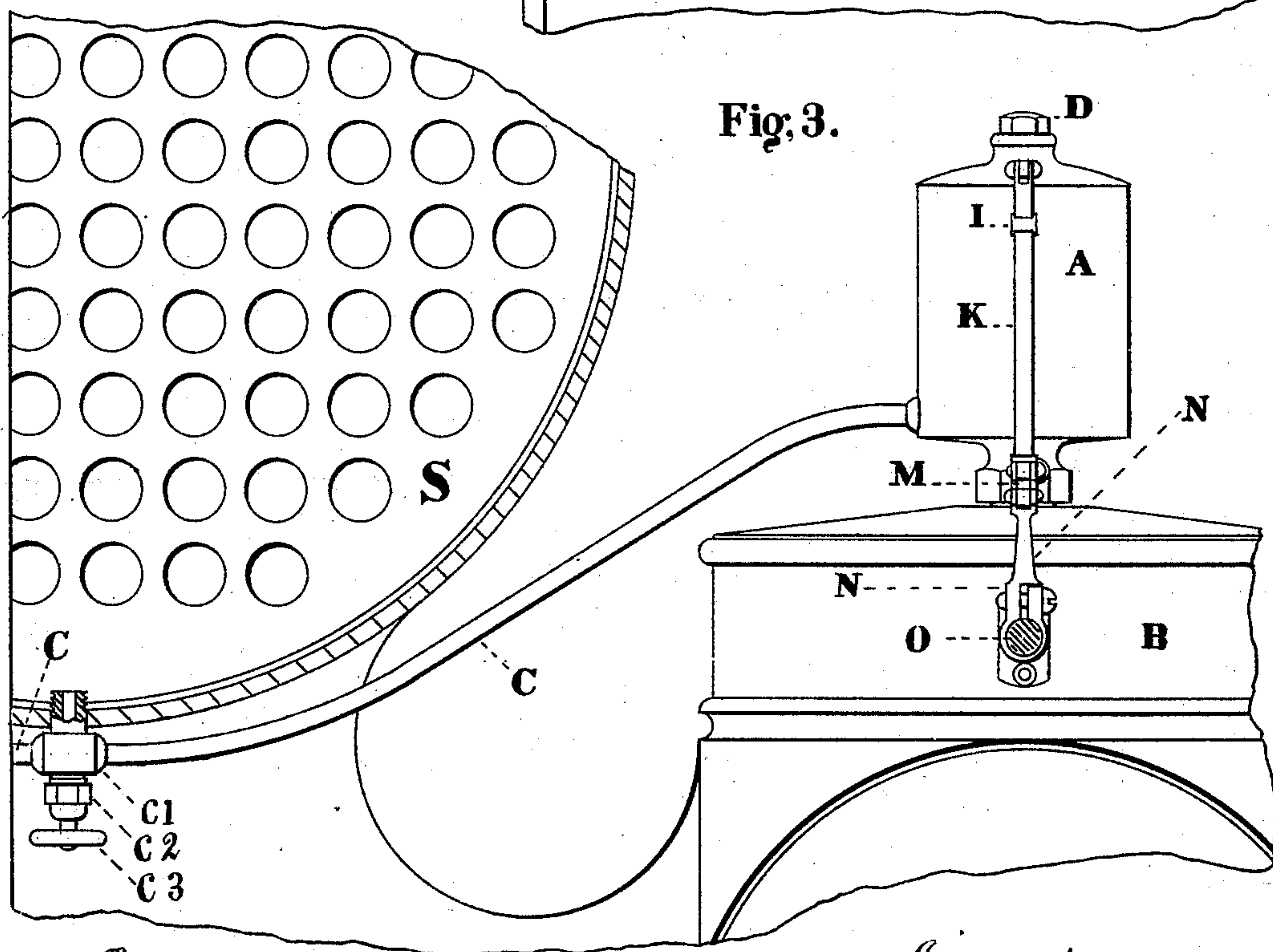


Fig. 3.



Witnesses:

E. E. Renchard.
A. M. Graham.

Inventor,

J. Vincent, Renchard.

UNITED STATES PATENT OFFICE.

J. VINCENT RENCHARD, OF WINDSOR, ONTARIO, CANADA.

LUBRICATOR.

SPECIFICATION forming part of Letters Patent No. 285,432, dated September 25, 1883.

Application filed March 3, 1883. (No model.)

To all whom it may concern:

Be it known that I, J. VINCENT RENCHARD, a citizen of the United States, residing at Windsor, Ontario Province, Canada, have invented an Improved Lubricator, of which the following is a specification.

The object of this device is to provide for a simple yet effective method of infusing the steam-engine with lubricants, more especially the locomotive, by auto-mechanical means, embracing in construction and operation a reduction of the operative principles in my former applications.

In the accompanying drawings, Figure 1 is a side vertical central section. Fig. 2 is a side vertical elevation, and shown as attached to the steam-chest of a locomotive-engine, and its transmitting mechanism as connected with the valve-rod of engine. Fig. 3 is a front vertical elevation viewed from the cab of the locomotive, and attached to the steam-chest and valve-rod thereof, also showing its communication with the boiler S by means of the pressure-pipe C and the two-way valve c' .

In the aggregate views, A is the oil-magazine; B, the steam-chest; C, the pressure-tube communicating between the oil-magazine and boiler; c' , the two-way valve for opening and closing communication between the boiler and the oil-magazine; c^2 , pack-nut; c^3 , valve-stem; D, filling-cap; E, discharge-valve; e' and e^2 , wood handle and screw; e^3 and e^4 , outlet-channel; F and G, indicator-glass tubes; f' and g' , indicator-screws; f^2 and g^2 , indicator-heads; H, piston-valve; I and h' , piston draw-head and pin; h^2 and h^3 , pack-nut and gland; h^4 , cylinder-plug; h^5 , h^6 , and h^7 , oil pockets or cells; J, fulcrum; j' and j^2 , screws to hold latter; j^3 , fulcrum-pin; K, spring-lever; L, adjustable head; l' , adjusting clamp-screw; M, connecting-arm; m' , connecting-pin; N, transmitting-arm; O, valve-rod of engine; P, oil-inlet channel; Q, oil-outlet channel; R, cylinder-bar, (cast in oil-magazine;) S, boiler.

The device is operated by the movement of the engine-valve-rod, it being peculiarly adapted, owing to its varied lengths of travel, to be controlled by the engineer as he places the "reversing-lever" to suit the requirements of power, speed, &c., so that the valve-rod is practically the regulating medium of the quan-

tity of lubricant injected into the engine at each revolution.

Filling the device with lubricant, its operation is as follows: The engine being at rest, valve E is opened, then valve c' , when the water from boiler will force its way through the pressure-pipe C into the oil-magazine A, then out through discharge-channel e^3 and e^4 , passing valve E. When the magazine is presumably clean, the valve c' is closed, likewise valve E. Cap D is then removed and magazine A filled with lubricant, after which D is replaced and valve c' opened, when the device is ready for use. As soon as the locomotive is put in motion the valve-rod imparts motion to the connecting-arm M, lever K, and piston-valve H, the latter being provided with drilled oil-pockets or oil-cells, and these are alternately brought under and over the inlet and discharge channels P and Q, receiving and discharging the oil that is forced into them by the superior pressure under the oil in magazine, which is forced upward by the hydraulic and steam pressure from the boiler through the pipe C. Remaining imbued with this pressure, the oil of its own force easily discharges into the channel Q, when the cells or oil-pockets communicate therewith.

It will be observed that the number of cells which become filled with lubricant are governed by the stroke of the valve-rod O, which, if traveling full stroke, will draw all the cells under the inlet-channel P, and if traveling short stroke will only bring under channel P the number of cells proportioned to such travel. However, all the cells on their discharge movement will communicate with the discharge-channel Q. As the lubricant is required by the engine the valve-rod will cause it to be delivered.

This device differs from my former application only in construction and the absence of a "contractible oil-pocket." Although not so complete in theory, yet sufficiently practicable for all general requirements, the spirit of my invention is in this device more simply explained, and consists in placing between the oil, subjected to steam and hydrostatic pressure and the various pressures and vacuum in the engine, any mechanism which may reciprocate, oscillate, revolve, or gyrate.

This device would also be operative by being placed on the top of the boiler and communicating by means of two tubes with the steam-chest, one of which would convey steam to the magazine to form the balancing-pressure, while the other would convey the lubricant to the engine. In this case, however, the moving mechanism would be best adapted by being placed on the line of the discharge-tube and down near the steam-chest. By this plan the oil itself would exert the superior pressure against the pressure from the steam-chest by its own weight.

I am familiar with the patent to C. H. Parrish, No. 126,572, in which a disk containing a cavity which can be increased or diminished mechanically from time to time is used to convey lubricant from an inlet to a discharge channel. In his device, like others of the class, the oil is subjected to the various pressures and vacuum from the engine, not only indirectly through the cavity in the disk by induction, but through the pipe *ff*, which communicates between the engine-pressures and the lubricant. The tube *ff* is intended principally to convey caloric to the "hot-air chamber" *P*, as well as exert a downward pressure upon the lubricant, which is no greater than the variable engine-pressures, and to which the lubricant is at all times subjected. The lubricant is dependent entirely upon its gravity, or a weight equivalent to the height of the oil in the oil-chamber, as shown in the drawings, to seek egress through the cavity into the engine. The pipe *ff*, by discharging steam into the oil-chamber, creates condensation. The resultant water, being reasonably greater in volume than the oil required by the engine, seeks the bottom of the lubricant, and is injected into the engine, instead of the lubricant, while the latter rises in the oil-chamber and finds egress to the engine through the pipe *ff*; hence the operation of the disk and its adjustable cavity is but chimerical. The tube *ff* also causes ebullition, disintegration, and oxidation of the lubricant in the receptacle, and when steam is shut off the resultant vacuum in the engine draws the lubricant out of the oil-receptacle. In his device the variable travel of the valve-rod cannot vary the discharge of the lubricant, as the single cavity in the disk can receive only a previously-regulated quantity of lubricant.

The device patented to J. W. Reed, No. 168,671, is intended to lubricate only when the locomotive operates without steam, as the lubricant therein is continually communicative with the atmosphere. My device differs entirely from the foregoing, as well as others of similar construction, and consists in placing an intervening mechanism between the variable pressures and vacuum from the engine and the lubricant, the latter, however, being subjected to the steam and hydraulic pressures from the boiler, or any pressure greater than that at any time delivered to the engine. The lubricant in my device is not subjected to either the engine-pressure, vacuum, or atmosphere until it discharges therein, as the intervening reciprocating mechanism precludes such communication. The superior pressure exerted against the lubricant being constant, the discharging lubricant is imbued with such pressure; but its inertia to discharge is varied, as it contends against the variable pressures of the engine in discharging therein. This is its automatic regulation, while the variable travel of the engine-valve rod or its equivalent, in combination with two or more cavities in the piston *H*, creates the mechanical regulation of the oil-discharge. The two sources combined form the auto-mechanical means.

Having described my invention, I desire to secure the following claim:

The method herein described of injecting lubricants, consisting in the employment of the piston *H*, provided with oil pockets or cells, and receiving motion from a moving member of the engine or other transmitting medium, and intervening in a channel-space, in which it operates to effect the transition of lubricant from the receiving-channel *P* to the discharge-channel *Q*, the lubricant being subjected, through the pipe *C*, to the hydraulic and steam pressure from the boiler, or other pressure superior to that delivered to the engine, substantially as specified.

Signed at Windsor, Province of Ontario, Canada, this 17th day of February, 1883.

J. VINCENT RENCHARD.

Witnesses:

E. E. RENCHARD,
A. M. GRAHAM.