

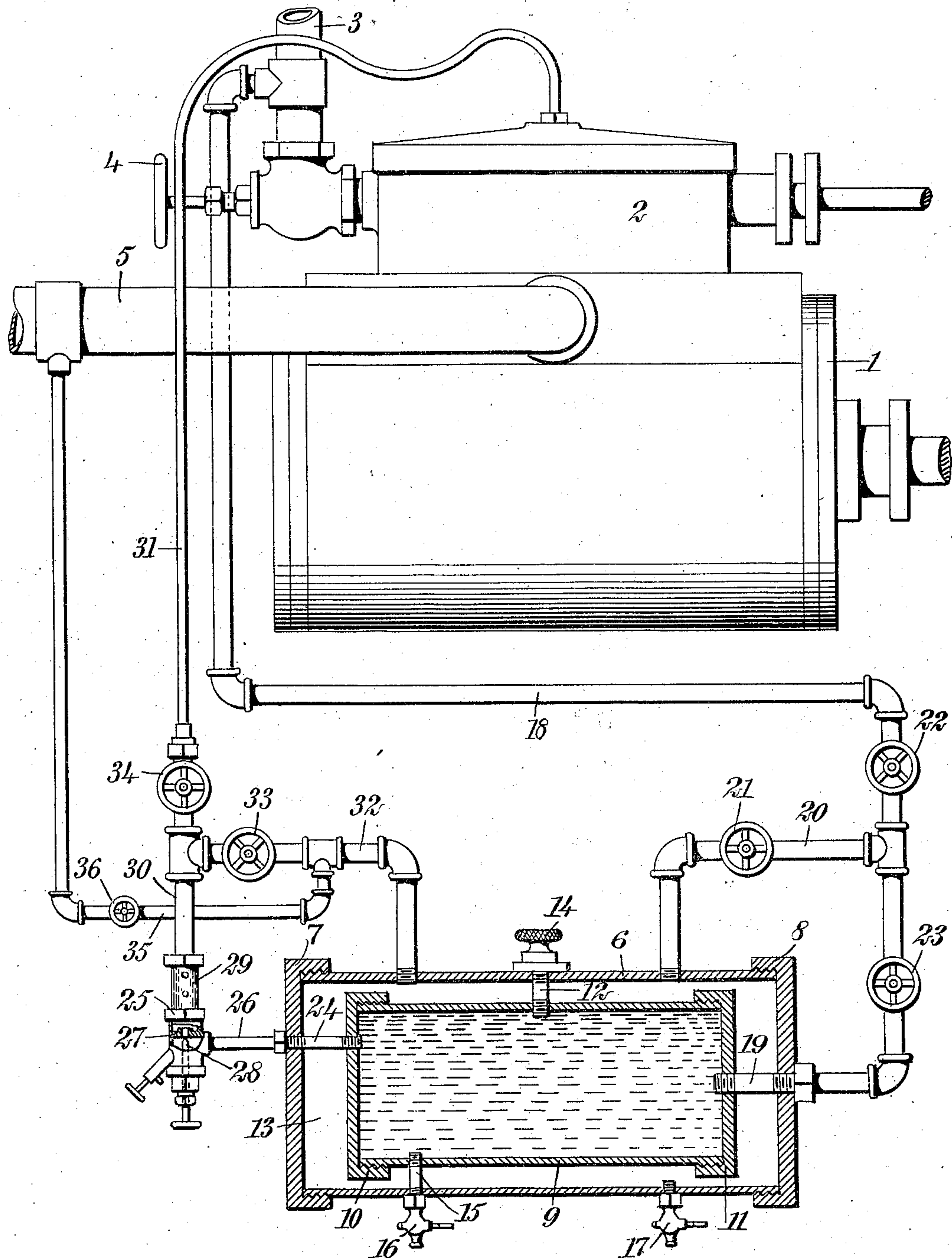
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C. L. GRAYBER & E. R. KERRIGAN.

LUBRICATOR.

APPLICATION FILED AUG. 14, 1908.



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LUBRICATOR.

No. 837,220.

Specification of Letters Patent.

Patented Nov. 27, 1906.

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To all whom it may concern:

Be it known that we, CHARLES LAYFETTE GRAYBER and EDWARD REDNOM KERRIGAN, citizens of the United States, and residents of Deer Lodge, in the county of Powell and State of Montana, have invented a new and Improved Lubricator, of which the following is a full, clear, and exact description.

This invention relates to lubricators, and is particularly useful in connection with devices of this character employed for the purpose of lubricating steam-engine cylinders.

The object of the invention is to provide a lubricator simple, strong, and durable in construction and in which the oil or other lubricant may be preheated by steam in order to permit it to flow freely in cold weather or to prevent its solidification, and thereby prevent the clogging of the apparatus.

A further object of the invention is to provide a lubricator in which the oil is forced steadily and regularly into the steam-chest by live-steam pressure, in which the sight-feed is constantly under the eye of the engineer, and which is easily regulated by the latter.

The invention consists in the construction and combination of parts, to be more fully described hereinafter and particularly set forth in the claims.

Reference is to be had to the accompanying drawing, in which the figure is a side elevation of our invention, showing the same applied to a steam-engine cylinder and showing a part in vertical cross-section.

Before proceeding to a more detailed explanation of our invention it should be understood that we employ an oil-chamber having a steam-jacket around the same, into which live steam is introduced to prevent the oil from freezing or becoming clogged.

The invention is particularly useful in connection with steam-engines intended for use in the open, such as traction-engines or the like, in which when used in cold weather the oil is liable to be affected by the low temperature. The oil is injected into the cylinder by means of live-steam pressure and through a sight-feed having an injecting-nozzle, by means of which the oil is forced from the oil-chamber drop by drop, and the flow through

is regulated by means of a needle-valve of the usual construction.

Referring more particularly to the drawing, 1 represents a steam-engine cylinder of the usual type, having a steam-chest 2, within which is located a slide-valve. A steam-pipe 3, having a throttle-valve 4, leads to the steam-chest and provides means for the entrance of the steam thereinto. An exhaust-pipe 5 leads from the steam-chest to the atmosphere or to a condenser in the usual manner.

We provide a cylinder 6, formed of cast-iron or other suitable material, having threaded ends upon which are screwed cylinder-heads 7 and 8. The cylinder-heads 7 and 8 are screwed tightly into place and do not require the use of gaskets. Within the cylinder 6 is located a smaller cylinder 9, having similar cylinder-heads 10 and 11, screwed upon its threaded ends, as in the cylinder 6. A pipe 12, having threaded ends, is screwed into properly-threaded openings in the cylinder-walls and affords communication to the inner cylinder through the steam-jacket chamber 13, formed between the cylinders. A screw plug or cap 14 is used to close the opening of the tube 12, which is intended for the purpose of filling oil into the cylinder 9, which constitutes the oil-chamber. A similar pipe 15, having threaded ends and fitted in proper tapped holes through the lower sides of the cylinders, constitutes a drain by means of which the cylinder 9 may be emptied, if so desired, and is provided with a petcock 16 for the purpose. A petcock 17 is located in a tapped opening in the lower side of the cylinder 6 to afford means for draining the same.

A steam-pipe 18 leads from the steam-pipe 3 to the cylinder-head 8, at which it is screwed to the end of a short pipe 19, having threaded ends screwed into openings in the cylinder-heads 8 and 11, thereby effecting communication between the steam-pipe 18 and the oil-chamber. A branch pipe 20 leads from the pipe 18 and opens through the cylinder 6 into the steam-jacket between the cylinders. The branch pipe 20 is provided with a throttle-valve 21, by means of which communication between the pipe 18 and the

steam-jacket 13 may be shut off. The pipe 18 has a similar throttle-valve 22 between the branch pipe 21 and the steam-pipe 3 and a second throttle-valve 23 between the branch pipe 21 and the cylinder-head.

The pipe 24, having its threaded ends screwed in proper openings in the cylinder-heads 7 and 10, effects communication between the oil-chamber and a sight-feed 25 through a pipe 26. The sight-feed may be of the usual type and has an injecting-nozzle 27, the flow through which is regulated by a needle-valve 28. The sight-feed, further, has a glass-tube section 29, through which the flow of the oil may be watched by the engineer.

A pipe 30 leads from the sight-feed to a second pipe 31, which communicates with the steam-chest 2 of the engine. A pipe 32 effects communication between the pipe 30 and the steam-jacket 13 and is provided with a throttle-valve 33, by means of which this communication may be shut off. Above the pipe 32 the pipe 30 has a similar throttle-valve 34, by means of which the flow through the pipe may be adjusted. A by-pass pipe 35, having a throttle-valve 36, opens communication from the pipe 32 to the exhaust-pipe 5 of the engine.

The oil-chamber, constituted by the cylinder 9, may be filled through the pipe 12. If the temperature is such that the oil needs no heating, the valves 21, 33, and 36 are closed, while the remaining valves are opened, permitting the flow of steam through the pipe 18 into the oil-chamber. The steam-pressure forces the oil out into the sight-feed.

It will be understood that from the condensation of the steam there will be a certain amount of water or steam and water in the pipes 30 and 31, and consequently as the oil, with a small quantity of steam, is forced out through the sight-feed the drops of oil will bubble up through the moisture and so be injected with the steam into the steam-chest for lubricating the valves, piston, &c. However, if it is desired to heat the oil the valves 21 and 33 are opened, whereby the steam is permitted to flow through the steam-jacket 13 and to circulate about the inner or oil chamber, thereby thoroughly heating the same. The steam then flows out from the steam-jacket through the pipe 32 and may enter the steam-chest through the pipe 31, together with the oil. If so desired, however, the valve 33 may be closed and the steam may pass through the by-pass pipe 35, the valve 36 being open, and so flow into the exhaust-pipe 5. The flow of oil may be regulated at the sight-feed in the usual manner.

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

1. A lubricator comprising an oil-chamber having a steam-jacket, means for admitting

steam to said chamber and to said jacket, a pipe communicating with said chamber and said jacket, and discharging into the steam-chest of an engine, and means for effecting communication between said jacket and the atmosphere.

2. A lubricator comprising an oil-chamber having a steam-jacket, a pipe having communication with said chamber and said jacket, means for shutting off said communication, a pipe discharging into the steam-chest of an engine and communicating with said chamber and said jacket, said pipe having means for shutting off communication with said chamber and said jacket, and a by-pass effecting communication between said jacket and the atmosphere.

3. A lubricator comprising an oil-chamber having a steam-jacket, means for simultaneously introducing steam into said chamber and into the said jacket, a pipe communicating with said chamber and discharging into a steam-chest, said pipe having a sight oil-feed, a second pipe communicating with said jacket and said first pipe, means for shutting off said communication between said first pipe and said jacket, and a by-pass communicating with said second pipe, and discharging into the atmosphere.

4. A lubricator comprising an oil-chamber having a steam-jacket, a live-steam pipe communicating with said oil-chamber, and having a branch communicating with said jacket, said branch having a throttle-valve, and said pipe having a throttle-valve between said branch and said chamber, an outlet-pipe from said chamber, discharging into the steam-chest of an engine, and having a sight oil-feed, a pipe having a throttle-valve, and effecting communication between said jacket and said outlet-pipe, and a by-pass having a throttle-valve and effecting communication between said jacket and the atmosphere.

5. A lubricator having a cylinder, and a second cylinder therewithin, constituting an oil-chamber, said cylinders forming a steam-jacket therebetween, means for introducing steam into said oil-chamber and into said jacket, an outlet-pipe from said chamber to the steam-chest of an engine, and having a sight-feed and a throttle-valve, a second pipe communicating with said first pipe and said jacket and having a throttle-valve, and a by-pass effecting communication between said second pipe and the atmosphere.

6. A lubricator comprising a cylinder, a second cylinder therewithin, constituting an oil-chamber, said cylinders having a steam-jacket therebetween, a steam-pipe communicating with said inner cylinder through said outer cylinder, a branch pipe communicating with said jacket, means for shutting off the flow of steam through said steam-pipe and said branch pipe, an outlet-pipe leading

from said inner cylinder, through said outer cylinder, to the steam-chest of an engine, and having a sight-feed and a throttle-valve, a second outlet-pipe leading from said jacket to said first outlet-pipe, and having a throttle-valve, and a by-pass effecting communication between said second outlet-pipe and the atmosphere, and having a throttle-valve.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

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Witnesses:

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