D. A. Greene,

Lubricator.

No. 104,139. Patented June 14. 1870.

Fig. 1.

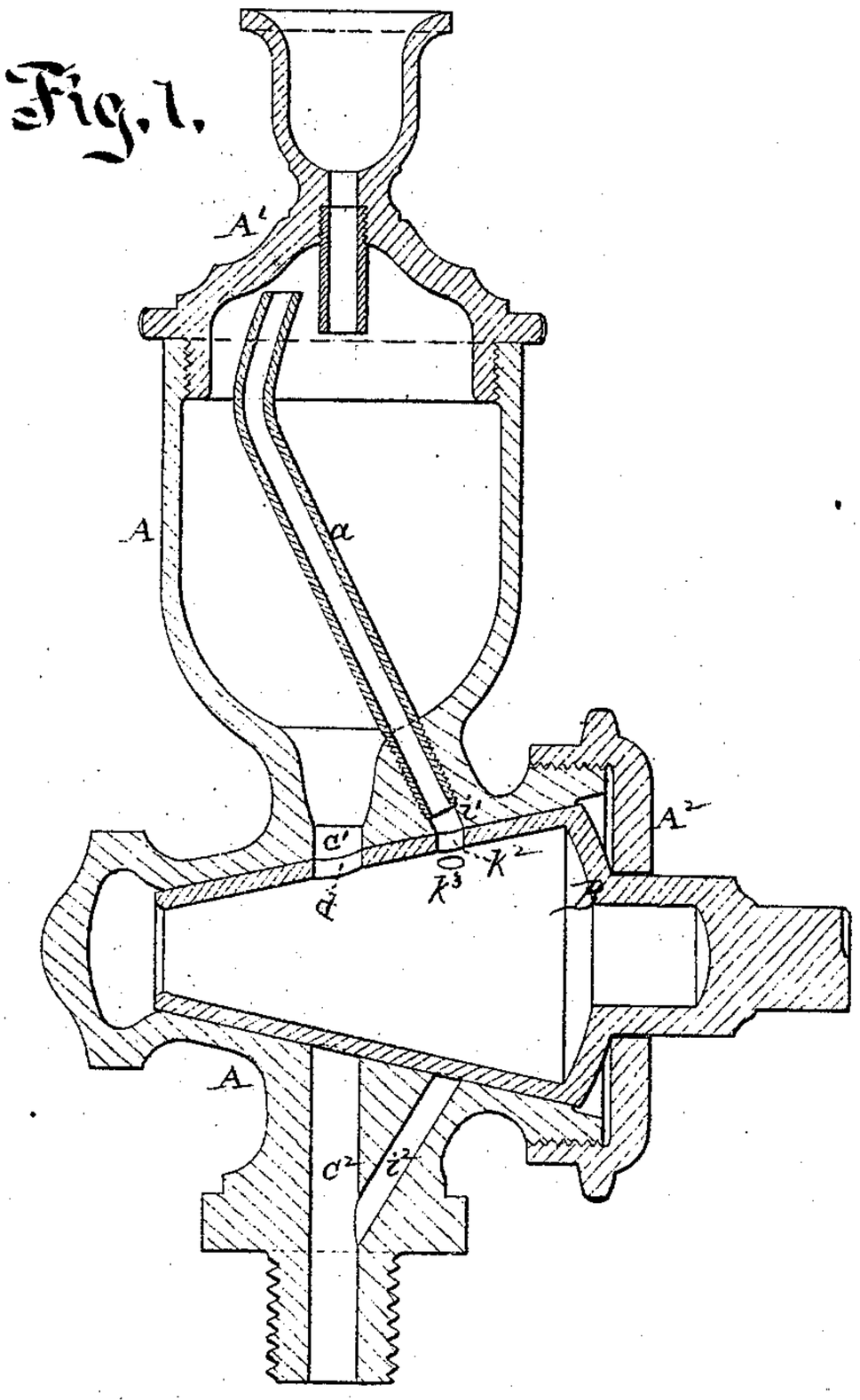
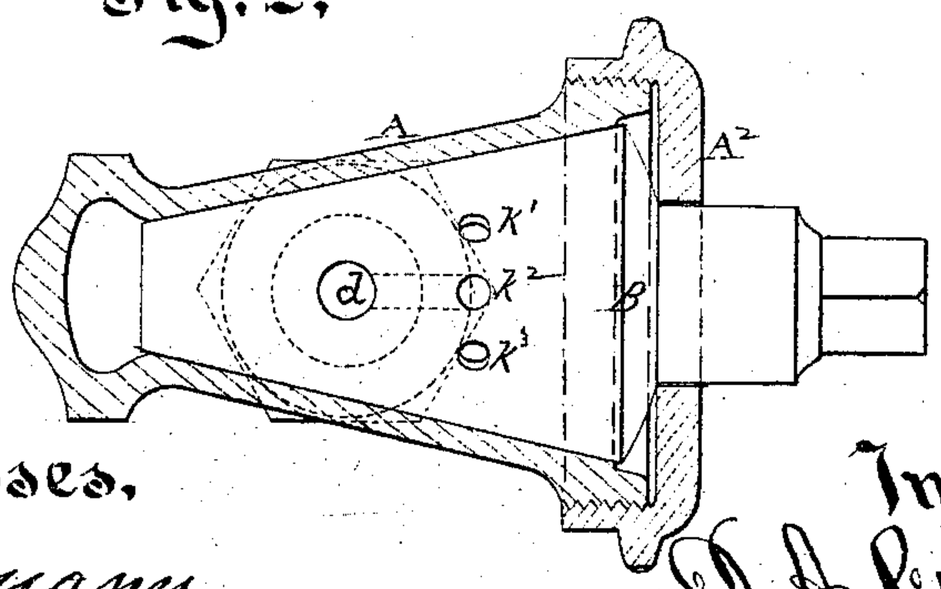


Fig. 2.



Witnesses,

A. Hoermann.

Inventor,

D. A. Greene

by his atty

E. G. Siggers

United States Patent Office.

DARWIN ALANSON GREENE, OF NEW YORK, N. Y.

Letters Patent No. 104,139, *dated June* 14, 1870.

IMPROVEMENT IN LUBRICATORS.

The Schedule referred to in these Letters Patent and making part of the same

To all whom it may concern:

Be it known that I, DARWIN ALANSON GREENE, of the city and county of New York, in the State of New York, have invented certain new and useful Improvements in Oil-Cocks or Lubricators; and I do hereby declare that the following is a full and exact description thereof.

My invention is intended more particularly for introducing oil into the steam-chests of steam-engines, but it may be used in any situation where oil or other fluid requires to be introduced into a chamber or space against a pressure of air or analogous fluid.

It has long been common to provide devices in which, by the aid of two or more cocks, a quantily of oil is first introduced into a chamber free from pressure, and there, being excluded from connection with external air, and put in communication with the steam-chest or chamber containing a pressure, the oil is allowed to flow down by its own gravity into the steam-chest, while the steam comes up and takes its place.

I accomplish this effectually and satisfactorily by the aid of a single cock. Efforts have been made before for performing this duty with a single cock, but they have been liable to throw out the oil by the violent escape of the steam at certain junctures. Attempts have been made to remedy, but such have lacked important requisites which my invention supplies.

I will proceed to describe what I consider the best means of carrying out my invention, and afterward designate the point which I believe to be new.

The accompanying drawing forms a part of this specification.

Figure 1 is a central vertical section in the plane of the plug. It shows the provisions for receiving the oil into a sufficiently-capacious oil-cup above, and represents the plug proper in the condition in which it receives the oil from such cup or reservoir, and holds it ready to be introduced into the steam-chest after the plug has been properly turned.

Figure 2 is a plan view of the plug of the oil-cock, and a horizontal section through the casing in the plane of the axis of the plug.

Similar letters of reference indicate like parts in both the figures.

A is a casting, of brass or other suitable material, which forms the main body of the device. It is chambered, as represented, and adapted to contain the oil in a cup-like cavity in its upper portion, to receive the conical plug in a nicely finished conical cavity near its center, and to allow the oil and steam to move through passages cored or drilled in its material, as represented.

There is a cover, A^1, screwed in, which has a small cup-like top adapted to receive the oil from a lamp-trimmer or other device, and let it down into the body of the reservoir.

There is a tube extending up through the reservoir, as indicated by *a*. It is open at both ends.

B is a plug formed hollow, as represented, and adapted to be turned by the finger or by any suitable wrench. It turns tightly in the corresponding conical recess in the casting A, and is held tightly therein by a screw-cap, A^2.

There may be a packing of twisted lamp-wick, or a like material, between the inner face of the cap A^2 and the shoulder of the plug.

I will apply separate letters to each of the separate passages which are important.

There are passages c^1 c^2 in the body A, which are in line with each other, and connect with the bottom of the reservoir, as represented.

There is a hole, *d*, in the hollow plug B, which, when turned in the position represented, allows the oil to flow into the interior of the plug. When the plug is reversed this orifice allows the oil to flow out into the passage c^2, and thence to enter the steam-chest or other chamber which my lubricator may be intended to supply.

There are two other passages, i^1 i^2, formed in the body or casting A. The upper passage i^1 is a continuation of the tube *a*. The lower passage i^2 is directly below it, and, leading obliquely downward, communicates with the passage c^2, as represented.

There are three orifices in the hollow plug B which are in the plane of these passages i^1 i^2. As the hollow plug B is slowly turned, these three orifices, marked respectively k^1 k^2 k^3, coincide successively with either of the orifices i^1 i^2.

The effect is not very marked when these orifices k^1 k^2 k^3 are moved across the upper end of the lower passage i^2. They then simply allow the oil to flow out through the passage i^2; but their relation is important when the hollow plug B is full of steam at a high pressure, and the plug is turned so as to discharge it upward and receive the oil.

Fig. 2 shows their exact arrangement with reference to each other and to the main orifice *d*, through which the oil is received.

When the main orifice *d* is in line with the passage c^1, so as to receive the oil into the interior of the hollow plug, the small orifice k^2 is in line or coincides with the passage i^1, and allows the steam, air, or other gaseous fluid which fills the plug B to flow out freely, and to be discharged quietly into the atmosphere through the medium of the pipe *a*, which carries it up through the oil. The other holes k^1 k^2 on each side perform their duties at a previous stage while the plug is being turned.

This is important. The plug B, while in position

for discharging the oil, becomes filled with steam at a pressure which exists within the steam-chest, of, say, eighty pounds per square inch.

As the plug is rotated from that position into a position to receive the oil, it necessarily moves one of the holes k^1 k^3 across the lower end of the passage i^1. In doing so most of the steam is discharged up through the pipe a, and when the proper position is attained for receiving the oil, the pressure obtaining within the hollow plug B is only that of the external atmosphere.

By reason of the two holes k^1 and k^3, arranged as represented, it is entirely immaterial which way the plug is turned. If turned in one direction it discharges its steam through the orifice k^1. If turned in the other, it discharges it through the orifice k^3. In either case it has sufficient time to reduce the pressure by this discharge, so that, when the main orifice d is brought to coincide with the oil-orifice c^1, there is no pressure of steam within the hollow plug to flow out into the oil-cup, and, by throwing out the oil, to induce mischief.

If preferred, the metal in the hollow plug B, between the small line k^1 k^2 k^3, may be removed by any suitable tool, so that, instead of the three passages, it may have, in fact, but one long channel or slot, as will be readily understood; but such a construction would obviously weaken the plug, and I prefer to leave the material between these holes, as represented.

In either event that portion of the cavity in the metal corresponding to k^2, and that portion at each end corresponding to k^1 and k^3, will perform the functions here described, that is to say, in turning the plug in one direction the pressure will be relieved by its escape through the orifice k^3, or through the corresponding part of the long slot which may be employed, and, in turning the plug in the other direction, the pressure will be relieved by the escape of the steam through the orifices k^1, or through the end of the slot corresponding thereto; but, after the pressure by such discharge has been reduced to that of the atmosphere, and the oil has commenced to flow in through the main channel c^1 and the hole d, and thus to reduce the space for the steam or air remaining in the hollow plug, such steam or air is allowed to escape through the hole k^2, or through a corresponding portion of the slot which may take its place.

I am aware that many approximations to my invention have been before proposed. I do not claim a pipe or passage leading up through the oil-cup to discharge steam, except in connection with the plug represented.

Many lubricators have been before proposed possessing some of the features of my improvement, but none have been able to accomplish the ends of mine as completely. Mine never subjects the oil-cup proper to pressure, and does not require, like several of the best of the preceding, that the top of the oil-cup shall be tightly closed. On the contrary, I provide for keeping it always open.

I claim—

1. The cup-shaped cover A^1, always open to receive oil, when arranged, as represented, relatively to the means below for transferring the oil into the steam-chest against pressure by the aid of the cock and passages, as specified.

2. The hollow plug B, having the orifices or vents d k^1 k^2 k^3 arranged, relatively to each other and to the passages in the casting A, as and for the purposes herein set forth.

In testimony whereof I have hereunto set my name in presence of two subscribing witnesses.

D. A. GREENE.

Witnesses:

WM. C. DEY,

R. ROULSTON.