April 29, 1924. 1,492,037

G. F. LARISON

AUTOMOBILE TIMER

Filed June 7, 1920

Fig. 4.

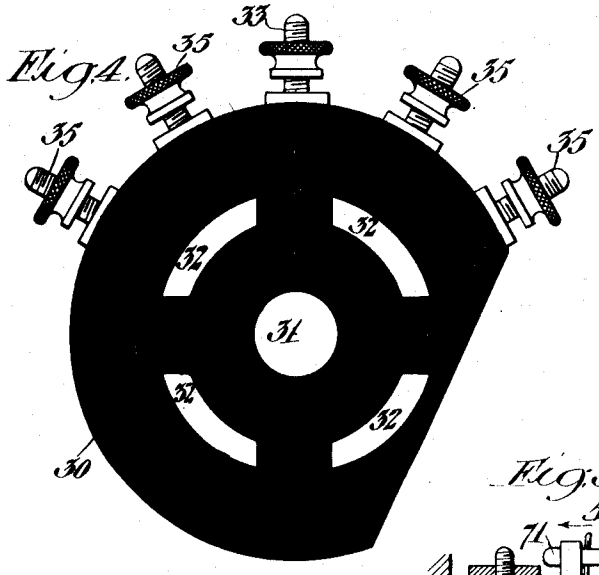


Fig. 2.

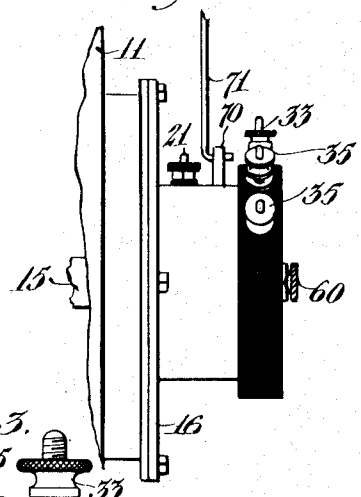


Fig. 3.

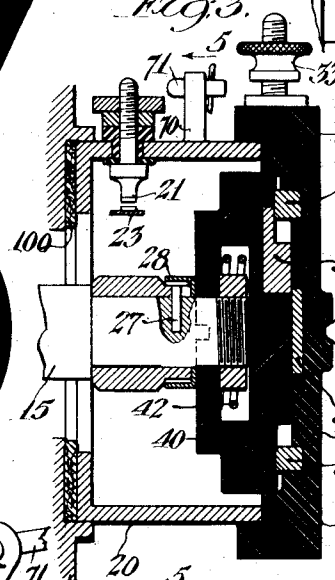


Fig. 6.

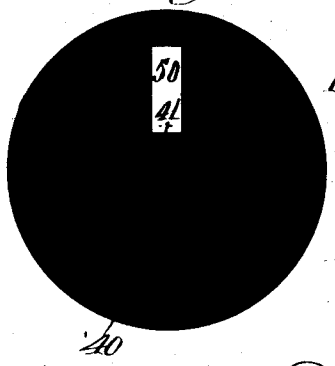


Fig. 1.

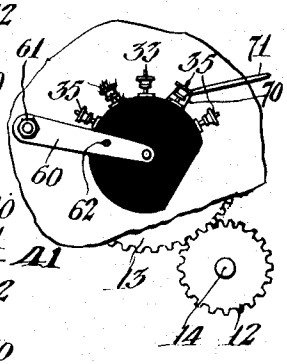


Fig. 5.

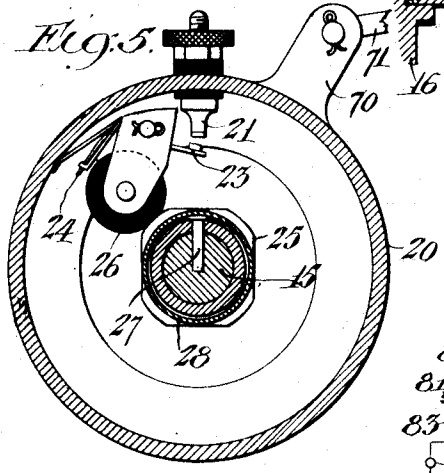
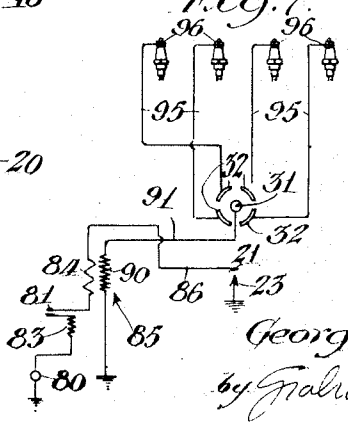


Fig. 7.



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UNITED STATES PATENT OFFICE.

GEORGE F. LARISON, OF CASA GRANDE, ARIZONA, ASSIGNOR OF ONE-HALF TO A. J. CLARK, OF LOS ANGELES, CALIFORNIA.

AUTOMOBILE TIMER.

Application filed June 7, 1920. Serial No. 387,220.

To all whom it may concern:

Be it known that I, GEORGE F. LARISON, a citizen of the United States, residing at Casa Grande, county of Pinal and State of Arizona, have invented a new and useful Automobile Timer, of which the following is a specification.

My invention relates to Ford automobiles which, as now constructed, are provided with an internal combustion engine ignited from a magneto which is incorporated in the flywheel of engine and which generates a potential of about twelve volts. This potential is then stepped up by four transformers to a high enough voltage to ignite the charge. Each of the transformers is supplied with current from the magneto through a low tension distributor which makes contact successively with the primary side of the four transformers, a single vibrating contact being used for all four transformers, or each transformer being provided with its own vibrator which is in the low tension circuit of the transformer. The low tension distributor is placed on the end of the cam shaft in the front of engine and is a source of constant trouble, operating as it does on low voltage, as any dirt or sediment collecting on its contact surfaces will tend to greatly reduce the certainty of its action and produce irregular firing or "missing."

The principal object of my invention is to substitute for the four transformers or "coils" as they are commonly called a single transformer and to substitute for the present low tension distributor a high tension distributor. By eliminating three coils I make a considerable saving in the first cost of the system and by substituting the high tension for the present low tension distributor, I am able to do away with the greater part of the present difficulties as will hereinafter be explained.

I am aware that high tension distributors working through single coils are old and that most types of the heavier cars using battery ignition are so equipped.

Further objects and advantages will be made evident hereinafter.

In the drawings which are for illustrative purposes only,

Fig. 1 is a view as seen from the front of my invention applied to a Ford car.

Fig. 2 is a side view on a slightly larger scale.

Fig. 3 is a section on a larger scale.

Fig. 4 is a view of the distributor cover as it appears when removed from the shell.

Fig. 5 is a section on a plane represented by the line 5—5 of Fig. 3 as viewed in the direction of the arrows of that figure.

Fig. 6 is a view of the distributor disc showing the distributor contact.

Fig. 7 is a diagram of connections.

In the form of my invention shown in the drawing, 11 is the frame of the internal combustion engine on a model T Ford automobile having timing gears 12 and 13. The gear 12 is on a crank shaft 14 and the gear 13 is on a cam shaft 15. The crank shaft is driven by the connecting rods, not shown, and drives the cam shaft through the gears 12 and 13. The cam shaft lifts the valve rods, not shown, and governs the admission and exhaust of gases from the cylinders of the engine in the usual manner. In the standard model T Ford, the low tension distributor is seated on a gear case 16 which encloses the gears 12 and 13 and it is an object of my invention to provide a device which will be adapted to go in the same place and perform the additional functions needed to make a successful high tension ignition system for such a car.

For this purpose I provide a shell 20 which seats in the same depression that the present low tension distributor occupies, this shell surrounding the end of the cam shaft 15. Mounted in and insulated from the shell 20 is a contact 21 and pivoted on a pin carried in and grounded on the shell 20 is a movable contact 23 which is moved into contact with the contact 21 by a spring 24 and out by a cam 25 acting on a roller 26. The cam 25 is fixed on the cam shaft 15 by a pin 27 and a retaining washer 28.

Seated on the outer end of the shell 20 is an insulating disc 30 which is preferably moulded material and which carries a central plate 31 and four sectors 32. The plate 31 is connected to a binding post 33 and each of the sectors 32 is connected to a binding post 35. Secured on the end of the shaft 15 is a rotating disc of insulation 40 and loosely seated therein is a second disc 41, the disc 41 being forced against the disc 30 by a compression spring 42. A distributing contact 50 is placed in cavities in the discs 40 and 41 serving as a driving member between the two and also serving to make a bridging

contact between the plate 31 and the sectors 32. The disc 30 is held against the shell 20 by a spring strip 60 which is secured by a bolt 61 to the frame of the engine 11. A pin 62 prevents the disc 30 from turning on the shell 20. An arm 70 is cast on the shell 20 and is connected through a rod 71 with manual control means by which the position on the shell with relation to the cam 25 may be varied.

The apparatus is connected as shown in Fig. 7 in which 80 is a source of electric power generating a low potential current which passes through a vibrating contact device 81 having a vibrating coil 83 and through the low potential primary 84 of a transformer 85. The low potential current then passes by way of a wire 86 to the contact 21 and from thence back to the other side of the generator or magneto 80 by way of the contact 23 and the frame of the machine, it being common practice to ground one side of all circuits in automobile wiring. Whenever the contacts 21 and 23 are closed by the cam 25 a circuit is established and a high potential current is generated in the high potential secondary 90 of the transformer 85, one side of this secondary being grounded and the other side being connected through a wire 91 with the binding post 33 and thence to the plate 31. The distributing contact 50 being carried around by the rotating of the shaft 15 makes contact between the plate 31 and one of the sectors 32, the high potential current being delivered to one of the binding posts 35, and thence through a wire 95 with one of the spark plugs 96 of the engine passing then to ground after firing the charge in that particular cylinder.

By varying the position of the shell 20 around the shaft 15 by means of the arm 70 and the rod 71, it is possible to vary the time of ignition as compared to the position of the piston in that particular cylinder. That is, it is possible to retard or advance the spark.

My invention is superior to the standard system of ignition now supplied with Ford cars in that the only low tension contacts are the contacts 21 and 23 which are made of iridium or platinum and which are very long lived. I provide a felt washer 100 between the shell 20 and the frame of the engine and the other parts are made so tight that they exclude dirt. The present form of Ford timer must be lubricated and the oil carried therein collects dirt and metal particles from the wear of the parts thus tending to soon short circuit the system unless given constant attention. I use no oil and there is so little wear of the parts that my device may be run for very long periods without attention. By using a high tension distributor, it is not necessary for the distributing contact 43 to actually touch either the sectors 32 or the plate 33, the high voltage jumping the small gap with ease. All the present trouble with poor contact in the distributor is done away with. I also use only one transformer, the other three now in use being discarded.

I claim as my invention:

1. A distributer comprising; a shell seated on the end of an engine about the projecting cam shaft of said engine and concentric therewith; a cover plate closing the open outer end of said shell; a central plate carried in the center of said cover plate; a plurality of sectors carried by said cover plate; a driving disc of insulating material secured on said cam shaft inside said shell, said disc having a central cavity therein; a driven disc of insulating material seated loosely in said central cavity; a distributing contact seated in depressions in said driven and driving discs and serving as a driving member therebetween, said distributing contact also serving to bridge between said central plate and said sectors; and elastic means for holding said distributing contact in electrical contact with said central plate and said sectors.

2. A distributer comprising; a shell seated on the end of an engine about the projecting cam shaft of said engine and concentric therewith; a cover plate closing the open outer end of said shell; a central plate carried in the center of said cover plate; a plurality of sectors carried by said cover plate; a driving disc of insulating material secured on said cam shaft inside said shell, said disc having a central cavity therein; a driven disc of insulating material seated loosely in said central cavity; a distributing contact seated in depressions in said driven and driving discs and serving as a driving member therebetween, said distributing contact also serving to bridge between said central plate and said sectors; and a compression spring in said cavity acting to force said driven disc outwardly and thus force said distributing contact into good electrical contact with said central plate and said sectors.

In testimony whereof, I have hereunto set my hand at Los Angeles, California, this 24th day of May 1920.

GEORGE F. LARISON.