

(No Model.)

C. F. L. SÖRENSEN.
LUBRICATOR.

No. 406,675.

Patented July 9, 1889.

Fig. 1.

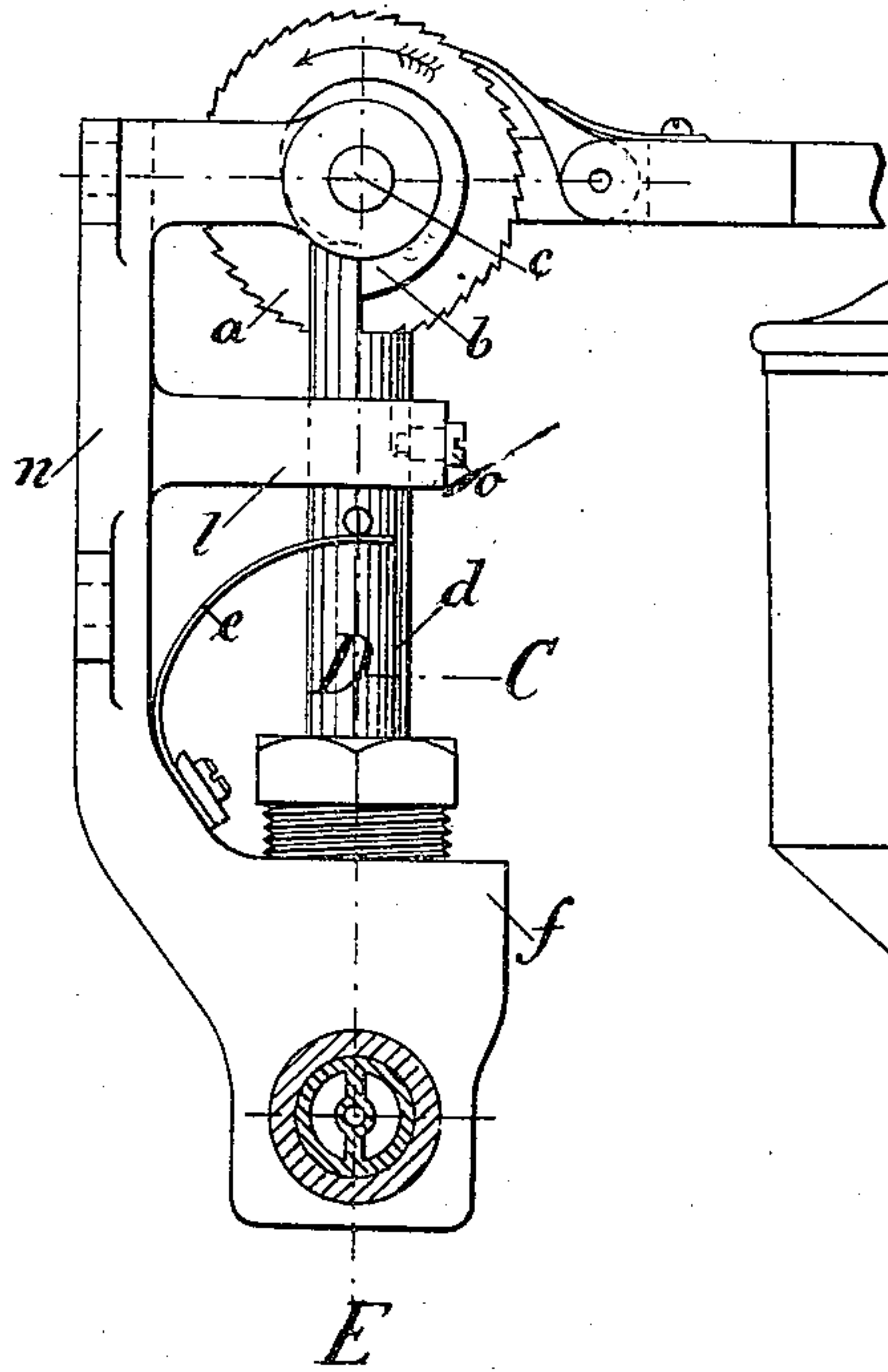


Fig. 2.

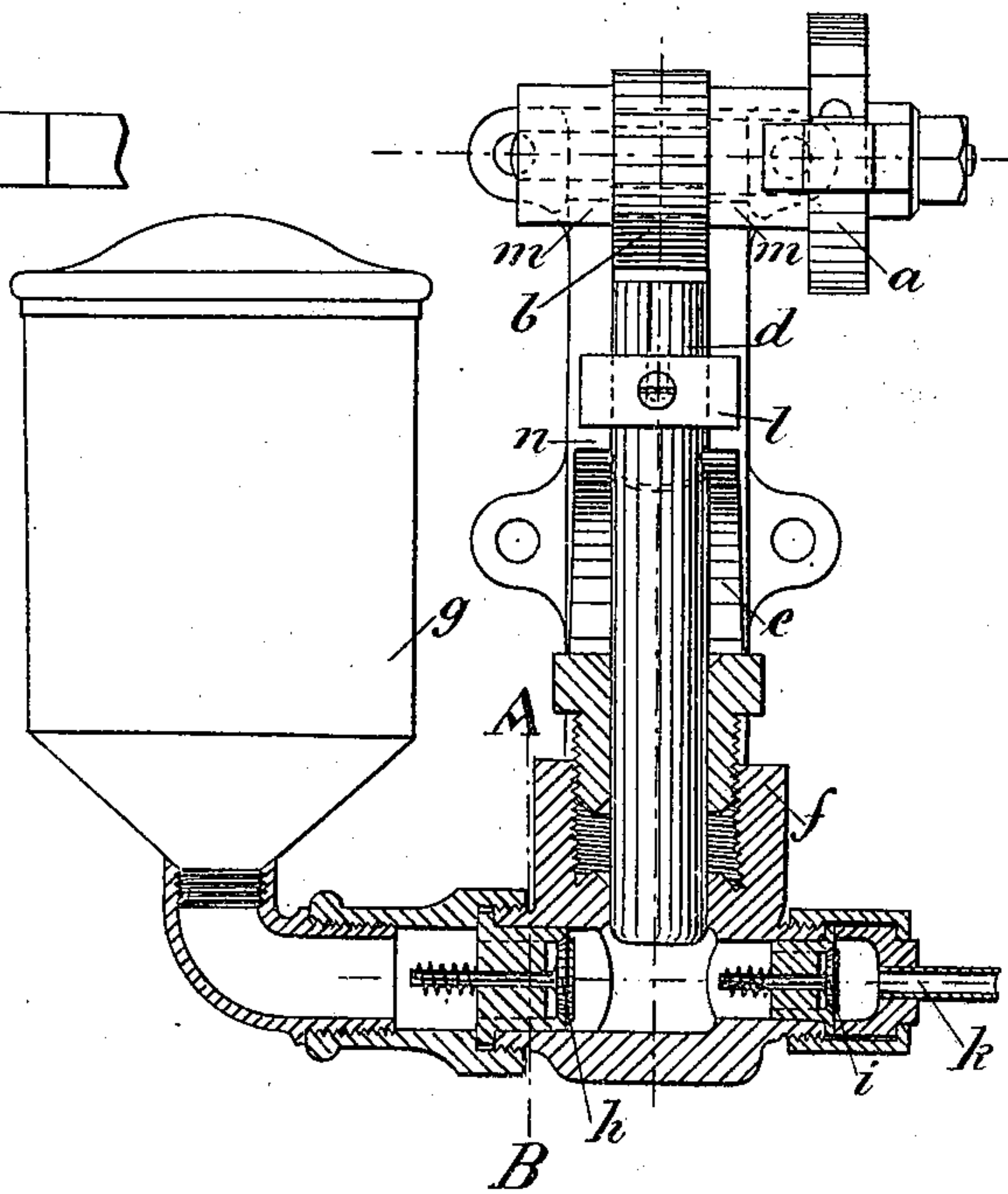


Fig. 3.

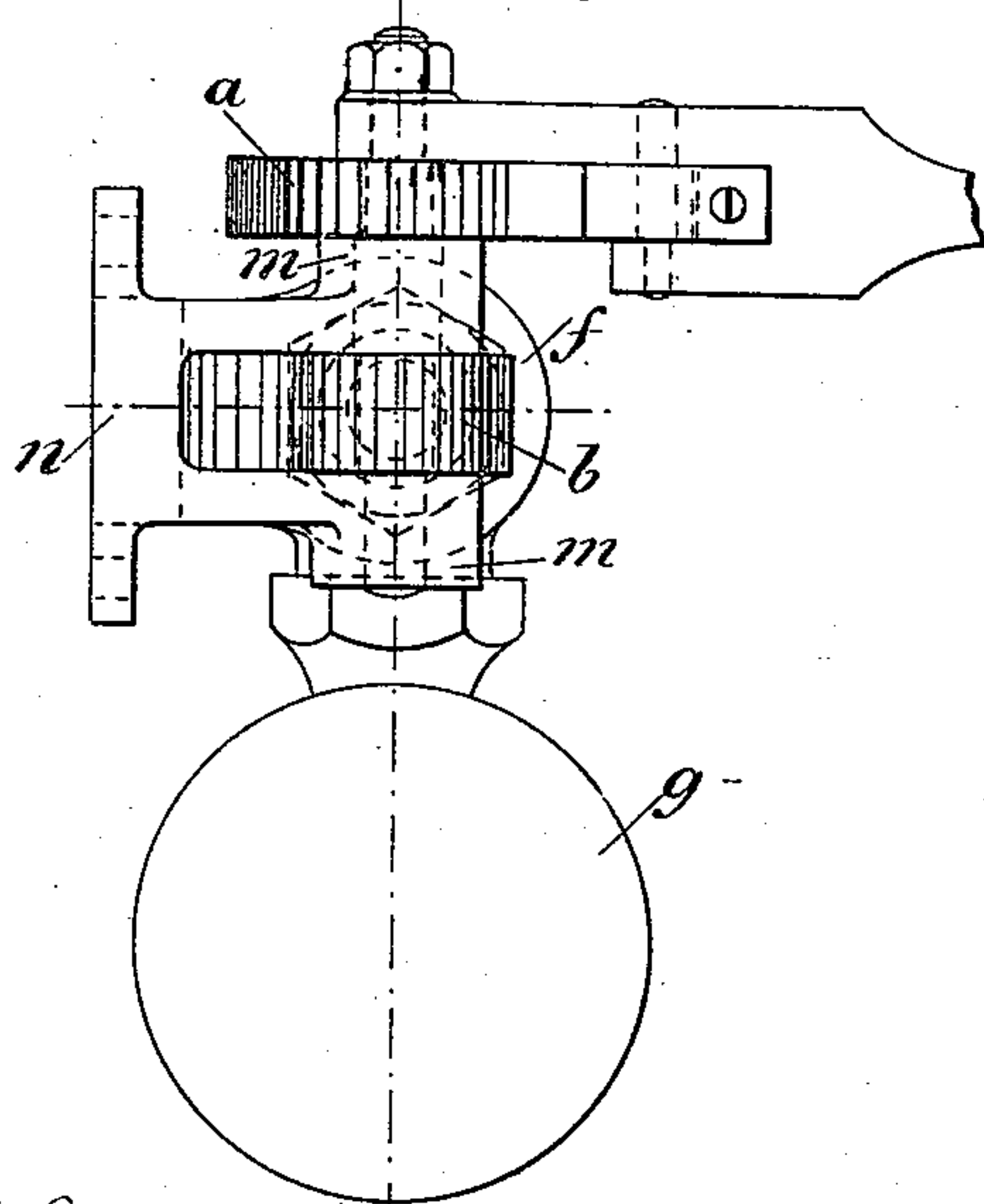
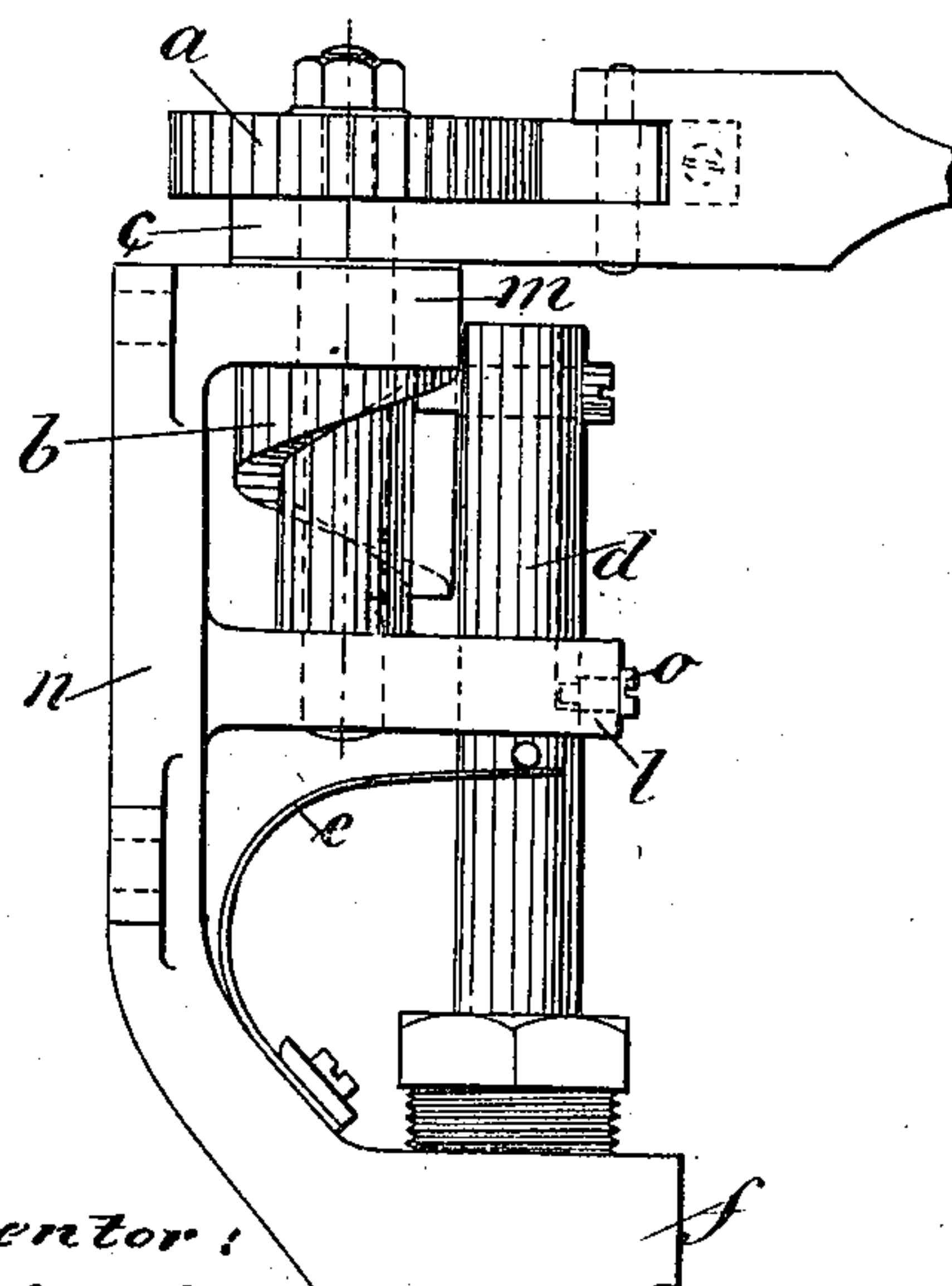


Fig. 4.



Witnesses:
Henry Huber
Carl Kay

Inventor:
Charles Fred Leop. Sørensen
by Goepel & Regener
Attorneys

UNITED STATES PATENT OFFICE.

CHARLES FREDERIK LEOPOLD SÖRENSEN, OF COPENHAGEN, DENMARK.

LUBRICATOR.

SPECIFICATION forming part of Letters Patent No. 406,675, dated July 9, 1889.

Application filed March 20, 1889. Serial No. 304,029. (No model.) Patented in France February 20, 1888, No. 188,841; in Belgium February 20, 1888, No. 80,710; in England February 20, 1888, No. 2,523; and in Norway February 20, 1888, No. 883.

To all whom it may concern:

Be it known that I, CHARLES FREDERIK LEOPOLD SÖRENSEN, of Copenhagen, Kingdom of Denmark, and a citizen of the Kingdom of Denmark, have invented certain new and useful Improvements in Lubricators, (for which patents have been obtained in the following countries: in France February 20, 1888, No. 188,841; in Belgium February 20, 1888, No. 80,710; in England February 20, 1888, No. 2,523; in Norway February 20, 1888, No. 883,) of which improved lubricator the following is a specification.

This invention relates to a continuous-feed lubricator suitable for high-pressure engines.

Mechanical lubricators as hitherto constructed possess the great disadvantage of requiring to be inspected at frequent intervals—that is to say, at least once daily. When the piston, after having forced out all the lubricant contained in the cylinder, reaches the end of its stroke, it is necessary to raise it and to refill the cylinder, without which lubrication ceases.

By this invention these defects are obviated, and in carrying out the invention a piston is provided passing through a stuffing-box into a cylinder under pressure, so as to drive out the oil through a tube, whereby it is caused to enter the space subjected to steam-pressure. A discharge-valve prevents the oil from returning into the tube, and at the same time causes the cylinder on the return-stroke of the piston to become refilled with oil from a vessel also provided with a valve. The continuous movement of the piston is advantageously effected by means of the rotary movement of a cam, or by other suitable arrangement. A suitable cam arrangement comprises a disk the periphery of which is of a spiral form, the radii of the spiral increasing proportionately with the angle of rotation. Another suitable arrangement of cam comprises a helical surface on a vertical axis. The helix only extends once round the axis, and the pitch of the thread corresponds with the length of stroke of the piston. It is, however, to be understood that I do not confine myself to these arrangements of cams, as they are

only given as examples, and can be replaced by any other suitable arrangement. A ratchet-wheel is employed to turn the spiral disk or the screw or their equivalent.

By this construction, when the spiral disk or screw or their equivalent turns, the piston, which by means of a spring is held against the surface of the same, is forced to descend slowly and with a uniform movement, at the same time compressing the spring until the piston has passed the terminating-point of the spiral, or until the screw has made a complete revolution, when the spring will carry back the piston to its original position.

Figure 1 is a side view, partly in section, of the improved apparatus provided with a spiral cam, the section being taken on the line A B of Fig. 2. Fig. 2 is a front view, partly in section, taken on the line C D E of Fig. 1. Fig. 3 is a plan, and Fig. 4 is a side view, showing the modified arrangement in which a helical cam is employed.

Similar letters of reference indicate corresponding parts.

a is the ratchet-wheel, which turns in the direction shown by the arrow in Fig. 1, at the same time turning the spiral disk or the helix *b*, or their equivalent, fixed on the arbor *c* of the ratchet-wheel.

d is the piston, which by means of the spring *e* is caused to follow or to bear against the periphery of the spiral, the thread of the helix, &c. It will thus be seen that when the piston has passed the terminating-point of the spiral, or when the helix has made a complete revolution, the spring *e* will immediately cause the piston to reascend and retake its normal position.

f is the cylinder, into which the piston draws oil from the reservoir *g* through the valve *h*. Under the pressure of the piston the oil is forced out of the cylinder *f*, through the valve *i*, and thence into the pipe *k*, which opens into the place where the oil is to be used. The cylinder *f*, the piston-guide *l*, and its screw *o*, which prevents the piston from turning, as well as the bearings *m*, in which turns the arbor *c*, are firmly connected to the frame *n*, which serves for fixing the entire apparatus

on a machine or wherever it may be required for use.

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

5 In a lubricator, the combination, with a casing, of a piston working in the same, a spring pressing the piston upward, a cam which presses the piston downward gradually as said cam rotates, a ratchet-wheel on the shaft of
10 the cam, and a pawl engaged with said ratch-

et-wheel, substantially as herein shown and described, and for the purpose set forth.

In testimony that I claim the foregoing as my own I have hereunto affixed my signature in presence of two witnesses.

CHARLES FREDERIK LEOPOLD SÖRENSEN.

Witnesses:

CHRISTIAN C. SÖRENSEN,
ED. J. LARSEN.