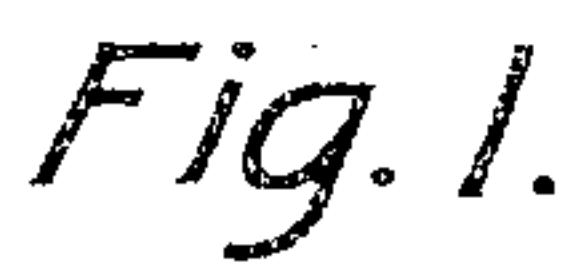


PATENTED OCT. 2, 1906.

LUBRICATOR.

APPLICATION FILED NOV. 2, 1905.

2 SHEETS—SHEET 1.



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No. 832,051.

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2 SHEETS—SHEET 2.

Fig. 3.

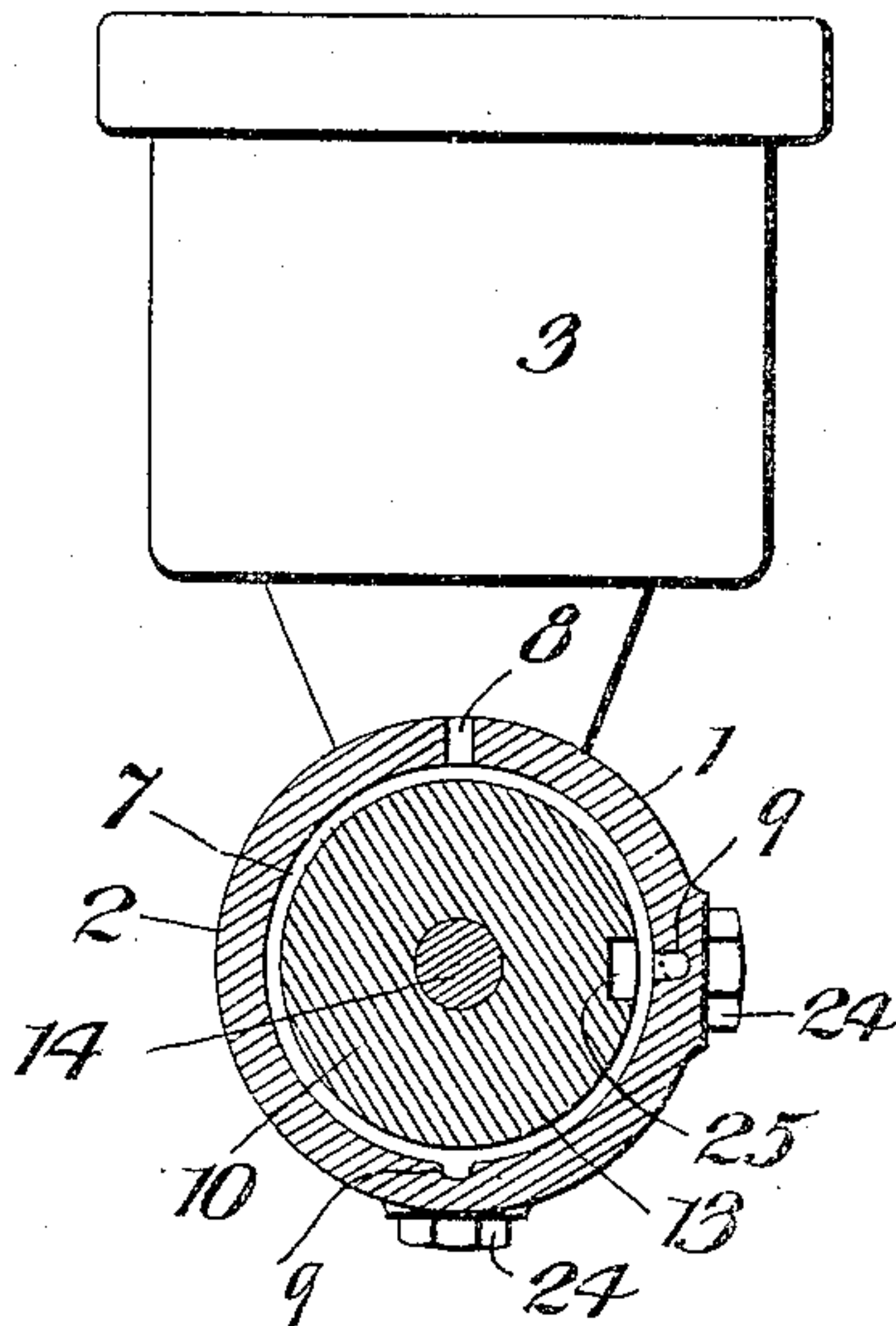
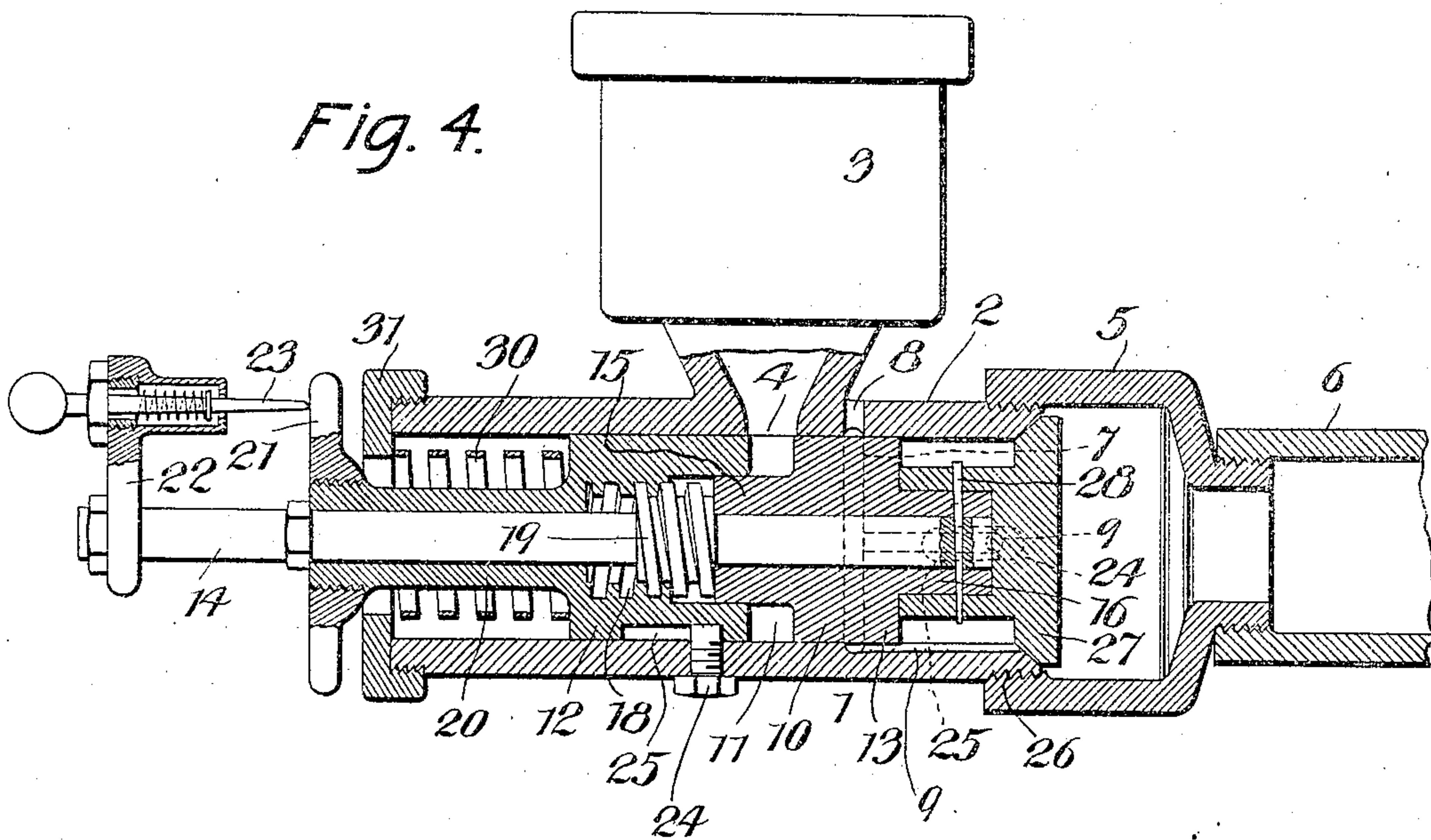


Fig. 4.



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UNITED STATES PATENT OFFICE.

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LUBRICATOR.

No. 832,051.

Specification of Letters Patent.

Patented Oct. 2, 1906.

Application filed November 2, 1905. Serial No. 285,586.

To all whom it may concern:

Be it known that we, HENRY H. FLANAGAN and JOSEPH HUVERSTUHL, citizens of the United States, residing at Des Moines, in the county of Polk and State of Iowa, have invented certain new and useful Improvements in Lubricators; and we do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

Our invention relates to improvements in lubricators, and more particularly to one adapted for feeding granular or flake graphite to the cylinders and valves of engines and other machinery.

One object of the invention is to provide a device of this character in which the dry flake or powdered graphite will be fed into the parts to be lubricated by the inrush of air to fill a vacuum produced by the operation of the engine or other machine upon which the lubricator is used.

Another object of the invention is to improve and simplify the construction and operation of lubricators, and thereby render the same more efficient and durable in use and less expensive to manufacture.

With the above and other objects in view the invention consists of certain novel features of construction, combination, and arrangement of parts, as will be hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a vertical longitudinal sectional view through a lubricator constructed in accordance with our invention, the parts being in their closed position. Fig. 2 is a similar view showing the parts in their open position. Fig. 3 is a vertical transverse sectional view taken on the plane indicated by the line 3 3 in Fig. 1, and Fig. 4 is a vertical longitudinal sectional view through a slightly-modified form of the invention.

Referring more particularly to Figs. 1 to 3 of the drawings, the numeral 1 denotes our improved lubricator, which comprises a body 2 and a hopper or receptacle 3, the latter to contain the dry granular or powdered graphite or other lubricant. The body 2 is here shown of cylindrical form disposed below the hopper or cup 3 and in communication with

the latter through a passage or port 4, so that the graphite can feed by gravity into said body. The latter, as shown, has its opposite ends open, and upon one is secured a reducing-coupling 5, to which is connected a discharge-pipe 6. Said pipe may lead to a cylinder, steam-pipe, steam-chest, relief-valve, or any other part of an engine or machine which it is desired to lubricate. Formed in the body 2 intermediate the graphite-supply or inlet-port 4 and the discharge end of the body is an annular or substantially annular groove or passage 7, which is open to the atmosphere at one or more points 8, as shown in Fig. 3 of the drawings, and from which leads one or more longitudinally-extending discharge grooves or ducts 9, which open at or adjacent to the discharge end of the body, as indicated in Fig. 1 of the drawings. Mounted to reciprocate in the body 2 is a feeder 10, which is provided with a graphite-pocket 11, adapted to alternately communicate with the graphite-supply passage 4 and the discharge passages or ducts 7 9. The feeder 10 is here shown as consisting of two sections or members 12 13, which are adapted to be adjusted toward and from each other to form the annular pocket 11 between them, the adjustment permitting the size of the pocket to be varied, so that the feed of the graphite may be regulated as desired. The members 12 13 are both of cylindrical form and of a diameter corresponding to that of the interior or bore of the body 2, so that they slide freely in the latter, and they are connected by an operating stem or rod 14, which extends centrally through them. The member 13 has at one end a reduced portion 15, which telescopes and slides in a recess formed in the adjacent end of the member 12, and the opposite end of said member 13 is internally screw-threaded to receive the screw-threaded end 17 of the stem 14. The member 12 has the inner or reduced portion of its recess or bore formed with screw-threads 18, which are engaged by a screw 19, formed or provided upon the stem 14. This screw-threaded connection permits the two members to be adjusted toward and from each other, so that the pocket 11 may be varied in width as desired. The member 12 is formed at its outer end with a tubular stem 20, through

which the stem 14 extends and upon which is provided an adjusting wheel or disk 21. At the outer end of the stem 14 is provided an arm 22, which carries a spring-stop 23, as clearly shown in the drawings. In order to limit the sliding or reciprocatory movement of the feeder in the body, we preferably provide stop-screws 24, which extend through threaded openings in the body and have their ends projecting into longitudinally-extending recesses 25, formed in the members 12 13. At the discharge end of the body 2 is formed a valve-seat 26, with which coacts a valve 27. The latter is secured by a key 28 or in any other suitable manner upon the reduced end or portion 16 of the member 13 of the feeder. The feeder 10 is adapted to be actuated in one direction by a coil-spring or any other suitable actuating means and in the reverse direction by either the suction or the pressure produced in the pipe 6 by the engine or other machine to which the lubricator is applied. In Fig. 1 of the drawings the feeder is shown as being held normally in its closed position, so that the pocket 11 communicates with the passage 4 by a coil-spring 29, which surrounds the stem 20 of the feeder and is confined between the end of the body 2 and the wheel or disk 21, and said feeder is actuated in the reverse direction or opened, so that the pocket 11 communicates with the passages 7 9 by the suction or vacuum in the pipe 6.

In Fig. 4 of the drawings the coil-spring 30 instead of being mounted, so that it moves the feeder to its closed position is mounted so that it moves the latter to its open position, and said feeder is adapted to be moved to its closed position by the pressure within the pipe 6. Said spring 30 is shown in Fig. 4 as being disposed within the body and confined upon the stem 20 between the outer end of the member 12 and a screw-cap 31, which is provided upon said end of the body. In all other respects the construction of the form of the invention shown in Fig. 4 of the drawings is similar to that shown in Fig. 1.

The operation of the lubricator is as follows: When it is applied to an engine or similar machine, so that a suction or partial vacuum is produced within the pipe 6 by the reciprocation of the piston of the engine or any part of a machine, the valve 27 and the feeder 10, to which it is attached, will be moved inwardly against the tension of the spring 29, so that the graphite-pocket will be moved from the position shown in Fig. 1, in which it communicates with the cup or hopper 3, to the position shown in Fig. 2, in which it communicates with the annular groove or duct 7, which may be either cut in the inner surface of the body or cast therein. When the valve 27 is thus opened, the suction or

vacuum will draw air through the openings 8 and cause it to expel the powdered graphite from the pocket 11 through the passages or ducts 7 9 and out around the valve 27, as clearly shown in Fig. 2 of the drawings. As soon as the suction or vacuum is broken the spring 29 will return the feeder to its normal position and the valve will engage the seat 26, so as to keep the graphite in its dry condition. The feeder shown in Fig. 4 of the drawings is held closed by the pressure in the pipe 6 and is opened by the spring 30, as soon as said pressure is removed from the valve 27. By means of the various adjustments the amount of graphite discharged at each reciprocation of the feeder may be regulated as desired.

While we have shown and described the preferred embodiments of the invention, it will be understood that various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention as defined in the appended claims.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. A lubricator of the character described comprising the body having the bore extending longitudinally therethrough from end to end and provided on one side with an air-inlet opening and with a hopper, a feeder in the bore of said body movable longitudinally therein and having a valve at one end coacting with a seat formed at one end of the body, and a spring on the other end of said body and connected to the said feeder, substantially as described.

2. A lubricator of the character described comprising a body having a lubricant-supply passage and a delivery-passage, and a feeder movable in said body and consisting of adjustably-connected sections forming an adjustable pocket between them, said pocket being adapted to alternately communicate with said supply and delivery passages.

3. A lubricator of the character described comprising a body having a lubricant-supply passage and a delivery-passage, a feeder slidably mounted in said body and consisting of sections having a screw-threaded engagement with each other to provide an adjustable pocket between them, said pocket being adapted to alternately communicate with said supply and delivery passages.

4. A lubricator of the character described comprising a body, a lubricant-receptacle, a supply-passage between said receptacle and body, a discharge-passage in said body open to the atmosphere and to the interior of said body, a feeder mounted to reciprocate in said body and consisting of two sections having a

screw-threaded engagement with each other
to provide a pocket between them, said
pocket being adapted to alternately commu-
nicate with said supply and discharge pas-
sages, and a check-valve at the discharge end
5 of said body carried by said feeder.

In testimony whereof we have hereunto

set our hands in presence of two subscribing
witnesses.

HENRY H. FLANAGAN.
JOSEPH HUVERSTUHL.

Witnesses:

JOHN B. SULLIVAN,
BIRD LYNN.