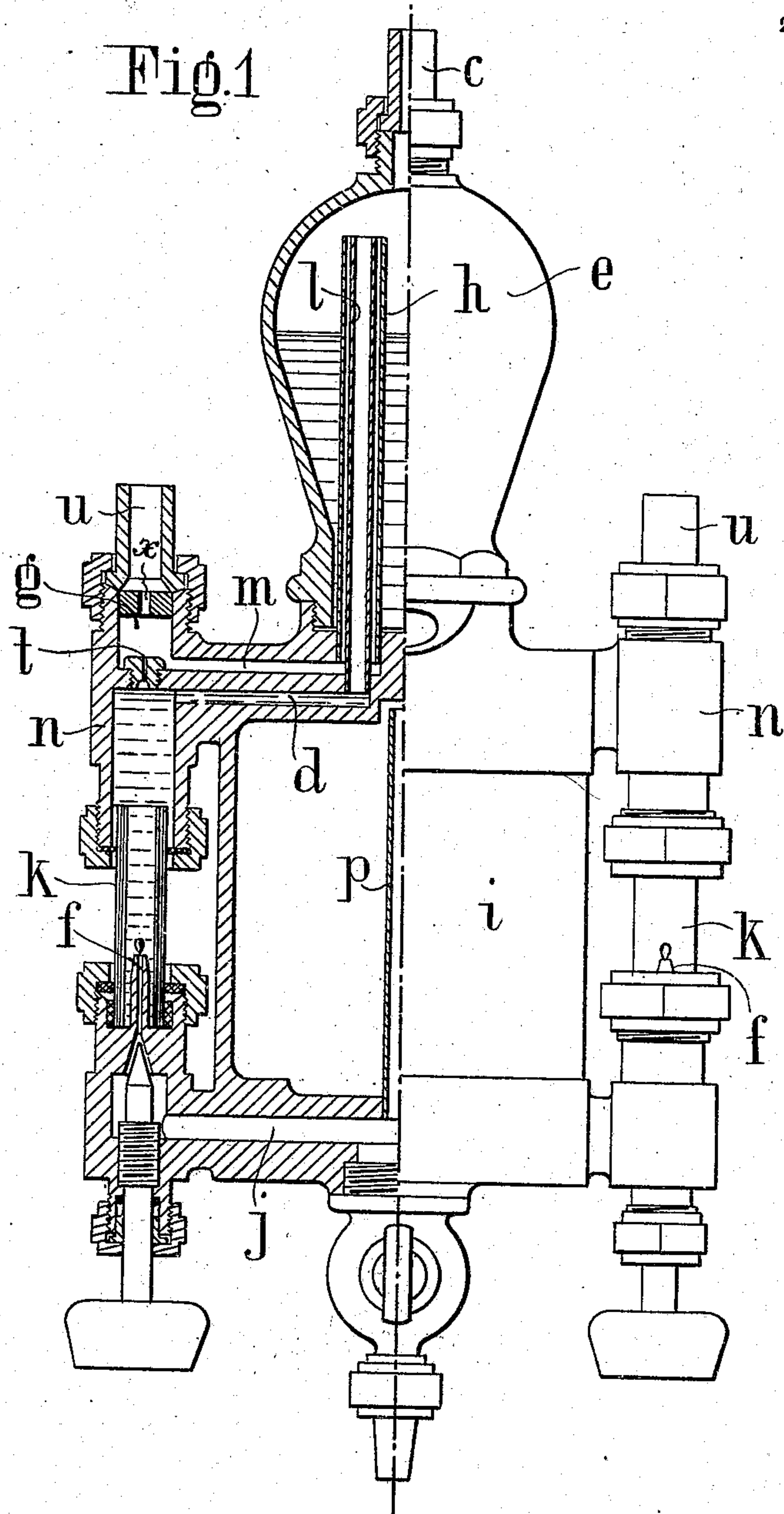


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LUBRICATOR FOR LOCOMOTIVES.  
APPLICATION FILED JUNE 29, 1908.

930,525.

Patented Aug. 10, 1909.

2 SHEETS—SHEET 1.



Witnesses

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Inventor.

*Emanuel Blauhorn*

*by Henry Orth*  
*Att'y.*

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Fig. 2

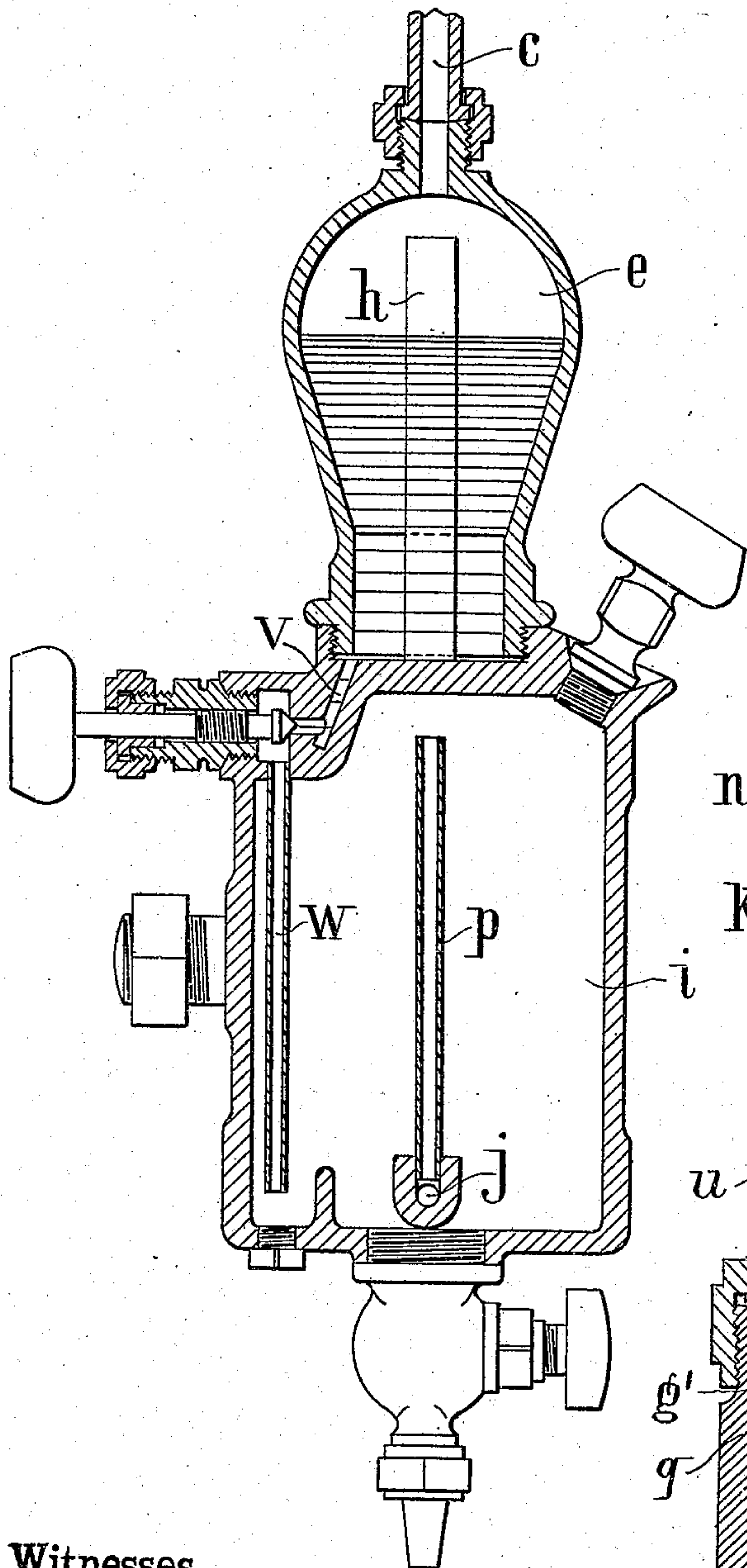


Fig. 3

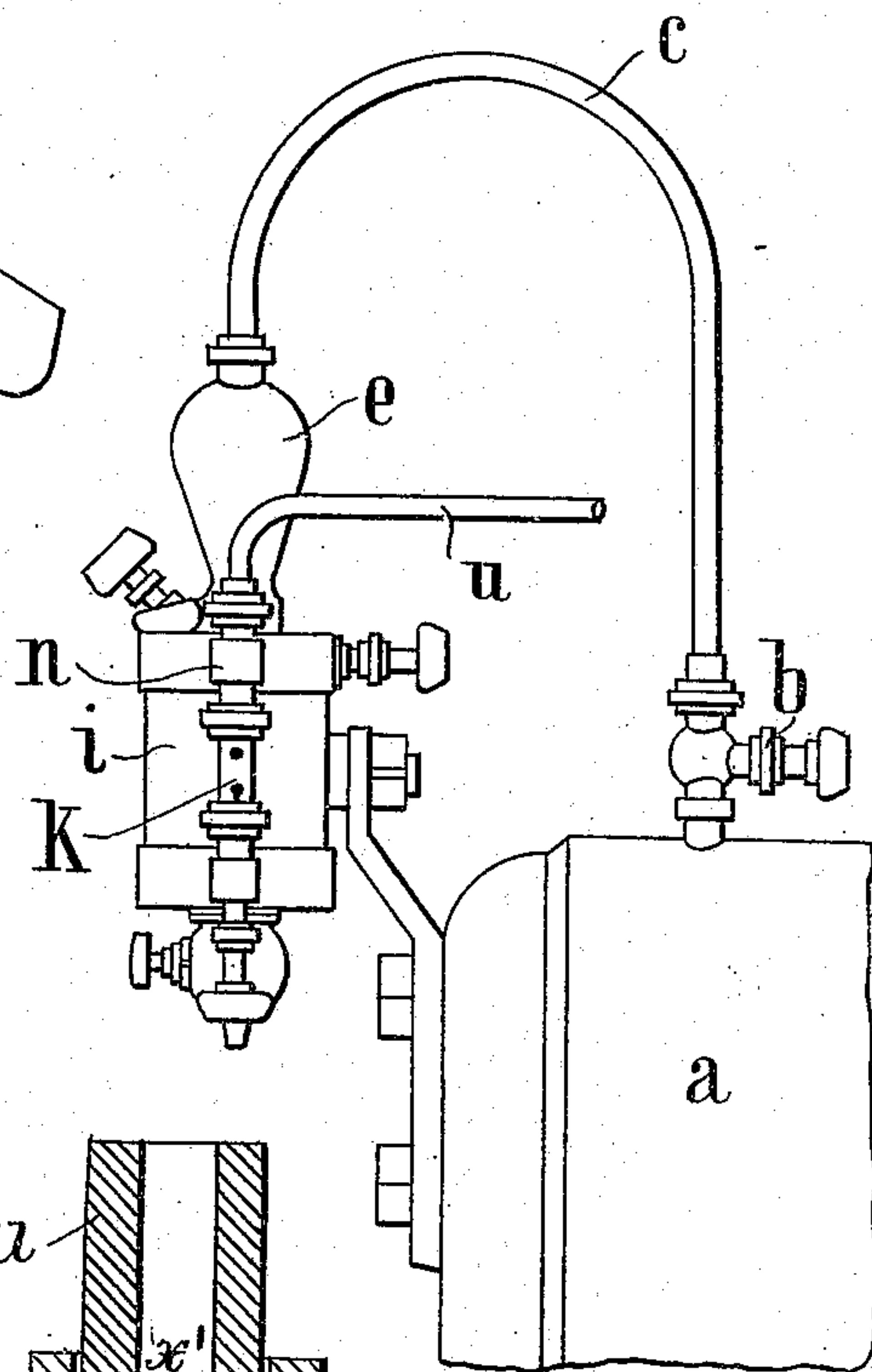
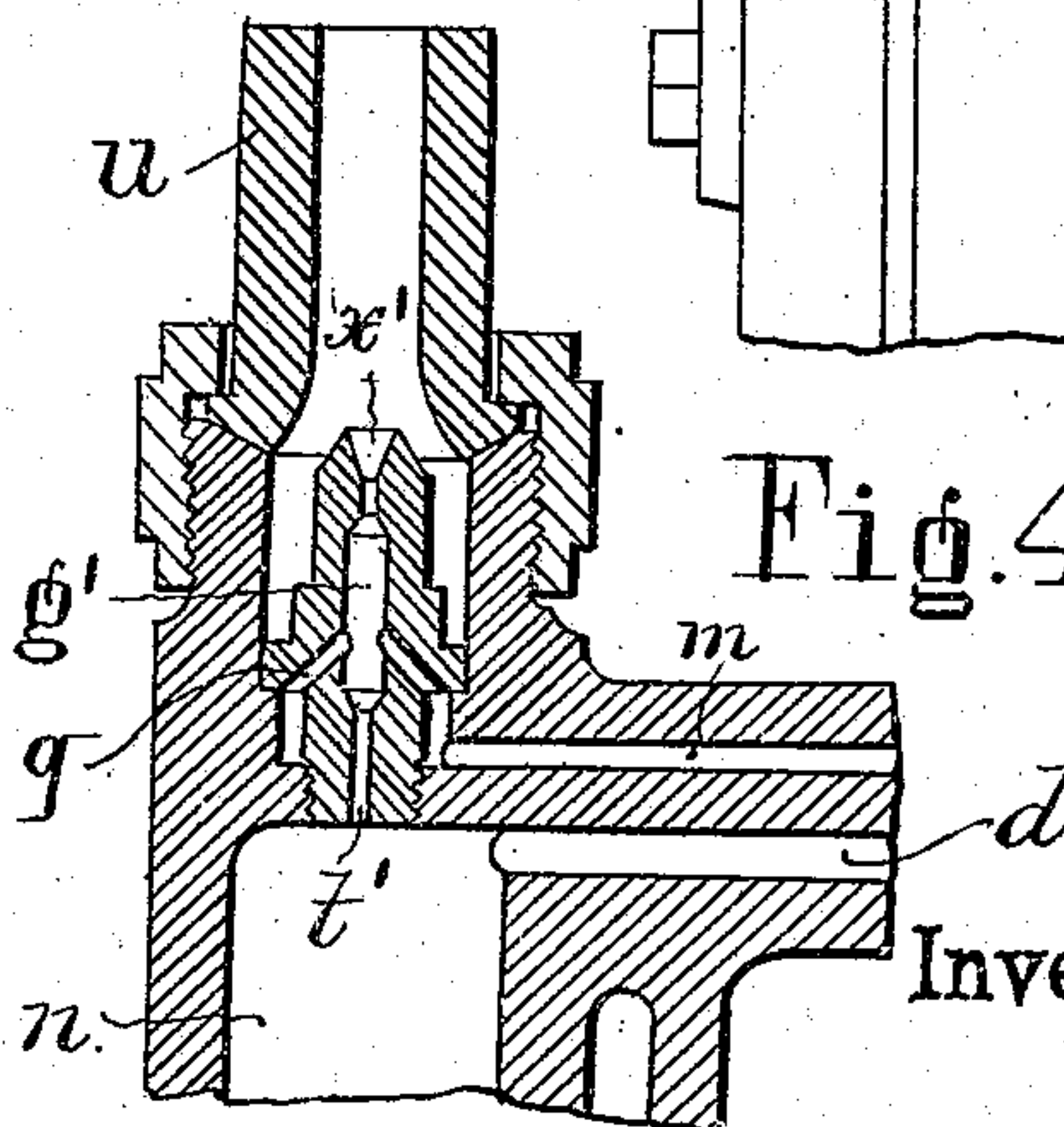


Fig. 4



Witnesses.

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# UNITED STATES PATENT OFFICE.

EMANUEL BLAUHORN, OF VIENNA, AUSTRIA-HUNGARY.

## LUBRICATOR FOR LOCOMOTIVES.

No. 930,525.

Specification of Letters Patent.

Patented Aug. 10, 1909.

Application filed June 29, 1908. Serial No. 440,871.

*To all whom it may concern:*

Be it known that I, EMANUEL BLAUHORN, a subject of the Emperor of Austria-Hungary, residing at Vienna, Austria-Hungary, have invented certain new and useful Improvements in Lubricators for Locomotives; 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 appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

My invention relates to sight feed lubricators and has for its object certain novel features of construction to obviate certain objections to such lubricators as they are now constructed, as will hereinafter be more fully described and claimed.

Referring to the drawings in which like parts are similarly designated, Figure 1 is a view of a lubricator partly in elevation and partly in longitudinal central section. Fig. 2 is a vertical central section taken at right angles to that of Fig. 1. Fig. 3 shows the manner of connecting the lubricator to a boiler and Fig. 4 is a vertical section through the upper part of the lubricator showing a modification.

For diluting the oil and preventing the oil from congealing in lubricators and the pipe system connected thereto, lubricators operated with condensation water are almost universally used for lubricating in steam chambers, such as the cylinders and valve chests of locomotives. It is usual for the chamber in which the oil drops rise, which chambers are customarily filled with water and are contained within sight glasses, to be connected through a narrow outlet with the pipe conducting the oil to the part to be lubricated. These small outlets are so narrow that the variations of pressure at the part to be lubricated are not at once transmitted to this chamber. Experience has shown that on account of the considerable variations of pressure that occur at the place to be lubricated on locomotives, which pressure often falls from 15 atmospheres over pressure rapidly below atmospheric pressure, these narrow openings tend to prevent the regular and uniform formation of the oil drops and the number of drops of oil that rise are often more than double the quantity required when the pressure at the place to

be lubricated is essentially reduced. In order to prevent these difficulties the oilers as heretofore used had the pipe conduits leading to the place to be oiled throttled at their exit ends. Usually in such lubricators a fine steam jet was conducted into the oil conduit to prevent a stagnation of the oil and steam mixture and also to prevent the adhesion of the saponified oil to the walls of the lubricator and its pipes. These objects have not been fully achieved by the oiling devices heretofore constructed. Since the oilers are usually arranged in the cab the oil conduits must have considerable length, especially when they are led outside the locomotive and then produce a partial condensation of the steam used to aid the flow of oil mixture in the pipes while on its way to the place to be oiled through the throttled outlet and in any case decreases its volume, becomes wet or primed and meets with a certain resistance at the outlet opening so that the oil is not properly blown through the tubes. If we permit a throttling of the oil pipes there is an energetic blowing out of these pipes especially upon reducing the pressure at their ends, but the sight glass will not be sufficiently protected against variations of pressure.

The objects of the present invention are to produce an energetic blowing through the oil conduits upon reduced pressure at the place of use and to maintain within the chamber of the lubricator a similar pressure in order that a complete and regular formation of oil-drops will take place upon variations of pressure.

To these ends the present invention consists essentially in that the small opening of the lubricator through which the mixture of steam and oil passes, discharges directly into a chamber which is connected by a second conduit with the steam space of the lubricator and discharges into the oil conduit. The cross section of the entrances into said chamber are maintained greater than the cross section of the exit from the chamber into the oil conduit; consequently there is maintained between the lubricator and the oil conduit an elastic expansion chamber that reduces the variations of pressure transmitted from the ends of the oil tubes at the place to be used.

The condenser *e* of the oiler, Fig. 3, is connected by a tube *c* controlled by a valve *b* to the boiler *a*. The lower part of the condenser chamber is filled with water of con-



densation and forms the water space of the  
 condenser while above the water contained  
 therein, the space is filled with boiler steam.  
 Below the condenser is the oil chamber *i* and  
 5 a passage *V* controlled by suitable valve,  
 (Fig. 2), leads to a tube *W* conducting water  
 from the water space of the condenser to  
 near the bottom of the oil chamber. The oil  
 contained in said chamber is forced upward  
 10 by the water and always maintained at the  
 top of said chamber where it flows into the  
 open end of pipe *p* connected at its lower end  
 to a passage *j* leading to the valve controlled  
 drop-forming nozzle *f* in the sight glass *k*.  
 15 The sight glass at its upper end enters the  
 lower end of the trap *n* connected by a con-  
 duct *d* to the lower end of a pipe *l* whose up-  
 per end projects in the steam space of the  
 condenser so that the sight glass is main-  
 20 tained under boiler pressure while there is a  
 slight excess of pressure maintained in the  
 passage *j* due to the height of the water col-  
 umn in the water space which slight excess of  
 pressure is sufficient to force the drops of oil  
 25 through the drop-forming nozzle *f*. The oil  
 in the trap *n* mixes with the steam coming  
 from the steam space of the condenser  
 through pipe *l* and passage *d* and passes  
 through the small orifice *t* at the top of said  
 30 trap forming a fine stream of mixed steam  
 and oil. This mixture of steam enters a  
 chamber *g* connected by a passage way *m*  
 with the lower end of a pipe *h*, preferably but  
 not necessarily, concentric with the pipe *l*,  
 35 which pipe *h* also enters the steam space of  
 the condenser thereby forming an annular  
 passage way for steam between pipes *h* and *l*  
 which steam meets the mixture of steam and  
 oil coming through the opening *t* and passes  
 40 through the opening *x* at the top of the cham-  
 ber *g* to the distributor pipes *u*. The exit  
 opening *x* is so measured that the area of the

entrance of the passage *m* into the chamber  
*g* and the area of *t* are together larger than  
 the smallest cross section of *x*. Since the  
 chamber *g* is capable of receiving more steam  
 15 than can pass from it at *x*, it acts as a reser-  
 voir or cushion that prevents the variations  
 of pressure arising in the oil pipe *u* from seri-  
 ously affecting the exit of rich oil mixture  
 50 through *t*.

In the modification shown in Fig. 4, the  
 chamber *g'* is formed within a nozzle like  
 member screwed into place. The passages  
*q* connecting the chamber *g'* with the passage  
 55 *m* are inclined upwardly and supply the  
 steam from the steam space of the con-  
 denser. The lower end of the nozzle con-  
 tains the passage *t'* for the entrance of the  
 rich oil mixture. The exit at *x'* is tapered out-  
 60 wardly in order to give the steam and oil  
 mixture a more ready exit from the nozzle.  
 The narrowest cross section of *x* is consid-  
 erably smaller than the sum of the entering  
 cross sections to the chamber *g*. 65

I claim:—

In a lubricator of the type described, the  
 combination with the condenser and the oil  
 drop forming devices; of a trap having a dis-  
 charge orifice and into which the oil drops  
 70 enter, means connected to the steam space  
 of the condenser to supply steam to the  
 trap, a chamber over the trap having a de-  
 livery orifice and means to connect the cham-  
 ber and steam space of the condenser sub- 75  
 stantially as described.

In testimony that I claim the foregoing as  
 my invention, I have signed my name in  
 presence of two subscribing witnesses.

EMANUEL BLAUHORN.

Witnesses:

JOSEF RUBASCH,  
 ROBERT W. HEINGARTNER.