

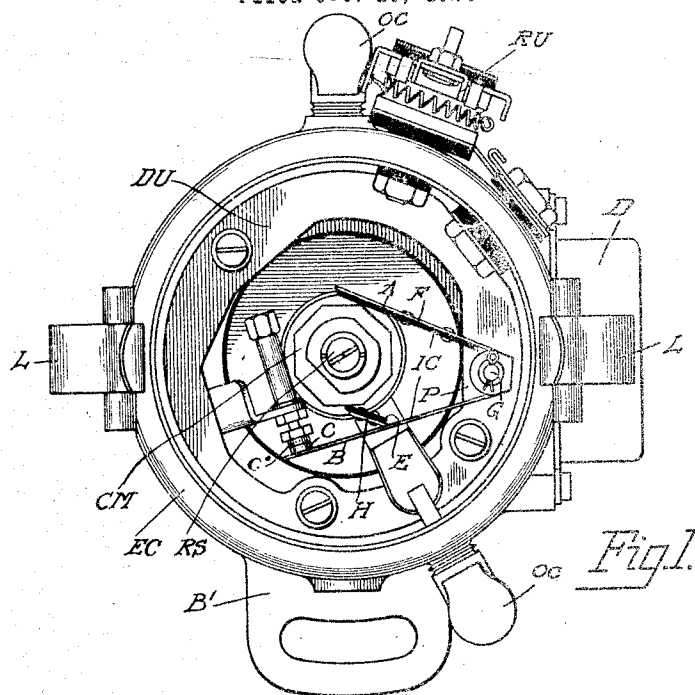
Nov. 27, 1928.

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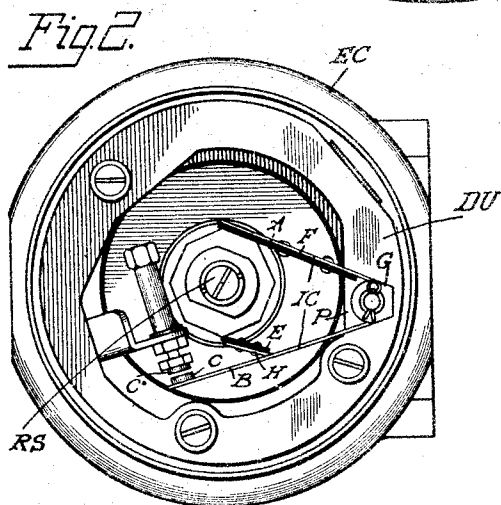
H. D. CURRIER

DISTRIBUTOR

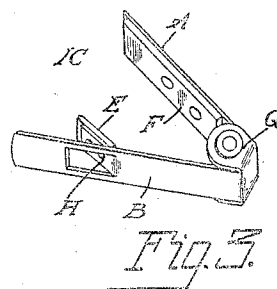
Filed Oct. 16, 1924



*Fig. 1.*



*Fig. 2.*



*Fig. 3.*

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## UNITED STATES PATENT OFFICE.

HIRAM D. CURRIER, OF CHICAGO, ILLINOIS, ASSIGNOR TO KELLOGG SWITCHBOARD AND SUPPLY COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

## DISTRIBUTOR.

Application filed October 16, 1924 Serial No. 743,868.

My invention relates to the interruption of a circuit in an ignition distributor, and is particularly adapted to be employed in ignition systems wherein the main circuit is intermittently interrupted, such as are now employed in automobile ignition systems and the like.

10 An object of my invention is the provision of a simple, durable and cheaply constructed device, whereby the action of the same will assure an interruption in the main circuit.

Another object of my invention is to build a device that will operate at excessively high speeds as well as at low speeds.

15 Another feature of my invention is the construction and arrangement of this device in such a manner that it has no period of vibration in itself.

One of the present faults found with interrupters for distributors is that they fail to operate properly at excessively high speeds. With my device, which follows the contour of the cam, a good contact is secured between the interrupter contacts no matter at what speed the interrupter cam may be traveling. My device is so arranged that one arm of the same which is in contact with the cam, moves the other arm of the contact which contains the interrupter contact into engagement with the stationary contacts, by the first arm moving away from the stationary contact and moving the second arm into contact with the stationary contact. I do not depend upon a spring to bring the contacts into engagement.

35 In the drawings:

Fig. 1 is a top plan view of a distributor with my device attached, the top or cover of said distributor being removed, to expose certain operating parts of the distributing unit, the said distributing unit being on a closed contact.

Fig. 2 is a partial top plan view of the distributor with my device attached, the top or cover of said distributor being removed to expose certain operating parts of the distributing unit, the said distributing unit being on an open contact.

Fig. 3 is a perspective drawing of my interrupter arm, showing the detailed construction of said device which will be more fully explained in the specification.

In the different figures, like reference characters denote like parts.

Referring now to the accompanying draw-

ings, I will point out in general the important parts or elements of said distributing unit.

EC is an enclosing casing for enclosing and supporting various parts of the distributing unit DU, which casing is provided with a pair of spring members or latches L for holding a suitable top or cover on said casing, and is also provided with an integrally formed member or bracket B' for adjustably mounting the unit DU in operative position by any suitable means. An interrupter contact arm IC is pivotally supported on a removable conducting plate P secured in the casing EC and is provided with a contact C pressed into engagement with a stationary contact C' to close the ignition circuit, controlled by the distributing unit DU.

A cam member CM is provided and is secured to the rotatable shaft of the distributing unit and rotates with the shaft to operate the interrupter contact arm IC and interrupt the contactual engagement of contact c with the stationary contact c', for purposes well known to those skilled in the art. A condenser D and a resistance unit RU are provided for well known purposes, but as they do not constitute an important part of my invention, they will not be further described.

Referring now in detail to the interrupter contact IC, it is comprised of two arms, namely A and B, and two pieces of non-conducting material, namely E and F, attached to portions of the said arms A and B. Means is provided at G for the suitable pivoting of the interrupter contact arm IC. The arms A and B, the pivoting support G and the portion H of arm B that is tilted at an angle, are integral parts, being stamped from one piece of material. The non-conductors E and F may be attached to the arms A and B by any suitable means, preferably riveted together.

I will next describe the action when the distributor is working. The cam member CM revolves when the rotatable shaft RS is revolving, this cam member presses against the non-conductors E and F on the arms A and B, which action causes the contacts c and c' to be engaged and disengaged, depending on what part of the cam member CM is pressing non-conductors E and F. If non-conductor E is on a flat spot of cam member CM, non-conductor F is on a raised part of the cam member CM, because the interrupter

contact IC is so constructed and arranged that it is impossible for both non-conductors to be in engagement with like surfaces of the cam member at the same time; therefore, when a low spot or a flat part of cam member CM is pressing non-conductor E, a high spot of cam member CM will be pressing non-conductor F, this will move contact *c* into engagement with stationary contact *c'*, as is illustrated in Fig. 1.

When a point on cam member CM presses against non-conductor E, a flat spot of the cam member presses against non-conductor F, which action forces the contact *c* on interrupter contact IC away from stationary contact *c'*, thus breaking the circuit as is illustrated in Fig. 2.

The non-conductors E and F will be alternately in engagement and disengagement with the points and flats of the cam member CM, thus causing contacts *c* and *c'* to be alternately engaged and disengaged, thus intermittently interrupting the circuit as the rotatable shaft RS revolves.

The interrupter contact IC has no period of vibration in itself, and consequently, the circuit cannot be interrupted or made without the necessary co-operation of the cam member CM. It has no period of vibration because it is of rigid construction, and is in contact with the cam member CM in two places, thus holding it steady. As is shown in Fig. 1, when the non-conductor F is pressed by a high spot on cam member CM, arm A is forced away from the cam, which action draws arm B in the same direction by reason of the rigidity of the interrupter contact IC, and simultaneously with this action, the non-conductor E has become engaged with a low spot on the cam member CM, thus allowing the arms to move in the same direction and eliminating all vibration by having arm A pressed upward by said high spot on said cam member CM, and held in said position by the said low spot, of cam member CM, pressing non-conductor E on arm H of arm B. The two arms tend to move in the same direction, therefore the arms themselves pull the contact *c* into engagement with *c'* and the member E pushes the contact *c* away from contact *c'*.

Two oil cups OC have been provided for the lubrication of said distributor, as will be understood by any one skilled in the art.

Having described and illustrated a preferred embodiment of my invention, I do not wish to be limited to the exact structure as shown and described, as changes and modifications will readily suggest themselves, but aim to cover all such changes and modifications as come within the spirit and scope of the appended claims.

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

1. A device of the character described including a rotatable interrupter cam, a non-periodic interrupter member provided with a pair of arms, pivoting means for said member integrally formed at the junction of said arms, said arms being free from all spring tension, an insulating strip secured to one of said arms, an angular member integral with the other of said arms and an insulating strip secured thereto, a movable contact on said other arm located on the end of said arm opposite the said pivoting means and at a point beyond the said angular member and a stationary contact associated therewith, said insulating strips on said first arm and said angular member of said other arm engaging said cam in two places to cause said movable contact to move in and out of engagement with said stationary contact upon rotation of said interrupter cam, said cam comprising the sole means for causing the movement of said arms.

2. A device of the character described including a rotatable cam having a plurality of apexes and flats, an interrupter member having a pair of arms and having no period of vibration of its own, pivoting means for said member integrally formed at the junction of said arms, said member being free from all spring tension, an insulating strip secured to the inner surface of one of said arms, an angular member integral with the other of said arms and an insulating strip secured to the inner face of said angular member, interrupter contacts controllable by said interrupter member, one of said contacts being stationary and the other movable, said movable contact located on the arm having the angular member at the end opposite the pivoting means and at a point beyond the said angular member, said arms of said member being so arranged that when said strip on said first arm engages an apex on said cam, the strip on said angular member of said other arm engages a flat on said cam to maintain said contacts closed, said cam when rotating causing the alternate opening and closing of said contacts, said cam being the sole means for opening and closing said contacts.

3. A device of the character described including a rotatable cam having a plurality of apexes and flats, a non-periodic interrupter member having a pair of arms, pivoting means for said member integrally formed at the junction of said arms, said member being free from all spring tension, an insulating strip secured to the inner face of one of said arms, an angular member integral with the other of said arms and an insulating strip secured to the inner face of said angular member, interrupter contacts controllable by said interrupter member, one of said contacts being stationary and the other movable, said movable contact located on the arm having the angular member at the end opposite the

pivoting means and at a point beyond the said angular member, said arms of said member being so arranged that when said strip on said first arm engages an apex on said rotating  
5 cam the strip on said angular member engages a flat on said cam to maintain said contacts closed, and when said strip on said first arm moves off of said apex, and engages a  
10 member engages an apex on said cam to open said contacts, said cam causing said contacts to alternately open and close through the agency of said interrupter arms, said cam being the sole means for opening and closing  
15 said contacts.

4. A device of the character described including a rotatable cam having a plurality of apexes and flats, a non-periodic interrupter member free from outside spring tension  
20 and provided with a pair of arms, pivoting means for said interrupter member integrally formed at the junction of said arms, an insulating strip secured to the inner face of one of said arms, an angular member integral  
25 with the other of said arms, and an insulating

strip secured to the inner face of said angular member, interrupter contacts controllable by said interrupter member, one of said contacts being stationary and the other movable, said movable contact being located on the arm  
30 having the angular member at the end opposite the pivoting means and at a point beyond the said angular member, said arms of said member so arranged that when the strip on  
35 said angular member engages an apex on said rotating cam, the strip on said angular member engages a flat on said cam to maintain said contacts closed, and when said strip on said first arm moves off of said apex and engages a  
40 flat on said cam said strip on said angular member engages an apex of said cam to open said contacts, said rotating cam thus causing said contacts to alternately open and close, said cam being the sole means for causing the  
45 movement of said arms to open and close said contacts.

Signed by me at Chicago, in the county of Cook and State of Illinois, this 14th day of October, 1924.

HIRAM D. CURRIER.