

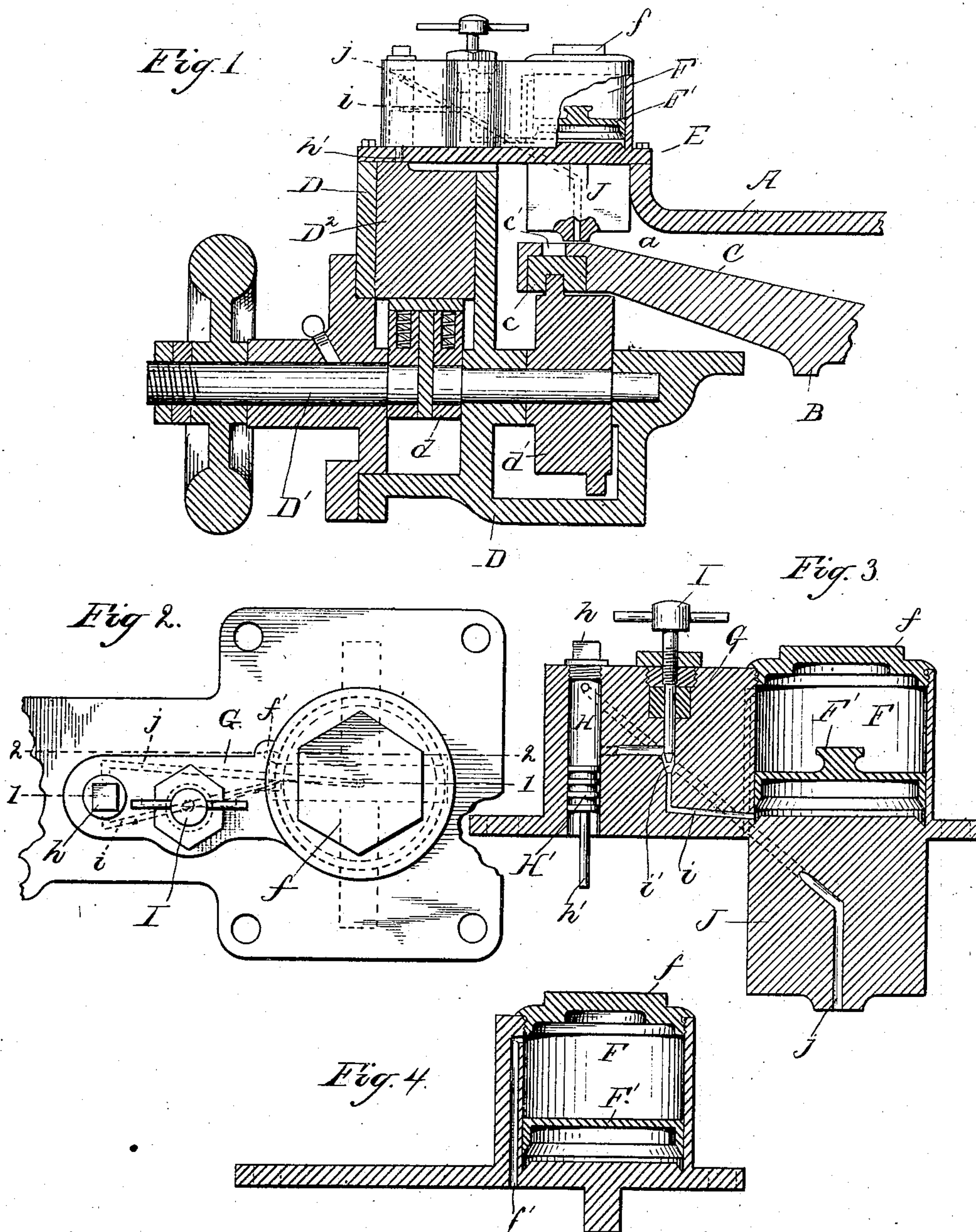
(No Model.)

E. W. WHITCOMB.

LUBRICATOR FOR MINING MACHINES.

No. 398,299.

Patented Feb. 19, 1889.



Witnesses
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UNITED STATES PATENT OFFICE.

EDWIN W. WHITCOMB, OF CHICAGO, ILLINOIS, ASSIGNOR TO GEORGE D. WHITCOMB, OF SAME PLACE.

LUBRICATOR FOR MINING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 398,299, dated February 19, 1889.

Application filed August 29, 1888. Serial No. 284,085. (No model.)

To all whom it may concern:

Be it known that I, EDWIN W. WHITCOMB, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Lubricators for Mining-Machines, which is fully set forth in the following specification, reference being had to the accompanying drawings, in which—

Figure 1 is a view showing my improved lubricator applied to a mining-machine, the machine being shown in section and the lubricator in elevation, a portion of the latter being broken away, however, to show the internal construction; Fig. 2, a plan view of the lubricator; Fig. 3, a sectional view of the same, taken on the line 1 1 of Fig. 2; and Fig. 4, a sectional view taken on the line 2 2 of Fig. 2.

Like letters refer to like parts in all the figures of the drawings.

My invention relates to lubricators for mining-machines, and is adapted more particularly for use in connection with mining-machines of the character set forth in Letters Patent No. 335,328, granted February 2, 1886, to George D. Whitcomb.

The object of my present invention is to provide an automatic lubricator for furnishing a suitable lubricant to the pivoted cup mounted in the arm of the slide-valve of said machine and engaging with the cam-wheel of the valve-motor.

I will now proceed to describe a construction in which I have practically carried out my invention in one form, and will then particularly point out in the claims those features which I deem to be new and desire to protect by Letters Patent.

In the drawings I have shown only so much of the machine as is necessary to illustrate the connection of the lubricator therewith and its mode of operation.

A represents a portion of the air-chest, and B the valve therein, provided with the arm C, and the slotted cup *c*, pivoted therein. An oil passage or duct, *c'*, extends from the top of the arm C through to the cup *c*. D represents the valve-motor casing, in which is mounted the motor-shaft D', provided with the cam-

wheel *d'* and with the eccentric piston *d*. D² represents the reciprocating gate or valve of the valve-motor. All these parts are constructed substantially as in the Letters Patent above referred to, and therefore need no extended description here.

Mounted on top of the valve-motor casing D is a plate, E, which forms the base of the lubricator. Upon this base is mounted an oil-chamber, F, which contains the supply of oil or other lubricant employed. Within this chamber there is arranged a snugly-fitting piston, F', free to move therein. The upper end of the chamber is closed by means of a suitable cap or screw-bolt, *f*, which may be removed when it is desired to remove the piston F' and refill the chamber. An air duct or passage, *f'*, leads from the air-space *a* within the valve-chest and valve-casing to the interior of the chamber F, opening into the same at a point near the top thereof and above the piston F'.

G represents a rib or body of metal formed upon the top of the base E. Through this rib there is bored near the front a vertical hole, H, which forms a pump chamber or cylinder, it being closed at the top by means of a screw-plug, *h*, or other suitable device.

H' represents a piston fitting snugly and reciprocating within the pump-cylinder H, it being provided with a stem or rod, *h'*, which extends downward and rests upon the top of the gate or valve D². An oil duct or passage, *i*, leads from the lower end of the oil-chamber F to the pump-chamber H, opening into this latter at a point just above the piston when said piston is in its lowest position. A portion of this duct or passage *i* is vertical, as shown in Fig. 3, and is provided with a valve-seat, *i'*, at its upper end, tapering or conical in form, as shown, to correspond with the correspondingly tapered or conical end of a screw-valve, I.

J indicates a downward extension or rib formed on the base E and terminating immediately above the end of the arm C, as shown in Fig. 1. A duct or passage, *j*, extends from the top of the pump-chamber H diagonally and then vertically downward to the bottom of the extension J, terminating at the lower end of

the same at a point immediately above the end of the arm C and the duct or passage *c'* therein.

The operation of the apparatus is as follows: The chamber F being supplied with oil and the mining-machine being in operation, the compressed air passes from the air-space *a* upward through the duct or passage *f'* and exerts its pressure upon the upper surface of the piston F'. This pressure causes the piston to force the oil through the duct or passage *i* into the pump-chamber H, thus filling the same. The amount of oil delivered to the pump-chamber may be regulated by adjusting the valve I nearer to or farther from the valve-seat *i'*, or the supply of oil may be entirely cut off, when desired, by closing said valve. The reciprocation of the gate D² imparts to the piston H' a reciprocating motion, which at each upward stroke forces the oil contained in the pump-chamber H into and through the duct or passage *j*. The oil is thus delivered on top of the end of the arm C and into the oil-passage *c'*, through which it passes downward and serves to lubricate the cup *c*. The extension J serves to prevent the arm C from rising, and thus disengaging itself from the cam-wheel, and in case the said arm rises sufficiently to come in contact with the extension J the surfaces thus brought into contact will be thoroughly lubricated and friction or binding will be prevented. The oil not only lubricates the upper surface of the cup *c*, but it also works downward around the same and lubricates the sides thereof, and a sufficient quantity will fall upon the cam-wheel D to lubricate this latter. By means of the apparatus I am therefore enabled to obtain a constant and automatic supply of oil for the parts to be lubricated, the quantity furnished being capable of the nicest regulation.

It is obvious that various modifications in the details of construction and arrangement of parts may be made without departing from the principle of my invention, and I therefore do not wish to be understood as limiting myself strictly to the precise details hereinbefore described, and shown in the drawings.

Having thus described my invention, what I

claim as new, and desire to secure by Letters Patent, is—

1. The combination, with the valve and valve-motor of a pneumatic mining-machine, of a lubricator provided with an oil-chamber having a piston located therein, and with an air duct or passage to supply compressed air to operate said piston, and an oil duct or passage through which the oil is discharged, substantially as and for the purposes specified.

2. The combination, with the valve and valve-motor of a mining-machine, of a lubricator provided with an oil-chamber having a piston arranged therein, an air-duct leading from the valve-chest to said chamber on one side of the piston, a pump actuated by the valve-motor, an oil-duct leading from the oil-chamber to said pump, and a second oil-duct leading from the pump to the point of connection between the valve and valve-motor, substantially as and for the purposes specified.

3. The combination, with the valve and valve-motor, of the lubricator provided with an oil-chamber having a piston arranged therein, a duct to admit compressed air to one side of said piston, a pump actuated by the valve-motor, an oil-duct leading from the oil-chamber to said pump, a valve arranged in said oil-duct to control the passage of the oil, and a second oil-duct leading from the pump to the point of discharge, substantially as and for the purposes specified.

4. The combination, with the valve and valve-motor, the latter provided with the vertically-reciprocating gate D², of the lubricator provided with a pump-chamber, H, a piston, H', arranged in said chamber and having its rod or stem *h'* resting on the gate D², an oil-chamber, F, having piston F', an air-passage, *f'*, for admitting air above said piston, and suitable ducts or passages leading from the oil-chamber below the piston therein to the pump-chamber and from the pump-chamber to the point of discharge, substantially as and for the purposes specified.

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