

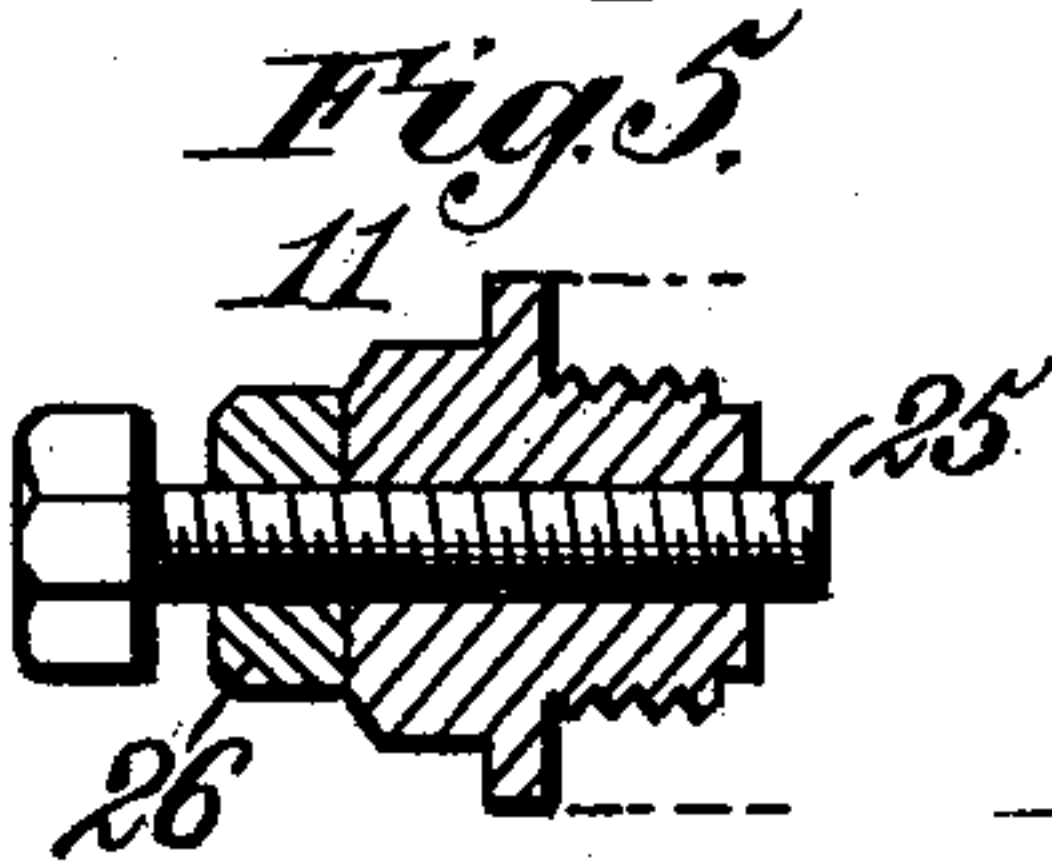
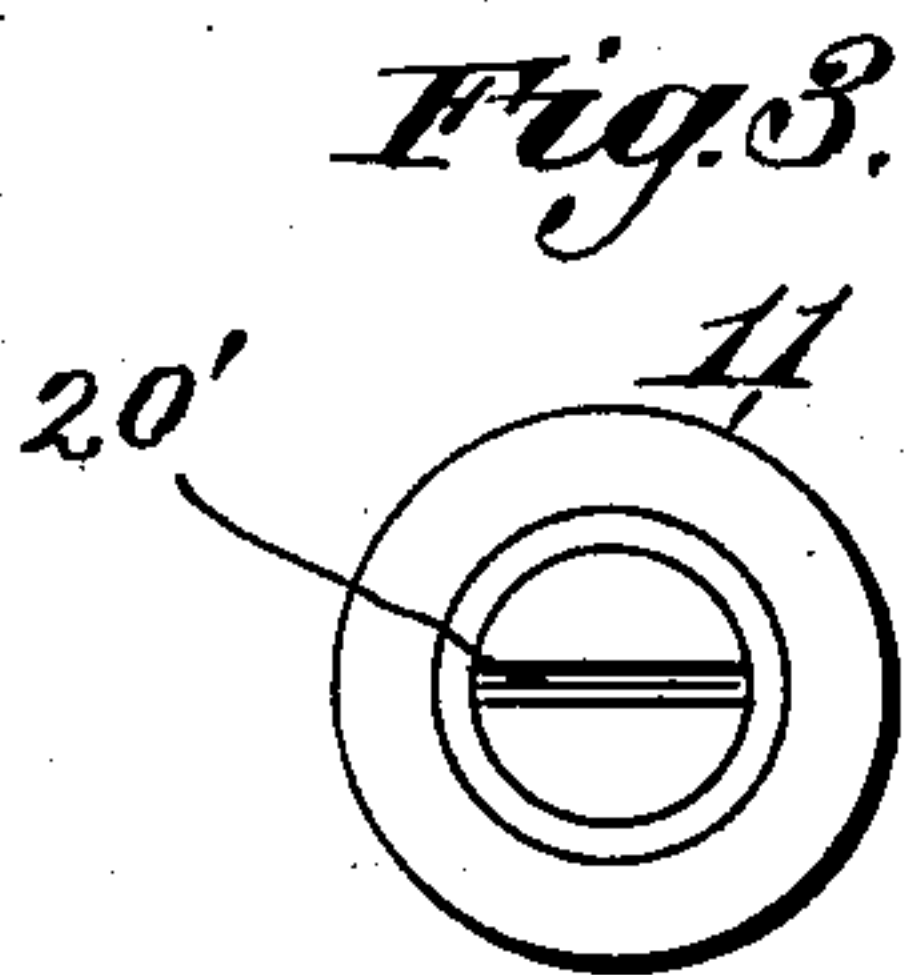
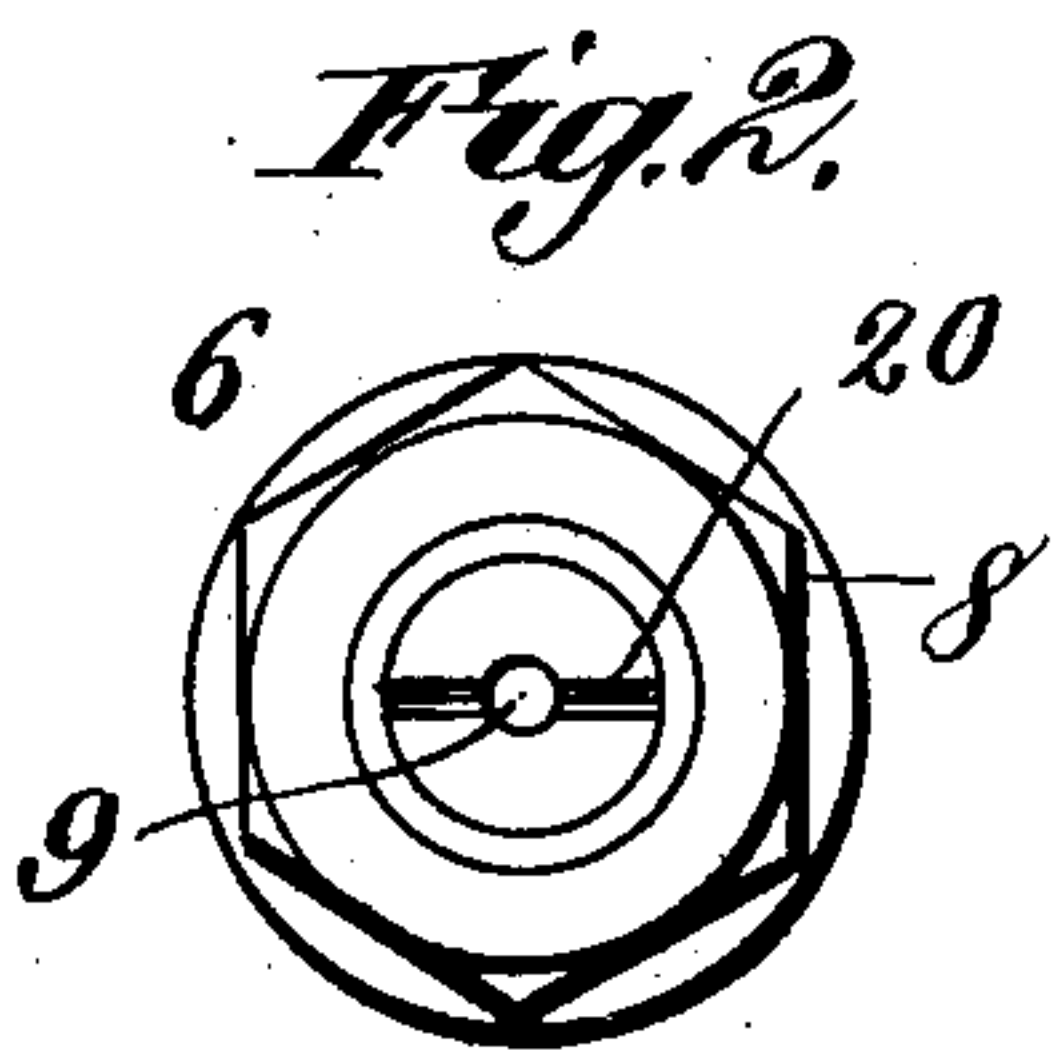
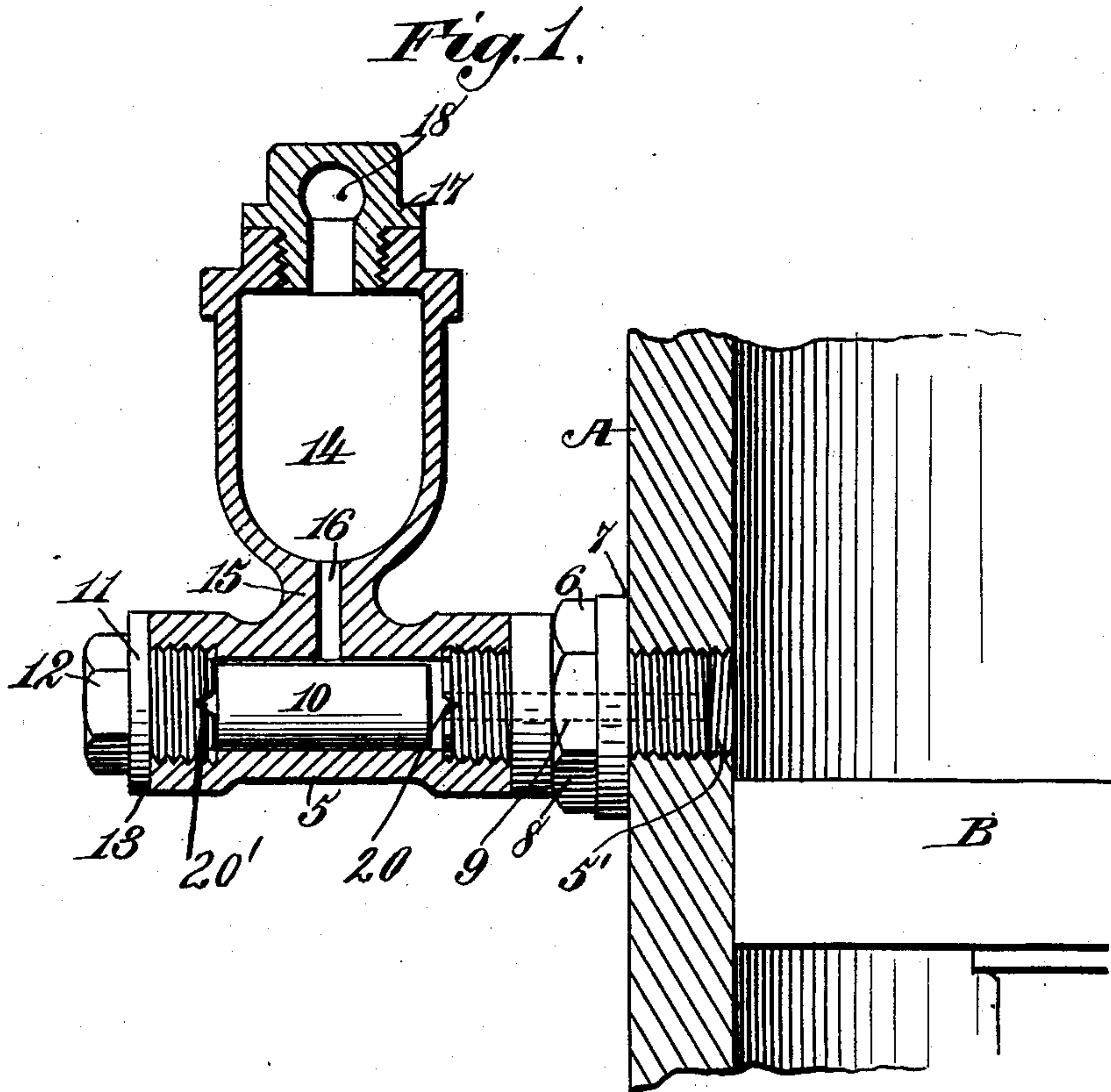
No. 701,745.

Patented June 3, 1902.

H. A. LYDDON.
LUBRICATOR.

(Application filed Nov. 27, 1901.)

(No Model.)



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UNITED STATES PATENT OFFICE.

HENRY A. LYDDON, OF BRAINERD, MINNESOTA.

LUBRICATOR.

SPECIFICATION forming part of Letters Patent No. 701,745, dated June 3, 1902.

Application filed November 27, 1901. Serial No. 83,875. (No model.)

To all whom it may concern:

Be it known that I, HENRY A. LYDDON, a citizen of the United States, residing at Brainerd, in the county of Crow Wing and State of Minnesota, have invented new and useful Improvements in Lubricators, of which the following is a specification.

This invention relates to lubricators adapted for connection with locomotive air-pumps, air-cylinders, air-compressors, and similar devices, the objects being to reduce the amount of lubricant employed, reduce cost of repairs, reduce the amount of gum which accumulates in air-cylinders, pipes, and engineer's brake-valves, also to lessen the leakage by air-piston due to the packing-rings wearing loose, and to prevent the tendency to stick on account of small quantities of oil being delivered into air-cylinder at each stroke of the pump. With my improved lubricator the feed of the oil is wholly automatic, the amount supplied being governed by the speed of the pump.

The lubricator, which is adapted for connection with an air-cylinder or analogous device, consists of a casing having an inlet and an outlet arranged to communicate with the interior of said cylinder, a plunger having a sliding fit in said casing and arranged to close at all times said inlet and reciprocatory in said casing solely by the action of the piston of said cylinder, and a reservoir for a lubricant in communication with said casing through said inlet.

I desire at this point to state that the invention is in no wise limited to the construction set forth in this description, for many changes may be adopted within the scope of the claims following said description.

The invention is shown in one simple and convenient embodiment thereof in the accompanying drawings, forming a part of this specification, and in which—

Figure 1 is a sectional elevation of a portion of an air-pump equipped with a lubricator including my invention. Fig. 2 is an inside face view of a coupling-plug. Fig. 3 is a similar view of a screw-plug. Fig. 4 is a perspective view of a plunger. Fig. 5 is a sectional elevation of a plug, showing a modification thereof.

In Fig. 1 I have shown at A the cylinder of an air-pump, the piston which reciprocates within the same being denoted by B, and while the cylinder is represented as vertically disposed this is not necessary.

The lubricator includes in its construction a casing, as 5, shown as horizontally disposed and as being of cylindrical form. The casing 5 is connected with the cylinder A substantially centrally of the height of the latter, its inner end being internally threaded to receive the correspondingly-threaded end of the plug-coupling 6, which has an annular shoulder adapted to abut against said inner end. The plug-coupling 6 is somewhat elongated, its inner end being externally threaded to fit the thread of a tapped opening 5' in the cylinder A. Said plug-coupling has adjacent to the shoulder 7 a second shoulder 8 of polygonal form, so as to be engaged by a wrench or like tool to facilitate the connection of said coupling with the cylinder A. The coupling 6 is bored its entire length, as at 9, to secure communication between the interior of the cylinder A and casing 5.

The cylindrical casing 5 is adapted to receive a plunger or piston, as 10, also of cylindrical form, and which has a short travel or stroke in the same, said plunger being solid and having a sliding fit in its chamber.

The casing 5 receives at its inner end the plug-coupling 6, its opposite end receiving the threaded imperforate plug 11, having a nut-head 12, by which it can be easily inserted in place, and a flange or shoulder, as 13, to engage the casing.

A reservoir or oil-cup, as 14, is provided, it being connected by a neck, as 15, with the casing 5, the neck having a channel or passage, as 16, opening into the oil-cup and casing, respectively, and serving to conduct the lubricant from the former to the latter. It will be seen that the channel or passage 16 constitutes an inlet for the casing or cylinder 5 and that said channel or inlet is transverse to and is located between the ends of the plunger or piston 10.

The oil-cup 14 is filled through an opening in its top, said opening being closed by the removable cap 17, preferably in screw-threaded engagement with the cup and flanged to fit

squarely against the same. The cap 17 is made comparatively deep, and it is chambered, as at 18, the chamber serving to receive air forced thereinto on one stroke of the piston B.

5 It will be assumed that the cup 14 is filled with oil. The reciprocation of the plunger 10 is caused by the variation of the air-pressure on each stroke of the piston B in the cylinder A of the air-pump or similar appli-
 10 ance. The plunger 10 fits sufficiently close in its casing that there is no actual flow of oil from the oil-reservoir to the air-cylinder; but the action of the plunger is that of rubbing the oil along between the plunger and cas-
 15 ing until all the surfaces are in a saturated condition. The end of the plunger as it advances scrapes the oil from the exposed surface of the walls of the casing and forces it to the end of the latter, from which it flows
 20 into the groove 20 in the plug 6 and from thence into the bore 9, from which it is drawn into the cylinder by the air on the stroke of the piston. The oil is drawn into the cylinder in the form of a fine spray, thereby lubri-
 25 cating the engaging faces of the cylinder and piston, respectively. The air circulates around the piston to a certain extent, and the groove 20' in the plug 11 serves as a clearance-space into which any air that may be be-
 30 hind the piston is forced and in which it can expand. The cylindrical casing therefore contains a solid imperforate cylindrical plunger of uniform diameter throughout its length, which has a sliding fit—that is, a fit
 35 which is sufficiently close that when the casing is held in a vertical position the plunger will not fall by its own weight from the casing, but which is sufficiently free to secure proper automatic action of the plunger.
 40 There is no actual flow of oil along the walls of the casing other than that induced by the rubbing of the plunger against the walls of the casing, and in view of the fact that the oil does not leave the lubricator in a mass or
 45 in drops, but is mixed with air in the form of a fine spray, it leaves the lubricator very slowly, but in sufficient quantity to secure the desired lubrication of the engaging parts.

In Fig. 5 the plug 11 is shown as bored its
 50 entire length, the bore being threaded to receive the screw 25, the head of which may be engaged to adjust the inner end of said screw into and out of the chamber in which the plunger 10 reciprocates to thereby vary the
 55 stroke of such plunger, and the screw is held in its adjusted position by the jam-nut 26 thereon, adapted to engage the plug 11.

Having described the invention, what I claim is—

1. In a lubricator for connection with an 60 air-cylinder, a casing having an inlet and an outlet adapted to communicate with the interior of said cylinder, an imperforate, cylindrical plunger of uniform diameter throughout its length and having a sliding fit in said 65 casing and arranged to close at all times said inlet and to reciprocate in said casing solely by the action of the piston of said cylinder and a reservoir for a lubricant in communication with said casing through said inlet and 70 the latter being transverse to, and between, the ends of the piston.

2. In a lubricator for connection with an air-cylinder, a casing having an inlet, plugs 75 screw-threaded into the opposite ends of the casing and one of the plugs having a screw-threaded extension having a bore constituting an outlet for said casing, an imperforate, cylindrical plunger of uniform diameter throughout its length and having a sliding 80 fit in said casing and arranged at all times to close said inlet and to reciprocate in said casing solely by the action of said piston of said cylinder and a reservoir for a lubricant in connection with said casing, through said inlet. 85

3. In a lubricator for connection with an air-cylinder, a casing having an inlet and screw-threaded plugs in its opposite ends, one of the plugs having a groove at its inner end and a longitudinal bore, a plunger having a 90 sliding fit in said casing and arranged to close at all times said inlet and to reciprocate in said casing solely by the action of the piston of said cylinder and a reservoir for a lubricant in communication with said casing 95 through said inlet.

4. In a lubricator for connection with an air-cylinder, a casing having a single inlet and a single outlet adapted to communicate with the interior of said cylinder, a plunger 100 having a sliding fit in said casing and arranged to close at all times, said inlet and to reciprocate in said casing solely by the action of the piston of said cylinder, and said inlet being transverse to, and between, the 105 ends of the plunger, and means for supplying a lubricant to the casing through said inlet.

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

HENRY A. LYDDON.

Witnesses:

EDWARD CRUST,
 A. L. MATTES.