

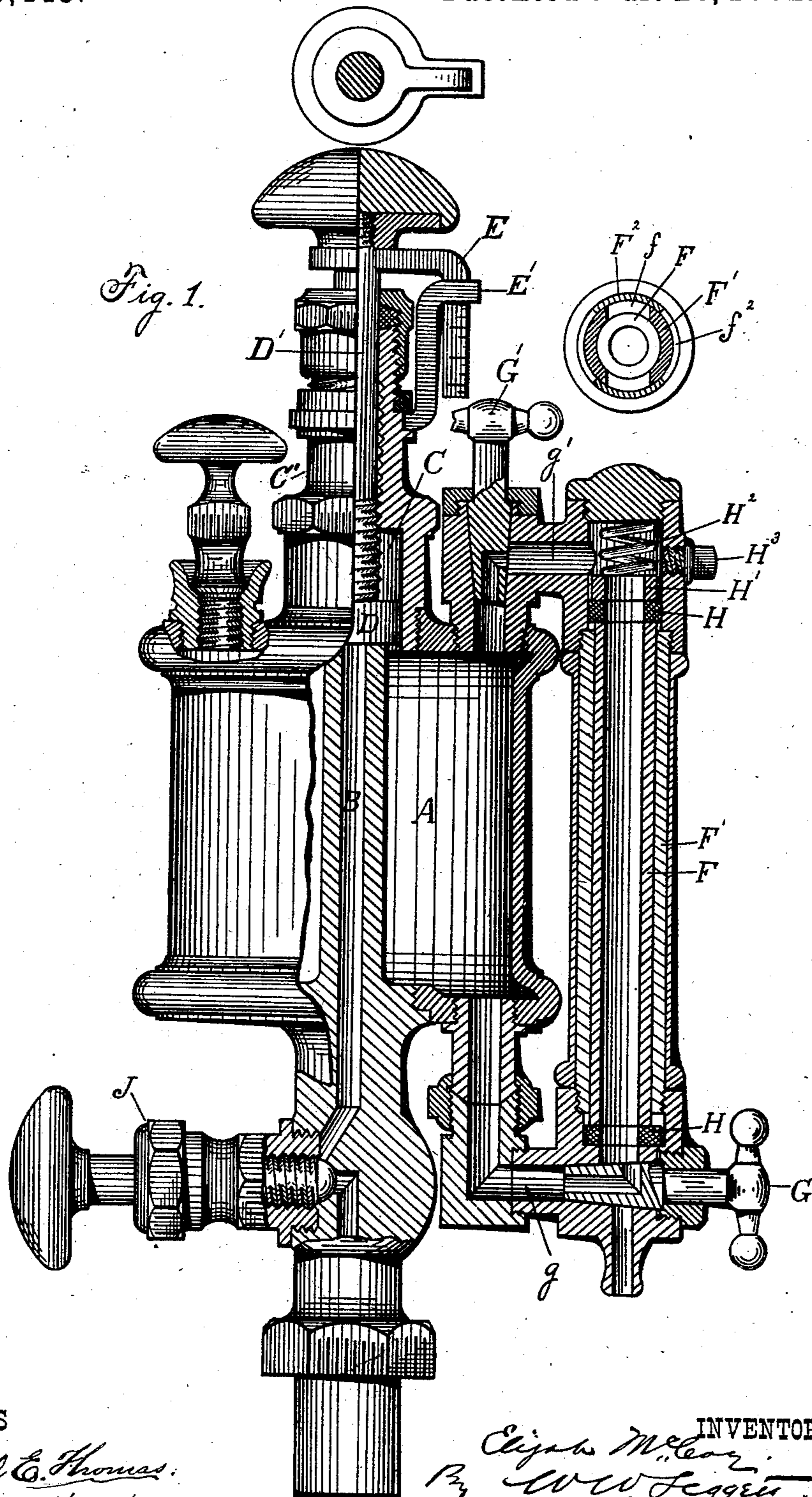
(No Model.)

2 Sheets—Sheet 1.

E. McCOY.
LUBRICATOR.

No. 255,443.

Patented Mar. 28, 1882.



WITNESSES

Samuel C. Thomas.
J. Edward Warren

INVENTOR

E. McCoy.
W. W. Leggett.

ATTORNEY

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Fig. 2.

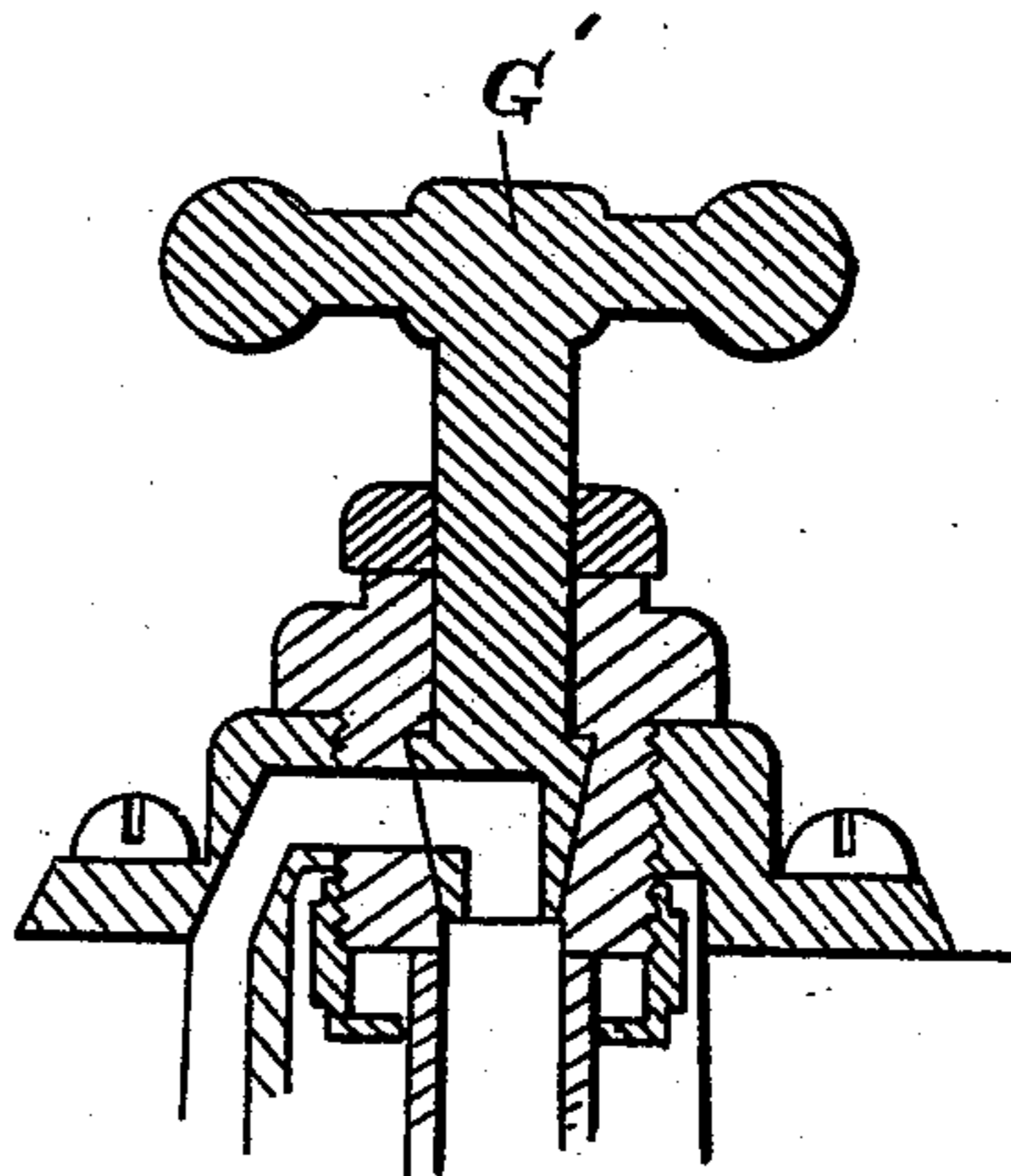
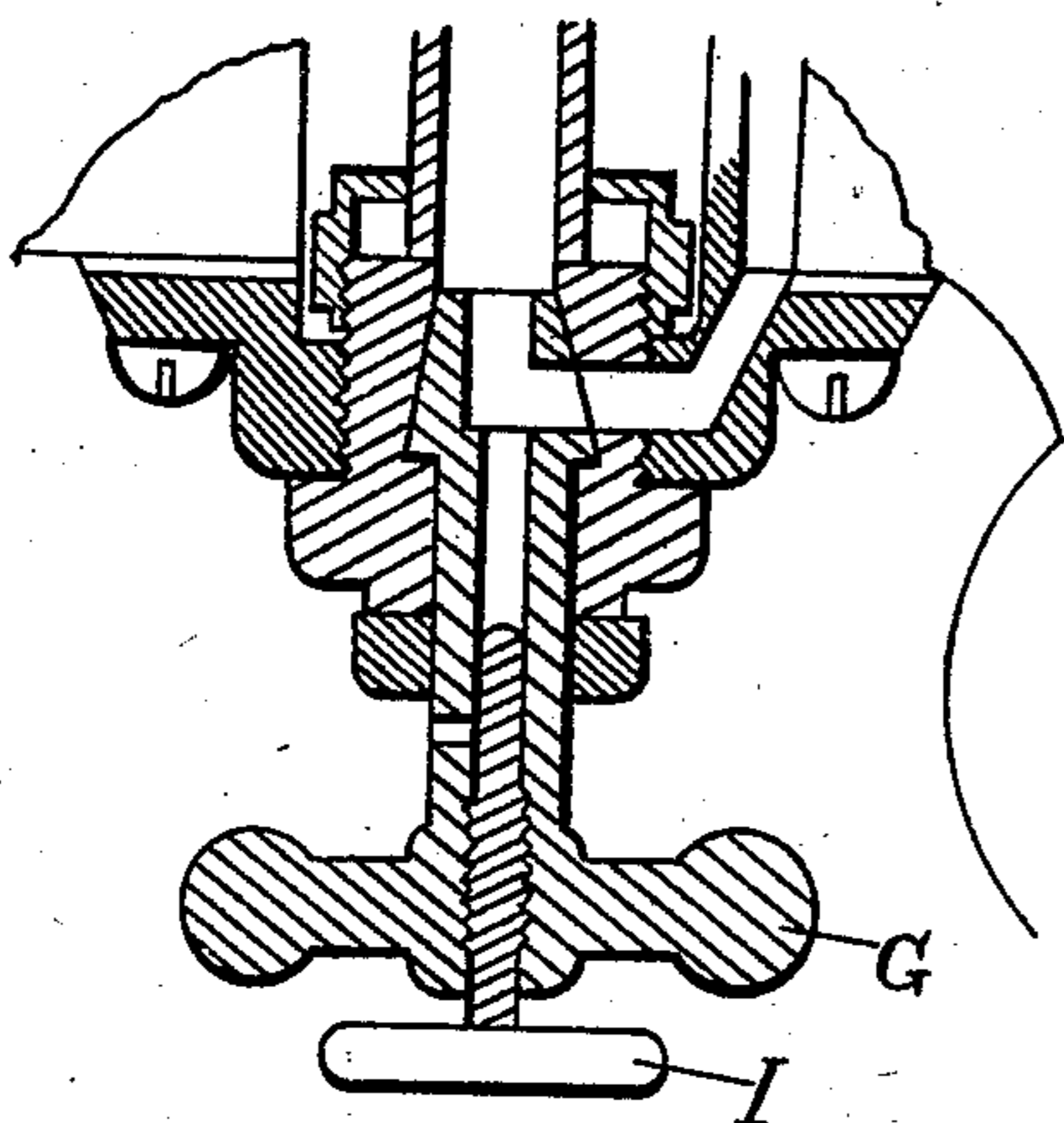
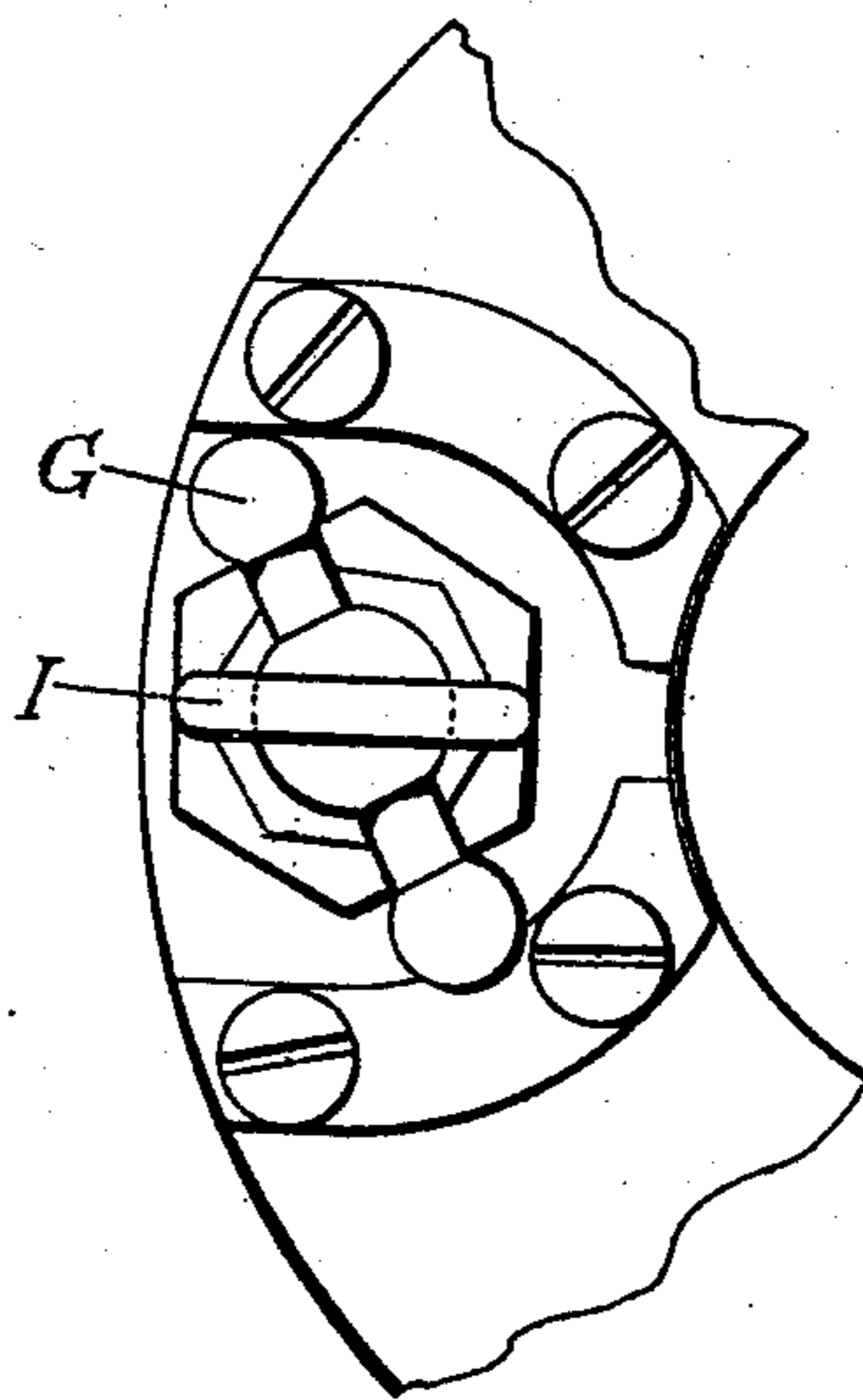
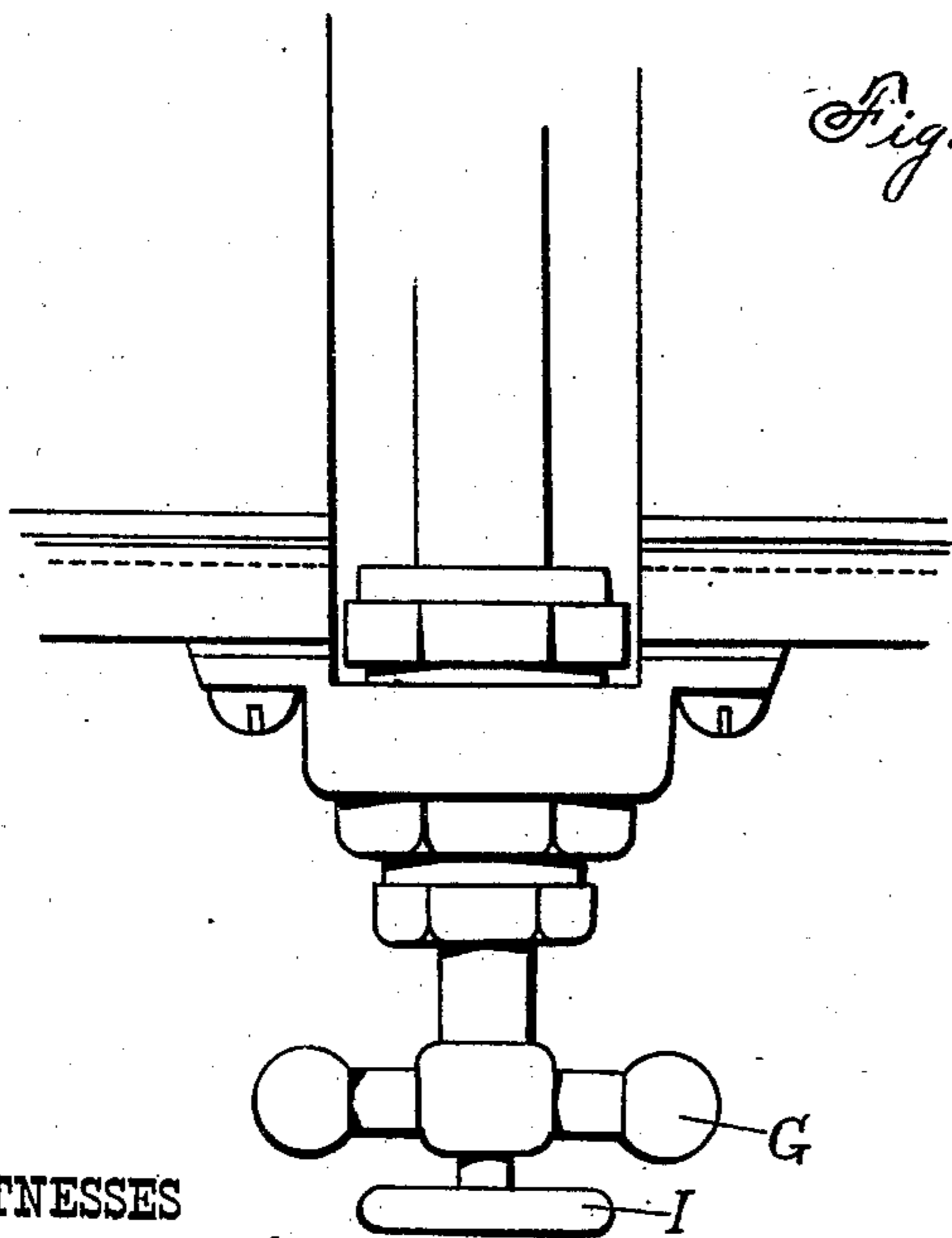


Fig. 3.



WITNESSES

Samuel C. Thomas.
J. Edward Warren

INVENTOR

Elijah McCoy
By W. W. Leggett,

ATTORNEY

UNITED STATES PATENT OFFICE.

ELIJAH McCOY, OF DETROIT, MICHIGAN, ASSIGNOR TO HENRY C. HODGES
AND CHARLES C. HODGES, OF SAME PLACE.

LUBRICATOR.

SPECIFICATION forming part of Letters Patent No. 255,443, dated March 28, 1882.

Application filed October 21, 1881. (No model.)

To all whom it may concern:

Be it known that I, ELIJAH McCOY, of Detroit, county of Wayne, State of Michigan, have invented a new and useful Improvement in Lubricators; and I declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form a part of this specification.

My invention consists of the combinations of devices and appliances hereinafter described, and more particularly pointed out in the claims.

In the drawings, Figure 1 is a view, half in elevation and half in section, illustrating my invention. Fig. 2 illustrates a variation in the method of connecting the gage-glass and its stop-cocks with the body of the lubricator, the gage-glass being set into the side of the reservoir. Fig. 3 illustrates another variation, in which the end of the gage-glass is fixed by a separate plate which is fastened to the body by screws.

Heretofore in the construction of lubricators, and especially those designed for use upon the cylinders of locomotives, great difficulty has been experienced by reason of the oil wasting at the moment steam is cut off from the dry-pipe and while the engine is still in motion. The difficulty may be explained as follows: When steam is in the steam chest and cylinder it also rises within the lubricator and establishes an equilibrium therein. Condensation then takes place quite rapidly. The oil is floated upon the condense-water, and being held back by the valve which governs the rapidity of feed, is not permitted to escape as rapidly as condense-water is formed, so that it soon fills the reservoir and rises above the top of the discharge-pipe. Now, when the steam is cut off—as, for instance, in coming into a station, or when going down a grade—the engine begins to “pump a vacuum,” as it is termed. It at once destroys the equilibrium which before existed in the body of the cup, and instantly sucks out all that quantity of oil which is above the level of the top of the discharge-pipe. It is desirable that a little oil

should thus accumulate and be discharged upon the valves the moment they begin to pump a vacuum; but in cups as ordinarily constructed this amount is not graduated and amounts to an absolute and useless waste of the lubricant.

In overcoming this difficulty my invention consists, first, in the combination, with the main oil-chamber, of a lubricator, and a discharge-tube projecting therein, of a plunger fitting said chamber above said tube and adapted to separate an upper extension of the chamber from the portion below, and means for adjusting said plunger from the exterior of the lubricator, whereby the space in which oil may collect above the opening of the discharge-pipe may be regulated, so that the engineer may know just how much oil will be sucked out, and may control the quantity at pleasure; second, in the combination, with the oil-chamber, discharge-pipe, and adjustable plunger, as above, of an adjustable exterior indicator connected with the plunger, so that its adjustment may be readily determined; third, in the combination, with the glass indicator-tube, of a lubricator and a slotted stationary metallic casing surrounding said tube, of a similarly slotted movable metallic casing surrounding said stationary casing and arranged to partially rotate thereon, whereby the indicator-tube may be thoroughly covered for protection and readily exposed for observation when desired; fourth, in means for protecting and adjusting the packing-securing spring, which permits the indicator-tube to expand and contract without impairing its packing; and the invention also consists in the combination of novel details of construction, which will be hereinafter fully described and claimed.

In carrying out my invention, A is the oil-chamber of a lubricator.

B is the discharge-pipe, through which steam is also admitted to the interior of the oil-chamber.

C is a cylindrical cavity in the top of the cup.

D is a plunger or piston, preferably a close-fitting or steam-packed piston, attached to an adjustable stem, D'. This plunger D serves as a partition separating the chamber C, which

is in fact an extension of the oil-chamber from the main portion of the oil-chamber below, and by adjusting this partition the area of the chamber C, which is in connection with the main portion of the oil chamber, may be regulated.

E is a graduated bar, loosely connected with the stem D' and passing through or by a fixed index finger or arm, E'.

F is an indicator-glass, to show the relative height of oil and condense-water.

G and G' are stop-cocks of any suitable nature, so located as to cut off at the will of the engineer all communication with the interior of the cup through the passages or ducts g g'.

H is a packing-ring or gasket, located at the top or bottom, if desired, of the indicator-glass.

H' is a metallic or other suitable follower, and H² a spring for forcing the gasket against the glass with an effective yet a yielding pressure.

H³ is a screw plug.

It will be observed that the discharge-pipe B rises to or a little above the base of the cylinder C. The object of this construction is that the condense-water within the oil-chamber may lift the oil to the top of the chamber and leave no vacant space, except the small cylinder C. This then alone becomes the condensing-chamber, and the size of this chamber is determined by the adjustment of the piston D. The engineer can see at a glance by the graduated scale E the exact location of the piston and consequent size of the condensing-chamber. He soon learns the proper size of condensing-surface to give him the necessary rapidity of condensation, and may vary it, if required, to correspond with the general temperature, so as to make it less in winter and more in summer. This feature of an adjustable condensing-surface is applicable in all lubricators in which oil is displaced by condense-water, no matter what its form or where the location of its condenser, and no matter whether the latter be directly or indirectly connected with the oil-chamber. In the instance shown the adjustable piston D is designed also to accomplish another object—viz., it fixes the amount of oil that can rise above the end of the discharge-pipe, and consequently the quantity that will be discharged when steam is shut off and the cylinder begins to pump a vacuum. This amount can of course be made more or less, according as the piston is adjusted to a higher or a lower point, and the degree of the adjustment and location of the piston is shown by the graduated arm E. This graduated scale may be arranged in any other suitable way to show this adjustment; and I do not limit myself to the peculiar construction illustrated, though it answers every purpose.

The stop-cocks G G' may be located at any desired point, either as shown in Fig. 1, or at the top and bottom of the indicator-glass, as shown in Fig. 2. So, also, the indicator-glass may be arranged as shown in either Figs. 1 or

2; or, as shown in Fig. 3, it may be seated at its end in a plate, which plate is in turn fastened by screws to the body of the cup with a suitable lead sheet or other interposed packing.

I is a drain-cock for draining off sediment, and may be employed in any of the lower stop-cocks, G'.

F' is a metallic casing provided with openings f. It surrounds and protects the glass tube. F² is a sleeve provided with similar openings, f². It surrounds the casing F', and the glass tube may be totally incased and hidden from view by turning simply the sleeve F² a quarter around its own axis. The stop-cocks enable the engineer at any time to cut off the indicator-tube if it gets broken, or if desired to clean the interior of the glass, and the sleeve enables the engineer to expose the glass at any moment to see the state of the oil, and then close it off so it cannot be broken accidentally. The spring H² permits the cup or glass to expand or contract freely without injuring the glass.

These lubricators have proven of great value upon the steam-chests of locomotives, and by reason of the features described have developed a great economy over other lubricators of this type, both in the saving of oil and reduced breakage. The upper end of the discharge-pipe B is made flat, and likewise the lower surface of the piston D, so that, when desired, in cold weather the engineer can close the exit-pipe at its top by running the piston down upon it, thus permitting steam to rise to this point and keep the cup from freezing, yet not admitting the steam to the interior of the cup.

J is a valve for regulating the rate of feed of the oil.

What I claim is—

1. In a lubricator, the combination, with the main oil-chamber and a discharge-tube projecting therein, of the plunger separating an upper extension of said oil-chamber above the discharge-pipe from the lower portion of said chamber, and means for adjusting said plunger from the exterior of the lubricator, substantially as described.

2. In a lubricator, the combination, with the oil-chamber, the central discharge-tube, and the adjustable plunger arranged above said tube, of an adjustable exterior indicator connected with said adjustable plunger, substantially as and for the purpose set forth.

3. In a lubricator, the combination, with the glass indicator-tube and a slotted stationary metallic casing surrounding said tube, of a similarly slotted movable metallic casing surrounding said stationary casing, and arranged to partially rotate thereon, substantially as described.

4. The combination, with the glass indicator-tube F, properly seated and packed at its lower end, of the packing-ring at its upper end, the follower resting upon said packing-ring, the spring having its lower end bearing

upon said follower, the casing inclosing said spring, and screw-plug screwed into said casing and bearing upon the upper end of said spring, substantially as described.

- 5 5. The combination, with a main oil-chamber, A, and the discharge and steam tube B extending therein, of the condensing-chamber C, the plunger D, fitting closely and sliding in said chamber C, and the adjustable stem

D', attached to said plunger and projecting outside the casing, substantially as described.

In testimony whereof I sign this specification in the presence of two witnesses.

ELIJAH McCOY.

Witnesses:

J. EDWARD WARREN,
SAMUEL E. THOMAS.