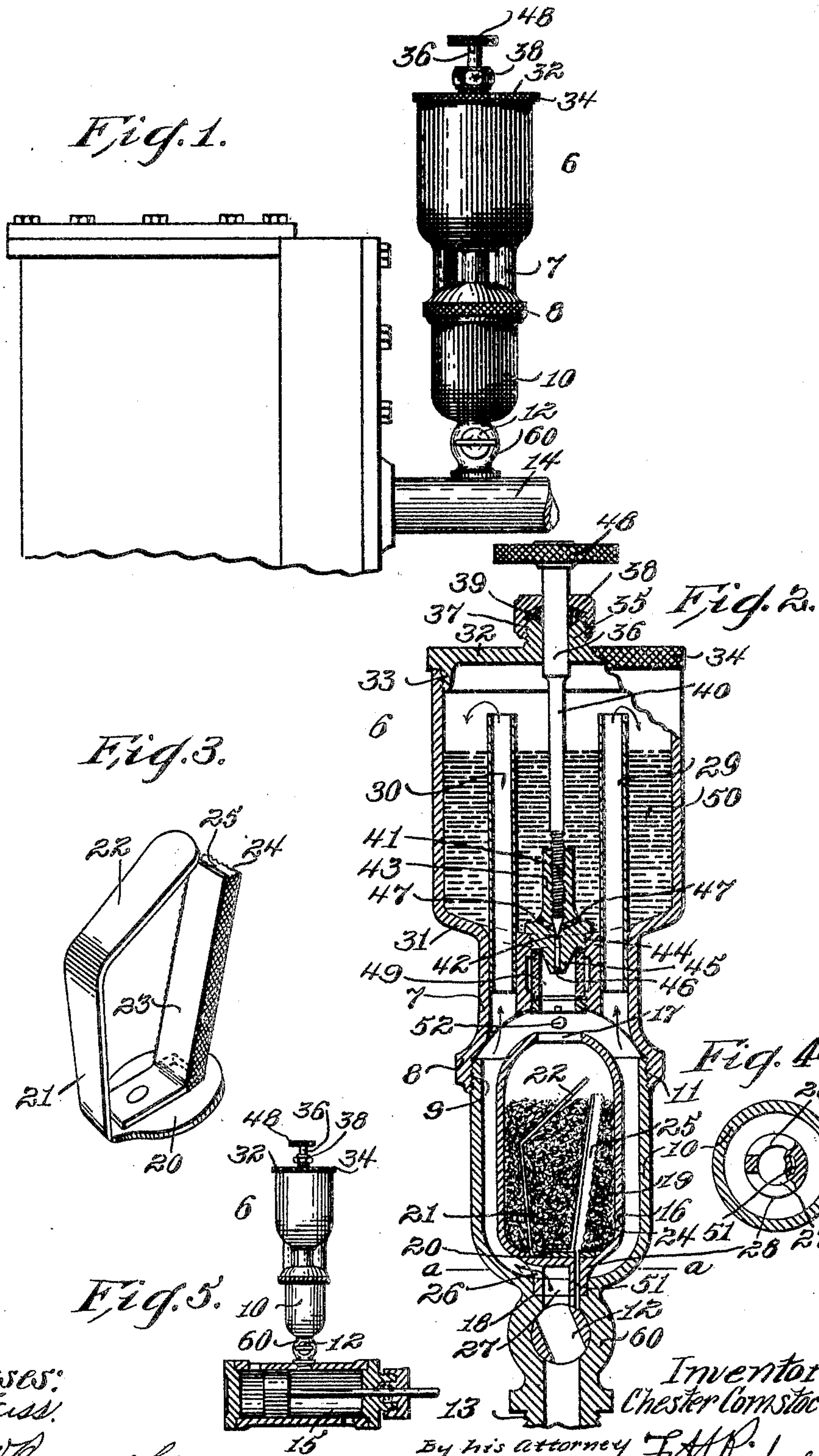


C. COMSTOCK.
LUBRICATOR.

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UNITED STATES PATENT OFFICE.

CHESTER COMSTOCK, OF BROOKLYN, NEW YORK.

LUBRICATOR.

No. 804,454.

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To all whom it may concern:

Be it known that I, CHESTER COMSTOCK, a citizen of the United States, residing in borough of Brooklyn, city of New York, in the county of Kings and State of New York, have invented certain new and useful Improvements in Lubricators, of which the following is a specification.

This invention is directed to the art of lubricating, and comprehends the admixture of a fluid, whether said fluid be a lubricant or not, with a non-liquid lubricant, whereby the lubricating substance may be conveyed to the parts to be lubricated when those parts are under pressure.

The invention further comprehends the construction of a device or apparatus which will automatically accomplish such admixture and feed it by a gradual discharge to the parts to be lubricated with a degree of efficiency and simplicity that will render it practical and desirable.

It is a further design of the invention to provide means for deflecting the course of the flow of the fluid as it is directed toward the non-liquid lubricating substance and for thereafter directing it along a surface of the said lubricating substance whether that surface be within or without that body.

It will be understood that the device shown may be used in a variety of ways, as will be shown in the specification.

The constructions illustrated on the accompanying sheet of drawings, together with the detailed description thereto appertaining, disclose one of the forms into which the invention may be embodied.

An embodiment of the invention is illustrated on the accompanying sheets of drawings, whereon—

Figure 1 is an elevational view of an improved lubricating apparatus associated with a steam-chest. Fig. 2 is a sectional view in elevation of the same. Fig. 3 is a perspective view of a lubricant-conveying member. Fig. 4 is a plan sectional view on line *a a* of Fig. 2, and Fig. 5 illustrates a lubricating device associated with a cylinder.

Throughout the various illustrations similar characters of reference apply to similar parts.

As has been remarked, that inasmuch as the principle of this invention—that is, the conducting of a fluid to a non-liquid lubricant, then discharging them in a compound state—is capable of being embodied in a variety of

devices I have, for example, illustrated a device applied to a feed-pipe, for instance, as shown in Fig. 1, and to a cylinder in another instance, as shown in Fig. 5. In either case it will be observed that the invention primarily comprehends the provision of a reservoir adapted to contain a fluid whether a lubricant or not, a receptacle for containing non-liquid lubricant, means for introducing the fluid into contact with non-liquid lubricant, means to deflect and thereafter direct the flow of the fluid relatively to the non-liquid lubricant, and means whereby may be ascertained the amount of lubricant used.

Referring now to the construction as shown, 6 indicates in a general way a reservoir, which may be made in any suitable manner and which in the present instance may be mounted upon a support 7, having a portion 8, which may be screw-threaded internally, as at 9, so that it may be fitted onto a cup 10, which may be externally screw-threaded at 11 to receive the screw-threaded portion 9 of said support.

Suitably associated with the chest 10 is a valve 60, provided with a valve-plug 12 and which may be screw-threaded at 13, so that it may connect to a leader-pipe 14, if desired, or to the body of a cylinder 15, Fig. 5.

Within the chest 10 may be located a cup 16, having an opening 17 at its upper portion and which cup may be stepped into a seat 18 in the base of the chest 10. This cup is designed to hold some suitable lubricating substance 19—such, for instance, as graphite or graphite compounded with another suitable lubricating medium—such, for instance, as soap, preferably soft soap. The former may be used if the reservoir 6 is to be filled with oil for use with air-compressors and gases, and the latter may be employed if said reservoir is to be filled with water for use with steam-cylinders, in which latter case the soap will serve as a vehicle to establish an affinity between the water and graphite. Within this cup may be located a member which may comprise a base 20, having a standard 21, from which may extend in an oblique and upward direction a deflecting-plate 22, and mounted also upon the base 20 is a support 23, which in the present instance may be provided with a screen 24, which may be constructed of some suitable open-mesh material, such as gauze or wire-netting. This material 24 will be disposed sufficiently distant from the member 23 so as to create a space or channel 25 between the screen 24 and the member 23, and thus

when the structure is placed in the cup and the lubricating mass is surrounding the same said lubricating mass will be held a certain distance away from the member 23, so as not to choke or obstruct the channel 25.

It is designed that communication may be had between the chest 10 and the interior of the reservoir 6 for the purpose of directing into the cup a pressure of any suitable medium which may be directed into the chest 10 through a port 26, passing through the wall 27 of a support 28, upon which the cup 16 may be disposed, and this port 26 communicates with the valve 60, by which the pressure of the medium may be controlled. These communications may be of any suitable form and in the present instance are illustrated as tubes 29 and 30, which are perpendicularly disposed within said reservoir 6 and which pass through the bottom 31 of said cups and through the support 7 into the chest 10, and such tubes are designed to extend to an approximate point relatively to the top of the reservoir 6, which in the present instance may be inclosed by a cap 32, screw-threaded, for instance, as at 33, to the interior of the cup and which may be milled, if desired, as at 34, for ready removal. This cap in the present instance may be provided with a bearing 35, through the bore of which may extend a stem 36, and the bearing 35 may be screw-threaded exteriorly, as at 37, to accommodate the cap 38, which may be screw-threaded to correspond with said screw-thread 37, and between this cap and the bearing may be confined suitable packing 39 for preventing the escapement of the pressure in the reservoir 6. The shank 40 of the stem 36 may be screw-threaded, as at 41, and pointed, as at 42, and may be movable in an internally-screw-threaded valve 43, which may be screw-threaded into or otherwise situated at 44 in the bottom of the reservoir 6, and this valve may be provided with a nozzle 45, having a channel 46, which may connect with ports 47, leading into the chamber 6, and the point 42 on the shank 40 of the stem 45 may operate as a needle-valve plug to control the communication between the ports 47 and the channel 46, and for the purpose of manipulating the valve-stem the same may be provided with a knurled head 48.

The valve just referred to is preferably located just above the opening 17 of the cup 16, and the nozzle thereof may be directed into the glass tube 49, which may enter the chest 10 and by which the amount of flow of a liquid lubricant 50, contained in the reservoir 6, to the cup 16 may be ascertained.

When the pressure of a medium is permitted to enter through the port 26 into the chamber 10 and the same passes through the tubes or channels 29 and 30, there will be a pressure in the lubricating apparatus equal to that of the pressure emanating from the mechanism adapted to be lubricated.

The liquid, which may be regulated to any desired flow, will be expelled from the nozzle of the valve and drop upon the deflecting portion 22 of the member 21 within the cup 16, whereupon it will run upon the mass of the non-liquid lubricant and will spread over the same, and when it reaches the wire-cloth 24 it will trickle down said cloth and into the channel 51, passing through the support 28, where it may drip off drop by drop through the valve 60 to the parts to be lubricated, it being understood that as the fluid 50 spreads over the non-liquid lubricant each drop thereof may carry with it a portion or deposit of the lubricant by a process of erosion, whereby the product which passes through the channel 51 will be the composition of the substance in the chamber 6 and the substance in the cup 16.

As has been remarked, the substance from the chamber 6 leaves the nozzle 45 in drops 52, which drops pass through the glass tube 49, and in this way the speed with which the lubricant is being fed to another can be ascertained by the rapidity with which these drops are being expelled from the nozzle. It will also be observed that by causing the liquid from the chamber 6 to be deposited upon the deflecting-surface 22 of the member within the cup 16 the drops emanating from the nozzle of the valve will not wear the non-liquid lubricant in one spot, so as to cause a puddle of the liquid, which would be a detracting feature in carrying out the eroding process.

For the purpose of preventing back-pressure against the flow of the lubricant to the parts to be lubricated when the pressure of a medium is first introduced into the apparatus I may locate the channel 51 in the portion 28 somewhat within the caliber of the conduit in the valve, so that the valve-plug 12 may be partially turned for the purpose of giving communication between the source of supply and the chamber 10 and yet at such partial turning will prevent the medium from entering the channel 51. Then the pressure has been circulated throughout the device, when the valve-plug 12 may be fully opened, when the channel 51 may communicate with the conduit of the valve.

The use of various characters of lubricants is comprehended, among which may be those which may comprehend the use of graphite lying in a mass within one receptacle and oil contained in another receptacle and being imparted to and upon the surface of the mass, preferably through intermittent discharges—that is, drop by drop—when the oil while traveling upon and around the surface of the mass may by a process of erosion take up particles of the graphite and carry them along with itself to the parts to be lubricated, whereby there is discharged to such parts a compounded lubricant comprehending the admixture of oil and graphite.

If desired, from the chamber 6 may emanate water, possibly most practically obtainable by condensation (if steam be used as a medium or pressure) or which may be placed into the cup if another medium or pressure be used, and the graphite in the cup 16 may be compounded with a suitable proportion of any suitable substance which may operate as a vehicle to create an affinity between the water and the graphite. In this connection it is here remarked that such vehicle, if desired, may, and probably in practice will, consist of soft soap admixed with the graphite in a manner in accordance with the subject-matter of my pending application, filed February 28, 1905, Serial No. 247,659.

It will now be observed that I have provided a lubricating device for discharging a lubricant or fluid and combining it with another lubricant by an intermitted process and whereby the two lubricants are directed to the place to be lubricated in a compound or mixed condition. It will be further observed that I have provided a method by which to determine the amount of lubricant being utilized, also for controlling the amount to be utilized. It will be further observed that I provide a device which may be located within the mass of one of the lubricants whereby the lubricant conducted thereto may be properly and efficiently directed in order to give efficient results.

It will be noted that the introduction as a lubricant of oil into the graphite is not essential, it being understood that the graphite alone being a lubricant may be carried to the parts to be lubricated by such other suitable medium as may be selected.

Within the purview of this invention I may resort to various constructions or assemblage of parts of lubricating apparatus so long as I maintain the integrity of the principle of combining two or more lubricants, a fluid with a non-liquid lubricant, and effecting such combination through means whereby both will be carried to the parts to be lubricated.

Having thus described my invention, I claim—

1. In a lubricator, the combination with a fluid-reservoir, of a receptacle for a non-liquid lubricant, lubricant deflecting and distributing means, means to convey the fluid to said deflecting means, and means to convey the fluid along a surface of and through the lubricant to the parts to be lubricated.

2. In a lubricator, the combination with a fluid-reservoir, of a receptacle for graphite, means in said receptacle for deflecting the flow of the fluid to distribute it over the graphite, means for conveying the fluid onto the deflecting means, and means for conveying the fluid along a surface of and through the graphite to the parts to be lubricated.

3. In a lubricator, the combination with a fluid-reservoir, of a receptacle for containing

a non-liquid lubricant, means for conducting a fluid onto the surface of and through the non-liquid lubricant, means for holding the non-liquid lubricant away from a portion of said means, and means for ascertaining the quantity being used.

4. In a lubricator, the combination with a reservoir for fluid of a receptacle for containing a mass of compounded lubricant, means for conducting the fluid to the compounded lubricant, means for ascertaining the amount of fluid being conveyed to said lubricant, means to regulate the quantity of fluid so conveyed, and means to deflect the fluid along surfaces of the lubricant to the parts to be lubricated.

5. In a lubricator, the combination with a fluid-reservoir, of a receptacle for containing a mass of compounded non-liquid lubricant, a deflecting device within said receptacle, means for conveying the fluid onto the deflecting device, a member carried by said device and being adapted to further carry the fluid over a surface of the lubricant to the parts to be lubricated, said fluid becoming laden during its travel with a deposit of the non-liquid lubricant.

6. In a lubricator, the combination with a fluid-reservoir, of a receptacle for containing a non-liquid lubricant, a deflecting device in said receptacle, an open-mesh element carried by said device, means for conveying a quantity of fluid to said device, said element being adapted to further carry said lubricant over a surface to the parts to be lubricated, said fluid becoming laden during its travel with a deposit of the lubricant.

7. A receptacle for containing a non-liquid lubricating body, a deflecting device mounted thereon, a gauze carried thereby, said member being adapted to conduct a fluid deposited thereon, over a surface of said body to the parts to be lubricated.

8. A lubricator comprising a lubricant-reservoir, a receptacle for containing a mass of non-liquid lubricant, a lubricant-distributing device in said receptacle, means for dropping a lubricant onto said device so that it may be directed to the surface of said lubricant, and an open-mesh member carried thereby along which a combined lubricant may travel to the parts to be lubricated.

9. A lubricator comprising a fluid-reservoir, a receptacle for containing a mass of non-liquid lubricant, a deflecting and distributing device in said receptacle, means for dropping the fluid onto the device, an open-mesh member carried by the device, and along which a combined lubricant may travel, and means for equalizing the pressure in the lubricator with that of the pressure of the device being lubricated.

10. A lubricator comprising a fluid-reservoir, a receptacle for containing a non-liquid lubricant, a fluid-distributing device in said

receptacle and onto a surface of which said fluid may drip, an open-mesh member carried by said device, said member being adapted to further convey said fluid over a surface of the lubricant to a port.

11. A lubricator comprising a fluid-reservoir, a receptacle for containing graphite compounded with a suitable substance, a device in said receptacle for deflecting the flow of the liquid and for carrying it to a surface of said graphite, a fluid-conductor in said receptacle, and which is adapted to convey the deflected fluid to and over a surface of the graphite to the parts to be lubricated.

12. A lubricator comprising a fluid-reservoir, a receptacle for containing a mass of non-liquid lubricant, and a fluid-vehicle, a fluid-deflecting device on a surface of which said fluid may drip and then spread over a surface of the mass and an open-mesh member in said receptacle, said member being adapted to convey the fluid from the surface of said mass to the parts to be lubricated.

13. In a lubricator, the combination with an oil-reservoir, of a receptacle for graphite, means to convey a regulated quantity of oil onto a surface of the graphite, and means for deflecting the oil-flow, and to convey the same along a surface of and through the graphite to the parts to be lubricated.

14. In a lubricator, the combination with a reservoir for water, of a receptacle for containing graphite and soft soap, means for conducting said water out of its path of discharge and over a surface of said graphite means for ascertaining the amount of water being discharged, means to regulate the quantity of water so discharged, and means to carry the water along a surface of the graphite to the parts to be lubricated.

15. In a lubricator, the combination with an oil-reservoir, of a receptacle for containing graphite, a standard, a deflector carried thereby, an open-mesh member within said receptacle, means for conveying a quantity of oil onto the surface of the deflector, so that it may spread over a surface of the graphite, said open-mesh member being adapted to further carry the oil over a surface of the graphite to the parts to be lubricated, said oil becoming ladened during its travel with a deposit of the graphite.

16. A lubricator comprising an oil-reservoir, a receptacle for containing a mass of graphite, an oil-spreader, means for dropping oil onto the surface of said spreader and an oil-conveyer in the receptacle along which combined oil and graphite may travel to the parts to be lubricated.

17. A lubricator comprising an oil-reservoir, a receptacle for containing graphite, a deflecting device into the surface of which oil may drip, a wire-cloth in said receptacle, said wire-cloth being adapted to further convey the oil over a surface of the graphite.

18. A lubricator comprising a reservoir, a pressure-chest, a receptacle within said chest for containing a lubricant, a deflecting device by which the lubricant may flow and be spread over the surface to the other lubricant, and means for directing one lubricant from the reservoir to the deflecting device and to the lubricant in the chest.

19. A lubricator comprising a lubricant-reservoir, a pressure-chest, a receptacle within said chest for containing a lubricant, a device in said receptacle by which the first-mentioned lubricant may flow and be spent, means for directing the lubricant from the reservoir into the lubricant in the chest.

20. A lubricator comprising a lubricant-reservoir, a pressure-chest, there being a connection between said chest and reservoir, a receptacle within said chest, adapted to contain a lubricant, a flow-deflecting device in said receptacle, and a wire-cloth carried thereby.

21. A lubricator comprising a reservoir, a pressure-chest, there being a connection between said reservoir and chest, a receptacle within said chest adapted to contain a mass of lubricant, means within said receptacle adapted to direct a fluid from the reservoir onto a surface of the mass in the receptacle within the chest, means for carrying the fluid through the mass, and means for controlling the amount of flow of one lubricant into the other.

22. A lubricator comprising a lubricant-reservoir, a pressure-chest, a communication from one to the other, a receptacle within said chest adapted to contain a lubricant, means within said receptacle adapted to direct a flow thereto imparted upon the lubricant from the reservoir and into the receptacle within the chest, means for controlling the amount of flow of the lubricant, and a sight for ascertaining the flow.

23. A lubricator comprising a lubricant-reservoir, a pressure-chest, a receptacle within said chest adapted to contain a lubricant, a wire-cloth mounted on a member located in the receptacle and by which the lubricant is conveyed from the receptacle, means adapted to direct pressure into the reservoir and into the chest, means for controlling the amount of flow of one lubricant into the other, means to control the pressure, and a "sight" for determining the amount of flow.

24. A lubricator comprising a lubricant-reservoir, a pressure-chest, a receptacle within said chest adapted to contain a lubricant, means within the receptacle adapted to direct a flow over and through one lubricant, means for controlling the amount of flow of one lubricant to the other, and a glass tube through which to determine the amount of flow of the lubricator.

25. In a lubricator, the combination with a fluid-reservoir, provided with openings for introducing pressure through pipes directed thereinto, of a pressure-chest, a pipe directed

into said chest, a receptacle within said chest adapted to contain graphite, and means for introducing and controlling the flow of the fluid to the graphite.

26. In a lubricator, the combination with an oil or water reservoir, provided with openings for introducing pressure, of a chest, a pressure-pipe directed into said chest, pipes directed into said openings, a receptacle within said chest adapted to be filled with graphite and soap, means for causing the oil or water to pass from the reservoir to the receptacle, means for controlling the flow of oil or water, a device for deflecting the oil as it comes from the reservoir, a glass tube through which may be observed the amount of oil being dispensed.

27. In a lubricating apparatus, the combination with a reservoir, of pressure-pipes directed thereinto and extending upwardly and near the top thereof, a steam-chest, a receptacle within said chest and adapted to contain a lubricating substance, a device in said chest provided with a wire-cloth, means whereby the amount of lubricant discharged may be ascertained, a valve for controlling the amount of lubricant discharged, and a valve for controlling the pressure.

28. In a lubricator, the combination with a fluid-reservoir, of a receptacle for a lubricant, fluid deflecting and distributing means, means to convey the fluid to said means, and means to convey the fluid along a surface of and through the lubricant to the parts to be lubricated.

29. In a lubricator, the combination with a water-reservoir, of a receptacle for graphite and soft soap, means in said receptacle for deflecting the flow of the fluid to distribute it over the material in the receptacle means for conveying the fluid onto the means, and means for conveying the fluid along a surface of and through the material to the parts to be lubricated.

30. In a lubricator, the combination with a fluid-reservoir, of a receptacle for containing a compound lubricant, means for conducting

a fluid onto the surface of and through the lubricant, means for holding the lubricant away from a portion of said means, and means for ascertaining the quantity being used.

31. In a lubricator, the combination with a reservoir for fluid, of a receptacle for containing a mass of compounded lubricant, means for conducting to and spreading the fluid over the compounded lubricant, means for ascertaining the amount of fluid being conveyed to said lubricant, means to regulate the quantity of fluid so conveyed, and means to pass a fluid along surfaces of the lubricant to the parts to be lubricated.

32. In a lubricator, the combination with a fluid-reservoir, of a receptacle for containing a mass of compounded non-liquid lubricant, a deflecting device within said receptacle, means for conveying the fluid onto the deflecting device, a member carried by said device and being adapted to further carry the fluid over the surface of the lubricant to the parts to be lubricated, said member separating the mass from the means, said fluid becoming ladened during its travel with a deposit of the non-liquid lubricant.

33. A lubricator comprising a pressure-chamber, and a fluid-chamber connected therewith, a lubricant-receptacle within the pressure-chamber, a valve in the lubricant-receptacle, means for directing pressure from the pressure-chamber to the receptacle, a lubricant deflecting and directing device in the second receptacle, said receptacle being provided with a channel connecting with said device and with a conduit adapted to be connected with the parts to be lubricated, a valve connected with said conduit and said channel, and a single valve-plug for said valve.

Signed at Nos. 9 to 15 Murray street, New York, N. Y., this 25th day of February, 1905.

CHESTER COMSTOCK.

Witnesses:

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