

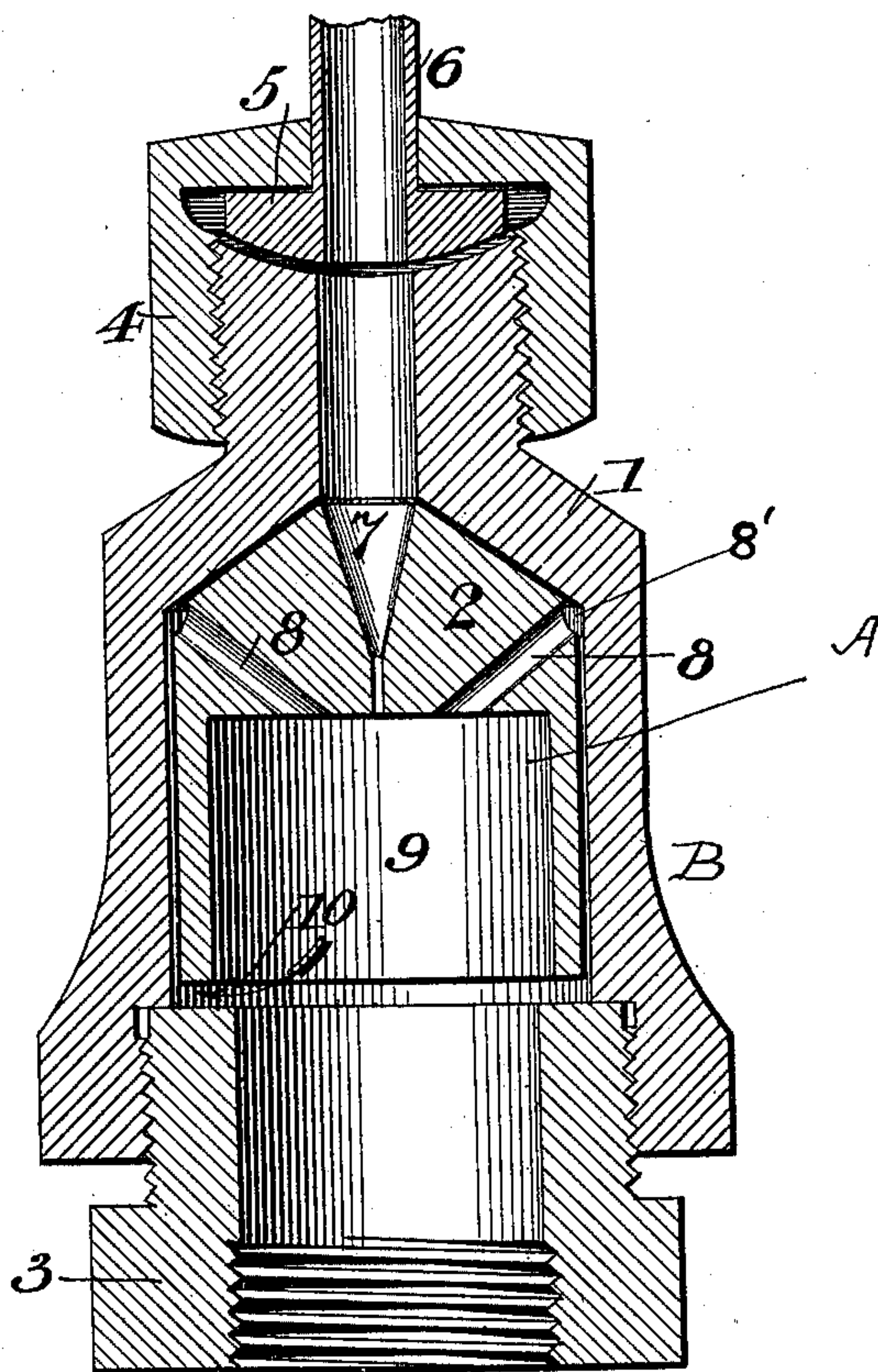
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Patented July 11, 1899.

W. G. WELDON & E. L. EGGER.  
CHOKE VALVE FEED FOR LUBRICATORS.

(Application filed Feb. 11, 1898.)

(No Model.)



Witnesses.  
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# UNITED STATES PATENT OFFICE.

WILLIAM G. WELDON AND EDWARD L. EGGER, OF CENTRALIA, ILLINOIS.

## CHOKE-VALVE FEED FOR LUBRICATORS.

SPECIFICATION forming part of Letters Patent No. 628,880, dated July 11, 1899.

Application filed February 11, 1898. Serial No. 670,002. (No model.)

*To all whom it may concern:*

Be it known that we, WILLIAM G. WELDON and EDWARD L. EGGER, of Centralia, in the county of Marion and State of Illinois, have  
5 invented a new and useful Improvement in Lubricator Attachments for Locomotives, of which the following is a specification.

Practical experience has demonstrated that when a locomotive is working steam oil does  
10 not flow or is not fed into the valve-chests and cylinders from the automatic lubricators ordinarily employed, owing to the back pressure of steam from the steam-chests.

It is the object of our invention to provide  
15 an automatic valve attachment for the lubricator-pipe leading to each valve-chest which shall be capable of producing a practically constant flow or feed of oil when the engine is in operation.

20 In the further explanation of the function of our invention we will state that the automatic lubricators used in locomotive-cabs and the "auxiliary oilers" also employed constitute two different means of oiling steam chests and  
25 cylinders. With the auxiliary oiler the valve can only be oiled when steam is shut off and the engine is running, while with the automatic lubricator in working order the oil is deposited in oil-pipe when engine is working  
30 steam in chest, but it is kept from passing to chest by the back pressure from the latter to oil-pipe. Our improved choke-valve feed attachment facilitates feeding oil to chest and cylinder while working steam and when en-  
35 gine is not working steam or in case the automatic lubricator gets out of order, and hence fails to feed oil, in which case oil may be supplied by a can manually to the lubricator or-  
40 dinarily located in the locomotive-cab.

The accompanying drawing shows a central vertical section of our valve attachment, with the connections required for lubricator-pipe and steam-chest.

45 The valve proper, A, is practically a hollow truncated cone provided with oil and steam passages, as hereinafter described. The casing B has a cone-shaped chamber in which said valve A reciprocates and an oil-passage leading vertically from such chamber. The  
50 casing B is screwed onto a hollow plug 3, which is in practice attached to the steam-chest (not shown) of a locomotive. The reduced upper

end of the casing B is connected by a screw-coupling 4 with the head 5 of a pipe 6, which in practice extends to an automatic steam-lu-  
55 bricator, (not shown,) which is usually arranged in the locomotive-cab.

The cylindrical valve A is made considerably shorter than the chamber of the casing B and also of sufficiently less diameter to al-  
60 low a certain vertical play or reciprocation. The reciprocation or "lift" of the valve is indicated by the space 10 left between it and the bottom of the chamber.

The conical head or upper end 2 of the valve  
65 A is adapted to fit and seat closely against the corresponding portion of the casing-chamber. A funnel-shaped vertical passage 7, which we term the "cone-choke," is formed in the head of the valve and opens into the  
70 cylindrical valve-chamber 9. Diagonal passages 8 lead from such chamber 9 through the head of the valve and communicate with a circumferential groove 8', formed at the obtuse angle of the valve.  
75

From the foregoing description the operation of the valve may now be understood.

It is necessary to state here that when the locomotive is not working steam in the chest, there being no back pressure in the oil-pipe  
80 6, leading from the steam-chest to the automatic lubricator in the cab, the oil will be discharged into said pipe through a choke forming a part of such automatic cab-lubricator, and thence into steam-chest. This  
85 choke is ordinarily used to enable the automatic lubricator to work steadily. Now when steam is admitted from the boiler to the chest and cylinder its sudden influx into the plug  
90 3 and valve-chamber will suffice to lift the valve A against its seat in casing B, and a large portion of the conical head 2 being thus inaccessible to steam acting through the lu-  
95 bricator-pipe 6 it is apparent the valve will remain thus seated, as shown in the drawing, so long as the engine is working steam. In other words, the result is due to the difference of the areas of steam-pressure offered by the head and bottom, respectively, of the valve A. Directly following such seating of the valve  
100 A the pressure of steam in the oil-pipe 6 rises to equality with that in the steam-chest; but the pressure at the cab-lubricator being slightly in excess of that in the chest, owing



to proximity of such lubricator to the boiler and the free communication between them, a circulation of steam will be started through oil-pipe 6 and cone-choke 7 to chest. This  
 5 circulation once begun through the cone-choke 7 will be continuous so long as the steam-pressure in the chest overcomes the gravity of valve A and holds it seated upward, as shown. Thus the oil delivered into  
 10 the pipe 6 from the cab-lubricator will be carried through the valve-passage 7 and through the plug 3 into the steam-chest and cylinder, as desired. The reason for employing the funnel shape or tapered "choke" 7 is  
 15 to enable steam-pressure to "concentrate," so to speak, on the oil accumulating therein. In other words, owing to the difference in diameter of the choke or passage 7 at top and bottom the steam-pressure suffices to feed oil  
 20 through it.

When steam is shut off from chest and cylinder, the upward pressure being thus removed, it is obvious the valve A will automatically unseat by gravity, and thus the  
 25 diagonal holes or passages 8 and groove 8' will be opened to excess of steam, so that a freer communication will be established between the oil-pipe 6 and the cylinder, and thereby a strong suction will be applied to the pipe  
 30 6 and thence to the cab-lubricator by the vacuum created in the cylinder, and this will draw oil from the cab-lubricator through the pipe 6 and valve A into the steam-chest and cylinder.

The diameter of passages 8 is carefully proportioned to allow due feed without "racing" of the lubricator and still draw oil out of the auxiliary oiler—that is to say, if the pipe 6  
 35 were connected with a steam-chest without the interposed choke the oil would be fed too fast and copiously by the automatic lubricator after steam is shut off while the engine is running at high speed on account of the excessive suction due to vacuum in cylinder, and, again, the holes 8 must be large  
 45 enough to allow production of sufficient vacuum to draw oil out of auxiliary oiler when automatic lubricator is not in working order. The holes 8 are necessary to make a larger  
 50 passage and freer communication between chest and oil-pipe than the cone-choke affords.

What we claim is—

1. The combination with a casing adapted  
 55 for connection with a steam-chest and lubricator-pipe, substantially as described, of an automatic reciprocating valve provided with an oil-passage adapted to permit the feed of

oil in all positions of the valve, and having its recessed or cup-shaped lower end accessible or exposed to the action of steam from the steam-chest, substantially as shown and described.

2. The combination with a casing adapted for connection with a steam-chest and lubricator-pipe at its respective ends, of an automatic reciprocating gravity-valve arranged therein and having a funnel-shaped oil-passage or "choke," and adapted to seat upward so as to mainly exclude access of steam on its  
 70 head, its lower end being recessed or cup-shaped accessible or exposed to the action of steam and thus having the greater area of steam-pressure while the valve is seated, substantially as shown and described.

3. The combination with the casing connected as specified of the automatic reciprocating valve having a conical head adapted to fit upon a like seat in said casing, its lower  
 80 end being cup-shaped and accessible or exposed to the action of steam-pressure, said head having a funnel-shaped or tapered oil-passage, or "choke," substantially as shown and described.

4. The combination with the casing connected as specified, of the automatic reciprocating valve, whose lower end is constantly exposed to steam-pressure from the cylinder, the body of the same having a longitudinal oil-passage and one or more lateral auxiliary  
 90 passages, the latter opening in that portion of the top surface or head of the valve which seats in the casing when the valve is raised, whereby the lateral passages are closed, substantially as shown and described.

5. An improved lubricator-valve attachment, comprising the casing adapted for connection with a lubricator-oil pipe and steam-chest as specified, and a reciprocating valve arranged in said casing and having a tapered  
 100 oil-passage, or "choke," and adapted to seat upward, substantially as shown and described.

6. The improved lubricating-valve attachment for locomotive steam-chests, the same comprising a casing having a chamber with conical head, and a reciprocating valve operating in said chamber and having a corresponding head, provided with a funnel-shaped oil-passage, or "choke," and lateral passages,  
 110 as shown and described.

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