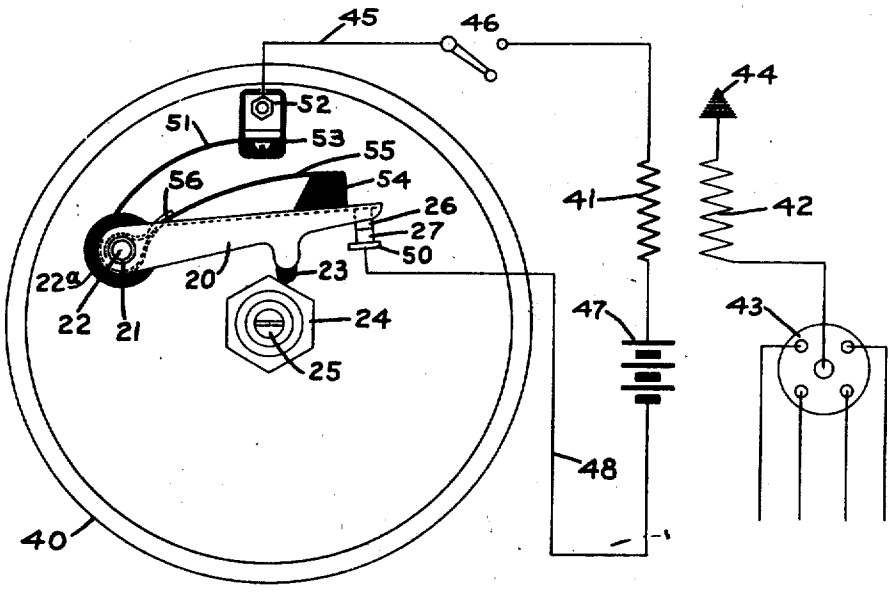
July 24, 1923. 1,462,860

J. H. HUNT

IGNITION TIMER

Original Filed Jan. 2, 1918



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UNITED STATES PATENT OFFICE.

JOHN H. HUNT, OF DAYTON, OHIO, ASSIGNOR TO THE DAYTON ENGINEERING LABORATORIES COMPANY, A CORPORATION OF OHIO.

IGNITION TIMER.

Original application filed January 2, 1918, Serial No. 209,845. Divided and this application filed December 11, 1919. Serial No. 344,204.

To all whom it may concern:

Be it known that I, JOHN H. HUNT, a citizen of the United States of America, residing at Dayton, county of Montgomery, and State of Ohio, have invented certain new and useful Improvements in Ignition Timers, of which the following is a full, clear, and exact description.

This invention relates to an improvement in ignition systems for internal-combustion engines, and more particularly to the timing mechanism of such systems.

This application is a division of my co-pending application Serial No. 209,845, filed January 2, 1918.

One of the objects of the present invention is to provide means for eliminating the chatter of the timer contacts which ordinarily takes place in ignition systems, wherein the timer cam actuates the contact arms to open and close the primary circuit.

In carrying out this object it is a further object of the present invention to provide means for preventing the separation of the contacts by absorbing the energy of impact, due to the opening and closing of the contacts, with the result that the contacts will remain in circuit closing relation until the cam tends positively to effect a subsequent separation of the contacts.

Further objects and advantages of the present invention will be apparent from the following description, reference being had to the accompanying drawing, wherein a preferred embodiment of the present invention is clearly shown.

In the drawing:

The figure is a plan view of one form of timer mechanism embodying the present invention, and a wiring diagram showing the application of the timer mechanism to an ignition system.

Referring to the drawing, 20 is an arm of light construction pivoted upon a stud 22 by means of a hub 21. Stud 22 is mounted upon the timer cup 40, but insulated therefrom by an insulating member 22^a. Arm 20 carries a cam follower 23 which is engaged at intervals by means of a cam 24 carried by an engine driven shaft 25. The free end of arm 20 carries a contact 26 which cooperates with contact 27, which is mounted upon a support 50 carried by the timer cup 40. A spring 51 is fixed at one end to a bracket 52 mounted upon insulating pad 53, and extends alongside of said arm. A block of rubber 54 is vulcanized upon said arm, and the free end 55 of spring 51 bears thereupon. A clip 56 is secured to spring 51 and serves to retain the said spring in proper position, and to conduct current passing through wire 45, bracket 52 and spring 51, into hub 21 and arm 20.

In the wiring diagram, 41 indicates the primary winding of an induction coil and 42 the secondary winding. One end of the secondary winding 42 is connected with a distributor 43 and the other end of the secondary winding 42 is grounded at 44. One end of the primary winding is connected by means of wire 45 with the bracket 52. The wire 45 is provided with an ignition switch 46. The other end of the primary winding is connected to a battery or other source of current 47, which in turn is connected by means of wire 48 with the bracket 50. Thus it will be seen, when the ignition switch is closed, and the contacts 26 and 27 are in contact closing position, the primary circuit will be completed.

When the pressure of spring 51 is applied to arm 20 through the soft rubber cushion, the energy of the impact contact 26, tending to rebound from the contact 27, will be absorbed to a large extent by the cushion 24. The action of the rebound block 54 in absorbing the energy of the impact and preventing rebound is due to elastic hysteresis. That is, when the rubber block is placed initially in the proper state of compression in spring 51 and is suddenly released from this state, the rubber block has the property of slowly returning to its initial shape when this additional pressure is removed. While the rubber is preferred as a cushioning material, it will be understood that other substances may be used which have elastic hysteresis under the conditions referred to.

While the block of rubber 54 is preferably vulcanized upon the arm 20, it is to be understood that the rubber block 54 could be vulcanized upon the spring 51 instead.

While the form of mechanism herein shown and described constitutes a preferred form of embodiment of the invention, it is to be understood that other forms might be adopted, all coming within the scope of the claims which follow.

What I claim is as follows:

1. In a timer mechanism, the combination with a support; of a pivoted arm having a hub mounted upon the support, but insulated therefrom; a contact carried by the arm; a second contact carried by the support; a cam member cooperating with the arm to separate the contacts; a bracket mounted upon the support, but insulated therefrom; a leaf spring having one end thereof attached to the insulated bracket, and another portion partly encircling the hub of the arm, and the free end extending alongside the arm; a block of elastic material exhibiting elastic hysteresis located between the free end of the spring and the arm; and a clip attached to the spring and bearing upon the arm hub.

2. In a timer mechanism, the combination with cooperating contacts; of a movable member of metallic material carrying one of the contacts; means cooperating with the movable member to effect separation of the contacts; and means for bringing the contacts together after separation and absorbing the energy of impact, comprising a spring and a block of rubber exhibiting elastic hysteresis interposed between the spring and the movable member and vulcanized upon the movable member.

3. In a timer mechanism, the combination with a support; of an arm pivotally mounted upon the support; a movable timer contact carried by the arm; a stationary timer contact carried by the support; an engine driven cam cooperating with the arm to separate the contacts; a leaf spring having one end attached to the support and the free end of said spring extending alongside the arm; and a block of elastic material exhibiting elastic hysteresis located between the free end of the spring and the arm.

4. In a timer mechanism, the combination with a support; of cooperating timer contacts; a movable member carrying one of the contacts and mounted upon the support; means cooperating with the movable member to effect the separation of the contacts; and means for bringing the contacts together after separation and absorbing the energy of impact of the contacts, said means comprising a spring and a block of elastic material exhibiting elastic hysteresis interposed between the spring and the movable member and permanently secured to the movable member.

5. In a timer mechanism, the combination with a support; of cooperating timer contacts; a movable member carrying one of the contacts and mounted upon the support; means cooperating with the movable member to effect the separation of the contacts; and means for bringing the contacts together after separation and absorbing the energy of impact of the contacts, said means comprising a spring and a block of rubber exhibiting elastic hysteresis interposed between the spring and the movable member, said block of rubber being permanently secured upon the movable member.

In testimony whereof I affix my signature.

JOHN H. HUNT.

Witnesses:
MILDRED PEASE,
HAZEL SOLLENBERGER.