

(No Model.)

C. COUSE.

AUTOMATIC LUBRICATOR FOR STEAM ENGINES.

No. 318,168.

Patented May 19, 1885.

Fig. 3

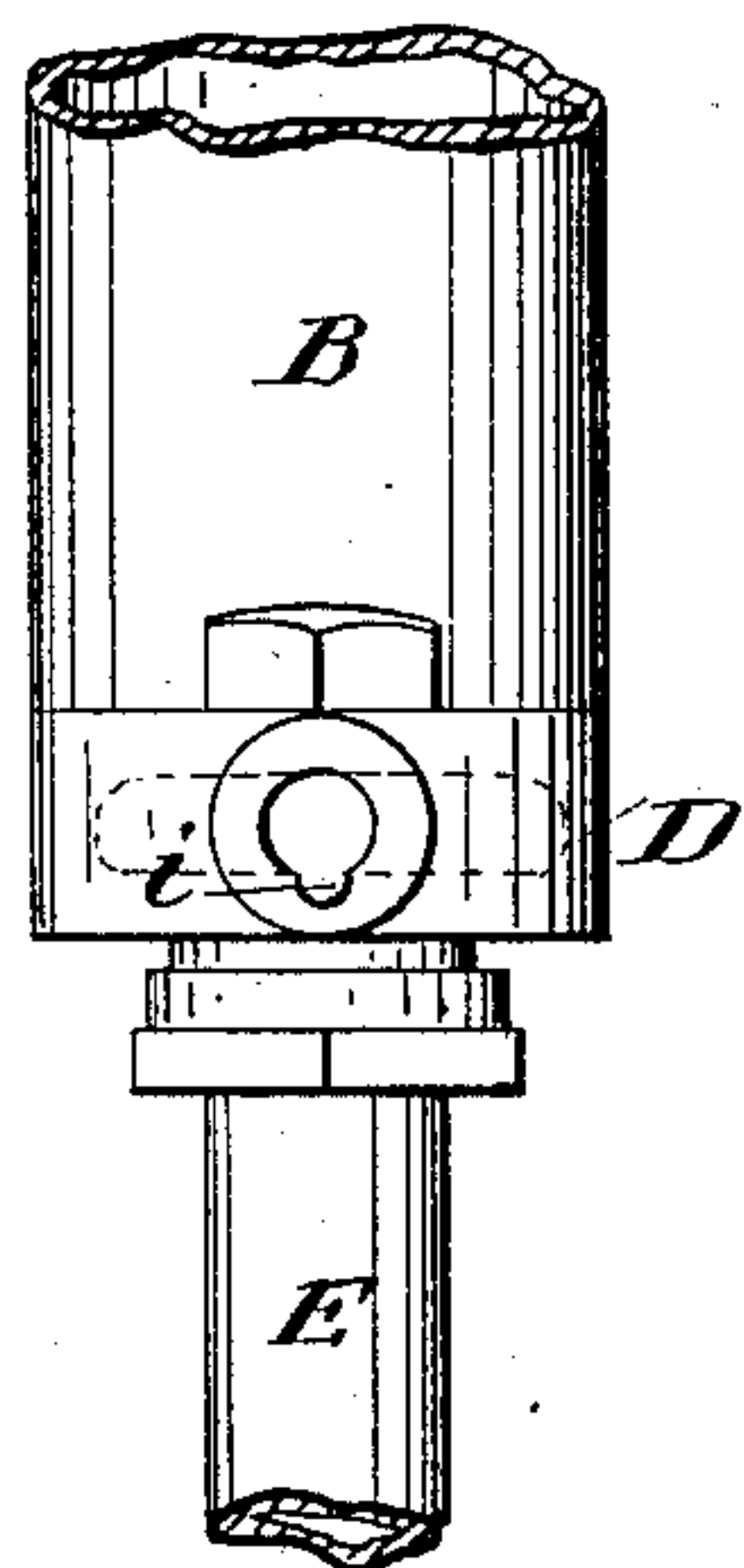


Fig. 1

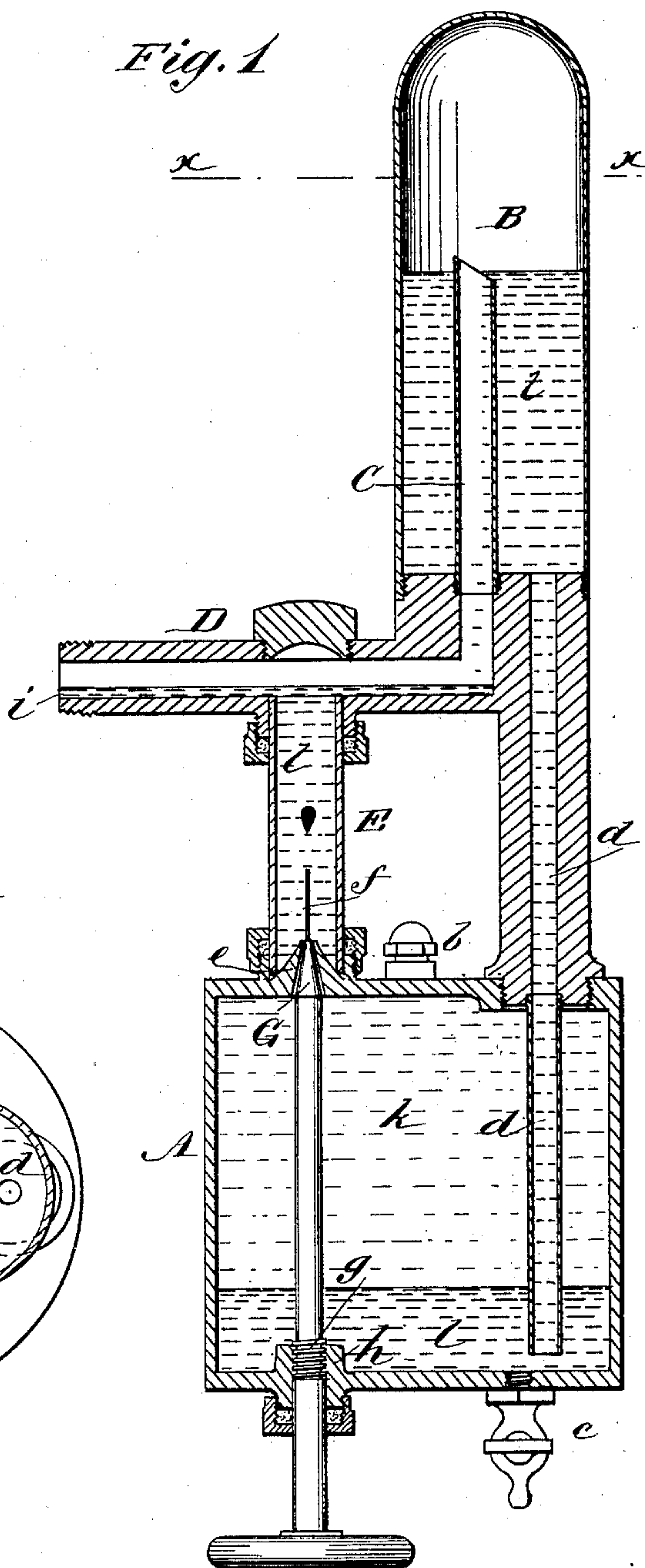
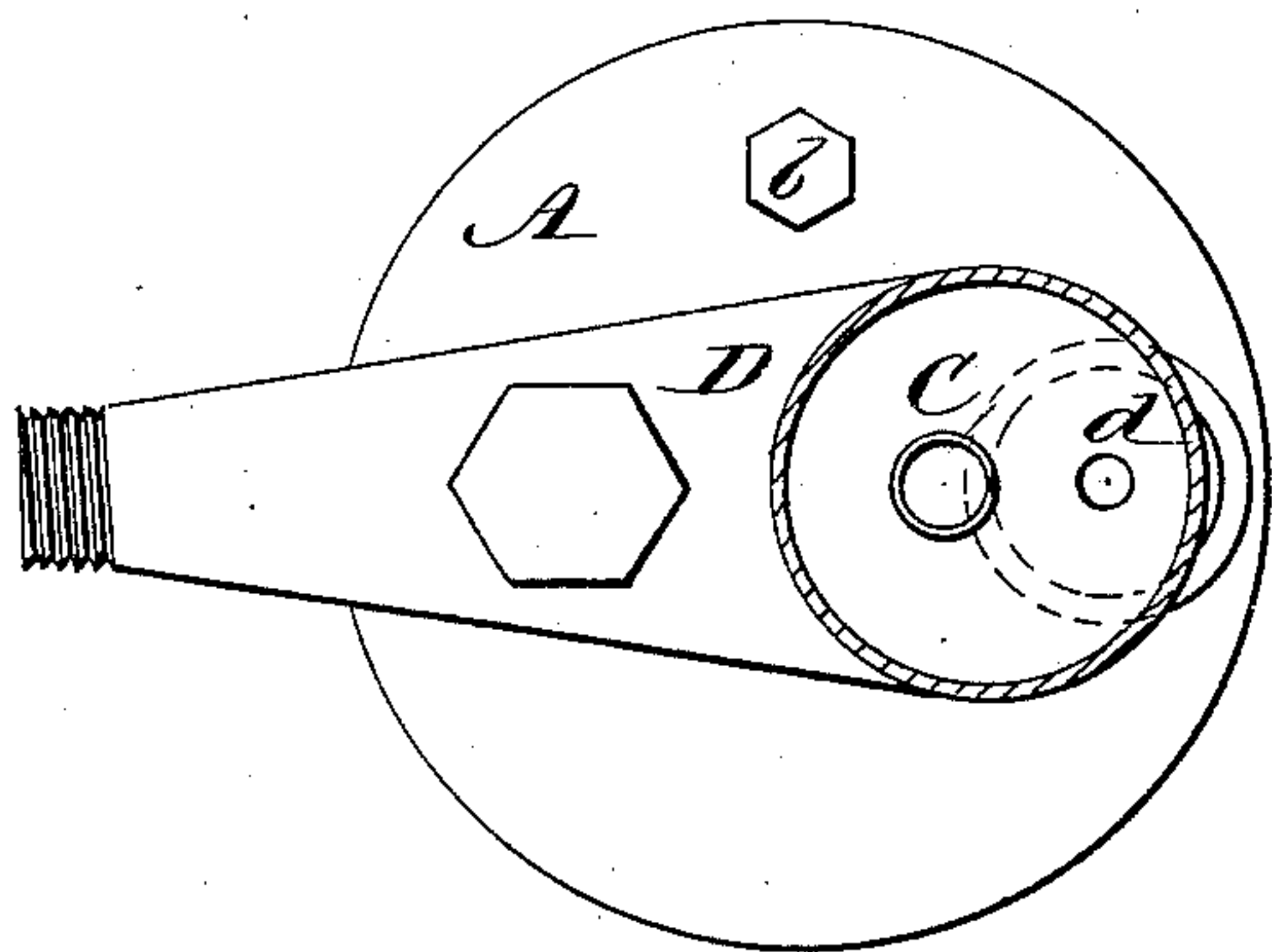


Fig. 2



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CHARLES COUSE, OF BELLEVILLE, NEW JERSEY.

AUTOMATIC LUBRICATOR FOR STEAM-ENGINES.

SPECIFICATION forming part of Letters Patent No. 318,168, dated May 19, 1885.

Application filed October 23, 1884. (No model.)

To all whom it may concern:

Be it known that I, CHARLES COUSE, of Belleville, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Automatic Lubricators for Steam-Engines, of which the following is a full, clear, and exact description.

This invention relates to lubricators or lubricating-cups in which the oil is arranged to rise and is transmitted by drops through a volume or body of water; and the invention is designed to be applied to supplying the steam-cylinder, steam-chest, or other steam-ways of an engine with oil in small or measured quantities, to mingle with the steam and so to lubricate the piston, valves, or other steam-exposed parts of the engine. It is mainly intended for use in marine engines, which, by the rolling or tossing of the boat, are subject to considerable motion, and where there is always more or less of wiredrawing of the steam. It may be used in connection with steam of both high and low pressure, and the draft upon which is either steady or irregular—that is, either uniform or “off and on.” A leading object of the invention is to avoid all premature evaporation of the oil and consequent choking of the cup by its mixing with the steam therein and the foaming incidental to such mixing. To this and other ends the invention consists in a novel method and certain constructions and combinations of parts, including a single valve of a needle form or character, whereby the oil, instead of being allowed to evaporate in the cup, is flushed therefrom by the water of condensation of the steam, the size of the rising drops of oil may be regulated at pleasure, and the oil is prevented from coming in contact with the sides of the glass tube or duct through which it rises, and said tube thereby kept clear for observing the action of the lubricator, substantially as hereinafter described.

Reference is to be had to the accompanying drawings, forming part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 represents a vertical section of a lubricating-cup embodying my invention; Fig. 2, a horizontal section of the same on the line *x x* in Fig. 1; and Fig. 3, a front view, in part.

A is the oil-receptacle, provided with a filling-plug, *b*, and emptying-cock *c*. Arranged above this receptacle, and connected therewith by a pipe or pipes, *d*, leading down to near the bottom of the receptacle, is an upright condenser, B, within which is a stand or overflow pipe, C, arranged to project to a given altitude therein. This pipe C connects at its lower end with an enlarged and spread or tapering shell-like horizontal duct, D, the front or outer end of which is intended to connect with the valve-chest or other steam-space of the engine. Said duct D also connects by a glass tube, E, open at its upper end, with the top of the receptacle A over a valve-seat, *e*, thereon. A conical valve, G, is arranged to fit or work within this valve-seat from below, and is provided with a needle, *f*, which projects centrally up within the tube E. The stem of said valve is extended downward through the bottom of the receptacle A and stuffing-box at such point, and is provided with a screw-thread, *g*, arranged to work in a screw box or projection, *h*, to allow of the adjustment of the valve, as required. The duct D is constructed in its base with a longitudinal inner groove or channel, *i*.

Supposing the receptacle A to be charged with oil, *k*, and the lubricating-cup to be connected by its flushing-duct D with the engine, as described, steam passing along said duct will be condensed therein and in the condenser B, and in due course will cause the transparent tube E to be filled, and the condenser up to or slightly above the level of the pipe C, and the duct *d* and lower portion of the receptacle A to be charged with the water of condensation *l* from the steam. The valve G being adjusted as required, the oil will be passed in small quantities through the valve-seat and up the needle *f*, and be delivered in drops at intervals from said needle, and rising through the water in the tube E will settle or be delivered in the groove or channel *i* in the bottom of the duct D, from whence it will be flushed along with and by the water of condensation from the condenser B into the valve-chest or other steam-space of the engine. This flushing prevents evaporation of the oil within the cup or till it reaches its place of discharge, where it will be volatilized or made to mingle with the steam and so be transmitted to lubricate the

steam-exposed working parts of the engine, as required. The needle-valve *G f* serves not only to regulate to the greatest nicety the size of the drops of oil delivered from the point or outer end of the needle, and so to control the supply of oil to the discharge-tube of the lubricator, but, by the oil hugging the needle, the transparent tube *E* will be kept from being tarnished by the oil, which will be restrained from coming in contact with the sides thereof, thus keeping said tube clear to observe the working of the lubricator.

A lubricating-cup constructed as described is what may be termed "self-adjusting," or has a balancing action as regards the supply and demand. It will work under all pressures, any variation in pressure not affecting the action of the cup, inasmuch as the feeding of the oil is not dependent upon the pressure of the steam, but upon the head of water in the pipe *d*, or pipe *d* and condenser *B*. The cup will commence working as soon as the tube *E* and pipe *d* become charged with water, and even before the condenser *B* is so charged, the condensation in the duct *D* then serving to effect the necessary flushing, which the overflow from the condenser *B* will afterward assist and keep up. The horizontal groove *i* in the duct *D* causes the oil to have only a very narrow top surface exposure to the steam, which will restrict the evaporation of it in the cup.

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

1. The method herein described of passing the oil from the lubricating-cup to mingle

with the steam in the engine where the oil is required to be used, which consists in flushing the oil from the cup by water of condensation as derived from the steam, substantially 40 as and for the purposes specified.

2. The combination, with the oil-receptacle *A* and the tube *E*, arranged to connect with an upper combined steam-passage and oil-discharge duct, and provided with a lower valve 45 for the admission of oil, of the elevated condenser *B*, having a stand or condense-water-supply pipe in connection below with said steam-passage and oil-discharge duct and a duct or pipe extending from said condenser 50 down into the oil-receptacle *A*, essentially as described.

3. In an automatic lubricator, constructed to operate substantially as described, the combined steam-passage and oil-discharge duct *D*, 55 of tapering or spread construction and provided with a lower longitudinal channel or groove, *i*, whereby said duct serves both as a condensing device and flushing passage for the oil, substantially as described. 60

4. The combination of the oil-receptacle *A*, the condenser *B*, fitted with a stand or overflow pipe, *C*, the duct *d*, the transparent tube *E*, with its adjustable needle-valve *G f*, and the duct *D*, provided with a lower longitudinal 65 passage, *i*, substantially as shown and described.

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Witnesses:

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