

W. H. GOLDSTINE.
LOWER CRANK CASE FOR COMBUSTION ENGINES.
APPLICATION FILED JULY 28, 1910.

1,022,413.

Patented Apr. 9, 1912.

2 SHEETS—SHEET 1.

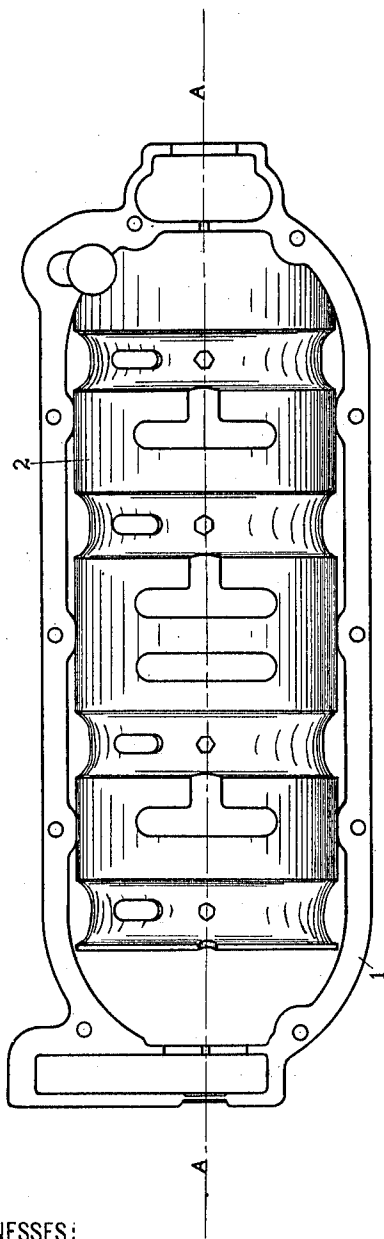


Fig. 1

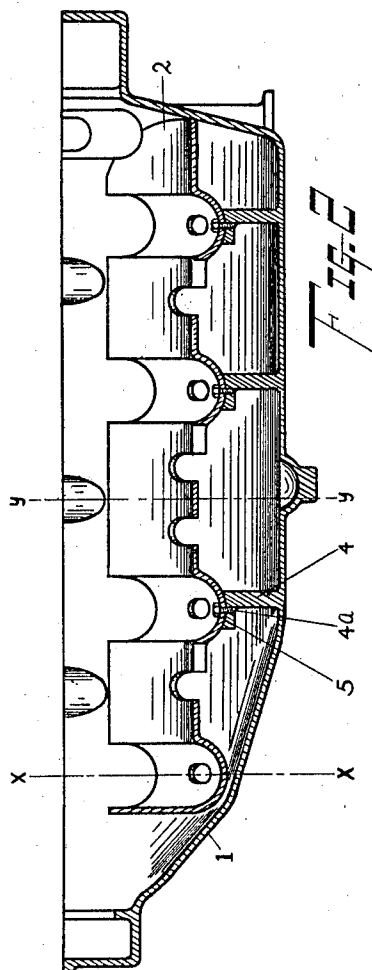


Fig. 2

WITNESSES:

J. Ray Abbey.

Christine A. Braidel.

INVENTOR

William H. Goldstine

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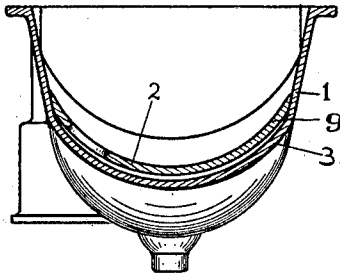


Fig. 3

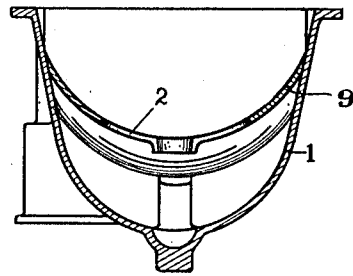


Fig. 4

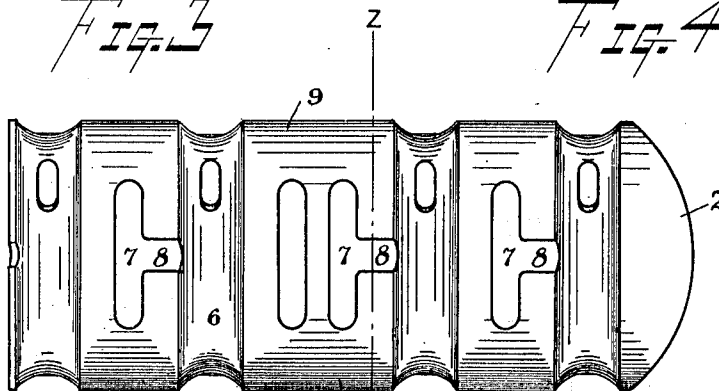


Fig. 5

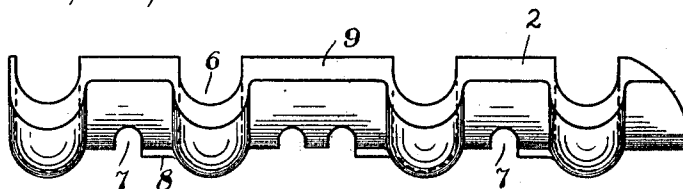


Fig. 6

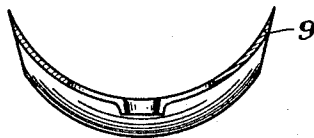


Fig. 7

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UNITED STATES PATENT OFFICE.

WILLIAM H. GOLDSTINE, OF FLINT, MICHIGAN.

LOWER CRANK-CASE FOR COMBUSTION-ENGINES.

1,022,413.

Specification of Letters Patent.

Patented Apr. 9, 1912.

Application filed July 28, 1910. Serial No. 574,382.

To all whom it may concern:

Be it known that I, WILLIAM H. GOLDSTINE, a citizen of the United States, residing at Flint, in the county of Genesee and State of Michigan, have invented certain new and useful Improvements in Lower Crank-Cases for Combustion-Engines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention is a lower crank case for gasolene engines, and is particularly adapted to automobile engines in which the lower part of the crank case is utilized as an oil reservoir. In engines of this type, it has heretofore been customary to cast the lower crank case in one piece and to also cast integral with the crank case a diaphragm or partition dividing the case into a lower oil chamber and an upper crank chamber, the partition being so arranged that the movement of the cranks splashes oil from the lower chamber to lubricate the lower rod connections of the engine, the oil then flowing over at one end of the partition and returning into the lower chamber of the crank case.

To produce a lower crank case, all parts of which are easily accessible for cleaning and inspection, I have devised the crank case illustrated in the accompanying drawings, in which—

Figure 1 is a top plan view of the crank case with the partition in place, Fig. 2 is a vertical section taken on the line A—A of Fig. 1, Figs. 3 and 4 are transverse sections taken on the lines $x-x$ and $y-y$ of Fig. 2 respectively, Fig. 5 is a top plan view of the removable partition, Fig. 6 is a side view, and Fig. 7 is a transverse section taken on the line $z-z$ of Fig. 5.

As is illustrated in the drawings, the device consists in the usual lower crank case 1, in which is removably mounted the partition 2. By making the partition removable I avoid coring and reduce the liability of leaving core sand in such restricted parts of the casting as for instance at 3 in Fig. 3. I preferably support the partition 2 on legs 4 cast integral with the shell 1. The legs 4 are provided with lateral projections 4^a to take the studs or bolts 5 by which the parti-

tion 2 is fastened to the legs 4. The purpose of offsetting 4^a as shown is to enable the drill to pass clear through 4^a before it comes in contact with the shell 1 so that there is less liability of accidentally drilling through the shell and causing a leak, than would be the case if the legs 4 were made solid, providing the drill happened to be put through too far. Partition 2 is formed with as many transversely disposed curved grooves 6 as there are cranks in the engine, to form channels along which the cranks pass when the engine is in operation. Openings 7 are provided in the partition adjacent the grooves 6, being connected to said grooves by chamber 8, to permit the oil to well up from below and flow slowly into the grooves to lubricate the cranks and pistons of the engine by splashing.

It will be noted that the edges 9 of the removable partition 2 fit snugly into the shell 1. This is an important feature of my improvement, in that the oil contained in grooves 6 is prevented from being thrown out from the space above the partition, as would be the case if the edges 9 were not close to the shell 1. At high speeds the engine is thereby prevented from working dry.

When the end of the crank case is tilted, as in an automobile going up hill, the oil is prevented from suddenly surging to the rear end of the crank case and thereby flooding the rear cylinders of the engine and allowing the forward cylinders to run dry. All the oil that reaches the cranks must rise through the openings 7 which are of such size that the oil may pass through but slowly. By this means the engine is thoroughly lubricated without danger of swamping the cylinders with oil or running any of the cylinders dry when the crank case is tipped, as in ascending or descending steep grades.

While I have shown and described the removable partition 2 as being made of a casting, it will be understood that the partition may be made of pressed sheet metal if desired, wire screen or any other suitable material.

By my improved construction I am enabled to produce a lower crank case that is simple and strong and one in which there are no parts requiring the use of thin sand cores and in which no parts of the shell are

subject to excessive shrinkage strain on account of sudden inequalities in thickness of the shell.

5 Having described my invention, what I claim and desire to secure by Letters Patent, is:—

10 A lower crank case comprising a shell, a horizontally disposed partition removably received in the shell, said partition having transverse crank-grooves, said partition formed with openings intermediate said grooves, channels connecting said openings

to said grooves; the lateral edges of said partition adapted to fit closely the walls of the shell, and means carried by the shell 15 to support the partition, for the purposes set forth.

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

WILLIAM H. GOLDSTINE.

Witnesses:

ADA E. DE BOLT,
CHRISTINE A. BRAIDEL.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."
