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FORCED FEED LUBRICATOR.

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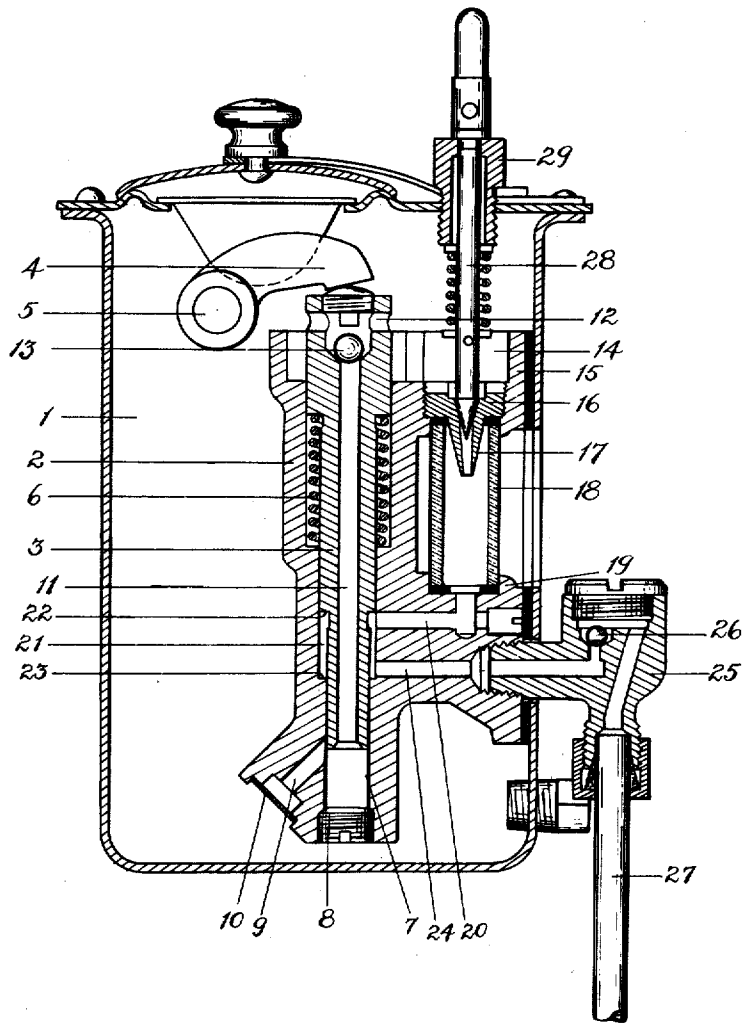
1,304,149. **Patented May 20, 1919.**



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FORCED-FEED LUBRICATOR.

1,304,149. Specification of Letters Patent. Patented May 20, 1919.

Application filed March 7, 1918, Serial No. 220,905. Renewed April 4, 1919. Serial No. 287,634.

To all whom it may concern:

Be it known that I, FREDERICK C. BLANCHARD, a citizen of the United States of America, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Forced-Feed Lubricators, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to forced feed lubricators and its object is to provide a sight feeding device in association with a lubricating or fuel oil reservoir and a pump performing the dual function of maintaining the sight feeding device under a constant head of pressure regardless of variations of level in said reservoir and of discharging the oil from said reservoir under pressure after its passage through the sight feeding means.

In the accompanying drawing there is shown in vertical section, a preferred embodiment of the invention, the plane of section cutting the lubricant reservoir, the pump, the sight feeding means and the oil outlet.

In said drawing the reference character 1 designates a reservoir containing lubricating or fuel oil and 2 and 3 respectively indicate the barrel and plunger of a pump mounted within said reservoir. Said plunger is actuated on its downward or pressure stroke by a rock-arm 4, carried by a shaft 5 and engaging the upper end of the plunger, while the suction or up-stroke of the plunger is actuated by a coil spring 6. The lower end of the bore 7 of the pump is closed by a plug 8 and at some distance above said plug an intake passage 9 communicates with said bore, said passage being screened as indicated at 10 at its point of communication with the reservoir. The plunger is formed with a central passage 11 through which oil is adapted to rise upon reciprocation of said plunger and to escape through outlets 12 adjacent the plunger top after unseating a ball check valve 13. The oil which discharges from the outlets 12 is adapted to be received by a basin 14 formed in the top of the barrel 2 and extending in a laterally projecting portion 15 of said barrel. An outlet from said basin is formed in the extension 15 through a plug 16 and a nozzle 17 integrally depending from said plug. Said nozzle is received within the upper end of a sight feed glass 18, said end of which abuts against the plug 16 while its lower end abuts against a laterally extending portion 19 of the barrel. Within the extension 19 there is formed a passage 20 communicating at one end with the sight feed tube and its other end being adapted to communicate with a pumping chamber 21 formed between annular shoulders 22 and 23 respectively formed upon the plunger and barrel, the said chamber surrounding the lower portion of the plunger. At a distance below the passage 20 substantially equal to the stroke of the plunger, an outlet passage 24 has communication with the chamber 21 which passage is extended into a discharge fixture 25 through which the discharging oil after unseating a ball check valve 26 is adapted to enter a pipe 27 leading to any desired point of use.

The discharge orifice in the plug 16 is controlled by a needle valve 28 which is adapted to be adjusted with relation to said opening by a nut 29 engaging the top of the reservoir 1 through which nut said valve passes.

In the operation of the above described lubricator the down-stroke of the plunger 3 will bring the same in close proximity to the plug 8. Upon the up-stroke a vacuum will be formed within the upper portion of the passage 11 which will be relieved as the plunger approaches its upper limiting position by an inflow of oil through the passage 9. Since this passage is closed immediately after the down-stroke of the plunger has commenced, said stroke will be accompanied by the raising of the check valve 13 and a discharge of oil through the outlets 12 into the basin 14. The capacity of the pump is such as to far exceed the maximum outflow that may take place through the sight feed passage, the surplus oil overflowing the basin and returning to its original level in the reservoir. The oil will drop from the nozzle 17 through the sight feed glass at a rate depending upon the adjustment of the needle valve 28, and the pumping chamber 21 is proportioned to take care of the maximum flow through the sight feed glass for which the needle valve may be adjusted. Owing to the maintenance of a constant head of oil pressure on the sight feed device the rate of flow remains fixed for any given adjustment of the needle valve. By using a common means to create said constant head

of pressure and also discharge the oil under pressure from the reservoir, a very compact and simple construction results.

What I claim as my invention, is:

1. In a device of the character described, the combination with a sight feeding device, of a basin for supplying oil to said device, a pump comprising a plunger formed with a longitudinally-extending passage having an outlet discharging into said basin, and a barrel receiving said plunger having an inlet in its lower portion, said barrel and plunger jointly forming a pumping chamber beneath the latter with which said inlet communicates the outlet of said chamber being through said longitudinal passage of the plunger, a second pumping chamber being formed above the first-mentioned chamber surrounding the plunger between annular shoulders respectively formed on said pump and barrel, and passages for respectively conducting the oil passed through said sight feeding device to and from the last-mentioned pumping chamber.

2. In a device of the character described, the combination with a sight feeding device, of a pump supplying oil to said device comprising a plunger formed with a longitudinally-extending passage opening in the upper portion of said plunger, and a barrel receiving said plunger having an inlet in its lower portion, said barrel and plunger jointly forming a pumping chamber beneath the latter with which said inlet communicates, the outlet of said chamber being through said longitudinal passage of the plunger, a second pumping chamber being formed above the first-mentioned chamber surrounding the plunger between annular shoulders respectively formed on said plunger and barrel, and passages for respectively conducting the oil passed through said sight feeding device to and from the last-mentioned pumping chamber.

3. In a device of the character described, the combination with a sight feeding device, of a basin for supplying oil to said device, a pump comprising a plunger formed with a longitudinally-extending passage having an outlet discharging into said basin, and a barrel receiving said plunger having an inlet in its lower portion, said barrel and plunger jointly forming a pumping chamber beneath the latter with which said inlet communicates, the outlet of said chamber being through said longitudinal passage of the plunger, and means for discharging the oil passed through said sight feeding device from the reservoir under superatmospheric pressure.

4. In a device of the character described, the combination with a sight feeding device, of a basin for supplying oil to said device, a pump comprising a plunger formed with a longitudinally-extending passage having an outlet discharging into said basin, and a barrel receiving said plunger having an inlet in its lower portion, said barrel and plunger jointly forming a pumping chamber with which said inlet communicates, the outlet of said chamber being through said longitudinal passage of the plunger, a rock arm engaging one extremity of said plunger to actuate the latter in one direction, a spring acting on the plunger to actuate the return stroke thereof, and means for discharging the oil passed through said sight feeding device from the reservoir under superatmospheric pressure.

5. In a device of the character described, the combination with a sight feeding device, of a basin for supplying oil to said device, a pump comprising a plunger formed with a longitudinally-extending passage having an outlet discharging into said basin, and a barrel receiving said plunger having an inlet in its lower portion, said barrel and plunger jointly forming two pumping chambers, one of which communicates with said inlet and has discharge connection with said longitudinal passage of the plunger, and passages for respectively conducting the oil passed through said sight feeding device to and from the other pumping chamber.

6. In a device of the character described, the combination with an oil reservoir, of a sight feeding device disposed within said reservoir, a mounting for said device having a basin in the top thereof having discharge connection with said device, a pump comprising a plunger and a barrel receiving the same, the latter being formed integrally with said mounting, said barrel and plunger jointly forming two pumping chambers, one of which has its inlet in the lower portion of the reservoir and discharges into said basin, and passages for respectively conducting the oil passed through said sight feeding device to and from the other pumping chamber.

7. In a device of the character described, the combination with a sight feeding device, of a pump supplying oil to said device, comprising a plunger formed with a longitudinally-extending passage having an outlet in its upper portion and a barrel receiving said plunger having an inlet in its lower portion, said barrel and plunger jointly forming a pumping chamber beneath the latter with which said inlet communicates, the outlet of said chamber being through said longitudinal passage of the plunger, and means for discharging oil passed through said sight feeding device from the reservoir under superatmospheric pressure.

8. In a device of the character described, the combination with a sight feeding device, of a pump supplying oil to said device, comprising a plunger formed with a

longitudinally-extending passage having an outlet in its upper portion and a barrel receiving said plunger having an inlet in its lower portion, said barrel and plunger jointly forming a pumping chamber with which said inlet communicates, the outlet of said chamber being through said longitudinal passage of the plunger, a rock arm engaging one extremity of said plunger, to actuate the latter in one direction, a spring acting on the plunger to actuate the return stroke thereof, and means for discharging the oil passed through said sight feeding device from the reservoir under superatmospheric pressure.

9. In a device of the character described, the combination with a sight feeding device, of a pump supplying oil to said device comprising a plunger formed with a longitudinally-extending passage having an outlet discharging into said basin and a barrel receiving said plunger having an inlet in its lower portion, said barrel and plunger jointly forming two pumping chambers, one of which communicates with said inlet and has discharge communication with said longitudinal passage of the plunger, and passages for respectively conducting the oil passing through said sight feed device to and from the other pumping chamber.

In testimony whereof I affix my signature.

FREDERICK C. BLANCHARD.