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CASINGS FOR INTERNAL COMBUSTION ENGINES

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Fig. 1

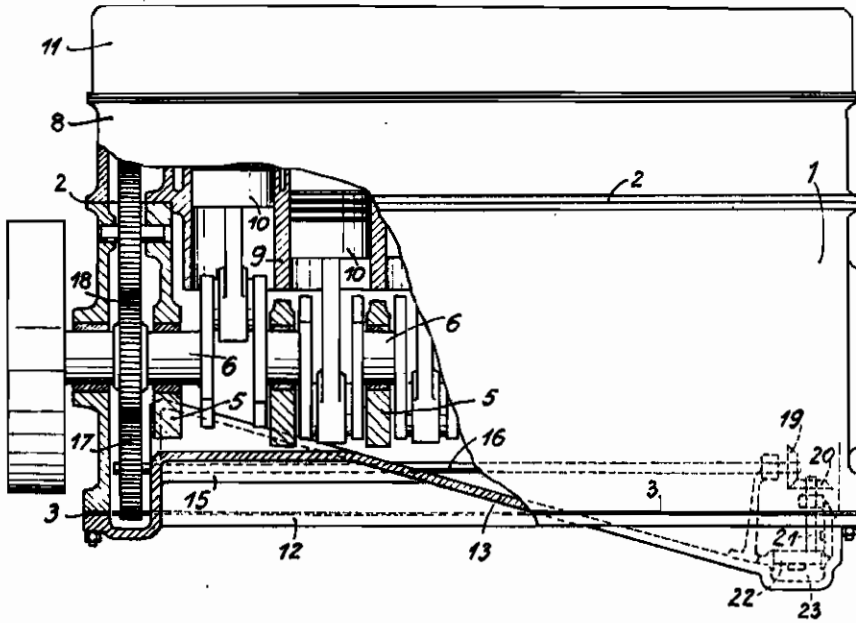
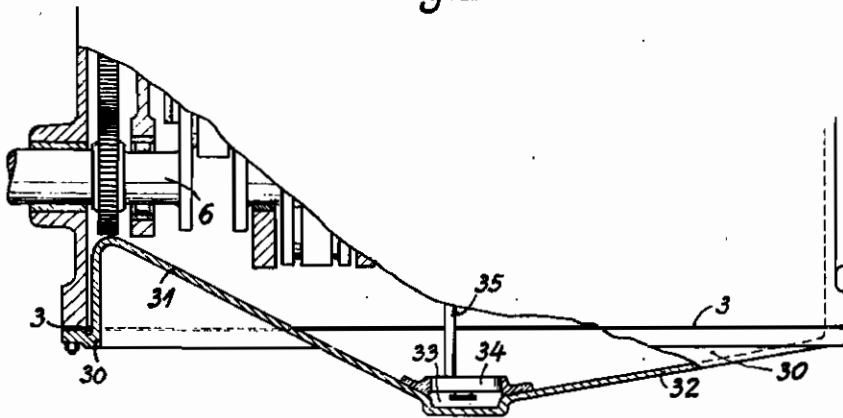


Fig. 2



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CASINGS FOR INTERNAL COMBUSTION ENGINES

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My invention relates to casings of internal combustion engines, especially engines of this kind as they are used in motor cars. Usually such casings are divided into an upper and a lower portion, the horizontal dividing plane going approximately through the axis of the crank shaft. With engines in which the casing is under heavy strain the dividing plane is situated lower and nearer to the bottom of the casing, so that the upper portion because of its greater height is able to endure greater forces because of the larger and more favourable cross section extending over the length of the engine. The rigidity and stiffness of the casing is thus increased so that its walls need not be so thick. This is of special importance with engines in which the cylinders are arranged in one row.

But this kind of construction of the casing involves difficulties with regard to its lower portion because of the usually prevailing narrow space underneath the engine, especially in motor cars, motor boats and other vehicles driven by internal combustion engines. The lower portion must then be made flat with a horizontal bottom in which it is practically impossible to arrange a lower situated oil sump so that the oil will be running about and sprayed around whenever the vehicle undergoes longitudinal inclinations, which makes it necessary to provide at least two oil pumps.

According to my invention, these disadvantages are avoided by the lower casing portion having a longitudinally inclined bottom which extends partially upwards over the horizontal dividing plane into the space confined by the upper casing portion. I prefer to make use of this upwardly extending bottom portion of the lower casing portion for the purpose of journaling the oil pump drive thereof.

My invention makes it possible to have high side walls in the upper casing portion and to create a single convenient oil sump in the lower portion without increasing the total height of the entire casing.

Having given a general description of my invention I now want to point it out more in detail having reference to the drawings which represent two examples embodying my invention.

Fig. 1 is a side view of a motor, partly in section.

Fig. 2 is a portion of a longitudinal section through a motor with a differently shaped lower casing portion.

In Fig. 1 the upper portion of the casing is designated by the numeral 1; it has high side walls extending over the entire length of the motor which has cylinders arranged in a row, the casing being indicated at 8 to which belongs the cover 11. The side walls of the upper casing portion 1 carry the bridges or brackets 5 in which the crank shaft 6 is journaled. The pistons 10 slide along the sliding surfaces 9. The upper casing portion extends upward to horizontal plane 2 and downward to horizontal plane 3 in which it meets the lower casing portion 12. This latter portion has the inclined bottom 13 which at its left extends upwards over plane 3 and at its right below this plane. At its right hand end the bottom 13 is shaped into an oil sump 23 provided with a pump 22 driven by vertical shaft 21, bevel wheels 20/19, horizontal shaft 16 and pinions 17 and 18. The horizontal shaft 16 is journaled at 15 in the upwardly extending left hand portion of the bottom 13 of the lower casing portion 12.

In the example represented in Fig. 2 like parts are designated by like numerals as in Fig. 1. What is different is that the lower casing portion 30 is provided with a bottom having two portions 31 and 32 inclined towards one another and meeting in the oil sump 33 over which the oil pump 34 is situated adapted to be driven by shaft 35. In this example only the left hand bottom portion 31 extends upwardly higher than the dividing plane 3 whereas the right hand bottom portion 32 extends approximately up to this plane 3. But of course, if so desired, the bottom portion 32 may also extend higher upward into the space confined by the side walls of the upper casing portion 1.

I do not want to be limited to the details described or shown in the drawings as many variations will occur to those skilled in the art without deviating from the scope of my invention.

EUGEN STUMP.