

W. C. BRINTON, JR.
CONTACT MAKER AND INTERRUPTER.
APPLICATION FILED JUNE 16, 1914.

1,129,446.

Patented Feb. 23, 1915.

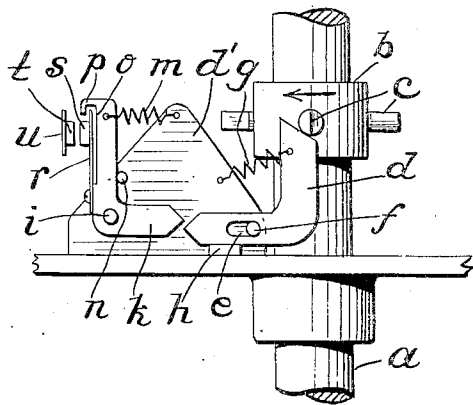


FIG. 1.

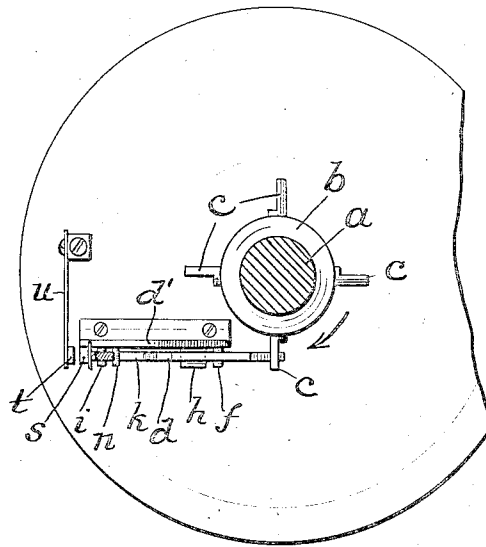


FIG. 2.

WITNESSES:

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CONTACT MAKER AND INTERRUPTER.

1,129,446.

Specification of Letters Patent.

Patented Feb. 23, 1915.

Application filed June 16, 1914. Serial No. 845,353.

To all whom it may concern:

Be it known that I, WILLIAM C. BRINTON, Jr., a citizen of the United States, residing at Manoa, county of Delaware, and State of Pennsylvania, have invented a new and useful Improvement in Contact Makers and Interrupters, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which form a part of this specification.

The object of my invention is to provide an improved means for opening and closing the primary circuit in a single spark ignition system for automobiles. In such a system it is necessary that the circuit should be closed with certainty, but only momentarily in order to avoid a quick jump in amperage and burning out of the electrical connections and insulation. It has been found impracticable to accomplish this result by actuating the circuit-closing member directly by a part moving with the cam- or timer-shaft, but it has been found feasible to effect the result by actuating the circuit-closing member through an intermediate member which is directly actuated by a part moving with the time shaft. Such an arrangement is disclosed in an application filed by me June 4, 1914, Serial No. 842,850, upon which the invention of this application is an improvement.

It is desirable that the primarily-actuated member should, in the advance movement positively imparted to it by the timer shaft, positively actuate the secondarily-actuated member, so that the closing of the circuit shall be positive. Such an arrangement is among those disclosed in said application, and is operative, if carefully and permanently adjusted and kept reasonably free from dirt, under all conditions of practical operation. It is desirable, however, that the structure be such as to be proof against variations in positions of the parts due to entry of dirt or other causes and also that the successful operation should not involve careful regulation of the relative strength of the springs used to restore the members to, and maintain them in, normal inoperative position. These results, as well as other necessary and desirable functions, are secured in the contact maker and interrupter forming the subject-matter of this application, one preferred embodiment of my in-

vention being shown in the accompanying 55 drawings, in which—

Figure 1 is a side view of the contact maker and interrupter. Fig. 2 is a plan view of the same.

A disclosure of the ignition system to 60 which the invention is applied is unnecessary to the understanding of my invention, as it is known in the art, and furthermore a system to which the invention is applicable is disclosed in my said application. It 65 is sufficient to say that my contact maker and interrupter is actuated from a shaft *a*, which may be either the timer shaft or a shaft driven from or in harmony with the timer shaft. On the shaft *a* is secured a collar *b* carrying radially extending trip-pins *c*. On a bracket *d'* conveniently secured in fixed relation to the shaft *c* is a bell-crank lever *d*. One arm of the bell crank has an inclined or cam face which is adapted to be 70 engaged by the trip pins as they rotate. The other arm of the bell-crank *d* has a slot *e* engaging a pivot pin *f* on the bracket *d'*. A spring *g* normally holds the bell-crank against a stop *h*. The stop *h* is so positioned 80 that the lever *d* can swing in one direction only on the pivot pin *f* or can slide bodily in the direction of extension of the slot *e*. The lever *d* so slides when the normal direction of rotation is reversed and then 85 swings on the pivot pin *f* to enable the actuating trip-pin *c* to clear the lever. It has a similar sliding movement under other conditions, as will be hereinafter described. When, in the normal direction of rotation of 90 the trip-pins *c*, they engage the inclined end of the lever *d*, the lever will swing on its pivot pin *f* without sliding in the slot *e*, and, through the circuit closing lever, close the circuit, as hereinafter described. On another pin *i* is pivoted the circuit closing lever *k*. This lever is also a bell-crank and is normally held by a spring *m* against a stop *n*. The two bell-cranks *d* and *k* are located in or about the same plane and are pivoted on parallel axes. Both levers are L-shaped, the lower arms of the two levers extending toward each other. The stop *n* engages the inner face of the upper arm of the lever *k* and is located above the pivot *i*. 100 The adjacent ends of the lower arms of the two levers *d* and *k* are beveled and are so located that in both the forward and return

movement of the lever *d* it will successively engage, slide upon and pass beyond the lever *k*. The lever *k* carries a contact *s*. I prefer to provide in the outer face of the upper arm of the lever *k* a shallow recess *o* and provide an outwardly extending flanged head *p* overhanging this recess and mount the contact *s* on a spring arm *r*, secured at its lower end to the outer face of the vertical arm of the lever *k*. This arm *r* overlies the recess *o* and its upper end extends behind the flange on the head *p*. The contact *s* is adapted to close the circuit by engaging a contact *t* supported on a spring arm *u*.

As hereinbefore stated, when a trip pin *e*, in its normal direction of rotation, engages the cam on the end of the upright arm of the lever *d*, it tends to push the lever forwardly and downwardly. Forward movement of the lever *d* is prevented by the engagement between the pin *f* and the end wall of the slot *e*. The downward movement imparted to the upper arm of the lever *d* necessarily swings the lever on its pivot so that the end of its lower arm moves upwardly and engages, slides upon and passes beyond the end of the lever *k*. This positively moves upwardly lower arm of the lever *k* and swings the upper arm out causing the contacts *s* and *t* to engage, which engagement, however, is only momentary, because the spring *m* immediately returns the lever *k* to normal position. On the return movement of the lever *d* under the impulse of the spring *g*, the opposing ends of levers *d* and *k* again engage, but the direction of movement of the lower arm of lever *d* is such as to tend to move down the lower end of lever *k*. This is prevented by the stop *n* and therefore the lever *d* is itself bodily moved backward, this being permitted by the pin *f* and slot *e*. As soon as the lever *d* passes beyond the lever *k*, the spring *g* restores the lever *k* to normal position. It will be observed that in this construction and arrangement, the relative strength of the springs *g* and *m* is unimportant and is no factor in the operation, because the lever *d* cannot move lever *k* except in the direction necessary to make contact, which the lever *d* does not even tend to do except in its forward movement. At the same time the direction of movement of the lever *k* is in the same plane as the direction of movement of the lever *d* and the lower arms of the two levers move in the same direction, which further insures the maintenance in position and certain operation of the parts.

Having now fully described my invention, what I claim and desire to protect by Letters Patent is:

1. In a contact device, a movable member adapted to be primarily actuated in opposite directions, a second movable member pivotally supported in such manner and in

such relation to the first member as to be engaged thereby in the latter's movement and tend to be moved from its normal position in one direction or the other dependent upon the latter's direction of movement, a stop preventing the movement of the second member in one direction from its normal position, and means slidably supporting the first member and permitting it to yield bodily under resistance to movement of the second member.

2. In a contact device, a member adapted for primary actuation, means pivotally and slidably supporting the said member, means positively swing said member forwardly on its pivot, a spring tending to move and hold said member in position for pivotal movement and adapted to swing said member backwardly on its pivot, a second movable member adapted to be engaged by the first member in the latter's pivotal movement in both directions and to thereby tend to move in opposite directions from its normal position, and a stop preventing the movement of the second member on the return movement of the first member, whereby the latter yields bodily to clear the second member.

3. In a contact device, two levers pivoted on parallel axes, means to periodically and positively actuate one lever and thereby cause it to positively move the other lever from its normal position to close the circuit, a stop limiting the return movement of the second lever, tension means to return both levers to normal position, a stop limiting the return movement of the first lever, and means permitting the first lever to yield bodily during its engagement, on its return movement, with the second lever.

4. In a contact device, a plurality of levers, pivoted on parallel axes and having approximating arms extending toward each other and adapted to engage in the pivotal movement of one lever in both directions, stops, one for each lever and preventing its pivotal movement except in one direction from its normal position, one of said levers being also bodily movable, tension means adapted to restore both levers to their normal position when moved away therefrom, and means to periodically actuate one of said levers in one direction.

5. In a contact device, a plurality of L-shaped levers extending in the same plane and having approximating arms extending toward each other, one of said arms being slotted in the direction of extension of the arm, a pivot pin engaging said slot, a stop under said arm, the second lever being pivoted on an axis parallel to that on which the first lever is pivoted, means to periodically swing the first lever on its pivot away from said stop thereby causing its said arm to engage the said arm of the second lever

and swing the second lever away from its normal position, a spring adapted to return the second lever to normal position, and a stop preventing the second lever from moving, on its return, beyond its normal position, thereby causing the first lever to be bodily moved by the second lever in the direction of said slot until said arms clear.

6. In a contact device, a movable member adapted to be primarily actuated in opposite directions, a second movable member pivotally supported in such manner and in such relation to the first member as to be engaged thereby in the latter's forward movement and thereby moved into circuit closing position, tension means to return both levers to their normal position, a stop preventing the movement of the second member beyond its normal position in its return movement, and also preventing its movement into circuit closing position in the return movement of the first member, and means slidably supporting the first member and permitting it to yield bodily after its actuation of the second member.

7. In a contact device, a plurality of levers extending in the same plane and having approximating parts extending toward each other, one of said levers being pivotally supported and also bodily retractable away from the other lever, a stop engaging the first lever, the second lever being pivoted on

an axis parallel to that on which the first lever is pivoted, means to periodically swing the first lever on its pivot away from its stop, thereby causing it to engage the second lever and swing it away from its normal position into circuit closing position, tension means adapted to return both levers to normal position, and a stop preventing the second lever from moving, on its return, beyond its normal position.

8. In a contact device, an L-shaped primarily operable lever having a slot in one arm, a pin engaging said slot adapted to act as a pivot for the lever, a stop engaging said lever, there being a cam on the other arm through which the lever is swung on its pivot, a circuit closing lever pivoted on axis parallel to that on which the first lever is pivoted and adapted, in the forward movement of the primarily operable arm to be swung on its pivot into contact closing position, tension means adapted to return both arms to their normal positions, and a stop limiting the return movement of the circuit closing lever.

In testimony of which invention, I have hereunto set my hand, at Philadelphia, on this 11th day of June, 1914.

WILLIAM C. BRINTON, JR.

Witnesses:

M. M. HAMILTON,
E. E. WALL.