

July 12, 1938. HANS-WOLFGANG BURSCHKIES 2,123,461
 DEVICE FOR STOPPING INTERNAL COMBUSTION ENGINES OR
 THE LIKE EMPLOYING OIL LUBRICATION
 Filed July 7, 1937

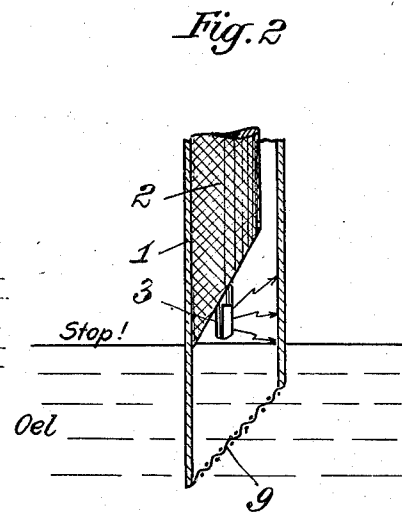
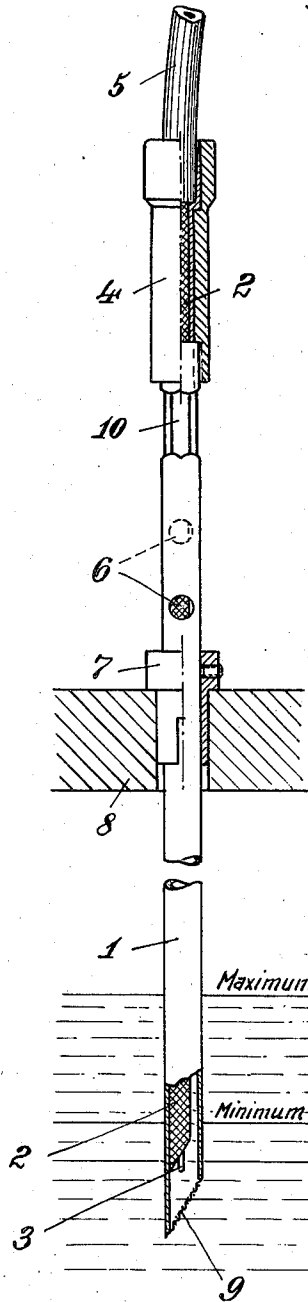
HANS-WOLFGANG BURSCHKIES

2,123,461

DEVICE FOR STOPPING INTERNAL COMBUSTION ENGINES OR
THE LIKE EMPLOYING OIL LUBRICATION

THE LIKE EMPLOYING OIL LUBRICATION

Filed July 7, 1937



Inventor
Hans-Wolfgang Bursch Kies
H. W. Bursch Kies
Attly

UNITED STATES PATENT OFFICE

2,123,461

DEVICE FOR STOPPING INTERNAL COMBUSTION ENGINES OR THE LIKE EMPLOYING OIL LUBRICATION

Hans-Wolfgang Burschkies, Berlin-Lichterfelde-Ost, Germany

Application July 7, 1937, Serial No. 152,422
In Germany August 14, 1936

5 Claims. (Cl. 123-196)

In the specification of my prior patent application Serial No. 68,144/1936 there is described a device for stopping internal combustion engines, when an oil deficiency arises in the crank case or sump of internal combustion engines, wherein an electrode of pin or wire form connected to the motor ignition lead is mounted in insulating material in a tube of rod form serving as the second electrode to be earthed, means being provided for allowing air to enter the tube when the oil level falls so that a spark passing between the electrodes causes a short-circuit in the ignition circuit.

In practice, it has been found that the air in the crank case may be enriched with petrol and oil vapours, for instance, owing to defective piston rings or worn-out pistons, so that the short-circuiting spark which occurs when the oil level falls ignites the explosive mixtures contained in the crank casing.

The invention has for object to prevent an extension of flame from the short-circuiting spark into the crank casing. A further object of the invention is to provide means permitting oil to escape from the tube as and when the oil level falls.

The invention provides means for allowing air to enter the tube containing the electrodes as the oil level falls so that the short-circuit spark gap is surrounded by an air space which communicates with the atmosphere. Access of air enriched with petrol or oil vapours from the crank casing to the spark gap is prevented. This communication with the atmosphere permits the oil to escape from the tube when the level of oil in the crank casing falls.

A constructional example of the invention is illustrated in the drawing wherein:

Fig. 1 shows a side view of the device according to the invention, partly in longitudinal section, and

Fig. 2 an enlarged partial section through the lower part of the device illustrating the striking of a spark at a predetermined fall of the oil level.

The device is constructed as follows:—

In a body of insulating material 2, preferably in rod form, which is freely suspended with play in a conductive metal tube 1 provided with a graduated scale, a conductive metal wire 3 is mounted, which projects somewhat out of the insulating material at the lower end and serves as electrode. The suspension of the wire 3 with the insulating material 2 in the tube 1 may be effected in any desired way, for instance, by

compressing the metal tube 1 at the region 10 onto the insulated wire, for instance, in hexagonal form. The upper end of the wire 3 is soldered to a bush, which is inserted in the moulded insulating material of the protective cap 4. A metal bush 7 displaceable over the tube 1 is arranged so that it can be secured by a screw, this bush serving as a stop on inserting the metal rod 1 in the oil-filled motor casing 8, and simultaneously earthing the measuring rod 1 through the motor casing 8. The metal wire 3 is connected through the bush in the protective cap 4 and the cable 5 to the high-tension cable leading to the ignition distributor of the motor.

The tube 1, which is preferably cut obliquely at the lower end, is covered by a piece of wire gauze or the like 9, which is soldered to the cut edges of the tube or fixed thereto in some other known manner. On the other hand, the tube 1 is provided somewhat below the constriction 10 with ports 6, through which the atmospheric air can enter the tube 1.

If there is sufficient oil in the motor casing, that is, if the oil level lies between maximum and minimum, the oil which has penetrated through the perforated screen 9 into the tube 1 between the free wire-end 3 and the earthed metal tube 1 prevents the passage of a spark from the wire electrode 3 to the tube electrode 1.

If the oil level in the motor casing falls below the minimum, the oil level in the tube 1 also falls. In order that the oil in the tube 1 shall be able to fall and escape through the screen 3, the ports 6 in the tube 1 are provided which, on falling of the oil level, permit entrance of atmospheric air, so that no vacuum can arise to retain the oil in the tube. At the moment when the free end 3 of the wire connected to the ignition lead is freed from oil, a spark strikes from the wire-end 3 to the earthed tube 1 and thus a short-circuit is produced in the ignition lead, causing the motor to stop. On the passage of the short-circuit spark, the screen 9, which is made of suitable material and mesh to be proof against flame penetration prevents the spark from extending into the air in the motor casing, which is possibly enriched with petrol and oil vapours, and causing ignition here.

It has already been stated in my prior application Serial No. 68,144/1936 that the action of the short-circuit spark also takes place when deterioration of the oil occurs.

The apparatus according to the invention may, moreover, be quite generally employed for the supervision of oil levels or the like, in which

case, on the occurrence of a short-circuit in the high-tension lead, any known signal of acoustic nature or a signalling lamp may be operated.

It is shown in the drawing that the wire 3 is freely suspended with its insulating material in the tube 1. The invention, however, also provides for rigidly mounting the wire 3 with the insulating material 2 in the tube and then providing a communication channel, for instance, in the form of a longitudinally extending groove or the like between the ports 6 and the space containing the spark gap.

I claim:

1. Device for stopping internal combustion engines on the occurrence of a deficiency in oil or for the supervision of oil levels and the like, comprising the combination of an electrode in wire or rod form, which is connected to the high-tension ignition lead of the internal combustion engine, a conductive tube of rod form which serves as second electrode and is earthed and in which said first mentioned electrode is mounted in insulating material and means for closing the spark gap from the exterior, said means being proof against the passage of flame but permeable to oil.

2. Device for stopping internal combustion engines on the occurrence of a deficiency in oil or for the supervision of oil levels and the like, comprising the combination of an electrode in wire or rod form which is connected to the high-tension ignition lead of the internal combustion engine, a conductive tube of rod form which serves as second electrode and is earthed and in which said first mentioned electrode is mounted in insulating material, the lower end of said tube being covered over by an oil permeable screen proof against flame penetration.

3. Device for stopping internal combustion engines on the occurrence of a deficiency in oil or for the supervision of oil levels and the like, comprising the combination of an electrode in wire or rod form which is connected to the high-tension ignition lead of the internal combustion engine, a conductive tube of rod form which serves as second electrode and is earthed and in which said first mentioned electrode is mounted in insulating material, the space within the tube above the spark gap opening directly to the atmosphere.

4. Device for stopping internal combustion engines on the occurrence of a deficiency in oil or for the supervision of oil levels and the like comprising the combination of an electrode in wire or rod form which is connected to the high-tension ignition lead of the internal combustion engine, a conductive tube of rod form which serves as second electrode and is earthed and in which said first mentioned electrode is mounted in insulating material, the interior of this tube communicating by ports with the atmosphere whereby the atmospheric air, when the oil level falls below a predetermined point can reach the electrodes, and means for confining the spark gap against flame penetration to the exterior.

5. A device for stopping internal combustion engines on the occurrence of a deficiency in oil or for the supervision of oil levels as claimed in claim 3, wherein the insulated wire, which is free at the lower end and serves as an electrode, is freely suspended with play in the tube serving as second electrode.

HANS-WOLFGANG BURSCHKIES.