Nov. 22, 1927.

1,650,469

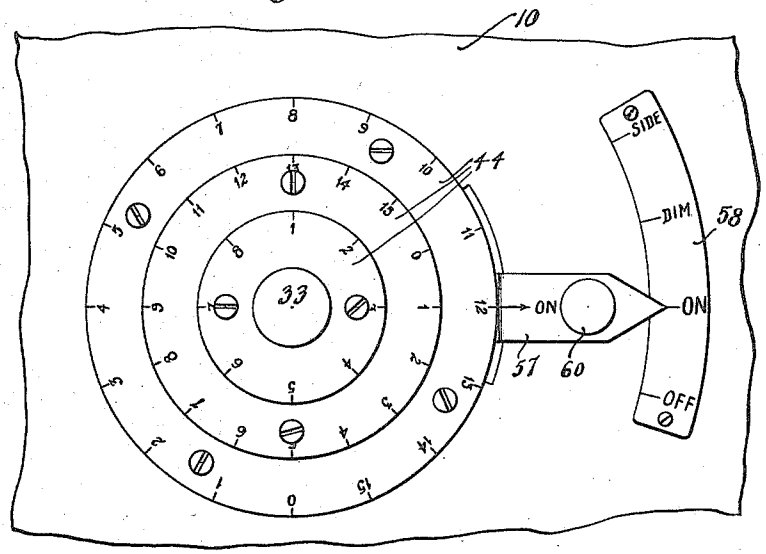
J. S. RYCHLEWSKI

IGNITION SWITCH

Filed April 11, 1925

3 Sheets-Sheet 1

Fig. 1.



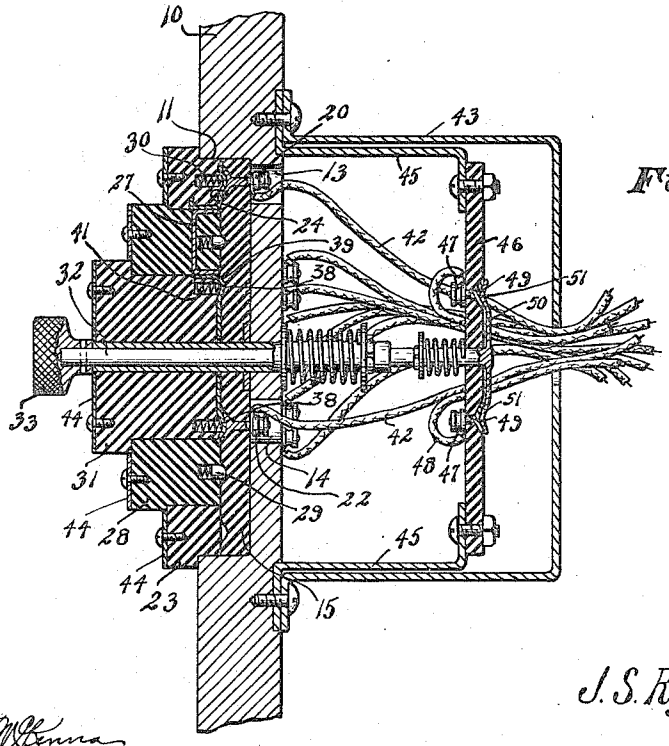


Fig. 2.

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Filed April 11, 1925 3 Sheets-Sheet 2

Fig. 3.

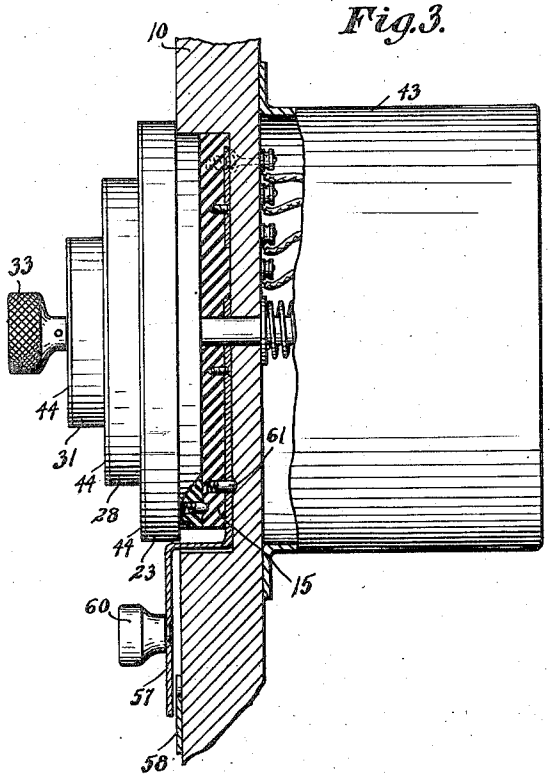


Fig. 4.

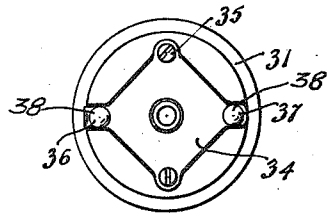


Fig. 5.

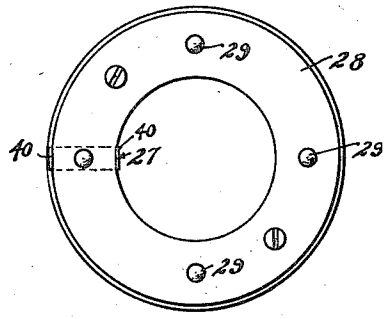
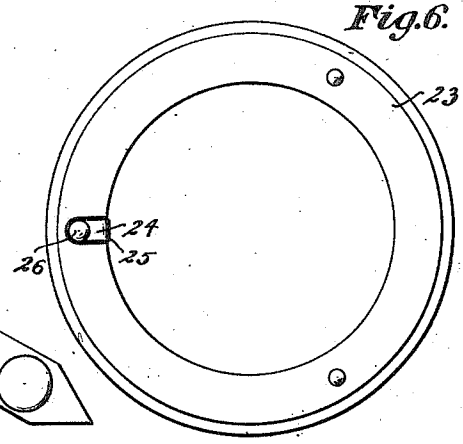


Fig. 6.



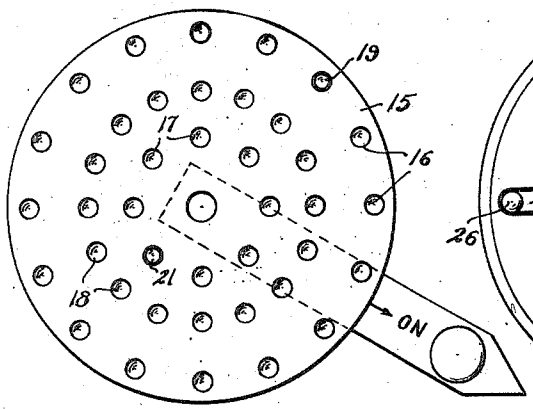


Fig. 7.

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Nov. 22, 1927. 1,650,469

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IGNITION SWITCH

Filed April 11, 1925 3 Sheets-Sheet 3

Fig. 8.

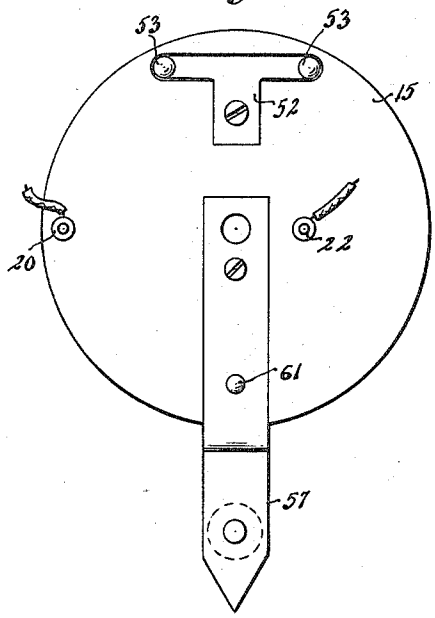


Fig. 9.

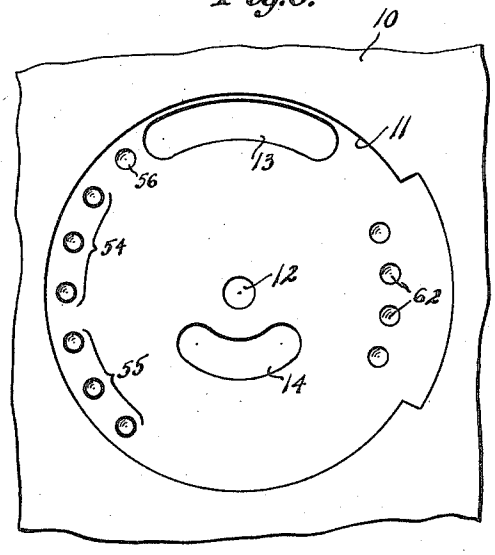


Fig. 10.

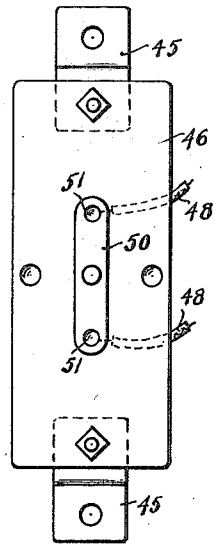
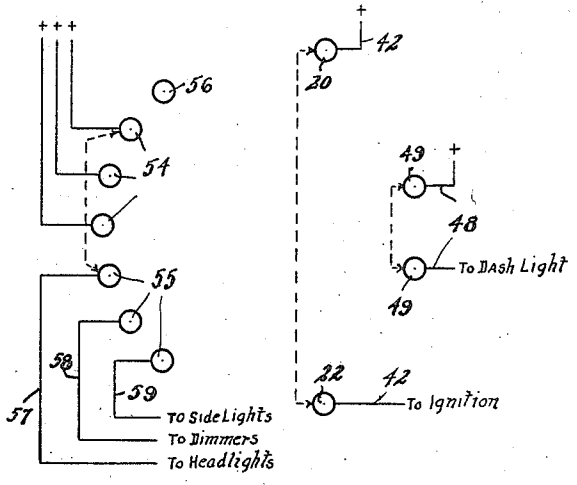


Fig. 11.



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UNITED STATES PATENT OFFICE.

JOHN S. RYCHLEWSKI, OF ENDICOTT, NEW YORK.

IGNITION SWITCH.

Application filed April 11, 1925. Serial No. 22,389.

This invention relates generally to switches, and contemplates certain improvements over the structure illustrated in my pending application bearing Serial Number 713,810, the present invention providilng a combination switch to be used in conjunction with both the ignition and lighting systems of an automobile, so that the said systems can not be used by anyone except those familiar with the combination.

The nature and advantages of the invention will be better understood when the following detailed description is read in connection with the accompanying drawings, the invention residing in the construction, combination and arrangement of parts as claimed.

In the drawings forming part of this application, like numerals of reference indicate similar parts in the several views, and wherein:

Figure 1 is a fragmentary view of the instrument board of an automobile showing the switch arranged thereon.

Figure 2 is an enlarged cross sectional view through the instrument board and switch.

Figure 3 is a side elevation of the switch partly in section and showing it associated with the instrument board.

Figure 4 is an end elevation of one of the rotatable disks.

Figure 5 is an elevation of one of the rotatable members.

Figure 6 is a similar view showing another of said members.

Figure 7 is a view in elevation of another disk used in the combination structure.

Figure 8 is a view similar to Figure 7 looking at the opposite side of the disk.

Figure 9 is a view of the instrument board with the switch removed.

Figure 10 is a view in elevation showing the contact and support therefor, which is used in connection with the instrument board light.

Figure 11 is a diagrammatic view.

Referring to the drawings in detail, 10 represents a portion of an instrument board of the type generally employed on automobiles, and which board is provided with a circular recess 11 having a central opening 12. The bottom of the recess above and below the opening 12 is provided with arcuate shaped slots 13 and 14 respectively, the purpose for which will be hereinafter described.

Mounted within the recess is a disk 15, the opposite sides of which are clearly illustrated in Figures 7 and 8. The outer side of this disk is provided with spaced annular series of depressions, the outermost series being indicated at 16, the innermost series at 17 and the intermediate series at 18. Projecting through the disk 15 is a contact 19 which is located in one of the depressions of the outer series 16, the contact being provided with a binding post 20 which is arranged to operate within the slot 13 of the instrument board. Also extending through the disk 15 is a contact 21 located within one of the depressions of the innermost series 17, and arranged diametrically opposite the contacts 19 above referred to. This contact 21 is provided with a binding post 22 which operates in the slot 14 in the instrument board, inasmuch as the disk is adapted to be partially rotated in either direction within the recess for a purpose to be hereinafter described.

Rotatably mounted within the recess 11 is a ring 23 of insulating material which is provided with a metallic contact indicated generally at 24. This contact includes an arm 25 which is arranged against the inner face of the ring, and formed with a projection 26 which is adapted to snap into the adjacent depression in the outer series 16 of the disk 15. When the circuit is closed to the ignition system of the automobile, the projection 26 which is designed to conform to the contact 19 is arranged in engagement therewith. The body portion 24 of this contact is as clearly shown in Figure 2 arranged across the inner periphery of the ring 23 and adapted to engage a contact 27 carried by a link 28 which is also of insulated material, when the circuit to the ignition system is closed. Upon inspection of Figure 2 it will be noted that the ring 28 is rotatably mounted within the link 23 having its inner surface arranged in confronting relation with the disk 15. The inner face of this ring 28 is provided with a plurality of spring pressed pins 29, preferably four in number equi-distantly spaced apart as shown in Figure 5, and which pins are adapted to snap into the adjacent depressions of the intermediate series 18 of said depressions formed on the adjacent face of the disk 15 to hold these parts 15 relatively in a given position. While the contact 24 carried by the disk 23 is of a resilient nature, use may be made of a coiled spring 30 to

assist in holding the projection 26 in effective engagement with the contact 19 if so desired. Should such a spring 30 be employed, the spring will be arranged in a pocket or recess formed in the disk 23 as clearly shown in Figure 2.

Arranged to rotate within the ring 28 is a disk 31, the disk having a central opening which is arranged in axial alignment with similar openings in the disk 15 and the opening 12 of the instrument board to receive the rotatable shaft 32, the outer end of which is provided with a knob 33 by means of which the shaft may be rotated for a purpose to be hereinafter described. This shaft however has nothing to do with controlling the circuit of the ignition system by means of the disk 31. The inner side of this disk is provided with a contact plate 34 clearly shown in Figure 4 and which plate is secured to the disk by suitable fastening elements 35, the disk is of course constructed of insulated material, while the contact plate is formed with extensions 36 and 37 respectively, each of which is formed with a bulged portion 38 which are adapted to be received by adjacent depressions of the inner series 17 of said depressions above referred to. The extension 37 of the contact plate is extended to engage the outer periphery of the disk 31 as indicated at 39 in Figure 2, and when the combination has been set to complete the circuit to the ignition system of the automobile, this portion 39 of the contact plate 34 is arranged in engagement with the contact 27 carried by the ring 28. It will be noted upon inspection of Figures 2 and 5 that the contact 27 carried by the ring 28 is substantially U-shaped having a plurality of branches 40 arranged to engage the inner and outer periphery of said ring, to complete the connection between the contact 24 and 34 when the various rotatable members have been properly positioned to close the circuit. If desired, the disk 31 may be provided with coiled springs 41 to hold the bulged portions 38 of the contact plate 34 in effective engagement with the disk 15. Terminally connected with the binding post 20 and 22 respectively are the ignition wires 42 which are partly covered by a metallic casing 43 secured to the one side of the instrument board as shown in Figure 2, but which wires pass through openings in the casing to their proper destination. It will now be noted upon inspection of Figure 1, that each of the rings 23 and 28 respectively, and also a disk 31 has its outer face provided with an annular plate 44, each plate having a series of numbers by means of which the proper combination can be readily obtained by any one familiar with the particular combination necessary in order to close the circuit.

Manifestly, when it is desired to use the car, it is only necessary to rotate the ring 23 the requisite distance to bring the projection 26 into engagement with the contact 19 on the disk 15, and to subsequently rotate the ring 28 and the disk 31 to bring the contacts carried by these parts into engagement with each other as shown in Figure 2, as well as to bring one of the projections 38 of the contact plate 34 into engagement with the contact 21 carried by said disk 15; when the parts are arranged in the manner shown in Figure 2, the current will pass through the switch in the proper manner to complete the circuit, and the engine put into operation. When it is desired to break the ignition circuit, the rotatable members can be turned to any desired extent, that is any one or more of these members may be rotated in either direction to move the respective contacts out of engagement with each other.

If the machine is equipped with lights on the instrument board, the circuit to these lights 49 shown in Figure 11 is controlled by means of a switch of the character shown in Figures 2 and 10. This switch includes a base 46 of insulated material which is arranged within the casing 43 and supported by suitable brackets 45 terminally secured to the instrument board as shown. This support 46 has associated therewith binding posts 47 which are connected with electric wires 48, each binding post being formed with a contact 49 arranged in a depression in the adjacent side of the support 46. The shaft 32 above referred to is journalled in the support 36 and carries at one end a movable contact plate 50, the opposite ends of which are formed with projections 51 which are adapted to snap into contacting engagement with the contacts 49, when the shaft 32 is rotated to position the plate 50 in the manner clearly shown in Figure 2, thereby closing the circuit to the dash light 49 independently of the ignition circuit.

It is also my purpose to control the circuits to the side lights, dimmers and headlights of the machine by means of the switch structure shown. In this connection I make use of a substantially T-shaped contact plate which is mounted upon the inner face of the disk 15 as clearly shown in Figure 8, the stem 52 of which is secured to the disk while the cross piece of the head portion of the contact is formed with projections 53. These projections are used in connection with the spaced series of contacts supported by the instrument board 10 within the depression 11 as clearly shown in Figure 9, each of said contacts being similar in construction to the contacts shown at 19 in Figure 2 and adapted to be seated in a depression formed in said instrument board. There are six of these contacts divided into series of three each, one series of contacts representing the positive side of the circuit and indicated at

54, while the contacts of the remaining series representing the negative side of the circuit are indicated at 55. It will be noted upon inspection of Figure 1 that there is an additional depression 56 which is not provided with a contact, and in which depression one of the projections 53 of the contact plate 52 is adapted to be arranged when the circuit is broken. Manifestly, the contacts of the respective series indicated at 54 and 55 are used in pairs so that when it is desired to use the headlights, the disk 15 is turned within the recess 11 through the instrumentality of a handle 57, arranging the said handle which is also shaped to be used as an indicator in the position with relation to the indicating plate 58 as clearly illustrated in Figure 1. When the handle 57 is arranged in this position, one of the projections 53 of the contact plate 52 engages the uppermost contact of the series 54, while the other projection 53 of said plate engages the corresponding uppermost contact of the series 55. If it is desired to use a dimmer, the handle is shifted to its proper position with relation to the indicating plate 58, whereupon the projections 53 of the contact plate 52 are shifted to engage the corresponding contacts next in order of the respective series indicated at 54 and 55. To use the side lights on the vehicle the handle 57 is further operated to arrange the projections 53 in corresponding engagement with the remaining corresponding contacts of the respective series 54 and 55 as will be readily understood. When the handle 57 is shifted to an off position indicated on the plate 58, the disk 15 is rotated, so that one of the projections 53 of the contact plate 52 is positioned within the depressions 56, thereby breaking the circuit. In Figure 11, the wires leading to the headlights are indicated at 57, the wires leading to the dimmers being indicated at 58, while the wires leading to the side lights are indicated at 59. The handle 57 is provided with a knob 60. Furthermore, the handle is equipped with a spring pressed pin 61 adapted to be received by one of a plurality of depressions 62 to hold the handle fixed in a given position. It is of course to be understood that when the disk 15 is rotated through the instrumentality of the handle 57 for making or breaking the circuits to the various lights, the disk 15, rings 23 and 28 respectively, and also the disk 31 above described are rotated as a unit within the recess 11 of the instrument board.

While it is believed that from the foregoing description, the nature and advantages of the invention will be readily apparent, I desire to have it understood that I do not limit myself to what is herein shown and described, and that such changes may be resorted to when desired as fall within the scope of what is claimed.

Having thus described the invention, what is claimed is:

1. A switch comprising a supporting member having a circular recess, spaced series of contacts arranged therein and included in normally open circuits, a disk mounted for rotation within the recess, spaced contacts arranged on one side of the disk and adapted to cooperate with the corresponding contacts of said respective series to selectively close said circuits, means for rotating said disk, means for holding said disk in a given position, a ring rotatably mounted in said recess, a contact on said ring having a portion arranged against the inner periphery thereof, and a second portion adapted to be brought into engagement with one of the last mentioned contacts carried by the disk, a second ring rotatably fitted within the first mentioned ring, a contact on the second mentioned disk including portions arranged against the inner end of the outer periphery thereof and adapted to be arranged in engagement with the adjacent portion of the contact of the first mentioned ring, a disk like member rotatably fitted within the second mentioned ring, a contact carried by the inner end thereof and adapted to engage the second mentioned contact carried by the first mentioned disk, and including a portion arranged to engage the contact carried by the second mentioned ring when the circuit is closed.

2. A switch including a support, a circular recess, and spaced arcuate shaped slots, a disk mounted for rotation within the recess, spaced contacts arranged on said disk, binding posts projecting from said contacts and arranged to operate in said slots, when the disk is rotated, inner and outer rings mounted for rotation with relation to said disk and also with relation to each other, a disk like member mounted for rotation within the innermost ring, a contact carried by the outermost ring and having a portion arranged against the periphery thereof, and a portion arranged to engage the adjacent contact on the first mentioned disk to close the circuit, a contact carried by the inner face of the last mentioned disk, and arranged to engage the other contact of the first mentioned disk, a contact on the second mentioned disk having a portion arranged on the periphery thereof, a substantially U-shaped contact carried by the innermost ring and adapted to have its parallel portions arranged to engage the contacts carried by the outermost ring and the second mentioned disk, spaced series of contacts arranged on the bottom of said recess, spaced contacts arranged on the adjacent side of the first mentioned disk, a handle projecting therefrom and adapted to rotate the same.

In testimony whereof I affix my signature.

JOHN S. RYCHLEWSKI.