

(No Model.)

H. RITTER & E. H. LUNKEN.
LUBRICATOR.

No. 506,442.

Patented Oct. 10, 1893.

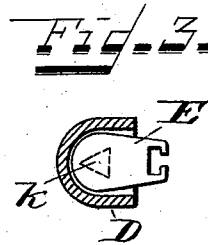
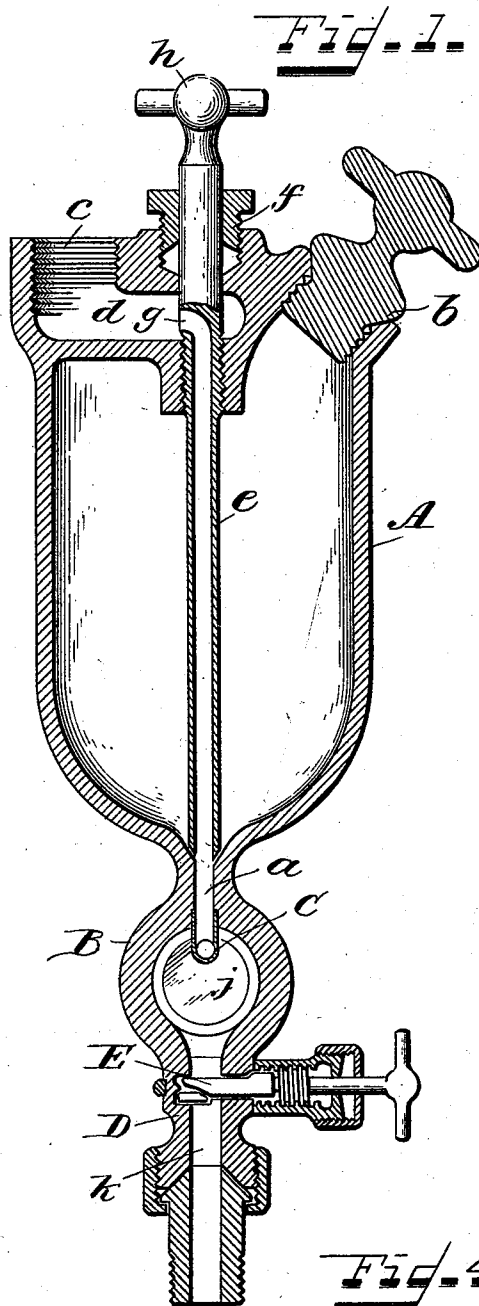


Fig. 2.

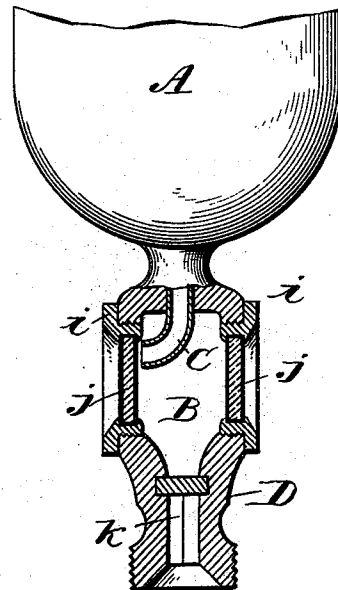
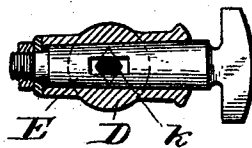


Fig. 4.



Witnesses.
Thomson Cross.
Bernard Hausfeld.

Inventors.
Henry Ritter and
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by Chambers
their Attorney.

UNITED STATES PATENT OFFICE.

HENRY RITTER AND EDMUND H. LUNKEN, OF CINCINNATI, OHIO, ASSIGNORS
TO THE LUNKENHEIMER COMPANY, OF SAME PLACE.

LUBRICATOR.

SPECIFICATION forming part of Letters Patent No. 506,442, dated October 10, 1893.

Application filed March 31, 1893. Serial No. 468,530. (No model.)

To all whom it may concern:

Be it known that we, HENRY RITTER and EDMUND H. LUNKEN, citizens of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have jointly invented certain new and useful Improvements in Graphite Lubricators, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

Our invention relates to apparatus for automatically supplying, to steam cylinders or pipes, finely pulverized graphite as a lubricant, and it has for its object the carrying out of such process with simple and novel mechanism.

The novelty of our invention will be hereinafter set forth, and specifically pointed out in the claims.

In the accompanying drawings:—Figure 1, is a central sectional elevation of our graphite lubricator. Fig. 2 is a broken view of the same partly in section and looking in the direction of the arrow of Fig. 1. Fig. 3, is a sectional detail plan view of the feed valve and feed passage. Fig. 4, is a corresponding view with a different form of valve.

The same letters of reference are used to indicate identical parts in all the figures.

The tendency of the present time among boiler and engine builders is toward very high pressures of steam, and oils for lubricating the engines under such high pressures will not answer because they become volatilized immediately upon entering the cylinder and so lose their efficiency as a lubricant. Powdered graphite, however, is not effected by these high pressures and answers perfectly as a substitute for the oils. Graphite, while long known as a lubricant for journals and occasionally placed in steam cylinders after removing the head, has never been fed automatically to the cylinders while the engine was running and it is the latter purpose that our present invention accomplishes.

We provide a steam tight cup or vessel A with a conical or tapering bottom having through it, at its lowest part, a discharge opening *a*. The upper end of the cup is provided with a filling plug *b*, a threaded pipe

opening *c* extending into a horizontal chamber *d*, and a central stem *e* which is passed through a stuffing box *f*, the chamber *d*, and has a threaded portion engaging the diaphragm under the chamber *d*. The stem *e* extends down into the cup directly over the opening *a* and is hollow from the chamber *d* with which it communicates by an opening *g*. The lower end of the stem *e* is beveled or tapering so that when screwed down it completely cuts off communication between the opening *a* and cup A, and the upper end of the stem is provided with any suitable handle *h*. Secured to the lower end of the cup, or integral therewith if desired, is a sight feed chamber B of any suitable construction in this instance having two opposing circular threaded openings into which are screwed rings *i* in which glass disks *j* are packed and secured, as seen in Fig. 2. A discharge tube C is secured in the lower end of the opening *a* and, extending down into the chamber B, has its lower end bent to bring the discharge opening close to the inner side of one of the glasses *j* above its middle. The lower end of the sight feed chamber terminates in a shank D with a discharge passage *k* through it which is preferably triangular in cross-section, as shown by the dotted lines in Fig. 3. In the shank D is a valve or cock E for regulating the discharge of the graphite from the sight feed chamber. In Fig. 1, this valve is shown as a straight way or gate valve constructed in accordance with E. H. Lunken's patent—of April 4, 1893, while in Fig. 4, it is shown as an ordinary turning plug-cock and here the discharge opening *k* just above the plug is diamond shaped in cross section as shown by the dotted lines. The lubricator thus constructed has its shank D suitably connected to the steam chest, or a pipe leading to the steam chest, and has a second pipe, not shown, extending from the steam pipe which leads from the boiler to the steam chest and connected with the opening *c*. A valve, not shown, is applied to this second pipe for cutting off steam from the lubricator when it is desired to fill the cup A through the opening of the plug *b*.

The operation is as follows: The valve E being slightly opened and the stem *e* slightly

raised, the current of steam and water of con-
 densation passes from the pipe communicat-
 ing with the opening *c* through said open-
 ing and chamber *d* and down through the
 5 hollow stem *e* and carries with it, at the end
 of the stem *e*, the particles of graphite col-
 lected around said stem, which latter are car-
 ried down through the opening *a* and nozzle
 C and are discharged into the sight feed
 10 chamber where the graphite is plainly visible
 as it leaves the mouth of the nozzle C. It
 then passes on through the sight feed chamber
 and opening of the valve E into the passage
k and is carried into the steam chest to do the
 15 work of lubrication. By raising and lower-
 ing the stem *e* and regulating the valve E,
 the desired rate of feed can be adjusted to a
 nicety. Should the tube C and opening *a* at
 any time become clogged with graphite, it is
 20 only necessary to screw down the stem *e* to
 its seat at the mouth of the opening *a* and
 then open the valve E whereupon full steam
 pressure will be applied through the stem *e*
 which will at once clear the opening *a* and
 25 tube C. Upon reclosing the valve E the feed
 can then again be regulated. By having the
 discharge opening *k* angular in cross section
 with the angle next to the opening side of the
 valve, the size of the discharge opening can
 30 be regulated to a nicety, and where a plug-
 cock is used as in Fig. 4, which can be turned
 in either direction, this angle is formed on
 both sides, as shown by the dotted lines.

By the above construction and mode of op-
 35 eration the graphite is fed into the steam
 chest mixed with the water of condensation
 so that it properly acts as a lubricant to all
 parts of the cylinder and steam chest.

The discharge through valve E can be so

minutely regulated that the sight feed cham- 40
 ber will remain filled with water from con-
 densation, which occurs when the discharge
 below the sight feed glass is not in excess of
 the rate of condensation above same. In this
 case the graphite can be plainly seen descend- 45
 ing automatically, according to the regulated
 quantity, through the water. Thus the lubri-
 cator permits of feeding the graphite either
 through a steam or a water filled sight feed
 chamber. 50

Having thus fully described our invention, we claim—

1. In a graphite lubricator, the combination
 of a steam tight receptacle for the graphite
 having a discharge opening at its lower end, 55
 a valve for closing and regulating said open-
 ing with relation to the receptacle, a sight
 feed chamber below said receptacle with
 which said opening communicates by means
 of a nozzle having a lateral discharge, a steam 60
 passage extending into said opening, a valve
 below said sight feed chamber, and steam
 connections with said lubricator, substan-
 tially as described.

2. The herein described lubricator consist- 65
 ing of the cup A with opening *c* and chamber
d at its upper end and opening *a* at its lower
 end, the sight feed chamber B below opening
a with tube C therein, the screw stem *e* ex-
 tending through the cup A and hollow from 70
 the chamber *d* to opening *a*, the valve E be-
 low the sight feed chamber, and discharge
 passage *k*, substantially as described.

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