Feb. 3, 1925. 1,525,119

A. C. DE LORME

IGNITION SYSTEM FOR INTERNAL COMBUSTION ENGINES

Filed Nov. 14, 1922

Fig. 1

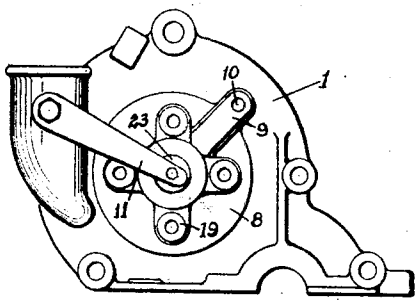


Fig. 2

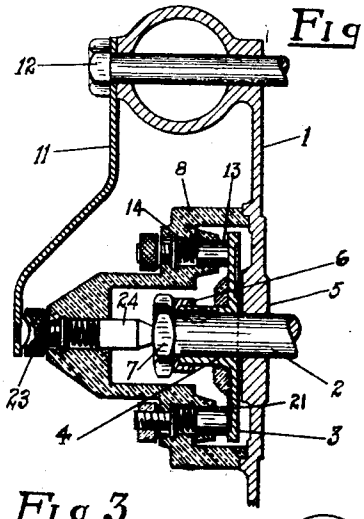


Fig. 5

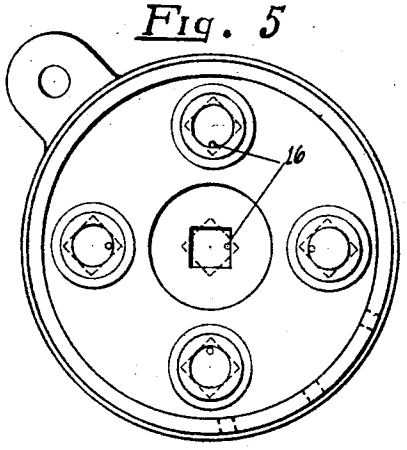


Fig. 3

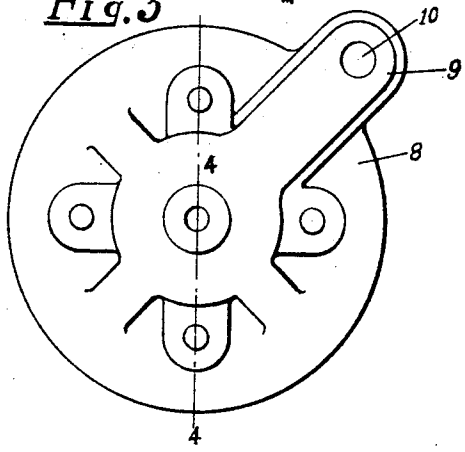


Fig. 4

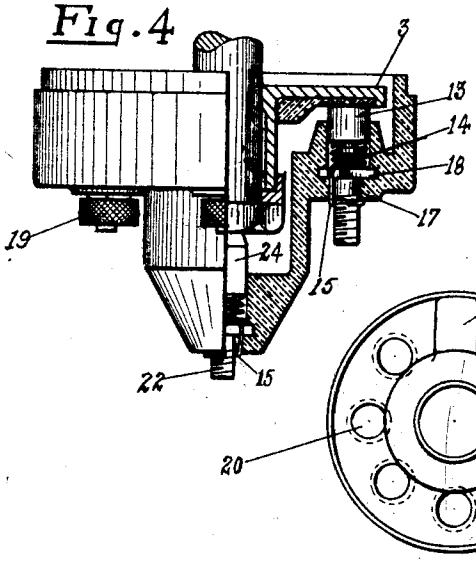


Fig. 7

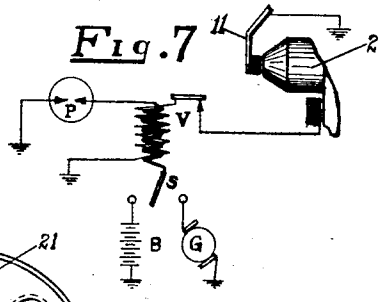


Fig. 6

INVENTOR
ALFRED C. DELORME
BY
A. D. T. Libby
ATTORNEY

Patented Feb. 3, 1925. 1,525,119

UNITED STATES PATENT OFFICE.

ALFRED CHINA DE LORME, OF NEWARK, NEW JERSEY, ASSIGNOR TO TIFFANY MANUFACTURING COMPANY, OF NEWARK, NEW JERSEY.

IGNITION SYSTEM FOR INTERNAL-COMBUSTION ENGINES.

Application filed November 14, 1922. Serial No. 600,825.

To all whom it may concern:

Be it known that I, ALFRED CHINA DE LORME, a citizen of the United States, residing at Newark, in the county of Essex, State of New Jersey, have invented certain new and useful Improvements in Ignition Systems for Internal-Combustion Engines, of which the following is a description, reference being had to the accompanying drawing and to the figures of reference marked thereon.

This invention relates to an ignition system for an internal combustion engine, more particularly for an engine of the Ford type. As is well known the standard ignition system on an engine of this kind consists of four vibrating coils, one for each cylinder, the primaries of which coils are led to a distributing block carried on a plate fastened on the front of the engine, the circuit being completed through a rotating member carried on the end of the cam shaft; but since the cam shaft is carried in bearings flooded with oil and its gears also are covered with oil, I have found that a ground completed through the cam shaft and its gears is more or less faulty all the time, causing the engine to miss or fire irregularly.

It is, therefore, the principal object of my invention to provide an ignition system which will obviate the trouble above set forth and in order to overcome the troubles, I have provided a permanent ground connection for the rotating member carried on the cam shaft so that a good electrical circuit is provided for the current after it leaves either one of the distributer brushes.

Another object of my invention is to provide a good electrical contact between the distributer brush itself and the terminal post, in connection with which each individual brush functions, thereby aiding in eliminating high resistance in the primary circuit of the spark coils.

Another object of my invention is to provide a distributer block which is simple in its construction, hence cheap in its cost of manufacture.

Other and further objects will be understood by one skilled in the art by reference to the specification and attached drawing, wherein—

Figure 1 illustrates an engine plate used on the front of a Ford engine which shows my distributer block mounted in position thereon.

Figure 2 is a part horizontal sectional view through the cam shaft of the apparatus shown in Fig. 1.

Figure 3 is a view enlarged from that shown in Fig. 1, showing a plan view of my distributer block.

Figure 4 is a part sectional view on the line 4—4 of Fig. 3.

Figure 5 is a view looking down on Fig. 4 with the cam shaft and the rotating member carried thereon removed.

Figure 6 is a plan view of the rotating member carried on the cam shaft.

Figure 7 is a diagrammatic arrangement illustrating the ignition system.

Referring now to the details wherein like numbers refer to corresponding parts in the various views, 1 is an engine plate through which an operating shaft 2, in this case the cam shaft of the engine, projects. Fastened to the cam shaft in any suitable manner is a member 3. As shown, the member 3 has a projecting hub 4 through which a pin may pass through the cam shaft, or a keyway such as indicated at 5 in dotted lines may be used. Collar 6 and a nut 7 completes one way of fastening the member 3 to the shaft 2. Positioned on the plate 1 is a distributer block 8 which has a terminal or handle 9 to which the timing lever is attached through the medium of hole 10. Distributer block 8 is held in position on the plate 1 by the standard engine spring 11, which in turn is held to the engine by a bolt 12. Distributer block 8 carries four brushes, generally referred to as 13, symmetrically spaced. To the ends of these brushes are securely attached springs 14. I prefer to twist the ends of the springs 14 around a small neck on the brush and then solder them thereto, it being undersood that the brushes 13 are preferably carbon. The brushes have a good plating of copper, or they may be a combination copper and carbon brush known to the

trade as "Co-phite", or metalized brushes. The outer ends of the springs 14 have an extended part 15 which passes through holes 16 that are drilled after the block 8 has been moulded with the terminal posts 17 therein. The terminal posts 17 have square shoulder portions 18 embedded in the moulded material of the block to prevent them from turning or from being pulled out as clearly illustrated in Fig. 4.

After the brushes 13 have been set in place in the pockets moulded in the block and the ends 15 of the springs are wrapped around the ends of the terminal stud 17 as clearly shown in Fig. 4, and after the connecting wires from the coils are likewise wrapped around the terminal stud 17, then both are securely clamped in position by the nuts 19. In my construction I pay particular attention to this detail in order to secure good electrical contact between the terminal stud 17 and the brush 13.

On the inner face of member 3 is moulded suitable insulating material on which the brushes 13 track. The moulded material may be held to the member 3 in any suitable manner as by the medium of the holes 20 made in the member 3 through which the moulded material passes during the process of moulding, thereby locking the same in position thereon. A segment 21 is set inwardly from the inner face of the member 3 so as to be flush with the surface of the moulded material, or a separate segment of suitable material such as bronze may be fastened to the inner face of the member 3 either before or after the moulding material has been moulded on to member 3.

While the member 3 is carried directly on the cam shaft 2 a poor ground is obtained as this shaft operates in bearings which are lubricated with oil and to get a good ground connection to the frame of the engine, I utilize a central terminal stud 22 in my distributer block and a brush 24, square in this particular case and fitting in a square hole to prevent turning. The spring connection to the brush is made in a similar manner as to brushes 13. However, the clamping nut 23 on the central terminal has a recess to receive the end of the engine spring 11 which, therefore, serves the double purpose of holding the distributer block in position on plate 1 as well as acting as a ground brush to carry the current from the brush 24 to the frame of the engine. It will be noted that the brush 24 makes contact directly on the end of the cam shaft and since the rotating member 3 is fastened thereto, a good electrical circuit is completed to ground through the brush.

In the diagrammatic arrangement shown in Fig. 7, G illustrates the alternating current generator on the Ford engine, B a battery and S a switch which may throw the battery or generator on to the vibrating coils, only one of which is shown. P illustrates the spark plug in an engine cylinder and V the vibrator in the primary circuit.

While there have been numerous distributer blocks and timers made for Ford engines, I am not aware that anyone heretofore has ever constructed a timer having a central grounding brush for the purposes herein described, and while I have shown a preferred form of my invention I do not wish to be limited to the exact details shown and described.

Having thus described my invention, what I claim is:

1. In an ignition system for an internal combustion engine, a plate having an operating shaft extending therethrough, a member carrying a contact segment fastened to said shaft, a distributer block positioned on said plate over said shaft member and having brushes to cooperate with said segment, a central contact terminal having a brush operating against the end of said shaft and a standard engine spring for holding the distributer block in position on the plate and for completing a circuit from said central terminal to the frame of the engine.

2. In an ignition system for an internal combustion engine, a plate, having an operating shaft extending therethrough, a member carrying a contact segment fastened to said shaft, a distributer block positioned on said plate over said shaft member and having brushes to cooperate with said segment, a central contact terminal having a brush operating against the end of said shaft and conjoint means including a standard engine part for holding the distributer block in position on the plate and for completing a circuit from said central terminal to the frame of the engine.

3. In an ignition system for an internal combustion engine, a plate bolted to the engine and having an operating shaft extending therethrough, a member carrying a contact segment fastened to said shaft, a distributer block positioned on said plate over said shaft member and having brushes to cooperate with said segment, a central contact terminal having a square brush operating against the end of said shaft, said terminal being provided with a nut having a socket therein, and a positive ground connection from said central terminal to the frame of the engine comprising a metal strap having a point to fit the socket in said nut and having its other end passing to the engine by one of said plate bolts.

4. In an ignition system for an internal combustion engine, consisting of: a source of current, a vibrating coil having a secondary winding of each engine cylinder and a distributer block with a rotating shaft and member thereon within the block for com-

pleting an electrical circuit through the primaries of said coils, means for insuring the completion of said primary circuits including a brush operating on the end of said shaft and a standard engine metal strap connection from said brush to a part of the engine framework, said distributer block having primary distributer brushes equipped with springs securely attached thereto, the outer ends of said springs passing through the block and being wrapped around its terminal stud and a clamping nut therefor.

In testimony whereof, I affix my signature.

ALFRED CHINA DE LORME.