No. 804,377. PATENTED NOV. 14, 1905.

B. F. CAMPBELL & J. E. COATES.

LUBRICATING DEVICE.

APPLICATION FILED AUG. 28, 1905.

2 SHEETS—SHEET 1.

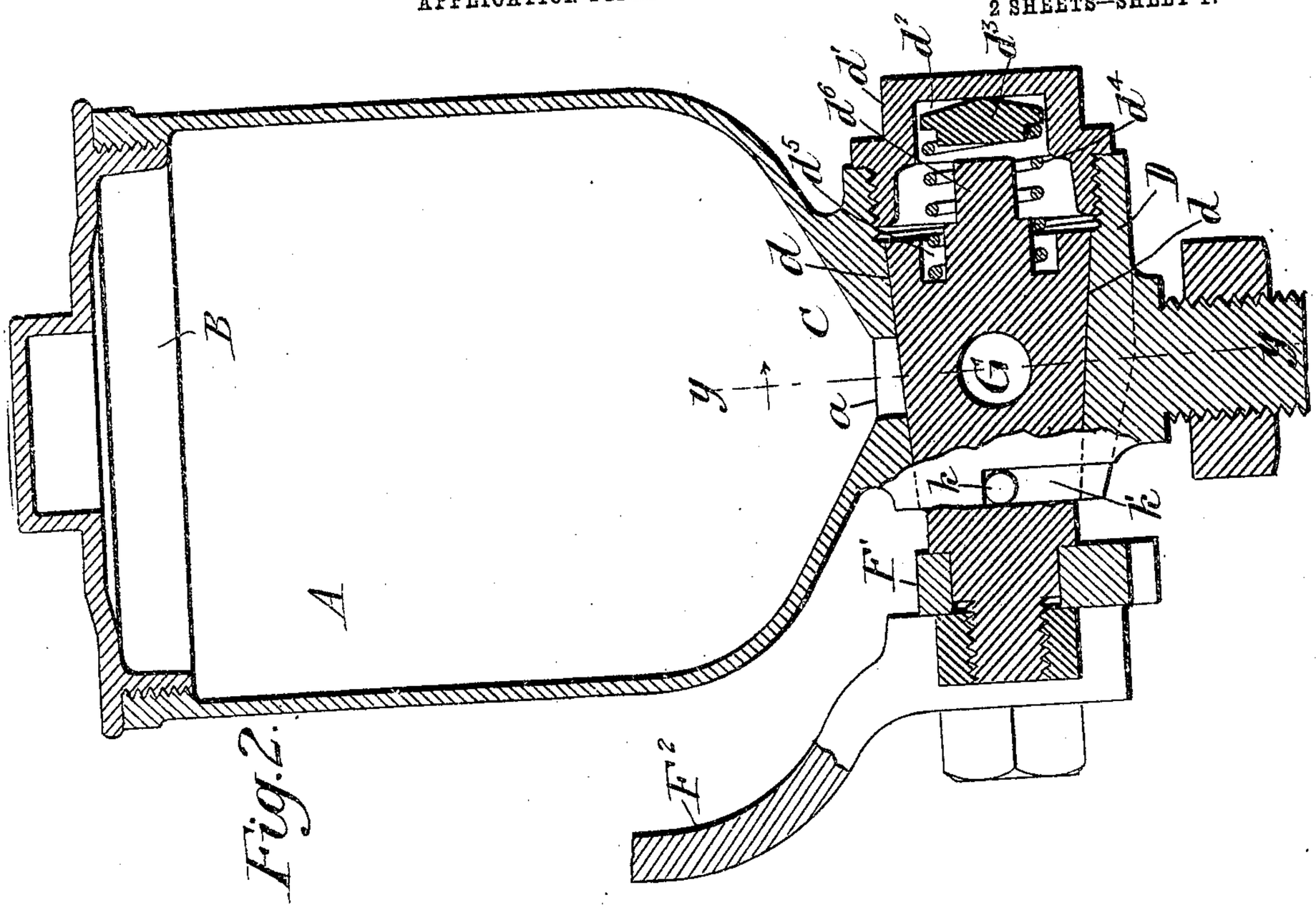

Fig. 2.

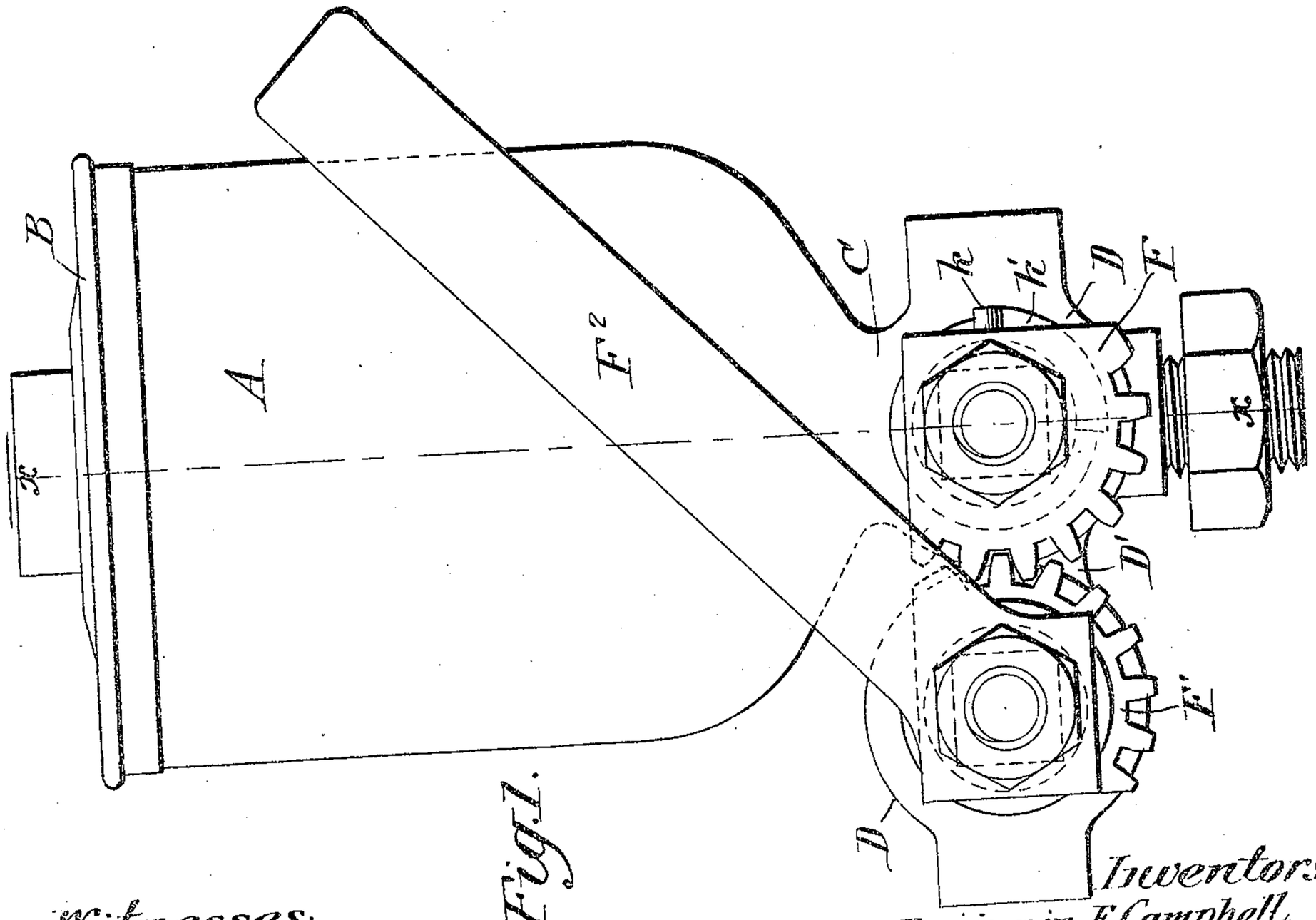

Fig. 1.

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2 SHEETS—SHEET 2.

Fig. 3.

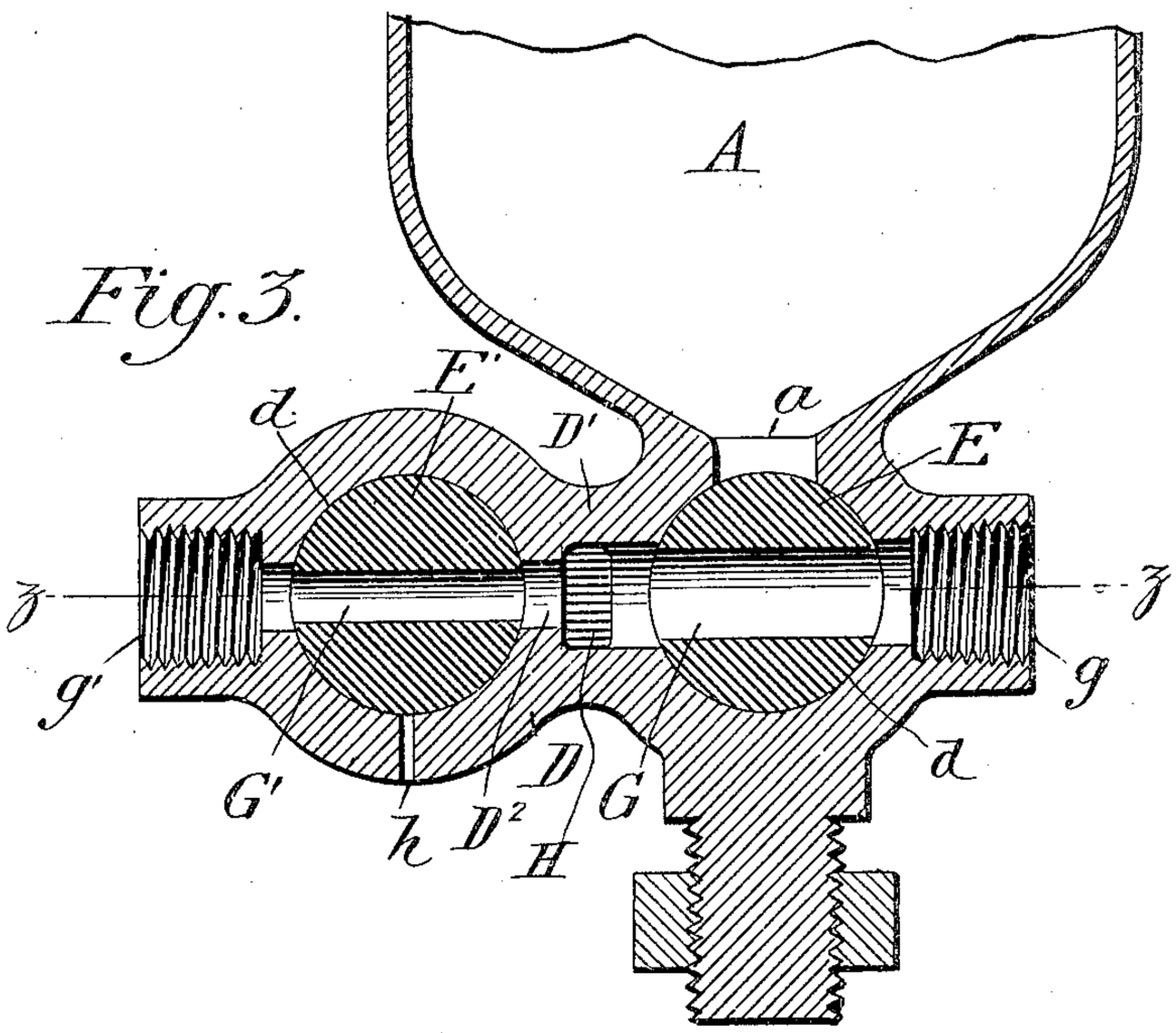
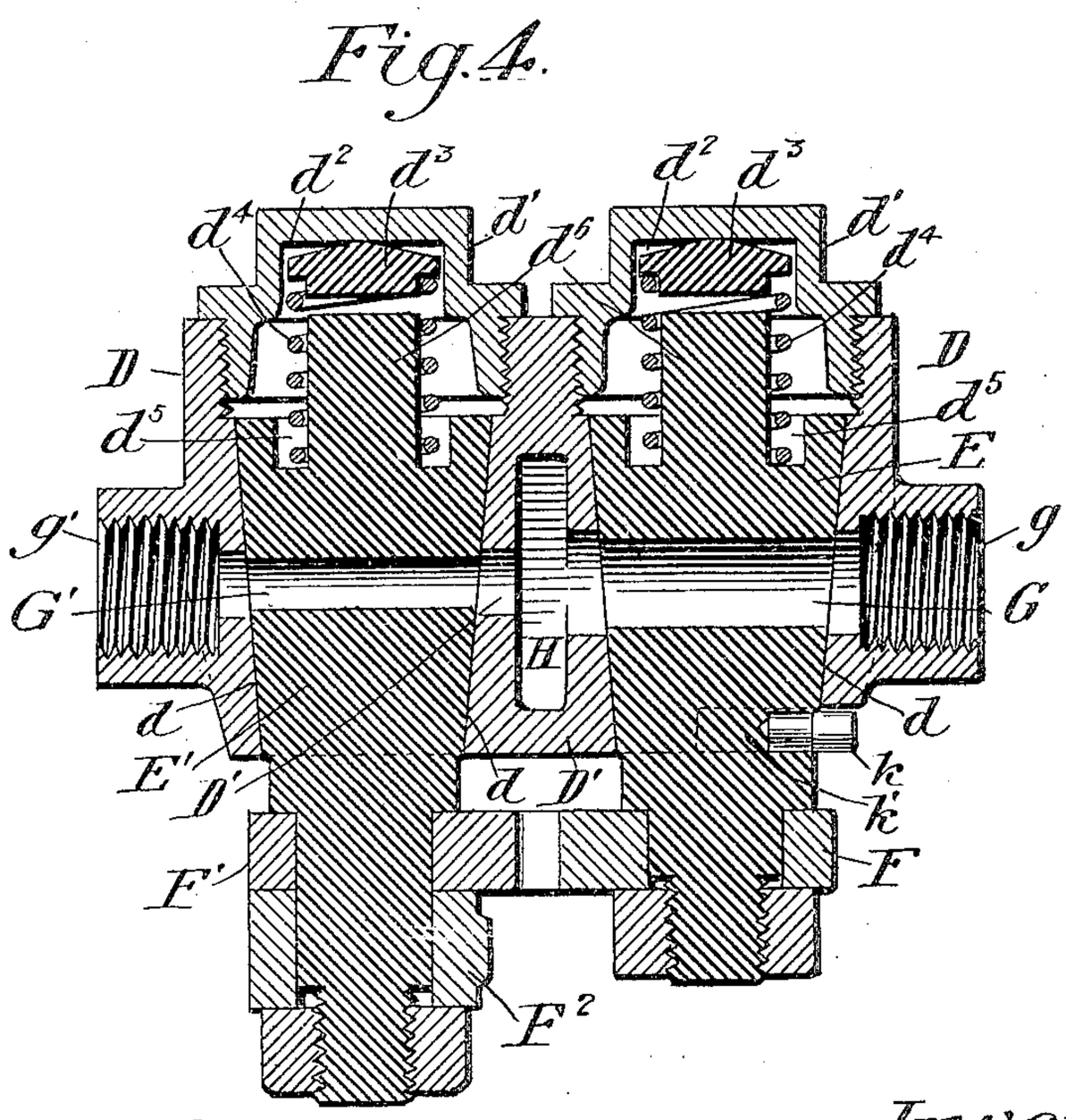


Fig. 4.



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UNITED STATES PATENT OFFICE.

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LUBRICATING DEVICE.

No. 804,377. Specification of Letters Patent. Patented Nov. 14, 1905.

Application filed August 28, 1905. Serial No. 276,020.

To all whom it may concern:

Be it known that we, BENJAMIN F. CAMPBELL and JOHN E. COATES, citizens of the United States, residing at Little Rock, in the county of Pulaski and State of Arkansas, have invented certain new and useful Improvements in Lubricating Devices, of which the following is a specification.

The invention to be hereinafter described relates to lubricating devices of the general type for supplying graphite or other desired character of lubricant to movable parts—as, for instance, the steam chest or cylinder of a steam-engine and their coacting elements.

We have found in practice that movable parts are most efficiently lubricated by forcing at desired times a charge of lubricant thereto by means of a motor fluid, such as compressed air.

With these general considerations in view one of the objects of the present invention is to provide a simple yet efficient device of the type stated, wherein the graphite or other lubricant and other foreign substances are prevented from coming in contact with the air or fluid controlling valve and wherein also by a simple movement a charge of lubricant can be readily forced to the parts to be lubricated.

The invention consists of the parts and combinations described, and definitely set forth in the claims.

In the drawings, Figure 1 is a side elevation of a device embodying our present invention. Fig. 2 is a vertical section thereof on the line $x\,x$, Fig. 1. Fig. 3 is a vertical section of the lower part of the device on line $y\,y$, Fig. 2, looking in the direction of the arrow, said figure. Fig. 4 is a horizontal section on line $z\,z$ of Fig. 3.

One form of the device as embodying our invention and selected for illustration comprises a reservoir or lubricant-cup A, having a usual cover B and a contracted lower portion C, preferably shown as integral with the reservoir or cup A. Disposed, preferably below the reservoir or cup A, are the valve elements and their casing D, the latter being selectively shown as formed integral with the lower portion of the reservoir or cup, although such integral formation is obviously not essential. The valve-casing D is provided with two similar tapering seats $d\,d$, Figs. 2 and 4, in which are respectively fitted the two valves E E′—valve E for controlling the charge of lubricant delivered from the reservoir or cup A and for identification denominated the "lubricant-valve" and valve E′ for controlling the motor fluid or air and for indentification denominated the "air-valve." It will be noted that the tapering valve-seats $d\,d$ are preferably shown as bored entirely through the casing D, one end of each being closed by a cap $d'\,d'$, having screw-threaded engagement with the casing and each provided with a seat $d^2\,d^2$, upon which rests the rocking support $d^3\,d^3$ for one end of a spring $d^4\,d^4$, the opposite end of said springs $d^4\,d^4$ resting in suitable seats $d^5\,d^5$, formed in the adjacent ends of the two valves E E′, Fig. 4. In order to give longitudinal support to the springs $d^4\,d^4$, each valve E E′ has an extended portion $d^6\,d^6$ extending some distance into the said springs, as will be readily seen from Fig. 4. From this construction it will be apparent that the springs $d^4\,d^4$ will maintain the valves E E′ forcibly seated upon or in their tapering casings and provide a close-fitting bearing at all times. The ends of the lubricant and air valves opposite the springs $d^4\,d^4$ are extended through the casing D and provided each with a partial gear F F′, which intermesh, an operating-handle F^2 being appropriately secured to one of said valves, as E′, so that upon movement of such handle to turn one of said valves the other valve will be simultaneously turned for a purpose to be hereinafter described.

The lubricant-valve E is formed with a lubricant-charging chamber G, extending diametrically therethrough, said chamber being adapted in one position to register with the discharge-opening g, leading to the parts to be lubricated. The air-valve E′ is similarly provided with a diametrical opening G′, which in one position, Figs. 3 and 4, may be brought into communication with a fluid or air inlet g' and in another position may interrupt such communication, as will be obvious.

The wall D′ between the two valves E and E′ has an opening D^2 in alinement with the air-inlet opening g' and discharge-opening g,

so that when the valves E E′ are in the position indicated in Figs. 3 and 4 free communication may be established between the air-inlet g' and the lubricant-discharge opening g through the valves E E′.

From the construction thus far described it will be evident that should the valves E E′ be turned to a position substantially ninety degrees from that shown in Fig. 3 the lubricant-charging chamber G of the lubricant-valve E will be in communication with the opening a in the lower part of the reservoir or cup A and will receive a charge of lubricant and that the air-valve E′ will be in a position to cut off communication between its opening G′ and the air-inlet g'. By means of the handle F^2 and the gear connection between the two valves D E′ it will likewise be evident that the said valves may be turned simultaneously ninety degrees to bring the chamber G, now filled with lubricant, into communication with the discharge-opening g and the opening G′ of the inlet g', so that the charge of lubricant in the lubricant-chamber G will be forcibly carried to the parts to be lubricated.

It is desirable in a device of this character that the lubricant (usually graphite) be not permitted to contact with the air-controlling valve, as it is liable to destroy the close-fitting contact of the valve and casing and permit the escape of air. We obviate this defect by the use of two valves, one for separately controlling the air, and we arrange for their coöperative action by uniting them together by means of gears or similar operative means. To further insure the same end, a wall D′ is disposed between the valves and is provided with a trapping-chamber H, so that any lubricant finding its way into the passage between the two valves will be trapped and prevented from injuriously affecting the air-valve.

A relief-opening h, Fig. 3, may be provided in the air-valve casing for the escape of the highly-compressed air from the chamber G′ when the air-valve is turned to interrupt communication between the air inlet and discharge openings g and g'.

To limit the turning movement of the valves to and from their communicating positions with their respective openings in supplying and cutting off the supply of lubricant, a pin k is provided on one of the valves, Fig. 4, which travels in a quadrant path k', the wall at each end of the quadrant thus limiting the turning movement of the two valves to ninety degrees. This insures the proper travel of the valves to and from their two positions, as indicated.

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

1. In a device of the class described, the combination of a reservoir or cup for holding lubricant, a valve-casing connected thereto and provided with two valve bores or seats, a valve in each of said bores or seats, one of said valves being provided with a chamber for containing a charge of lubricant, the other of said valves provided with means for controlling the air or fluid for carrying the lubricant to the parts to be lubricated, and connections between said valves for insuring their simultaneous movement.

2. In a device of the character described, the combination of a reservoir or cup for holding lubricant, a valve-casing connected thereto and provided with two tapering valve-seats, two tapering valves—one in each of said tapering valve-seats, one of said valves having a chamber for containing a charge of lubricant, the other of said valves having an opening for controlling the admission of air or fluid through the chamber of the first-mentioned valve, and means for operatively connecting said valves and causing them to move simultaneously.

3. In a device of the class described, the combination of a reservoir or cup for holding a lubricant, a valve-casing connected thereto, a lubricating-valve in said casing for containing a charge of lubricant, a separate air-valve in said casing for controlling the passage of air through the lubricating-valve, and means for connecting said valves to cause them to move in unison.

4. In a device of the character described, the combination of a reservoir or cup for holding lubricant, a valve-casing connected thereto, and having two tapering valve-seats, a tapering valve in each of said valve-seats, a spring acting on each of said valves to force them longitudinally of the tapering seats, one of said valves having a chamber for holding a charge of lubricant received from the reservoir or cup, the other of said valves having an opening for controlling the passage of air through the chamber of the first-mentioned valve, and means for simultaneously turning said valves.

5. In a device of the class described, the combination of a reservoir or cup for holding a lubricant, a valve-casing connected thereto, two valves in said casing, the one for receiving the charge of lubricant from the reservoir or cup, the other for separately controlling the passage of air through the first-mentioned valve, means for operating said valves in unison, and a trapping-chamber for the lubricant between said valves.

6. In a device of the character described, a reservoir or cup for holding a supply of lubricant, a valve-casing disposed below the same, said casing having two tapering valve-seats, a tapering valve in each of said seats, means for closing one end of each valve-seat,

a rocking support, a spring interposed between the rocking support and each of said valves, one of said valves having a chamber for holding a charge of lubricant, the other of said valves having an opening and controlling the passage of air through the said chamber of the first-mentioned valve and gears for operatively connecting said valves.

In testimony whereof we affix our signatures in presence of two witnesses.

BENJAMIN F. CAMPBELL.
JOHN E. COATES.

Witnesses:
ROBT. D. NEWELL,
B. E. SCOTT.