May 9, 1933. J. F. MARTIN 1,907,428

IGNITION TIMER

Filed July 7, 1932 2 Sheets-Sheet 1

Fig. 1.

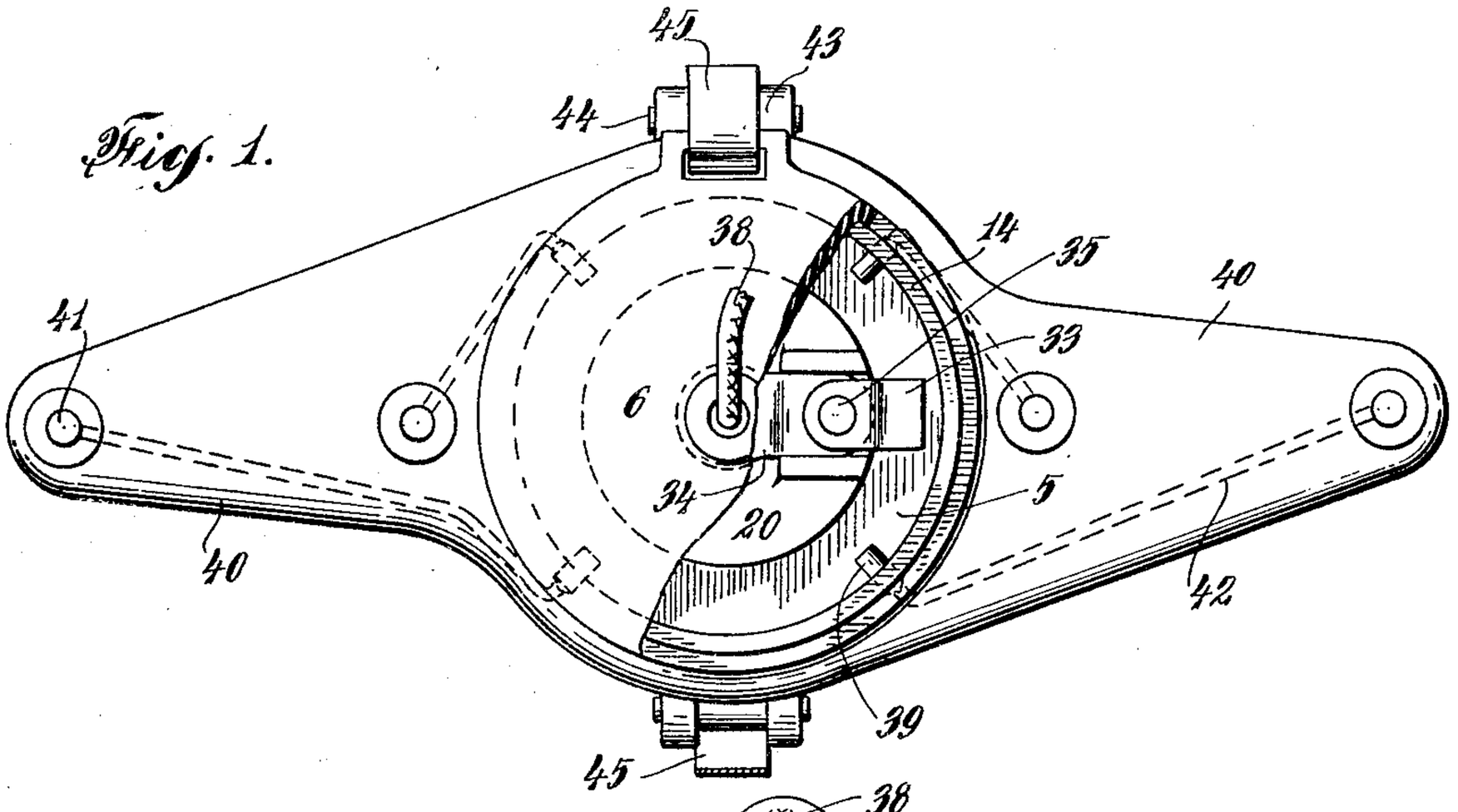

Fig. 2.

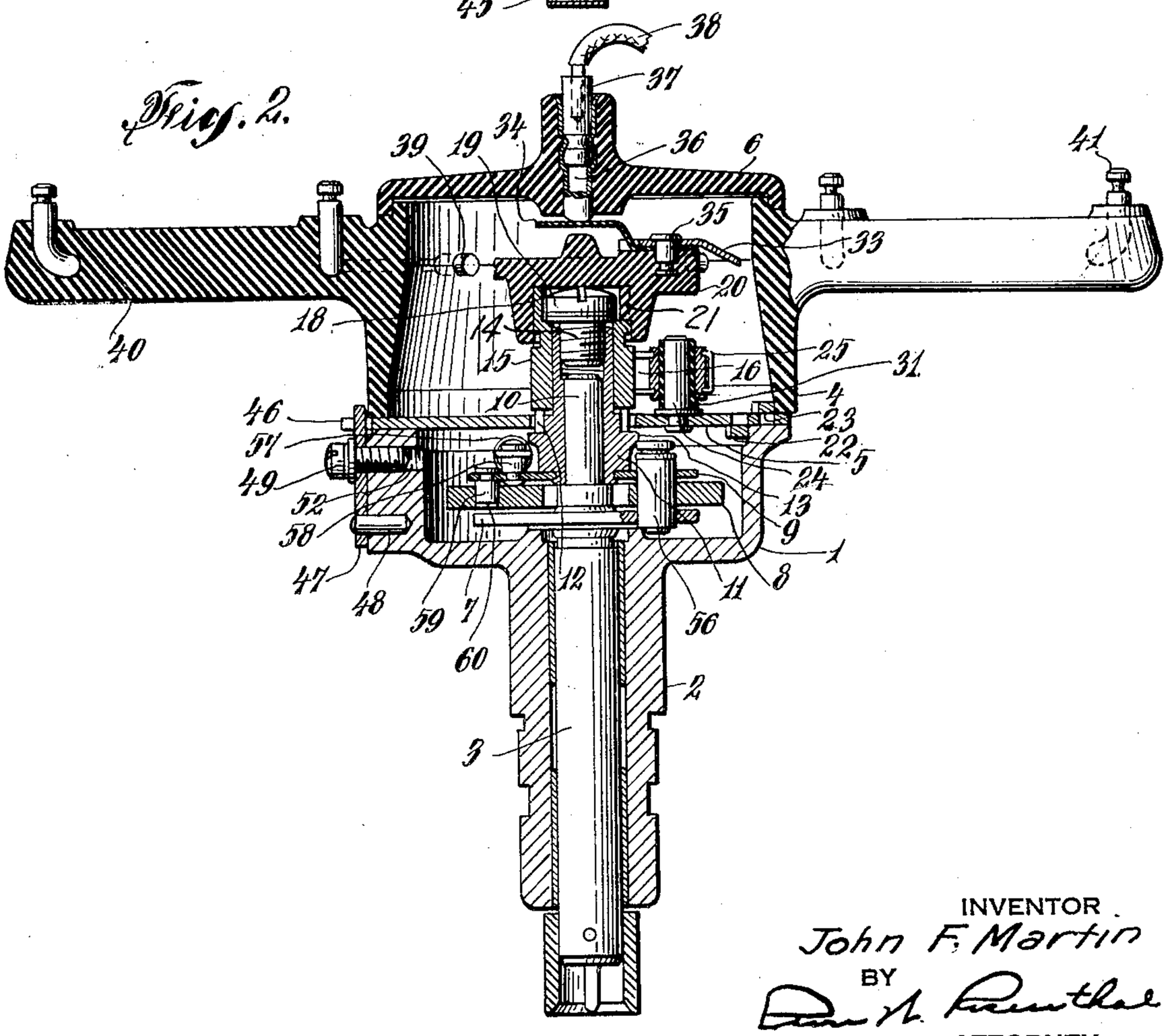

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Fig. 3.

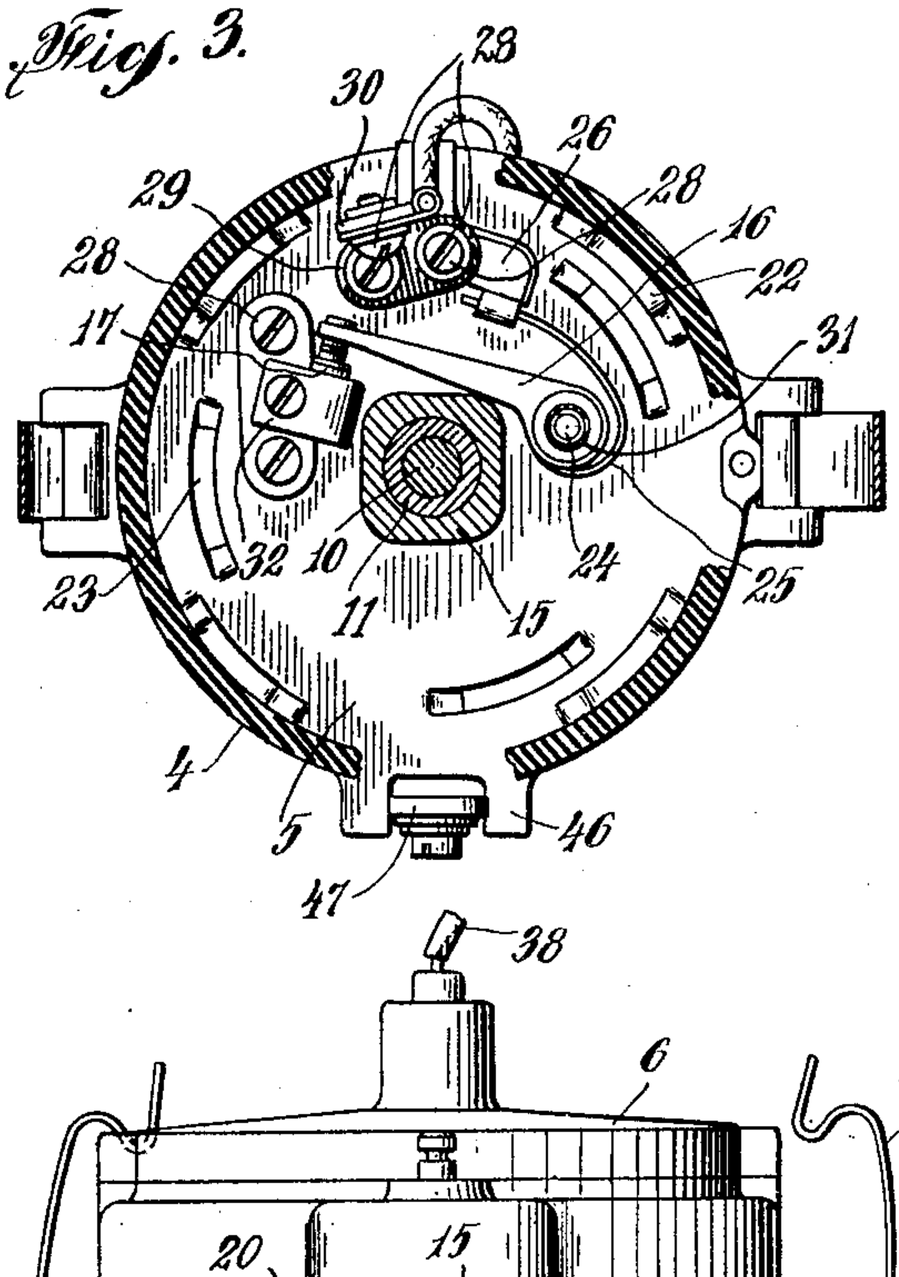


Fig. 5.

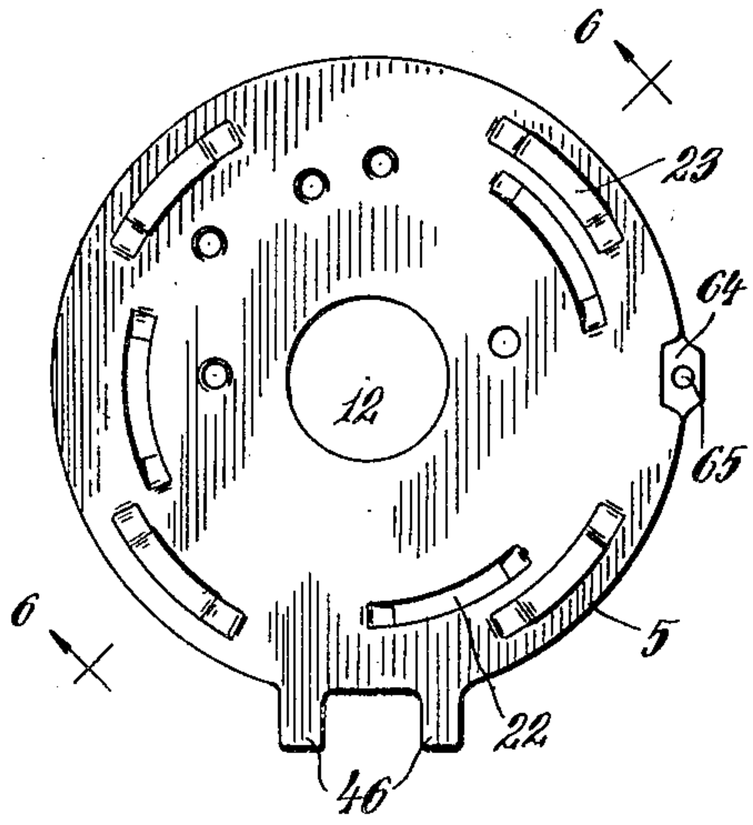


Fig. 6.

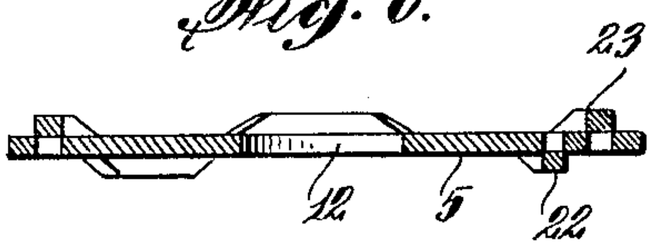


Fig. 4.

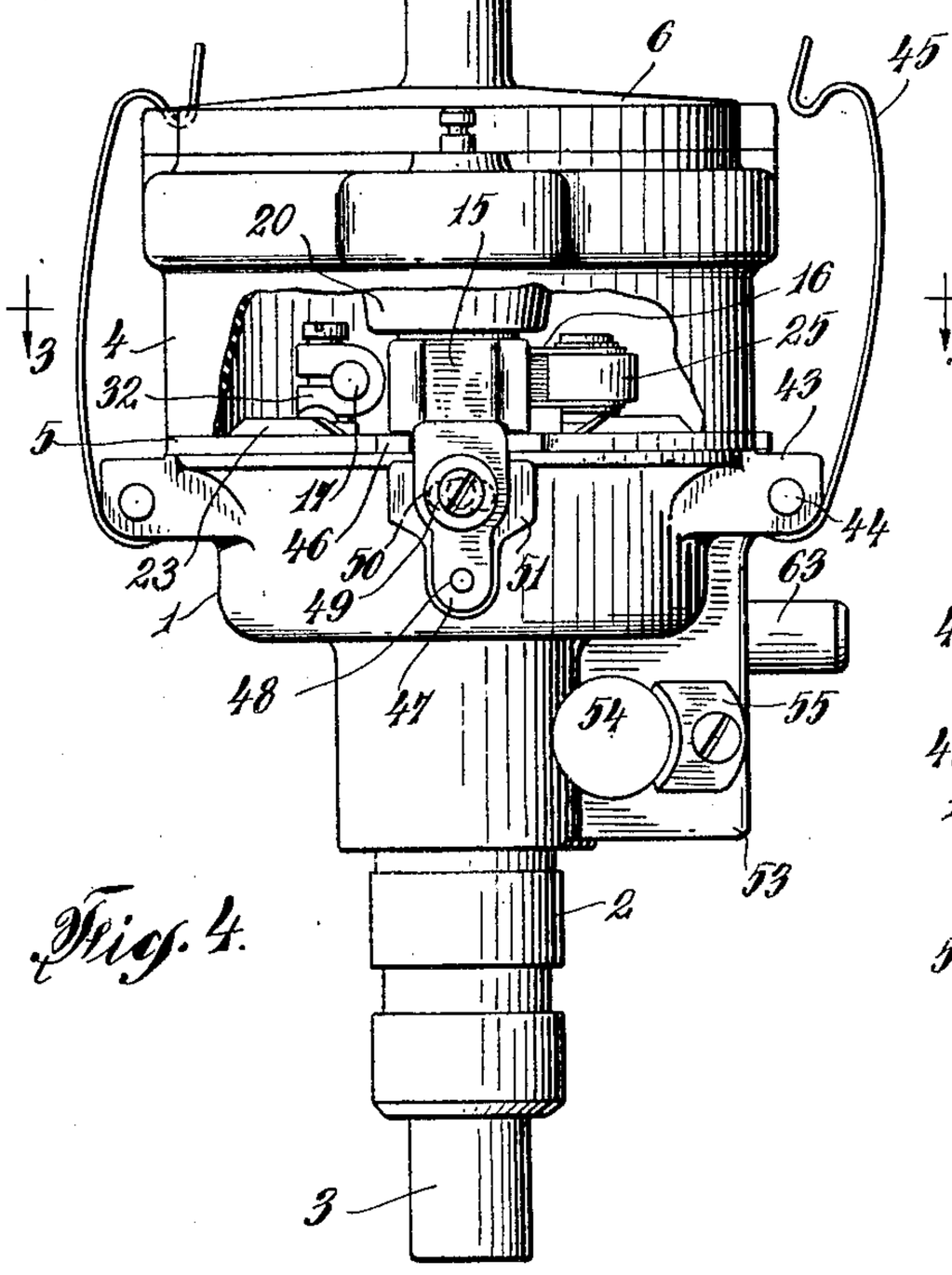
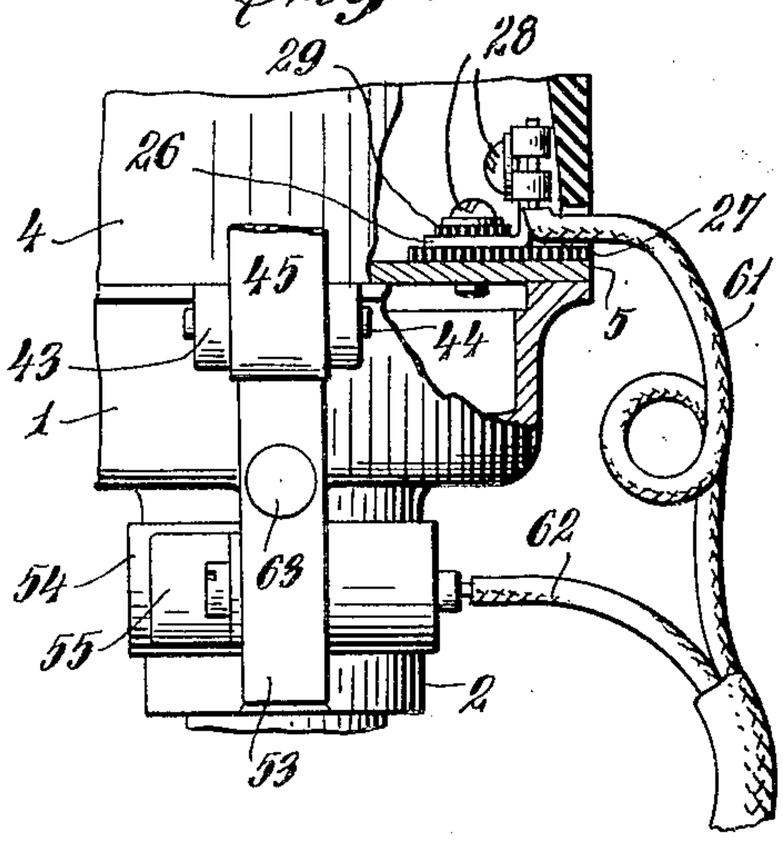


Fig. 7.



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Patented May 9, 1933 1,907,428

UNITED STATES PATENT OFFICE

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IGNITION TIMER

Application filed July 7, 1932. Serial No. 621,214.

My invention relates to an ignition timer comprising a circuit interrupter and a distributor of high tension current for the ignition systems of internal combustion engines.

An object of the invention is to provide a timer that is simple, durable and inexpensive in construction and efficient in operation.

Another object of the invention is to provide a timer that easily can be mounted in operative position and readily taken apart for repairs and replacement of parts.

With these and other objects in view, the invention consists of the arrangement and combination of parts described hereinafter and recited in the claims; and I reserve the right to make changes in details which do not depart from the principle of the invention or exceed the scope and spirit thereof.

The drawings show a preferred embodiment of the invention.

Fig. 1 is a top plan of a timer according to my invention partly broken away to reveal the interior,

Fig. 2 is a vertical section therethrough;

Fig. 3 is a transverse section on the line 3—3 of Fig. 4;

Fig. 4 is a side elevation partly broken away to disclose the interior;

Fig. 5 is a top plan of the plate for supporting the circuit breaker in the timer;

Fig. 6 is a transverse section on the line 6—6 of Fig. 5; and

Fig. 7 shows a detail.

On the drawings the same numerals identify the same parts throughout.

The timer comprises a cup-shaped casing 1 having at its lower end a bearing 2 for an operating shaft 3. The upper end of the casing 1 is open but is surmounted by a distributor head 4 of insulation. Between the casing 1 and the distributor head 4 is an adjustable plate 5 which carries the fixed and movable contact of the circuit breaker for the low tension side of the ignition circuit; and the distributor head 4 is also open at the top but is closed when the timer is in use by means of a cover or cap 6.

The shaft 3 which extends into the casing 1 carries a plate or arm 7 rigid therein near the bottom of the casing. On this plate or member are pivoted governor weights 8 and above these governor weights is a similar member 9 to which the weights are also attached. The inner end of the shaft 3 is reduced as shown at 10 and on this reduced end is a tubular shaft 11 to which the member 9 is affixed at the lower end. The shaft 11 revolves freely in an opening 12 in the plate 5 and is enlarged at 13 so as to be greater than the diameter of this opening. Hence the shaft 11 can not move upward because the plate 5 and enlarged portion 13 prevent this. At its upper end the tubular shaft 11 has a bore with threads 14 and it carries above the plate 5 a cam sleeve 15. On the plate is pivotally mounted and insulated therefrom a breaker lever 16 carrying at one end a contact to engage a fixed contact 17 mounted on the plate 5 and in circuit therewith. The upper end of the cam sleeve is enlarged at 18 to receive the head of a screw 19 which engages with the threads 14 in the adjacent extremity of the tubular shaft 11 to hold the cam sleeve 15 fast in place, the inside of this sleeve having a shoulder against which the head of the screw can bind.

Over the end of the cam sleeve 15 is placed a rotor of insulation 20 which may have a key 21 to engage a slot in the side of the cam so that the rotor will turn therewith. Hence when the shaft 3 rotates, the cam 15 and the rotor 20 will revolve together.

The plate 5 is provided with portions which are cut and struck upwardly from the bottom and top as shown at 22 and 23, thus providing curved projections to retain the plate in central position. The bottom projections 22 fit into the rim of the cup-shaped casing 1 and the upper projections 23 fit into the lower part of the distributor head 4 and are surrounded thereby to keep the distributor head in proper position. The plate 5 has a stud 24, providing a pivot for the breaker lever 16, and to this lever is affixed one end of a spring 25 to hold in circuit-closing position as regards the contact 17. The plate 5 also carries an angle-shaped terminal piece 26 insulated from the plate 5 by a sheet of fiber 27 and secured by a screw 28 which is separated from the element 26 by a fiber washer 29, the

screw passing through an enlarged opening in this element. The element has a clip 30 attached to its vertical portion by a similar screw 28 and the clip serves to engage the end of a conductor and connect it to the part 26. This piece 26 has a portion shaped to engage and anchor the other end of the spring 25 which is attached to the breaker lever 16, and stud 24 on which the lever is mounted is surrounded by a bushing or sleeve 31 of insulation.

The fixed contact 17 is mounted in a clamping block 32, held in place by other screws 28 engaging the plate 5 and this contact 17 can easily be adjusted into the required operating position.

The rotor 20 carries a distributor brush 33 and a radially arranged spring 34 both of which are attached by means of a rivet 35. In the cap 6 of the distributor head is a metallic socket 36 which is engaged by the spring 34, the socket receiving the metallic end 37 of a high tension conductor 38 joined to one terminal of the high tension winding of the spark coil. In the sides of the head are terminals 39 and projecting from the exterior of the head are two laterally extending arms 40. From the upper face of these arms project binding posts 41; each of which is joined to one of the contact terminals 39 by an embedded conductor 42. The binding posts 41 are, of course, united to the spark plugs of the engine.

The casing 1 is provided at opposite sides with perforated lugs or ears 43 carrying retaining pins 44 and between the ears of each pair are spring retaining members 45, the upper ends of which are bent over to grip the top of the cap 6. These members hold the cap 6 and the distributor head 4 in place but can easily be detached and swung outward to permit the cap 6 and head 4 to be temporarily removed. The top of the cap 6 can be provided with recesses to be engaged by the ends of the members 45.

The edge of the plate 5 has a pair of projections 46 between which is an adjusting member 47 mounted on a pivot pin 48 in the outer wall of the casing 1. This wall also receives a screw 49 in a threaded hole and the member 47 has a transverse slot 50 for receiving the screw 39. Hence by loosening the screw the element 47 can be swung from one side to the other and turn the plate 5 to a limited extent. The slot 50 affords sufficient clearance for this purpose. The side of the casing 1 may be flattened as shown at 51 for the purpose and the threaded opening for receiving the screw 49 is shown at 52.

At one side of the casing is a longitudinal projection 53 with a transverse opening for receiving an encased condenser 54. This condenser is held in position by an angle-shaped clip 55 which engages the side thereof and is affixed to casing 1 to form a ground connection for one terminal.

At 56 are projections on the member 7. The member 9 may lie between these projections and may be connected thereto by springs 57 attached to the projections and pins 58 affixed to the member 9. The member 9 may also carry pins 59 which engage slots 60 in the weights 8. When the speed rises the governor weights fly outward stretching the springs 57 and by the sides of the slot 60 acting on the pins 59 the member 9 is shifted and the cam is thus caused to advance or retard the spark.

The numeral 61 indicates the conductor from the primary coil leading to the binding post element 26 in the casing 1 and at 62 is a parallel connection for the condenser 54 which is to be in multiple with the interrupter lever and contacts 17. At 63 I may mount a hollow cup in the side of the casing 1 to admit lubricant. The plate 5 may also have a projection 64 in one point of its periphery with a stud 65 to engage a recess in the bottom of the head 4, thus insuring that the head will always be put on the plate 5 in the proper position. The position of the plate 5 itself is determined by the member 47 which should lie between the projection 46.

Having described the invention, what is claimed is:

1. A timer comprising a cup-shaped casing, a plate resting upon the rim of the casing, and a distributor engaging the plate at one end, the plate having integral projections struck up from both faces to enter the casing and the head, and means for retaining the casing and the head in proper relative position.

2. A timer comprising a casing, a distributor head on the casing, a timer plate adjustably mounted with respect to the casing, said casing having a pair of projections on its periphery, a member lying between said projections and pivotally mounted on the outside of the casing, and means for securing said member in desired position whereby the plate can be adjusted.

3. A timer comprising a casing and a distributor head thereon, a plate in the casing, a fixed and a movable contact on said plate, the plate having projections on its periphery, a member pivotally attached to the outside of the casing and disposed between the projections, said member having a transverse slot, and a screw mounted in the side of the casing and passing through said slot, said screw when tightened holding the member and the plate in desired adjusted position.

4. A timer comprising a casing and a distributor head thereon, a plate in the casing, an interrupter lever insulatably mounted on the plate, a binding post insulatably mounted on said plate, a projection carrying a clip on said binding post for the attachment of

a conductor, a spring attached at one end to said lever, and means on said post for engaging the other end of said spring.

5. A timer comprising a casing and a distributor head thereon, a plate between the adjacent edges of said casing and said head, said plate having integral projections struck up on both faces to enter the rim of the casing and the rim of the head, and a projection at the periphery bearing a stud to engage the adjacent end of the distributor head to mark the proper position of the head when the head is removed.

In testimony whereof I affix my signature.

JOHN F. MARTIN.