No. 795,230. PATENTED JULY 18, 1905.

C. E. MALMBORG.

LUBRICATOR.

APPLICATION FILED SEPT. 8, 1904.

Fig. 1.

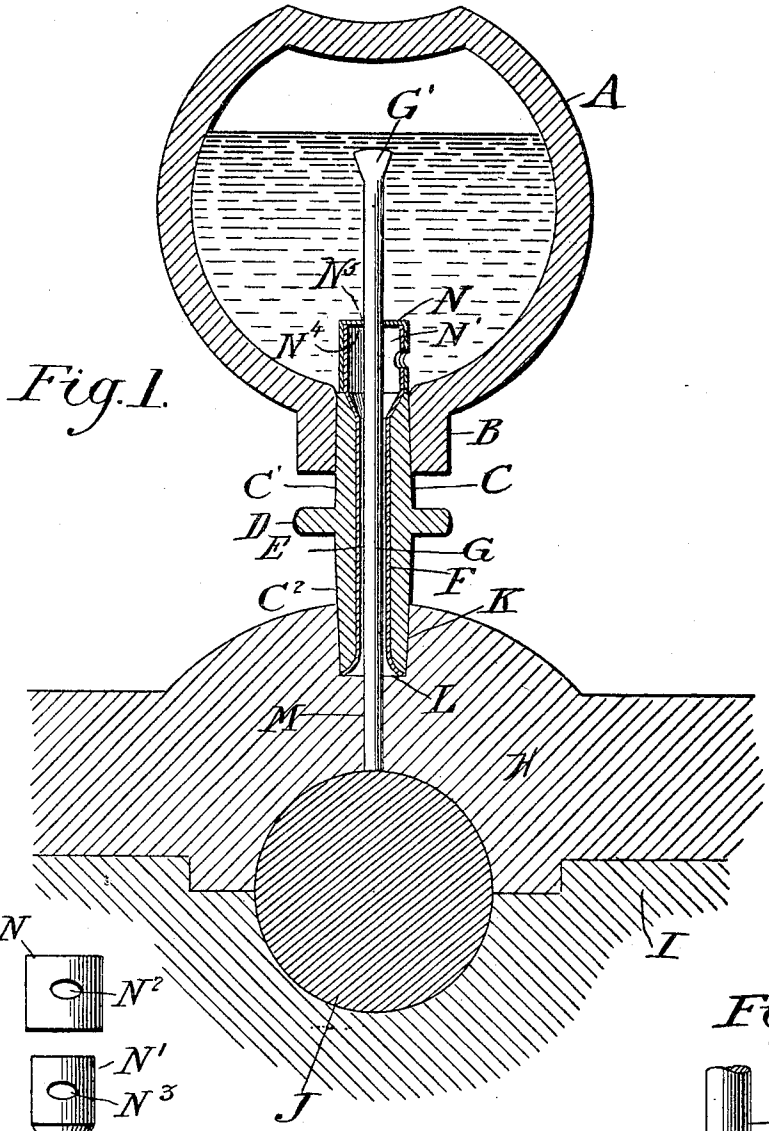


Fig. 3.

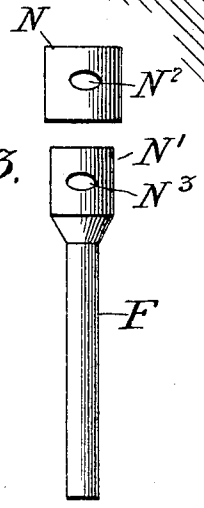
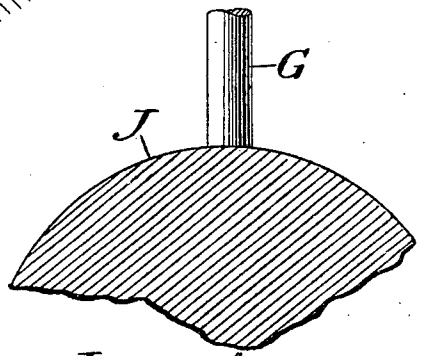


Fig. 2.



Witnesses:
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No. 795,230. Patented July 18, 1905.

UNITED STATES PATENT OFFICE.

CARL EMIL MALMBORG, OF GALESBURG, ILLINOIS.

LUBRICATOR.

SPECIFICATION forming part of Letters Patent No. 795,230, dated July 18, 1905.

Application filed September 8, 1904. Serial No. 223,764.

To all whom it may concern:

Be it known that I, CARL EMIL MALMBORG, a subject of the King of Sweden and Norway, residing at Galesburg, in the county of Knox and State of Illinois, have invented certain new and useful Improvements in Lubricators, of which the following is a specification.

My invention relates to lubricators, and particularly to that class thereof which are used for oiling the shafts or journals of machines.

One object of the invention is to provide a device of the character described which will be economic of manufacture and in use, which will be durable, which will automatically permit a flow of oil or other lubricant when the parts to which it is applied are in motion, and which will effectually prevent a flow of the lubricant when said parts are at rest or when the lubricator is detached therefrom.

Another object is to produce a device of the character described by which the flow of oil may be regulated.

A further object is to provide a device of the character described which may be instantly attached to or detached from an ordinary journal-box without changing the latter, or, in other words, which is interchangeable from one machine to another and which is portable.

Another object is to provide a device of the character described which will be equally effective whether applied to portable, stationary, or moving machines, as locomotives, automobiles, &c.

Further, and I may say the most important, objects consist in providing a device wherein the oil is in a more perfect manner supplied to the feed-needle than heretofore and to so construct the needle that it will conform to the periphery of the shaft which it contacts, and thus more evenly supply oil thereto.

A still further object of the invention is to provide a device of the character described wherein the parts thereof are easily separable without the use of tools and which are assembled without the use of bolts, rivets, screws, or other securing contrivance.

In the accompanying drawings, which illustrate my invention, Figure 1 is a vertical central section. Fig. 2 is a sectional view of the shaft and enlarged elevation of the needle, and Fig. 3 an elevation of the feed-pipe and needle.

Referring now to the drawings by letters, the same letter indicating the same part in the different figures thereof, A represents an oil-cup having a neck B and is preferably of glass or other transparent material to show the amount of oil contained therein; but it may be of any preferred material or materials. It may also be of any desired shape or configuration. C is a stock, preferably of wood, is tapered from its mid-length portion to its ends, and has an integral collar D about its central portion for convenience in handling it. The stock has an opening E extending longitudinally and centrally therethrough for the reception of a feed pipe or tube F, which fits therein and is of the same length as the stock. G is a feed-needle, also of a material capable of maintaining a high polish, is circular in its cross-section, of greater length than the stock C, is of the same diameter throughout its length, and has an enlarged head G'. The needle is of a diameter very slightly less than that of the opening or bore in the feed pipe or tube F, through which it is passed to reciprocate back and forth as occasion requires in use. Its lower end may be flat or concaved to conform in contour to the periphery of the shaft with which it contacts in use.

J is a journal or shaft, and H and I are respectively the cap and pillow of a journal-box in which it is seated.

The oil-cup A being first nearly filled with the lubricant and the needle having been put in place in the feed-pipe E, the short end C' of the stock C is seated in the neck B thereof and fixed firmly and securely therein by frictional contact only by the operator grasping the collar D and forcing and turning the stock in the proper direction. The parts being thus assembled, the device may be turned into any position, and the outer end of the needle may be within the feed pipe or tube, or it may extend outwardly to its extreme length, (where it will be held from escapement therefrom by the enlarged head G',) and it may even be shaken or jolted with much

force and the needle be reciprocated rapidly back and forth; but the external air-pressure on the orifice between the needle and the flared outer end of the feed-tube will prevent even the most minute portion of oil escaping therefrom. The longer end C^2 of the stock may then be seated in an orifice K in the cap H, with its periphery resting on the shoulder L and the needle projecting downwardly through the oil-hole M and its end contacting the shaft or journal J, as shown at Fig. 1. So long as the shaft is at rest no oil will flow down through the orifice E; but as soon as the shaft begins to revolve the motion thereof and the vibration of the needle incident thereto will cause the oil to flow downwardly to lubricate it, and the flow of oil will be proportionate to the speed of the shaft. The quantity of oil supplied to the needle is much greater when the lower end of the feed-pipe is concaved to conform to the contour of the periphery of the shaft, and the flow of oil is facilitated when both the needle and the feed-pipe are concaved.

The upper end portion of the needle is within the oil-cup and is surrounded with oil. The upper end of the feed-pipe is at all times covered with oil. By reason of its upper end being flared the lubricant will much more readily enter the orifice E and be conducted downwardly therethrough by the needle.

By reason of the parts being so constructed that the needle will reciprocate freely back and forth and that the oil will feed equally well whether the needle be in approximately its highest or in its lowest position or at any point therebetween the needle will automatically adjust itself to journal-boxes the thickness of the caps of which differ.

Should a greater supply of oil be required than is given with a needle fitting perfectly within the feed-tube, another needle of a very little less diameter may be inserted, the same feed-tube being used.

It will be apparent that the device may be used on stationary machinery or on moving machinery—such as locomotives, automobiles, and the like—and that it is instantly removable for filling with oil, for changing it from one machine to another, or for any other purpose, and also that the movable parts are instantly detachable from each other. By reason of the air-pressure about and on the flared lower end of the feed-pipe preventing the lubricant from flowing when it is not in position on a running shaft both cleanliness and economy are subserved, as will be evident.

The feed-pipe F has an enlarged cylindrical head N′, having a lateral opening N^3 and an open top N^4. A cylindrical cap or casing N, having an axial opening N^5 at its top and a lateral opening N^2, is adapted to fit snugly over the head N′. When it is desirable to have a maximum flow of oil to the needle, the openings N^2 and N^3 are turned into such position that they will register, so that oil passing from the oil-cup will flow into the opening N^2 and thence into the opening N^3, from whence it will be conducted to the needle, which latter passes longitudinally through the openings N^4 and N^5. Should a lesser flow of oil be required, the casing N is turned so that the opening therein does not fully register with the opening in the head N′. Should it be desired to entirely cut off the flow of oil to the feed-needle through said openings, the cap N is turned on the head N′ to such an extent that the opening N^2 will entirely pass the opening N^3 and the latter be closed by the cap. A very small quantity of oil, sufficient for ordinary use, will then be supplied to the upper portion of the needle, which extends through the opening N^5 in the top of the cap and into the supply of oil in the cup A.

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

A lubricator comprising an oil-cup inclosed at its upper portion and having a downwardly-extended neck, a stock having a longitudinal opening therethrough adapted to be fixed in said neck by frictional contact only, a feed-pipe having an enlarged conoidal head, and a flaring portion at its other extremity, said enlarged head and flaring portion constituting means for retaining it within the stock, and said head having a lateral orifice, a cap fitted over the head of the feed-pipe and having an axial and a lateral orifice, adapted to be turned about the head, and a feed-needle extending through the feed-pipe and the opening in the top of the cap and into the supply of oil in the oil-cup, said needle having a concaved lower end.

In testimony whereof I have set my hand and affixed my seal this 27th day of July, 1904.

CARL EMIL MALMBORG. [L. S.]

Witnesses:

CARL I. JOHNSON,

L. M. RICHARDS.