(No Model.)

W. S. COOPER.

OIL CUP.

No. 277,683. Patented May 15, 1883.

FIG. 1

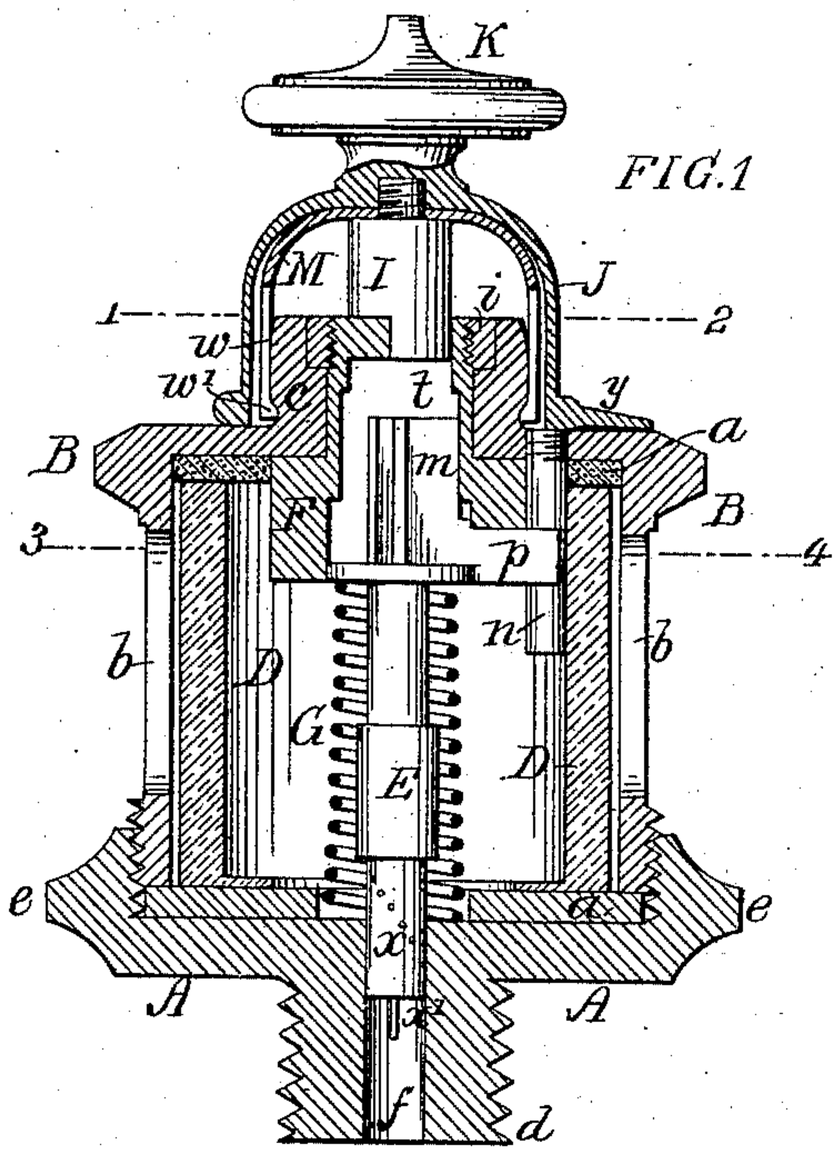


FIG. 4

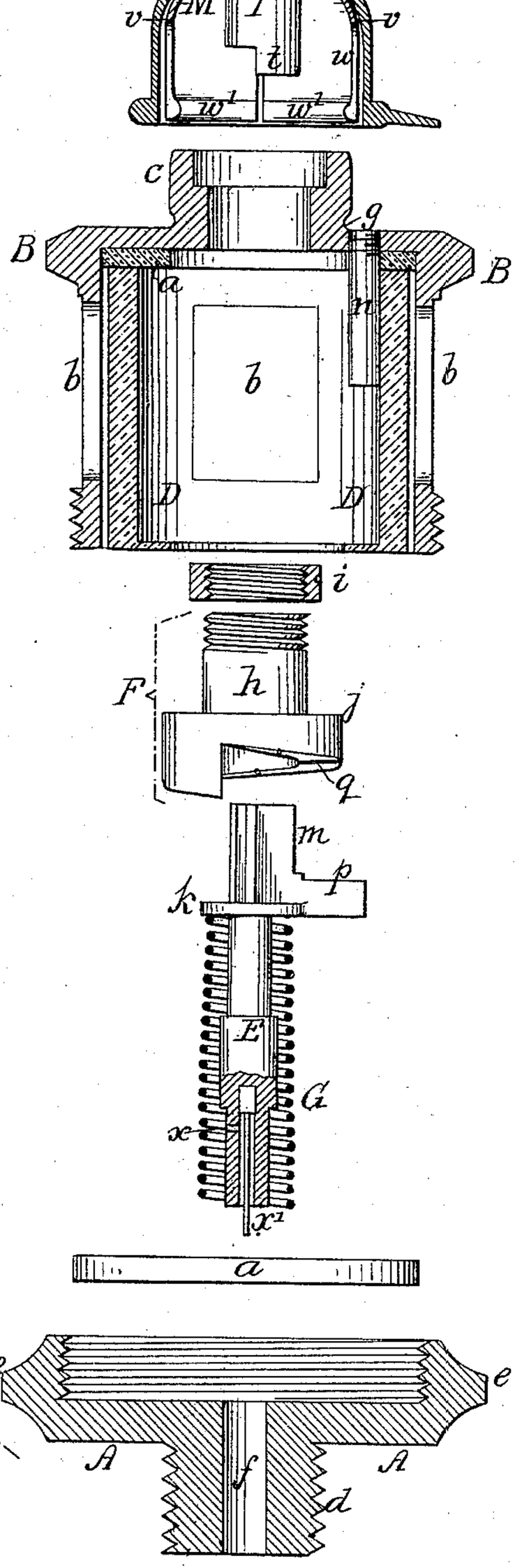


FIG. 2.

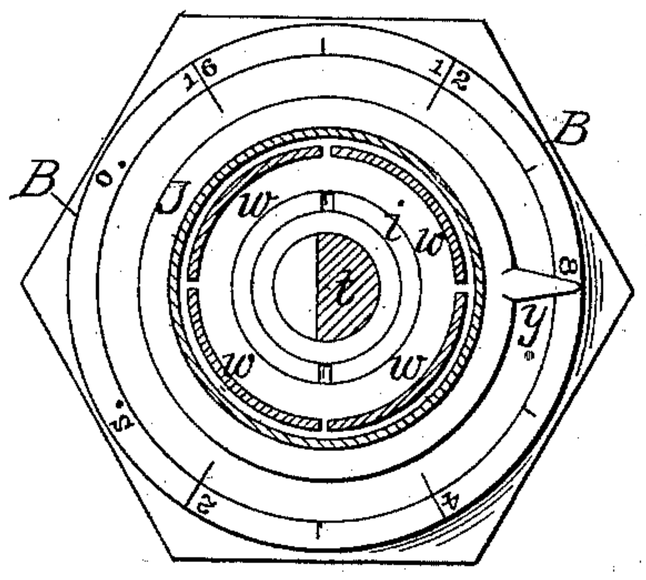
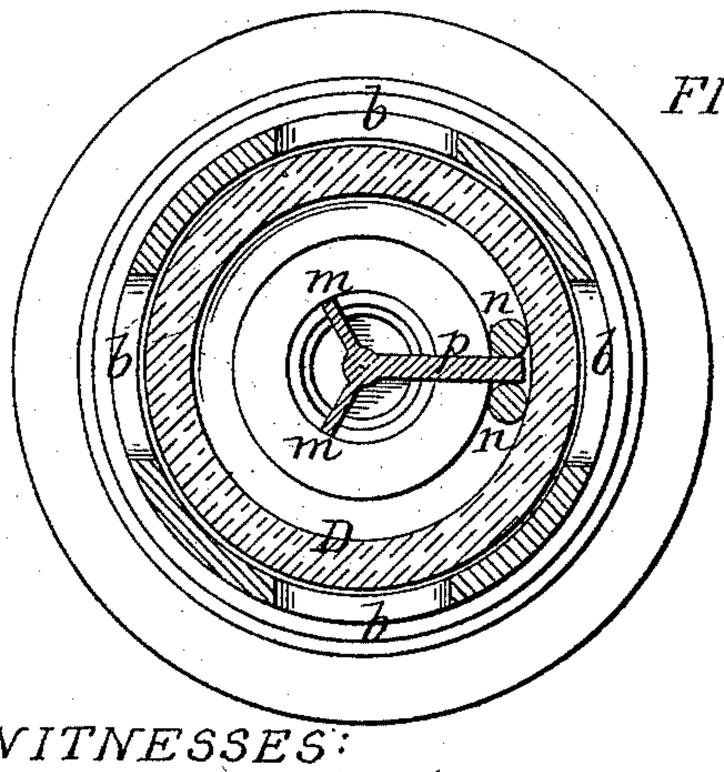


FIG. 3.



WITNESSES:
Hamilton O. Turner.
James F. Jobin.

INVENTOR:
William S. Cooper
by his Attorneys
Howson and Sons

UNITED STATES PATENT OFFICE.

WILLIAM S. COOPER, OF PHILADELPHIA, PENNSYLVANIA.

OIL-CUP.

SPECIFICATION forming part of Letters Patent No. 277,683, dated May 15, 1883.

Application filed November 13, 1882. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM S. COOPER, a citizen of the United States, and a resident of Philadelphia, Pennsylvania, have invented certain Improvements in Oil-Cups, of which the following is a specification.

My invention comprises improvements in that class of oil-cups which are intended to deliver a certain number of drops of oil per hour to the bearing or other object to be lubricated, my improvements relating to the construction of the casing of the cup, to means for readily and accurately governing the flow of the oil, and to devices for closing the cup and yet permitting ready access to the same when necessary.

In the accompanying drawings, Figure 1 is a vertical section of my improved oil-cup; Fig. 2, a sectional plan on the line 1 2; Fig. 3, a sectional plan on the line 3 4, and Fig. 4 views of the different parts of the cup detached from each other.

The body of the oil-cup consists of the base A, the casing B, and cylinder D, of glass, a packing-ring, *a*, of leather, cork, or other available material being interposed between the top of the glass cylinder and the casing, and between the lower end of the cylinder and the base A. The lower end of the casing is screwed into the base, and has a number of lateral openings, *b*—four in the present instance—through which the glass cylinder and its contents can be observed.

A special feature of my invention may be referred to here. It has been usual to make oil-cups entirely of brass, and as this alloy is comparatively soft the cups were more or less wounded in screwing them tightly into their places by instruments used for the purpose. For this reason the base, instead of being carried upward to form the casing, is made separately therefrom and of wrought or cast iron or of steel, the base, including the tubular branch *d* and flange *e*, being cheaply made by suitable dies and drop-press, or by casting, after which it is turned, the flange *e* internally threaded to receive the lower threaded end of the casing, and the tubular stem also threaded, so as to be screwed into a steam-chest or other object which demands a continuous supply of oil. By applying a suitable wrench to the base it can be screwed tightly into its place without subjecting the upper or brass portion of the cup to any torsion. The lower hollow portion of a spindle, E, fits snugly but so as to slide in the central opening, *f*, of the base, and this portion of the spindle is provided with a number of small holes, *x*, arranged one above the other, and preferably in the spiral course shown. The quantity of oil passing from the body of the cup into and through the hollow end of the spindle and into the central opening of the base will depend upon the number of holes *x* exposed above the base for the entrance of the oil. The portion *h* of a cam, F, is fitted snugly but so as to turn freely in the top of the casing, to which it is confined by an annular nut, *i*, the cam having a shoulder, *j*, for bearing against the under side of the top of the casing.

On the top of the spindle E is a disk, *k*, between which and the base of the cup intervenes a spiral spring, G, the tendency of which is to raise the spindle, and above the disk are three wings, *m*, which fit snugly in the interior of the cam F, but so that the latter can be turned freely on the wings, for the spindle is rendered incapable of turning in the present instance by two pendent pins, *n n*, secured at their upper ends to the casing, a projection, *p*, of one of the wings passing between the two pins, and the upper edge of the projection bearing, owing to the action of the spring, against the inclination *q* formed on the annular under face of the cam.

It will be seen that the altitude of the spindle and the number of holes *x* exposed for the entrance of the oil will depend upon the position to which the cam may be turned.

In the top of the portion *h* of the cam is a segmental opening for the reception of the segmental projection of a spindle, I, which is secured to the inverted cup J, the lower edge of the latter being in contact, or nearly so, with the top of the casing, and the cup being furnished at the top with a wheel, K, preferably serrated at the edge, so as to be easily manipulated. This inverted cup closes the entrance to the oil-cup, and with its spindle and handle serves as an instrument wherewith to turn the cam, and thereby either depress the spindle or permit the spring to raise the same.

The spindle I may have a square or many-sided central projection for entering a corresponding orifice in the top of the cam, or the latter may have the projection for entering an orifice in the spindle; but the cutting away of the latter so as to form the segmental projection adapted to a corresponding orifice in the top of the cam is the most economical plan.

It is essential that the inverted cup should admit of being turned freely, should be retained in its place, and yet should be detachable, so that the oil-cup can be replenished from time to time by pouring oil through the cam. For these purposes I secure another inverted cup, M, to the interior of the cup J, and so sever the same from the lower edge to about the point *v*, so as to convert it into a number of springs, *w*, each of which has an internal rib, *w'*, for engaging in an annular groove, *g*, at the point where the tubular projection *c* of the casing meets the top of the same. These springs are such that while they cling to the said projection *c* within the groove, and thereby serve to maintain the inverted cup J in place, they will yield when an effort is made to detach the cup.

An annular graduated scale is made on the top of the casing, and a pointer, *y*, projects from the lower edge of the inverted cup J, as shown in Fig. 2, the scale being so graduated in accordance with the holes *x* in the spindle that the operator may determine by an examination of the pointer and scale how many holes in the spindle are exposed to the oil in the cup, and he can increase or diminish the flow of oil to the extent desired by turning the cup while he notes the pointer and figures on the scale. The portion *q* of the cam is preferably notched at intervals for the reception of the upper edge of the projection *p*, so as to prevent the accidental shifting of the cam.

The lower tubular portion of the spindle E has a central pin, *x'*, which projects below the end of the spindle, this pin serving to collect the oil which drops from the end of the same centrally through the opening *f*.

Instead of using the cam F and spring G, the cam may be made with a slot adapted for the reception of the projection *p* and adapted to actuate the spindle E in both directions.

I claim as my invention—

1. An oil-cup in which a base, A, of wrought-iron or steel, or other metal or alloy harder than brass, is combined with the brass casing B, forming the body of the cup, substantially as described.

2. The combination, in an oil-cup, of the following elements, namely: first, the body of the cup, forming a reservoir for the oil; second, a spindle, tubular and perforated at its lower end, which is adapted to slide in the outlet-opening of the cup; third, a device for preventing the said spindle from turning; fourth, a cam situated within the cup for determining the altitude of the said spindle; and, fifth, a device outside the cup for operating the cam, substantially as set forth.

3. The combination of the cam F, adapted to be turned in the casing B, and having on its under face an annular inclination, *q*, with the spindle E, prevented from turning in the casing, and having a projection, *p*, forced against the said face of the cam by a spring, substantially as described.

4. The combination of the casing and the cam F, the portion *h* of which is adapted to turn in the top of the casing, with a detachable inverted cup, serving to close the entrance to the casing, and having a spindle or pin so adapted to the cam that the latter may be turned by turning the cup.

5. The combination of the casing of the cup and its tubular projection *c*, having a groove, *g*, with the inverted cup J, having internal springs provided at their lower ends, with ribs for engaging with the groove, substantially as specified.

6. The combination of the casing and its grooved projection *c* with the inverted cup J and an inner inverted cup, M, slotted to form springs, the lower ribbed ends of which engage in the groove of said projection, substantially as described.

7. The combination of the base of the cup having a discharge-opening, *f*, the spindle E, having a tubular lower end adapted to said opening and provided with openings *x*, as described, and mechanism for raising and lowering said spindle, as set forth.

8. The combination of the base of the cup having a discharge-opening, *f*, with the spindle E, having a tubular lower end adapted to the opening and provided with openings *x*, and a central pin, *x'*, as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WM. S. COOPER.

Witnesses:
HARRY DRURY,
HARRY SMITH.