

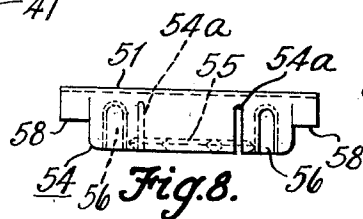
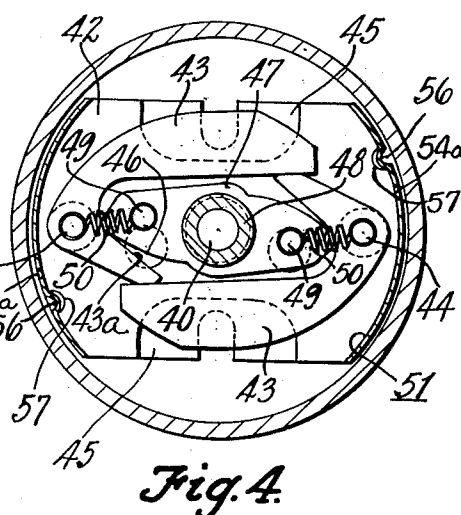
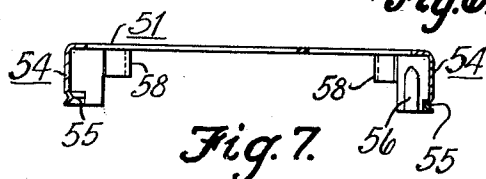
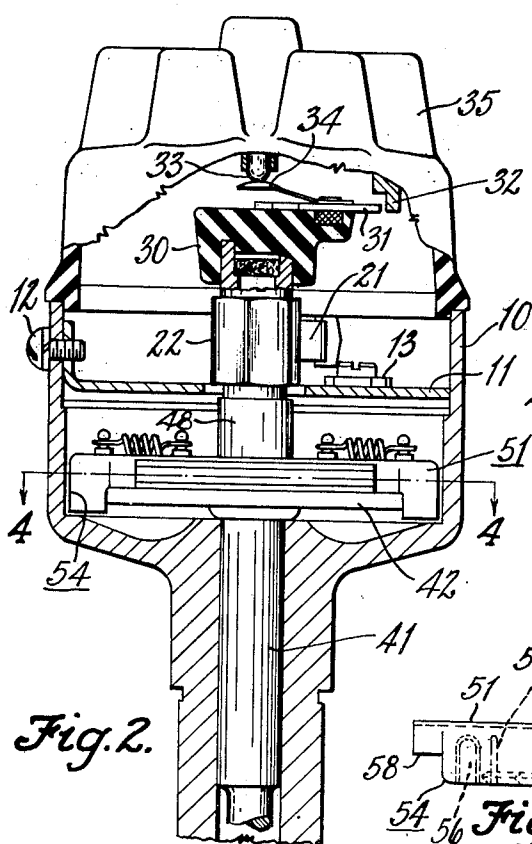
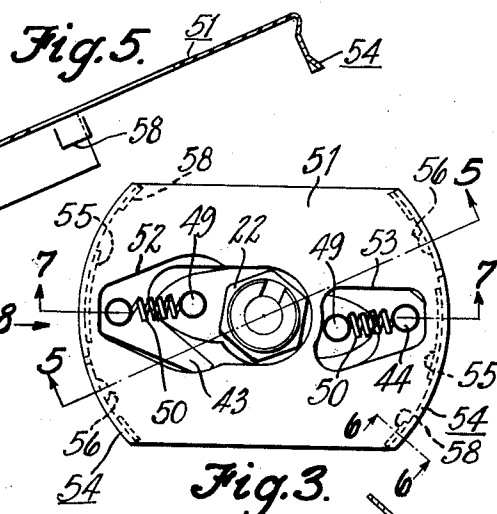
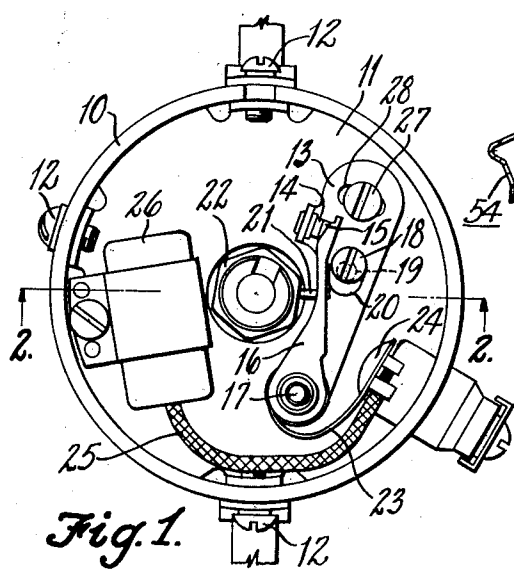
Nov. 3, 1953

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2,657,556

IGNITION TIMER

Filed Oct. 26, 1949



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2,657,556

IGNITION TIMER

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Application October 26, 1949, Serial No. 123,686

10 Claims. (Cl. 64—25)

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This invention relates to ignition timers having speed responsive means for adjusting the annular location of the timer cam with respect to the engine driven shaft which operates the cam. The speed responsive means comprises a plate connected with the engine driven shaft of the timer and supporting weights which move out against the action of springs to turn the timer cam relative to the driving shaft. The timer cam is journaled on an extension of the drive shaft and is connected with a cam plate with which the weights engage. A cover plate attached to the plates supporting the weights retains the weights and the cam plates in location.

An object of the invention is to facilitate the attachment of the cover plate to the weight plate. This is accomplished by a construction of the cover plate and of the weight plate which provides for a snap-on connection.

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:

Fig. 1 is a plan view of the ignition timer with the distributor cap removed.

Fig. 2 is a sectional view of the ignition timer and distributor on line 2—2 of Fig. 1.

Fig. 3 is a plan view of the assembly of timer cam, speed responsive device and cover therefor.

Fig. 4 is a sectional view on line 4—4 of Fig. 2.

Fig. 5 is a sectional view of the cover on line 5—5 of Fig. 3.

Fig. 6 is a fragmentary, sectional view of the cover on line 6—6 of Fig. 3.

Fig. 7 is a sectional view of the cover on line 7—7 of Fig. 3.

Fig. 8 is a side view of the cover looking in the direction of arrow 8 of Fig. 3.

Referring to Figs. 1 and 2, a housing 10 supports a breaker plate 11 attached to the housing by screws 12. Plate 11 supports a bracket 13 which carries a stationary contact 14 engageable with a movable contact 15 carried by circuit breaker lever 16 journaled on a pivot post 17 and insulated therefrom, said post being attached to the plate 11 and providing a pivot for the bracket 13 which is adjustable by the turning of a slotted disc 18 attached to an eccentric shank 19 pivoted on plate 11 and disc 18 is received by a slot 20 of bracket 13. This adjustment varies the location of a rubbing block 21 attached to lever 16 relative to the ignition timer cam 22 against

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which the block is urged by leaf spring 23 attached to lever 16 at one end and at the other connected with a terminal 24 insulatingly supported by housing 10 and connected also by a wire 25 with one foil of a condenser, the other foil of which is connected with a condenser enclosing case 26 attached to plate 11. Bracket 13 is maintained in adjusted position by the tightening of a screw 27 passing through an arcuate slot 28 in bracket 13 and threaded into the plate 11.

Cam 22 is drivingly connected with a distributor rotor 29 having a segment 31 for distributing sparking impulses to distributor posts 32 from a center button 33 connected with an ignition coil secondary winding and engaged by a contact on the end of a leaf spring 34 attached to the segment 31. The center button 33 and the post 32 are carried by a non-conducting distributor cap 35 supported by the housing 10.

The cam 22 is journaled on the extension 40 (Fig. 4) of a driving shaft 41 rotatably supported by the housing 10. Shaft 41 is connected with a weight plate 42 supporting weights 43 pivoted on studs 44 carried by the plate 42 and sliding on bosses 45 integral with plate 42. Weights 43 have arms 43a for engaging cams 46 provided by a cam plate 47 attached to the tubular extension 48 of cam 22. Plate 47 carries studs 49 connected by springs 50 with studs 44 whereby the weights 43 and cam plate 47 are urged into the normal position shown in Fig. 4. This is the arrangement of parts for a distributor whose cam rotates clockwise. As speed increases, weights 43 move outwardly against the action of springs 50 to effect clockwise rotation of plate 47 and cam 22 in order to advance the timing of the ignition.

The weights 43 and the plate 47 are retained upon the plate 42 by a cover 51 having openings 52 and 53 for receiving the cam 22, studs 44 and 49 and springs 50 which connect these studs. Plate 51 has two arcuate flanges 54 each provided with an arcuate bead 55 and each having a detent 56 adapted to be received by a notch 57 in plate 42. The cover 51 provides four stops 58. Each flange 54 is cut partially across at 54a, thus separating the shorter part of the flange which provides the detent 56 from the longer part of the flange.

The cover 51 is assembled with the plate 42 by holding the cover 51 approximately parallel with the plate 42 and the detents 56 approximately in alignment with the notches 57 of the plate while pressing the cover against the plate

with pressure sufficiently to cause the beads 55 to be cammed outwardly by the edges of the plate so that they bear upon the periphery of the plate, said motion being continued until the stops 58 bear upon the upper surface of the plate, whereupon the beads 55 snap under the plate and engage its under surface to retain the cover upon the plate. The shorter resilient portions of the flanges 54, providing the detents 56, bear against the edges of the plate 42 resiliently. The longer portions of the flanges 54 which provide the beads 55 bear resiliently against the edges of the plate 42.

The cover 51 does not turn relative to plate 42 which is subjected to torsional vibrations since the detents 56 engage the notches 57 of the plate. The cover 51 remains assembled with the plate 42 although the timer may be subjected to up and down vibrations. If one were to grasp the shaft 41 in one hand before assembly in the timer housing 10, and were to grasp the cover 51 in the other hand and pull it in a direction away from the plate 42, the central part of the cover would be flexed away from the plate but the cover would not come loose from the plate because, the flanges 55 would grip the plate all the more firmly. While the assembly of shaft 41, plate 42, cam 22 and cover 51 is disassembled from the housing 10, the cover 51 can be removed from the plate 42 by pushing against the edges of the flanges 54 with pressure sufficient to cause the flanges 54 and their beads 55 to spring out around the edges of the plate. Obviously, in service, the cover 51 is not subjected to the application of any forces against the lower edges of the cover flanges 54. Therefore the cover 51 remains assembled with the plate 42.

While the embodiment of the present invention as herein disclosed, constitutes a preferred form, it is to be understood that other forms might be adopted.

What is claimed is as follows:

1. In an ignition timer, the combination comprising a shaft, a weight plate attached thereto, a timer cam journaled on the shaft, means transmitting motion from the shaft to the cam and including weights pivoted on the plate and providing levers, and a plate attached to the cam and providing cams engaged by said levers and a weight and cam plate retainer comprising a sheet metal plate through which the timer cam extends and having resilient flanges, said flanges being constructed to fit over the edge of the weight plate and having detents to provide retaining lugs cooperating with said weight plate to hold the retainer plate thereupon.

2. In an ignition timer, the combination comprising a shaft, a weight plate attached thereto, a timer cam journaled on the shaft, means transmitting motion from the shaft to the cam and including weights pivoted on the plate and providing levers, and a plate attached to the cam and providing cams engaged by said levers, and a weight and cam plate retainer comprising a sheet metal plate through which the timer cam extends and providing resilient flanges adapted to bear against edges of the weight plate and certain portions of these flanges providing internal beads for engaging the underside of the weight plate and other flange portions providing detents for engaging in notches provided by the weight plate.

3. In an ignition timer, the combination comprising, a shaft; a weight plate attached to the shaft; a timer cam journaled on the shaft;

means transmitting motion from the shaft to the cam and including weights pivoted on the plate and providing levers; a plate attached to the cam and providing cams engaged by the levers; and a weight and a cam plate retainer comprising a sheet metal plate through which the timer cam extends and having oppositely disposed flanges, said flanges providing means for engaging the under side of the weight plate for locking the retainer to the weight plate and said flanges also providing additional means cooperating with notch provisions provided by the weight plate to prevent the retainer from turning relative to the weight plate.

4. In an ignition timer, the combination comprising, a shaft; a weight plate attached to the shaft; a timer cam journaled on the shaft; means transmitting motion from the shaft to the cam and including weights pivoted on the plate and providing levers; a plate attached to the cam and providing cams engaged by the levers; and a weight and a cam plate retainer comprising a sheet metal plate through which the timer cam extends and having a plurality of spaced resilient arcuate flanges extending generally axially of said retainer plate; and means for locking the retainer plate to the weight plate including circumferentially spaced struck in portions from the flanges.

5. In an ignition timer, the combination comprising, a shaft; a weight plate attached to the shaft; a timer cam journaled on the shaft; means transmitting motion from the shaft to the cam and including weights pivoted on the plate and providing levers; a plate attached to the cam and providing cams engaged by the levers; and a weight and a cam plate retainer comprising a sheet metal plate through which the timer cam extends and having a plurality of spaced resilient arcuate flanges extending generally axially of said retainer plate; circumferential detents formed in the flanges adapted to engage the underside of the weight plate for locking the retainer to the weight plate against accidental removal of the retainer plate; and additional detents formed in the flanges cooperating with means on the weight plate for preventing the retainer plate from turning relative to the weight plate.

6. In an ignition timer, the combination comprising, a shaft; a weight plate attached to the shaft; a timer cam journaled on the shaft; means transmitting motion from the shaft to the cam and including weights pivoted on the plate and providing levers; a plate attached to the cam and providing cams engaged by the levers; and a weight and a cam plate retainer comprising a sheet metal plate through which the timer cam extends and having resilient flanges adapted to receive between them and yieldingly grip the periphery of the weight plate, at least one of said flanges having means to interlock with the plate to prevent accidental removal of the retainer and means on at least one of the flanges cooperating with means provided by the plate to prevent rotation of the retainer relative to the weight plate, said flanges being yieldable so as to permit same to yield during assembly of the retainer with said weight plate and snap into said interlocking relation.

7. In an ignition timer, the combination comprising, a shaft; a weight plate attached to the shaft; a timer cam journaled on the shaft; means transmitting motion from the shaft to the cam and including weights pivoted on the plate and

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providing levers; a plate attached to the cam and providing cams engaged by the levers; and a weight and a cam plate retainer comprising a sheet metal plate through which the timer cam extends and having holding means whereby the plate and retainer may be connected together against axial and turning movements solely by relative movement, said holding means including recesses in the plate and a plurality of projection means provided on the flanges, certain of the projection means being constructed and arranged to fit in the recesses of the plate to prevent the retainer from turning relative to the plate while the other projection means are positioned below the plate to hold yieldingly the retainer against accidental removal from the weight plate; and stop means provided by flanges adapted to engage the plate to limit the axial movement of the retainer plate as it is being connected with weight plate.

8. In an ignition timer, the combination comprising a shaft; a weight plate attached thereto, a timer cam journaled on the shaft; means transmitting motion from the shaft to the cam and including weights pivoted on the plate and providing arms; a plate attached to the cam and providing cams engaged by the arms; and a retainer consisting of a perforated plate through which the cam extends, said plate having oppositely disposed flexible flanges constructed to fit over the edge of the weight plate, portions of said flanges being dented inwardly to provide retainer lugs cooperating with the underside of said weight plate to hold the retainer thereon.

9. In an ignition timer, the combination comprising a shaft; a weight plate attached thereto, a timer cam journaled on the shaft; means

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transmitting motion from the shaft to the cam and including weights pivoted on the plate and providing arms; a plate attached to the cam and providing cams engaged by the arms; a retainer plate having an opening through which the cam extends, said retainer plate having resilient axially extending flanges for receiving the weight plate; said flanges having lugs extending inwardly therefrom for engaging the weight plate removably to hold the retainer on said weight plate.

10. In an ignition timer, the combination comprising a shaft; a weight plate attached thereto, a timer cam journaled on the shaft; means transmitting motion from the shaft to the cam and including weights pivoted on the plate and providing arms; a plate attached to the cam and providing cams engaged by the arms; and a retainer plate having an opening through which the cam extends, said plate having oppositely disposed flexible flanges constructed to fit over the edge of the weight plate, said flanges having lugs extending therefrom for engaging the weight plate to preclude accidental removal of the retainer, at least one of said flanges having an additional lug extending therefrom cooperating with means provided by the weight plate to prevent relative rotational movement of said retainer with respect to said weight plate when said retainer is assembled to said weight plate.

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