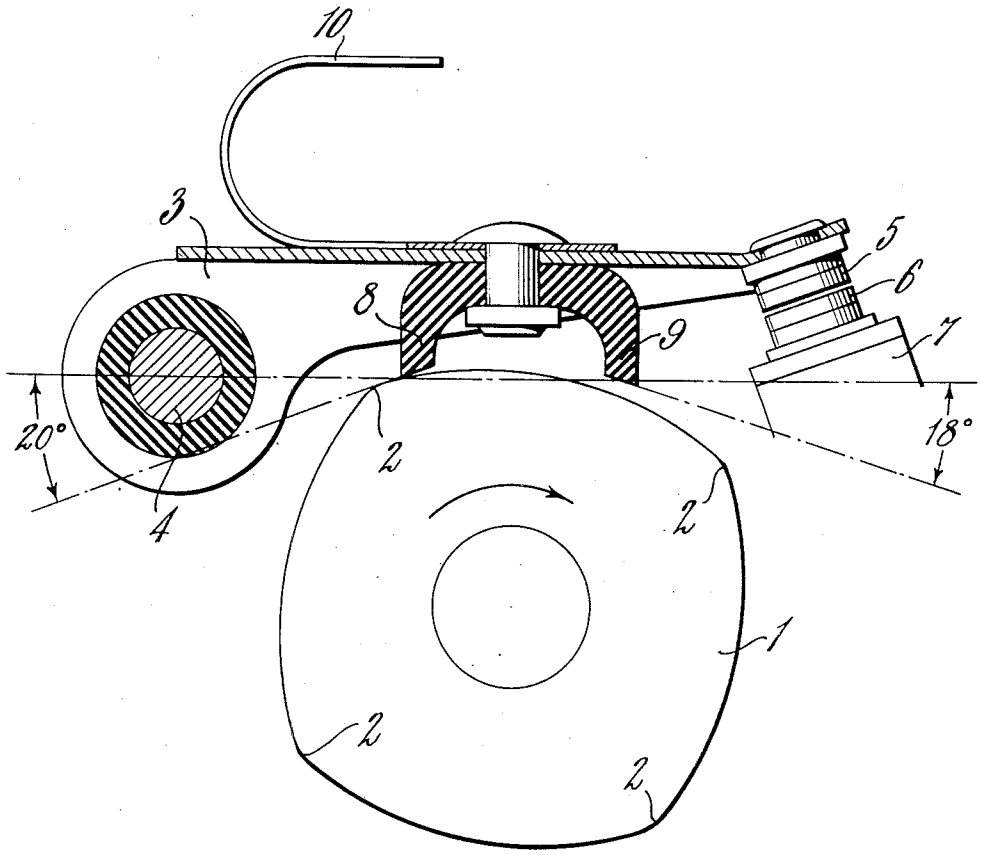
Feb. 28, 1939. W. D. CROCKER 2,148,424

ELECTRIC IGNITION INTERRUPTER

Filed Feb. 6, 1937




INVENTOR.
William D. Crocker
BY
ATTORNEY.

Patented Feb. 28, 1939 2,148,424

# UNITED STATES PATENT OFFICE

2,148,424

## ELECTRIC IGNITION INTERRUPTER

William D. Crocker, Springfield, Mass., assignor to American Bosch Corporation, Springfield, Mass., a corporation of New York

Application February 6, 1937, Serial No. 124,446

6 Claims. (Cl. 200—30)

This invention relates to an interrupter for the ignition system of a multicylinder internal combustion engine. In ignition systems of this type, a cam actuated interrupter lever is commonly provided for making and breaking a primary circuit for the purpose of inducing sparking voltages in a high tension secondary circuit. The cam for actuating the lever is, in the case of a four-cycle engine, driven at one half the speed of the crank shaft and is provided with as many lobes or active portions as the engine has cylinders. Where the engine has a large number of cylinders, the interrupter cam has heretofore been provided with a similarly large number of lobes and the construction of such devices therefore becomes increasingly costly and difficult as the number of engine cylinders increases. Furthermore, as the number of lobes increases it becomes more difficult to give these lobes the proper contour and also the extreme frequency and force of the impact of the cam lobes upon the striking block of the interrupter results in rapid wear and deterioration of the latter.

It is a primary object of this invention to avoid the above mentioned difficulties and to this end I provide a structure in which the interrupter cam requires but one half the number of lobes heretofore used to serve a given engine.

The above and other objects and features of this invention will be more apparent to those skilled in the art from the following detailed description taken in conjunction with the accompanying drawing which shows a plan view of a portion of an interrupter constructed in accordance with the present invention.

Referring to the drawing, reference numeral 1 indicates an interrupter cam provided with a plurality of lobes or active portions. In this instance the interrupter is intended to serve an eight-cylinder four-cycle engine, and therefore four lobes are provided. It will be understood that in general where the cam is mounted on a timer distributor shaft driven at one half engine speed, the cam will be provided with but half as many lobes as the engine has cylinders. An interrupter cam 3 is pivoted at one end on a stud 4 and carries a contact point 5 adapted to coact with a fixed contact point 6 mounted upon a binding post 7.

Between stud 4 and the contact point 5 the lever 3 is provided with a pair of striking blocks 8 and 9 each of which are adapted to coact with each of the lobes 2 of the cam 1 to break the circuit through the contact points 5 and 6 eight times for each complete revolution of the cam. In the instance shown, the striking blocks are formed of a single U-shaped member of insulating material. In operation it will be obvious that when the cam is rotated in the direction of the arrow, one of the lobes 2 will first strike the striking block 8 to force the lever 3 outwardly against the action of spring 10 and separate the contact points 5 and 6, thus breaking the circuit therethrough. As the lobe passes from under the striking block 8, the spring 10 will return the lever to its former position in which the contact point 5 rests upon point 6, thus closing the circuit. As the cam rotates further, the same lobe which previously acted upon the lever through striking block 8 will act in the same manner upon striking block 9. The lever will therefore be actuated twice by each of the lobes 2 for each rotation of the cam. The lobes will therefore be more widely spaced about the circumference of the cam and can be given a better contour than if they were closely spaced. The action of the lobes upon the striking blocks will be distributed between two of them and the wear thereon correspondingly decreased.

It will be understood that the striking blocks 8 and 9 must be spaced so that the time interval between the oscillation of the lever 3 through the block 8 and its oscillation through block 9 by any given lobe is exactly equal to the time interval between its oscillation through block 9 by that lobe and its oscillation through block 8 by the next succeeding lobe. The time interval between successive oscillations of the lever is therefore constant. Since there is a different leverage effective through the two striking blocks, the block 8 closest the lever stud 4 is slightly shorter than block 9. In the instance shown, if a horizontal line is drawn through the center of stud 4, the top of the block 8 would just touch this line, while the sliding edge of block 9 would be intersected thereby. Also the ends of the striking blocks may be cut at different angles. In the instance shown, the contact surface of block 8 makes a positive angle of 20 degrees with the horizontal, while the contact surface of block 9 makes a negative angle of 18 degrees thereto.

It will be understood that where the term horizontal is used in the above description, it is with reference solely to the positioning of the parts on the drawing. Other positioning of the parts and other embodiments of the invention will be obvious to those skilled in the art from the example given.

Having thus described my invention, what I claim is:

1. An interrupter for an electric ignition circuit comprising an oscillating lever, a multilobe cam for actuating said lever, a plurality of striking blocks mounted on the lever for successively engaging the same lobe of said cam to actuate the lever in the same direction, and a spring for returning the lever after actuation by each lobe, said striking blocks being so spaced that the angular movement of the cam is substantially constant between any two successive oscillations of the lever.

2. An interrupter for an electric ignition circuit comprising an oscillating lever, a multilobe cam for actuating said lever, a pair of spaced striking blocks mounted on the lever for successively engaging the same lobe of said cam to actuate the lever in the same direction, and a spring for returning the lever after actuation by each lobe, said striking blocks being so spaced that the angular movement of the cam is substantially constant between any two successive oscillations of the lever.

3. An interrupter for an electric ignition circuit comprising an oscillating lever, a multilobe cam for actuating said lever, two striking blocks mounted on the lever and effective at different points along the length thereof for successively engaging the same lobe of said cam to actuate the lever in the same direction, and a spring for returning the lever after actuation by each lobe, said striking blocks being so spaced that the angular movement of the cam is substantially constant between any two successive oscillations of the lever.

4. An interrupter for an electric ignition circuit comprising an oscillating lever, a multilobe cam for actuating said lever, a U-shaped member fastened to the lever and forming two striking blocks effective at different points along the length of the lever for successively engaging the same lobe of said cam to actuate the lever in the same direction, and a spring for returning the lever after actuation by each lobe, said striking blocks being so spaced that the angular movement of the cam is substantially constant between any two successive oscillations of the lever.

5. An interrupter for an electric ignition circuit comprising an oscillating lever, a multilobe cam for actuating said lever, two striking blocks mounted on the lever and effective at different points along the length thereof for successively engaging the same lobe of said cam to actuate the lever in the same direction, a spring for returning the lever after actuation by each lobe, said striking blocks being so spaced that the angular movement of the cam is substantially constant between any two successive oscillations of the lever, and means for compensating for the different leverage effective at said different points.

6. An interrupter for an electric ignition circuit comprising an oscillating lever, a multilobe cam for actuating said lever, two striking blocks mounted on the lever and effective at different points along the length thereof for successively engaging the same lobe of said cam to actuate the lever in the same direction, and a spring for returning the lever after actuation by each lobe, said striking blocks being so spaced that the angular movement of the cam is substantially constant between any two successive oscillations of the lever, the striking block nearest the pivot point of said lever being shorter in length than the other of said striking blocks.

WILLIAM D. CROCKER.