

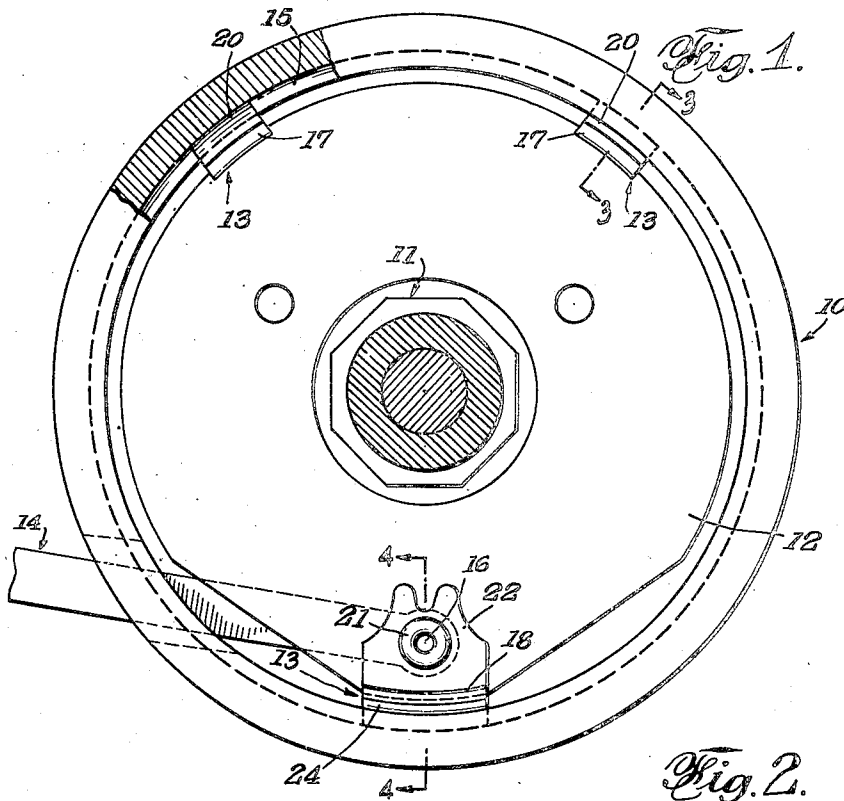
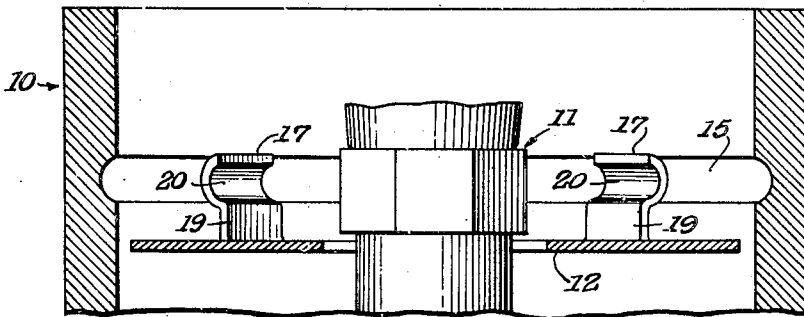
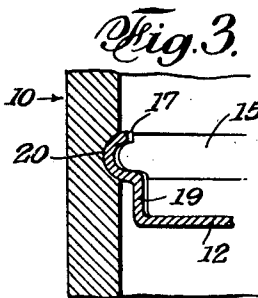
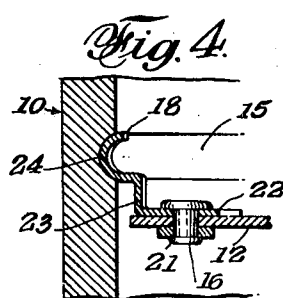
June 29, 1948.

S. E. ALDRIDGE

2,444,149

IGNITION TIMER

Filed Jan. 18, 1946



INVENTOR.
Seth E. Aldridge
BY C. F. Stratton
ATTORNEY

UNITED STATES PATENT OFFICE

2,444,149

IGNITION TIMER

Seth E. Aldridge, San Diego, Calif.

Application January 18, 1946, Serial No. 641,944

7 Claims. (Cl. 200—19)

1 This invention relates to ignition timers of the general type used, in internal combustion engines, to advance or retard the period of ignition of engines. More specifically, this invention deals with a suction controlled timer of novel and improved form.

Generally, timers or distributors of the type referred to include a housing, a rotating cam in the housing, and a breaker plate carrying a fixed contact and a movable contact on an arm controlled by the cam. Advance and retard of the ignition period is effected by partial rotation of the plate with respect to the housing so that the cam controls the arm to engage the contacts early or late with relation to the compression cycle of an engine. This partial rotation of the breaker plate is effected by the suction of said engine. The conventional manner of mounting the breaker plate includes bearing balls in a groove or raceway or in special liners in the housing. It will be evident that the cam of the timer actuates the mentioned arm several times in one second and each time transmits a hammer blow to the housing by said balls. This results in an indenting of the ball raceway because of the high unit pressure of the balls. These indentations frequently develop to such a degree as to materially change the critical adjustment between the cam and the contacts and, consequently, the adjustment between the contacts. The smoothness of rotation of the breaker plate is affected since the balls must necessarily climb from or drop into indentations which have developed. Further, in order for balls to roll freely, some endwise freedom is necessary. Since they have only point contact in their raceway, the breaker plate is subject to wobble, again changing its critical relation with the cam. The latter occurs more frequently when the suction operated connection is moved to change the timing. Again, assembly of the breaker plate in a housing is complicated by the necessity for handling not only the plate, but the balls and perhaps ball cages, liners, etc.

Recognizing the above faults in timers and seeking to correct them, this invention has for its primary object to provide improved and efficient means for mounting a breaker plate in a timer and further contemplates such means that may be installed in existing timers.

Another object of the invention is to provide a breaker plate having support and guide means in a timer housing which will efficiently mount the same without danger of becoming maladjusted.

Another object of the invention is to provide

2 a breaker plate having support and guide means which present surface rather than point or line contact with a timer housing for efficient transmission and absorption of the shock forces transmitted to said housing.

Another object of the invention is to provide a breaker plate which is unitary and can, therefore, be more easily installed in a timer housing.

My invention also has for its objects to provide such means that are positive in operation, convenient in use, easily installed in a working position and easily disconnected therefrom, economical of manufacture, relatively simple, and of general superiority and serviceability.

15 The invention also comprises novel details of construction and novel combinations and arrangements of parts, which will more fully appear in the course of the following description. However, the drawings merely show and the following description merely describes one embodiment of the present invention, which is given by way of illustration or example only.

In the drawings, like reference characters designate similar parts in the several views.

25 Fig. 1 is a plan view, partly in section, of a timer embodying a breaker plate according to the invention.

Fig. 2 is a broken vertical sectional view thereof.

30 Figs. 3 and 4 are fragmentary sectional views as taken on the respective lines 3—3 and 4—4 of Fig. 1.

In that form of the invention which is illustrated in the drawing, the timer comprises, generally, a housing 10, a cam 11 mounted on the vertical axis of the housing, a breaker plate 12, means 13 supporting the breaker plate for oscillation in the housing, and means 14 for effecting said oscillation according to the variable load on an engine controlled by the timer.

40 The housing 10 is of conventional form and, for the purposes of the present invention, is formed with an internal groove 15 generated about the axis of the housing and preferably of partially circular cross-sectional form. The groove 15 is, therefore, circular about the distributor axis and transversely curved in the manner of a partial torus.

45 The cam 11 is also conventional and is mounted in the housing to rotate on the central axis of the timer.

50 The breaker plate 12 is mounted transversely in the housing and in a conventional manner carries breaker contacts which are opened and closed by the lobes of the cam 11 as the latter rotates. In the drawing, only the plate is shown, since the

3

parts which it carries are of usual form and design.

The means 14, also conventional, comprises a link connected to the plate 12 at 16 and arranged to be moved by the suction force of an engine to cause said plate to oscillate about the timer axis.

The breaker plate support and guide means 13, in this case is shown as comprising a pair of angularly spaced similar shoes 17 and a third, preferably a spring shoe 18, arranged symmetrically with the shoes 17 to form an isosceles triangle in which the shoe 18 forms the apex.

Although the shoes 17 may be separate applied elements to the plate 12, they are here shown as integral, each comprising a preferably upwardly bent portion 19 terminating in a doubly curved shoe portion 20. The outer face of the latter is machined or otherwise suitably formed to have the curvature of the groove 15 whereby said shoes will smoothly slide in said groove.

The spring shoe 18 preferably comprises a separate member secured to the breaker plate 12 by a rivet or the like 21 passing through its foot part 22. Said rivet also comprises the pivot 16 for the means 14. In other respects the shoe 18 is similar to the shoes 17 having an upwardly directed portion 23, similar to the portion 19, and a doubly curved shoe portion 24, similar to the portion 20.

It will be seen that the breaker plate thus provided is easily mounted in the groove 15 of the housing by placing the shoes 17 in said groove and pressing the plate downwardly to snap the shoe 18 into place in the groove. By pressing the shoe 18 inwardly, the breaker plate can be as easily removed. When in place, the shoes 17 and 18 have firm, non-wobbly contact with the wall of the groove 15 to provide a mounting for the breaker plate which is easily oscillated by means 14, which is steady in its position and obviates the faults enumerated in the preamble of this specification.

While I have illustrated and described what I now regard as the preferred embodiment of my invention, the construction is, of course, subject to modifications without departing from the spirit and scope of my invention. I, therefore, do not wish to restrict myself to the particular form of construction illustrated and described, but desire to avail myself of all modifications that may fall within the scope of the appended claims.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. In an ignition timer, a housing having a

4

transversely curved annular groove, a plurality of spaced doubly curved shoes engaged in said groove, and a breaker plate carried by the shoes.

2. In an ignition timer, a housing having a transversely curved annular groove, a plurality of spaced doubly curved shoes engaged in said groove, and a breaker plate carried by the shoes, one of said shoes being resilient.

3. In an ignition timer, a housing having a transversely curved annular groove, a plurality of spaced shoes engaged in said groove, each shoe being partly coextensive with the groove to afford surface contact therewith, and a breaker plate carried by the shoes.

4. In an ignition timer, a housing having a transversely curved annular groove, a plurality of spaced shoes engaged in said groove, each shoe being partly coextensive with the groove to afford surface contact therewith, and a breaker plate carried by the shoes, two of said shoes being integrally formed with the breaker plate.

5. In an ignition timer, a housing having a transversely curved annular groove, a plurality of spaced shoes engaged in said groove, each shoe being partly coextensive with the groove to afford surface contact therewith, and a breaker plate carried by the shoes, two of said shoes being integrally formed with the breaker plate, and the third comprising a resilient member secured to the breaker plate.

6. A breaker plate comprising a plate, at least three peripheral shoes on said plate, said shoes being annularly curved about a common center, and each shoe being transversely and outwardly convexly curved to directly engage a groove in a timer housing mounting the breaker plate.

7. A breaker plate comprising a plate, at least three peripheral shoes on said plate, said shoes being annularly curved about a common center, and each shoe being transversely and outwardly convexly curved to directly engage a groove in a timer housing mounting the breaker plate, two of said shoes being integrally formed with said plate and the third comprising a separate, attached and resilient shoe member.

SETH E. ALDRIDGE.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
2,125,368	Arthur	Aug. 2, 1938