

(No Model.)

C. E. JOHNSON.
Lubricator for Steam Engine Cylinders.

No. 229,710.

Patented July 6, 1880.

Fig. 1

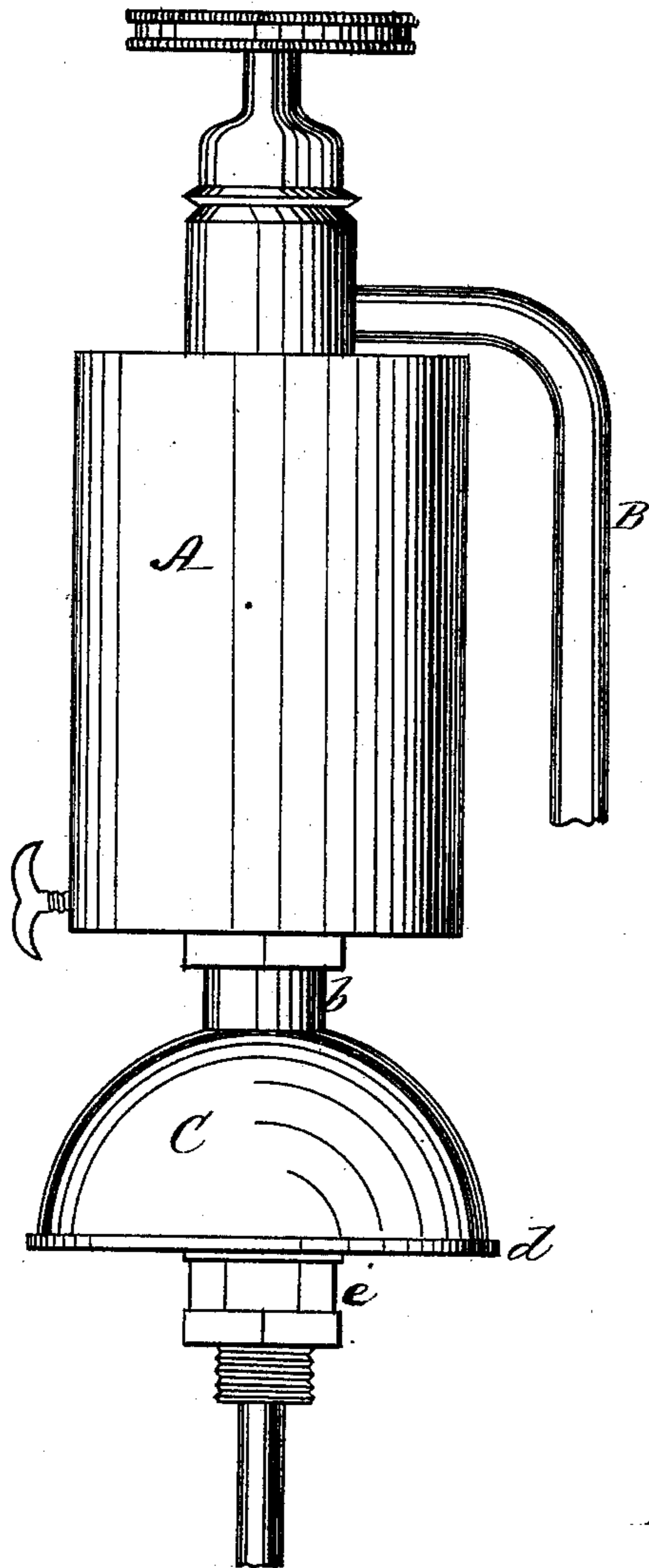


Fig. 2

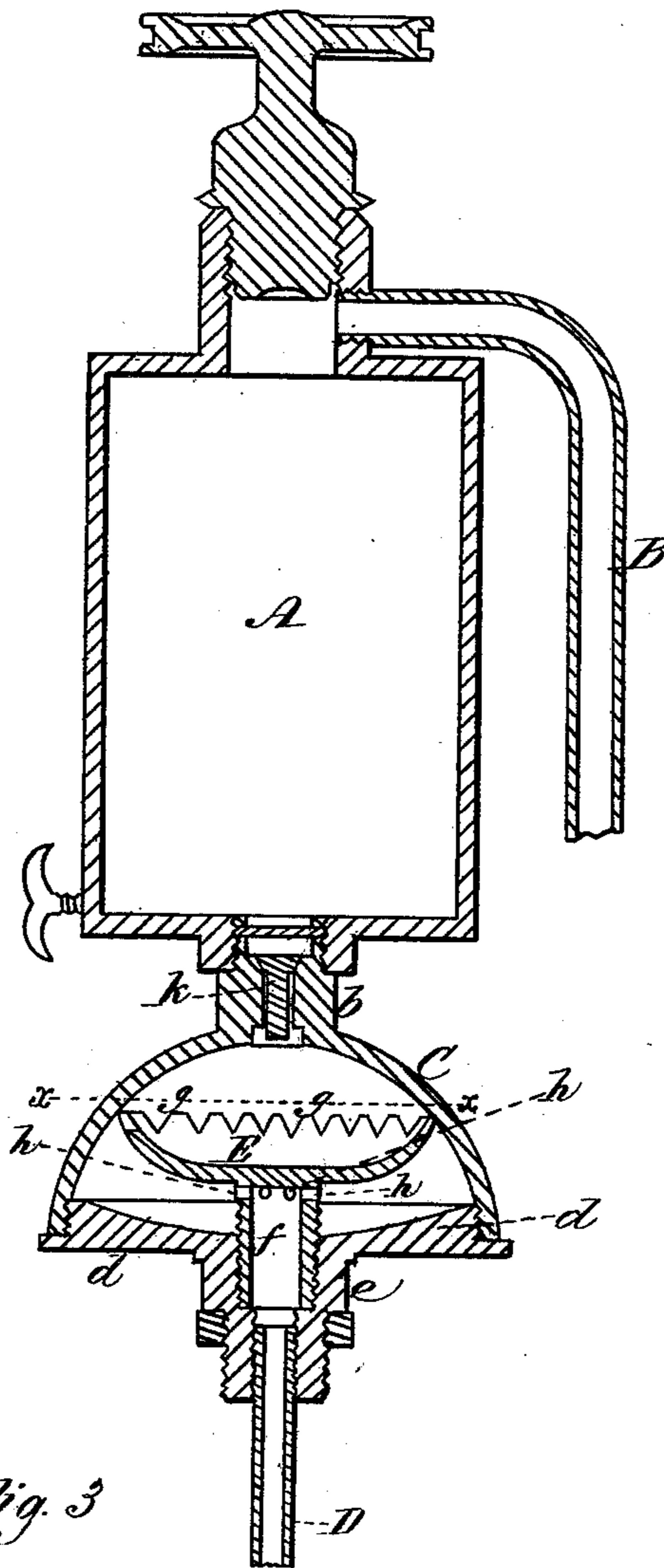
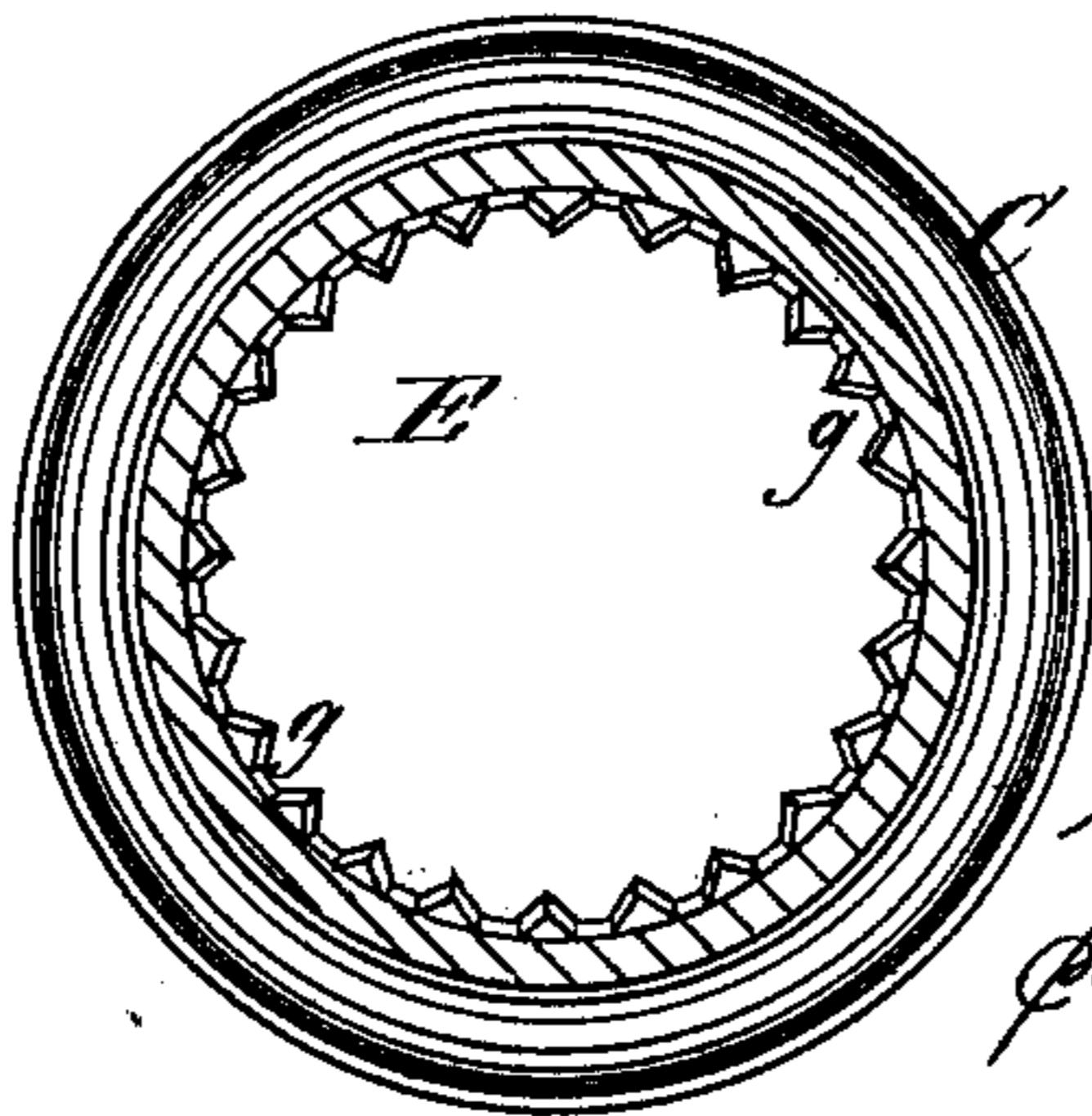


Fig. 3



Witnesses;
H. J. Cambridge
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UNITED STATES PATENT OFFICE.

CHARLES E. JOHNSON, OF BOSTON, MASSACHUSETTS.

LUBRICATOR FOR STEAM-ENGINE CYLINDERS.

SPECIFICATION forming part of Letters Patent No. 229,710, dated July 6, 1880.

Application filed May 27, 1880. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. JOHNSON, of Boston, in the county of Suffolk and State of Massachusetts, have invented an Improved Lubricator for Steam-Engine Cylinders, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

10 Figure 1 is an elevation of a lubricator constructed in accordance with my invention. Fig. 2 is a vertical section through the center of the same. Fig. 3 is a horizontal section on the line *x x* of Fig. 2.

15 Lubricators in which the steam-supply pipe is led directly to the bottom of the oil-cup are objectionable, for the reason that each time the cup is refilled with oil it becomes necessary to wait until a sufficient quantity of water
20 from the condensation of steam has accumulated in the portion of the supply-pipe nearest to the cup in order to prevent the steam from acting directly upon and becoming mixed with the oil in the cup, which it is very important
25 to avoid, as the oil when thus mixed with steam obscures the glass inspection-chamber in the feed-pipe and prevents the engineer from observing what amount of oil is being carried forward.

30 My invention has for its object to avoid this delay at each refilling of the cup, which often prevents the lubricator from being used for fifteen or twenty minutes, and sometimes longer; and my invention consists in the combination, with the oil-cup, of an independent
35 receptacle for containing water, which is placed between the bottom of the oil-cup and the steam-supply pipe leading to the boiler, this receptacle being so constructed that it will not
40 empty itself, and will thus cause a body of water to be at all times interposed between the oil-cup and the steam-supply pipe, which effectually prevents the steam from reaching and becoming mixed with the oil and enables the
45 apparatus to be instantly set in operation after the oil-cup has been refilled without having to wait for the steam to condense, as heretofore.

In the said drawings, A represents the oil-cup of a lubricator, which is provided, as usual,
50 with a discharge-pipe, B, through which the oil is forced to the cylinder of the engine.

To the bottom of the oil-cup A is secured a

hemispherical receptacle, C, the upper end of which is provided with a short neck or tube, *b*. The bottom *d* of the receptacle C, which is 55 made detachable therefrom and concave on its upper side, has projecting down from its center a short tube, *e*, which is coupled with a steam-supply pipe, D, leading directly to the boiler or main steam-pipe. (Not shown.) 60

Within the receptacle C is placed a concavo-convex plate or cup, E, which is supported on a hollow stem, *f*, screwed into the bottom plate, *d*, and communicating with the pipe D. The upper edge of the cup E, which bears against 65 the inner surface of the receptacle C, is notched or scalloped, as at *g*, in order to afford communication between the portions of the receptacle above and below the cup, and the stem *f* is provided with a series of inlet-apertures, 70 *h*, communicating with its interior, through which the water enters the receptacle from the pipe D.

The tube *b* is provided with a valve, *k*, the plug of which is fitted to its seat in such a manner as to close automatically on the application 75 of downward pressure, this valve serving to prevent the oil in the cup A from running down into the receptacle C when the pressure is off the boiler or the steam is shut off from 80 the receptacle C, or when the lubricator is removed from the boiler.

The cup E is intended to be always filled with water, as is also the concavity of the bottom plate, *d*, and as the water cannot drain 85 off therefrom, a permanent supply is thus maintained within the receptacle C, which insures a body of water being at all times interposed between the oil-cup A and the steam-pipe D, which thus prevents steam from reach- 90 ing and becoming mixed with the oil under any circumstances whatever, while the interposition of the cup E between the inlet and outlet apertures of the receptacle C tends to reduce any back-pressure from the cylinder of 95 the engine, and also prevents undue pressure being exerted upon the oil by the steam in the pipe D.

The operation is as follows: The oil-cup A being filled with oil, and the cup E of the re- 100 ceptacle C and concavity of the bottom plate, *d*, filled with water, steam is admitted from the supply-pipe D, and is instantly condensed on coming into contact with the water in the

receptacle C. The pressure of the steam now forces the water up through the valve *k* into the oil-cup A, and exerts the required pressure on the oil to force it through the pipe B into the cylinder of the engine, and as the receptacle C always contains water the steam is condensed as fast as it reaches it, thus affording the necessary supply of water to take the place of the oil forced out of the cup A. By thus constantly maintaining a body of water between the oil-cup and the steam-supply pipe the apparatus is ready for use immediately after the oil-cup has been refilled, and the delay and inconvenience incident to lubricators as heretofore constructed are thus entirely avoided, while there is no liability of mixed steam and oil being forced through the feed-pipe, and consequently the glass inspection-chamber therein is always in a condition to afford an uninterrupted view of the oil passing through it, whereby much waste is avoided, as the engineer is enabled to observe the flow of the oil and regulate it accordingly by means of a valve in the feed-pipe provided for the purpose.

I claim—

1. In a lubricator, the combination, with the oil-cup A and its discharge-pipe B, of the independent receptacle C, interposed between the bottom of the cup A and the pipe D, and provided with a concave bottom, *d*, inlet-apertures *h*, and concave plate or cup E, adapted to retain a permanent supply of water within the receptacle C, substantially as and for the purpose described. 25 30

2. In a lubricator, the combination, with the water-receptacle C, of the concave plate or cup E, placed within it and having its upper edge provided with notches or apertures *g*, to allow of the passage of the water from the lower to the upper portion of the receptacle C, substantially as set forth. 35 40

Witness my hand this 15th day of May, A. D. 1880.

CHARLES E. JOHNSON.

In presence of—

W. J. CAMBRIDGE,
F. W. JOHNSON.