No. 652,290. Patented June 26, 1900.

J. POWER.

LUBRICATOR.

(Application filed Dec. 15, 1899.)

(No Model.)

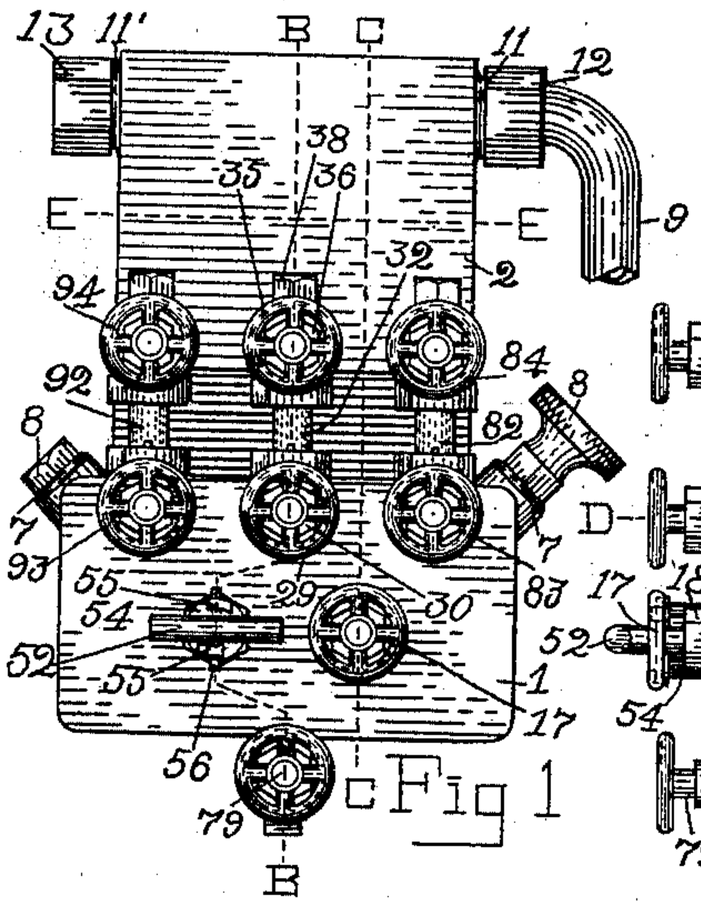

Fig 1

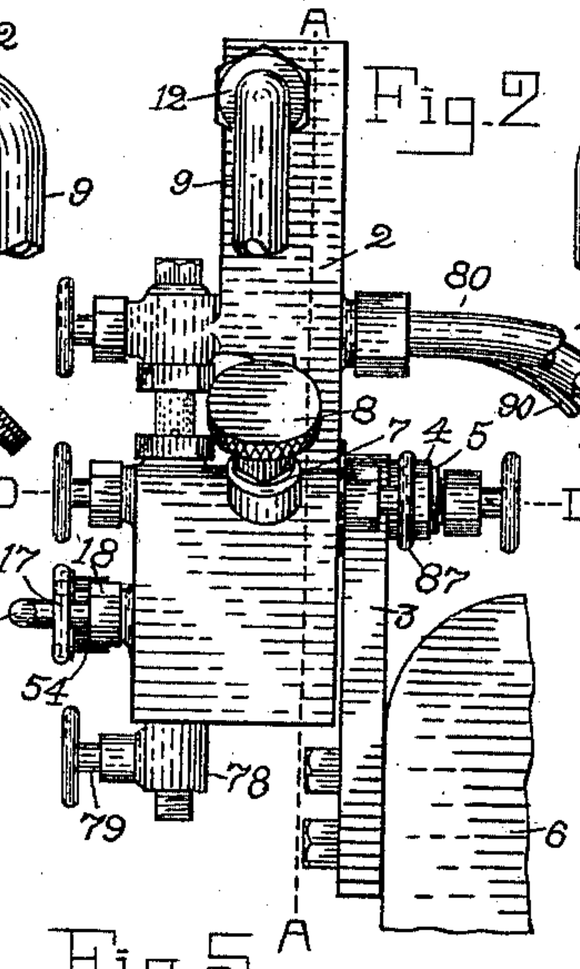

Fig 2

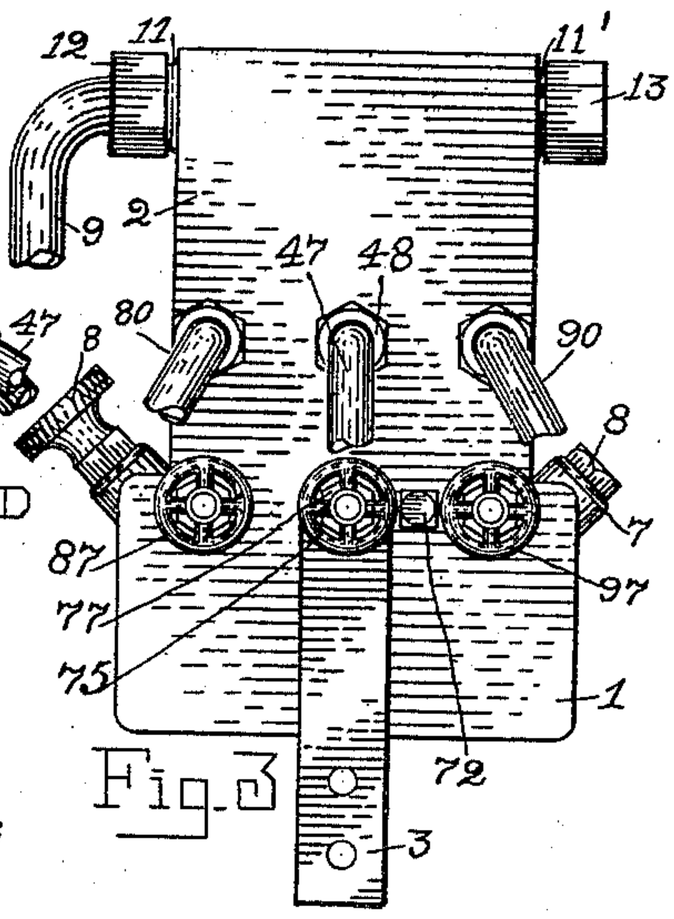

Fig 3

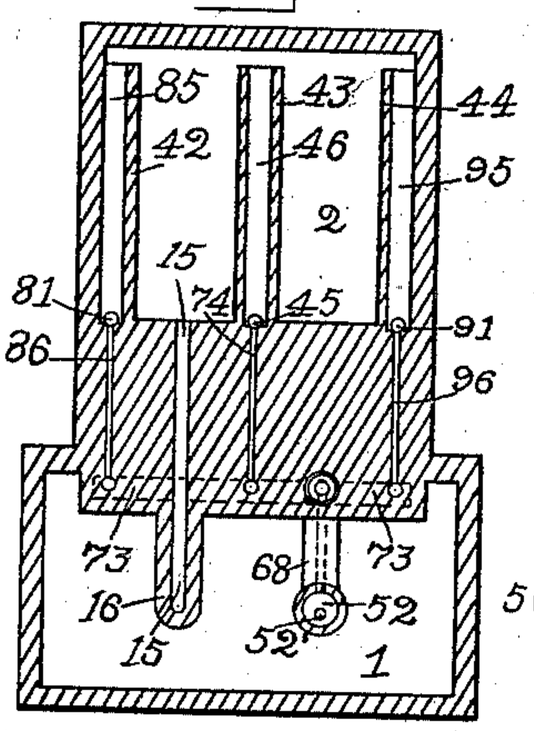

Fig 4

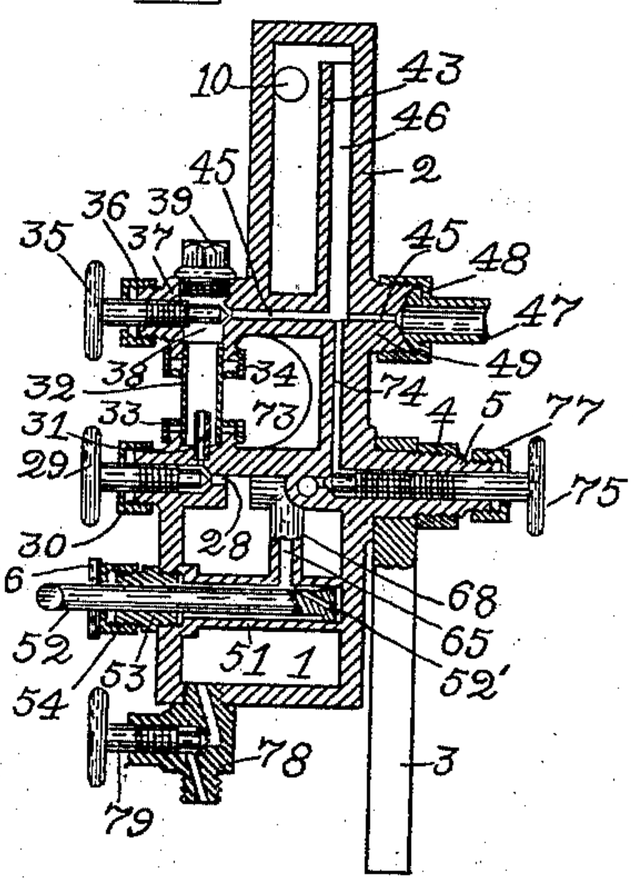

Fig 5

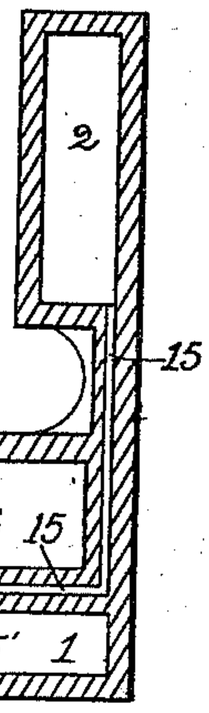

Fig 6

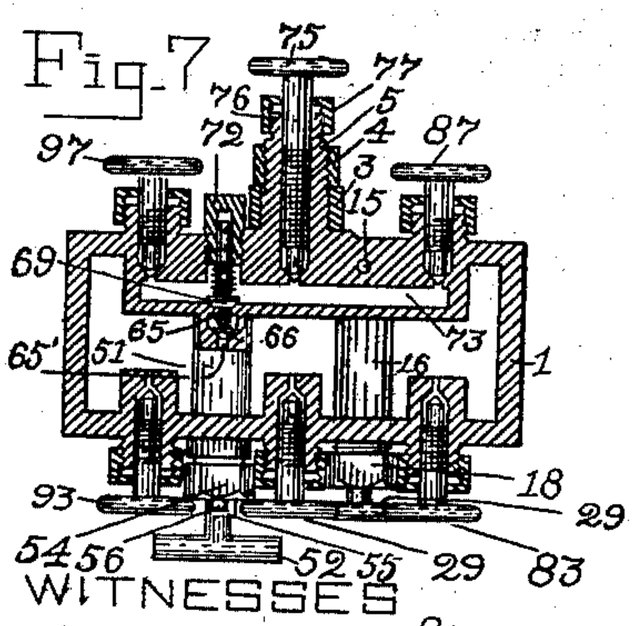

Fig 7

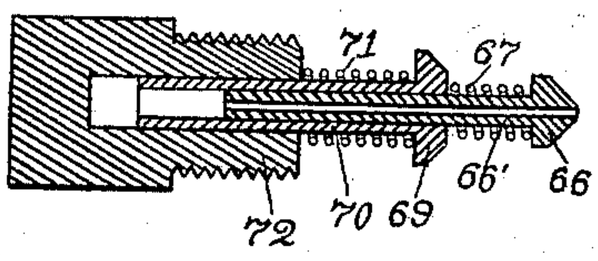

Fig 9

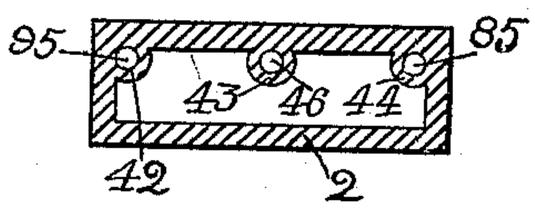

Fig 8

WITNESSES

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LUBRICATOR.

SPECIFICATION forming part of Letters Patent No. 652,290, dated June 26, 1900.

Application filed December 15, 1899. Serial No. 740,384. (No model.)

To all whom it may concern:

Be it known that I, JOHN POWER, a citizen of the United States of America, and a resident of the borough of Manhattan, city, county, and State of New York, have invented certain new and useful Improvements in Lubricators, of which the following is a specification.

This invention relates to new and useful improvements in lubricators, and refers to that class of lubricators in which the lubricant is caused to flow from a reservoir into pipes leading to the parts to be lubricated by the force of gravity derived by admitting water from a steam-condensing chamber into the lubricant-reservoir. The water being the heavier causes the lubricant to elevate and flow from outlet-passages in the upper part of the reservoir and to enter into leading or so-called "tallow" pipes.

The invention has reference principally to steam-engine lubricators, and has special reference to lubricators used on locomotive-engines.

One object is to provide improved means for regulating the supply of oil to the working parts and to so improve the construction as to avoid the faults of the lubricators now in common use—namely, that of permitting oil to flow from the oil-reservoir into the boiler and admitting water from the condenser into the tallow-pipes.

A further object is to furnish means for forcing by hand a quantity of oil from the reservoir into one or more of the tallow-pipes for the purpose of giving the parts supplied thereby an extra charge of oil when needed and also to be used in emergency, as when the sight-feed glasses break or if the gravity feed-passages should become clogged, an object being to so arrange the hand feeding device that the operator can measure and regulate the amount of oil displaced thereby.

With these objects in view my invention consists of the novel devices and the improved construction and combinations of parts hereinafter described.

In the annexed drawings, Figure 1 is a front view of a lubricator embodying my improvements. Fig. 2 is a side elevation, and Fig. 3 is a rear elevation, of same. Fig. 4 is a sectional view taken on the dotted line A A in Fig. 2 and shows the parts as they appear looking to the left in Fig. 2. Fig. 5 is a sectional view taken on the dotted line B B in Fig. 1 and shows the section and some of the parts on the left of the line. Fig. 6 shows the section on the line C C in Fig. 1. Fig. 7 is a horizontal sectional view taken on the line D D in Fig. 2, showing the parts as they appear looking downwardly. Fig. 8 shows the section on the line E E in Fig. 1. Fig. 9 is a sectional view on an enlarged scale and taken on a center line through the check-valves, more fully hereinafter described.

Referring to the several figures, the oil-reservoir 1 and the steam-condenser 2 are shown constructed integral. They are made, preferably, of cast metal, and the chambers therein are cored out, and the oil and water passages are cored and bored. A tubular projection 5 is formed on the upper central part of the rear wall of the reservoir 2 and extends through an aperture in the upper part of the support-bracket 3, which is securely held against a shoulder thereon by the binding-nut 4. The bracket 3 is bolted at its lower end to a shown part of a boiler 6 and supports the lubricator at a suitable elevation above all the parts to be lubricated. The oil-reservoir has filler-openings at 7 7, through which the oil can be poured to fill the reservoir. The filler-plugs 8 8 are screwed into and close the openings 7 7 when the reservoir is full. The steam-pipe 9 is coupled to the tubular projection 11 near the upper part of the condenser 2, it being held thereon by the coupling-nut 12. The opposite projection 11′ is also adapted to be coupled to the steam-pipe should it be desired to connect on that side. A cap-nut 13 is screwed onto and closes the aperture through the projection 11′. The apertures through the said steam-inlet projections 11 and 11′ enter the condenser-chamber near its upper part, as shown at 10 in Fig. 5, and the steam from the boiler enters the condenser therethrough. The water of condensation passes from the condenser downwardly through the passage 15 through the tube 16 and enters the oil-reservoir through an opening 15′ in the part of the tube 16 below the water-valve 17. This water-valve 17 has a threaded stem and is entered into a threaded aperture in the reservoir and tube 16 and may be closed to prevent the

water from entering the oil-reservoir. A packing-nut 18 is screwed on the projection of the reservoir-wall around the valve-stem and is adapted to receive and compress the packing around the valve-stem in the usual manner. An oil-passage opens from the upper central and front part of the oil-reservoir at 28, and oil may pass therethrough to the central nozzle 31. This nozzle is a small tube set into a recess in the upper part of the oil-reservoir and projects upwardly into the central sight-glass 32.

Valve 29 is threaded into a tubular projection on the oil-reservoir, and the packing-nut 30 is screwed on the said projection and is adapted for holding the packing for the stem of valve 29. This valve 29 is arranged to regulate the flow of oil from the reservoir through the passage 28.

The sight-glass 32 is supported at its lower end in a recess in the oil-reservoir and at its upper end fits in an aperture through the feed-arm 37. The sight-glass 32 is adapted to be filled with water, through which oil from the nozzle 31 passes upwardly a drop at a time. The lower packing-nut 33 and the upper packing-nut 34 are threaded to the sight-glass-retaining parts and are adapted to hold packing against the glass to prevent leaking. The sight-glass aperture 38 in the feed-arm 37 is bored entirely through the arm and is large enough to permit the sight-glass to be entered from the top. After the glass is entered to place the upper end of the said aperture is closed by the threaded plug 39.

An oil-passage 45 extends from the aperture 38 rearwardly through the base of the condenser and the coupling projection 49 and opens into the central tallow-pipe 47. A valve 35 is screwed into the feed-arm 37 and is adapted for regulating the flow of oil through passage 45. The packing-nut 36 is screwed upon the arm 37 and is adapted for containing the packing for the stem of valve 35.

Inside of and on the rear wall of the condenser 2 are formed three perpendicular hollow ribs 42, 43, and 44, extending from the base of the condenser to nearly the top of the condenser-chamber and having steam-passages therein extending their entire length. The passage 46 in the rib 43 opens at its lower end into the central oil-passage 45 and at its upper end into the condenser-chamber. Dry steam passes from the upper part of the condenser-chamber down the passage 46 and into the oil-passage 45, where it mixes with the oil and then passes and carries the oil into the tallow-pipe 47 and thence to the parts to be lubricated. The tallow-pipe 47 is coupled to the projection 49 on the condenser by the coupling-nut 48 in the usual manner.

The hand feed device consists of an oil-pump constructed in the oil-reservoir 1. The pump-cylinder 51 is formed integral with the oil-reservoir and is disposed horizontally between the front and rear walls thereof. The pump-plunger 52 has a T-handle on its outer end, by which it may be operated, and on its inner end has an enlarged part for engagement with the inner periphery of the cylinder and is perforated diagonally, as shown at 52′ in Figs. 4 and 5, to allow the oil to flow from the rear end of the pump-cylinder forwardly to the oil-passage 65 in the tube 68, when the end of the plunger is adjusted backwardly beyond the said passage. A lock-pin 56 is inserted through an aperture through the pump-plunger, near the handle end, and is adapted for engaging with hooks on the packing-nut 54 to hold the plunger locked in its inner position. The pump-center fitting 53 has a smaller bore than the pump-cylinder, and it is screwed into a threaded recess in the reservoir, near the front end of and centrally in line with the pump-cylinder. A packing-nut 54 is screwed upon the fitting 53 and has the usual packing-recess. A pair of hooks 55 55 (see Figs. 1 and 7) are formed on the outer end of packing-nut 54 and are adapted for engagement with the pump lock-pin 56.

An oil-passage 65 extends from the upper part of the oil-reservoir at 65′ rearwardly and downwardly through the tube 68 to the oil-pump, and a check-valve 66, having a tubular stem 66′, is mounted in a bored aperture through another check-valve 68 (see Figs. 7 and 9) and is furnished with a coil-spring 67 and is adapted to prevent oil from flowing bach into the reservoir, but permits it to be drawn into the pump-cylinder. Upon pressing the pump-plunger inwardly the oil will be forced up through the tube 68 and into the hand-feed oil-passage 73. (See Figs. 4, 5, and 7.) This passage 73 is arranged horizontal and level with the upper part of the oil-reservoir chamber and is also parallel with the rear wall of the reservoir. The check-valve 69 has a tubular stem and is mounted in an aperture in the plug 72. A coil-spring 71 encircles the stem of valve 69 and is adapted for pressing the valve against its seat. This check-valve will permit oil to be forced from the passage 65 into the hand-feed oil-passage 73, but will not allow it to return.

An oil-feed passage 74 leads from the center of the hand feed-passage 73 to the oil-passage 45, and the valve 75 is screwed into the tubular projection 5 and is arranged to close the said passage. The packing-nut 77 is screwed upon the projection 5 and contains the packing for the stem of valve 75.

It is obvious that the oil in the reservoir as it is displaced by the water from the condenser will flow through the passages leading to and from the sight-glass 38, where the amount of flow may be seen, and thence into the passage 45, and from there it will be blown into and through the tallow-pipe 47 by the steam which comes from the condenser through the passage 46.

When the sight-glass breaks, the valves 29 and 35 may be closed and the valve 75 can be opened, and oil may then be pumped from the reservoir through the hand-feed passage 73

to passage 45, from whence it will be carried by the steam through the tallow-pipe to the parts to be lubricated.

The oil-passages to the side tallow-pipes 80 and 90 are similar to those leading to the central tallow-pipe 47, and oil can flow or may be pumped into either or all of the tallow-pipes at one time. The sight-glasses 82 and 92 are similar to the central glass 32, and the flow-regulating valves 83 and 93 are similar to valve 29, and valves 84 and 94 are similar to valve 35.

In Fig. 4, 81 is the oil-passage leaning from the sight-feed glass 82 to the tallow-pipe 80 and is similar to passage 45. Oil-passage 91 is also similar to passage 45 and leads from sight-glass 92 to tallow-pipe 90. Steam enters passage 81 through passage 85 and also enters passage 91 through passage 95. Oil-passage 86 leads from the hand-feed oil-passage 73 to the passage 81 and may be closed by the valve 87, which is similar to valve 75. Oil-passage 96 leads from hand feed-passage 73 to passage 91, and it may be closed by the valve 97.

Fig. 7 shows clearly all the valves which control the openings into and from the hand feed-passage 73, and Fig. 9 shows more clearly how the check-valves 66 and 69 and their springs 67 and 71 and also the plug 72 are constructed and arranged.

To operate the oil-pump, first turn the plunger-handle to the left to free the lock-pin 56 from the hooks 55 on the nut 54. Then the plunger may be drawn out either a portion of or its entire stroke, according to the amount of oil wanted. Then by returning the plunger to its inner position the oil will be forced through the hand-feed oil-passages 65 and 73 and through any of the passages leading therefrom that may be open.

It will be obvious that the steam-inlet 10 in the condenser is lower than the openings into the steam-passages 46, 85, and 95, and that the water of condensation when it accumulates in sufficient quantity to fill the condenser as far as the said inlet will flow back to the boiler through the steam-pipe 9, and thus it cannot elevate to or enter the said steam-passages nor pass to the tallow-pipes.

The drain-valve may be constructed in any well-known form. The valve shown consists of the body 78, which is threaded into a perforation in the bottom of the oil-reservoir, and the threaded valve-stem 79 is screwed therein. The purpose of this valve is to drain off the water from the oil-reservoir when it is desired to put in a new supply of oil.

Having thus described my invention, I claim the following:

1. In a lubricator the combination of an oil-reservoir and a steam-condenser; a water-passage connecting the condenser and the reservoir; a series of oil-passages leading from the reservoir through sight-glasses to a series of tallow-pipes; supplemental oil-passages leading from the reservoir to the tallow-pipes; a valve for controlling the flow of oil through each of the oil-passages, and steam-passages connecting the condenser-chamber with the tallow-pipes substantially as described.

2. In a lubricator the combination of a steam-condenser and an oil-reservoir, both connected by a water-passage; an oil-pump attached to the oil-reservoir; an oil-passage connecting the reservoir-chamber with the pump; a check-valve in said oil-passage; an oil-passage from the pump to a tallow-pipe; a check-valve in said latter passage, the check-valves adapted to permit oil to flow from the reservoir to the pump and thence to the tallow-pipe and to not let it return; a passage for steam between the condenser and the tallow-pipe and an oil-passage through a sight-glass from the condenser to the tallow-pipe substantially as described and shown.

3. In a lubricator the combination of a steam-condenser and an oil-reservoir; a water-passage connecting the condenser and the reservoir; an oil-passage leading through a sight-glass to a tallow-pipe; a valve for regulating the said latter passage; a supplemental oil-passage connecting the reservoir and the tallow-pipe; a valve for regulating the supplemental oil-passage; a passage for steam from the condenser to the tallow-pipe, and a pump adapted for forcing oil from the reservoir through the supplemental passage and into the tallow-pipe substantially as described.

Signed by me at New York, N. Y., this 28th day of November, 1899.

JOHN POWER.

Witnesses:
E. J. O'CONNOR,
A. A. V. BOURKE.