

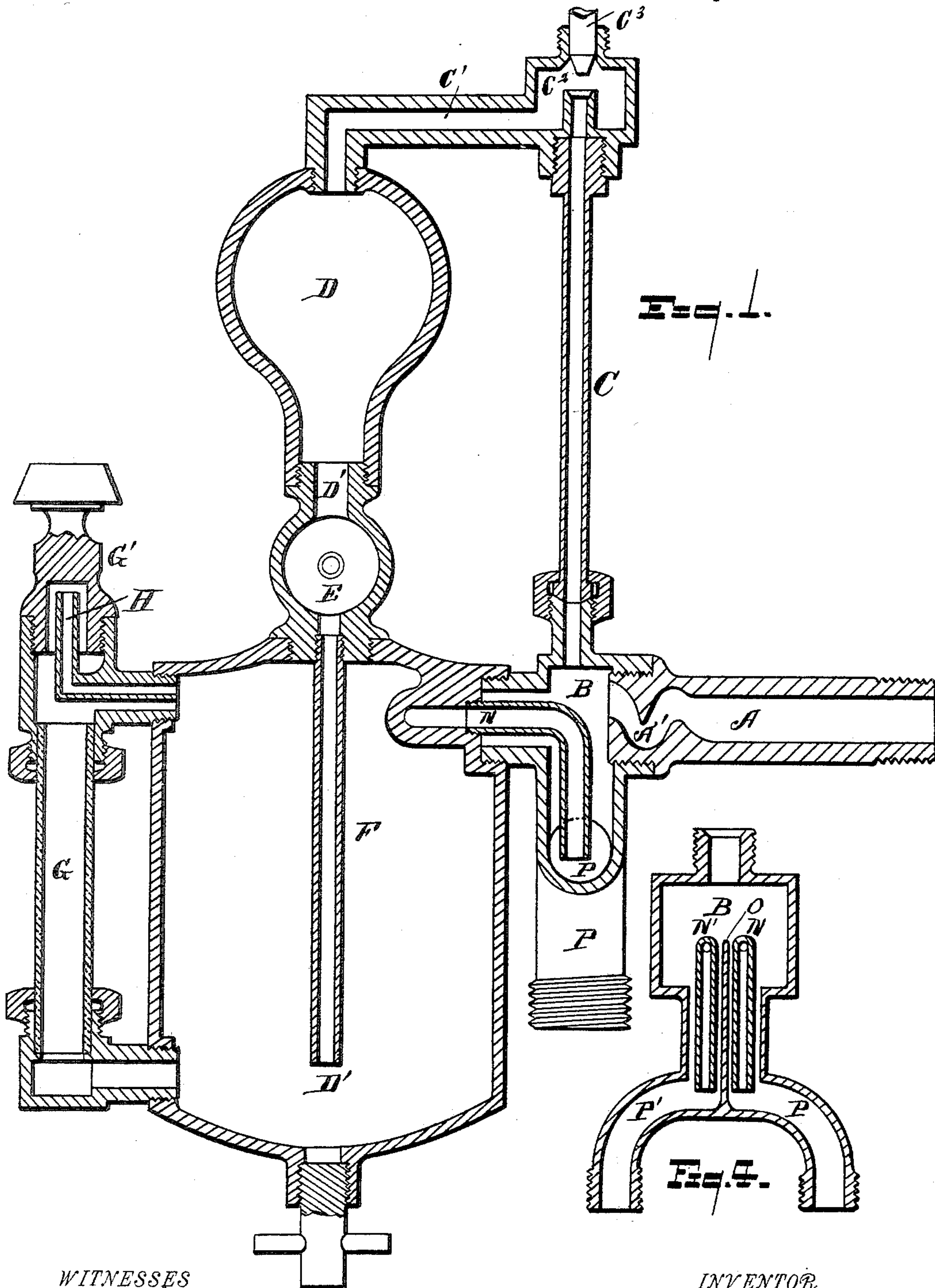
(No Model.)

2 Sheets—Sheet 1.

F. W. KRANTZ.
LUBRICATOR.

No. 433,008.

Patented July 29, 1890.



WITNESSES
M. A. Horner
H. E. Whitaker

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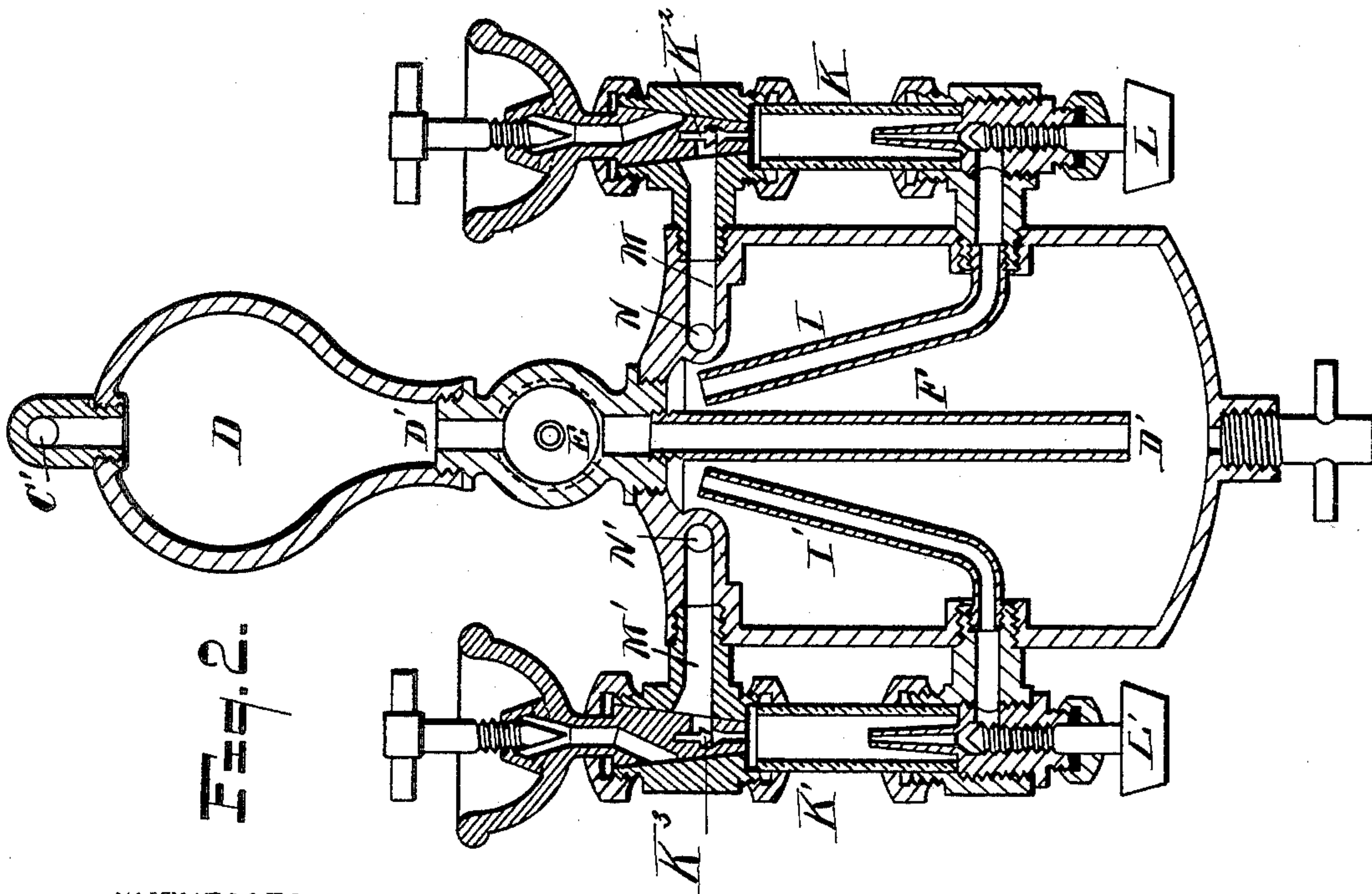
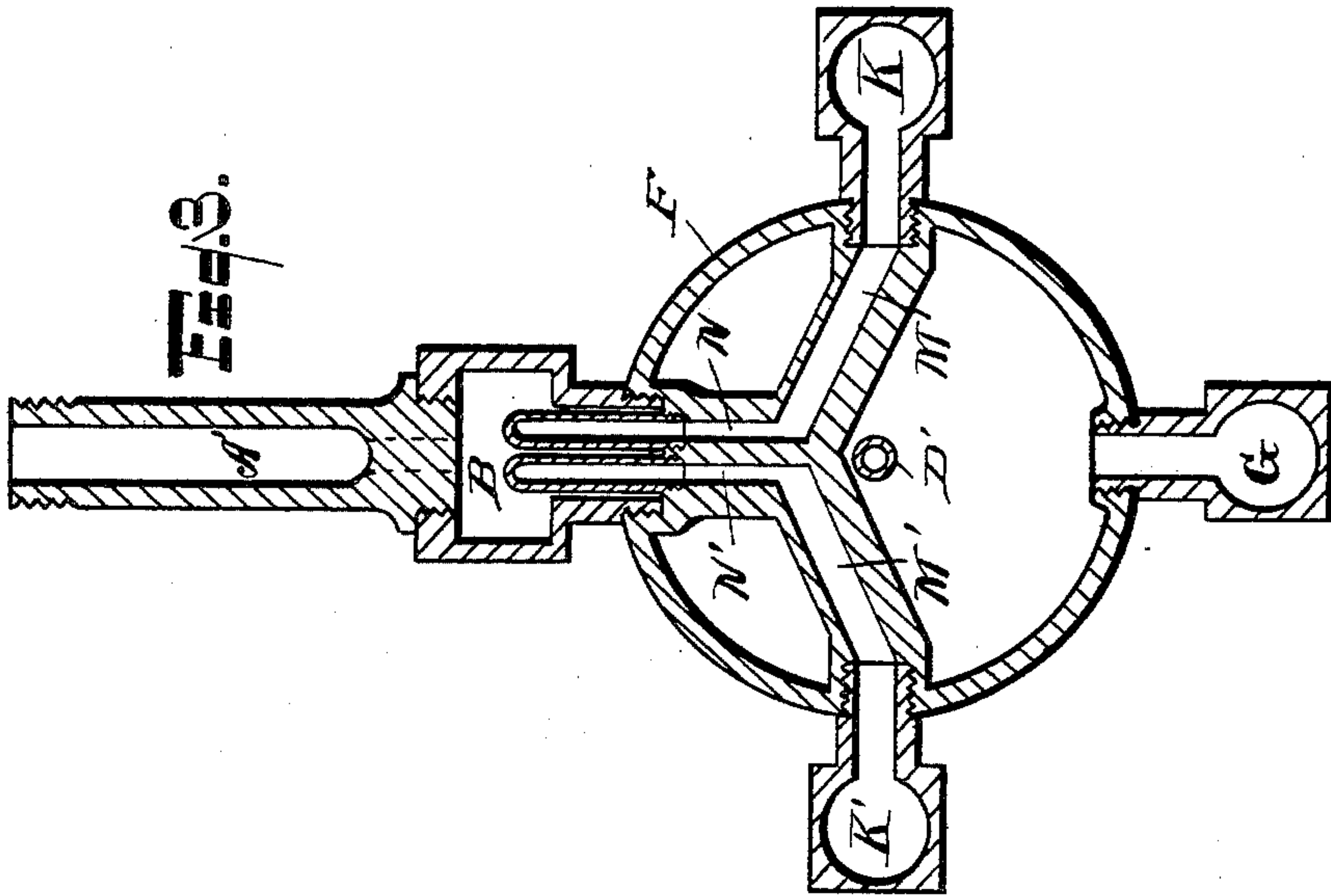
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UNITED STATES PATENT OFFICE.

FREDRICH W. KRANTZ, OF DETROIT, MICHIGAN, ASSIGNOR TO THE MICHIGAN LUBRICATOR COMPANY, OF SAME PLACE.

LUBRICATOR.

SPECIFICATION forming part of Letters Patent No. 433,008, dated July 29, 1890.

Application filed February 24, 1890. Serial No. 341,583. (No model.)

To all whom it may concern:

Be it known that I, FREDRICH W. KRANTZ, of Detroit, in the county of Wayne and State of Michigan, have invented new and useful
5 Improvements in Lubricators, of which the following is a specification.

My invention relates particularly to that class of lubricators called "hydrostatic," in which oil is intended to be supplied to the
10 two cylinders of a locomotive-engine from a single oil-reservoir, and which are provided with independent sight-feeds filled with water, through which the oil rises drop by drop in regulated supply; or any other approved
15 sight-feed may be used.

It consists in a chamber placed in the steam-way, into which converging multiple oil-ducts leading from the oil-reservoir discharge oil under substantially the same pressure as that
20 maintained in the oil-reservoir, and from which chamber it flows through oil-pipes leading to the valve chests or cylinders, thereby dispensing with the equalizing-tubes in familiar use.

In the annexed drawings, making part of this specification, Figure 1 is a vertical section on the plane of the supply-pipe, which furnishes steam to the condenser. Fig. 2 is a vertical section on the plane passing through the
30 sight-feeds. Fig. 3 is a horizontal section. Fig. 4 is a vertical section of the chamber in the steam-induction pipe and showing the pipes which feed oil to the engine-cylinders.

The same letters are employed in all the figures in the indication of identical parts.

Steam from the boiler is introduced into the chamber B through a pipe A, provided with a trap at A', intended to prevent any oil which may be in the said chamber flowing
40 outward into the boiler. Thence the steam passes through the pipe C into a chamber C², from which the pipe C' leads to the condenser D. The pipe C may extend into the chamber C² far enough to terminate above the level of pipe C', and its upper end may be
45 formed with a seat to receive the conical point of a valve C³, by which the steam may be shut off from the condenser. While the steam is preferably taken from the chamber
50 B, because that is the cheapest and simplest

arrangement, it is obvious that an independent pipe may take the steam from the boiler to the condenser, while another leads into chamber B, the pressure in both being that of the boiler.

The water of condensation flows down the pipe D', controlled by a stop-cock E, into the single oil-chamber F, which is filled with oil through the sight-glass G, when the cap G' is unscrewed. The air in the oil-cup finds a
55 vent through the pipe H.

The oil floating on the accumulating water in the common oil-chamber F flows out of the two pipes I and I' into the sight-feeds K and K' under regulation of the valve L. As all
60 these parts appertaining to the lubricator shown are familiar elements of the up-drop lubricators in common use, they do not require detailed description. The oil passes out at the top of the sight-feed under check-
70 valves K² and K³. Means is provided for independently supplying oil to the cylinders in case of breakage of a sight-feed glass, which is already covered by Patent No. 342,753, issued to me, and need not be described herein.

The oil flows inward from the sight-feeds through M and M', which lead into the walls of the lubricator-casing and respectively connect with ducts N and N', which lead into the chamber B and deposit their oil in the bot-
80 tom thereof on either side of the partition O, whence it flows through the independent pipes P and P' to the valve-chests or cylinders of the engine. The partition O divides the oil and sends the proper supply to each
85 of the cylinders.

Should compound engines be employed, the number of the sight-feeds and connecting oil-discharge pipes may be increased to correspond to the number of cylinders to be lubri-
90 cated. In such case there would be as many sight-glasses as there are cylinders and a corresponding number of discharge-pipes leading from the respective sight-feeds, and all discharging into chamber B. In such case,
95 as there must be an independent pipe leading to each cylinder of the compound engine, the lower end of the chamber B must be formed with as many partitions as will isolate the discharge ends of the pipes N and N',
100

&c., respectively, and cause each to deliver its oil to its own appropriate cylinder.

The partition separating the lower ends of the pipes N and N', &c., do not extend to the top of the chamber B, which would cut the chamber into a series of chambers, some of them having no connection with the steam-pipe, for that would destroy the very purpose of my invention, which is to have an equal pressure of steam on the interior of the oil-chamber from which the oil is taken and the interior of the chamber into which it is delivered and from which it flows to the cylinders or valve-chests of the engine, thereby dispensing with the equalizing-tubes necessary in other locomotive-engine lubricators.

While my invention is described in its application to locomotive-engine lubricators, it is manifest that it may also be applied to stationary engines when two or more cylinders are employed, whether double or compound engines.

In order that the waste of steam into the cylinders may not be excessive, the oil-supply pipes P and P' may be throttled by making the connections with a small orifice or by using regulating valves or cocks in the supply-pipes.

The partitions O should extend far enough between the pipes N and N', &c., to prevent the oil passing to other pipes than the ones they are intended, respectively, to supply; but the upper part of the chamber B should be entirely in connection with the steam-supply pipe, either by cutting off the partitions, as shown, or perforating them, so that the steam-pressure shall reach the mouths of all the pipes N, &c., so as to substantially equalize the pressure at both ends of the oil-ducts leading out of the oil-cylinder.

I am aware that other devices have been employed for securing an equalized pressure on the steam-induction and oil-discharging pipes, and consequently I do not seek to cover, broadly, other means of obtaining such equalization of pressure. I am aware, too, that check-valves have been used in analogous lubricators for permitting the inflow of steam and yet preventing an outflow of oil through the steam-pipe; but the trap A' in the steam-pipe A, it will be observed, discharges steam into the top of the chamber B and above the par-

tition O, and consequently if one of the discharge-pipes P or P' should become stopped up and condensation occur therein and oil accumulate unobserved by the engineer—who ought, however, to be informed by the stoppage of the feed in one of the sight-feed glasses—the accumulation of such water and oil would only cause it to flow over the top of the partition and into the other compartment and thence to the cylinder; and even if both should be stopped and the chamber B filled with oil and water the oil could not flow back into the boiler through the trap, while it would do so where the steam is introduced under a check-valve in the top of the partition, which, when opened by the entering steam, would permit the oil to flow down through the valve and steam-pipe into the boiler.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a hydrostatic lubricator, the combination of a condenser and single oil-chamber, multiple pipes I I', which take oil from the common chamber, multiple adjustable up-drop sight-feeds, into which such pipes discharge, and oil-discharge tubes which lead from the respective sight-feeds to chamber B, into which they discharge such oil, and which is connected by steam-pipes with the boiler and condenser, and provided with a partition which divides the lower part of the chamber into compartments, into which the oil-ducts N N' respectively discharge their oil, and multiple pipes which carry the oil from the respective compartments to the several cylinders to be lubricated, substantially as set forth.

2. The combination of the condenser D, oil-chamber F, pipes I I', up-drop sight-feeds K K', pipes leading therefrom, and chamber B, with partition O, and the steam-induction pipe A and trap A', arranged to discharge steam into the chamber B above the plane of the top of the partition, substantially as set forth.

Subscribed in the presence of two attesting witnesses.

FREDRICH W. KRANTZ.

Witnesses:

RODNEY MASON,
FRANK. W. MARVIN.