

P. R. WERNER.
CONTACT MECHANISM.
APPLICATION FILED SEPT. 15, 1910.

1,036,943.

Patented Aug. 27, 1912.

2 SHEETS—SHEET 1.

Fig. 1.

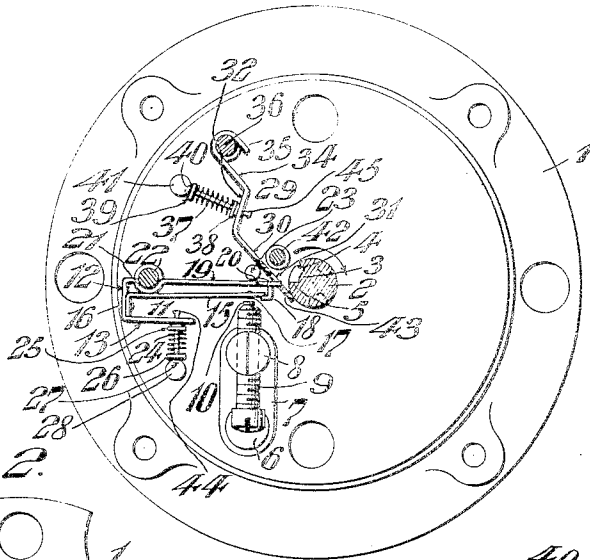


Fig. 2.

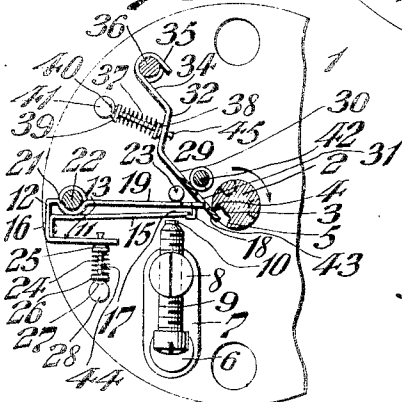


Fig. 3.

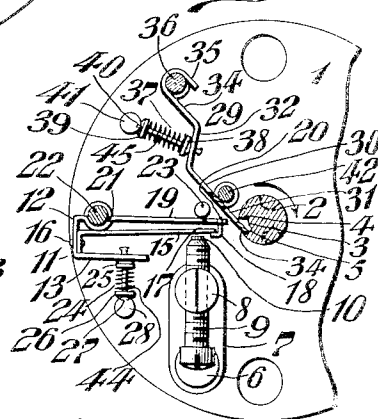


Fig. 6.

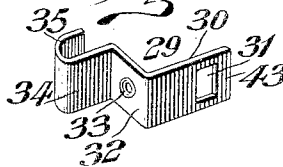


Fig. 4.

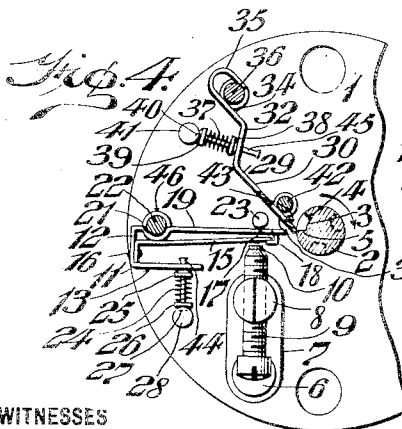


Fig. 7.

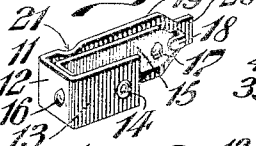


Fig. 5.

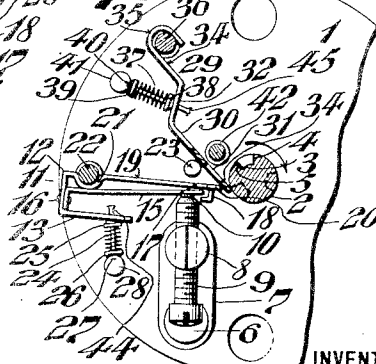
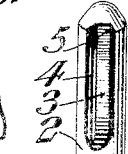


Fig. 8.



WITNESSES

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Fig. 9.
46

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2 SHEETS—SHEET 2.

Fig. 10

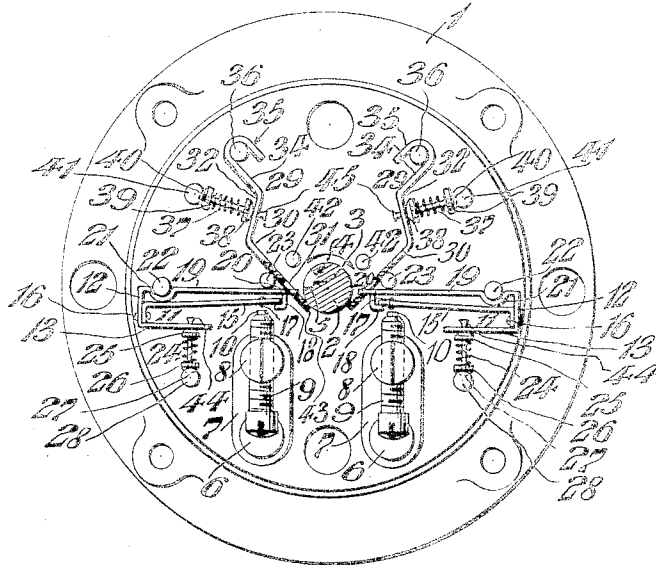
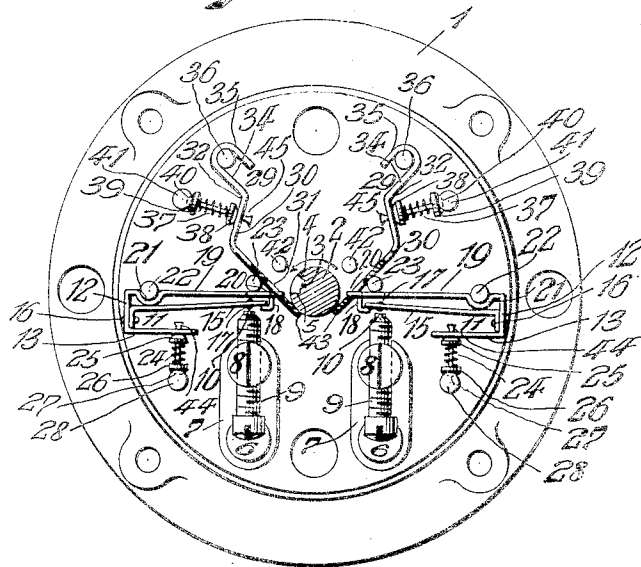


Fig. 11



WITNESSES

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UNITED STATES PATENT OFFICE.

PAUL R. WERNER, OF PHILADELPHIA, PENNSYLVANIA.

CONTACT MECHANISM.

1,036,943.

Specification of Letters Patent.

Patented Aug. 27, 1912.

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To all whom it may concern:

Be it known that I, PAUL R. WERNER, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Contact Mechanism, of which the following is a specification.

My present invention relates to contact mechanism, wherein a circuit is made and broken in such a manner that the contact is always of the same duration regardless of the engine speed, and consists of a novel and simplified construction in which a minimum number of parts are employed and wherein the movable parts are constructed and arranged in such a manner that there is no liability of the tension devices becoming disarranged or out of order.

It further consists of a novel construction of a contact carrying member, a novel construction of a movable member for operating the contact carrying mechanism, and a novel construction of a shaft for controlling the operation of the actuating member for the contact carrying member.

It further consists of a novel contact mechanism in which only compression springs are employed.

It further consists of other novel features of construction, all as will be hereinafter fully set forth.

For the purpose of illustrating my invention, I have shown in the accompanying drawings one form thereof which is at present preferred by me, since the same has been found in practice to give satisfactory and reliable results, although it is to be understood that the various instrumentalities of which my invention consists can be variously arranged and organized and that my invention is not limited to the precise arrangement and organization of these instrumentalities as herein shown and described.

Figure 1 represents a plan view of a contact mechanism embodying my invention, the same being shown in assembled position with respect to a suitable support, the shaft being shown in section. Figs. 2, 3, 4 and 5 represent sectional plan views similar to the view seen in Fig. 1, but showing the parts in different relations to each other. Fig. 6 represents a perspective view of the actuating means for the contact carrying member. Fig. 7 represents a perspective view of the contact carrying member. Fig. 8 represents a side elevation of the shaft,

showing more particularly the novel manner in which the same is recessed. Fig. 9 represents a side elevation of one of the pins employed. Fig. 10 represents a plan view of my device showing two contact devices. Fig. 11 represents a plan view similar to Fig. 10, but showing the parts in a different position.

Similar numerals of reference indicate corresponding parts in the figures.

Referring to the drawings: 1 designates a support which, in the present instance, for sake of illustration, I have shown as consisting of a casing cover such as is illustrated in my prior Patent, No. 940,376, November 16, 1909, although as will be apparent, the contact mechanism may be supported in any desired manner. The support 1 is apertured to receive a shaft 2 which is adapted to be driven in any desired manner, and is operatively connected with the engine. The shaft 2 is provided with a novel form of recess 3 which, in the present instance, is constructed by recessing the side of the shaft to form the radially inclined walls 4 and 5 on opposite sides thereof.

3 designates a binding post which is operatively connected with the primary terminal.

7 designates a plate which carries the post 8, which latter is split or otherwise adapted to receive a screw 9 to which a stationary contact 10 is secured.

11 designates a movable contact carrying member, which, in the present instance, consists of a strip of material, one end of which is laterally deflected as is indicated at 12, and then forwardly deflected, as indicated at 13, the forwardly extending portion 13 being provided with an aperture 14.

15 designates a spring, one end of which is riveted at 16 to the laterally deflected portion 12, the forward end of the spring being provided with a contact 17 and the outward movement of the forward end of the spring being limited by a hook 18 carried by the main or body portion 19, which latter at its extreme forward end is cut away to form a portion 20. The portion 19 of the contact carrying member 11 is recessed at a suitable point in order to form a seat 21 for the pin or stud 22 on which it is fulcrumed, said pin or stud being carried by the support 1 in any desired manner.

23 designates a stud against which the

forward end of the portion 19 normally abuts, the contact carrying member being maintained in its normal position owing to the provision of a tension device comprising
 5 a compression spring 24 mounted on a rod 44 which passes through the aperture 14 and is suitably headed to prevent its disengagement from said aperture. One end of the spring 24 abuts against a washer 25, the
 10 outer end of which is preferably rounded to engage the recess or counterbored portion of the aperture 14, while the other end of said spring abuts against a pivot member 26 which is fixed to the rod 44 and has its outer
 15 face rounded or beveled, thereby adapting the same to engage the seat 27 in the post or pin 28 carried by the support 1.

29 designates the actuating or movable member for the contact carrying member, the same comprising a strip of material provided with a forward extension 30 which, at a suitable point thereon, is provided with an aperture or slot 31, which, at certain times, co-acts with the tongue 20 of the contact
 25 carrying member 11.

32 designates an intermediate portion extending inwardly from the forward portion 30 and this is provided with an aperture 33, one face of which is preferably counter-
 30 bored.

34 designates a portion extending outwardly from the intermediate portion 32 and having its end forming a U-shaped hook 35 which, at certain times, is adapted to co-act with the pin or post 36 carried by the support 1.

37 designates a compression spring mounted on a rod 45, which latter extends through the aperture 33 and is suitably headed to prevent its disengagement with the aperture.

38 designates a washer mounted on the rod 45, one end of which is rounded or beveled to adapt the same to engage the counterbored aperture 33 and against the opposite side of this washer one end of the spring abuts. The other end of the spring member abuts against a pivot member 39, fixed to the end of the rod 45 and having its outer face rounded or beveled, thereby
 50 adapting the same to engage a seat 40 in the pin 41 carried by the support 1.

42 designates a pin carried by the support 1, which, at certain times, serves as a stop for the movable member 29.

55 The pins 36, 22 and 42 are headed at their outer ends to prevent improper upward movement of the parts 11 and 29, and are provided with a shoulder 46 on which the parts 11 and 29 are mounted, so that in
 60 case of wear it is unnecessary to renew the support but simply insert a new pin thereinto.

The operation of my novel contact mechanism will now be readily apparent, and is

as follows: In Fig. 1 the parts are shown 65 in their initial position, and assuming that the shaft 2 is being revolved in the direction of the arrow shown in said figure, the parts will maintain the position seen there until the shaft rotates to the position seen 70 in Fig. 2, at which time the extreme end of the member 29 will move into the recess 3. On the further rotation of the shaft 2 in the direction of the arrow, the extreme end of the member 29 will engage the wall 5, as 75 shown in Fig. 3, and be moved rearwardly against the tension of the spring 37, so that the member 29 will be guided on the stop 42 and be moved rearwardly until it assumes the position seen in Fig. 4, at which time it 80 will be seen that the spring 37 is compressed and the hook portion 35 is moved rearwardly from the pin 40, and the extreme end of the member 29 is about to be released from its contact with the outer periphery of 85 the wall 5 of the shaft 2. As the extreme end of the member 29 passes to the outer periphery of the shaft 2 the forward unapertured end 43 will engage the end of the tongue 20 and cause the contact carrying 90 member 11 to be moved on its fulcrum 22, so that the movable contact 17 will be moved into direct and positive engagement with the stationary contact 10, the inward movement of the spring 15 being permitted at this time, 95 owing to the manner in which it is mounted, as is evident. Since the actuating member 29 is now moving forwardly, owing to the tension of the spring 37, as soon as the tongue reaches the edge of the aperture 31 100 it will pass thereinto into the position seen in Fig. 1, whereupon the free end of the spring 15 will engage the hook 18 and thereby prevent any further contact being made.

I wish to call special attention to the 105 fact that in my present invention I employ but two movable parts which can be bodily removed, one carrying the movable contact and the other being the actuating means therefor, which is controlled by the move- 110 ment of the shaft 2, and since the tension devices for the movable contact carrying member and for the actuating member are secured thereto, it will be apparent that the entire mechanism may be taken apart or 115 assembled without the employment of any tools whatsoever.

It will be apparent that when the shaft 2 is revolving in a reverse direction to that shown by the arrow, no contact will be made, 120 since the aperture 31 will permit the member 29 to move over the tongue 20, so that the contact carrying member 11 will not be actuated in such a manner as to permit the contact 17 carried thereby to engage the sta- 125 tionary contact 10.

The walls 4 and 5 of the aperture 3 extend radially, so that the same shaft is

adapted to be employed no matter whether a right or left arrangement is made of the contact carrying member and its actuating member on their support as will be clearly understood by reference to Figs. 10 and 11 and by construction the shaft 2 is adapted for any desired arrangement of the contact mechanism.

It is of course to be understood that any desired number of recesses 3 may be employed, so that contacts may be produced at any desired interval of time in the rotation of the shaft 2, and still be within the scope of my invention.

It will be seen that owing to the novel manner in which the parts are correlated and arranged on their support, a number of contact mechanisms may be placed thereon if desired, to be actuated by the same shaft. It will be apparent that two contact mechanisms may be located on the support and operated by the same shaft, one of said contact mechanisms being operated in a reverse direction to the other contact mechanism and both of said mechanisms being controlled by the same means, such as for example, the same recess in the shaft.

The operating parts are constructed in such a manner as to render the same standard, the parts being interchangeable, so that in case of repair it is unnecessary to ship to the factory the entire mechanism, but simply to send for the parts which it is desired to replace.

The stationary contact and the different parts of the contact mechanism are constructed so that either a right or left arrangement of the same may be employed, so that the operating shaft may revolve in either direction, and owing to the novel manner in which the slot 3 is constructed, the shaft is adapted to operate either in a right or left direction.

The parts are very light and can be stamped out of sheet metal, the economy of which is evident.

It will now be apparent that I have devised a novel and useful construction of a contact mechanism, which embodies the features of advantage enumerated as desirable in the statement of the invention and the above description, and while I have, in the present instance, shown and described a preferred embodiment thereof which has been found in practice to give satisfactory and reliable results, it is to be understood that the same is susceptible of modification in various particulars without departing from the spirit or scope of the invention or sacrificing any of its advantages.

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

1. The combination in a contact mechanism, of a stationary contact, a movable con-

tact carrying member, a contact movably carried thereby, a tension device for the contact carrying member, a stop for said member, a movable member having an aperture therein into which the contact carrying member normally extends, a tension device for said movable member, and means for actuating the latter.

2. A contact mechanism, mechanically operative on its movement in either direction and electrically operative on its movement in but one direction and including a stationary contact, a movable contact, a compression spring acting against the movable contact to move the same in one direction and serving as the means for retaining the same in assembled position, said spring being bodily removable with said movable contact and forming a unit of structure therewith, and means for causing the movement of the movable contact in a reverse direction.

3. A contact mechanism, mechanically operative on its movement in either direction and electrically operative on its movement in but one direction and including a stationary contact, a movable contact, a compression spring acting against the movable contact to move the same in one direction and serving as the means for retaining the same in assembled position, said spring being bodily removable with said movable contact and forming a unit of structure therewith, and means for causing the movement of the movable contact in a reverse direction, said means including a movable member and a compression spring serving as a tension device for said member and as a means for retaining the same in assembled condition and bodily removable with said movable member and forming a unit of structure therewith.

4. In a contact mechanism, a stationary contact, a fulcrumed member, a contact resiliently carried thereby, a stop for the fulcrumed member, a compression spring acting against said movable member to move the same in one direction and serving as the means for retaining the same in assembled position, an actuating member suitably fulcrumed, a stop for the actuating member, a compression spring serving as a tension device for the actuating member and as a means for retaining the same in assembled condition, and a shaft having a recess therein provided with radial side walls and controlling the movement of the actuating member.

5. In a contact mechanism, a stationary contact, a fulcrumed member, a contact resiliently carried thereby, means for limiting the movement of the resiliently carried contact in one direction, a stop for the fulcrumed member, a compression spring acting against the fulcrumed member to move

the same in one direction and serving as a means for retaining the same in assembled position, an actuating member suitably fulcrumed, a stop for the actuating member, a
5 compression spring serving as a tension device for the actuating member and as a means for retaining the same in assembled condition, and a shaft having a recess therein provided with radial side walls controlling the movement of the actuating member.
10

6. In a contact mechanism, a stationary contact, a pin in proximity thereto, a contact carrying member formed to fulcrum on said pin, a spring contact carried by said
15 member, an abutment for said spring contact, a stop for the contact carrying member and means for actuating the contact carrying member.

7. In a contact mechanism, a stationary
20 contact, a pin in proximity thereto, a contact carrying member having a recess in its side adapting the same to fulcrum on said pin, a compression spring acting against the contact carrying member to move the same
25 in one direction and serving as the means for retaining the same in assembled position, a spring having one end fixed to the contact carrying member, a contact on said spring, a hook secured to said member to
30 limit the movement of the contact carrying spring in one direction, a stop, a compression spring serving as a tension device for the contact carrying member, and as the means for holding said member in assembled
35 position with said pin, and means for actuating the contact carrying member.

8. A shaft having a recess therein provided with radial side walls whereby said
40 shaft will operate either a right or left arrangement of the contact mechanism, in combination with a contact mechanism actuated by one of said side walls.

9. The combination in a contact mechanism, of a stationary contact, a fulcrumed
45 member, a resilient contact carried by the fulcrumed member, a rod carried by said fulcrumed member and having relative movement thereto, a spring mounted on said rod, an abutment for said spring carried by said rod, a post in which said abutment is pivoted, and means for actuating
50 said fulcrumed member to make and break the circuit.

10. The combination in a contact mechanism, of a stationary contact, a fulcrumed
55 member, a movable contact resiliently carried by the fulcrumed member, a rod having relative movement with respect to the fulcrumed member, an abutment fixed on said rod, a washer movable on said rod, a spring
60 intermediate said abutment and washer, a post on which said abutment is pivoted, and means for actuating said fulcrumed member to make and break the circuit.

65 11. The combination in a contact mechanism

of a stationary contact, a fulcrumed member, a contact carried thereby, a rod having one end loosely engaging said fulcrumed member, an abutment having a conical face fixed to said rod, a washer having
70 a conical face movable on said rod and engaging the fulcrumed member, a spring interposed between said washer and abutment, a post formed with a seat for said abutment, and means for actuating said fulcrumed
75 member.

12. The combination in a contact mechanism, of a stationary contact, a fulcrumed member, a contact carried by the fulcrumed member, an abutment, movably carried by
80 the fulcrum member, a post formed with a seat for said abutment, a spring intermediate said abutment and said fulcrumed member, and actuating means for the fulcrumed member.
85

13. The combination in a contact mechanism, of a stationary contact, a movable contact member, a contact carried thereby, a tension device for the contact carrying member including a compression spring for
90 moving said member in one direction and serving as the means for retaining the same in assembled condition, a stop for said member, a movable member having a shoulder with which the contact carrying member is
95 normally out of engagement, a tension device for said movable member including a compression spring serving also as the means for retaining the same in assembled condition and bodily removable with said
100 member and forming a unit of structure therewith, and means for actuating said movable member to bring said shoulder into engagement with the contact carrying member.
105

14. The combination in a contact mechanism, of a stationary contact, a movable contact member, a contact carried thereby, a tension device for the contact carrying member and including a compression spring
110 serving to hold said member in assembled condition, a stop for said member, a movable member having a shoulder with which the contact carrying member is normally out of engagement, a tension device for said
115 movable member and serving to hold said member in assembled condition, and means for actuating the latter to move said shoulder into engagement with the contact carrying member to cause the latter to make a
120 contact whereupon the movable member disengages with the contact carrying member and allowing it to break the circuit and return to its initial position.

15. The combination in a contact mechanism, of a support, a plurality of contact mechanisms carried by said support and adapted to produce a contact of fixed duration, a shaft rotatably mounted and provided with means for operating one of said
130

mechanisms when said shaft is rotating in one direction and for operating the other of said mechanisms when said shaft is rotating in an opposite direction.

5 16. The combination in a contact mechanism, of a support, a plurality of contact mechanisms carried by said support and adapted to produce a contact of fixed duration, a shaft rotatably mounted and provided with a recess having radial walls for
10 operating one of said mechanisms when said shaft is rotating in one direction and for operating the other of said mechanisms when said shaft is rotating in an opposite
15 direction.

17. The combination in a contact mechanism, of a support, a movable contact carrying member carried thereby, a stationary contact, a compression spring carried by
20 and bodily removable with the contact carrying member and serving as a means for retaining said member in assembled position, an abutment for the compression spring, a movable member to actuate the
25 movable contact carrying member, a compression spring carried by and bodily removable with the movable member, an abutment for said last named compression spring, means to limit the movement of said
30 movable contact carrying member and of said movable member, and actuating means for the movable member.

18. The combination in a contact mechanism,

of a stationary contact, a movable contact carrying member, an abutment, a
35 movable abutment, a compression spring between said abutments, a stop having a seat engaging one of said abutments, the other of said abutments engaging the contact carrying member, means for maintaining the
40 abutments in engagement with the spring, and means for actuating the contact carrying member to make and break the circuit.

19. The combination in a contact mechanism, of a stationary contact, a movable
45 contact carrying member, a tension device therefor, a movable member, an abutment, a movable abutment, a compression spring between said abutments, a stop having a seat engaging one of said abutments, the
50 other of said abutments engaging the movable member, means for limiting the relative movement of said abutments, and actuating means for the movable member to cause the latter to actuate the contact carrying
55 member to make and break the circuit.

20. A shaft for operating a plurality of contact mechanisms having a plurality of radial walls presenting their faces in opposite directions to the directions of rotation
60 of the shaft and a contact mechanism actuated by one of said radial walls.

PAUL R. WERNER.

Witnesses:

H. S. F. LUBANSKY,
W. F. MAUS.