

(No Model.)

H. SCHAFFSTÄDT & A. BERGEN.

LUBRICATOR.

No. 362,667.

Patented May 10, 1887.

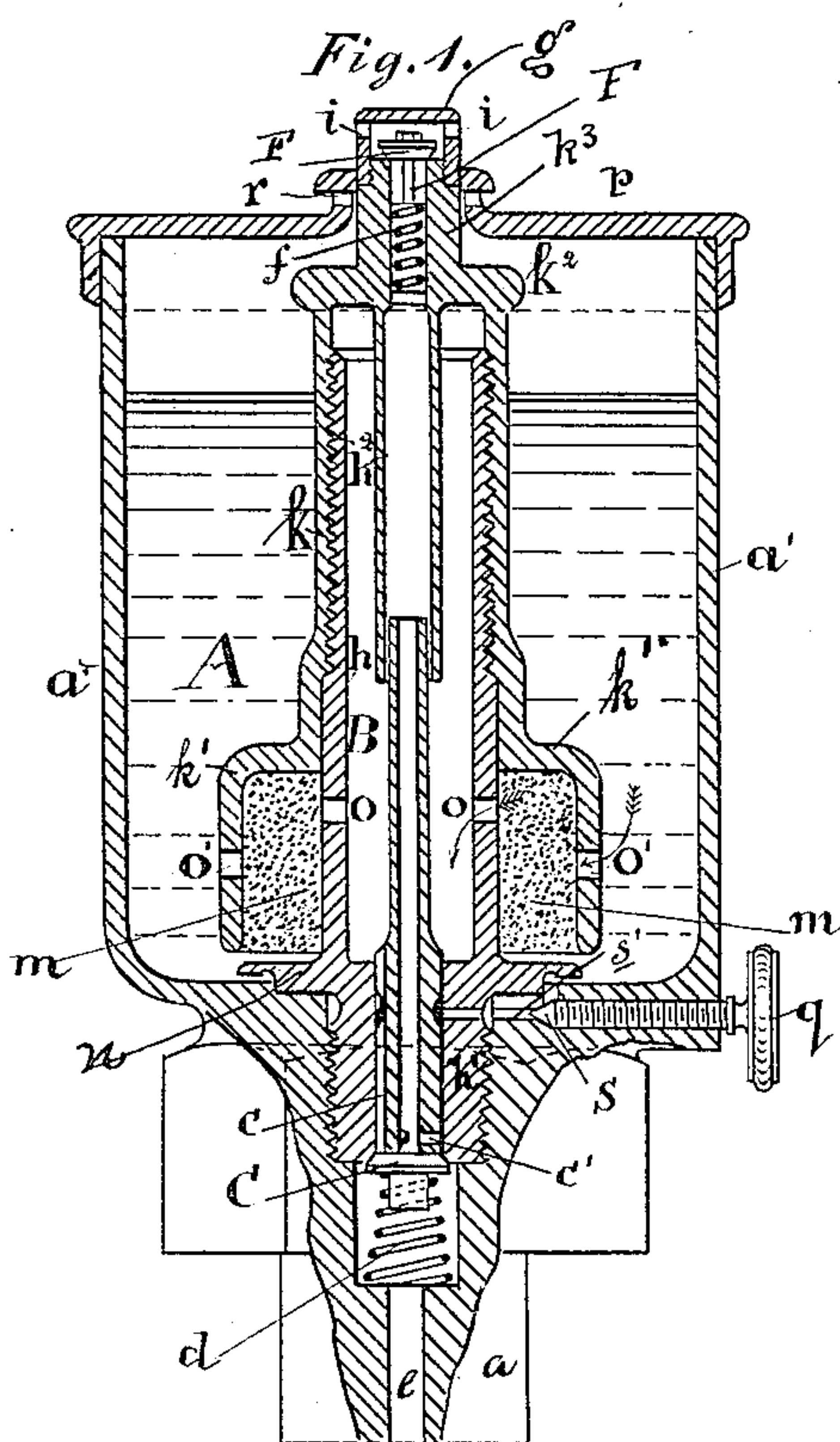


Fig. 1a.



Witnesses:  
Henry Mann  
Carl Kay

Inventor.  
Heinrich Schaffstädt &  
Adolf Bergen  
by Goepke & Zaegerer  
Attorneys.

# UNITED STATES PATENT OFFICE.

HEINRICH SCHAFFSTÄDT, OF GIESSEN, AND ADOLF BERGEN, OF HÖCHST-  
ON-THE-MAIN, GERMANY.

## LUBRICATOR.

SPECIFICATION forming part of Letters Patent No. 362,667, dated May 10, 1887.

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*To all whom it may concern:*

Be it known that we, HEINRICH SCHAFFSTÄDT, of Giessen, and ADOLF BERGEN, of Höchst-on-the-Main, Germany, have invented  
5 certain new and useful Improvements in Lubricators, of which the following is a specification.

This invention relates to certain new and useful improvements in that class of lubricating devices which are used for lubricating the  
10 cylinder of an engine when the said engine is not operated by steam—for example, for locomotives when they are running on a downgrade and the steam is shut off—or for air-pumps or  
15 like machines. The devices used for this purpose heretofore have been defective, inasmuch as the steam entered the lubricating-chamber and the water of condensation, being of greater density than the oil contained in the chamber,  
20 filled up the chamber and gradually forced the oil out.

The object of our invention is to provide a new and improved lubricating device in which the steam and water cannot mix with the oil  
25 or displace the same, and in which the flow of oil can be regulated to a nicety.

In the accompanying drawings, Figure 1 is a cross-sectional view of our improved apparatus for oiling cylinders. Fig. 1<sup>a</sup> is a detail  
30 cross-sectional view of the lower part of the tubular valve-stem.

Similar letters of reference indicate corresponding parts.

Referring to Fig. 1, *a'* represents the oil-chamber provided on its bottom with a neck,  
35 *a*, by means of which the chamber is fastened on the top of the cylinder. A tube, *h*, having a flange, *n*, has the part *h'* below the flange *n* screw-threaded and screwed into an aperture  
40 or screw-threaded cavity in the bottom of the oil-chamber *a'*. The tube *h* is screw-threaded on the outside, and on it is screwed a sleeve, *k*, provided at its upper end with a milled head, *k*<sup>2</sup>, and a neck, *k*<sup>3</sup>, projecting upward from said  
45 head, on which neck a cap, *g*, is fastened, which has apertures *i*. The neck passes through a central aperture in the cover *p* of the oil-chamber *a'*, the cover being provided with a raised central part through which the neck *k*<sup>3</sup> passes,

in which raised part of the cover the apertures  
50 *r* are provided for establishing communication between the exterior air and the interior of the oil-chamber. In the top of the neck *k*<sup>3</sup> of the sleeve *k* a seat is formed for an upwardly-moving valve, *F*, which valve is located in  
55 the upper part of the neck *K*<sup>3</sup>. A tube, *h*<sup>2</sup>, projects downward from the underside of the head *k*<sup>2</sup>, and into the lower end of the said tube *h*<sup>2</sup> the upper end of a tubular valve-stem, *B*, fits, which valve-stem passes down through the bore of  
60 the screw-threaded lower end, *h'*, of the tube *h*, and on the lower end of said tubular valve-stem the valve *C* is formed, which fits against the valve-seat formed on the lower end of the part *h'* of the tube *h*. The bore in the part  
65 *h'* is smaller than that of the tube *h*, and that part of the tubular valve-stem in the bore of the part *h'* is of greater diameter than the rest of the valve-stem, and is provided with longitudinal grooves *c*, and with apertures *c'*, as  
70 shown in Fig. 1<sup>a</sup>. A spring, *d*, presses the valve *C* against its seat. The bore *e* leads from the cavity containing the spring *d* to the cylinder. An inverted-cup-shaped part, *K'*, is  
75 formed on the lower end of the sleeve *k*, and is provided with apertures *o'* slightly below the apertures *o* in the tube *h*. A ring, *m*, of felt or other fibrous or like material that permits the passage of oil, surrounds the lower part of the tube *h*, and is in turn surrounded  
80 by the inverted-cup-shaped part *K'*. The bore *s'* extends from the bore in the part *h'* of the tube *h* to the bottom part of the oil-chamber *a'*, and is closed by the pointed end of a screw, *s*, having a head, *q*. *A* represents the oil.  
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The operation is as follows: When the engine is in motion and no steam is admitted into the cylinder, a greater or less vacuum is created, and the valve *F* is closed by the pressing of the exterior air. The pressure of the  
90 air in the upper part of the oil-cylinder presses the oil through the felt *m*, the apertures *o*, and the channels *c* in the tubular valve-stem *B*. The valve *C* is forced down, thus permitting the oil to pass into the cylinder. As long as  
95 there is a vacuum in the cylinder the oil continues to flow; but as soon as a vacuum is destroyed the valve *C* is closed and the valve *F*



opened. It may sometimes be necessary that a greater supply of oil is to be delivered to the cylinder, in which case the screw *s* is moved outward, so as to permit oil to flow from the oil-chamber direct into the bore *s'*, and into the cylinder. Ordinarily the bore *s'* is kept closed. In case any steam leaks out of the cylinder, it passes through the apertures *c'* into the bore of the tubular valve-stem and through the neck *k<sup>3</sup>*, and out through the apertures *i* in the cap *g*.

The quantity of oil passing through the felt *m* can be regulated by screwing down the cup-shaped part *k'* of the sleeve on the collar *n*, whereby the felt is compressed more or less. When the cover *p* is removed, the sleeve *k* can be turned very easily by means of the milled head *k<sup>2</sup>*.

In my improved apparatus the steam leaking from the cylinder cannot pass into the oil-chamber, but passes directly into the air through the tube or central chamber.

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

1. The combination of an oil-chamber the bottom of which is provided with a downwardly-extending neck, a tube, *h*, within said chamber, provided with lateral ducts, and having a screw-threaded lower end inserted in said neck, a spring-seated valve, *C*, at the lower end of said tube, a sleeve, *k*, surrounding the upper end of said tube and provided at its upper end with an upwardly-projecting tubular neck, *k<sup>3</sup>*, in communication with the outer air, a spring-seated valve, *F*, for closing said neck, a smaller tube, *h<sup>2</sup>*, within the tube *h*, extending downward from said tubular neck, and a tubular valve-stem sliding at its upper end within the tube *h<sup>2</sup>*, and connected at its lower end with

the valve *C*, said tubular valve-stem having a vertical duct, *c*, and a lateral duct, *c'*, substantially as described.

2. The combination of an oil-chamber the bottom of which is provided with a downwardly-extending neck, a tube, *h*, within said chamber, provided with lateral ducts, and having a screw-threaded lower end inserted in said neck, a spring-seated valve, *C*, at the lower end of said tube, a sleeve, *k*, surrounding the upper end of said tube, and provided at its upper end with an upwardly-projecting tubular neck, *k<sup>3</sup>*, in communication with the outer air, and with an inverted cup at its lower end surrounding the tube *h*, opposite its lateral ducts, a spring-seated valve, *F*, for closing said neck, a smaller tube, *h<sup>2</sup>*, within the tube *h*, extending downward from said tubular neck, and a tubular valve-stem sliding at its upper end within the tube *h<sup>2</sup>*, and connected at its lower end with the valve *C*, said tubular valve-stem having a vertical duct, *c*, and a lateral duct, *c'*, substantially as described.

3. In a lubricator, the combination of an oil-chamber, a tube, *h*, within said chamber, provided with a flange and with lateral ducts above said flange, and an adjustable inverted cup surrounding said tube opposite said ducts and above said flange, forming an annular space between said cup and tube for fibrous material, substantially as described.

In testimony that we claim the foregoing as our invention we have signed our names in presence of two subscribing witnesses.

HEINRICH SCHAFFSTÄDT.  
ADOLF BERGEN.

Witnesses:

AUGUST FUNCK,  
LOUIS FOST.