(No Model.)

M. S. CABELL.

OIL CUP.

No. 413,295. Patented Oct. 22, 1889.

Fig. 2.

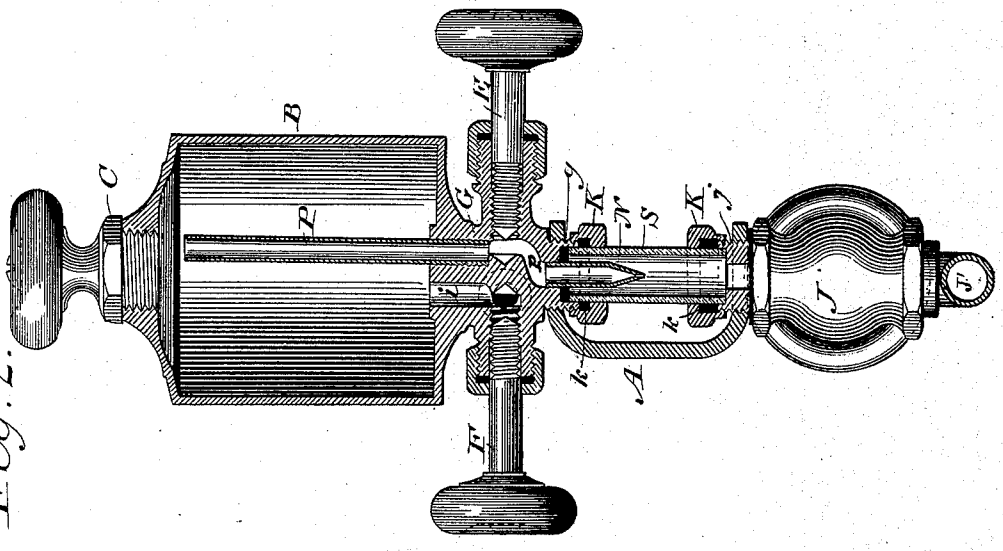
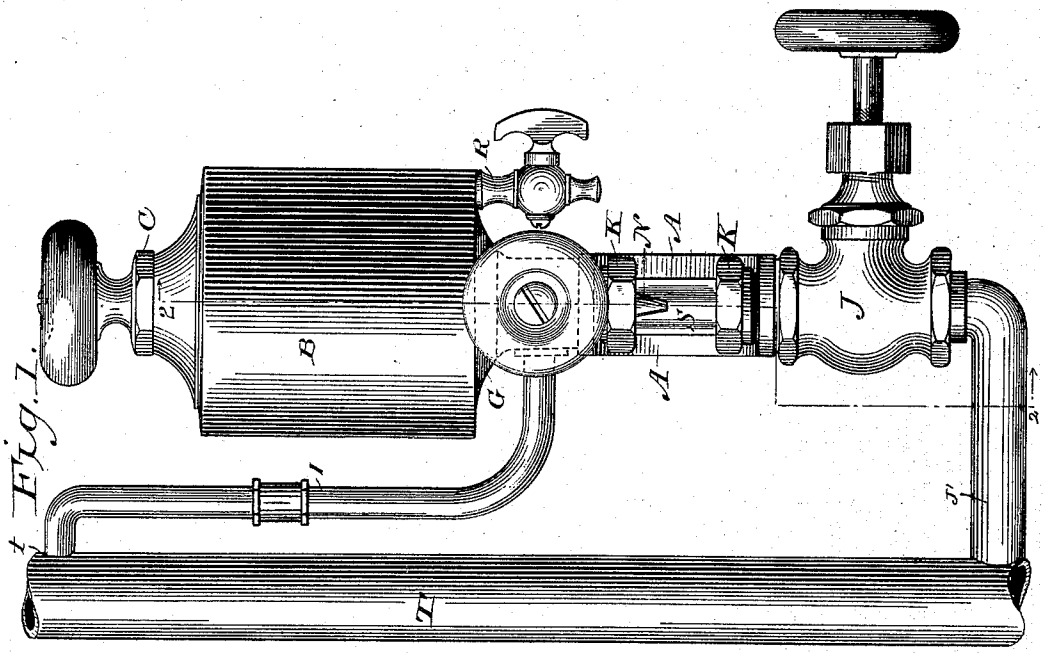


Fig. 1.



Witnesses

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MILTON S. CABELL, OF QUINCY, ILLINOIS, ASSIGNOR TO THE CONSOLIDATED MANUFACTURING COMPANY, OF WASHINGTON, DISTRICT OF COLUMBIA.

OIL-CUP.

SPECIFICATION forming part of Letters Patent No. 413,295, dated October 22, 1889.

Application filed March 21, 1889. Serial No. 304,162. (No model.)

To all whom it may concern:

Be it known that I, MILTON S. CABELL, a citizen of the United States, residing at Quincy, in the county of Adams and State of Illinois, have invented certain new and useful Improvements in Oil-Cups; 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 that class of oil-cups which are employed for automatically furnishing a continuous supply of oil to the bearings of machinery which is located within steam-chambers, and more especially to that class of lubricators which effects the oiling of bearings and frictional parts by mingling the oil with the steam in any desired relative proportion, so that it will be carried therewith to the point or points where it is required.

The object of the invention is to utilize condensed steam, either under pressure or not, to cause the oil to flow into a delivery-pipe, and to so regulate the admission of the condensed steam and the flow of the oil that the lubricant may be supplied in any desired quantity and with any desired speed.

To this end the invention consists of new and improved means for attaining the desired results, all as hereinafter fully described, reference being had to the accompanying drawings, forming a part of this specification.

In the said drawings, Figure 1 is a side elevation of my improved oil-cup, the same being connected with the steam-pipe leading to the cylinder of a steam-engine. Fig. 2 is a vertical transverse section on the line 2 2 of Fig. 1.

The same letters of reference are used throughout.

The letter B designates the body of my improved oil-cup, having an opening in its upper end closed by any suitable air-tight cap, as C. The bottom of the cup is continued downwardly into what I term the "guard" G, and at the lower end the guard is provided with an external screw-thread *g*.

J is a cock, whose upper extremity *j* carries a screw-thread similar to that lettered *g*.

A is a curved metallic arm, approximately of the shape shown in Fig. 2, and having openings near each end which are screw-threaded, so as to fit the screws *g* and *j*. When this arm is screwed tightly upon these screws, the cup is supported thereby above and in direct alignment with the cock J.

P is a pipe, seated at its lower end in the screw-threaded upper extremity of a passage *p*, which extends through the guard, and the said pipe P projects upwardly within the body B of the cup nearly to its top, as shown in Fig. 2. The lower end of the passage *p* is led to the center of the lower threaded end *g* of the guard, and is internally screw-threaded similarly to its upper end. A "drip" or nozzle N is screwed into this lower end and projects downwardly. Intermediately between its ends the passage *p* is provided with a stop-cock E, preferably, but not necessarily, of the form illustrated.

The guard G is provided with a second passage or inlet *i*, which opens into the bottom of the body B and outwardly into the pipe I, a second stop-cock F being seated in the guard G, and preferably on the side opposite to the above-mentioned stop-cock E, to regulate and control the flow through said inlet *i*.

The extreme lower end of the screw-threaded projection *g* and the extreme upper end of the screw-threaded projection *j* are recessed annularly around their central bores, and a short piece of glass tubing S, of sufficient diameter to fit the recesses and of sufficient thickness and strength to withstand somewhat rough usage, is inserted, as shown in Fig. 2. A suitable packing *k* surrounds the tube S and abuts against the ends of the projections *g* and *j*, and packing-nuts K, centrally bored, so as to loosely embrace the glass tube, take onto the exterior threads of the projections and compress the packing when screwed down tightly to effect a close joint at either end of the glass tube, in a manner well understood in the art. When the glass tube is in place, it will surround the nozzle N, and the lower end of the latter will be visible through the glass tube between the nuts K, as seen in Fig. 1.

At any suitable point in the bottom of the body B a small petcock R is inserted, by which the contents of the body of the cup may be drawn off at will.

The operation of my improved oil-cup is as follows: The pipe I being connected to the steam-pipe T at a point *t* somewhat above the top of the body of the oil-cup, and the pipe J′, leading from the cock J, being led into the steam-pipe at any suitable point below the oil-cup, steam from the pipe T will pass into the pipe I and become condensed therein to a certain extent. The body B having been filled or nearly filled with the lubricating-oil and the cap C tightly closed, if now the stop-cock F be slightly opened, the condensed steam from pipe I will flow through the inlet-pipe *i* into the body B beneath the oil, and the latter will rise a trifle, enough oil flowing down pipe P to maintain the level of the oil in the body across the top of said pipe. The stop-cock E being now slightly opened, this overflow of oil will be permitted to flow through the passage *p*, and will drip from the nozzle N into and upon the cock J, such dripping being very plainly discernible through the glass tube S. If now the cock J is opened, this oil will flow through pipe J′ into the steam-pipe T, where it will mingle with the live steam and be carried forward to the cylinder to lubricate the piston therein. It will be seen that the stop-cock F controls the flow of condensed steam into the body B beneath the oil, and this cock may be opened to a greater or less extent, according as the pressure necessitates. The stop-cock E controls the flow of oil after it has overflowed into the pipe P, and prevents a too excessive flow thereof to the nozzle N. For instance, if the pressure were great, the condensed steam admitted through the inlet *i* would quickly raise the body of oil and completely fill the pipe P. In this case, if the stop-cock E were opened to a too great extent, an undesirably large quantity of oil would be passed through the nozzle N, and in a stream rather than in drops. To overcome this the stop-cock E is opened only very slightly, so that, no matter how great the pressure, only the desired amount of oil is permitted to pass downwardly to the nozzle. On the contrary, if the pressure were very light, this difficulty would not arise. The cock J is used simply to admit the flow of the lubricant to the machinery or not at will. If the pipe I be of considerable length, the steam will be more thoroughly and certainly condensed; but this construction gives to the water entering at the inlet *i* a considerable head, which, if not quite the same thing as steam-pressure, in this case must be controlled in the same manner—that is to say, if the stop-cock F is opened to such an extent that a heavy column of water in the pipe I is permitted to enter beneath the oil in the body B, the oil will be driven down the pipe P in undesirably-large quantities. On the contrary, if the pipe I be too short, the steam therein will not condense, but will be admitted as steam beneath the oil, and will rise in bubbles through the latter and pass down the pipe P without attaining the desired result. In the preferred form of my device, therefore, I make the pipe I of considerable length, regulate the admission of condensed steam by the stop-cock F, so that only enough will be admitted to compensate for the outflow of oil, yet without creating a compression of the water, the oil, or the air within the body, and regulate the outflow of oil from the pipe P to the nozzle N, so that it will drip from the latter and be plainly discernible. The body B may be filled with oil from time to time by removing the cover C, and the pipe P may be unscrewed and withdrawn from the open upper end of the body for cleaning when desired. When the oil in the body has been all consumed and the operator observes water dropping from the nozzle N, the stop-cock F is closed, the petcock R is opened, the cover C is removed, and the water within the body B is drawn off. The petcock R is then closed, the body filled with oil, the cover replaced, the stop-cock F reopened, and oil again flows from the device. When it is desired to remove the glass tube S for cleaning or repair, the threaded projection *g* of the guard G is unscrewed from the arm A, the nuts K removed, the arm A unscrewed from the threaded projection *j* of the cock J, and the cleaning may take place. I have discovered, however, that by constructing the arm A substantially as herein shown, and by making the glass tube a trifle shorter than the distance between the bottoms of the above-mentioned recesses, the nuts K K can be operated by an ordinary wrench and the glass tube withdrawn without entirely disconnecting the several parts of my device, and this I claim is a decided improvement and advantage over oil-cups similiar in general construction to this and which have been heretofore made.

What I claim as new is—

1. The combination, with an oil-cup provided on its lower end with a guard formed with an inlet leading to the cup and an outlet leading therefrom, of a supply-pipe communicating with the inlet, a pipe located in the cup and communicating with the upper end of the outlet, a nozzle secured to and communicating with the lower end of such outlet, and two stop-cocks, one for the inlet and the other for the outlet, as and for the purpose set forth.

2. The herein-described oil-cup, the same comprising the body B and the guard G, having an exteriorly-threaded extension *g*, provided with a central perforation, and with an enlarged recess around the lower end of said perforation, in combination with the cock J, having an exteriorly-screw-threaded projection *j*, provided with a central perforation, and with an enlarged recess around the upper end of said perforation, and the glass tube S, its ends fitting in said recesses, and packing-nuts K, engaging said exterior screw-threads at their ends, and with the curved arm A, having threaded apertures near its

ends engaging said projections above and below the glass tube, as and for the purpose described.

3. In an oil-cup, the guard G, having the passage *p* and the inlet *i*, the pipe P, screwed into the upper end of said passage, the drip-nozzle N, screwed into the lower end of said passage, and the pipe I, connected with said inlet, in combination with the stop-cock E, for controlling the flow of oil through said passage, and the stop-cock F, for controlling the flow of water through said inlet, substantially as described.

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

MILTON S. CABELL.

Witnesses:
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