H. KREISS.

OILER FOR LOCOMOTIVES.

APPLICATION FILED MAR. 6, 1912.

1,121,637.

Patented Dec. 22, 1914.

Fig. 1.

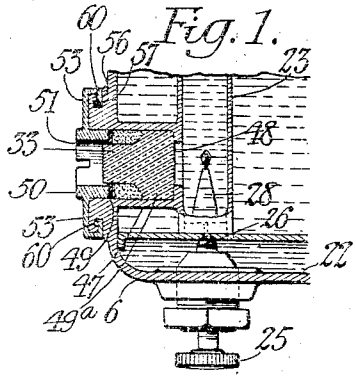


Fig. 2.

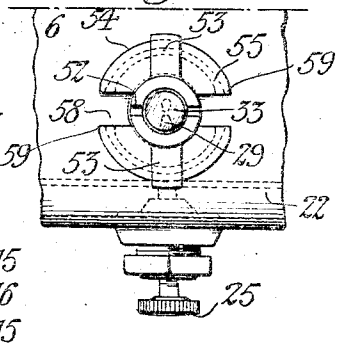
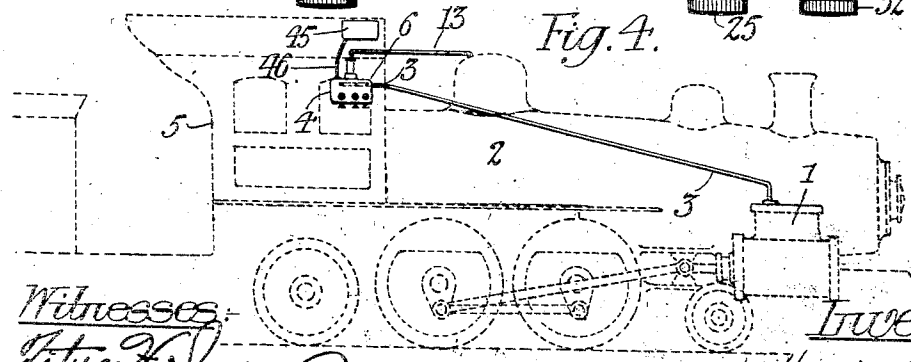


Fig. 3.

Fig. 4.



Witnesses:

Titus F. Dove.

Lorenz L. Pratt.

Inventor:

Henry Kreiss

by B. B. Stickney

his Attorney.

UNITED STATES PATENT OFFICE.

HENRY KREISS, OF ELIZABETH, NEW JERSEY.

OILER FOR LOCOMOTIVES.

1,121,631. Specification of Letters Patent. Patented Dec. 22, 1914.

Application filed March 6, 1913. Serial No. 751,931.

To all whom it may concern:

Be it known that I, HENRY KREISS, a citizen of the United States, residing in Elizabeth, in the county of Union and State of New Jersey, have invented certain new and useful Improvements in Oilers for Locomotives, of which the following is a specification.

This invention relates to oilers for the driving cylinders and compressed-air pumps of locomotives.

It has been proposed to place an oiler directly upon the steam cylinder of a stationary engine, and to connect the oiler to the cylinder in such a manner as to depend upon the operation of the steam engine itself to cause the oil to flow into the cylinder; but such a plan is impracticable to adopt in a locomotive, where it is impracticable for the engineer to reach the cylinder and give frequent attention to the operation of the oiler.

The principal object of my invention is to lubricate the steam cylinders and air pump cylinders of locomotives, by means of an oiler that will positively supply the oil, and yet be constantly under the ready inspection and control of the engineer in the cab, remote from the cylinders to which the oil is supplied. To this end I lead tubes from the cylinders or their steam chests back to the locomotive cab, and connect the tubes to a pump which is positively driven by a constant live-steam connection directly from the boiler of the locomotive, and I prevent the pumping of an excess of oil by means of a back-pressure or back-choking device, which accomplishes the object of slowing down the pump until it delivers the exact amount of oil required; the oil being then delivered in the form of drops, at such points that they can be seen by the engineer, and the observation of which enables him to regulate the speed of the oil pump. The drops rise in water of condensation, which forms in pockets or wells opening into the upper ends of said tubes, and overflowing into said tubes and thence gravitate to the steam chests of the locomotive cylinders.

I have further contrived to supply all the cylinders of the locomotives by means of a single oil pump, which is compactly arranged with its plunger extending within the oil receptacle and having its parts designed for convenient assembling and disassembling.

The device may be inexpensively constructed and readily taken apart for inspection, and repair or renewal of worn parts.

Oil is pumped from the receptacle into a back-pressure compartment, in open communication with which are the wells aforesaid communicating with the tubes which lead to the steam chests, etc.; provision being made for controlling the speed of the pump and for causing the oil to be delivered in drop form behind bulls'-eyes; the pressure of the oil delivered by the pump being very great, so that a positive feeding thereof to the drop formers is assured. The speed of the pump is regulated by the engineer to suit the demands of each cylinder or part to which the oil is fed.

In the accompanying drawings Figure 1 is a sectional elevation of a portion of an oiler, to illustrate the manner of detachably securing the bull's-eye therein. Fig. 2 is a front elevation of the parts seen at Fig. 1. Fig. 3 is a front sectional elevation of the oiler. Fig. 4 is a diagram to illustrate the mounting of the oiler in a cab of the locomotive.

To the steam chests 1 of a locomotive 2 is led a tallow-pipe or oil-feeding pipe 3 from an oiler 4 placed in a cab 5 of the locomotive, and constructed in accordance with my improvements. This oiler may be in the form of a box-like oil receptacle 6: the oil therein being designated as 7. An oil pumping piston or plunger 8 works up and down in a cylinder or tube 9, preferably placed vertically within said oil receptacle 6. This plunger carries at its upper end a piston head 10 of larger diameter than 8, and working in a steam cylinder 11; to one end of which steam is supplied through a three-way valve 12, which is in direct communication with a supply pipe 13 which takes an unlimited supply of live steam directly from the boiler of the locomotive, as at Fig. 4, said pipe 13 being connected directly to the usual steam drum of the boiler. The steam effects the down stroke of the piston 10; and a spring 14 effects the return stroke. Upon the plunger 8 is a tappet or arm 15 working in a slot 16 in a link 17, the upper end of which is pivoted at 18 to an arm 19 of the three-way valve. At Fig. 3, the valve is shown as open to the steam supply 13 and closed to the atmosphere; but upon the conclusion of the down stroke of the piston 10, the arm 15 strikes the bottom of the slot 16

and pulls down the link, and thereby turns the three-way valve to shut off the steam at 13 and to open the cylinder 11 to the atmosphere through port 16^a, so that the steam may be exhausted, whereupon the spring 14 lifts the piston 10 to the top of cylinder 11. At the conclusion of the up-stroke, the arm 15 strikes the top of the slot 16, and restores the three-way valve to the Fig. 3 position, so that steam is again admitted and the pump plunger forced down.

A valve 20 is provided to control the admission of oil into the pump-cylinder 9: and a valve 21 closes during the up-stroke of the plunger 8. By this means oil is forced into a back-pressure compartment 22, whence it passes into wells 23, from which lead the tallow pipes 3 to the steam cylinders of the locomotive. These wells 23 are hence in open communication with the steam chest, and serve as pockets in which steam condenses, thereby wholly or partly filling the wells with water 24. The oil enters these wells from the back-pressure compartment 22, and rises in the form of drops to the surface of the water 24, and escapes or overflows into the pipes 3, through which it gravitates to the steam chest 1.

For preventing the pump from racing under the supply of live steam from the boiler, there are provided back-throttles or chokes 25, one at each of the wells 23; these devices being in the form of screws, having pointed tips 26, which may nearly or entirely close apertures 27, through which oil must pass from the back-pressure compartment 22 into nipples or nozzles 28 within the wells 23; these nozzles having small openings or tips 29 to facilitate the formation of drops of oil. Each of the back-throttles 25 may be regulated independently of the other, and may coöperate with the other to regulate the speed of the pump; making it possible for the engineer to feed more oil to one than to the other, when required without the necessity of giving special attention to the speed of the oil pump which it will be seen is taken care of automatically by merely adjusting the back-throttle in each instance until the desired rate of formation of drops is obtained.

The oil receptacle is illustrated as having a third well 30, similar to 23, and having a pipe 31 to lead to the steam cylinder of the compressed-air pump usually provided upon the locomotive, for working the brakes; a third back-throttle or choke 32, similar to 25, being employed at this point, and coöperating with back-throttles 25 to determine the speed of the pump. The regulator 32 may be set relatively closed so that very little oil will be supplied to the cylinder of the air pump, while the regulator 25 may be relatively open so that considerable oil is supplied to the steam chests of the locomotive-driving cylinders; but in no case will the speed of the oil pump be in excess of that required to supply the oil consumed in these unequally consuming steam cylinders.

The nozzles 28 are placed behind bulls'-eyes 33, thus enabling the engineer in a simple and sure manner to adjust the action of the oil-pump to the individual requirements of all the cylinders. As many wells with their appointments as desired may be placed in the oil receptacle, and all may be supplied by the single or common oil pump, which will automatically run at the exact speed necessary for positively supplying oil at the required rate in each of the wells or in as many of them as may be in use at any time.

The cylinder 11 is removably attached to the oil receptacle 6, said cylinder having a cylindrical base 34 which is threaded into a boss 35 formed on the top of the oil receptacle; this base being provided with facets 36 or other means to be engaged by a wrench. The head of the plunger cylinder or tube 9 may be threaded at 37 into the top of the oil receptacle within the boss 35, so that said cylinder 9 may be readily detached; the bottom of said tube having a flange 38 to bear down upon a boss 39 into which the lower end of the cylinder 9 is inserted; a packing 40 being provided, against which the flange 38 may bear so as to make the structure liquid tight. The pump may be provided with a stuffing-box 41, in which the packing may be held by a nut 42 threaded upon a boss 43 formed upon the top of the receptacle 6 within the boss 35. Spring 14 may bear down on said nut and up against tappet 15. After the cylinder 11 is removed, the nut 42 may be unscrewed and then the cylinder 9 may be also unscrewed and taken out for inspection and cleaning, etc., the opening for the stuffing box 41 in the boss 43 being large enough to make possible the withdrawal of the lower end of the tube 9 which has the valve box projecting from its sides. In the steam cylinder 10 may be provided exhausts 44 for the steam; these to be uncovered just as the piston 10 completes its down stroke. It will be seen that the oil is positively fed or forced from the oil receptacle to the tallow pipes, and that there is no delicacy of action or liability of stoppage, or danger of waste of oil.

The device is especially adapted to long runs, since an oil tank 45 within the cab may have a pipe 46 leading directly into the oil receptacle 6, so that an unlimited amount of oil can be supplied to the steam cylinders without trouble or delay.

The glass bull's-eye 13 may be inserted in a cup or socket 47 projecting within the oil receptacle 6 just in front of each of the

wells 23, 30; said socket having in its inner end a sight opening 48, which also constitutes an opening in the side of the well just opposite the tip of the drop forming nozzle 28. The bull's-eye is held in place by a rubber gasket 51 (pressing against the enlarged inner end or head 49ª of the bull's-eye) and a metal washer 49; and a securing nut 50 is arranged upon the outside of the oil-receptacle, where it is accessible and easily manipulated, so that it is unnecessary to open the receptacle in order to remove the bull's eye or the gasket 49. The nut comprises an annular or perforated body (through which the bull's-eye may be seen) having a nick 52 for a screw-driver or tool, and also having opposite projections 53, whose ends are turned over the cylindrical edges 54 of a boss 55 formed upon the outside of the receptacle 6; said boss having a peripheral groove 56 in which hook fingers 57 formed upon the projections 53. The boss is slotted or grooved at 58 to permit the nut to be placed in position when the nicks 52 stand vertically or at right angle to the position seen at Fig. 2. The projections 53 are inserted within the slot 58, and then the nut is turned, the fingers 57 entering the grooves 56. To facilitate engagement of the said fingers and grooves, the edges of the boss may be beveled or chamfered as at 59, and the parts may be fitted so that the nut clamps the bull's-eye firmly in position. By turning the bull's-eye to the left to Fig. 2 position, the fingers 57 will emerge into the slots 58, whereupon the nut can be picked off and the other parts removed. The fingers may also, if desired, have crooks 60 extending into an undercut groove in the boss.

It will be seen that the oiler operates without the aid of the engines of the locomotive, and is independent of the pressure in the locomotive cylinders, and can operate when the locomotive is at rest. It can conveniently be placed in the cab of a locomotive, and easily inspected and controlled, and embodies all the advantages of a forced oil feed, while permitting the feed to be controlled by the engineer upon inspecting the drops of oil that are being fed. Moreover the oiler pump can be operated by other fluid than steam, and hence the field of usefulness of the oiler is very great. It will be seen that the single plunger of the oil pump may operate very many oil feeds; and that there is no necessity to provide a complicated set of pipes and tubes, especially upon the inside of the oil receptacle. When the locomotive is stationary, the engineer may shut off the supply of oil to the steam cylinders, while continuing the supply of the steam cylinder of the air-pump for the brakes; and the speed of the oil pump will diminish correspondingly.

Variations may be resorted to within the scope of the invention, and portions of the improvements may be used without others.

Having thus described my invention, I claim:

1. An oiler for the cylinders of locomotives, adapted to be mounted in the cab of a locomotive, comprising, in combination, an oil receptacle having a pump to take oil therefrom, pump-operating means in open communication with the boiler, steam-valve mechanism controlled by said pump-operating means, wells in said oiler to hold water of condensation, said wells in open communication with the cylinders or steam chests of the locomotive, drop-forming devices opening into said wells and in communication with the delivery side of said pump, the oiler having a sight opening through which the drops can be seen, and independently adjustable means between said drop-forming devices and said pump for regulating the speed of the pump by means of back pressure at the delivery side thereof, whereby the adjustment of said regulating means may not only control the flow of drops in each well independently of the other, but may also automatically control the speed of the pump.

2. An oiler comprising, in combination, an oil receptacle having a pump to take oil therefrom, pump-operating means, steam-valve mechanism controlled by said pump-operating means, a well in said oiler to hold water of condensation, and to communicate with the cylinder or steam chest to be oiled, a drop-forming device in said well and in communication with the delivery side of said pump, the oiler having a sight opening through which the drops can be seen, and adjustable means between said drop-forming device and said pump for regulating the speed of the pump by means of back pressure at the delivery side thereof.

3. An oiler comprising, in combination, an oil receptacle having drop-forming devices, and an oil pump comprising a steam cylinder and a plunger cylinder both removably attached to the oil receptacle; the head of the plunger cylinder or tube being detachably threaded into said receptacle, and the bottom of said tube having a flange to bear down upon a packing.

4. An oiler comprising, in combination, an oil receptacle having drop-forming devices, and an oil pump comprising a steam cylinder and a plunger cylinder both removably attached to the oil receptacle; the head of the plunger cylinder or tube being detachably threaded into said receptacle, and the bottom of said tube having a flange to bear down upon a packing, and a gland being provided for the upper end of said tube.

5. An oiler comprising, in combination,

an oil receptacle having drop-forming devices and an oil pump comprising a steam cylinder and a plunger cylinder both removably attached to the oil receptacle; the head of the plunger cylinder or tube being detachably threaded into said receptacle, and the bottom of said tube having a flange to bear down upon a packing; the upper end of said tube surrounded by packing, and a nut threaded upon a boss within said boss to confine said packing.

6. An oiler comprising an oil receptacle having drop-forming devices and an oil pump comprising a steam cylinder having a base which is threaded into a boss formed on the receptacle, and a plunger cylinder or tube threaded into said receptacle within said boss; the bottom of said tube having a flange to bear down upon a packing, and a gland being provided for the upper end of said tube.

7. The combination of an oil tank, a pump, a closed compartment into which said pump pumps oil from said tank, said compartment forming a pressure reservoir, steam-operated pump-operating means constructed to cause said pump to deliver oil at a pressure substantially higher than the pressure of the steam by which the pump is driven, wells in said tank to fill with water of condensation, drop-forming devices in said wells, said drop-forming devices in communication with said closed compartment, and independently adjustable means to regulate the flow of oil from said closed compartment to said drop-forming devices; said tank having sight openings opposite said drop-forming devices, and said wells being provided with discharge orifices, in communication with the source of steam from which the pump is driven, in a manner to lubricate moving parts under pressure of steam from said source.

8. The combination of an oil tank, a pump, steam-operated pump-operating means constructed to cause said pump to deliver oil at a pressure substantially higher than the pressure of the steam by which the pump is driven, said pump connected to an unceasing source of supply of steam, a well to fill with water of condensation, a drop-forming device in said well, said drop-forming device in communication with said pump, to receive oil therefrom, and adjustable means to regulate the flow of oil to said drop-forming device; said well being provided with a discharge orifice communicating with the source of steam from which the pump is driven in a manner to lubricate a moving part under pressure of steam from said source.

HENRY KREISS.

Witnesses:
CHARLES REKEMEIER,
WM. J. E. COCKER.