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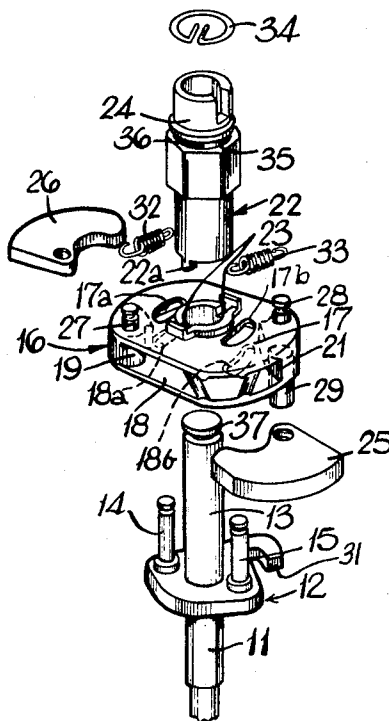
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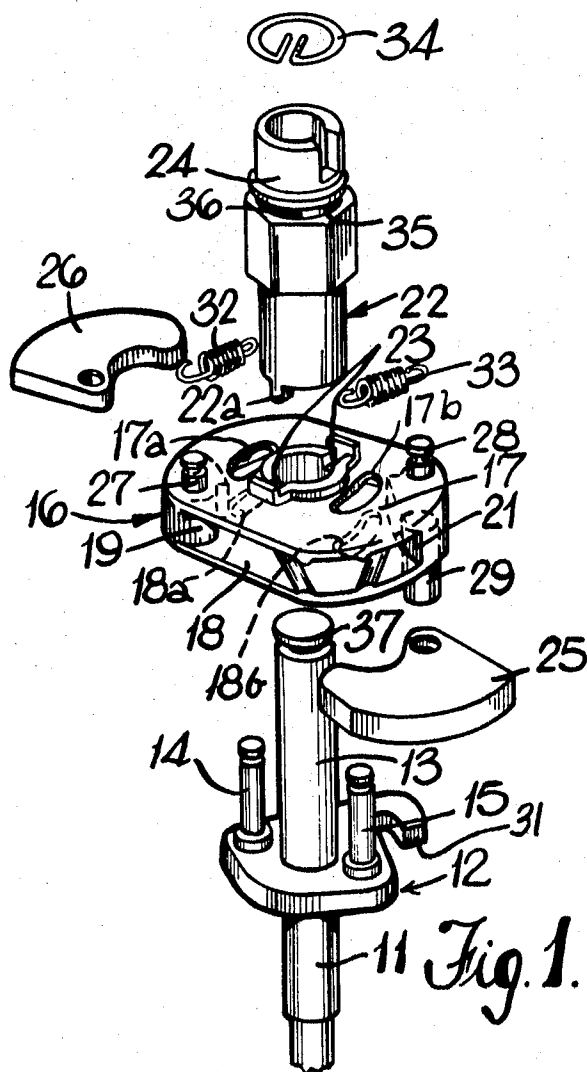
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**[54] IGNITION DISTRIBUTORS WITH IMPROVED
CONTROL WEIGHT ADJUSTMENT MEANS
2 Claims, 2 Drawing Figs.**

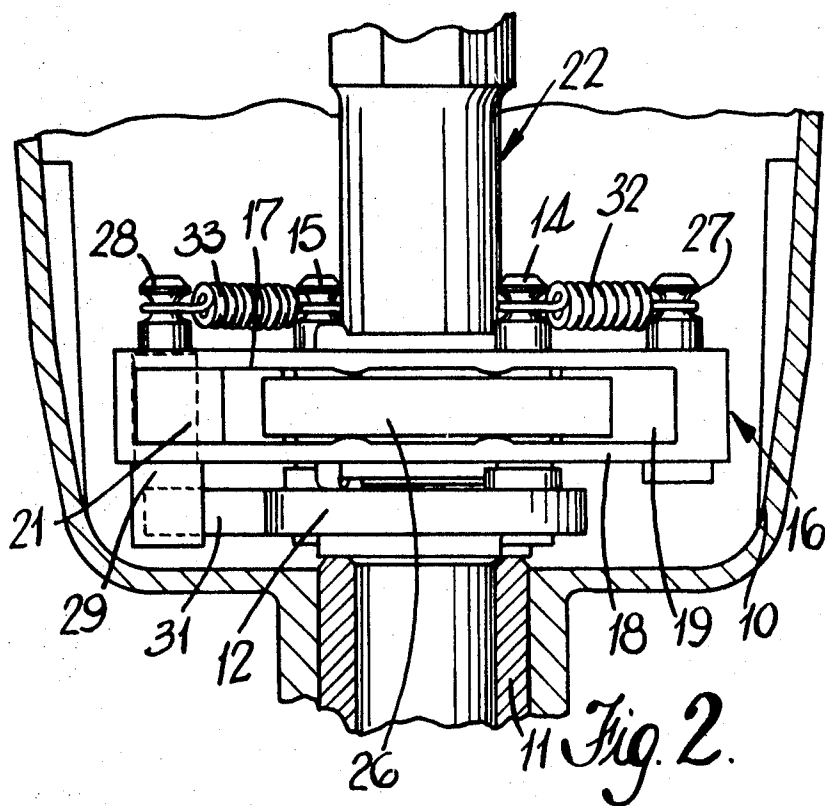
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ABSTRACT: An ignition distributor structure wherein as the driven shaft is rotated, the housing and the cam shaft rotate therewith and the control weight pivots relative to the driven shaft, and in so doing coacts with the cam surface defined by the housing to move the housing and the cam shaft angularly relative to the driven shaft against the action of a resilient means which normally acts between the driven shaft and the housing to urge the housing to move angularly relative to the driven shaft in one direction.





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IGNITION DISTRIBUTORS WITH IMPROVED CONTROL WEIGHT ADJUSTMENT MEANS

This invention relates to ignition distributors for use with internal combustion engines.

An ignition distributor according to the invention includes a shaft adapted to be rotatably driven by the engine with which the distributor is utilized, a synthetic resin housing carried by said driven shaft and mounted for angular movement relative to the driven shaft about the axis thereof, a cam shaft connected to said housing for rotation therewith and positioned coaxially with respect to said driven shaft, said cam shaft serving to operate a contact breaker assembly of the distributor, a control weight located within said housing and pivotally connected to said driven shaft for pivotal movement relative to the driven shaft about an axis substantially parallel with, and spaced from, the axis of the driven shaft, a cam surface defined by the housing and engageable by said control weight, and resilient means acting between the driven shaft and the housing to urge the housing to move angularly relative to the driven shaft in one direction, the arrangement being such that as said driven shaft is rotated said housing and said cam shaft rotate therewith and said control weight pivots relative to said driven shaft and in so doing coacts with said cam surface defined by the housing to move the housing and the cam shaft angularly relative to said driven shaft against the action of said resilient means.

One example of the invention is illustrated in the accompanying drawings wherein:

FIG. 1 is an exploded perspective view of part of an ignition distributor, and

FIG. 2 is a fragmentary part sectional view of an ignition distributor assembled.

Referring to the drawing, the distributor includes a casing 10 having a shaft 11 journaled for rotation therein. The shaft 11 extends at one end from the casing and is adapted to engage a driving dog within the internal combustion engine with which the distributor is utilized, so that the shaft 11 is rotatably driven in timed relation to the operation of the engine. A driving plate 12 is secured to the shaft 11 at its inner end, a portion 13 of the shaft 11, of reduced cross section, extending through the plate 12. A pair of pivot posts 14, 15 are secured to the plate 14, 15 extending parallel to the portion 13 of the shaft.

A moulded synthetic resin housing 16 comprising upper and lower disc like portions 17, 18 spaced apart by integral, diametrically opposite, cam forms 19, 21 is carried by the shaft 11, in contact with the plate 12. The disc like portions 17, 18 of the housing 16 are each formed with a pair of diametrically opposed arcuate slots 17a, 17b, 18a, 18b respectively through which the posts 14, 15 extend, and moreover each of the portions 17, 18 is formed with a central hole through which the portion 13 of the shaft 11 extends. A hollow cam shaft 22 is engaged as a sliding fit on the projecting part of the portion 13 of the shaft 11 and is connected to the housing 16 for rotation therewith by means of a pair of lugs (one of which is shown at 22a) at the lower axial end of the cam shaft 22, which engage corresponding holes 23 in the upper, disc like portion 17 of the housing 16. At its end remote from the lugs 22a the cam shaft 22 is provided with an axially extending spigot 24 which receives the rotor arm of the distributor. In use, the cam shaft 22a operates the conventional contact breaker assembly of the distributor.

Located within the housing 16 are a pair of control weights 25, 26, which are pivotally mounted on the pivot posts 14, 15 respectively. The control weights 25, 26 are freely movable within the housing 16 about the pivot posts 14, 15, and the housing is formed with pairs of inwardly directed ribs which lightly engage the control weights 25, 26 to resist movement of the control weights 25, 26 towards and away from the disc like portions 17, 18 of the housing 16. The housing 16 is provided with a pair of diametrically opposed, upstanding posts 27, 28,

the post 28 including a portion 29, which extends from the lower disc like portion 18 of the housing 16 adjacent a stop 31 on the periphery of the drive plate 12. A pair of springs 32, 33 are engaged with the post 27, and the projecting end of the post 14 and the post 28 and the projecting end of the post 15, respectively, the springs 32, 33 urging the housing 16, and the cam shaft 22, to move in one angular direction with respect to the plate 12 and the shaft 11.

The control weights 25, 26 engage respective cam surfaces defined by the cam forms 19, 21 within the housing 16, so that when the shaft 11 is driven the weights 25, 26 tend to pivot about their respective pivot posts 14, 15, and in so doing coact with the cam surfaces of the cam forms 19, 21 to move the housing 16, and the cam shaft 22, angularly with respect to the drive plate 12 and the shaft 11 against the action of the springs 32, 33, thereby altering the angular position of the cam shaft 22 with respect to the shaft 11 by an amount corresponding to the speed of rotation of the shaft 11. The engagement of the portion 29 of the post 28 with the stop 31 in the drive plate 12 limits the degree of angular movement of the housing 16 and cam shaft 22 with respect to the shaft 11, in one direction, the degree of angular movement in the opposite direction being limited by interengagement of the weights 25, 26. The limit of angular movement of the housing 16 in said one direction is set during assembly by cutting portions from the stop 31. The housing 16 and the cam shaft 22 are held against upward, axial movement relative to the shaft 11 by means of a circlip 34 which is engaged in a circumferential groove 35 in the cam shaft 22, the ends of the circlip 34 extending through a radial bore 36 in the cam shaft 22 into a circumferential groove 37 in the portion 13 of the shaft 11.

The control weights 25, 26 are conveniently formed from steel or sintered iron, and it will be appreciated that since the housing 16 and consequently the cam forms 19, 21 are moulded in synthetic resin, then any rattling of the parts which occurs due to free play in the parts will be deadened by the synthetic resin. Moreover, since the housing 16 is moulded in synthetic resin manufacturing tolerances can be kept to a minimum so that undesirable free play between the parts of the assembly is substantially eliminated. The distributor shown in the drawings is operated by rotating the shaft 11, in a clockwise direction. However, the same housing 16 can be used in an anticlockwise distributor, the housing 16 being inverted.

The cam shaft 22 is formed in steel, but in a modification of the ignition distributor described above the cam shaft is moulded in a suitable synthetic resin material.

In a further modification (not shown) the stop 31 is dispensed with and angular movement of the cam shaft 22 in said one direction is limited by engagement of the portion 29 of the post 28, with one end of a slot in the plate 12.

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

1. An ignition distributor including a shaft adapted to be rotatably driven by the engine with which the distributor is utilized, a synthetic resin housing carried by said driven shaft and mounted for angular movement relative to the driven shaft about the axis thereof, a cam shaft connected to said housing for rotation therewith and positioned coaxially with respect to said driven shaft, said cam shaft serving to operate a contact breaker assembly of the distributor, a control weight located within said housing and pivotally connected to said driven shaft for pivotal movement relative to the driven shaft about an axis substantially parallel with, and spaced from, the axis of the driven shaft, a cam surface defined by the housing and engageable by said control weight, and resilient means acting between the driven shaft and the housing to urge the housing to move angularly relative to the driven shaft in one direction, the arrangement being such that as said driven shaft is rotated said housing and said cam shaft rotate therewith and said control weight pivots relative to said driven shaft and in so doing coacts with said cam surface defined by the housing to move the housing and the cam shaft angularly relative to said driven shaft against the action of said resilient means.

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2. A distributor as claimed in claim 1 further including a second control weight diametrically opposite said one control weight, said second control weight being located within the housing and being pivotally connected to said driven shaft for

pivotal movement relative to the driven shaft about an axis substantially parallel with, but spaced from, the axis of the driven shaft, and a second cam surface defined by the housing and engageable by said second control weight.

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