

F. G. WILLIAMSON.
 GRAPHITE LUBRICATOR.
 APPLICATION FILED DEC. 31, 1908.

936,970.

Patented Oct. 12, 1909.

Fig. 1.

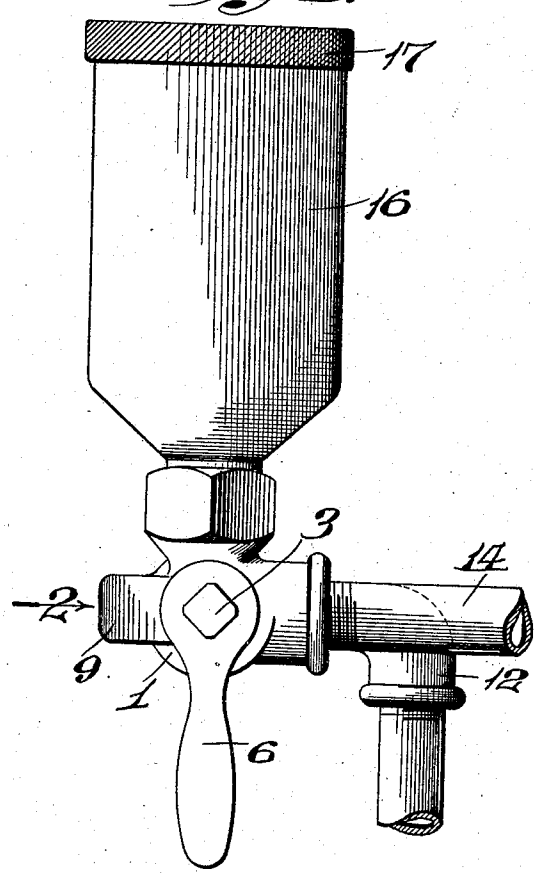


Fig. 2.

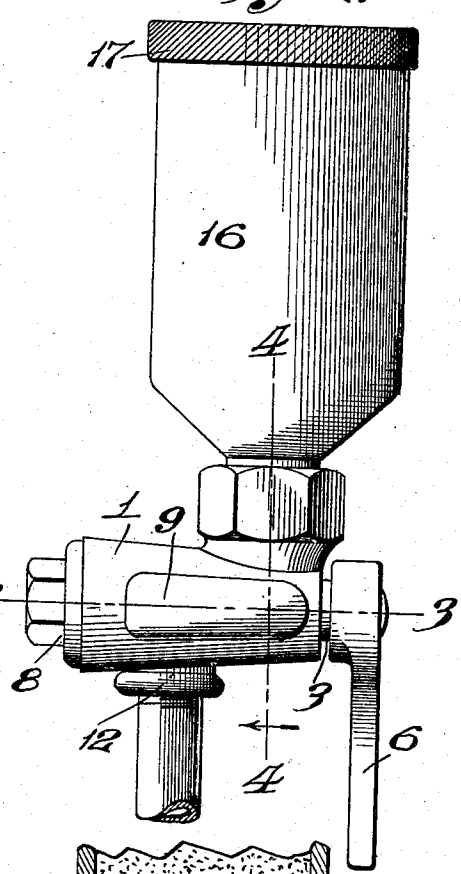


Fig. 3.

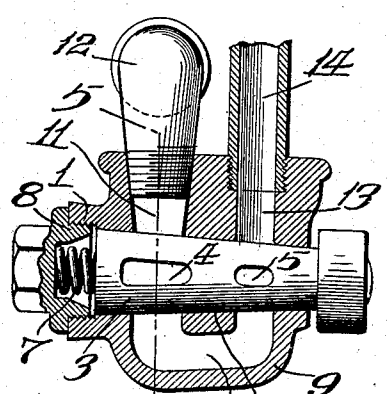


Fig. 4.

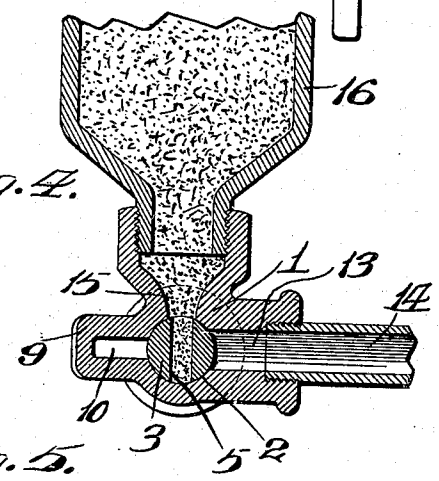
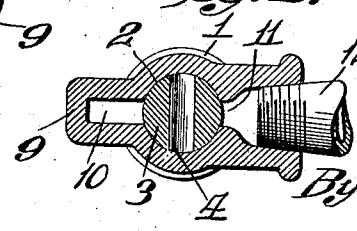


Fig. 5.



attest.
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UNITED STATES PATENT OFFICE.

FREDERICK G. WILLIAMSON, OF ST. LOUIS, MISSOURI.

GRAPHITE-LUBRICATOR.

936,970.

Specification of Letters Patent.

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To all whom it may concern:

Be it known at I, FREDERICK G. WILLIAMSON, a citizen of the United States, and resident of St. Louis, Missouri, have invented certain new and useful Improvements in Graphite-Lubricators, of which the following is a specification containing a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention relates to a graphite lubricator or to a device for supplying graphite or analogous material to movable parts; for instance, to the steam chest or cylinder of a locomotive or steam engine, and which graphite is forcibly expelled through a valve by means of fluid pressure, such as compressed air or steam.

The object of my invention is to construct a flake or pulverized graphite lubricator wherein but a single valve is made use of, thereby greatly simplifying and reducing the cost of the device, and reducing to a minimum all leakage of the fluid pressure utilized for discharging the graphite from the device.

To the above purposes, my invention consists in certain features of novelty hereinafter described, claimed, and shown in the accompanying drawings, in which:

Figure 1 is a side elevation of the lubricating device of my improved construction; Fig. 2 is an elevation of the device as seen looking in the direction indicated by the arrow 2 in Fig. 1; Fig. 3 is a horizontal section taken on the line 3—3 of Fig. 2; Fig. 4 is a vertical section taken on the line 4—4 of Fig. 2; and Fig. 5 is a detail section taken on the line 5—5 of Fig. 3.

Referring by numerals to the accompanying drawings: 1 designates a horizontally disposed cylindrical valve casing, through which is formed a tapered opening 2, in which is arranged to rock a tapered valve plug 3, provided in its larger end with a diametrically arranged fluid pressure port 4, and adjacent its smaller end with a diametrically arranged port 5, which forms a pocket to receive the charge of graphite which is discharged from the device. The smaller end of the valve 3 projects through the casing 1 and receives an operating lever or handle 6, and bearing against the larger end of the valve is an expansive coil spring 7, held within a cap 8, which is screw-seated in the larger end of the casing 1, and thus

said spring 7 exerts a pressure on the valve plug to hold the same snugly against its seat.

Formed integral with the side of the housing 1 is an auxiliary housing 9, in which is formed a horizontally disposed port or chamber 10, the ends of which communicate with the opening 2 through the housing 1. Formed through the side of the housing 1, directly opposite one end of the port 10 and in alinement with the port 4, is a fluid pressure inlet port 11, the inner end of which is approximately equal in width to the width of the port 10, and leading to this port 11 is one end of a fluid pressure supply pipe 12 which is secured to the housing 1 in any suitable manner. Formed through the opposite end of the housing 1 and in direct alinement with the opposite end of the port 10 and the port 5, is a lubricant discharge opening 13, which is considerably wider than is the port 10 and the port 5, and connected to the housing 1 and leading from this opening 13 is a pipe 14, which conveys the graphite or other lubricant to the parts to be lubricated.

An opening 15 is formed through the top of the housing 1 in alinement with the port 5, and connected to the housing and leading into this opening 15 is the lower end of a container 16, the upper end of which is closed by a removable cap or plate 17.

When my improved device is assembled for use, the various parts occupy the positions as seen in Figs. 1 and 2, and the valve 3 is turned so that the ports 4 and 5 occupy a vertical plane at right angles to the ports 11 and 13 and the port 10. Thus the port 5 coincides with the opening 15, and a charge of flake or pulverized graphite or analogous material fills said port 5 while the same occupies a vertical position. When it is desired to discharge the graphite from the port or pocket 5, the handle or lever 6 is engaged and the valve is rocked a quarter of a turn, thus bringing the ports 4 and 5 into a horizontal plane, and in which position they register with the ports 11 and 13 and with the ends of the port 10. Fluid pressure in the form of compressed air or steam discharges from the pipe 12 through the port 11, port 4 and port 10, and will blow or forcibly discharge the body of graphite contained in the port or pocket 5 out through the opening 4 to and through the pipe 14, which leads to the parts to be lubricated. As soon as this action takes place the handle 6

is returned to its normal position, thus rocking the valve 3 back to its normal position, which action cuts off the blast of fluid pressure through the device and brings the port 5 into position to be refilled with graphite from the container 16.

The opening 13 is purposely made considerably wider than is the port 5 and port 10 in order that when the valve is rocked into position to discharge graphite, the discharge end of the port 5 will be in communication with the opening 13 before the port 4 is in communication with the ports 10 and 11, and thus the charge of graphite contained within the port or pocket 5 will commence to discharge as soon as the first opening occurs between the port 4 and the port 11 and port 10.

The spring 7 exerts sufficient pressure to maintain the valve 3 snugly against its seat, and as but a single valve is used in the device leakage of fluid pressure through the device is reduced to a minimum.

A lubricating device of my improved construction is very simple, comprises a minimum number of parts, is easily assembled or taken apart, and provides efficient means for discharging a predetermined amount of graphite or similar lubricant to the interior of a steam chest, locomotive cylinder or the like.

I claim:

1. A lubricating device, comprising a valve housing in which is formed a passage way, there being ports formed in the housing in alinement with the ends of the passage way, a single valve plug arranged for operation in the valve housing between the ends of the passage way and the ports, there being ports formed through the valve plug, which last mentioned ports are adapted to coincide with the first mentioned ports and the ends of the passage way and a lubricant holder detachably arranged on the valve housing, the discharge end of which holder is normally in communication with one of the ports in the valve plug.

2. A lubricating device, comprising a valve housing in which is formed a passage way, there being ports formed in the housing in alinement with the ends of the passage way, one of which ports is wider than the corresponding end of the passage way, a single valve plug arranged for operation in the valve housing between the ends of the passage way and the ports, there being ports formed through the valve plug, which last mentioned ports are adapted to coincide with the first mentioned ports and the ends of the passage way and a lubricant holder detachably arranged on the valve housing, the discharge end of which holder is normally in communication with one of the ports in the valve plug.

3. A lubricating device, comprising a

valve housing in which is formed a passage way, there being ports formed in the housing in alinement with the ends of the passage way, a single valve plug arranged for operation in the valve housing between the ends of the passage way and the ports, there being ports formed through the valve plug, which last mentioned ports are adapted to coincide with the first mentioned ports and the ends of the passage way, yielding pressure means normally bearing against one end of the valve plug, and a lubricant container detachably carried by the valve housing and the discharge end of which container is normally in communication with one of the ports in the valve plug.

4. A lubricating device, comprising a valve housing in which is formed a passage way, there being ports formed in the housing in alinement with the ends of the passage way, a valve plug arranged for operation in the valve housing between the ends of the passage way and the ports, there being ports formed through the valve plug, which last mentioned ports are adapted to coincide with the first mentioned ports and the ends of the passage way, and a container in communication with one of the ports in the valve plug when said plug occupies a closed position.

5. A lubricating device, comprising a valve housing through which is formed an opening, a valve plug arranged in said opening, there being a pair of ports formed through the valve plug, there being a passage way formed in the valve housing, the ends of which are in alinement with the ports in the valve plug, there being ports formed in the valve housing opposite the ends of the passage way, a fluid pressure pipe connected to one of said ports, a pipe leading from the opposite one of said ports, and a graphite container connected to the valve housing and adapted to supply graphite to one of the ports in the valve plug.

6. The combination with a fluid pressure supply pipe, a lubricant delivery pipe and a lubricant container, of a valve housing, the openings in which are in communication with the fluid pressure supply pipe, the graphite delivery pipe and the graphite container, there being a passage way formed in the housing, the ends of which passage way are in alinement with the ends of the fluid pressure pipe and the graphite delivery pipe, a valve plug arranged for operation in the valve housing, and there being ports formed through said valve plug, which ports are adapted to communicate with the ends of the passage way when the valve is rocked.

7. The combination with a fluid pressure supply pipe, a lubricant delivery pipe and a lubricant container, of a valve housing, the opening in which is in communication with a fluid pressure supply pipe, the graphite de-

livery pipe and the graphite container, there being a passage way formed in the housing, the ends of which passage way are in alinement with the ends of the fluid pressure pipe and the graphite delivery pipe, a valve plug arranged for operation in the valve housing, there being ports formed through said valve plug, which ports are adapted to communicate with the ends of the passage way when the valve is rocked, and yielding pressure means normally bearing against one end of the valve plug.

8. The combination with a fluid pressure supply pipe, a lubricant delivery pipe and a lubricant container, of a valve housing, the opening in which is in communication with a fluid pressure supply pipe, the graphite delivery pipe and the graphite container, there being a passage way formed in the housing, the ends of which passage way are in alinement with the ends of the fluid pressure pipe and the graphite delivery pipe, a valve plug arranged for operation in the valve housing, there being ports formed through said valve plug, which ports are adapted to communicate with the ends of the passage way when the valve is rocked, yielding pressure means normally bearing against one end of the valve plug, and a handle carried by the opposite end of the valve plug.

9. A lubricating device, comprising a valve housing through which is formed an opening, a valve plug arranged in said opening, there being a pair of ports formed through the valve plug and which ports are

in communication with one another when the valve plug is shifted, there being ports formed in the valve housing in alinement with the ports in the valve plug, a fluid pressure pipe connected to one of the last mentioned ports, a pipe leading from the opposite one of said ports, and a graphite container connected to the valve housing for supplying graphite to one of the ports in the valve plug.

10. A lubricating device, comprising a valve housing through which is formed an opening, a valve plug arranged in said opening, there being a pair of ports formed through the valve plug, there being ports formed in the valve housing in alinement with the ports in the plug, a fluid pressure pipe connected to one of the ports in the housing, a pipe leading from the opposite one of the ports in the housing, a graphite container connected to the valve housing for supplying graphite to one of the ports in the valve plug, and there being a port formed in the valve housing for establishing communication between the pair of ports in said valve housing when the valve plug is shifted into an open position.

In testimony whereof, I have signed my name to this specification, in presence of two subscribing witnesses.

FREDERICK G. WILLIAMSON.

Witnesses:

M. P. SMITH,
E. L. WALLACE.