

Feb. 11, 1936.

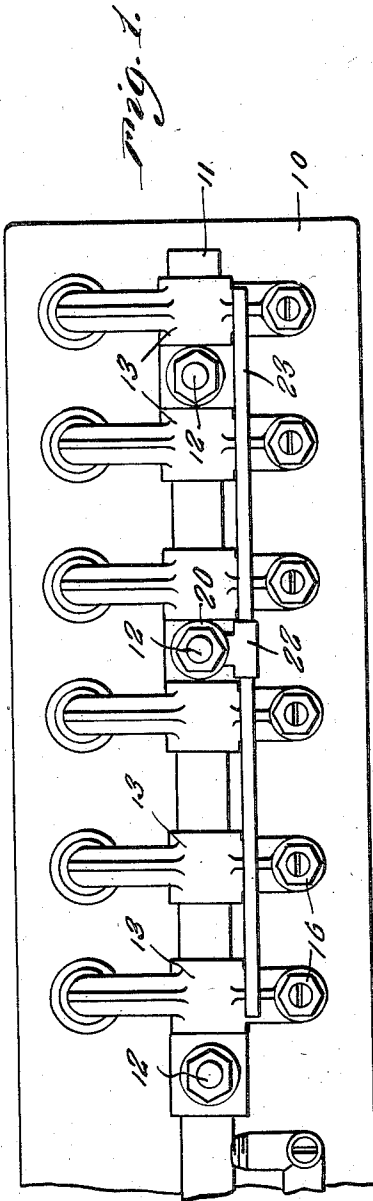
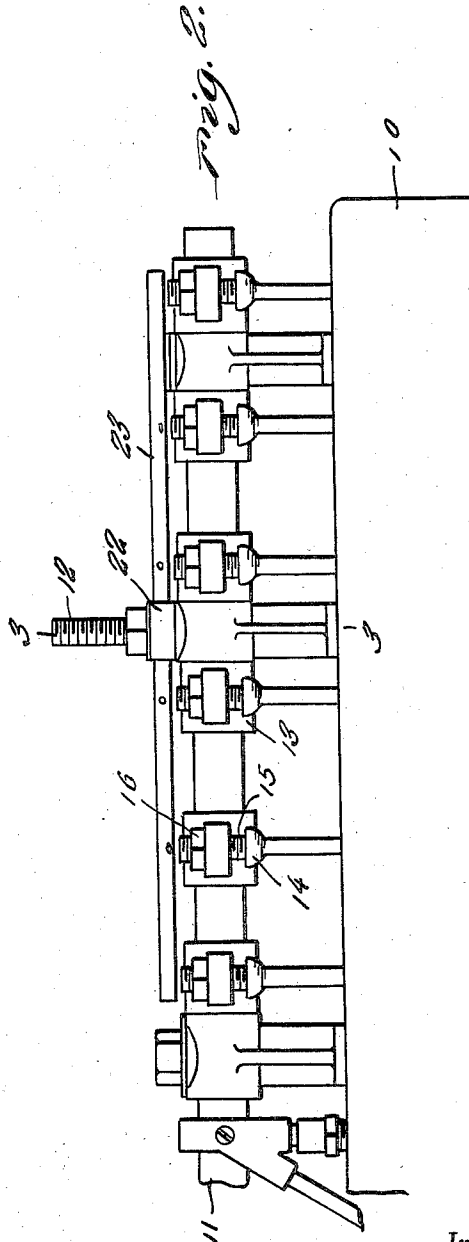
J. LONGO

2,030,646

LUBRICATING DEVICE

Filed Sept. 26, 1934

2 Sheets-Sheet 1



Inventor

Joseph Longo

By *Clarence A. O'Brien*
Attorney

Feb. 11, 1936.

J. LONGO

2,030,646

LUBRICATING DEVICE

Filed Sept. 26, 1934

2 Sheets-Sheet 2

Fig. 4.

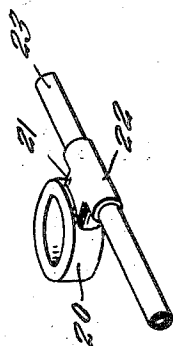


Fig. 8.



Fig. 6.



Fig. 7.



Fig. 5.

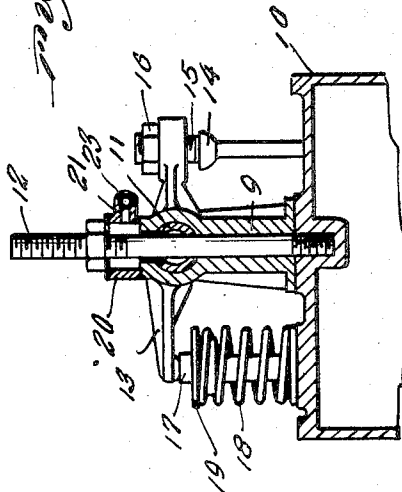
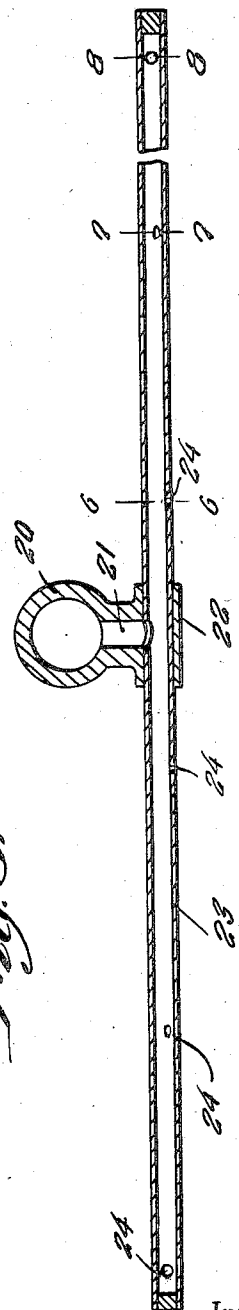


Fig. 3.



Inventor

Joseph Longo

By *Charles A. O'Brien*
Attorney

UNITED STATES PATENT OFFICE

2,030,646

LUBRICATING DEVICE

Joseph Longo, Syracuse, N. Y.

Application September 26, 1934, Serial No. 745,623

3 Claims. (Cl. 184-6)

This invention relates to new and useful improvements in the lubrication of internal combustion engines.

An object of this device is to provide means for lubricating the rocker bar mechanism and to supply a cushioning oil film for the various contact points, thus obviating the usual noise and the wear of the members.

A further object of the proposed invention is to present a device of the character described above which may be utilized for both single and multiple cylinder engines and so designed that it can be easily attached to the conventional rocker arm mechanism.

A still further object of this device is to provide means for directly lubricating the usual ball and socket contact of the rocker arm and push rod, whereby the socket portion is continuously supplied with lubricating oil, which is there atomized by the contact points and disseminated to the various parts of the valve mechanism.

Various other objects and advantages will become apparent from the following description with reference to the accompanying drawings, wherein:

Figure 1 is a top plan view of a multi-cylinder engine equipped with the proposed invention.

Figure 2 is a side elevational view of the same.

Figure 3 is a vertical cross sectional view of the engine taken on the line 3-3 of Figure 2.

Figure 4 is a detail view of the proposed lubricating device.

Figure 5 is a longitudinal cross sectional view of the lubricating device.

Figures 6, 7, and 8 are vertical cross sectional views of the oil distributing pipe, taken on the lines 6-6, 7-7, and 8-8 respectively of Figure 5.

Describing the invention in detail, the reference numeral 10 designates the conventional cylinder head of an internal combustion engine having an overhead valve mechanism which comprises the usual hollow rocker arm shaft 11, secured to the cylinder head by the cap screws 12. Pivotally mounted thereon, in spaced relation along the shaft, are the rocker arms 13 as shown in Figure 1.

Each arm is engaged, at one end thereof, by a push rod 14, through the medium of the contact adjusting screw 15 equipped with the usual lock nut 16. The opposite end of the rocker arm engages valve stem 17 which is normally urged upwardly by the valve spring 18 acting against the washer 19 as is clearly shown in Figure 3.

The numeral 20 designates an annular member resting on the intermediate rocker arm shaft sup-

porting bracket 9. Member 20 being disposed circumjacent the associated cap screw 12 and secured in position thereby in alinement with the aperture provided in the bracket to accommodate the cap screw.

The annulus is provided with a radially extending channel portion 21, made integral therewith and which terminates at its outer end in a substantially T-shaped supporting bracket 22 which is adapted to accommodate a distributor pipe or oil manifold 23 which communicates with the channel.

The distributor pipe is provided with longitudinally spaced outlets 24 stepped downwardly in a direction away from the oil source.

It will thus be seen that in operation oil is forced through the shaft 11 by an oil pump (not shown) and the pressure allows the oil to rise through the opening made for the cap screw, and to pass into annular member 20 from which it escapes through the channel portion 21 into the distributor pipe 23, discharging through the apertures therein onto the free ends of the rocker arms for lubricating the push rod and rocker arm assemblies.

In the drawings, the distributor pipe or oil manifold 23 is shown positioned adjacent the push rod engaging ends of the rocker arms, but variations in respect to the location thereof may be made by lengthening the channel portion 21 so that the manifold may be disposed directly above the contact points of the rocker arms with the push rods thus affording direct lubrication to the ball and socket assemblies.

The distributor pipe 23 has the outlet ports 24 gradually increasing in diameter from the two inner ports to the outer ports, and these ports 24 are stepped downwardly from the inner ports to the outer ones, the inner ports being located relatively high on side portions of the pipe, and the outer ports passing through the lower or bottom part of the pipe, the remaining ports being located in the pipe at intermediate points between the bottom part and said side portions through which the inner ports pass. This construction and arrangement of ports 24 provides a steady and uniform flow of oil to all of the rocker arms. The oil enters the pipe 23 at low pressure and slowly commences to fill the pipe, but due to the fact that the inner and intermediate ports 24 are raised above the bottom of the pipe, the initial flow of oil will not pass through these ports, but will pass to the ends of the pipe and start to drip from the outer ports. Then as the level of oil in the pipe rises, some of the oil will start to drip

from the intermediate ports and finally oil will drip from the inner ports. Thus after the oil in pipe 23 has reached a level above the inner ports, all of the ports will receive oil, which will drip therefrom upon the rocker arms. By making the ports gradually increase in size from the inner ports to the outer ports, there is no danger of the inner ports discharging more oil than the outer ports, as would occur if the inner ports were of larger diameter, due to the fact that the pressure is greater at the inner portion of the pipe 23, as it is close to the entrance 21. Therefore, it is necessary to increase the size of the ports from the inner ports to the outer ports, as well as to step the ports downwardly from the inner ports to the outer ports. Thus this arrangement of the ports insures a steady supply of oil through all of the ports regardless of their distance from the source of oil supply.

20 This invention is particularly unique in that the device causes the oil to flow directly to the valve stems thus insuring positive lubrication. It also lubricates at a point where the rocker arm pivots on the shaft. A substantial portion of the oil droppage by the use of this device will flow toward the push rod end and the rest will flow toward the other end of the rocker arm engaging the valve stem thus assuring positive lubrication of same.

30 It will, therefore, be understood that the particular embodiment of the invention herein disclosed is of an illustrative character and not restrictive and that variations and modifications may be made with respect thereto as properly fall within the scope of the appended claims.

What is claimed is:

1. A lubricating device for overhead valves comprising an oil reservoir connected with the rocker

arm shaft, a distributor pipe connected with the reservoir and disposed adjacent the push rod engaging ends of the rocker arms and in spaced parallel relation to the said shaft, and having a longitudinal series of downwardly stepped apertures therein for uniformly lubricating the push rod and rocker arm assemblies.

2. A lubricating device for overhead valves comprising an annular member secured in position by the cap screw of the rocker arm mechanism to receive oil therefrom, and having a radially projecting channel portion integral therewith, a distributor pipe communicating with said channel and disposed adjacent the push rod engaging ends of the rocker arms and in spaced parallel relation to the said shaft, and having graduated and downwardly stepped apertures therein for lubricating the rocker arm and push rod assemblies.

3. A lubricating device for overhead valves comprising an annular member secured in position by the cap screw of the rocker arm mechanism to receive oil therefrom, a radially projecting channel member connected with the annular member and in communication therewith, the outer end of the channel member having an elongated tubular portion connected therewith and extending at right angles thereto, a pipe having an intermediate portion held in the tubular part with the perforation in the pipe connecting the interior of the pipe with the channel member, and said pipe having other perforations therein located adjacent the rocker arm for supplying lubricant to said arms, said other perforations being stepped downwardly from the inner ones to the outer ones, with said outer ones located in the bottom part of the pipe.

JOSEPH LONGO.