Oct. 2, 1951 S. HOFMANN 2,569,991

IGNITION POINT ASSEMBLY

Filed March 17, 1948

Fig. 1.

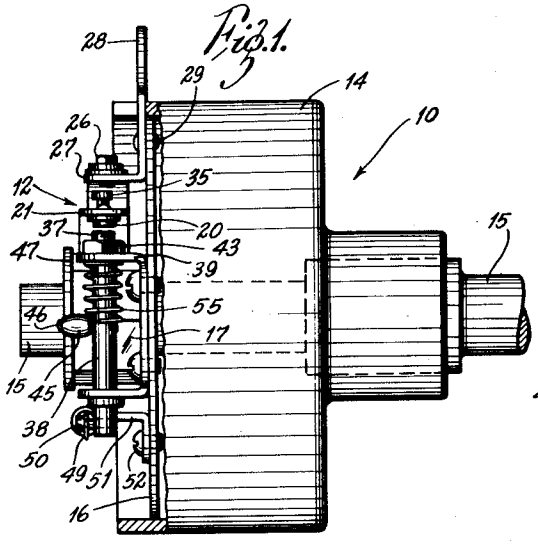


Fig. 2.

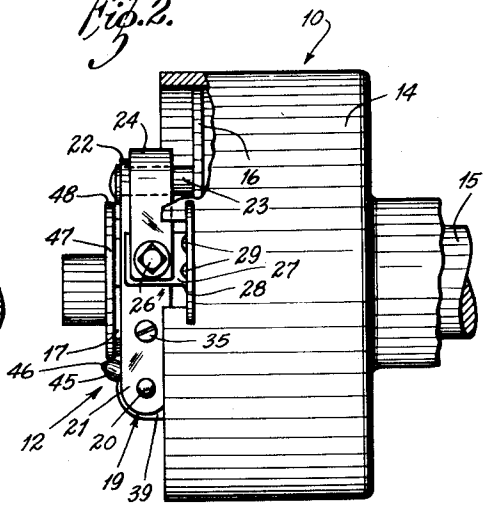


Fig. 3.

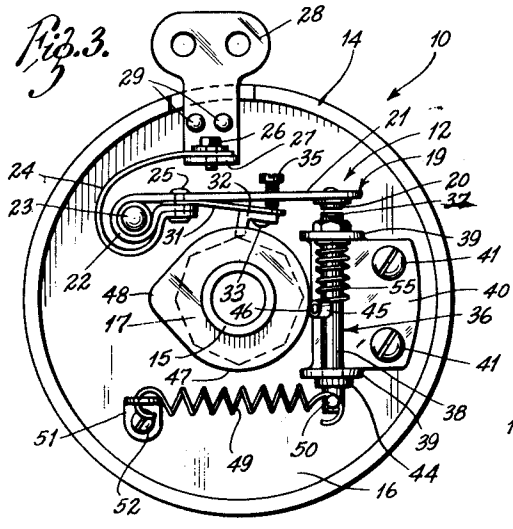


Fig. 4.

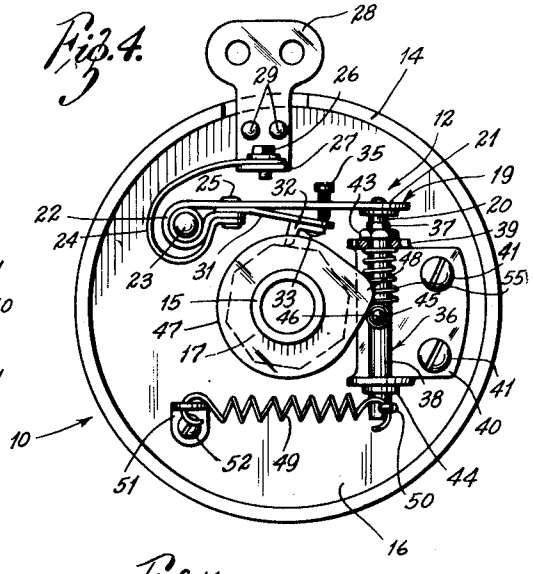


Fig. 5.

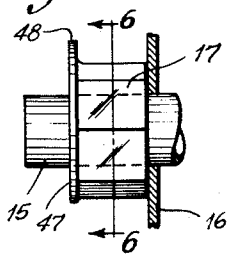


Fig. 6.

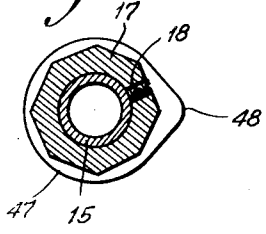
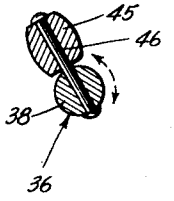


Fig. 7.



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IGNITION POINT ASSEMBLY

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5 Claims. (Cl. 200—30)

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The present invention relates generally to distributors for automobile and other gasoline engines, and more particularly to self-cleaning ignition points for distributors.

An object of the present invention is to provide novel ignition points which are self-cleaning during use.

Another object is to provide novel ignition points which are so constructed and mounted that the normally stationary point is rotated or rocked while the movable point is in contact therewith to clean the points during the use thereof and to maintain the contacting surfaces of the points smooth to insure full area contact thereof, thereby eliminating oxidizing, pitting, and other damage to the points, and insuring long life and trouble-free contact.

Another object is to provide novel ignition points which incorporate an adjustable rubbing or fibre block for establishing and maintaining the gap between the ignition points.

Another object is to provide a novel method of automatically cleaning ignition points.

Another object is to provide ignition points which are formed for self-cleaning through the rotation or rocking of the normally stationary point, and in which the rubbing or fibre block for the movable point may be synchronized with the rocking movement of the normally stationary point in order to equalize wear on the points and on the rubbing block to insure each wearing at the same rate to maintain the predetermined point gap at substantially the same distance throughout the life of the points.

Other objects are to provide ignition points which are relatively inexpensive and which are economical in use through eliminating cleaning and adjustment, which are simple in construction and yet efficient to effect full current transfer and thereby insure trouble-free ignition, and which may be readily installed for replacement parts in presently constructed distributors, or which may be installed as initial parts in new distributors.

The foregoing and other objects and advantages are apparent from the foregoing description taken with the accompanying drawing, in which:

Fig. 1 is a side elevational view of a distributor incorporating ignition points including the teachings of the present invention, a part of the distributor case being broken away for clarity;

Fig. 2 is a side elevational view of the distributor and points of Fig. 1 rotated through ninety degrees, a part of the distributor case being broken away for clarity;

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Fig. 3 is a plan view of the distributor and ignition points of Fig. 1, showing the ignition points in break position;

Fig. 4 is a view similar to Fig. 3, showing the ignition points in closed position;

Fig. 5 is a side elevational view of the distributor rotor;

Fig. 6 is a cross-sectional view on substantially the line 6—6 of Fig. 5; and

Fig. 7 is an enlarged cross-sectional view through the roller mounted on the supporting shaft of the rotatable ignition point.

Referring to the drawing more particularly by reference numerals, 10 indicates generally a distributor which incorporates the present novel ignition points assembly generally designated 12. The distributor includes the usual casing 14, rotatable shaft 15, plate 16 for mounting the elements of the ignition points assembly 12, and a rotor 17 which is removably and adjustably connected to the shaft 15 by a setscrew 18.

The present ignition points assembly 12 comprises a pivoted ignition point 19 including a movable contact point 20 secured to the free end of an arm 21, the other end of said arm 21 being formed as a loop 22 and being pivotally mounted on a post 23 supported on the plate 16. A spring member 24 is secured at one end by a rivet 25 to the arm 21 and is removably secured at the other end by a screw 26 to an upstanding flange 27 of a bracket 28 secured by suitable rivets 29 to the plate 16. Also secured to the arm 21 by the rivet 25 is a short spring arm 31, to the free end of which is secured a fibre rubbing block by a suitable rivet 33. A screw 35 threadedly engages a threaded aperture in the arm 21 and contacts at its free end the spring arm 31 for adjustably setting the position of the block 32 in respect to the rotor 17, as is clear from the drawing.

The present ignition points assembly 12 also includes a rotatable ignition points 36 comprising a contact point 37 which is mounted on one end of a rotatable shaft 38 supported for rotation in suitable apertures formed in spaced flanges 39 upstanding from a bracket 40 secured by suitable screws 41 to the plate 16. The shaft 38 is maintained in an initial predetermined position of adjustment by a nut 43 adjacent the contact point 37 and an annular shoulder 44 formed integral with or secured to the other end thereof. No adjustment of the shaft 38 is made during use of the assembly 12. A roller 45 (Figs. 3 and 7) is mounted on the shaft 38 by means of a pin 46, or the like, which extends diametrically through the shaft 38 and on which

the roller 45 is rotatably mounted, the pin 46 being peened over at its ends. The roller 45 extends upwardly from the shaft 38 and is disposed against the periphery of a cam member 47 secured to the top of the rotor 17. The cam member 47 is shown with a single cam 48, although more than one may be used. A tension spring 49 secured at one end to a post 50 mounted in the free end of the shaft 38 and at its other end to a bracket 51 secured to the plate 16 by a screw 52 biases the roller 45 into constant contact with the periphery of the cam member 47. A compression spring 55 disposed about the shaft 38 and bearing against one flange 39 and the pin 46 maintains the shaft 38 against longitudinal movement and with the nut 37 against its adjacent flange 39.

Operation

The installation of the ignition points assembly 12 on the plate 16 of the distributor is manifest from the foregoing detailed description of the several elements thereof.

In order to insure substantially equal wear of the faces of the contact points 20 and 37 and the contacting edge of the block 32, the cam 48 is provided of a depth which will rotate the shaft 38 in its contact with the roller 45 through a sufficient number of degrees in each rotation of the cam member 47 to wear the surfaces of the contact points 20 and 37 substantially the same amount as the block 32 is worn. This is a simple matter of adjustment as between materials and movement and can be readily ascertained.

With the ignition points assembly 12 mounted as shown in the drawings, rotation of the shaft 15 and the rotation therethrough of the rotor 17 effects movement of the arm 21 through contact of the block 32 with the rotor 17. The spring arm 31 is biased into engagement with the screw 35 and the spring 24 urges the arm 21 and its supported elements clockwise about the post 23. The rotor 17 is octagonal, and, hence, the contact point 20 will make and break with the contact point 37 eight times during each revolution thereof.

During each revolution of the rotor 17 and the cam member 47 secured thereto, the roller 45 will be moved outwardly by the cam 48 one time and returned by the spring 49 to the position of Fig. 3. This displacement of the roller 45 effects rotation of the shaft 38 and the contact point 37 secured thereto. During the engagement of the contact points 20 and 37, this rotation effects a frictional cleaning action which maintains the engaging surfaces smooth and bright and insures continued full-faced engagement thereof. Oxidizing and pitting are eliminated and it is unnecessary to otherwise clean the faces of the contact points 20 and 37 during the life thereof. It is manifest that the depth of the cam 48 formed on the cam member 47 may be increased or decreased to respectively increase or decrease the arc of movement of the roller 45 and, hence, the shaft 38 and its contact point 37.

Hence, the labor involved in cleaning ignition points and the labor and cost of replacement parts involved in the replacement of ignition points is eliminated by the present construction. Furthermore, new point efficiency is maintained by the contact points 20 and 37 throughout the life of the present construction.

The spring mounting of the block 32 and the provision of the screw 35 permit ready adjustment of the block 32 should it be necessary to move the block 32 outwardly from or nearer to the arm 21 to compensate for wear of the block 32 or the contact points 20 and 37, respectively.

It is manifest that there has been provided an ignition points assembly and cleaning method which fulfill all the objects and advantages sought therefor.

It is to be understood that the foregoing description and the accompanying drawing have been given by way of illustration and example. It is also to be understood that changes in form of the elements, rearrangement of parts and steps, and substitution of equivalent elements and steps, which will be obvious to those skilled in the art, are contemplated as within the scope of the present invention which is limited only by the claims which follow.

What is claimed is:

1. An ignition point assembly, comprising a pair of facing engageable contact points, means supporting one contact point for movement into and out of engagement with the other contact point, means supporting the other contact point for limited rotational movement, yieldable means urging rotation of said other contact point in one direction, and means for periodically rotating it less than 360° in the opposite direction, so as to impart a rocking or oscillating movement to said other contact point, said last named means also actuating the supporting means of said one contact point.

2. An ignition point assembly, comprising a pair of facing engageable contact points, means supporting one contact point for movement into and out of engagement with the other contact point, means supporting the other contact point for limited rotational movement, cam means for rotating said other contact point less than 360° in one direcion for each revolution of the cam, and spring means urging it in the opposite direction, so as to impart a rocking or oscillating movement to said other contact point whereby the contact points are rubbed together once during each complete rotation of the cam means.

3. In an ignition point assembly, the combination of a shaft-like member mounted for limited rotational movement, a contact point secured to one end thereof, a post-like member extending outwardly from the shaft-like member, a coiled spring having one end fastened to said post-like member so as to urge rotation of the shaft-like member in one direction, a pin-like member secured to said shaft-like member, and cam means for engagement with said pin-like member for periodically rotating said shaft-like member less than 360° in the opposite direction.

4. In an ignition point assembly, the combination of a shaft-like member mounted for limited rotational movement; a first contact point at one end thereof; a second contact point pivotally mounted for movement into and out of engagement with the first contact point; a rotatably mounted member containing two separate cams on a common axis, one of said cams causing pivotal movement of the shaft-like member in one direction; yieldable means urging pivotal movement thereof in the opposite direction; the other cam causing movement of the second contact away from the first contact; and yieldable means urging the second contact toward the first contact.

5. In an ignition point assembly for use with an internal combustion engine containing a predetermined number of cylinders, the combination

of a shaft-like member mounted for limited rotational movement; a first contact point at one end thereof; a second contact point pivotally mounted for movement into and out of engagement with the first contact point; a rotatably mounted member containing two separate cams on a common axis, one of said cams causing pivotal movement of the shaft-like member in one direction once during each rotation of the rotatable member; yieldable means urging pivotal movement thereof in the opposite direction; the other cam causing movement of the second contact away from the first contact a number of times equal to the number of cylinders during each rotation of the rotatable member; and yieldable means urging the second contact toward the first contact.

SEBASTIAN HOFMANN.

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