

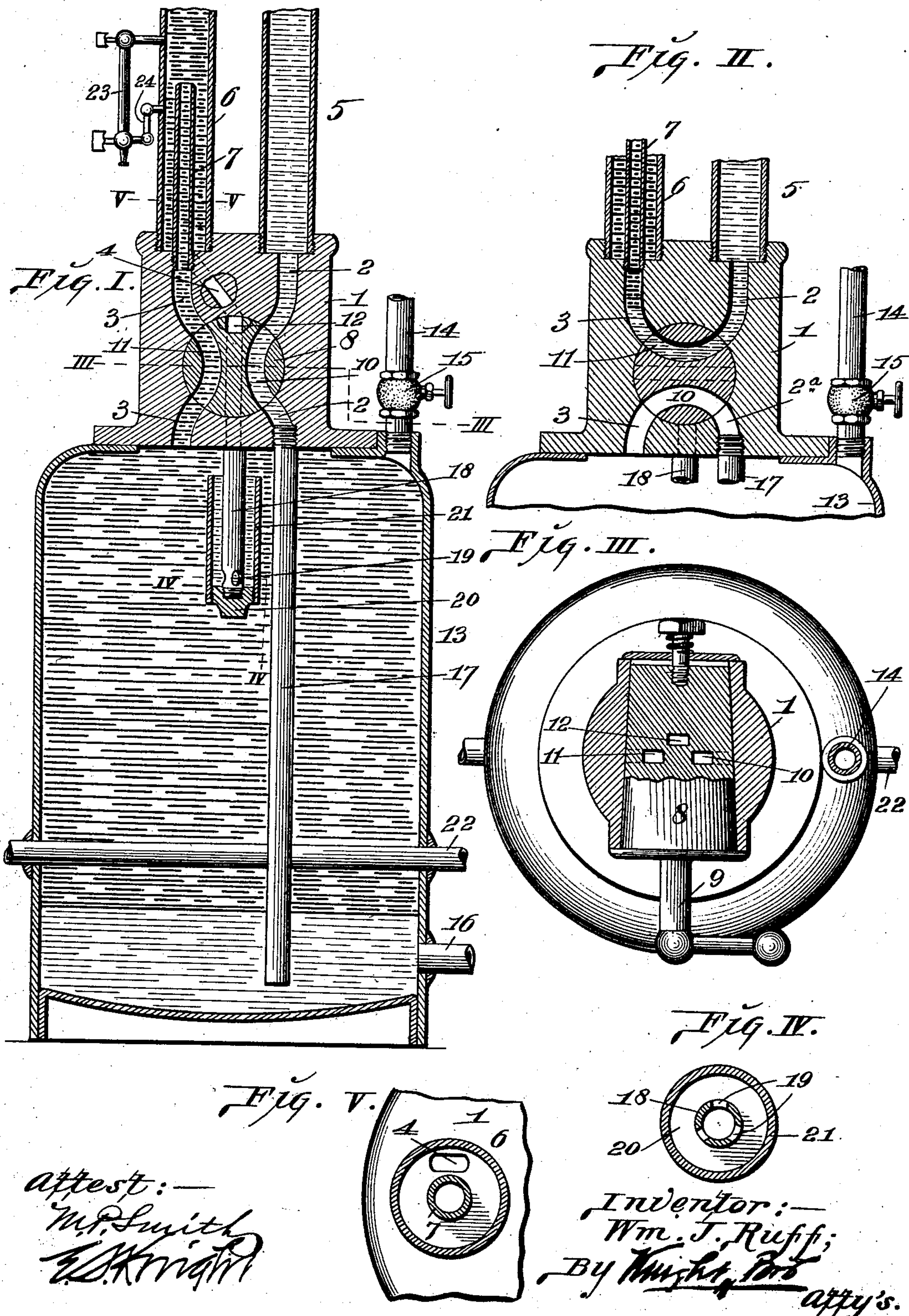
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W. J. RUFF.
LUBRICATING APPARATUS.

(Application filed Apr. 1, 1901.)

(No Model.)



UNITED STATES PATENT OFFICE.

WILLIAM J. RUFF, OF QUINCY, ILLINOIS.

LUBRICATING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 696,197, dated March 25, 1902.

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To all whom it may concern:

Be it known that I, WILLIAM J. RUFF, a citizen of the United States, residing in Quincy, in the county of Adams and State of Illinois, have invented certain new and useful Improvements in Lubricating Apparatus, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

The object of my invention is to provide a means whereby the oil-tank of a lubricating apparatus is so connected to the water-pipe and to the oil-pipe that it can be closed off when it is to be refilled and at which time a communication is established directly between the water-pipe and the oil-pipe, so that water will pass from the former to the latter to cause the oil remaining in the oil-pipe after the tank has been emptied to be conducted to the parts to be lubricated while the tank is being refilled.

My invention consists in features of novelty hereinafter fully described, and pointed out in the claims.

Figure I is a vertical section taken through the apparatus. Fig. II is a detail section through the valve-housing and valve of the apparatus, showing the valve moved from the position seen in Fig. I to produce a by-pass connection from the water-pipe to the oil-header. Fig. III is a view, partly in plan and partly in horizontal section, taken on the line III III, Fig. I. Fig. IV is an enlarged cross-section taken on the line IV IV, Fig. I. Fig. V is an enlarged cross-section taken on the line V V, Fig. I.

1 designates a valve-housing containing a passage 2, that has communication with the water-pipe 5, that is connected to the housing 1. The housing also contains a duct 3, that has communication with an oil pipe or header 6, connected to the housing, the communication from said duct into said header being obtained through a vertical tube 7, centrally positioned within the header 6. The pipe or header 6 communicates with a passage 4 in the valve-housing 1.

8 designates a valve mounted in the housing 1 and provided with an operating-handle 9. The valve 8 contains ports 10 and 11, that are respectively adapted to be moved into

registration with the passage 2 and duct 3 in the valve-housing 1, and the valve also has a port 12, that is adapted to register with the passage 4 in the housing.

13 designates an oil-tank located beneath the valve-housing 1 and on which said housing is mounted. This tank has connected to it an oil-supply pipe 14, equipped with a shut-off valve 15, and through which oil is introduced into said tank.

16 is a drain-pipe connected to the tank 13 at the lower end thereof. Depending from the valve-housing 1 at the location of the passage 2 is a pipe 17, that extends downwardly in the tank to a position near the bottom thereof, where it is open to communication with the interior of the tank.

Directly beneath the valve 8 and in alignment with the passage 4 is a trap-pipe 18, containing at its lower end orifices 19. The lower end of the trap-pipe 18 is closed by a cap 20, and affixed to said cap is a tube 21, that is arranged concentric with the trap-pipe 18, which it encircles. The cap 20 and tube 21 constitute a water-seal cup surrounding the lower portion of the trap-pipe 18.

22 designates a heater-pipe extending through the reservoir 13, through which any suitable heating medium, such as steam, may be conducted to warm the oil in said tank.

23 designates a sight-tube connected to the header 6, the said tube being connected at its lower end to the header by a trap-pipe 24, that leads downwardly from the header before being connected to the lower end of the sight-tube.

In the practical use of the apparatus the operation will be as follows: It being understood that the tank 13 has been filled with oil introduced through the supply-pipe 14, water is admitted into said tank from the pipe 5, passing through the passage 2 and the port 10 of the valve 8, which latter is set as seen in Fig. I. The introduction of water into the tank causes the oil to be forced upwardly in said tank, from which it flows through the duct 3 and the port 11 in the valve 8 and upwardly through the vertical pipe 7 into the header 6, from where it passes to the parts to be lubricated. In the event of any water passing up with the oil through the vertical tube 7 into the header 6 such water will natu-

rally descend in said header around the vertical tube 7 by reason of its being of greater specific gravity than oil, and as the water reaches the lower end of the header 6 it will pass downwardly through the passage 4 and port 12 in the valve 8 into the trap-pipe 18 and from said pipe into the water-seal cup surrounding the trap-pipe and overflow from said cup into the tank to descend through the oil to the bottom of the tank. The water-seal cup surrounding the trap-pipe 18 is therefore always filled with water, and consequently oil is not permitted to enter said pipe. The sight-tube being provided with a trap-pipe 24, a quantity of water is always maintained in the lower end of the sight-tube, and by virtue of the presence of such water in the sight-tube coating the interior of the tube with oil is prevented, that would, if present, obstruct a view of the oil present in the sight-tube. By means of the arrangement stated whenever the water in the sight-tube rises even slightly above the normal point provided for by the trap 24 indication is given thereby that the oil-supply in the tank has become depleted and the tank requires refilling. When this depletion of the oil-supply is indicated, as stated, the valve is turned into the position shown in Fig. II, so that the port 10 or 11 will be brought into registration with both the passage 2 and duct 3 in the valve-housing 1, thereby providing direct communication from the water-pipe 5 to the oil-header 6 through the vertical pipe 7 therein. The tank 13 is thus cut off from communication with the pipe 5 and the oil-header 6 and may be again filled with oil removed entirely from the valve-housing, such removal should be necessary for repairs or other reason. When the tank 13 has been shut off, as stated, there will remain in the oil-header 6 a quantity of oil sufficient to supply the immediate needs of the apparatus, and such remaining oil will be forced from the header by the water flowing directly from the water-pipe 5 through the by-pass connection provided by communication from the passage 2 to the duct 3 through the valve 8. When the tank 13 has been refilled with oil, the valve 8 is moved back to its original position and the operation is resumed as before. The vertical pipe 7 is of material value in the oil-header 6 for the following reasons: The vertical pipe being centrally positioned in the header 6 permits the existence of a well surrounding it, into which any water descends that may have passed with the oil into the header. By this arrangement the oil is permitted to flow upwardly through the vertical tube 7 out of contact with the wall of the header 6 surrounding said tube, while the water is free to escape from the well into the passage 4 and return therethrough through the valve 8 to the trap-pipe 18. The point of entrance of the oil into the header through the vertical tube 7 being located above the upper end of the passage 4, the entrance into the passage is

always free from oil and the water will flow into the passage at once whenever the tank 13 is placed in communication with the water-pipe 5 and oil-header 6, and there is consequently no cessation of the flow of oil to the lubricating-cups or parts being oiled when the tank 13 is placed into communication with the water-pipe and oil-header, owing to the fact that any water which passes into the tank from the oil-header necessarily displaces its equivalent in bulk of oil, which passes into the header proportionately as the water passes out.

It will be understood that when the valve is turned to form a direct communication between the water-pipe and the oil-pipe that the auxiliary passage 4 is closed, thereby shutting off all communication between the oil-pipe and the oil-tank while the latter is being refilled, and when the valve is turned back to open a communication between the tank and the two pipes the water in the oil-pipe, which has entered while the tank is shut off, will flow through the passage 4 into the oil-tank through the trap with which said passage communicates.

I claim as my invention—

1. In a lubricating apparatus, the combination with a valve-housing provided with passage-ways, of a water-pipe and an oil-header connected to said housing and having communication with said passage-ways, and a vertical tube positioned in said oil-header and open to communication therewith, said vertical tube being provided with communication into one of said passage-ways, and a valve in said housing having ports providing communication with the passage-ways therein, substantially as described.

2. In a lubricating apparatus, the combination of a valve-housing provided with passage-ways, a water-pipe and an oil-header connected to said housing and having communication with the passage-ways therein, a vertical tube connected to said valve-housing and extending upwardly into said oil-header and having communication with one of the passage-ways in said housing, a valve provided with ports in said housing said ports providing communication between the passage-ways therein, said housing being provided with a passage leading from said oil-header to a port in said valve, substantially as described.

3. In a lubricating apparatus, the combination of a valve-housing having passage-ways therein, a valve in said housing, an oil-tank located beneath said housing and into which said passage-ways communicate, a water-pipe and an oil-header connected to said housing and having communication with said passage-ways, a vertical pipe connected to said housing, and extending upwardly in said oil-header and having communication with one of the passage-ways in said housing; said housing being provided with a passage extending therethrough and communicating with said valve, and a water-seal trap located in said

tank into which said passage communicates, substantially as described.

4. In a lubricating apparatus, the combination of an oil-tank, a valve-housing, a water-
5 pipe on one side of the housing and which communicates with said tank through a passage-way in the housing, a pipe on the other side of the housing adapted to contain a column of oil and which also communicates with
10 said tank through a passage-way in the housing, and a valve located in said housing and controlling said passage-ways; whereby communication is established either from said water-pipe to said oil-pipe through said oil-
15 tank to cause the oil to pass from the tank into the oil-pipe or direct from said water-pipe to said oil-pipe to move the column of oil in the latter pipe, substantially as set forth.

5. In a lubricating apparatus, the combina-

tion of an oil-tank, a valve-housing, passage- 20 ways extending through the housing, the pipe 7, a water and an oil pipe communicating with said tank by means of said passage-ways, and a valve located in said housing and controlling said passage-ways; said housing and 25 said valve having auxiliary passages establishing a communication between said oil-pipe and said tank; whereby a communication is established from said water-pipe to said oil-pipe either through said oil-tank, or 30 direct from said water-pipe to said oil-pipe at which time the auxiliary passage between said oil-pipe and said tank is closed, substantially as set forth.

WILLIAM J. RUFF.

In presence of—

GERHARD G. ARENDS,
HENRY DAMHORST.