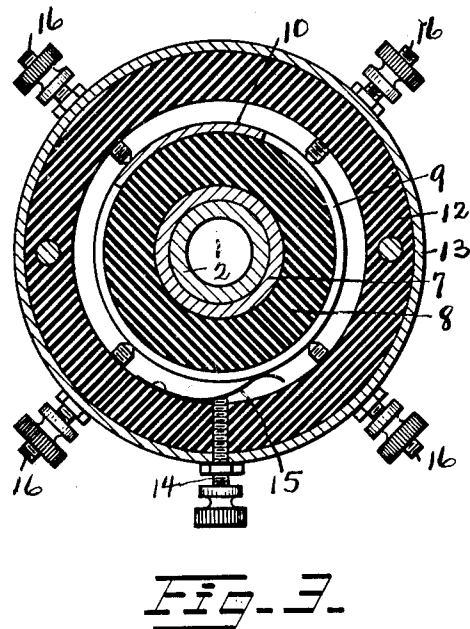
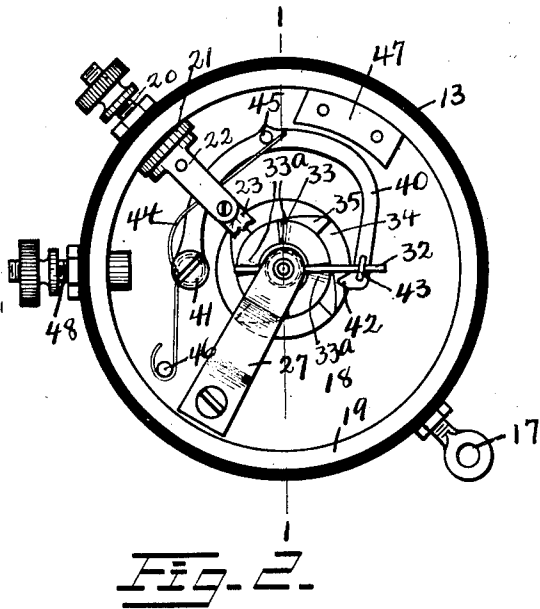
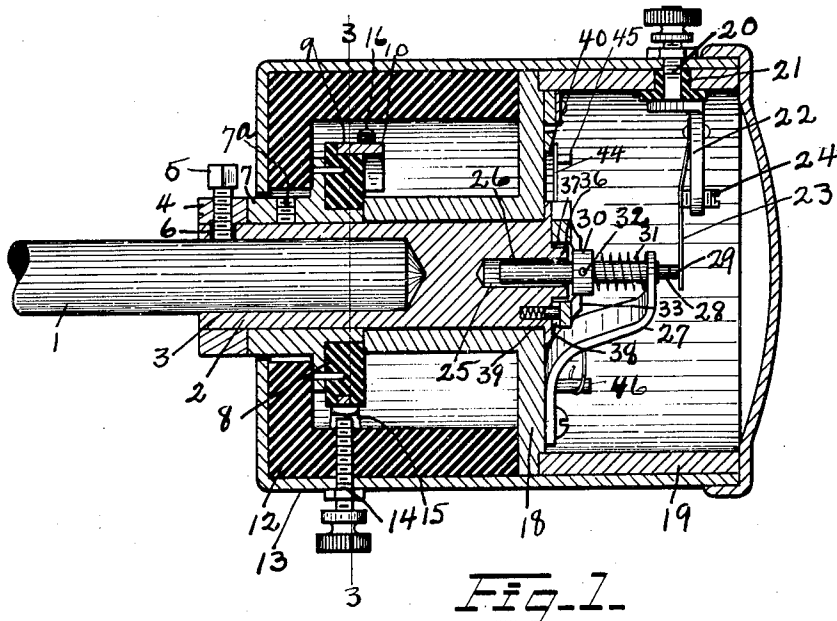


W. N. BARRETT.
 TIMER FOR IGNITION SYSTEMS.
 APPLICATION FILED DEC. 8, 1911.

1,064,122.

Patented June 10, 1913.



Witnesses

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TIMER FOR IGNITION SYSTEMS.

1,064,122.

Specification of Letters Patent.

Patented June 10, 1913.

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To all whom it may concern:

Be it known that I, WILLIAM N. BARRETT, a citizen of the United States, residing at Meadville, in the county of Crawford and State of Pennsylvania, have invented new and useful Improvements in Timers for Ignition Systems, of which the following is a specification.

This invention relates to timers for ignition systems and consists in certain improvements in the construction thereof as will be hereinafter fully described and pointed out in the claims.

The object of the invention is to provide a device which will complete a momentary circuit to produce a spark and at the same time break the circuit regardless of the speed of the engine or the stopping of the engine.

A further object of the invention is to provide a device in which a rub contact is made so as to keep the contacting surfaces bright.

Other objects of the invention will appear from the specification and claims.

The invention is illustrated in the accompanying drawings as follows:—

Figure 1 shows a central section through the line 1—1 in Fig. 2. Fig. 2 an end elevation, the cover being removed to better show construction. Fig. 3 a section on the line 3—3 in Fig. 1.

1 marks the shaft. This may be a cam shaft or the crank shaft depending upon the type of the engine, 2 the timer shaft. This is provided with a socket 3 in which the end of the shaft 1 is arranged. The timer shaft 2 is locked on the shaft 1 by means of a set screw 5, the set screw extending through the collar 4, and the perforation 6 in the timer shaft 2. A carrier 7 for the secondary contacts is fixed on the shaft 2 by means of a set screw 7^a. An annular insulating ring 8 is fastened on the carrier 7 and the contact ring 9 is mounted on this insulated ring 8. The ring 9 has a projection 10 extending in an axial direction for purposes hereafter described. A post carrier 12 is secured to the flanged mounting 18, the flanged mounting being mounted on the timer shaft 2, and the case 13 extends over the whole, the case 13 being also of insulating material. A post 14 extends through the carrier 12 against a brush 15, the brush being forced into contact with the ring 9 so as to remain in contact with said ring at all times. The post 16 extends through the carrier 12 into the

path of the projection 10. Wires are carried from the post 16 to the different cylinders of the engine and the projection 10 is so timed with relation to the other devices as to be in contact with the post 16 at the proper moment for each cylinder.

The flanged mounting 18 carrying the post carrier and other parts of the timing device are journaled on the timing shaft 2 and are held against rotation by the pin 17, the pin 17 ordinarily being connected with some convenient mechanism (not shown) for advancing or retarding the spark. This is accomplished by swinging the flanged mounting 18 on the timing shaft 2. The secondary circuit, therefore, is connected up by extending the post 14 to the coil, the other side of the coil being grounded on the engine and the post 16 extending to the spark plug, the other side of the spark plug being grounded on the engine.

A cylindrical extension 19 is secured to the flanged mounting 18 at the opposite side from the post carrier 12. A post 20 is secured to the cylindrical extension being insulated therefrom by the plug 21 and case 13. The post is connected with an arm 22 on which a contact spring 23 is secured, the position of the spring being adjusted by a screw 24.

The timer shaft 2 has the socket 25 opposite the socket 3 and the contact actuating pin 26 is carried in this socket. The opposite end of the pin being slidingly mounted in the bracket 27. The pin terminates with a contact point 28 which operates against the contact point 29 on the spring 23. The pin 26 has the collar 30 secured to it and the spring 31 is tensioned between the bracket 27 and this collar and tends to force the pin 26 so as to carry the point 28 out of contact with the point 29. As shown in Fig. 1 these points are in contact.

A lifting pin 32 extends through the collar 30 and shaft 26. This pin rides on a face cam wheel 33, the cam wheel having four cam teeth about the shape of ordinary ratchet teeth. They are on the end face of the wheel 33. There are as many of the cams 33^a on this wheel as it is desired to make contact with each revolution of the shaft 1. As shown the device is arranged for a four cylinder engine.

It will be observed that the cam faces 33^a rotating in the direction of the hands of a watch will as they come under the lifting

pin 32 force the pin 26 upwardly against the spring 31 so as to make contact between the points 28 and 29. These could be made to operate through the action of the shaft alone so as to give these desired contacts in this manner properly timed if it were not for the fact that with a slow running engine the contact is extended beyond the time necessary and on the other hand if the engine should stop one of these cams under the lifting pin 32 the connection would be maintained through the battery thus exhausting the battery. In order to obviate this, I have provided the following mechanism:—The cam wheel 33 is mounted on a ratchet wheel 34, the ratchet wheel having the ratchet teeth 35. The ratchet wheel is arranged on an extension 36 on the end of the timing shaft 2, the ratchet wheel having the socket 37 which is arranged over the extension. A detent 38 is arranged on the back face of the ratchet wheel and the pawl 39 operates in this detent to lock the wheel with the timing shaft 2. A lever 40 is pivotally mounted on a screw 41, the screw being secured to the mounting 18. The lever ends in a pawl 42 which is adapted to be engaged by the teeth 35 as they rotate. The lever has the loop 43 through which the lifting pin 32 extends. A spring 44 is wound around the screw 41 and operates against the pin 45 on the lever 40. The opposite end of the spring is anchored on a pin 46 which is arranged in the mounting 18. The spring tends to force the lever against a stop 47. The ratchet teeth 35 are midway between the cams 33^a. They engage the pawl end 42 of the lever 40 and force it against the spring away from the stop 47. This occurs with the lifting pin 32 in a position midway between the cams 33^a and in a depressed position so that there is no contact between the points 28 and 29. The lifting pin is, therefore, carried forward with the lever 40 under the influence of the tooth 35. As the lever 40 swings forward it swings with the screw 41 as a center whereas the tooth 35 swings with the axis of the timing shaft as a center. After the lever has traveled with the tooth 35 for a short distance, therefore, the pawl end 42 swings out of engagement with the tooth 35 and the spring 44 then snaps the lever 40 back against the stop 47. This movement is sufficient to carry the lifting pin 32 from the next succeeding cam face 33^a and off the end of the cam face. During this return movement of the lever 40, therefore, the lifting pin riding on the cams 33^a lifts the pin 26 so as to make a contact between the points 28 and 29. It will be noted also that during the time of this contact, the point 28 is rotating relatively to the point 29 so that there is a rub contact. As shown in the drawings, the lever 40 is on the return movement and the lifting pin is on the top of the cam. With the shaft 1

on the point as shown, the spring movement of the lever 40 which will continue to the stop 47 is sufficient to carry the pin 32 off the cam 33^a and thus break the contact. The primary circuit is completed through the post 20, the points 29 and 28, the post 48 which is connected by way of the extension 19, mounting 18 with the pin 26. The primary circuit, of course, is carried as usual through the battery and coils not shown.

The ratchet wheel 34 forms the actuator for operating the devices throwing the contact points into and out of contact. As shown, it will be noted that it is a rotary actuator.

What I claim as new is:—

1. In a timer for ignition systems the combination of two contact points, one of which is movable into and out of contact, and one of which is movable relatively to the other while in contact; an actuator; and devices operated by the actuator and when operated throwing the points into contact moving one of the points relatively to the other during contact and independent of the actuator throwing the points out of contact.

2. In a timer for ignition systems, the combination of two contact points, one of which is movable into and out of contact and one of which is rotatable while the points are in contact; an actuator; and devices operated by the actuator and when operated throwing the points into contact, rotating one of the points during contact and independent of a movement of the actuator throwing the points out of contact.

3. In a timer for ignition systems, the combination of two contact points, one of which is movable into and out of contact and one of which is movable relatively to the other while in contact; an actuator; devices actuated by the actuator in one direction; and means independent of the actuator operating with said devices to return said devices and on the return movement throwing said contact points into contact, moving one of said points relatively to the other and throwing said points out of contact independently of a continued movement of the actuator.

4. In a timer for ignition systems, the combination of two contact points, one of which is movable into and out of contact and one of which is movable relatively to the other while in contact; a rotary actuator; devices actuated by the actuator in one direction; and means independent of the actuator operating with said devices to return said devices and on the return movement throwing said contact points into contact, moving one of said points relatively to the other and throwing said points out of contact independently of a continued movement of the actuator.

5. In a timer for ignition systems, the combination of two contact points one of which is movable axially and rotatively; means for moving one of said points into contact and rotating the same while in contact; devices for actuating said means; and a power driven mechanism for actuating said devices in one direction, said devices being adapted to be released and to operate independently of said mechanism in throwing said contact points into and out of contact.

6. In a timer for ignition systems, the combination of a rotating shaft; an axially faced cam carried by said shaft; a contact point adapted to move axially and rotatively; a power driven mechanism for rotating said point in one direction with the cam; means actuated independently of said mechanism for rotating said contact point in the opposite direction and operating on said cam to move the contact point axially; and a second contact point operating with the first contact point.

7. In a timer for ignition systems, the combination of two primary contact points one of which is adapted to move rotatively and axially; a power driven shaft; a series of cams facing axially on said shaft; a series of teeth on said shaft; a spring actuated device moved by the teeth in one direction and moving in the opposite direction under the influence of the spring; a connection between said device and the movable contact point for rotating the contact point with the movement of the device under the influence of the spring and said device acting on the axially faced cam when moving under the influence of the spring to force the contact point in an axial direction into contact and moving off of said cam to release the same with the completion of the spring actuated movement of the device; a series of secondary contacts and means synchronized with said primary contact actuating mechanisms for closing the said secondary contacts while said primary contact points are in contact.

8. In a timer for ignition systems, the combination of a power driven shaft; a series of cams rotatively locked with the shaft; a similar series of teeth rotatively locked with said shaft; a lever pivoted to engage said teeth successively and to be released therefrom by the rotation of said teeth; a spring for operating said lever in return direction; contact points one of which is movable; a connecting device between the lever and the movable contact said device operating on the cam to throw said contact point axially into contact and to rotate the same under the influence of the lever while in contact and to carry the same off the cam to release the same prior to the completion of the spring actuated movement of the lever.

9. In a timer for ignition systems, the combination of a power driven shaft; a series of cams rotatively locked with the shaft; a similar series of teeth rotatively locked with said shaft; a lever pivoted to engage said teeth successively and to be released therefrom by the rotation of said teeth; a spring for operating said lever in return direction; contact points one of which is movable; a connecting device between the lever and the movable contact said device operating on the cam to throw said contact point axially into contact and to rotate the same under the influence of the lever while in contact and to carry the same off the cam to release the same prior to the completion of the spring actuated movement of the lever; a series of portions of secondary circuits; and means synchronized with said contact actuated mechanisms for closing said portions of circuits successively while said contact point is in contact.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

WILLIAM N. BARRETT.

Witnesses:

S. J. LOGAN,

FREDERIC H. DAVENPORT.