

E. J. JONES.
Oil-Cups for Steam-Engines.

No. 156,291.

Patented Oct. 27, 1874.

Fig. 1.

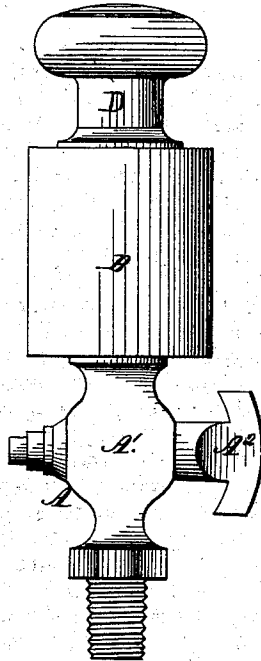


Fig. 2.

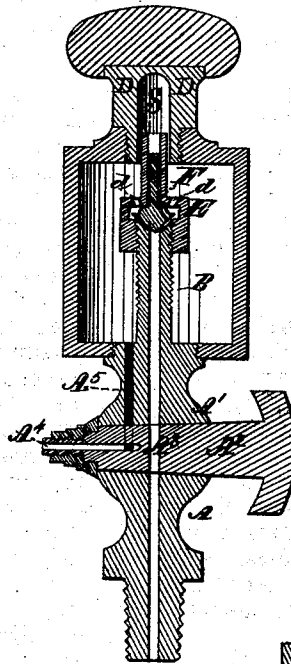
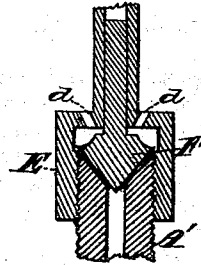
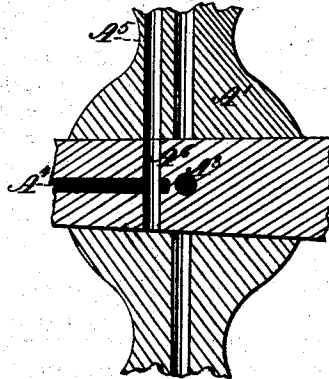


Fig. 3.



WITNESSES-

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EVAN J. JONES, OF INDIANAPOLIS, INDIANA.

IMPROVEMENT IN OIL-CUPS FOR STEAM-ENGINES.

Specification forming part of Letters Patent No. **156,291**, dated October 27, 1874; application filed March 19, 1874.

To all whom it may concern:

Be it known that I, EVAN J. JONES, of Indianapolis, in the county of Marion and State of Indiana, have invented a certain new and useful Improvement in Oil-Cups for Lubricating the Valves of Steam and other Engines, of which the following is a full, clear, and exact description, reference being had to the annexed drawing, in which—

Figure 1 is an elevation of my improved cup, showing its form and general appearance when ready for application. Fig. 2 is a vertical section, showing the reservoir for containing the lubricating material, the automatically-operating valve for regulating the flow of oil to the parts to be lubricated, the conducting-tube for the same, and the cock for shutting off communication between the steam-chest of the engine and the oil-reservoir, and for driving off the water of condensation; and Fig. 3 is a sectional view of the cock, showing the passages for the oil and for the water of condensation.

Corresponding letters denote like parts in the several figures.

This invention relates to a certain improvement in oil-cups for lubricating engine-valves; and it consists of an automatically-operating valve, having its upper surface chamfered or stepped, and its lower surface tapering, and seated upon the cock-stem, upon which is fitted a vertically-adjustable cup with ports for regulating the quantity of lubricant to be discharged at any one time, substantially as hereinafter more fully set forth.

In order that the requisite amount of lubricating material may be automatically and properly delivered from the reservoir to the valve of the engine upon which the cup is placed, and in such quantities as to meet the requirements of said valve without any waste of such material, I provide cock A, having upon its lower end a screw-thread for attaching it to the cover or some other part of the chest, a suitable hexagonal or otherwise formed collar being provided for the application of a wrench. Above the collar alluded to there is an enlargement, A¹, as shown, through which, at a right angle to its axis, there is formed an aperture for the reception of a key, A², in which there is an aperture, A³, for the pas-

sage of the lubricating material, said aperture being at a right angle to the axis of the key, and through its central portion, in order that when it is in one position it may register with an aperture formed centrally through the cock and its stem, and allow the lubricating material to flow down to the valve; but when it is turned from such position one-fourth of a revolution said passage shall be closed and the aperture A⁴ be made to register with a passage, A⁵, which passes vertically from the longitudinal aperture in the cock A to the oil-reservoir. In order that the water resulting from the condensation of steam in the reservoir may be drawn off at the proper times, there is formed in the end of the key A² which is opposite to the one upon which the handle for turning it is placed, an opening, A⁶, which is in line with its axis, and extends inward to and registers with the aperture A⁵, so that when the key is in the position last described said water may be drawn off through the two last-named openings. Above the enlarged portion A¹ of the cock A there is a neck, the upper end of which is provided with a screw-thread, upon which the reservoir B is screwed, said neck being of such a diameter as to allow of the aperture A⁵ being formed in it. The reservoir B may be of any form and dimensions required, its ends being furnished with heads, in each of which there is an opening with screw-threads in them, the lower one being for the purpose of attaching it to the neck of the cock A, and the upper one for the reception of the cup D, the upper portion of which, for convenience in handling when in use, may be made of wood, its lower portion being of metal, to enable it to form a steam-chamber for a purpose soon to be described. Upon the upper portion of the cock A there is a stem, which reaches nearly or quite to the upper inner surface of the reservoir B, and has upon its upper end a screw-thread for the reception of a cup, E, the lower portion of which is of sufficient size to receive said stem, while its upper end is so reduced as to pass up into a chamber formed in the metal portion of cup D, but is not of sufficient size to fill said chamber, the space between it and the wall of the cup forming the steam-chamber above referred to. Within the cup E there

is placed the automatically-moving valve F, it resting, when closed, in a seat formed upon the upper end of the stem of the cock A, and closing the passage in the same, as shown in Fig. 2. The valve F, which is made tapering on its lower surface, to fit its seat in the upper end of the stem of the cock A, is chamfered or stepped upon its upper surface, as seen in the two views of Fig. 2, to prevent it from closing the ports *d d* in the cup E when it is opened, in order to allow the lubricant entering said ports to pass into the cup E and continue down under the said valve into the stem of the cock A, which conducts it to the parts to be lubricated.

It will be seen that by this construction of valve a supply of oil or other lubricant is provided at every stroke of the piston, making it more effectual in the performance of its work.

The cup E has formed in the upper end of its largest part two or more holes, *d d*, for the passage of the lubricating material to the hole in the stem of the cock A and through it to the valve of the engine.

The operation of my improved cup will be substantially as follows: The parts having been constructed and arranged as shown, and the cup secured into the cover of the steam-chest of an engine, the reservoir is to be filled with some lubricating material, at which time the valve F will rest upon its seat and prevent the passage of any of such material to said chest, but so soon as steam is admitted and the induction and eduction valve commences to move, differences of pressure will exist in the chest sufficiently at times to raise the automatically-acting valve F by the stem which passes up through the stem of cock A. When it becomes desirable to lubricate the valve of the engine, the key of the cock A is to be turned so as to have the hole A³ formed in it, register with the passage through the stem of the cock, when, as the induction-valve moves into such a position as to close all the passages from the steam-chest, the pressure therein will be sufficient to raise valve F, and a portion of steam will pass said valve and flow into the reservoir above the oil, and thus form an equilibrium of pressure in the reservoir and in the steam-chest, as a consequence of which a portion of the lubricating material will flow downward through the apertures *d d* in the cup E and under valve F into the chest sufficient to lubricate the valve until the operation is repeated, said quantity being regulated by raising and lowering said cup, and thus leaving a greater or less space between it and the upper end of the stem of the cock for the oil to flow through.

When the induction-valve of the engine has been moved to such a position as to allow the steam from the chest to flow into the cylinder, the pressure in said chest will be reduced to such an extent as to cause the valve F to drop to and rest upon its seat, and thus the supply of lubricating material will be cut off, and the steam which had previously passed into the reservoir will be condensed, and the water resulting therefrom will take the place of the oil which passed out, when, upon the return of the induction-valve to the position in which it closes all of the ports leading from the chest, the pressure will again rise until the valve F will be again raised, and thus the operation of furnishing or regulating the quantity of oil to the induction-valve will be repeated.

It is apparent that if the water resulting from the condensation of the steam admitted to the reservoir be insufficient to supply the place of the oil at each movement of the valve of the engine, yet the movement of the parts will not be affected thereby, and they will keep on admitting steam until a sufficient amount of water has resulted from the condensation thereof to bring the oil up to the discharging-point, and this will occur so frequently as to make it certain that the valve and cylinder of the engine will always be kept properly lubricated.

It follows, as a matter of course, that the water of condensation will settle to the bottom of the reservoir, as its specific gravity is greater than that of the oil, and hence only oil will be delivered to the steam-chest, and the water may be drawn off from the reservoir at any time by turning the key A², so as to cause the communication between said reservoir and the chest to be cut off and the discharge-passage A⁴ to register with A⁵. When the water has been drawn off, as described, the reservoir may be again filled with oil by unscrewing the cup B and passing it in through the opening thus formed.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

The valve F, having its lower surface tapering and its upper surface chamfered or stepped, in combination with the cock-stem B and cup E, having the ports *d d*, substantially as and for the purpose specified.

In testimony whereof I have hereunto signed my name in presence of two subscribing witnesses.

EVAN J. JONES.

Witnesses:

HENRY WESSE,
H. P. STEWART.