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TIMER FOR GASOLINE ENGINES

Filed Feb. 25, 1925

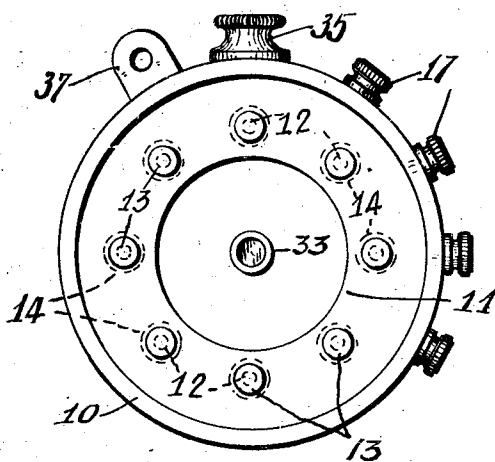


FIG. 1

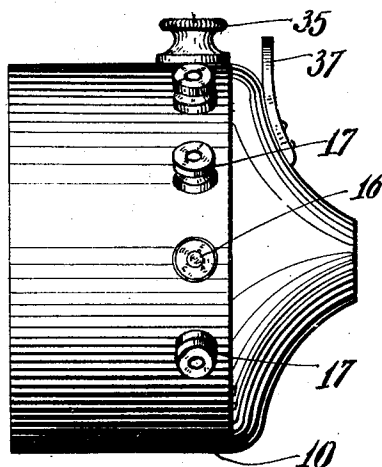


FIG. 2

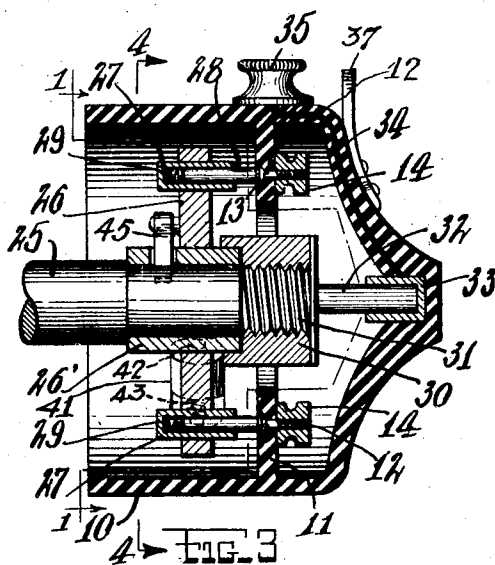


FIG. 3

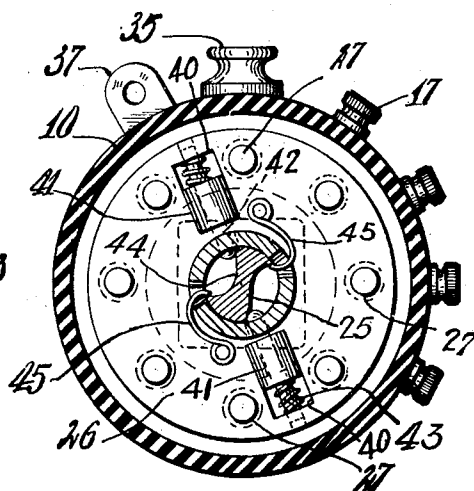


FIG. 4

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TIMER FOR GASOLINE ENGINES.

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This invention relates generally to ignition means for internal combustion engines, having more particular reference to the timer employed to cause the spark in the engine cylinder when the charge is compressed in the latter.

The invention has for an object the provision of a novel and improved type of timer characterized by simple construction, the invention also having for an object to provide an improved means for automatically advancing and retarding the spark as the speed of the engine varies.

For further comprehension of the invention, and of the objects and advantages thereof, reference will be had to the following description and accompanying drawing, and to the appended claims in which the various novel features of the invention are more particularly set forth.

Fig. 1 of the drawing is an inside face view showing the shiftable element of the timer, this view being taken on the line 1—1 of Fig. 3.

Fig. 2 is a side view thereof.

Fig. 3 is an axial sectional view of the timer.

Fig. 4 is a transverse sectional view of the timer, this view being taken on the line 4—4 of Fig. 3.

Referring now to the drawing, the reference numeral 10 indicates a cuplike casing which is of suitable insulating material, and which is adapted to be mounted in the usual manner on a suitable part to permit of slight angular adjustment thereof. This casing is formed with an interior radial flange 11 which is formed with a number of apertures in which are positioned the screws 12 having enlarged heads 13 sunk into the flange to be flush with the forward face thereof, these screws having nuts 14 threaded on their ends, which are used to bind to said screws wires leading to a set of binding posts 16 that are fixed in the wall of the casing 10 and have nuts 17 threaded on their outer ends to receive the wires leading to the ignition or sparking elements of the engine. I have here shown eight of these screws and four of the binding posts, the device being arranged for an eight cylinder engine with opposed screws wired to a common binding post.

The usual shaft of the timer is shown at 25 and is driven from the engine shaft in the usual manner. This shaft 25 projects

into the open end of the casing 10 and has fixed thereon, within the said casing, a disk 26 having an elongated hub 26' surrounding the said shaft 25. This disk 26 is formed with opposed apertures in which are inserted the tubular members 27 that are closed at one end and have seated therein the carbon contact pins 28 that are pressed against the flange 11 by suitable means such as the springs 29. The hub 26' projects into and makes contact with a short sleeve 30 supported in the casing 10 and having threaded therein a plug 31 from which projects a carbon contact pin 32 that engages in a metal cup 33 sunk into the transverse end wall of the casing. From this cup 33 a wire 34 leads to a fifth binding post 35 on the casing 10. As will be apparent, when the shaft 25 is rotated, the circuit is closed between the binding post 35 and the other posts 16 successively, as the pins 28 contact with the heads 13 of the screws 12. The casing 10 is shown as having fixed thereto an arm 37 adapted to have attached thereto the usual means for shifting the casing to vary the time of the spark.

I also provide a means for automatically varying the spark as the speed of the engine increases. To this end the disk 26 is formed with a pair of opposed radial slots 40 that accommodate the weights 41 fixed on the radial rods 42 slidable in radial apertures in the said disk. The outer portions of these rods 42 are surrounded by the coiled expansion springs 43 that bear inwardly on the blocks 41. The inner ends of these rods project into cam notches 44 in the shaft 25 while the disk 26 has attached thereto the one end of each pair of springs 45 whose opposite ends are connected to the shaft 25, and which act to press the rods against the walls of the said notches, these springs 45 being weaker than the springs 43. When the engine speed increases the blocks 41 move outward against the pressure of the springs 43 due to the centrifugal force developed, and the springs 45 then cause the disk 26 to shift relatively to the shaft 25 in an angular or rotary direction so that the timing of the device is varied. When the speed of the engine decreases the springs 43 cause the rods 42 to move inward and by bearing on the cam walls of the slots they act to return the disk and shaft to their original positions, varying the timing of the device in an opposite direction.

Having thus described my invention, what I claim as new and desire to protect by Letters Patent of the United States is as follows:

5 1. In a timing device for internal combustion engines, a casing having a number of contact members therein, a shaft adapted to be driven from an engine, a disk freely mounted on said shaft, a contact member
10 carried by said disk to engage the contact members in the casing upon rotation of the shaft, a weighted member radially slidable in said disk, a cam wall on said shaft, a spring retaining the said weighted member engaged
15 with said cam wall, and a second spring urging said disk in a rotary direction upon said shaft, movement of the shaft and disk with relation to one another under the influence of the second spring being limited
20 by the engagement of the said weighted member with the said cam wall.

2. In a timing device for internal combustion engines, a casing having a number of contact members therein, a shaft adapted to
25 be driven from an engine, a disk freely mounted on said shaft, a contact member carried by said disk to engage the contact members in the casing upon rotation of the shaft, a weighted member radially slidable in
30 said disk, a cam wall on said shaft, a spring

retaining the said weighted member engaged with said cam wall, and a second spring urging said disk in a rotary direction upon said shaft, movement of the shaft and disk with relation to one another under the influence
35 of the second spring being limited by the engagement of the said weighted member with the said cam wall, said last named spring being weaker than the first named spring.
40

3. In a timing device for internal combustion engines, a casing having a number of contact members therein, a shaft adapted to be driven from an engine, a disk freely
45 mounted on said shaft, a contact member carried by said disk to engage the contact members in the casing upon rotation of the said shaft, a rod slidable radially in the said disk, said shaft having a cam notch therein
50 presenting a cam wall against which the inner end of said rod bears, a weight fixed to the said rod, a spring urging said rod radially inwardly, and a second spring connected at opposite ends to the said shaft and
55 the said disk acting to retain the said rod in position with the said cam wall of the notch in the shaft.

In testimony whereof I have affixed my signature.

MANUEL HERRERA.