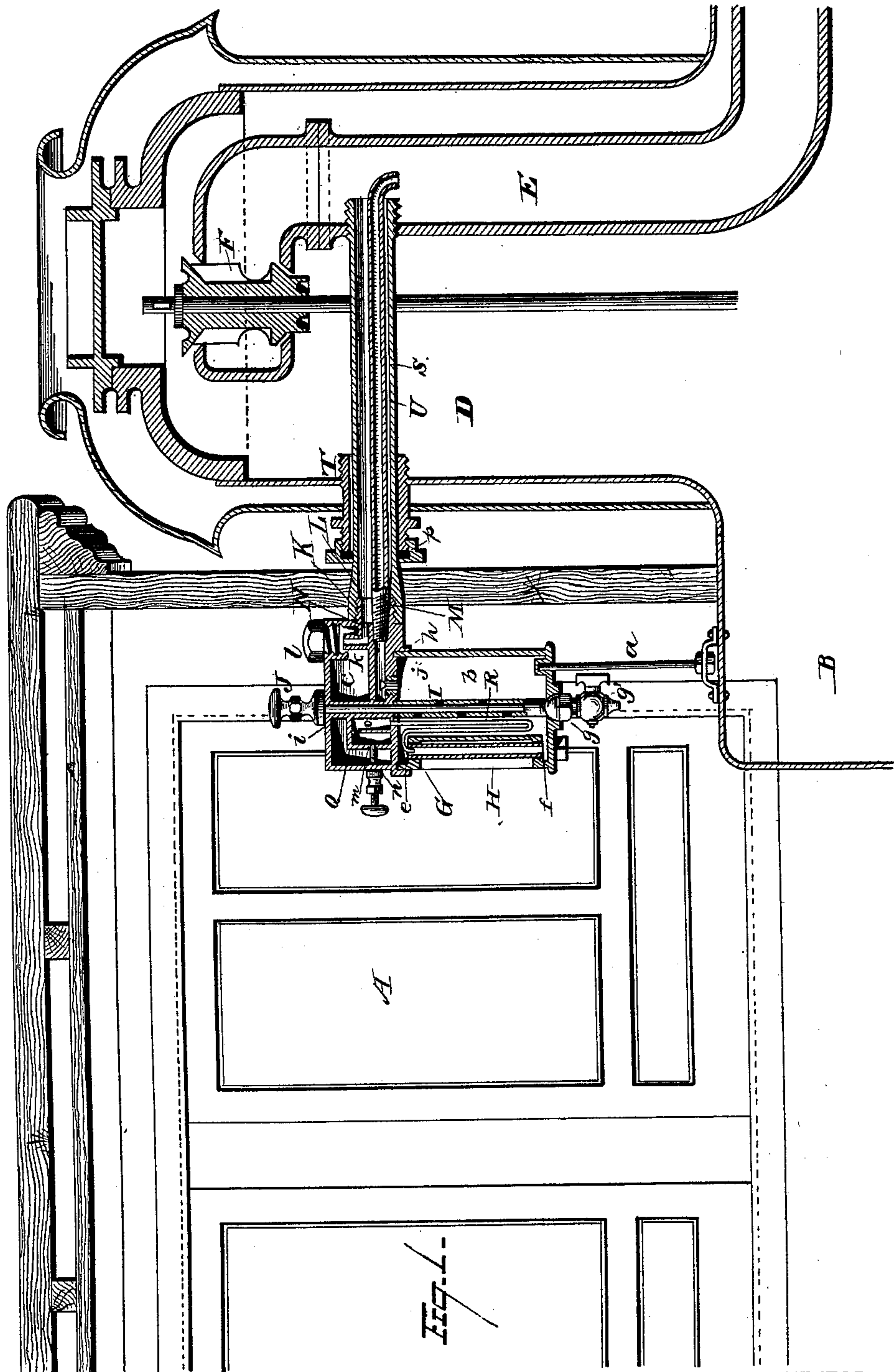


C. H. PARSHALL.  
Lubricator.

No. 214,311.

Patented April 15, 1879.



WITNESSES  
C. J. Nottingham  
A. M. Bright

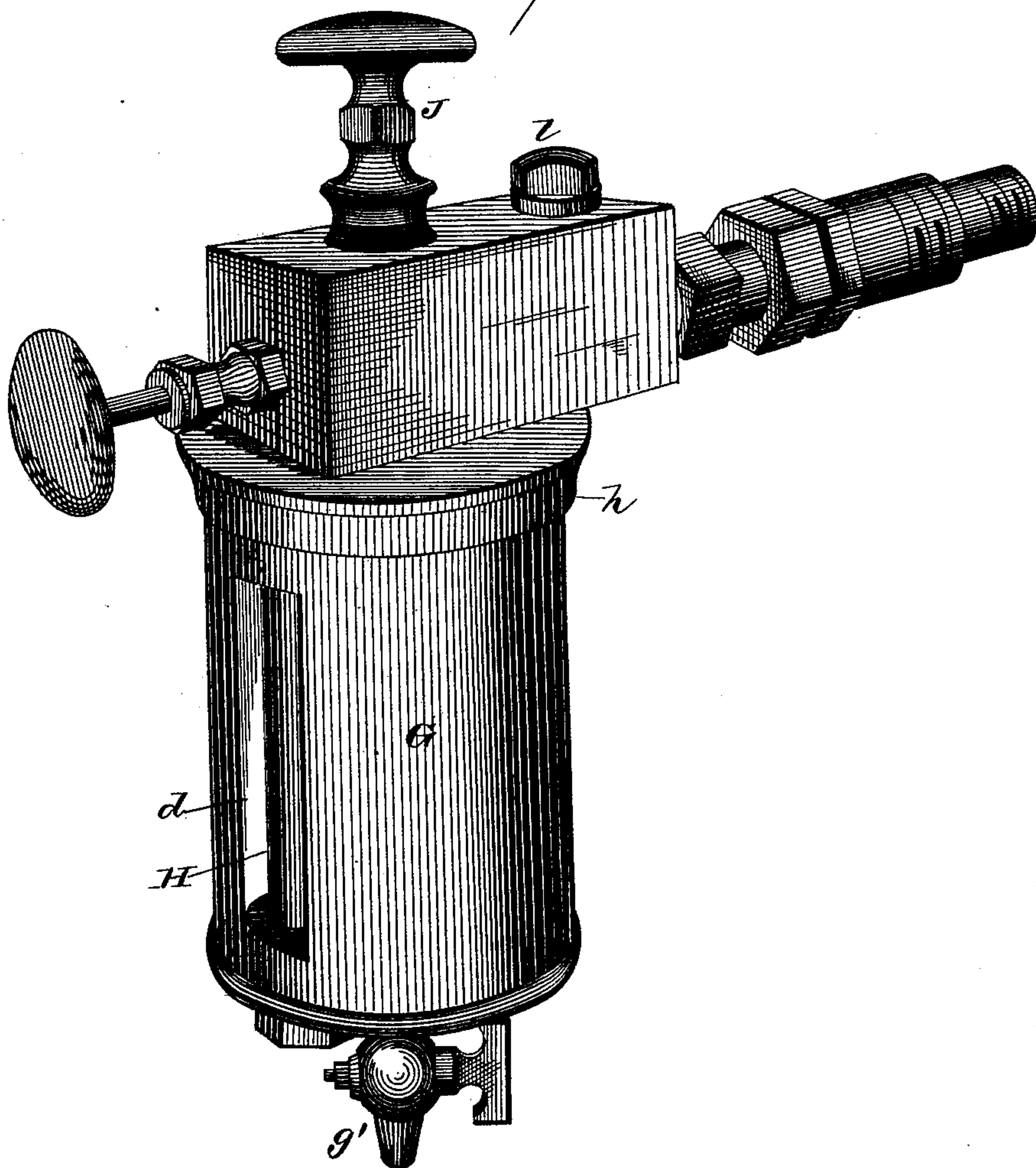
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Fig. 2



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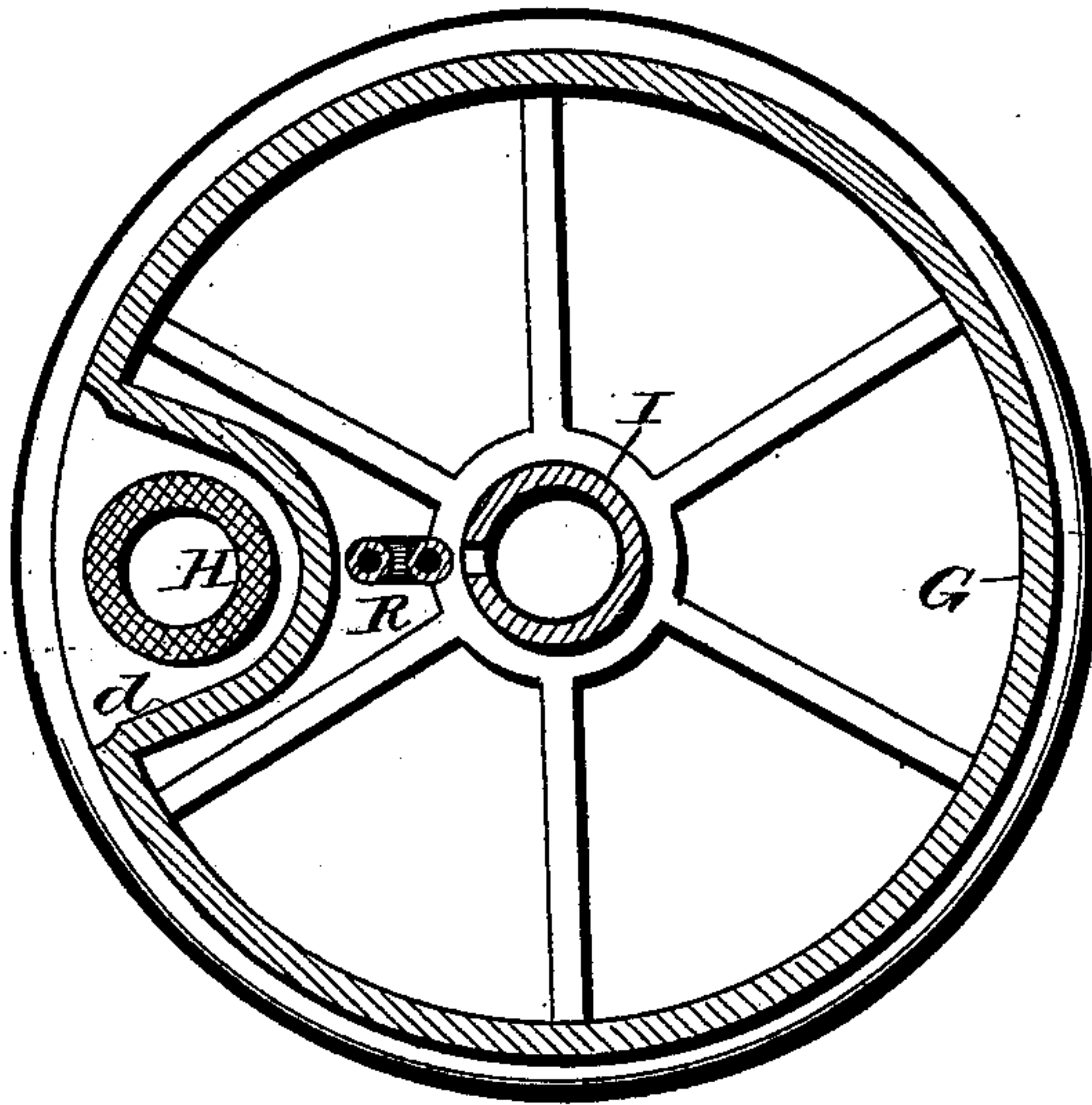
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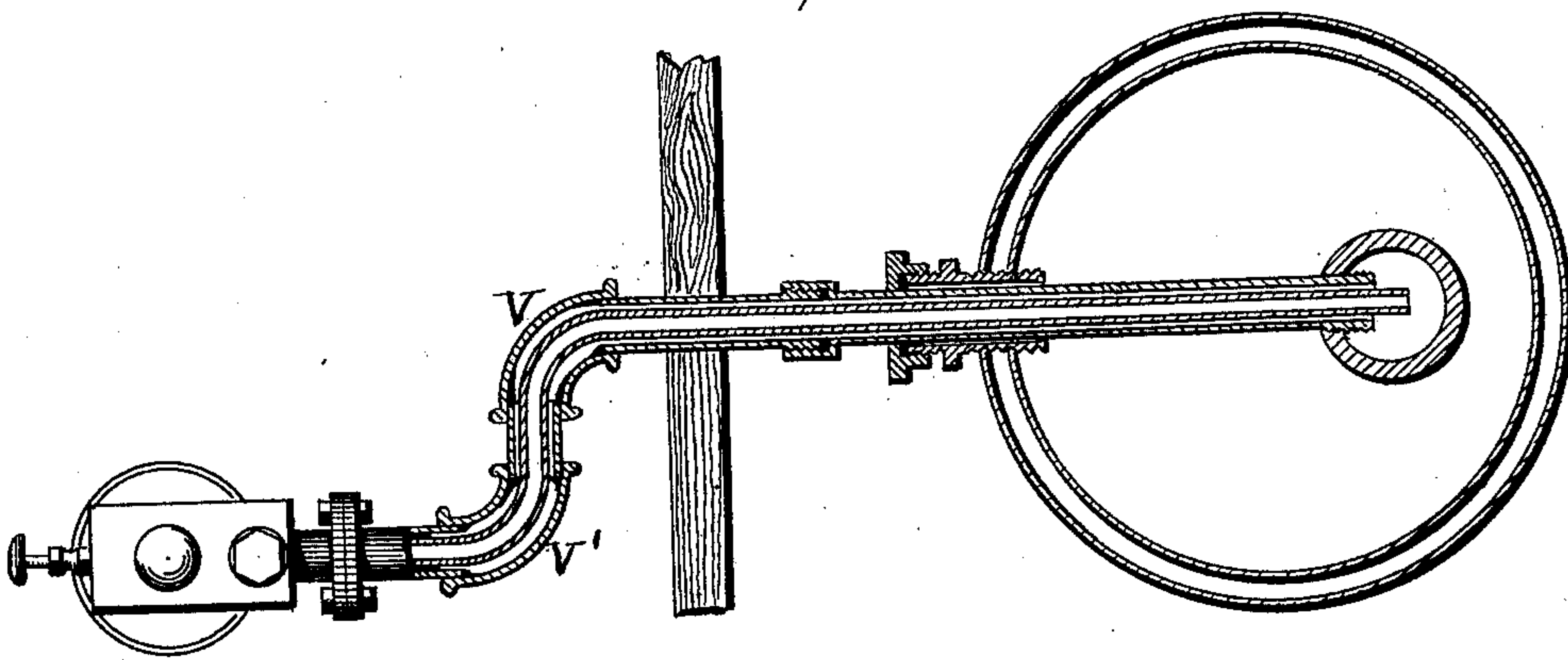
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*Fig. 3.*



*Fig. 4.*



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# UNITED STATES PATENT OFFICE.

CHARLES H. PARSHALL, OF DETROIT, MICHIGAN.

## IMPROVEMENT IN LUBRICATORS.

Specification forming part of Letters Patent No. **214,311**, dated April 15, 1879; application filed February 1, 1879.

*To all whom it may concern:*

Be it known that I, CHARLES H. PARSHALL, of Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Lubricators; and I do hereby declare the following to be a full, clear, and exact description of the invention, 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 part of this specification.

My invention relates to an improvement in lubricators and attachments for locomotives, the object being to provide a lubricating apparatus of such construction and arrangement of parts that the lubricator may be at all times under the immediate control of the engineer or fireman, and the amount of lubricating material supplied to the cylinders readily ascertained and regulated, that both cylinders of a locomotive-engine be supplied from a single lubricating apparatus, and that the connections may be adapted to expand and contract without injury to the apparatus; and to these ends my invention consists, first, in the combination, with the dry-pipe of a locomotive-boiler, of a lubricator provided with a visible hydrostatic drop-feed and with independent steam and oil pipes furnished with a slip-joint and connecting the lubricator with the dry-pipe, whereby the amount of oil fed to both cylinders is readily ascertained by the engineer and regulated as desired.

My invention further consists in the combination, with the dry-pipe of a locomotive-boiler, of a lubricating apparatus connected therewith and with the steam dome in such a manner that the connecting-pipes may expand and contract without causing any undue strain either on the lubricating apparatus, dry-pipe, or shell of the boiler.

My invention further consists in the several details in construction and combinations of parts, as will be hereinafter explained, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a vertical section of a lubricating apparatus located within the cab of a locomotive and connected with the dry-pipe in the steam-dome of the boiler. Fig. 2 is a view, in perspective,

of my improved lubricator. Fig. 3 is a transverse section of the oil-receptacle. Fig. 4 is a modification.

A is the engine-cab; B, the boiler, and D the steam-dome.

Within the dome D is located the ordinary dry-pipe E, in the upper portion of which is located the throttle-valve F, all of which parts are of the ordinary or of any desired construction.

G is a lubricator, supported by an upright frame, *a*, attached to the boiler or to any convenient portion of the cab.

It is preferable to secure upright *a* to the boiler, so that there will be no uneven motion between the body of the lubricator and the conduits by which the connections with the dome are made.

Lubricator G is divided into two parts—viz., the oil-receptacle *b* and condenser *c*—which parts are constructed of metal and connected in any desired manner.

Oil-receptacle *b* is cast in a single piece, with a recess, *d*, in one side thereof, within which recess is placed the glass indicating-tube H, the latter being of less length than the oil-receptacle, to form openings *e f* leading from the upper and lower ends of the glass tube to the interior of the oil-receptacle.

I represents a perforated pipe, the upper end of which is screwed into the lower partition of the condenser, while its lower end projects through the bottom of the oil-receptacle and receives a nut, *g*, which latter, being turned as a ball which fits snugly into a socket in the bottom of the oil-receptacle, serves to bind evenly the latter to the condenser, the upper edge of the oil-receptacle being received within the downwardly-projecting flange *h* formed on the bottom of the condensing-chamber.

Waste-cock *g'* is combined with nut *g* for the purpose of drawing off the water from the glass tube and oil-receptacle when desired.

J is a screw-threaded plug fitted into the top of the condensing-chamber. The plug J being removed, oil is inserted through the opening *i*, and flows into the perforated tube I, and from thence into the oil-receptacle. Condensing-chamber *c* is provided with a screw-threaded limb or stem, K, which is di-



vided into a steam-passage, L, and oil-feeding passage M by means of the portion N. In the bottom of the condenser is located a downwardly-closing check-valve, *j*, by means of which a communication may be established between the oil-receptacle *b* and the oil-passage M.

Connecting with the steam-passage L is a vertical steam pipe or conduit, *k*, which extends nearly to the top of the chambered nut *l*. Nut *l* being chambered allows the steam to be supplied to the condenser at the desired height above the bottom thereof, to insure a column or body of condense-water in the condenser of the requisite height; and, further, the nut enables the steam-pipe to be blown out and cleansed when necessary. In the opposite side of the condenser is formed a chamber, Q, having an opening, *m*, through the same, which is governed by a screw-valve, *n*, the latter serving to regulate the amount of water to be admitted to the interior of chamber Q from the main chamber of the condenser. Rising from the bottom of chamber Q is a vertical partition, *o*, which extends nearly to the top of said chamber, the partition preventing a direct communication between the condenser and oil-receptacle, and insuring a column of water within the chamber equal in height to that of partition *o*. To the bottom of chamber Q is attached a feed-water pipe, R, which extends downwardly any desired distance into the oil-receptacle, and then by a return-bend is carried upwardly, and is inserted in the upper end of the glass tube H.

A steam-pipe, S, is screwed upon the screw-threaded stem K of the condensing-chamber, and extends through the frame-work of the cab, through the shell of the steam-dome, and is screwed into the side of the dry-pipe.

To provide for the contraction and expansion of steam-pipe S, the shell of the dome is furnished with a sleeve, T, which is firmly secured to the dome, and serves as a passage for steam-pipe S. Sleeve T is provided with a follower or packing-cap, *p*, which insures a tight joint between the sleeve and steam-pipe. By means of this construction the steam may have an endwise movement, due to its expansion and contraction, without affecting the shell of the steam-dome, and without opening any joint or seam between the shell of the dome and the steam-pipe. Within the steam-pipe S is placed an oil-feed pipe, N, one end of which projects into the dry-pipe, while its opposite end is screwed into the oil-passage M in the condenser.

The operation of my improved lubricating apparatus is as follows: Steam enters the steam-pipe S from the dry-pipe, and flows through the vertical steam-pipe in the condenser to the main chamber, where it is condensed. The condense-water is fed to the chamber Q in any desired quantity, and from thence flows downwardly within the return-bend pipe to the upper end of the glass indi-

cating-tube. The return-bend pipe serves a double function, viz: It conducts the warm condense-water through the lubricating material, thus keeping the latter at the proper temperature to retain it in a limpid condition under all degrees of temperature. Again, the return-bend pipe forms a trap, which is always filled with condense-water, and serves as an effectual water-seal to prevent any flow of oil into the condenser. As the water issues from the end of the return-bend pipe it falls into the glass tube in drops. As the oil stands at the same height in the glass tube that it does in the main oil-receptacle of the lubricator, the drops of water fall the length of the glass tube and pass out into the lower end of the oil-receptacle. The drops of condense-water entering the oil-receptacle operate to displace an equal quantity of oil, and cause the latter to raise the check-valve and flow through the oil-feeding pipe into the dry-pipe, and there mingle with the steam passing to the valve-chest and cylinders of the locomotive.

The engineer can thus readily ascertain the amount of oil being fed to the engines, by inspecting the glass tube of the lubricator and ascertaining the number of drops of water falling through the tube in any given time, and the amount of oil to be fed can be easily regulated by varying the admission of condense-water, by changing the opening of the feed-valve.

When the oil-receptacle has become filled with water, it may be emptied by opening the waste-cock, allowing the water to escape, and the oil-receptacle again filled.

The construction of the oil-receptacle with the glass indicating-tube seated inside the periphery of the same is an important feature of my improvement, in that the glass tube is thoroughly protected, and hence not easily broken or displaced; and, further, the apparatus is rendered more compact and efficient by reason of such an arrangement of parts.

The oil is fed directly to the steam in the dry-pipe, and hence is conducted to both valves and cylinders of the locomotive. This enables the engineer to govern the flow of lubricants to both engines by a supply of lubricant contained in a single lubricating apparatus.

The connection between the lubricator and the dry-pipe being formed by a slip-joint allows of the expansion and contraction of the steam-pipe without affecting any of the steam-joints or the lubricator proper.

Fig. 4 illustrates the form of connection when it is desired to place the lubricator at one side of the cab. In this construction the curved elbows V V' are employed to constitute the steam-pipe, and the oil-feeding pipe is properly curved to fit within the steam-pipe.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with the dry-pipe of a



locomotive or other boiler, of a lubricator constructed with a visible hydrostatic drop-feed, and provided with independent steam and oil conduits connecting the lubricator with the dry-pipe, said conduits furnished with a slip-joint, whereby the parts are not injured by their unequal expansion and contraction, substantially as set forth.

2. The combination, with the dry-pipe of a locomotive or other boiler, of a lubricator, and a steam-pipe connecting the lubricator and dry-pipe, said steam-pipe provided with a slip-joint at the point of its passage through the shell of the steam-dome, substantially as set forth.

3. The combination, with the dry-pipe of a locomotive or other boiler, of a lubricator, a steam-pipe connecting the lubricator and dry-pipe, and a sleeve and packing-follower forming a slip-joint between the shell of the boiler-dome and said steam-pipe, substantially as set forth.

4. The combination, with the dry-pipe of a

locomotive or other boiler, of a lubricator provided with a condensing-chamber, a steam-pipe connecting said condensing-chamber and dry-pipe, and an oil-pipe located within the steam-pipe, and serving to convey oil from the lubricator to the steam in the dry-pipe, substantially as set forth.

5. The combination, with the dry-pipe of a locomotive or other boiler, of a lubricator provided with a condensing-chamber, a steam-pipe connecting said condensing-chamber and dry-pipe, the steam-pipe being furnished with a slip-joint, and an oil-pipe located within the steam-pipe, and serving to convey oil from the lubricator to the dry-pipe, substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 14th day of January, 1879.

CHARLES H. PARSHALL.

Witnesses:

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GEORGE COX.