H. F. MARANVILLE.

LUBRICATING SYSTEM.

APPLICATION FILED OCT. 7, 1910.

1,109,002.

Patented Sept. 1, 1914.

2 SHEETS—SHEET 1.

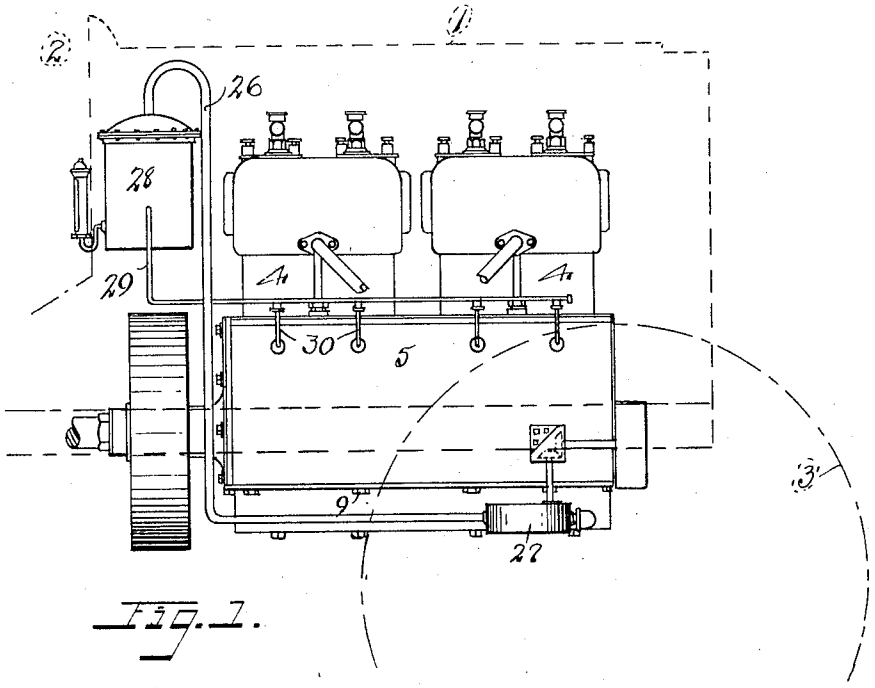


Fig. 1.

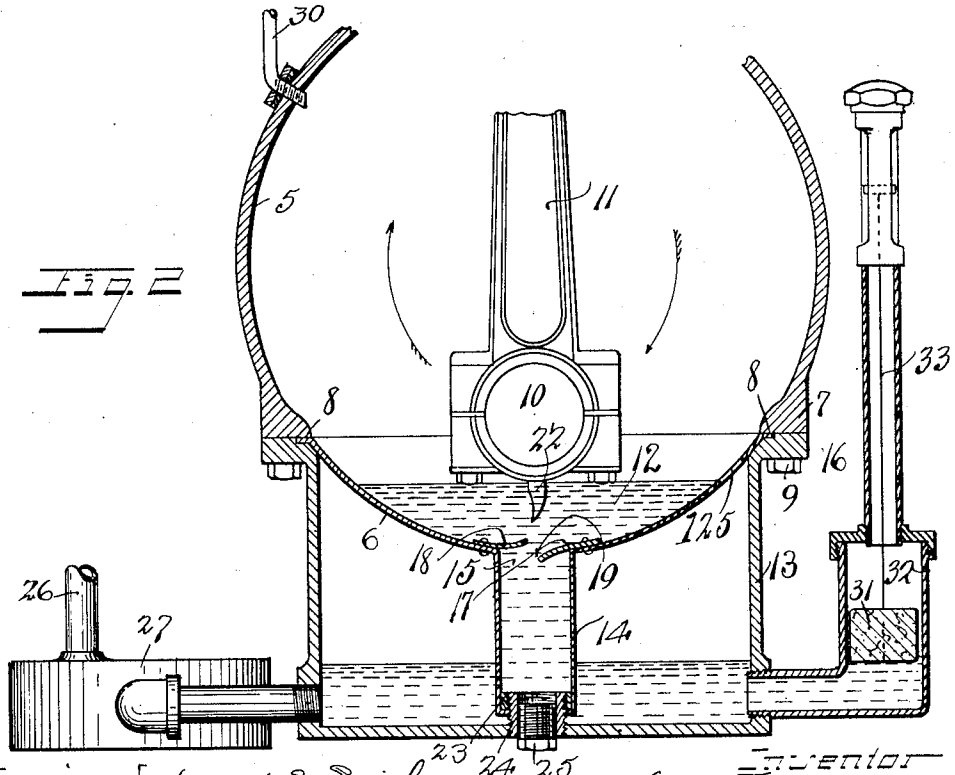


Fig. 2

Witnesses. Harold E. Smith, Hugh B. McGill

Inventor Harvey F. Maranville, By J. B. Hull. Atty

H. F. MARANVILLE.

LUBRICATING SYSTEM.

APPLICATION FILED OCT. 7, 1910.

1,109,002.

Patented Sept. 1, 1914.

2 SHEETS—SHEET 2.

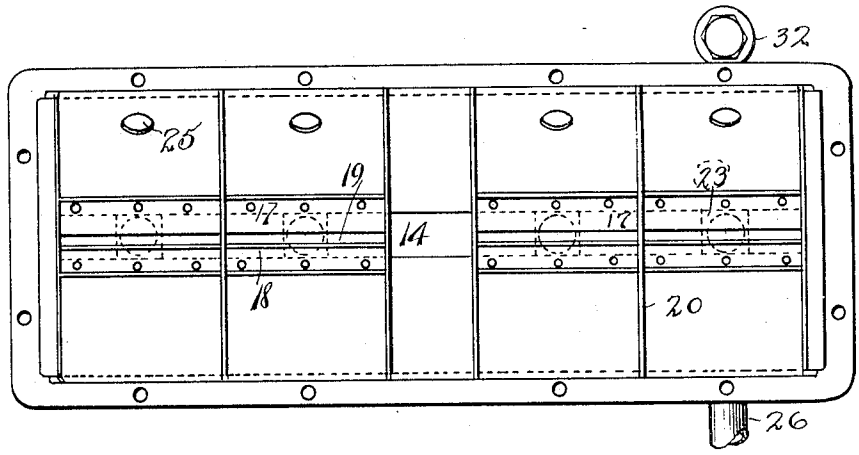


Fig. 3.

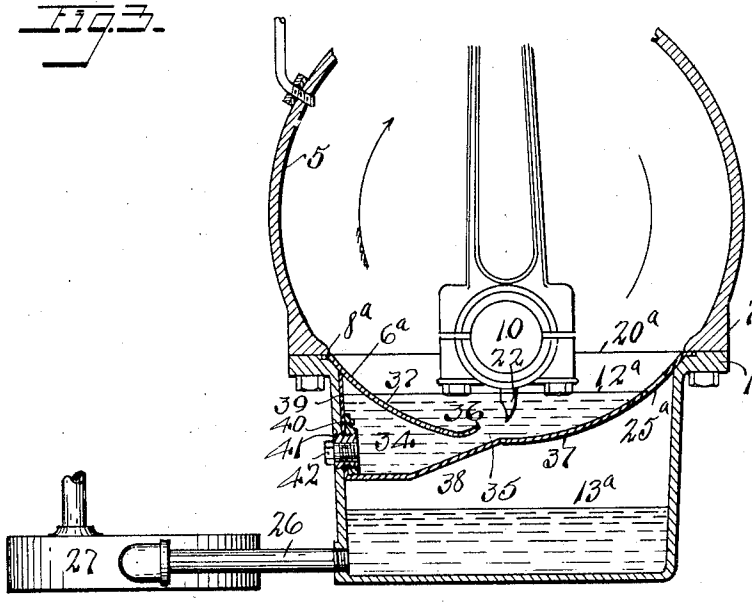


Fig. 4.

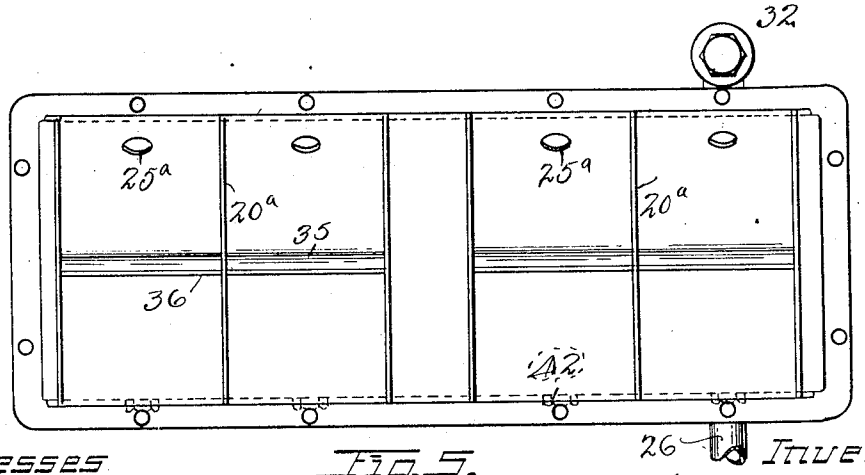


Fig. 5.

Witnesses

Harold E. Smith

Hugh B. McGill

Inventor

Harvey F. Maranville

By J. A. Hall.

Atty

UNITED STATES PATENT OFFICE.

HARVEY F. MARANVILLE, OF AKRON, OHIO, ASSIGNOR TO THE PERFECTION SPRING COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

LUBRICATING SYSTEM.

1,109,002. Specification of Letters Patent. Patented Sept. 1, 1914.

Application filed October 7, 1910. Serial No. 585,819.

To all whom it may concern:

Be it known that I, HARVEY F. MARANVILLE, a citizen of the United States, residing at Akron, in the county of Summit and State of Ohio, have invented a certain new and useful Improvement in Lubricating Systems, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

This invention relates to lubricating systems of the type shown in my pending applications #545,742 filed February 24, 1910 and #569,460 filed June 29, 1910.

The objects of the present invention are generally to provide a system of this kind which, in addition to convenience of application to existing motor vehicles and efficiency in operation, will be economical of construction, with relative cheapness of installation.

Further objects of the invention will appear hereinafter and will be realized by the constructions embodied in the drawings forming part hereof and set forth, in their essential combinations, in the claims hereto annexed.

In the drawings Figure 1 represents a side elevation of a multi-cylinder engine having my invention applied thereto; Fig. 2 a vertical sectional view taken through the lower portion of the crank case having my invention applied thereto; Fig. 3 a plan view of the lower half of the crank case or engine base; Fig. 4 a sectional view, similar to Fig. 2, of a modified form of the invention, and Fig. 5 a plan view of the lower portion of the crank case or engine base shown in the preceding figure.

Describing the parts herein by reference characters, wherein the same numerals denote like parts in the different views, 1 denotes the hood of the automobile, 2 the dash board, and 3 a front wheel thereof. Within the hood and supported by the frame in the ordinary manner is the engine, shown herein as of the four-cylinder type, the cylinders being denoted generally by the numeral 4. The cylinders are supported by a base or crank case comprising an upper section 5 and a lower section 6. The upper section may be of any ordinary standard type, and is shown as provided with flanges or projections to which the lower section may be secured by means of corresponding lateral flanges 8, the sections together forming a crank case. Each cylinder will be provided with a suitable piston, between which and the crank 10 there extends a connecting rod 11.

The lower section 6 is provided with a chamber 12 in which oil is maintained at a level sufficiently high to permit of lubricating the engine parts by the "splash" system and with an oil receptacle 13, arranged externally of said chamber for receiving the surplus oil overflowing from the foregoing chamber; also with a sediment chamber 14 depending from the chamber 12 and communicating with the lower portion thereof.

The lower section 6 is conveniently formed of light sheet metal having a rounded bottom provided with a slot 15 at the lower portion thereof said slot extending preferably the full length of the section. The sides and ends of the lower section 6 are bent or flared outwardly, as shown at 8, and are seated in a suitable recess in the flanges 16 of the receptacle 13, the arrangement being such that when the bottom section 6 is clamped in place, the flanged edges 8 form in effect a gasket between the flanges 7 and 16. To one side of the slot 15 there is secured a downwardly extending plate 17 and to the opposite side there is secured an upwardly extending plate 18, whereby said plates form between them a port 19, one side of which is considerably higher than the other, the higher edge of the port being located on that side of the port toward which the crank shaft 10 turns when the engine is going ahead, as indicated by the arrows.

The chamber 12 will be provided with transverse partitions 20, dividing the chamber into compartments, one for each crank, each compartment being of sufficient depth to retain therein a quantity of oil which will cause the immersion of the lower portion of the crank on its down stroke, even though the engine is tipped, as, for instance, when the vehicle ascends or descends a hill.

To secure lubrication by the splash system, as well as to facilitate the sweeping of the sediment from the chamber 12 into the chamber 14, each crank will be provided with a hollow curved projection 22, the projection being curved downwardly in the direction of rotation of the shaft when driving ahead.

The sediment chamber 14 is provided with suitable clean-out openings, which may be

conveniently arranged as follows: At its bottom, the chamber 14 is provided with a plate 23 having a suitable number of apertures, preferably one for each compartment. The bottom of the receptacle is provided with apertures registering with the former apertures and each aperture is of less diameter than the width of the bottom of the chamber 14. A nipple 24 is threaded into the apertures in said plate and into the bottom of the receptacle 13, thus providing a clean-out opening and at the same time anchoring the chamber 14 in place. For each nipple 24 a removable plug 25 is provided.

Each compartment, provided between the partitions 20, is provided with an overflow opening 125, by means of which oil is maintained at a level to permit the dipping of the crank thereinto. Any oil accumulating in said compartment above a certain level may escape into the receptacle 13 and be pumped from said receptacle, through a conduit 26 and a pump 27 of any preferred construction, into a filter 28, which may be of the type shown in my application #569,459, filed June 29, 1910. From this filter, the oil is supplied through a pipe 29 and suitable branches 30 to the upper section 5 of the crank case, each branch 30 being so arranged as to discharge onto the ascending cranks and thence into one of the compartments within the chamber 12.

The receptacle 13 may be provided with a suitable gage, shown as comprising a float 31 mounted in a casing 32 which communicates with the receptacle 13, said float carrying a rod 33 arranged to coöperate with a suitable index (not shown in detail).

In Figs. 4 and 5 there is shown a modification of my invention in which the chamber containing the oil by which the cranks and other moving parts of the engine are lubricated is of somewhat different construction from that shown in the preceding figures. In this embodiment of my invention, the upper section 5 and lower section 6^a are connected together in the same manner as the sections in the preceding modification,—by means of flanges 8^a clamped between the flanges 7 and 16^a. It is also provided with partitions 20^a dividing the chamber into compartments, one for each crank 10, and each crank is shown as provided with a curved projection 22. Each compartment of the chamber 12^a is provided with an overflow opening 25^a, by means of which surplus oil may flow into the oil receptacle 13^a and thence be removed through conduit 26 and pump 27, as in the preceding modification. The sediment receptacle 34, however, is located at one side of and below, instead of directly beneath, the chamber 12^a. This receptacle communicates with the compartments of the chamber 12^a through ports 35, one side of each port being located at the lowest part of the chamber 12 and the other side being formed by a lip 36 projecting upwardly from the portion of the bottom wall of 6^a which is opposite the bottom wall 37. The bottom wall 37 is extended downwardly to form the bottom wall 38 for the chamber 34 and then upwardly along one of the side walls of the section 6^a, as shown at 39. At suitable intervals, clean-out-openings are provided for the removal of sediment that may be swept into the receptacle 34 by the rotation of the cranks 10. These clean-out-openings are conveniently formed in the manner shown in Fig. 4 and extend through the side wall of the lower section 16^a and the up-turned wall 39 of the receptacle 34. A plate 40 having threaded apertures is applied to the inner surface of the wall 39 and nipples 41 are threaded into said plate and into the side wall of the section 6^a. These nipples are closed by removable plugs 42, threaded thereinto.

Having thus described my invention, what I claim is:

1. A crank case comprising an upper section and a lower section, the lower section being provided with an outlet near the bottom thereof and with an overflow above said outlet, a sediment receptacle located below said outlet, and an oil receptacle inclosing the sediment receptacle and detachably connected to the upper section and arranged to receive the overflow from the lower section.

2. A crank case provided with an outlet near the bottom thereof and having an overflow opening above said outlet, a sediment receptacle located below said outlet, and an oil receptacle inclosing the sediment receptacle and arranged to receive the overflow from the crank case.

3. In an internal combustion engine, the combination with a crank case comprising an upper and a lower section, the lower section being provided near its bottom with an outlet port and having at a higher level than said port an overflow opening, the height of said opening being such as to bring the level of the oil in the case sufficiently high so that the engine crank will dip therein, of a sediment receptacle communicating with said port, an oil receptacle having its bottom below the overflow opening and adapted to receive the oil discharged therethrough, a filter, means for forcing oil from the receptacle to the filter, and connections for returning oil from said filter to said crank case.

4. In an internal combustion engine, the combination, with a crank case having near its bottom an outlet port and having in its wall at one side of its bottom at a higher level than said port an overflow opening, the height of said opening being such as to bring the level of the oil in the case suf-

ficiently high so that the engine cranks will dip therein, of a sediment receptacle communicating with said port, an oil receptacle having its bottom at a lower level than the overflow opening and adapted to receive the oil discharged therethrough, a filter, means for forcing the oil from the receptacle to the filter, and connections for returning oil from said filter to said crank case.

5. The combination of a crank case having adjacent to the bottom thereof an outlet port and having above said port an overflow opening, a sediment receptacle communicating with said port, an oil receptacle connected to the crank case and located below the overflow opening and including the sediment receptacle, means, extending through the oil receptacle and communicating with the sediment receptacle, for removing sediment from the latter receptacle, and means for supplying oil from the oil receptacle to the crank case.

6. The combination of a crank case having adjacent to the bottom thereof an outlet port and having at one side of its bottom and at a higher level than said port an overflow opening, a sediment receptacle communicating with said port, an oil receptacle having its bottom at a lower level than the overflow opening, and communicating therewith, and a crank having a portion adapted and arranged to pass below the said overflow opening thereby to dip into the oil in said case.

7. The combination of a crank case comprising an upper section and a lower section, an oil receptacle having flanges, bolts connecting the flanges of said receptacle to the upper section, a lower section having lateral flanges interposed between the receptacle flanges and the upper section, a sediment chamber within the oil receptacle and communicating with the bottom of the lower section, said lower section being provided with an overflow opening above the bottom thereof arranged to discharge into the oil receptacle and to maintain a level of oil in said section, means extending through the walls of the oil and sediment receptacles for removing sediment from the latter receptacle, and means for supplying oil from the oil receptacle to the crank case.

8. The combination of a crank case comprising an upper section and a lower section, an oil receptacle, bolts connecting said receptacle to the upper section, a lower section having lateral flanges interposed between the adjacent edges of the oil receptacle and the upper section, a sediment chamber within the oil receptacle and communicating with the bottom of the lower section, said lower section being provided with an overflow opening above the bottom thereof arranged to discharge into the oil receptacle and to maintain a level of oil in said section, and means extending through the walls of the oil and sediment receptacles for removing sediment from the latter receptacle.

9. The combination, with the upper section of a crank case for multi-cylinder engines, of a bottom section, said bottom section being provided with one or more transverse partitions forming compartments, a sediment receptacle projecting downwardly from the bottom of the lower section and communicating with all of said compartments, each compartment of the crank case being provided with an overflow opening above the bottom thereof, an oil receptacle arranged to receive the overflow from such openings, means for supplying oil from the latter receptacle to the crank case, and a crank for each compartment, each crank having a portion adapted and arranged to pass below the overflow opening of said compartment, thereby to dip into the oil therein.

10. The combination, with the upper section of a crank case for multi-cylinder engines, of a bottom section, said bottom section being provided with lateral flanges and one or more transverse partitions forming a compartment for each crank of the engine, a sediment receptacle projecting downwardly from the bottom of the lower section and communicating with all of said compartments, each compartment of the crank case being provided with an overflow opening above the bottom thereof, an oil receptacle arranged to receive the overflow from such openings, means extending through the lateral flanges and securing the oil receptacle to the upper section, means for supplying oil from the oil receptacle to the crank case, and a crank for each compartment, each crank having a portion adapted and arranged to pass below the overflow opening of said compartment, thereby to dip into the oil therein.

11. The combination of a crank case for a multi-cylinder engine having its bottom provided with a plurality of ports and a plurality of overflow openings, the latter being located at a higher level than said ports and out of vertical alinement therewith, a sediment receptacle communicating with all of said ports, an oil receptacle adapted to receive the oil discharged through said openings, means for returning oil from said receptacle to said crank case, and a crank corresponding to each port and having a portion adapted and arranged to pass below the corresponding overflow opening, thereby to dip into the oil in said case.

12. The combination of a crank case for a multi-cylinder engine having its lower portion provided with transverse partitions whereby the same is divided into separate compartments, the bottom of each compart-

ment being provided with a port and each compartment having an overflow opening located at a higher level than said ports, said ports and openings being out of vertical alinement with each other, a sediment receptacle communicating with all of said ports, an oil receptacle communicating with said openings, means for returning oil from said latter receptacle to said crank case, and a crank for each compartment having a portion adapted and arranged to pass below the overflow opening thereof, thereby to dip into the oil in said compartment.

13. The combination, in an engine, of a crank case having a port in the bottom thereof and also having in its wall an overflow opening, the height of said opening being such as to bring the level of the oil in the case sufficiently high so that a portion of the engine crank will dip therein and said opening being displaced laterally from said port toward the side of the case where said crank enters the oil, a sediment receptacle communicating with the bottom of the crank case through said port, a receptacle communicating with said opening and adapted to receive the oil discharged therethrough, and a crank having a portion adapted and arranged to pass below the overflow opening thereby to dip into the oil in said case.

14. The combination of a crank case having an upper and a lower section, the lower section having a sediment chamber depending from the bottom thereof and communicating therewith through an outlet port formed between upwardly and downwardly deflected flanges and said section having an overflow opening located above the outlet into the sediment chamber, and a receptacle arranged to receive such overflow.

15. The combination, with a crank case comprising an upper section and a sheet metal lower section having a sediment chamber communicating with the bottom thereof and having an overflow port located above the outlet into the sediment chamber, of a receptacle connected to the crank case and adapted to receive such overflow and extending around the sediment chamber, and a clean out plug extending through a wall of the last mentioned receptacle and into the sediment receptacle.

16. The combination, with a crank case comprising an upper section and a sheet metal lower section having a sediment chamber communicating with the bottom thereof and having an overflow port located above the outlet into the sediment chamber, of a receptacle connected to the crank case and adapted to receive such overflow and inclosing the sediment chamber, a clean out plug extending through a wall of the last mentioned receptacle and into the sediment receptacle, and a threaded reinforcing member in the sediment receptacle for said plug.

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

HARVEY F. MARANVILLE.

Witnesses:

OLIVER M. KAPPLER,

BRENNAN B. WEST.