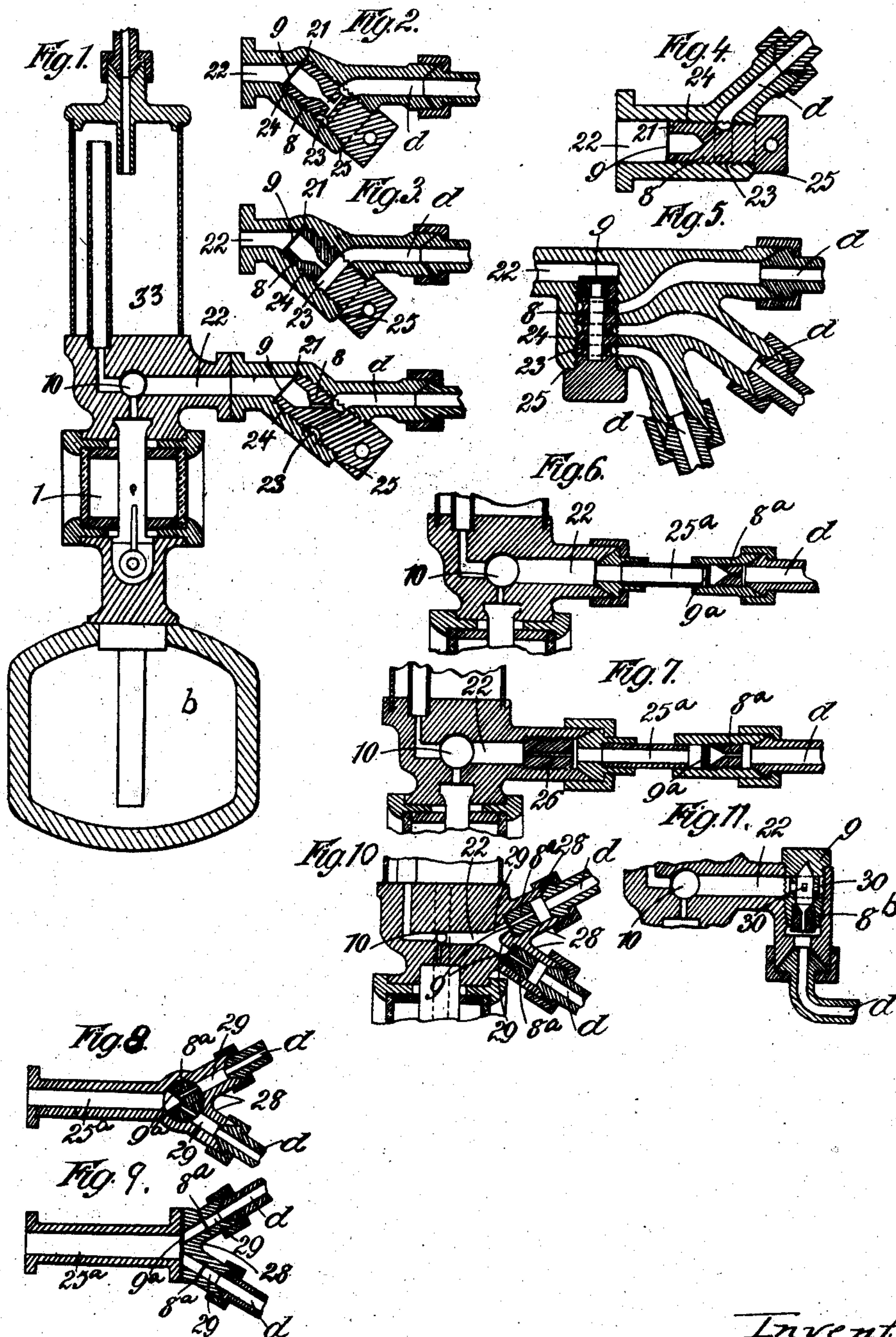


No. 865,262.

PATENTED SEPT. 3, 1907.

W. MICHALK.  
STEAM LUBRICATING APPARATUS.  
APPLICATION FILED JAN. 31, 1906.



Witnesses:  
J. P. Deane  
J. A. Romney

Inventor,  
William Michalk  
By *D. P. McChapman*  
Attorney



# UNITED STATES PATENT OFFICE.

WILHELM MICHALK, OF DEUBEN, NEAR DRESDEN, GERMANY.

## STEAM LUBRICATING APPARATUS.

No. 865,262.

Specification of Letters Patent.

Patented Sept. 3, 1907.

Application filed January 31, 1906. Serial No. 298,857.

*To all whom it may concern:*

Be it known that I, WILHELM MICHALK, a subject of the King of Saxony, and a resident of Deuben, near Dresden, in the Kingdom of Saxony, Germany, have  
5 invented certain new and useful Improvements in Steam Lubricating Apparatuses, of which the following is a full, clear, and exact description.

This invention relates to steam lubricating apparatus for steam cylinders and valves, in which the expulsion  
10 of the oil is effected by the water of condensation accumulating in the chambers of the same, and in this connection, the invention has specially in view certain practical improvements in the type of apparatus disclosed in the applicant's former patent No. 826,517,  
15 dated July 17, 1906.

A special object of the invention is to provide a novel throttle nozzle and strainer attachment for the lubricator and also to provide a construction wherein means are provided for permitting the water to expel the oil  
20 in the glass chamber in a rapid manner without impeding the working of the engine or part being lubricated.

A few of the practical embodiments of the invention are suggested in the accompanying drawings, in which:

Figure 1 is a sectional view of a steam lubricating apparatus equipped with the improved nozzle and strainer attachment contemplated herein. Figs. 2 to 11, inclusive are detail sectional views showing modifications of the nozzle and strainer attachment.

For illustrative purposes there is shown in Fig. 1 of  
30 the drawings a steam lubricating apparatus of the same general type and construction as the apparatus shown in the former patent aforesaid, No. 826,517, and primarily embodying in its organization the condenser 33 in which the steam received from the boiler is  
35 formed into water of condensation which finds outlet into the bottom oil reservoir *b*. In the latter the water of condensation presses oil through suitably arranged channels into the glass chamber 1 in the manner fully explained in the former patent referred to. Also, in  
40 this construction of lubricating apparatus, the same includes in its construction a steam and oil mixing chamber or space 10 with which communicates the passage 22 for conveying the steam and oil mixture to a nozzle chamber 24, which nozzle chamber has associated therewith the distributing or outlet pipe *d*. The  
45 nozzle chamber 24 is preferably provided with an outer open end into which is inserted a screw plug 8 constituting a throttle nozzle, the open end 21 of which nozzle faces the passage 22 and is designed to have  
50 arranged thereover a strainer sieve 9 through which the steam and oil mixture is compelled to pass as it comes through the passage 22 from the mixing chamber or space 10. This construction is plainly shown in Figs. 1, 2, 3 and 4 of the drawings, and to provide for  
55 removing the impurities which may have accumulated on the strainer sieve, it is only necessary to detach the

nozzle or plug 8. To secure a tight joint, the outer end of the nozzle or plug 8 is preferably provided with a shoulder 25, and while in some forms of construction it is desirable to make the nozzle or plug 8 of one piece, 60 the same may be formed of separate pieces or parts as suggested in Fig. 3 of the drawings, but in all of these several forms of the invention, the nozzle or nozzle plug is provided with ports or passages 23 which provide communication therethrough between the outlet pas- 65 sage 22 of the lubricator, and the distributing pipe *d*, all of which is plainly shown.

In Fig. 4 there is suggested the thought of arranging the distributing pipe *d* at an angle, while Fig. 5 involves the idea of having a plurality of distributing  
70 pipes *d* in communication with the outlet passage 22 through a single nozzle or nozzle plug, but it is to be noted that in Figs. 1, 2, 3, 4 and 5, the arrangement shown provides for passing the oil mixture laterally from the nozzle or nozzle plug into the distributing  
75 pipes *d*, thus admitting of an arrangement which permits of the ready removal of the nozzle or nozzle cup.

Figs. 6 to 9, inclusive suggest the idea of arranging a ported or perforated throttle nozzle or plug 8<sup>a</sup> in combination with a strainer sieve 9<sup>a</sup> at the end of a pipe section 25<sup>a</sup> inserted between the pipe or pipes *d* and the  
80 outlet passage 22 of the lubricator. By this means the oil, which may be carried along and heated, is subjected to a cooling action before reaching the distributing pipe. Furthermore, in Fig. 7 of the drawings there is  
85 suggested the idea of arranging the supplemental ported throttle nozzle or plug 26 directly in, or in close proximity to, the outlet 22 for the lubricator, thus insuring a thorough mixing of the oil and steam before reaching  
90 the main nozzle and strainer.

In Figs. 9, 10 and 11, is suggested the idea of connecting up with the outlet of the lubricator a Y connection 28 having separate passages 29 adapted to be provided with ported nozzles 8<sup>a</sup> and strainers 9<sup>a</sup> of a suitable design, but maintaining the same relative positions and  
95 performing the same functions as the corresponding elements previously referred to.

In Fig. 11 of the drawings is shown a construction wherein the strainer is formed by a hollow screw *g* of a perforated formation and carrying in one end a ported  
100 throttle nozzle 8<sup>b</sup>, the perforations or ports of said hollow screw being designated by the reference number 30.

I claim:

1. In a steam lubricating apparatus, the lubricator proper having an outlet passage for steam and oil, a nozzle chamber connected with the lubricator and in communication with said passage, said nozzle chamber having a distributing pipe connection therewith, and a ported throttle nozzle arranged in the nozzle chamber and interposed between the said distributing pipe and the outlet passage of the lubricator proper.

2. In a steam lubricating apparatus, the lubricator proper having an outlet passage for steam and oil, a nozzle



chamber connected with the lubricator proper and in communication with said passage, said nozzle chamber having a distributing pipe connection therewith, a throttle nozzle arranged in said chamber between the distributing pipe  
5 connection and the outlet passage for the lubricator proper, and a strainer sieve arranged between the nozzle and the outlet passage for the lubricator proper.

3. In a steam lubricating apparatus, the lubricator proper having an outlet passage for steam and oil, an exterior nozzle chamber connected with the lubricator proper  
10 and in communication with said outlet passage, a distributing pipe connecting with the nozzle chamber, and a ported throttle nozzle detachably mounted in said nozzle chamber and carrying a strainer sieve.

15 4. In a steam lubricating apparatus, the lubricator proper having an outlet passage for steam and oil, an ex-

terior nozzle chamber connected with the lubricator proper and in communication with the outlet passage thereof, a distributing pipe having a lateral connection with one side of the nozzle chamber, a throttle nozzle mounted in  
20 said chamber and having a longitudinal opening and lateral openings to provide communication between said outlet passage and the distributing pipe connection, and a strainer sieve at the side of the nozzle next to the outlet passage from the lubricator proper.

In witness whereof I have hereunto set my hand in presence of two witnesses.

WILHELM MICHALK.

Witnesses:

PAUL E. SCHILLING,  
PAUL ARRAS.