May 27, 1958 D. C. KINNEY 2,836,164

PROTECTIVE DEVICE FOR INTERNAL COMBUSTION ENGINES

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FIG.1.

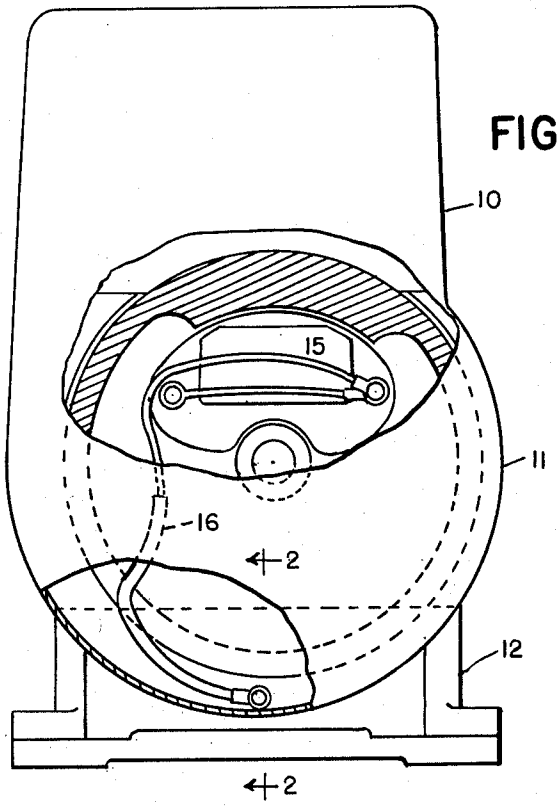
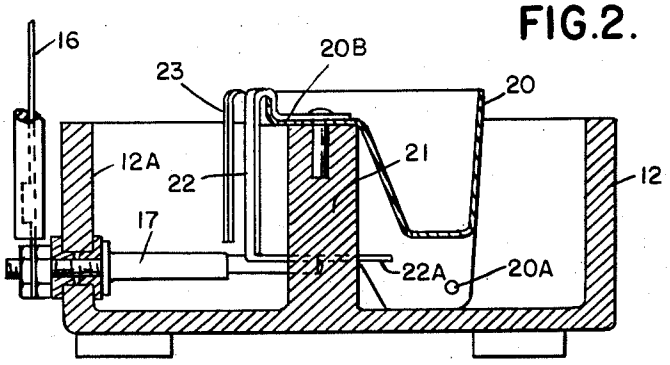


FIG.2.



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FIG.3.

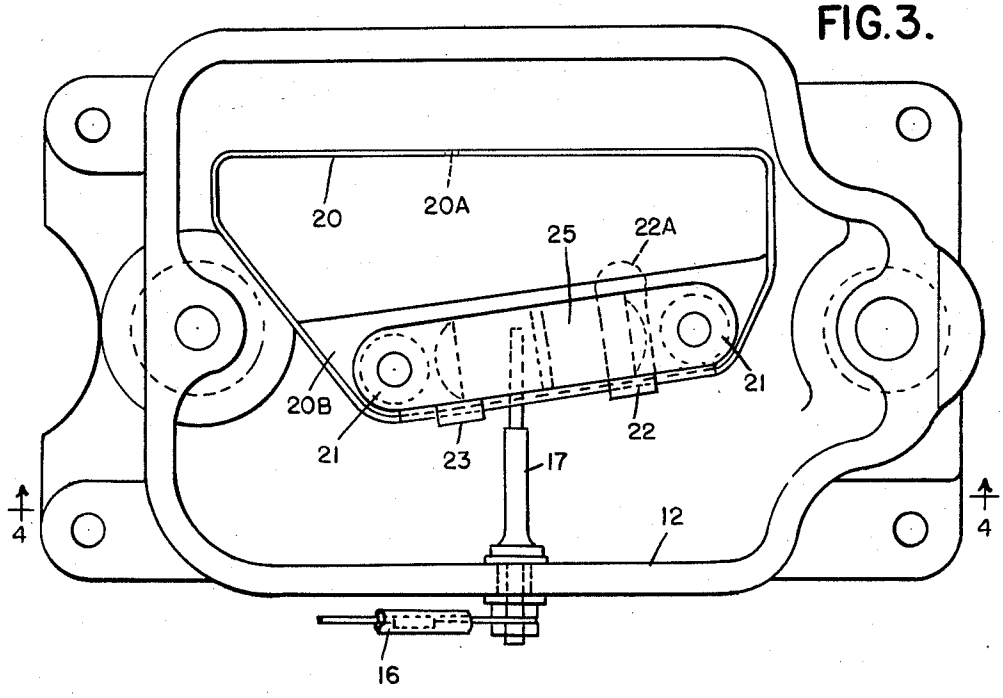
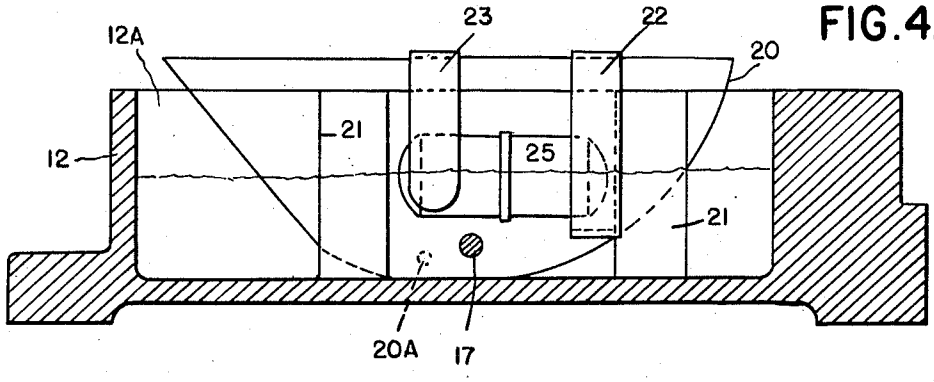


FIG.4.



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United States Patent Office 2,836,164
Patented May 27, 1958

2,836,164

PROTECTIVE DEVICE FOR INTERNAL COMBUSTION ENGINES

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Application March 3, 1955, Serial No. 491,881

4 Claims. (Cl. 123—196)

The present invention relates to a protective device for internal combustion engines and more specifically to a device for preventing the operation of an engine when there is insufficient lubricating oil present.

In the usual small internal combustion engine in which a quantity of lubricating oil is carried in the crankcase and distributed to the pistons and cylinders by "splashing" the "high" and "low" oil levels are not usually indicated. The addition of too much oil usually causes an overflow but there is not usually any indication of a "low" level.

Among the objects of the present invention is to provide means for preventing the operation of the engine when the oil level has reached or is below a safe "low" level.

Another object is to provide means for interrupting the ignition circuit when the "low" oil level is reached.

Still other objects and advantages will readily occur to those skilled in the art upon reference to the following description and the accompanying drawings in which—

Fig. 1 is a partial view in elevation with parts in section of a stationary internal combustion engine involving the present invention.

Fig. 2 is a sectional view of the lower part of the crankcase in line 2—2 of Fig. 1.

Fig. 3 is a top plan view of the parts shown in Fig. 2.

Fig. 4 is a section on line 4—4 of Fig. 3.

In the drawings, there is indicated diagrammatically an engine having a cylinder housing **10**, a flywheel housing **11**, crankcase **12** and with part of the flywheel housing broken away to show the stator **15** of a flywheel magneto.

From the magneto **15** an insulated conductor **16** is shown as extending to the lower portion of the crankcase where it is secured to the outer end of a metal rod or "probe" **17** extending through but insulated from a wall **12A** of the crankcase **12**.

Within the crankcase is a small pan **20** having a curved bottom, and located so that the crank end of the piston rod (not shown) dips into the oil therein as the crank rotates. The pan **20** is supplied with oil from the main body of oil in the crankcase **12** through a small opening **20A**. The pan **20** is supported upon two pillars **21** spaced a short distance apart and extending up from the bottom of the crankcase. As shown, one of the upper side edges of the pan **20** is bent outwardly to provide a flange **20B** to provide a means by which the pan is attached to the pillars **21**.

Fixed to the flange **20B** is a pair of guide strips **22** and **23**, the latter **23**, extending downwardly a short distance and the former **22** extending downwardly to near the bottom of the crankcase **12** and being bent at right angles to provide a portion **22A** extending toward the pan **20** and between pillars **21**.

In the space between strips **22—23** and the adjacent vertically extending wall of pan **20** is a small float **25** of

such dimensions that, as the oil level moves up and down, it will be guided in its movement by the pillars **21**, the wall of pan **20** and the strips **22—23**.

The probe **17** is of such length within the crankcase as to extend to a point within the float space and substantially at the level of the guide strip portion **22A**, which level is such that when the level of the oil supporting the float **25** drops to a low unsafe level, the float will contact the probe **17** and the strip portion **22A**. When this contact is made, it establishes a ground connection and the low voltage primary of the magneto is "shorted," immediately stopping the engine and preventing further operation until oil has been added.

I claim:

1. In an internal combustion engine having magneto ignition, a crankcase containing a supply of oil, a dip pan supported in said crankcase, means communicating the interior of said dip pan with the oil in said crankcase, an electrically conductive float in said crankcase and exterior of said dip pan, said dip pan constructed and arranged to substantially overlie said float to shield same from oil splash disturbances, means guiding said float in vertical movement caused by a change of oil level in said crankcase, a pair of electrical conductor elements submerged in said oil exteriorly of said dip pan and arranged to be simultaneously contacted by said float at a predetermined oil level, one of said conductor elements being grounded and the other of said conductor elements being connected with the primary winding of the magneto and operable to electrically ground same when the oil level drops to the predetermined level aforesaid.

2. In an internal combustion engine having magneto ignition, a crankcase containing a supply of oil, a dip pan supported in said crankcase, means communicating the interior of said dip pan with the oil in said crankcase, an electrically conductive float in said crankcase and exterior of said dip pan, said dip pan constructed and arranged to substantially overlie said float to shield same from oil splash disturbances, means guiding said float in vertical movement caused by a change of oil level in said crankcase, a pair of electrical conductor elements submerged in said oil exteriorly of said dip pan and arranged to be simultaneously contacted by said float at a predetermined oil level, one of said conductor elements being grounded and the other of said conductor elements being connected with the primary winding of the magneto and operable to electrically ground same when the oil level drops to the predetermined level aforesaid, said other contact supported by and insulated from said crankcase and extending into said oil underneath said float.

3. In an internal combustion engine having magneto ignition, a crankcase containing a supply of oil, a dip pan supported in said crankcase, means communicating the interior of said dip pan with the oil in said crankcase, an electrically conductive float in said crankcase and exterior of said dip pan, said dip pan constructed and arranged to substantially overlie said float to shield same from oil splash disturbances, means guiding said float in vertical movement caused by a change of oil level in said crankcase, a pair of electrical conductor elements submerged in said oil exteriorly of said dip pan and arranged to be simultaneously contacted by said float at a predetermined oil level, one of said conductor elements being grounded and the other of said conductor elements being connected with the primary winding of the magneto and operable to electrically ground same when the oil level drops to the predetermined level aforesaid, said other contact supported by and insulated from said crankcase and extending into said oil underneath said float, said means communicating the interior of said dip pan with the oil disposed at a lower level in said

crankcase than the level at which the float contacts the aforesaid elecrical conductor elements.

4. In an internal combustion engine having magneto ignition, a crankcase containing a supply of oil, a dip pan supported in said crankcase, means communicating the interior of said dip pan with the oil in said crankcase, an electrically conductive float in said crankcase and exterior of said dip pan, said dip pan constructed and arranged to substantially overlie said float to shield same from oil splash disturbances, means guiding said float in vertical movement caused by a change of oil level in said crankcase, a pair of electrical conductor elements submerged in said oil exteriorly of said dip pan and arranged to be simultaneously contacted by said float at a predetermined oil level, one of said conductor elements being grounded and the other of said conductor elements being connected with the primary winding of the magneto and operable to electrically ground same when the oil level drops to the predetermined level aforesaid, said float guiding means comprising substantially vertically disposed oil pan supporting posts arranged at opposite ends of said float, a substantially vertically inclined exterior wall of said dip pan on one side of said float, and substantially vertically disposed members supported from the upper edge of said dip pan and spaced from the aforesaid wall of said dip pan to lie on the other side of said float.

References Cited in the file of this patent

UNITED STATES PATENTS

946,923	Teeter	Jan. 18, 1910
1,184,029	Schatz	May 23, 1916
1,243,470	White	Oct. 16, 1917
1,369,321	Buren	Feb. 22, 1921
2,253,260	Alcorn	Aug. 19, 1941

FOREIGN PATENTS

698,978	France	Dec. 8, 1930