

No. 706,224.

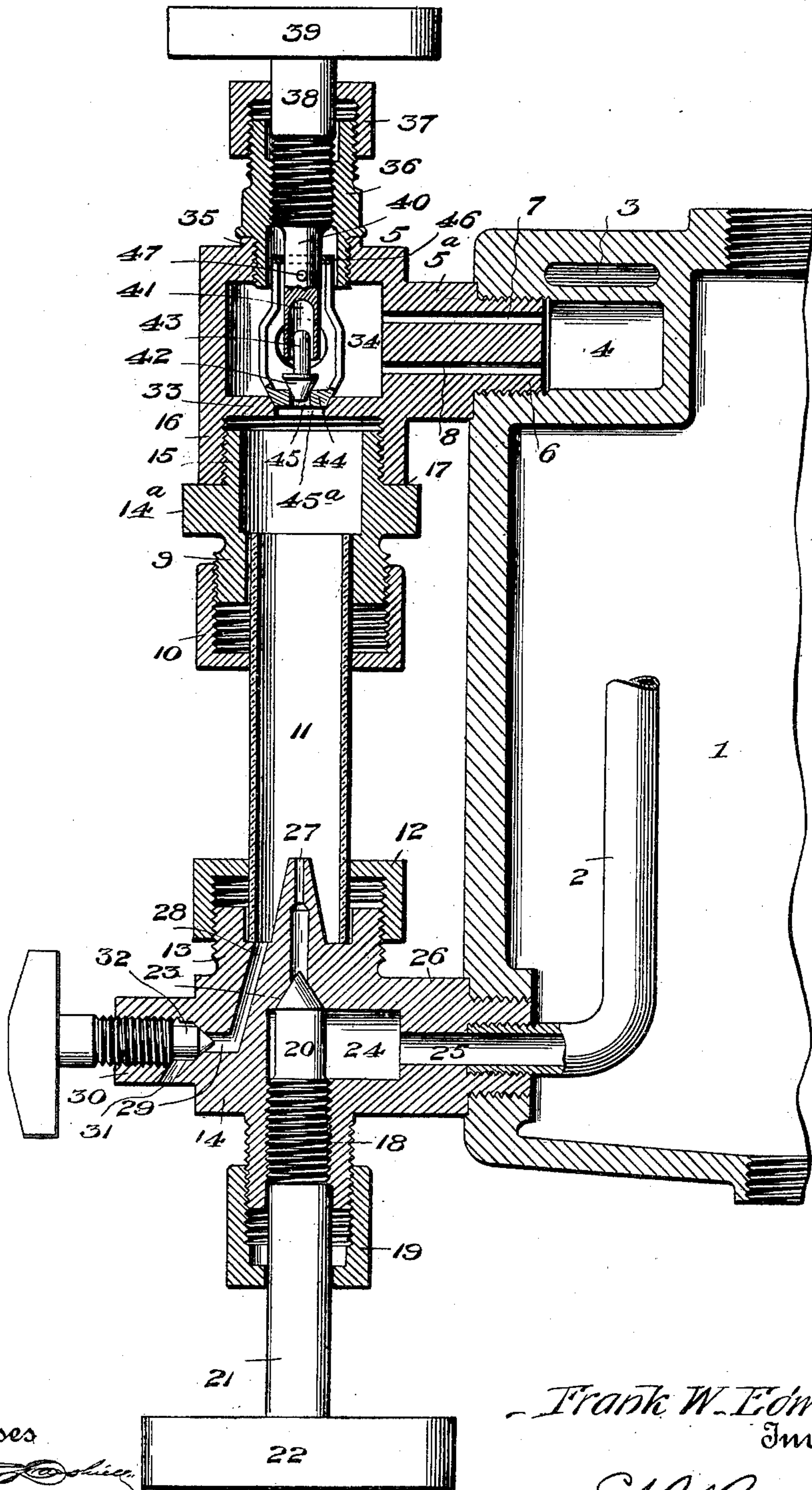
Patented Aug. 5, 1902.

F. W. EDWARDS.

LUBRICATOR.

(Application filed Oct. 30, 1901.)

(No Model.)



Witnesses

H. O. Benjamin

by

Frank W. Edwards
Inventor

E. M. Bond
Attorney

UNITED STATES PATENT OFFICE.

FRANK W. EDWARDS, OF LOGANSPOUT, INDIANA.

LUBRICATOR.

SPECIFICATION forming part of Letters Patent No. 706,224, dated August 5, 1902.

Application filed October 30, 1901. Serial No. 80,528. (No model.)

To all whom it may concern:

Be it known that I, FRANK W. EDWARDS, a citizen of the United States, residing at Logansport, in the county of Cass and State of Indiana, have invented certain new and useful Improvements in 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.

This invention relates to certain new and useful improvements in condensation-displacement lubricators, and more particularly to the feed-arms and their connection with the lubricator bowl or reservoir and the valve in the upper feed-arm and its accessories, having for its objects, among others, to provide an improved automatic check-valve to give a positive free working when the lubricator is feeding and a positive closing-valve in case the lubricator-glass breaks. I aim also at convenience in fitting up the parts as well as in removal thereof for repairs or other causes. I further provide means for holding the valve and its cage positively to its seat and for lifting the cage and valve from the seat when it is desired to allow of a flow of steam into or through the lubricator feed-glass and to allow condensation to fill into the said glass. I also provide a simple yet most efficient means for draining the glass when desired.

I provide the double valve herein shown to meet certain conditions, which are as follows: It is desirable to have a small valve that can be lifted from its seat and leave a small opening for oil or steam to pass through, and it is also necessary to have means provided whereby an increased opening can be made between the tallow-pipe side of the upper feed and the sight-glass of the upper feed-arm of a lubricator, because in actual service there are all kinds of lubricating-oils fed through the lubricator. A greater per cent. of these have in them a gummy substance, which collects on the parts with which it comes in contact. This gum gathers on the small check-valve and in many instances stops up the small opening in which the small valve is seated. Then another and more troublesome source of stopping up this small opening are the rubber gaskets with which the sight-glasses are packed. As the glasses become heated the

rubber is softened, causing a leak, which necessitates tightening up the packing-nuts. This tightening up of the packing-nuts causes a part of the gasket to be forced by the sides of the glass into the chamber leading to the small opening in which is located the small check-valve. This small opening being in practice only about one-eighth of an inch in diameter and the rubber particles being usually much larger they completely fill the aforesaid opening or passage, stopping the feed of lubricant to the valves and cylinder, which causes serious damage to the engine. To avoid this damage to the engine, valves, and cylinders, I constructed my double valve, which gives an increased opening when these dangerous conditions present themselves. This double valve meets and overcomes these adverse conditions met with in actual service. The raising of the larger valve or cage from its seat gives the increased opening necessary to let all dirt particles pass and give a free passage for the oil to pass through to the valves and cylinders of the engine. The gumming of the parts hereinbefore referred to prevents the valve in the upper feed-arm moving from its seat to allow the oil to pass around, and should it perchance be forced off its seat it would be firmly held in the stem which guides it. My stem is provided so as to hold both the small valve and the cage to their seats when the emergencies arise. Every drop of oil blown out through a leak is that much waste from the engine-supply, and taking the combined waste that would occur on all the engines on one railroad it means a heavy loss to the railroad company in the course of a year.

The construction is such that the valve may be closed by pressure brought to bear on the upper side thereof by the presence of steam and also by the pressure of the valve-stem, screw-threaded into a hub, so arranged as to put direct pressure on the top of the valve. It also provides for the lifting of the valve from the bottom part of the feed-arm and means whereby a direct or increased opening is made between the inside of the upper feed-arm and the sight-feed glass.

I further provide a heating-chamber for the oil-reservoir with means for the admission of live steam to such chamber and the drain-

age of the water of condensation therefrom when required.

Other objects and advantages of the invention will hereinafter appear, and the novel features thereof will be specifically defined by the appended claims.

The invention in its preferable form is clearly illustrated in the accompanying drawing, which is a substantially central vertical section through the parts constituting my improvement, with a portion of the lubricator-bowl also shown in section, parts being in elevation and a portion broken away.

Referring now to the details of the drawing, 1 designates the cup or bowl of a lubricator of known or any approved form of construction, except as hereinafter specified, of which 2 is the supply-pipe. This bowl is shown as provided with the recess 3 around the outside of the wall of the heating-chamber 4, formed in the bowl, as shown. It will be understood that this chamber 4 extends around the bowl and that the recess 3 is merely for the purpose of lightening the bowl.

5 is the upper feed-arm. It has a screw-threaded end 6, which is screwed into a screw-threaded opening communicating with the said heating-chamber 4, as shown, and this arm has its lateral portion 5^a formed with a longitudinal passage 7 for the admission of live steam to the heating-chamber 4 and a separate and independent longitudinal passage 8 for the purpose of allowing of draining off of the water of condensation as it accumulates in the said chamber. This feed-arm is provided with the depending threaded nipple 9 to receive the sight-glass sleeve 10, through which passes the sight-glass 11, as shown. The lower end of this glass is received in a corresponding sleeve 12, screwed onto the nipple 13 of the lower feed-arm 14. The sleeves or nuts 10 and 12 may be of any well-known or approved form of construction, and the nipple 9 is by preference formed on the double-ended sleeve 14^a, the upper threaded portion 15 of which is screwed into the depending threaded portion 16 of the upper feed-arm, against the lower end of which nipple or threaded portion 16 the shoulder 17 on the sleeve 14^a engages, as shown.

The lower feed-arm 14 is provided with the depending screw-threaded nipple 18, which receives the nut 19, and which nipple is also interiorly threaded, as shown, to receive the threaded portion of the feed-valve 20, provided with a stem 21 and a handle 22, as shown. This feed-valve is fitted to a seat 23 at the top of the chamber 24, which communicates by passage 25 in the extension or lateral portion 26 of the lower feed-arm with the supply-pipe 2, as shown. The end of the supply-pipe is shown as screwed into a threaded opening in the inner threaded end of the said lateral portion 26.

The feed-valve 20 controls the flow through the feed-tube 27, the lower end of the sight-glass 11 being received in a socket in the nip-

ple 13 on the upper face of the lower feed-arm, as shown in the drawing.

The lower feed-arm is provided with a drain-passage 28, communicating with the sight-glass, as shown, and this passage extends in an inclined direction from the lower end of the socket in which the lower end of the said glass is received and communicates with the horizontal passage 29, formed in the lateral portion 30 of the said feed-arm. From this horizontal passage extends the passage 31, preferably inclined, but not necessarily so, and this passage or outlet is controlled by the drain-valve 32, screw-threaded into the threaded bore of the lateral portion 30 of the said lower feed-arm, being fitted to a seat in the lateral portion 30 and when seated covering the outlet 31, as shown in the drawing. It will be readily seen that when this valve is unseated sufficiently to uncover the passage 31 the water of condensation which has accumulated in the sight-glass will be allowed to drain off and that when this valve is seated the communication between the sight-glass and the atmosphere is entirely shut off.

The upper feed-arm is provided with the diaphragm 33, above which is the chamber 34, with which the passage-ways 7 and 8 communicate, and at the top of this arm is the internally-threaded boss or nipple 35, which receives the sleeve 36, the upper end of which is exteriorly threaded and receives the packing-nut 37, through which passes the valve-stem 38, having a handle 39 and a reduced portion 40, the lower end of which is hollow, as shown at 41. 42 is a valve having a stem 43, disposed within the hollow portion of the stem 38, as shown, the said valve being fitted to a seat 45 and controlling the passage 45^a in the bottom of the cage 46, the upper cross portion of which is adapted to be engaged upon its under side by the pin 47, carried by the reduced portion 40 of the stem 38. The opening seen back of the cage is the outlet for the oil passing from the upper feed-arm to the oil-pipe.

With the parts constructed and arranged substantially as above described the operation is substantially as follows: When the lubricator is feeding under normal conditions through the sight-feed glass, the valve-stem 38 is screwed to position, as shown in the drawing, allowing sufficient clearance for the valve 42 to be raised from its seat by the influence of the balancing pressure, which action in turn will permit the oil to be delivered through the opening 45 and coincident opening in the diaphragm 33 into the chamber 34, and thence to the parts to be lubricated. With these conditions the cage 46 is seated on its seat on the diaphragm 33, closing up the increased passage 45^a. In case it becomes necessary to put steam or condensation into the glass 11, the valve-stem 38 is screwed upward, bringing the stop-pin 47 into contact with the under portion of the upper part of the cage, lifting the said cage

from its seat, which action would permit a full opening into the glass 11 through the passage 45. This opening would be maintained as long as it would be necessary to furnish the supply of steam, after which the valve-stem would be screwed down to permit the valve 42 and cage 46 to again be seated and work, as before, under normal conditions. In case the lubricator sight-feed glass should be broken and it be found necessary to feed oil through an auxiliary hand oiling or other auxiliary oiling device connected to the upper feed-arm, the valve-stem 38 should be screwed down, forming a bearing on top of the valve 42, forcing said valve to its seat, which in turn will force the cage securely to its seat in the diaphragm 33. This would shut off all chances for the passage of steam or oil through the broken sight-feed glass.

The cage 46 is provided with openings on either side, so as to provide free circulation around and through the cage. The upper portion is made a true circle with an opening for the passage of the valve-stem.

The sleeve 36 being screwed into the boss on the top of the upper feed-arm and all the parts of the device being connected by means of screw-threads and the like, it will be readily seen that the parts may be easily assembled or taken apart for repairs or other purposes and the effectiveness of the improvement will be readily appreciated.

While the structural embodiment of the invention as hereinbefore disclosed is what I at the present time consider the preferable one, I do not wish to restrict myself to the details of construction herein shown, but reserve the right to make such changes, variations, and modifications as come properly within the scope of the invention and protection prayed.

What I claim as new is—

1. In a lubricator, a feed-arm with a chamber, a cage fitted to a seat around an opening in the bottom of said chamber and having a smaller port in its bottom, a valve fitted to said port in said cage and movable within the cage independently thereof, and means movable independently of the cage and valve for seating the valve and cage together or allowing them to move independently of each other.

2. In a lubricator, a feed-arm having a chamber with opening, a cage fitted to said

opening and having a small port, a valve movable within the cage and fitted to the opening therein, and means independent of and engaging said smaller valve and movable within the cage for closing both of said ports.

3. In a lubricator, a feed-arm having a diaphragm with port, a cage seated at said port and having a smaller port, a valve fitted to said port in the cage and having a stem, a stem disconnected from the cage and having tubular portions to receive the stem of the said valve and means to engage the cage, and means constructed to raise and lower the stem.

4. In a lubricator, a feed-arm having a diaphragm with port, a cage fitted to said port and having openings in its side walls and a valve-port, a valve having a stem and fitted to the port in the cage, a stem independent of the cage and having tubular lower end to receive the stem of the valve, and a lateral projection on said stem to engage and raise the cage and valve.

5. In a lubricator, a feed-arm having a chamber and diaphragm with port, a cage adapted to be seated to said port and having a smaller port in its lower portion, and openings above the same, a valve fitted to the port in the cage, a stem with tubular lower end movable independently of the cage, said valve being independently movable and having a stem fitting said tubular portion, and said lower end of the tubular stem being adapted to engage said valve for seating the valve and cage together or allowing them to move independently of each other, as set forth.

6. In a lubricator, an arm having a diaphragm with port, a cage having a bottom portion fitted to said port and having a smaller port in its bottom, a valve movable independently of the cage and fitted to said port therein, a stem independent of said valve and cage and movable within the latter and having a portion to receive the stem of said valve, means for engaging said stem with the valve to hold the latter to its seat, and means for engaging the cage to raise the same to move the cage and valve simultaneously, as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

FRANK W. EDWARDS.

Witnesses:

ELIZABETH HOMBURG,
F. H. WIPPERMAN.