

1,022,991.

Fig.2.

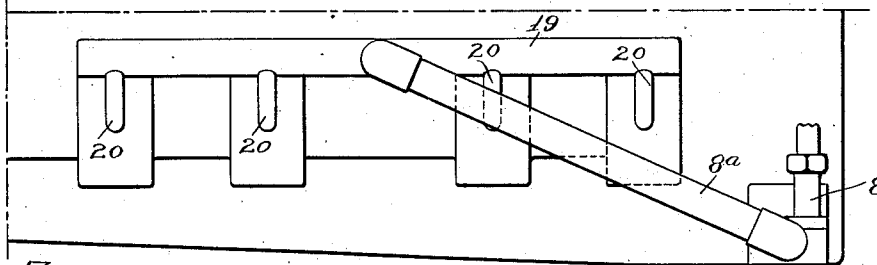


Fig.3.

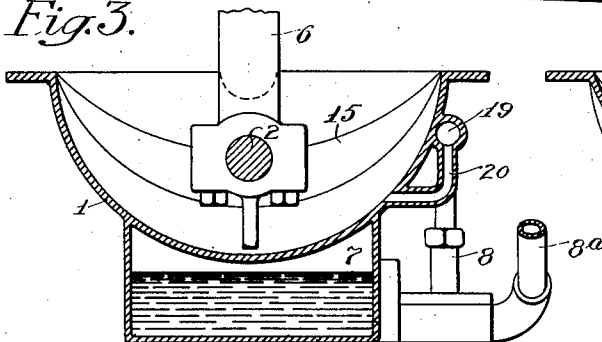
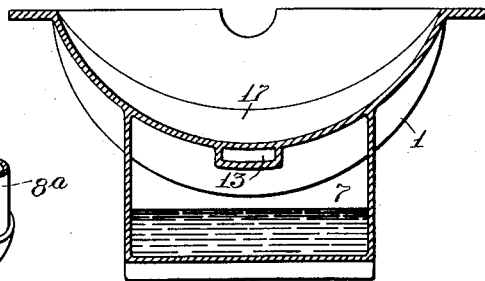


Fig. 4.



Witnesses.
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UNITED STATES PATENT OFFICE.

ERNEST M. WHITE, OF GLOBE, ARIZONA.

OILING SYSTEM FOR AUTOMOBILES.

1,022,991.

Specification of Letters Patent.

Patented Apr. 9, 1912.

Application filed July 29, 1911. Serial No. 641,299.

To all whom it may concern:

Be it known that I, ERNEST M. WHITE, a citizen of the United States, and a resident of Globe, Gila county, Arizona, have invented certain Improvements in Oiling Systems for Automobiles, of which the following is a specification.

One object of my invention is to provide a novel construction, particularly applicable to the crank case of an engine such as those of the type commonly used on motor vehicles, for the purpose of automatically providing an increased supply of oil for lubricating the various parts when the engine is inclined as in ascending a grade; the increased supply being proportional to the amount of such inclination and the arrangement being such that when the engine again assumes a level position the amount of oil in active circulation is shortly reduced to normal.

It is further desired that the construction shall be such that when the front end of the engine is downwardly inclined, oil shall be collected in one or more supplementary reservoirs and thereafter be at once placed in active circulation when the engine returns to a level position so that there is no danger of a failure in the delivery of a proper amount of oil to the various parts requiring lubrication.

These objects and other advantageous ends I secure as hereinafter set forth, reference being had to the accompanying drawings, in which;—

Figure 1, is a vertical section of the lower portion of the crank case of an engine illustrating my invention as applied thereto; Fig. 2, is a side elevation of the crank case shown in Fig. 1, illustrating the piping for distributing the oil to the supplementary reservoirs, and Figs. 3 and 4 are vertical sections, respectively taken on the lines *a—**a*, and *b—b*, Fig. 1.

In the above drawings 1 represents a casting forming the lower portion of an engine crank case and 2 is the crank shaft, in this instance provided with four cranks to which are respectively connected rods 3, 4, 5, and 6. The lower portion of the crank case is in the form of a main reservoir 7 whose bottom slopes from its front end 1^a toward its

rear end and has connected adjacent said latter end a pump 8 designed to draw lubricant from the deepest portion of said reservoir. 55

Either integral with the structure 1 or independent thereof are four supplementary reservoirs 9, 10, 11, and 12, in the present instance in the form of narrow containers of approximately crescent shaped section and extending transversely of the main casting 1, respectively under or in the plane of oscillation of, the various connecting rods 3—6. Each of these supplementary reservoirs has an opening 13 at its forward side to permit of the overflow of lubricant into the main reservoir 7, while at its rear edge there is provided a structure formed in the present instance of a ledge 14 and a transversely extending partition 15 constituting a pocket, which when the forward end of the crank case is raised, serves to catch and retain a certain amount of lubricant. 60 65 70

In addition, at the forward part of each of the supplementary reservoirs is a transversely extending ledge 16 and a transverse partition 17 which in some cases is provided by the partition 15 and in other cases is distinct therefrom, as indicated at 17. There is then formed a second pocket designed to catch and retain lubricant splashed up by the connecting rod when the forward end of the crank case is depressed. 75 80

Each of the various partitions 15 or 17 is of a definite height so as to permit of the overflow of oil after a certain amount has accumulated; there being in the case of the rearmost partition an opening 18 to permit of this overflow. 85 90

Between the ledges 16 and 14 of the two supplementary reservoirs 9 and 10 there is a single transverse partition, although in the case of the two supplementary reservoirs 10 and 11 two partitions 15 and 17 are provided, with an opening between them; it being in most instances immaterial as to which construction is adopted. 95

For supplying oil to the various supplementary reservoirs, the delivery end of the pump 8 is connected through a pipe 8^a with a distributing pipe 19 delivering through pipes 20 into the various supplementary reservoirs. 100

Under operating conditions, with the crank case of the engine in a substantially horizontal position, oil is drawn by the pump from the main reservoir 7 of the crank case and is forced through the pipes 18, 19, and 20 and thence to the various reservoirs 9, 10, 11 and 12.

By what is known as splash lubrication, the various connecting rods deliver this oil to the crank pins and other parts requiring lubricant, the surplus oil escaping from the reservoirs to the main reservoir through the overflow openings 13. If now the front end of the crank case be raised, as when the vehicle on which the engine is mounted is ascending a grade, the oil, instead of escaping through the overflow openings 13, collects in greater quantity within the various supplementary reservoirs 9 and 10, etc., and also is retained by the pockets formed by the partitions 15 and ledges 14.

As a consequence there is provided for each connecting rod a body of oil in excess of that normally in active circulation and which in amount is proportional to the inclination of the engine and hence in some degree likewise proportional to the increased amount of work put upon said engine by reason of the grade. There is thus applied to the parts requiring lubrication a sufficient amount of oil to maintain them in proper working condition and as soon as the engine returns to its horizontal position, the surplus oil previously collected is at once returned to the main reservoir through the overflow openings 13 where it is not in circulation. If, on the other hand, the forward end of the crank case be depressed, as when the engine is descending a grade, the supplementary reservoirs would temporarily contain but relatively small amounts of oil and when the engine returns to the horizontal position it might be compelled to operate for an appreciable time without sufficient lubricant for the various parts. By my construction, however, this condition is avoided, since as soon as the forward end of the engine is depressed, lubricant collects in the pockets formed by the ledges 16 and the partitions 15 or 17, as the case may be, so that as soon as normal conditions again exist, a body of oil is at once delivered to each of the supplementary reservoirs from these pockets so that the connecting rods and their associated parts receive ample lubrication.

It is obvious that while my system is primarily intended for engines used on motor vehicles, it is not necessarily confined to engines of this type, since it may be advantageously employed on engines or other machines whose position varies sufficiently to render it operative.

I claim:—

1. The combination of a crank case hav-

ing a main oil reservoir; a series of containers forming supplementary reservoirs and each having an overflow outlet at its forward side; a pocket for each supplementary reservoir placed to receive and hold oil when the forward end of the crank case is raised; with means for causing oil to flow from the main reservoir to the supplementary reservoirs.

2. The combination of a crank case having a main oil reservoir; a container forming a supplementary reservoir, in position to deliver oil to a crank; said supplementary reservoir having an overflow outlet at its forward side and being provided with a pocket placed to receive and hold oil when the forward end of the crank case is raised; with means for causing oil to flow from the main reservoir to the supplementary reservoir.

3. The combination of a crank case having a main oil reservoir; a container forming a supplementary reservoir placed to deliver oil to the crank and having an overflow; a pocket placed to receive oil when the forward end of the crank case is lowered and formed to deliver such oil to the supplementary reservoir when the crank case is restored to its normal position; with means for causing oil to flow from the main reservoir to the supplementary reservoir.

4. The combination of a crank case having a main oil reservoir; a container forming a supplementary reservoir placed to deliver oil to the crank; and having an overflow; a pocket placed to receive oil when the forward end of the crank case is lowered and formed to deliver the oil to the supplementary reservoir when said crank is restored to its normal position; a second pocket placed to receive oil when the forward end of the crank case is elevated and thereafter to deliver said oil to the supplementary reservoir when the crank case is returned to its normal position; with means for causing oil to flow from the main reservoir to the supplementary reservoir.

5. The combination of a crank case having a main oil reservoir provided with a series of transversely extending containers forming supplementary reservoirs, each of said containers having an overflow at its forward side and being provided with oil receiving pockets at both its forward and its rear sides, said pockets being in position to cause one of them to retain oil whenever the crank case is longitudinally inclined to the horizontal and thereafter return said oil to the main reservoir; with means for causing oil to flow from the main reservoir to the supplementary reservoirs.

6. The combination of a crank case having a main reservoir; a series of containers forming supplementary reservoirs; said containers each being extended upwardly at one

side so that they have a greater holding capacity when tilted in one direction from their normal positions than when tilted in the opposite direction; with means for causing oil to flow from the main reservoir to the supplementary reservoirs.

In testimony whereof, I have signed my

name to this specification, in the presence of two subscribing witnesses.

ERNEST M. WHITE.

Witnesses:

J. T. HARRINGTON,
LESLIE BALLARD.