May 24, 1932. M. BOUCHER 1,859,549

LUBRICATING SYSTEM

Filed Nov. 13, 1929 2 Sheets-Sheet 1

Fig. 1.

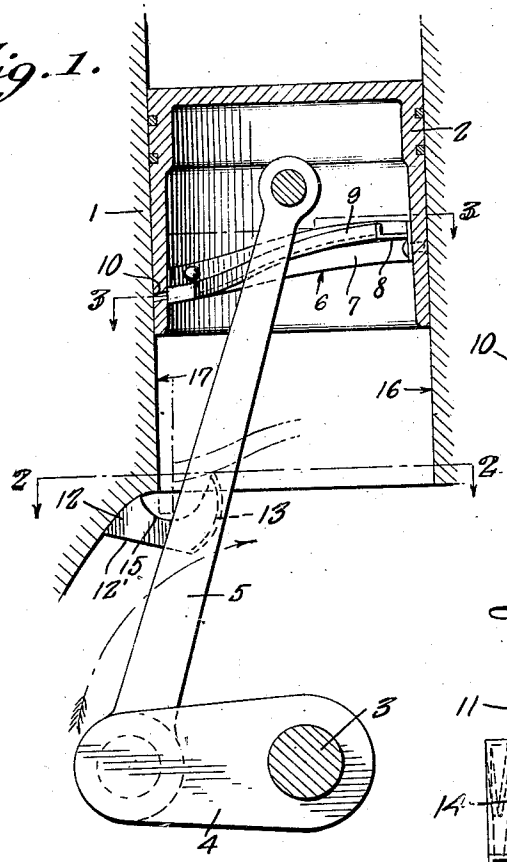


Fig. 3.

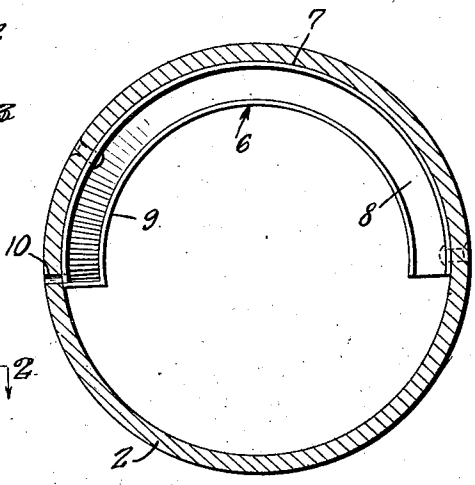


Fig. 4.

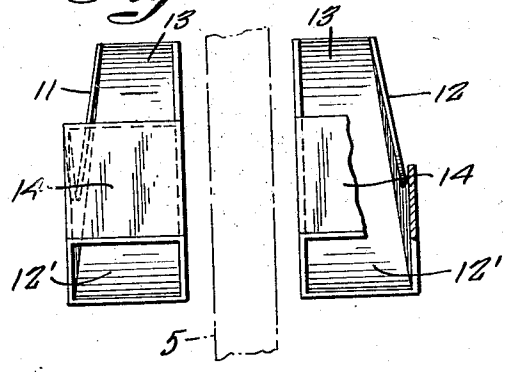


Fig. 2.

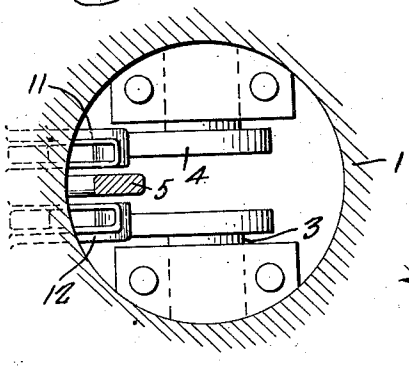
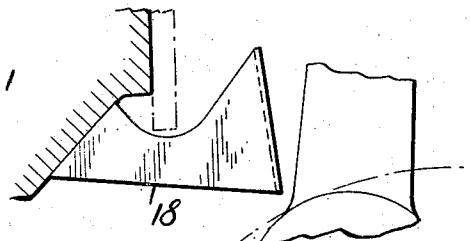


Fig. 5.



MORRIS BOUCHER
INVENTOR

BY Victor J. Evans

ATTORNEY

May 24, 1932. M. BOUCHER 1,859,549

LUBRICATING SYSTEM

Filed Nov. 13, 1929 2 Sheets-Sheet 2

Fig. 8.

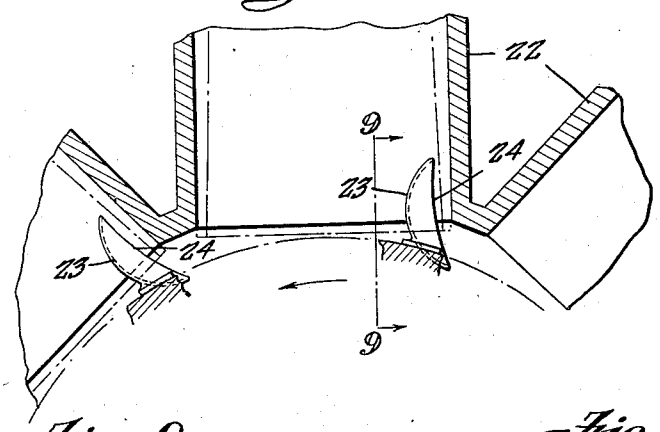


Fig. 9.

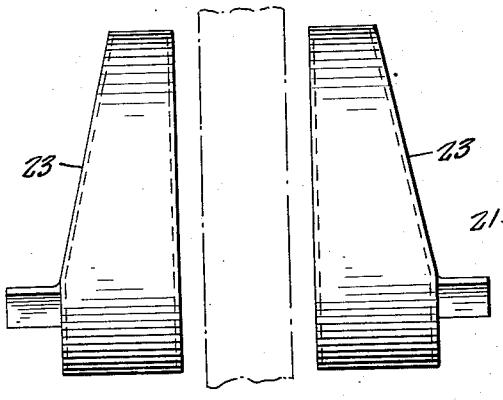


Fig. 6.

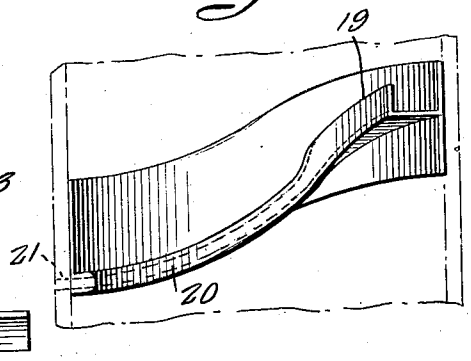


Fig. 7.

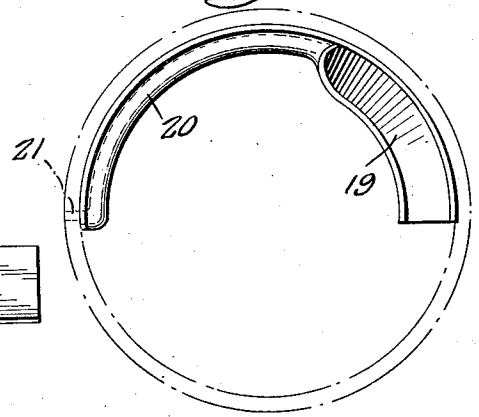
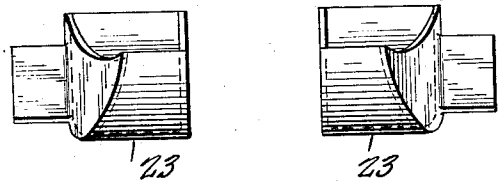


Fig. 10.



MORRIS BOUCHER,
INVENTOR

BY Victor J. Evans

ATTORNEY

Patented May 24, 1932 1,859,549

UNITED STATES PATENT OFFICE

MORRIS BOUCHER, OF MARCH FIELD, CALIFORNIA

LUBRICATING SYSTEM

Application filed November 13, 1929. Serial No. 406,912.

My present invention has reference to a means for properly lubricating the cylinders and pistons of internal combustion engines, so that an equal quantity of lubricant will be delivered thereto. As is well known the cranks on the shafts of engines of this character dip into and splash the lubricant against the walls of the engine cylinders, the shaft, however, except in reverse speeds travels in one direction, so that only one wall of each of the cylinders and one side of each of the pistons is properly lubricated. It may, therefore, be considered the object of this invention to provide a simple means for directing a lubricant splashed by the cranks against the thrust side of the motor, that is, the side of the cylinder and piston that receives the most wear during the power stroke, so that these portions of the pistons and cylinders will be effectively lubricated to prevent undue wear and consequent scoring of such sides of the pistons and cylinders.

A still further object of the invention is the provision of a means for this purpose which can be readily attached to and formed with the pistons and with the engine block below the cylinders of any known type of internal combustion engines without interfering with the remaining structure thereof.

It is a still further object to provide a lubricant system or means for this purpose which shall be simple in construction, cheap to manufacture and which will perform its purpose with ease, accuracy and efficiency.

The invention will be fully and comprehensively understood from a consideration of the following detailed description when read in connection with the accompanying drawings which form part of the application, with the understanding, however, that the improvement is capable of extended application and is not confined to the exact showing of the drawings nor to the precise construction described and, therefore, such changes and modifications may be made therefrom as do not affect the spirit of the invention nor exceed the scope thereof as expressed in the appended claims.

In the drawings:

Figure 1 is a sectional view through a portion of an engine cylinder to illustrate the application of my improvement, the piston and other parts being also in section.

Figure 2 is a horizontal sectional view on the line 2—2 of Figure 1.

Figure 3 is a sectional view through the piston approximately on the line 3—3 of Figure 2.

Figure 4 is a front elevation of the lubricant deflectors, the piston connecting rod which travels therebetween being indicated by the dotted lines.

Figure 5 is a fragmentary side elevation to illustrate a slight modification.

Figure 6 is a side elevation of a lubricant trough in accordance with this invention, the same being a slight modification from that disclosed by Figures 1 and 3.

Figure 7 is a plan view thereof.

Figure 8 is a fragmentary sectional view through the type of engines having radially disposed cylinders such as those employed upon aeroplanes and illustrating the application of my improvement thereon.

Figure 9 is a sectional view approximately on the line 9—9 of Figure 8, the piston connecting rod being indicated by the dotted lines.

Figure 10 is a front elevation of the lubricant deflectors disclosed in Figures 8 and 9.

In Figures 1 and 2 of the drawings the numeral 1 designates a cylinder of an internal combustion engine, 2 the piston which reciprocates in the cylinder, 3 the shaft, 4 the crank portion of the shaft and 5 the connecting rod between the crank 4 and the piston 2. The piston 2 is of the ordinary construction but in carrying out my invention I either integrally form, bolt, or weld therein a metal trough which is broadly indicated by the numeral 6. The trough, in the showing of the drawings is substantially semi-cylindrical in plane and has an inner flange 7 that is secured to the wall of the piston 2. The flange may be termed the body portion of the trough, the trough proper being somewhat spirally bent in plan to afford an upper portion 8 whose top is open and a lower or downwardly directed portion 9 whose top may be closed. The portion 8 has its end open, but

the end of the part 9 is closed and this part 9 delivers to an oil opening 10 in the piston 2.

The lower portion of the trough is arranged on the thrust side of the piston and likewise on the thrust side of the cylinder 1. The crank 4 rotates in the direction of the arrow as disclosed by Figure 1 of the drawings. On the engine block, directly below the cylinder 1 and at the said thrust sides of the cylinder and piston I fix in any desired or preferred manner the inner ends of director elements 11 and 12. Both of these elements are of the same construction, both being in the nature of channeled elements whose lower faces are open, as at 12′, and whose front faces are arcuate and extended upwardly, as at 13. The top portions of the members 11 are also open, and the closed backs 14 are arranged angularly and are secured to the inner face of the engine block. From the arcuate front the sides of the lubricant deflectors are arched inwardly as at 15 to provide a clearance for the piston on the extreme down stroke thereof.

In operation the crank, traveling through the pockets therefor in the oil pan picks up and would ordinarily dash such oil against the wall indicated for distinction by the numeral 16 of the cylinder 1. The piston rod travels between the deflector elements 11 and the oil from the crank will be directed through the open bottoms of the said elements, against the inwardly curved front walls 12 thereof and be delivered against the second or thrust walls indicated for distinction by the numeral 17 in the cylinder 1. A portion of the lubricant will, of course, be splashed against the wall 16 and the lubricant on the wall 17 is received through the opening 10 in the piston upon the downward stroke thereof and directed into the downwardly rounded or curved trough in the said piston. Also a quantity of oil splashed by the cranks toward the wall 16 will be delivered into the open top of the trough and will be directed downwardly therefrom through the opening 10 in the piston to further lubricate the wall of the piston that travels along the side of the wall 17 of the cylinder 1.

In Figure 5 I have illustrated a slight modification of the oil deflector, the only material difference being that in this instance the outer face of the said deflector 18 is arranged at a slight inward inclination.

In Figures 6, and 7 the trough, which may be either integrally formed on the inner wall of the piston or otherwise effectively secured thereto slightly differs from that above described. The trough comprises an upper downwardly inclined portion 19 which is widened and which has its top open. This portion merges into a downwardly curved pipe extension 20 whose outer end is closed and which communicates with a port or opening 21 in the thrust side of the piston. In Figure 8 I have illustrated the improvement connected in any suitable manner in an engine provided with radial cylinders 22. The crank shaft for the pistons in the cylinder 22 turns in the direction of the arrow disclosed in Figure 8 and the lubricant deflector elements, in this instance, have their outer walls concaved, as at 23 and the sides of their inner faces dished, as at 24, so that the lubricant splashing against the curved walls 23 will be directed toward the thrust wall of the cylinder 22.

Figure 9 illustrates the manner in which the piston connecting rod travels between the lubricant deflectors and Figure 10 illustrates in perspective the said deflectors.

The construction and advantages of my improvement will, it is thought, be understood and appreciated by those skilled in the art to which such invention relates so that further description is not required.

Having described the invention, I claim:—

1. Oil deflectors designed to be secured in an engine directly below the piston cylinder, arranged in pairs to receive the piston connecting rod therebetween, each comprising a channeled member whose lower face is open and whose front face is curved and extended upwardly into the cylinder and whose upper face is also open.

2. Oil deflectors designed to be secured in an engine directly below the piston cylinder, arranged in pairs to receive the piston connecting rod therebetween, each comprising a channeled member whose lower face is open and whose front face is curved and extended upwardly into the cylinder and whose upper face is also open and the side walls from the said open face of the deflector being arched inwardly to afford a clearance for the piston on the extreme down stroke of the piston.

In testimony whereof I affix my signature.

MORRIS BOUCHER.