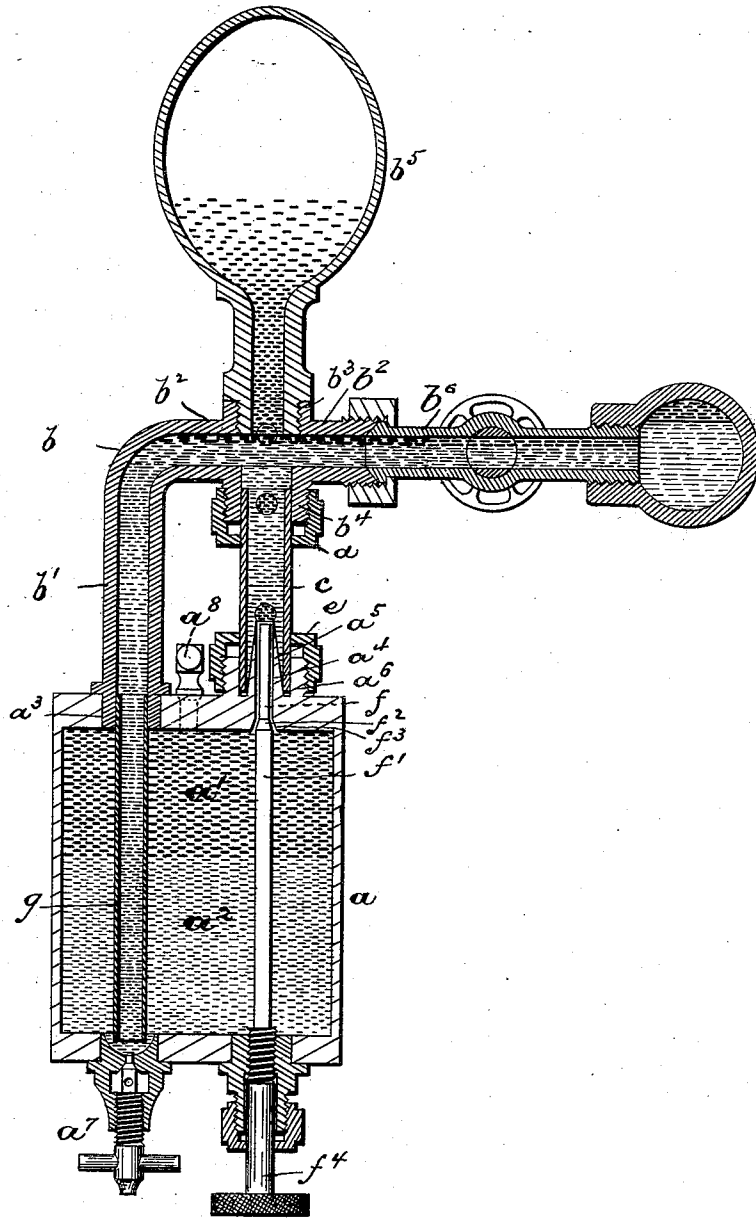


(No Model.)

C. COUSE.
AUTOMATIC SIGHT FEED LUBRICATOR.

No. 508,566.

Patented Nov. 14, 1893.



Witnesses

Inventor

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UNITED STATES PATENT OFFICE.

CHARLES COUSE, OF BELLEVILLE, NEW JERSEY.

AUTOMATIC SIGHT-FEED LUBRICATOR.

SPECIFICATION forming part of Letters Patent No. 508,566, dated November 14, 1893.

Application filed May 18, 1893. Serial No. 474,654. (No model.)

To all whom it may concern:

Be it known that I, CHARLES COUSE, a citizen of the United States, residing at Belleville, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Automatic Sight-Feed Lubricators; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawing, and to letters of reference marked thereon, which form a part of this specification.

This invention relates to certain improvements in what are commonly called automatic sight-feed lubricators, for feeding oil automatically to water heaters, boilers and the like.

The objects of the invention are to cause the feed pump to serve in regulating the feeding of the oil and to secure a regular and effective supply, to increase the size of the oil drops supplying the lubricant, to simplify the construction and reduce the cost of manufacture, and to secure other advantages and results some of which will be referred to in connection with the description of the working parts.

The accompanying drawing illustrates, in central vertical section, the novel features of construction in my invention, the one figure being deemed sufficient to fully exhibit the improvements.

In said drawing, *a* indicates a vessel containing, or adapted to contain, a body of oil and water, the oil, *a'*, being lighter than the water, *a''*, floating on the latter as indicated. At the upper and lower ends of the said vessel, openings are provided, the purposes of which will be duly explained. At the opening, *a''*, is arranged and secured an inflow pipe or duct, *b*, which extends upwardly, as at *b'*, from the vessel and is bent or turned horizontally, as at *b''*, and the horizontal portion, *b''*, being provided with threaded protuberances *b''*, *b''*, which are centrally open to provide a passage for fluid.

By means of the horizontal portion, *b''*, and the continuation or extension, *b''*, of the same, I am enabled to enter the main feed water pipe at its side and thus sediment in said feed water pipe is prevented from working into the sight tube and obstructing the flow there-

through, the said feed water pipe being larger in diameter than said pipe, *b''*, and the bottom of the bore therein being below the bottom of said pipe *b''* as will be understood. Again by means of the turn in the pipe, *b*, and the entrance of the horizontal parts being at the side of the feed water pipe as described, the sight-glass is brought to a higher elevation where it may be more conveniently inspected.

At the side of the opening, *a''*, and at a little distance therefrom, is another opening, *a''*, which lies vertically in line with the openings, in the horizontal portion, *b''*. At said opening, *a''*, is formed a conical projection, *a''*, and, around it, a threaded nipple, *a''*, an annular recess being formed between to receive the end of the sight glass or transparent tube, *c*. Said transparent tube extends upward from the annular recess into the opening in the protuberance, *b''*, and the joints around the same are made impervious to water by suitable packing employed in connection with the glands or followers *d*, *e*, or otherwise. The conical projection in which the opening or passage, *a''*, is formed extends upward a distance into said tube and is provided with a pin or rod, *f*, which is smaller in diameter than said passage or that the latter is given an annular form as will be understood. Said pin or rod terminates at or just short of the extremity of the conical projection and thus the globule of oil collecting at the end of the conical projection holds to said projection until it has gained considerable size, when it severs its connection from the said projection because of the smaller specific gravity of the oil and rises through the water, lying in said tube, *c*, to the horizontal tube portion, *b''*, where it is fed in small quantities, but regularly, into the boiler or heater automatically. By means of the pin, rod or wire, *f*, a broad extremity of the projection, *a''*, and a broad supply opening, *a''*, but the area of said opening is reduced so that the oil is fed but slowly.

The flow through the annular opening, *a''*, may be regulated by means of a connecting rod, *f'*, having at its connection with the pin or rod, *f*, a conical shoulder, *f''*, which may engage a correspondingly conical seat, *f''*, to close the passage or opening *a''*. The rods *f* and *f'* may be of one integral piece. The

rod f' is adjusted longitudinally by the adjusting screw, f^4 , which has its bearings at the bottom of the vessel a .

When the device is employed with a boiler or heater to which water is supplied by a pump, I prefer to employ, in connection with the horizontal pipe portion, b^2 , and in line with the transparent tube, c , an air chamber, b^5 , which when in normal operation is partly filled with air at the top and with oil at the bottom, the mouth of the chamber lying downward and in line with the projection a^5 , so that the oil rises into the said mouth directly. It may however be disposed a little to one side or the other of said line.

In operating the device thus described, the parts being constructed and assembled in the manner stated, and the horizontal portion, b^2 , being secured to the feed water pipe of the boiler or heater by means of the pipe section, b^6 , of the feed water pipe I first close communication with the vessel, a , through the pipe, b^6 , by means of a suitable valve, and close the regulating valve by turning the screw, f^4 , so that fluid cannot pass through the opening, a^4 . I then open a drain cock, a^7 , and allow any water that may be in the vessel, a , to be discharged therefrom, the said vessel being vented, to allow such discharge, by removing the filler plug a^8 . After the water has run out and the cock, a^7 , closed, the valve f^2 , f^3 , and the valve or cock of the pipe, b^6 , (not shown) opened, the further action of the device is automatic in regularly feeding the oil to the boiler. As the oil rises through the projection a^5 and the water in pipe, c , it enters the chamber b^5 and gradually takes the place of the water that previously entered from the feed water pipe. The fluid pressure on the air in said chamber compresses the said air and the latter serves as an elastic cushion which relieves other parts which would otherwise work irregularly and without the certainty which would enable the engineer to know when to replenish the vessel. When water already under high pressure is used and a pump for feeding the boiler is dispensed with, I may dispense with the air chamber. After the filling of the lower part of the chamber, b^5 , with oil, the subsequently supplied oil is fed outward through the pipe b^2 , b^6 , the water from the supply pipe flowing inward to take its place and, being heavier than the oil, the water flows downward through an interior extension, g , of the pipe, b , raising the oil so that it will flow upward through the opening, a^4 , regularly but slowly. At the extremity of the projection, a^5 , the oil meets with the water of the sight glass, c , and forms globules as indicated, the globules being held upon the end of the projection until they have attained considerable size, because of the peculiar construction already described. The globules, however, sever their connection and rise to the top of the water, floating on the same outwardly toward the boiler and entering the latter. The oil mixes with the water and lubri-

cates the same, so as to prevent foaming and to secure other well known advantages connected with the use of kerosene or other light mineral oils. The affinity of the oil for the metal of the horizontal pipe, b^2 , helps in securing a free flow over the water and against the current of said water in said pipe. When the pump and air chamber are used, the action of the pump on the compressed but elastic air, through the fluids lying in the pipe b^2 , b^6 , and air chamber, produces a pumping action on the oil so that the latter lying in the horizontal pipe is helped in its outflow.

Having thus described the invention, what I claim as new is—

1. The improved lubricator for boilers &c. which consists of the inclosed vessel a , bent or turned pipe, b , having openings to receive the air chamber and sight tube, said sight tube extending from the vessel to one of said openings, said air-chamber arranged in line with said sight tube, and means for controlling the flow of oil through said sight tube, substantially as set forth.

2. In combination with the lubricant vessel a , a water feed pipe leading from the boiler connection into said vessel, a , a pipe for leading the displaced oil into said water pipe, and an air chamber in connection with said water feed pipe, substantially as set forth.

3. In combination with the lubricant vessel a , and the feed water pipe, of a bent pipe, b , coupled at its horizontal end to said feed water pipe above the bottom thereof and at its vertical end to the top of the vessel a , where it is provided with an interior extension, g , extending to the bottom of said vessel, a sight tube inserted between said horizontal part of the bent tube and the top of the vessel and opening into each, and a needle valve extending through the vessel into the bottom of said sight tube and regulating the outflow of oil therethrough, substantially as set forth.

4. The combination with the vessel a , having interior pipe, extension g , and an oil-outflow valve, a sight tube arranged above said valve and a bent tube b , connecting with the extension, g , and extending vertically from said vessel and then horizontally, the horizontal part extending entirely across the top of said sight tube and laterally distant from said sight tube having means adapted to enter at the side of the feed water pipe above the bottom thereof, said sight tube and horizontal part of the bent tube being related to allow the oil-globules to rise through the sight tube and then flow horizontally outward over the inflowing water, substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 10th day of May, 1893.

CHARLES COUSE.

Witnesses:

CHARLES H. PELL,
OSCAR A. MICHEL.