Nov. 30, 1926. 1,608,753

W. KAISLING

CONTACT SWITCH

Filed May 3, 1923

Fig. 1.

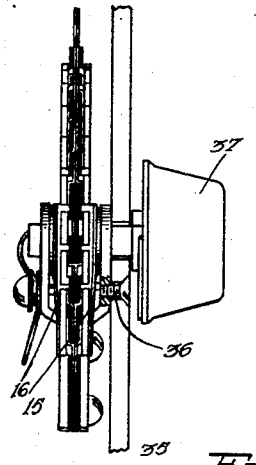


Fig. 2.

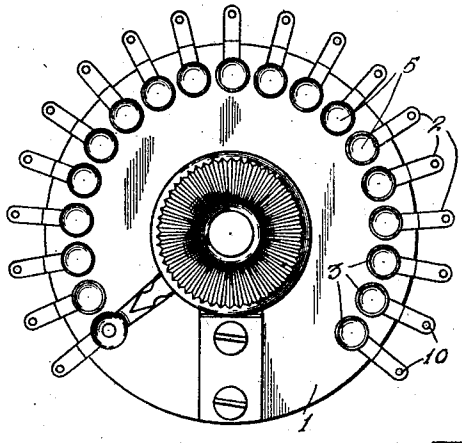


Fig. 3.

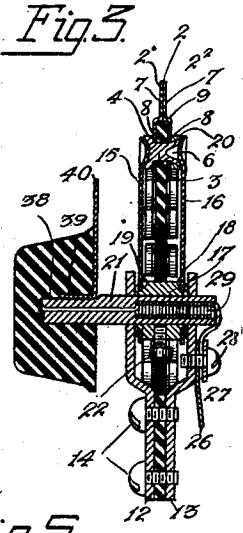


Fig. 4.

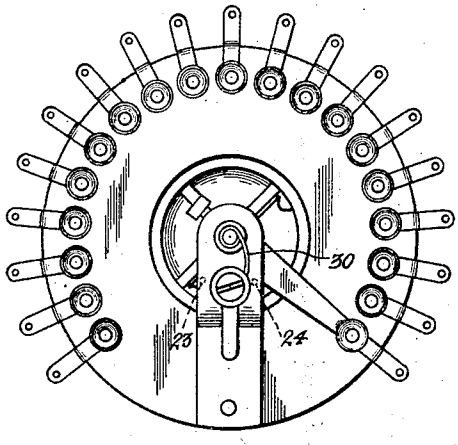


Fig. 5.

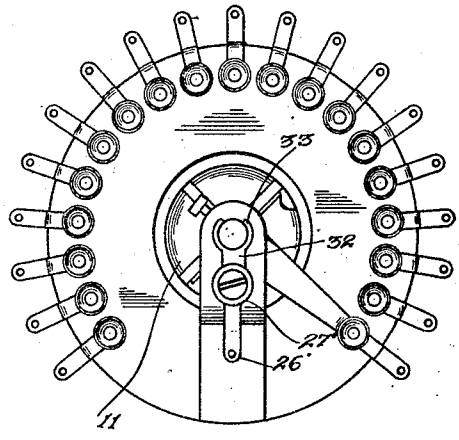
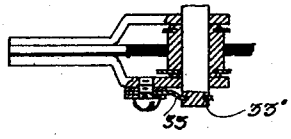


Fig. 6.



Inventor:
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By Attorney

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UNITED STATES PATENT OFFICE.

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CONTACT SWITCH.

Application filed May 3, 1923. Serial No. 636,438.

My invention relates to a switching mechanism such as is used in radio or wireless receiving sets for controlling and changing the condition of certain circuit arrangement in such receiving sets.

Prior to my invention, the contact points, to which are connected conductors extending from certain apparatus of the receiver set, for example the conductors leading from the taps of the variocoupler, are mounted in the front panel of the cabinet and the contact switch arm for engaging the contact points, is also mounted on the front panel. This manner of mounting the contact points and contact switch arm is objectional for the reason that in order to remove the variocoupler from the set or cabinet in which it is enclosed it is necessary to remove the contact points from the panel or to cut the conductors connecting the variocoupler with the contact points, thus necessitating much work and also the destruction of the connecting conductors. An objection is that the contact points and contact switch arm are exposed to dust and dirt whereby poor contact between the switch arm and contact points is liable to occur.

An object of my invention is the provision of means for mounting the contact points and contact switch arm to form a unitary structure so that the same may be mounted on the back of the front panel as a unit and enclosed in the cabinet, and should it be desired to remove the apparatus connected to the contact points, all that is necessary is to remove a screw which secures my contact point and switch arm carrying unit to the front panel which will permit said apparatus to be removed.

Another feature of my invention is the manner in which the terminals for receiving external conductors are secured to the contact points.

The above mentioned features, as well as others will be pointed out more in detail in the ensuing specification and for a clearer understanding of the same, reference may be had to the accompanying drawing in which like reference characters in the several views denote like parts and in which:

Fig. 1 is a plan view of my invention showing the manner in which the same is secured in its mounted position;

Fig. 2 is a right side plan view of Fig. 1;

Fig. 3 is a sectional view of my invention;

Fig. 4 is a left side plan view of Fig. 1;

Fig 5 is a view showing a modified form of my invention; and

Fig. 6 is another view of the modification of my invention.

Referring now more in detail to my invention, 1 is a flat round piece of suitable non-conducting material, around and near the periphery of which I mount a plurality of terminals 2 and contact points 3 and as each terminal 2 and each contact point 3 is the same and mounted in the same identical manner a description of the construction and mounting of one will suffice.

The contact point 3 is cylindrical in shape and has a head 4 at one end which has a hollowed out portion 5, the other end of contact point 3 is hollowed out to form an opening 6. The terminal 2 comprises two halves $2'$ and 2^2, each half being so shaped that its end 7 extends parallel to and engages the end 7 of the other half of terminal 2 and its opposite end portion 8 engages the side of the mounting member 1 and a shoulder 9 is provided which engages the peripheral edge of the member 1. The halves $2'$ and 2^2 of terminal 2 are secured in position on the member 1 by the contact point 3 which extends through a suitable opening in the half $2'$ and then through an opening in the member 1 and an opening in the half 2^2. A cylindrical member 20 is then slipped over the end of the contact point 3 and brought into engagement with the half 2^2 of terminal 2, whereupon the end of said contact point 3 is spun over by a spinning operation to prevent the removal of said contact point 3, and displacement of said member 20 whereby the halves of said terminal 2 are secured to the member 1. The terminal 2 is provided with an opening 10 for receiving an external conductor.

The mounting piece 1 has a central opening 11, and secured to said mounting piece 1 is a pair of supporting members 12 and 13, by means of screws 14 which extend through suitable openings in member 12 and mounting piece 1 and then have screw-threaded engagement with suitable tapped orifices in member 13. The free ends of the members 12 and 13 extend slightly beyond the center of the opening 11 in piece 1. A

pair of spring contact wipers 15 and 16 are provided, which are secured to a cylindrical member 17 in this manner; both ends of the cylindrical member 17 is reduced whereby circumferential shoulders 18 and 19 are formed, each of the contact wipers 15 and 16 is provided with a suitable opening for fitting over one of the reduced end portions of member 17 whereby contact wipers 15 and 16 will engage shoulders 18 and 19 respectively and when the contact wipers are so positioned the reduced end of the member 17 protruding beyond the contact wiper, is staked over whereby the contact wiper is secured in position on the member 17 against displacement. The contact wipers 15 and 16 are of the same length and shape and are secured on the cylindrical member 17 parallel to each other. The free end of each contact wiper is enlarged and arcuate shaped, the arcuate shaped end portion of contact wiper 15 being adapted to engage the hollowed out portion 5 of the contact point 3 and the arcuate shaped portion of contact wiper 16 being adapted to engage the spun over end of said contact point 3 and washer 20. To support the contact wipers in operative position relative to the contact points 3 and members 20, a rotatable shaft 21 is provided which extends through a suitable opening, in the supporting member 12, through a central opening in the cylindrical member 17 and through a suitable opening in the member 13. The openings in the members 12 and 13 are of such size so as to permit rotation of the shaft 21 and in order to prevent rotation of the shaft 21 in the member 17, a set screw 22 is provided which extends through and has screw-threaded engagement with a suitable tapped orifice in the side of said member 17 whereby the end of said screw 22 will engage the shaft 21 so that when the shaft 21 is rotated the member 17 and the contact wipers 15 and 16 will rotate in the same direction with said shaft, and the arcuate shaped ends of contact wipers will ride over the heads of contact points 3, washers 20 and spun over ends of said contact points 3 respectively. The wipers 15 and 16 have a spring effect which insures positive contact and also serves through the medium of their acuate shaped ends to maintain said wipers in engagement with the contact point to which they have been rotated. The form of the wipers and contacts produce a snap action. To limit the extent of rotation of the contact wipers and to prevent their disassociation with the contact points 3 and washers 20, a pair of stop pins 23 and 24 are provided and secured to the members 12 and 13 respectively, which stop pins are adapted to be engaged by the contact wipers 15 and 16 respectively. By providing a pair of contact wipers and securing them in the manner just described the possibility of the binding of the shaft 21 is entirely eliminated as would be the case were only one wiper employed.

A terminal 26, for receiving an external conductor, and a washer 27 are secured to the supporting member 13 by means of a suitable screw 28 and to connect the terminal 26 with contact wipers 15 and 16, a helically wound conductor 29 is provided which engages and is suitably secured in an opening in the end of shaft 21, and which has its end 30 clamped between the washer 27 and terminal 26. The inner end may extend through an orifice and be soldered therein. Thus a closed circuit is provided from the terminal 26 to the contact wipers 15 and 16. In Figs. 5 and 6 I show a modification of my invention wherein I dispense with the use of the helically wound conductor 29 and in this modification, I provide a spade member 32 which has its split end 33 engaging a suitable groove 33′ in the shaft 21 and its other end clamped between the terminal 26′ and washer 27′ whereby a closed circuit is provided from the terminal 26′ to the contact wipers.

To support the unitary structure of my invention on the mounting panel 35 (Fig. 1) I provide said panel 35 with a suitable opening through which the end of the shaft 21 protrudes to permit the supporting member 12 to engage the back face of said mounting panel, and to secure the unitary structure in this position a screw 36 is provided which extends through a suitable opening in the panel 35 and then has screw-threaded engagement with a suitable tapped orifice in the supporting member 12.

For rotating the shaft 21 and the wipers 15 and 16, I provide a thumb and finger knob 37 which has an opening for receiving the end of the shaft 21 and is held thereon by means of a frictional engagement, and in order to prevent rotation of the knob 37 on the shaft 21 one side of the shaft 21 is shaved or flattened to form a flat surface 38, and which flat surface is adapted to be engaged by the flat turned back end 39 of the indicator 40 secured in said knob 37. The mounting panel may be suitably marked or graduated and the contact wipers 15 and 16 adjusted parallel to the indicator 40 so that the operator may know at any time by observing the indicator 40, the particular contact point engaged by the contact wipers.

In order to remove the unitary structure of my invention from the panel all that is necessary, is to remove the knob 37 and screw 36.

From the foregoing it is at once obvious that I have assembled the contact points and wipers and other parts to form a unitary structure which may be mounted on and dismounted from the back of the mounting

panel without interferring with any part of said unitary structure. While I have described and illustrated a particular structure of my invention it is to be understood that changes and modifications may readily suggest themselves, and I do not wish to be limited to the exact structure as shown and described but intend to cover all, that may come within the spirit and scope of the appended claims.

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

1. In a device of the character described, a flat cylindrical supporting member, a terminal, a pin and a washer for fitting over and engaging one end of said pin, said pin and washer adapted to engage said terminal to secure the same on said supporting member, spring contact wipers rotatably supported on said supporting member so that said spring contact wipers will engage said pin and washer on opposite sides thereof, means for closing a circuit through said spring contact wipers to said terminal, and means for permitting said device to be secured as a unit to a suitable mounting member.

2. In a unitary structure of the character described, a flat circular mounting member, a plurality of terminals, pins and cylindrical members for engaging said pins, said pins and cylindrical members adapted to secure said terminals on the periphery of said mounting member, spring contact wipers rotatably supported on said mounting member and in operative association with said pins and cylindrical members, said contact wipers adapted to have contactual engagement with only one of said pins and one of said cylindrical members at the same time when said wipers are in a resting position, and means for permitting said unitary structure to be mounted as a whole to another mounting member.

3. In a unitary structure of the character described, a flat circular mounting member, a plurality of terminals, pins and cylindrical members for securing said terminals on said mounting member, each end of said pins provided with a hollowed out portion, spring contact wipers, means for rotatably supporting said contact wipers on said mounting member, said spring contact wipers having arcuate shaped end portions for engaging the hollowed out portions of said pins at their opposite ends whereby said contact wipers are adapted to have contactual engagement with anyone of said pins and cylindrical members, and to be maintained in engagement by said arcuate shaped ends and hollowed out portions, a mounting panel and means for securing said unitary structure on said mounting panel.

4. In a unitary structure of the character described, a flat circular mounting member, a plurality of terminals, pins and cylindrical members for securing said terminals on said mounting member, each end of said pins provided with a hollowed out portion, a pair of spring contact wipers, means for rotatably supporting said pair of contact wipers on said mounting member and parallel to each other, said spring contact wipers having arcuate shaped end portions for engaging the hollowed out portions of said pins whereby said contact wipers are adapted to have contactual engagement with anyone of said pins and cylindrical members, means secured on said first means for closing a circuit through said pair of contact wipers, a mounting panel, means for securing said unitary structure on the back of said mounting panel, and means for rotating said pair of spring contact wipers.

5. In a unitary structure of the character described, a flat circular mounting member, a plurality of terminals, pins and cylindrical members for engaging said pins, said pins and cylindrical members adapted to secure said terminals on the periphery of said mounting members, spring contact wipers rotatably supported on said mounting member and in operative association with said pins and cylindrical members, said contact wipers adapted to have contactual engagement with only one of said pins and one of said cylindrical members at the same time when said wipers are in their resting position, stop pins for preventing the disassociation of said contact wipers and said pins and cylindrical members, a mounting panel, and means for securing said unitary structure on one side of said mounting panel.

6. A device of the character described including a mounting piece, a plurality of terminals, means for securing the terminals to opposite sides of the mounting piece, a supporting member to which said mounting piece is fastened, a pair of contact wipers rotatably supported by said supporting member positioned on opposite sides of said mounting piece and adapted to make electrical contact with said terminals one at a time, a shaft rotatably supporting said contact wipers and in turn supported by said supporting member, all forming a unitary structure, and means including said shaft and supporting member for securing the device as a whole to a mounting panel.

7. A device of the character described including a mounting member having stationary contacts, a supporting member attached to said mounting member, and a rotary shaft and a contact wiper supported by said supporting member, said shaft having an orifice enclosing a spring member having its one end connected to said supporting member.

8. A device of the character described in-

cluding a mounting member, a supporting member attached thereto, stationary contacts secured to said mounting member, a rotatable shaft and a wiper rotatably secured to said supporting member for contacting with said contacts, said rotatable shaft having an orifice, and means extending without said orifice for insuring positive connection between said wiper and said supporting member.

9. A device of the character described including a mounting member having stationary contacts, a supporting member secured to said mounting member, a rotary shaft and a wiper supported by said supporting member, said wiper adapted to make contact with said contacts, and yielding means having its opposite ends connected to said supporting member and said shaft for insuring positive electrical connection between said shaft and said supporting member.

10. A device of the character described including a mounting plate having stationary contacts on opposite sides thereof, a supporting member and a pair of rotatable contact makers positioned on opposite sides of said mounting plate all forming a unitary structure, a shaft for said pair of contact makers, and means including said shaft and said supporting member for securing a device as a unit to a mounting panel.

11. A device of the character described including a mounting member, terminals appearing upon opposite sides thereof, rivets having contacting surfaces securing said terminals together and to said mounting member, a supporting member attached to said mounting member, and a pair of rotatable contact wipers supported by said supporting member and positioned on opposite sides of said mounting member for engaging the contacting surfaces of said rivets.

12. A device of the character described including a circular mounting member, angular terminal strips appearing on opposite sides of said mounting member, means extending through said terminal strips and said mounting member securing oppositely positioned terminals to said mounting member, a rotatable shaft having a pair of wipers appearing upon opposite sides of said mounting member, and a member for rotating said shaft to cause said wipers to engage the opposite sides of the means which secures the terminal strips to said mounting member.

13. A device of the character described including a circular mounting member, angular terminal strips appearing on opposite sides of said mounting member, means extending through said terminal strip and said mounting member securing oppositely positioned terminals to said mounting member, a rotatable shaft having a pair of wipers appearing upon opposite sides of said mounting member, a member for rotating said shaft to cause said wipers to engage the opposite sides of the means which secures the terminal strips to said mounting member, a supporting member for said shaft, and yielding means for insuring contact between said rotatable shaft and said supporting member.

14. A device of the character described including a circular mounting member, terminal strips appearing upon opposite sides of said mounting member and having their free ends in contact, means securing said terminal strips to said mounting member, and a pair of rotatable contact makers positioned on opposite sides of said mounting member for engaging said means.

15. A device of the character described including a mounting member, terminal strips having offset portions appearing on opposite sides of said mounting member and having their free ends in contact, connecting means extending through said mounting member and said terminal strips to secure the terminals strips to the mounting member, and a pair of rotatably supported contact makers positioned on opposite sides of said mounting member for engaging said securing means to make electrical contact therewith.

Signed by me at Chicago, in the county of Cook and State of Illinois, this 26th day of April 1923.

WILLIAM KAISLING.