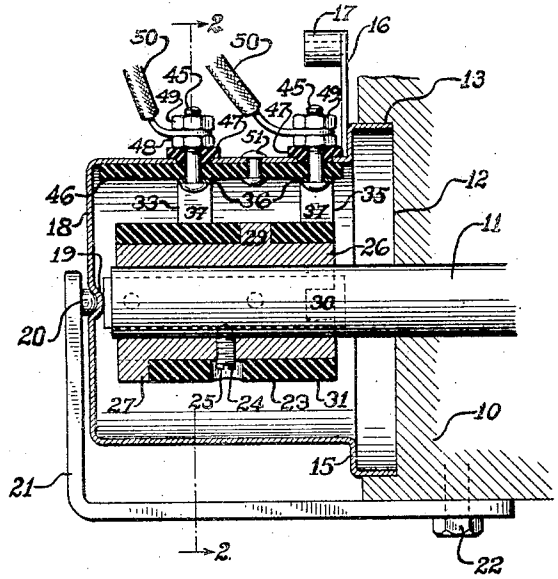
March 23, 1926. 1,577,877

A. SCHUMACHER

TIMING MECHANISM FOR AUTOMOBILES

Filed Dec. 26, 1924

Fig. 1



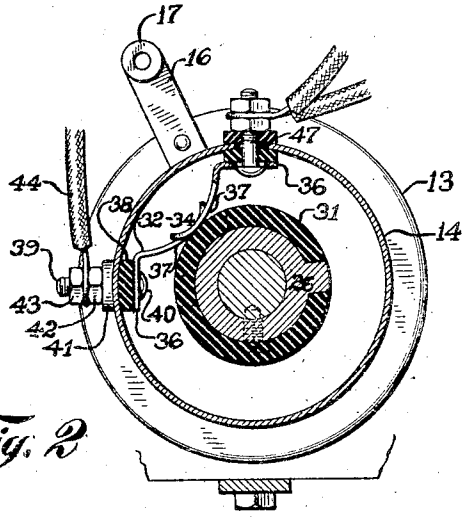
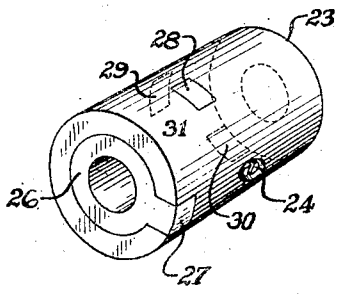


Fig. 2

Fig. 3



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UNITED STATES PATENT OFFICE.

ALBERT SCHUMACHER, OF WALLINGFORD, CONNECTICUT.

TIMING MECHANISM FOR AUTOMOBILES.

Application filed December 26, 1924. Serial No. 753,049.

To all whom it may concern:

Be it known that I, ALBERT SCHUMACHER, a citizen of the United States, and a resident of Wallingford, county of New Haven, and State of Connecticut, have invented certain new and useful Improvements in Timing Mechanisms for Automobiles, of which the following is a specification.

This invention relates to timers for internal-combustion engines, and more particularly to a distributor to be used in the ignition system of the Ford automobile.

One object of this invention is to provide a distributor of the above nature having a cylindrical casing which is adapted to be rotated to advance or retard the sparks in all of the cylinders of the engine.

A further object of the invention is to provide a distributor having an improved type of distributing contact and an improved form of commutator.

A further object is to provide a device of the above nature which will be simple in construction, inexpensive to manufacture, easy to install and manipulate, and very efficient and durable in use.

With these and other objects in view, there has been illustrated on the accompanying drawings, one form in which the invention may be conveniently embodied in practice.

Fig. 1 represents a side sectional view of the distributor and a portion of the engine to which it is attached.

Fig. 2 is a sectional view taken along the line 2—2 of Fig. 1, looking in the direction of the arrows.

Fig. 3 is a perspective view of the commutator element, shown detached from the remainder of the device.

Referring now to the drawings in which like reference numerals denote corresponding parts throughout the several views, the numeral 10 indicates the forward lower portion of the engine casing in which a cam shaft 11 is mounted. In order to form a support for the timer commutator, the cam shaft 11 extends forwardly from the engine casing, as clearly shown in Fig. 1. At the point where the cam shaft emerges from the casing 10, said casing is provided with a circular recess 12, concentric with the cam shaft, said recess being adapted to form a seat for an enlarged flange 13 on the inner end of a cup shaped shell member 14.

The main body of the shell member 14 is of smaller diameter than the flange 13 and is connected to said flange by a radial annular ring portion 15, to which is riveted or otherwise secured near the top of the shell member, an arm 16 having a cylindrical knob 17 at its free end.

The knob 17 is adapted to be connected by means, not shown, to the usual spark advance lever on the steering wheel of the automobile, whereby the shell member 14 will be caused to rotate in its bearing recess 12. The shell member 14 is provided with a closed front end 18 having a central indentation 19 in alinement with the axis of the cam shaft 11. The indentation 19 serves as a seat for a bearing pin 20 projecting inwardly from one arm of an angular bracket 21, the other arm of said bracket being secured by a bolt 22 to the bottom of the engine casing 10. By means of this construction, it will be clear that the shell member 14 will be held securely in its recess 12, but at the same time will be free to rotate about its axis when the spark advance lever is manipulated.

A commutator or rotor 23 is mounted concentrically within the shell member 14, and is fitted upon the forward end of the cam shaft 11, being keyed thereto by a screw 24 passing through a recess 25 in said rotor. The rotor 23 comprises a central metallic bushing or core 26 having four radial terminals 27, 28, 29, and 30, extending outwardly therefrom and lying in a cylindrical surface of somewhat greater diameter than the bushing 26.

Surrounding the central bushing 26 is a casing 31 of hard rubber or other suitable molded insulating material, the surface of said casing preferably lying flush with the outer surface of the terminals 27, 28, 29, and 30, previously mentioned.

In order to successively energize the spark plugs of the four cylinders of the engine at the proper intervals, a pair of spring clips 32 and 34 are located on the side of said shell member, and a pair of spring clips 33 and 35 are located on the top of said shell member at an angular distance of ninety degrees from the clips 32 and 34. Each of the spring clips is provided with a flat base 36 and a curved contact section 37, the latter being adapted to press resiliently against the outer surface of the rotor, said clips 32, 33, 34, and 35 being in alinement with the terminals 27, 28, 29, and 30 respectively.

The flat bases 36 of the side spring clips

32 and 34 are adapted to rest upon a rectangular strip 38 which in turn rests against the periphery of the shell member 14, said strip and clips being secured to said shell member by a pair of threaded bolts 39 having heads 40 engaging the flat bases 36 of said clips 32 and 34.

A pair of insulating washers 41 are located on said bolts 39, and engage the outer surface of the shell member 14. Each bolt 39 is provided with a pair of nuts 42 and 43 adapted to engage said insulating washers 41 and to form a binding clamp for the bare terminal of an insulated conductor 44 leading to one of the engine spark plug circuits.

The upper pair of spring clips 33 and 35 are secured to the top of said shell member by bolts 45. The bases of said clips 33 and 35 are adapted to rest upon an insulating strip 46, similar to the strip 38, previously described.

On the outside of the shell member, each of the bolts 45 passes through an insulating washer 47 above which are a pair of nuts 48 and 49, adapted to engage said washer 47, and to form a binding clamp for the bare terminal of an insulated conductor 50 located therebetween, said conducting wires leading to the remaining engine spark plug circuits. The insulating strips 38 and 46 at the side and upper parts of the shell member 14 are adapted to be secured to the shell by rivets 51.

In order to permit each of the spring clips to be adjusted individually, said clips are provided in their flat bases 36 with an elongated slot, the width of which is equal to the diameter of the bolts. It will thus be seen that when the nuts on any particular bolt are unscrewed, the position of the corresponding clip may be readily changed by sliding said clip along the bolt the desired distance.

One advantage of the present invention is that the spring clips are constantly rubbing against the rotor, and in this manner will keep the surface of the terminals free from oil and other like matter, so that the danger of clogged contacts will be avoided.

While there has been disclosed in this specification one form in which the invention may be embodied, it is to be understood that this form is shown for the purpose of illustration only, and that the invention is not to be limited to the specific disclosure but may be modified and embodied in various other forms without departing from its spirit. In short, the invention includes all the modifications and embodiments coming within the scope of the following claim.

Having thus fully described the invention, what is claimed as new, and for which it is desired to secure Letters Patent, is:

In a distributor for an internal combustion engine, a shell member, a commutator located in said shell member and mounted to rotate with the engine crank shaft, said commutator having a tubular metallic core provided with a plurality of integral staggered terminals extending to the circumference of said commutator, and a plurality of adjustable slotted resilient contact strips secured to said shell member, said strips being insulated from said shell member and extending inwardly to contact with said terminals.

In testimony whereof, I have affixed my signature to this specification.

ALBERT SCHUMACHER.