

June 21, 1938.

M. FAULKNER

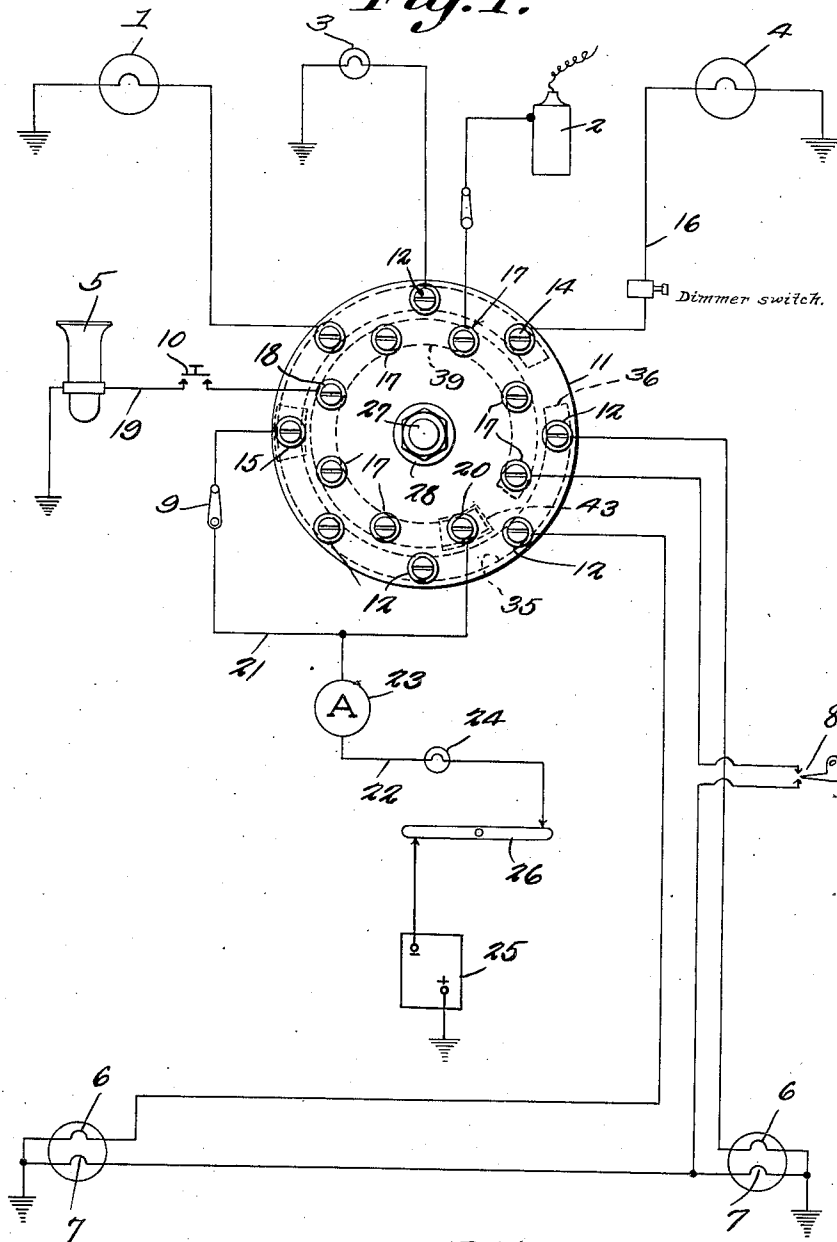
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SWITCH

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Fig. 1.



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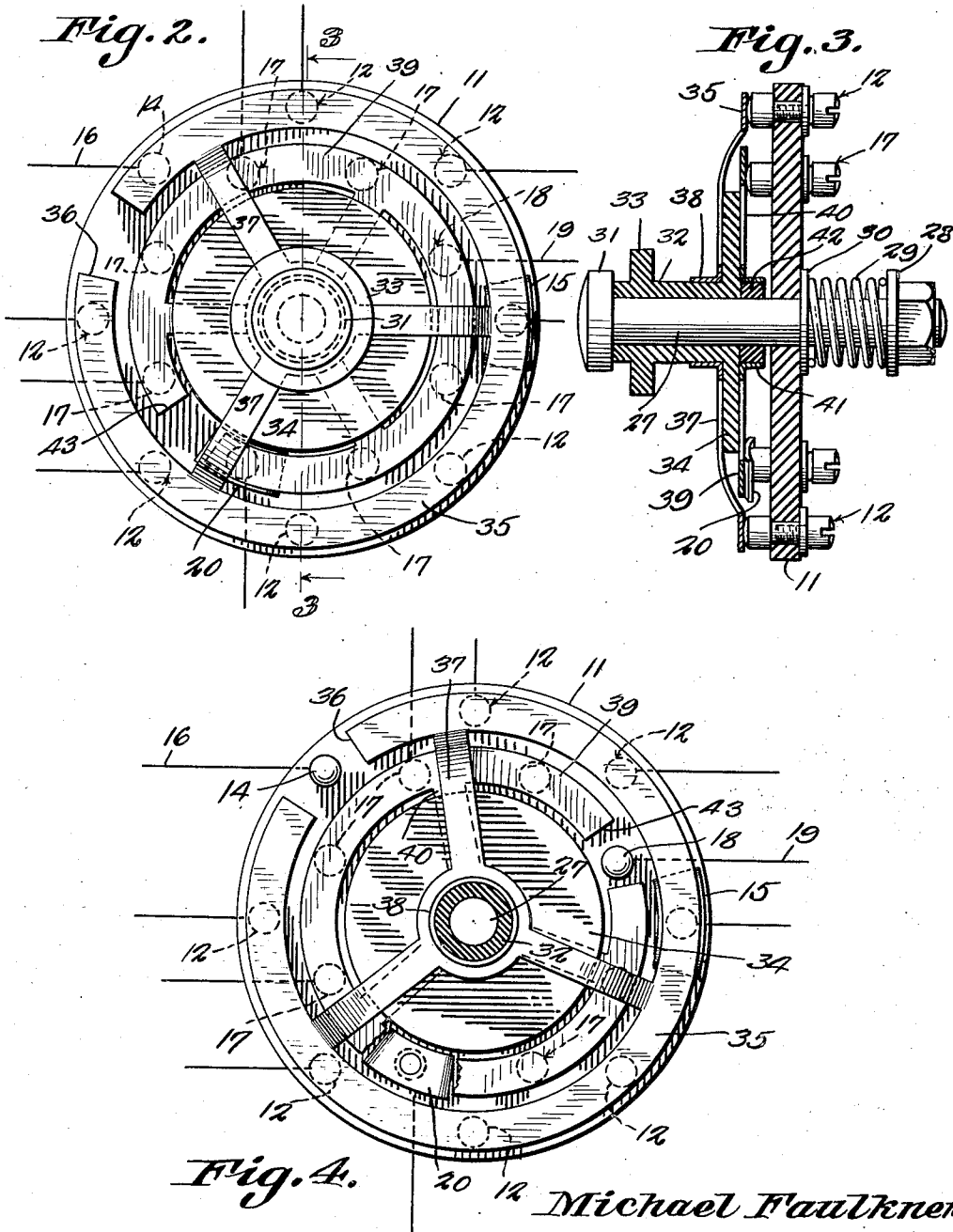
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SWITCH

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2 Sheets-Sheet 2



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SWITCH

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2 Claims. (Cl. 200—14)

This invention aims to provide a novel selector switch, under the control of an operator, whereby any one instrumentality of two groups of electrical devices on an automobile may be cut out when grounded or shorted, the other instrumentalities of that group remaining in working order: a statement which will be understood more clearly when the structure is described in detail.

It is within the province of the disclosure to improve generally and to enhance the utility of devices of that type to which the present invention appertains.

With the above and other objects in view, which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed, may be made within the scope of what is claimed, without departing from the spirit of the invention.

In the accompanying drawings:

Fig. 1 in a diagram illustrating one of the many uses to which the device forming the subject matter of this application may be put;

Fig. 2 is a front elevation of the switch forming the subject matter of this application;

Fig. 3 is a section on the line 3—3 of Fig. 2;

Fig. 4 is a front elevation wherein parts have been sectioned away.

Referring first to Fig. 1, in order that the advantages of the device hereinafter described may be clearly understood, there is shown in that figure two groups of electrical devices used on a motor car. One of these groups is employed, or is likely to be employed, at any time. That group comprises an ignition mechanism 2, a horn 5 under the control of a switch 10, and stop and go lights 7 under the control of a switch 3, usually assembled with the brake pedal. The other group, which is likely to be used after nightfall only, comprises headlights 1 and 4, cluster lights 3 on the instrument board of the vehicle, and tail lights 6 under the control of a switch 9.

As stated in the opening portion of this specification, the invention aims to provide a selector switch, under the control of an operator, whereby any instrumentality of either group may be cut out when grounded or shorted, and still have the other instrumentalities of that group in working order.

For the purpose of making manifest the utility

of the selector switch hereinafter described and claimed, it is necessary to refer to one member only of each group, the horn 5 being chosen as typical of the group likely to be used under all conditions, and the headlight 4 being chosen as typical of the group likely to be used after nightfall only.

The selector switch forming the subject matter of this application comprises a disk-like base 11, made of insulating material. The base 11 carries first switch terminals, denoted as a group by the numeral 12. The first switch terminals 12 are arranged in a circle. Of the switch terminals 12, two only need be noted, to wit, the terminals 14 and 15, the switch terminal 14 because it is connected to a grounded conductor 16 wherein the headlight 4 is interposed, and the terminal 15 because it is somewhat longer than the other terminals of the group 12.

The base 11 carries second switch terminals denoted as a group by the numeral 17. The switch terminals 17 are arranged in a circle of smaller diameter than the circle in which the first terminals 12 are located. Of the second switch terminals 17, two, only, need receive attention, namely, the switch terminal 18, which is connected by a conductor 19 to the horn 5, the horn switch 10 being interposed in the said conductor; and the terminal 20, characterized by the fact that it is longer than the other terminals of the group under consideration.

The terminals 15 and 20 are connected by a conductor 21, in which the switch 9 is interposed. Branched off from the conductor 21 is a conductor 22, in which is interposed an ammeter 23, and a signal 24 which operates when any of the instrumentalities of either group, for instance the horn 5 or the lamp 4, is grounded or shorted. The conductor 22 leads to a source of electrical energy 25, such as a battery, and in the conductor 22, a main cutout switch 26 is interposed.

Continuing the description of the selector switch, and noting Figs. 2, 3 and 4, it will be observed that a main shaft 27 is journaled in the switch base 11, the shaft 27 having, also, a longitudinal movement in the base. On the rear end of the shaft 27 there is an abutment, such as a nut and washer 28. A compression spring 29 surrounds a part of the shaft 27, the rear end of the spring engaging the abutment 28 and the forward end of the spring engaging a washer 30, which is pressed against the rear surface of the switch base 11. On its forward end, the shaft 27 has a turning head 31.

Journalled on the main shaft 27 is an auxiliary shaft 32, of tubular form, the shaft abutting against the head 31 on the shafts 27 and 32 having an outstanding turning disk 33. The shaft 32 is formed of insulating material and is supplied at its rear end with a disk-like body 34. A conducting member 35 is provided, and may be called a first conducting member, since it co-operates with the first switch terminals 12. The conducting member 35 has a dead area 36, which may be a gap in the ring, as shown in Fig. 2. The conducting member 35 may be connected by resilient spokes 37 with a hub 38 secured to the shaft 32, the spokes 37 resting against the disk-like body 34 on the shaft 32.

A second conducting member 39, of less diameter than the conducting member 35, is provided, and is adapted to make contact with the second switch contacts 17. The second conducting member 39 is in the form of a disk, connected by resilient spokes 40 to a hub 41 secured at 42 to the shaft 27, but insulated therefrom, the spokes 40 having contact with the body 34 of the shaft 32. The second conducting member 39 is provided with a dead or insulating space 43, which may be a gap in the ring or conducting member 39. The spoke and ring construction shown in connection with the conducting members 35 and 39 is not insisted upon. The function of the spring 29 is to draw the shaft 27 rearwardly, along with the shaft 32, thereby causing the conducting member 35 to have engagement with the contacts 12 and to cause the conducting member 39 to have engagement with the contacts 17. The contact 15 of the outer annular group is long enough to bridge the gap 36 in the ring 35, and the contact 20 of the inner annular group is long enough to bridge the gap 43 in the ring 39.

In practical operation, the current flows from the battery 25 through the conductor 22 and the conductor 21 to the terminal 20 and thence into the conducting member 39 and the terminal 18. From the terminal 18, the current flows by way of the conductor 19 to the horn 5. If the horn 5 is shorted or grounded, the shaft 27 is turned by means of the disk 31 until the terminal 18 is in the gap 43 of the conducting member 39 as shown in Fig. 4. The other electrical instrumentalities which are operated through the conducting member 39, namely the ignition mechanism 2 and the stop and go lights 7, are not affected, because their switch terminals 17 are still engaged with the conducting member 39.

If, for instance, the headlight 4 becomes grounded or shorted, that instrumentality may be cut out by rotating the shaft 32 by means of the head 33 until the terminal 14 is in the gap 36 as shown in Fig. 4. The other instrumentalities which are fed by way of the conducting member 35 obviously will not be affected. Since the elongated terminal 15 bridges the gap 36 in the conducting member 35, and since the elongated terminal 20 bridges the gap 43 in the conducting member 39 there will be no interruption of current flow through the conducting members 35 and 39 when they are rotated.

When any of the electrical devices fail, the signal 24 will notify the operator of that fact. Owing to the fact that the diagram shown in Fig. 1 is simple, and since it is the switch which

does the work, a lengthy tracing out of the circuits is considered unnecessary.

It is to be understood that the present invention is not restricted to use on automobiles but may be applied to any device using a multiplicity of circuits.

What is claimed is:

1. A switch comprising a base, a main shaft mounted to rotate on the base, an auxiliary shaft mounted to rotate on the main shaft, means under the control of an operator for rotating the shafts individually, a first conducting member rotatable with the auxiliary shaft and having an insulating space, a second conducting member rotatable with the main shaft and of less diameter than the first conducting member, the second conducting member having an insulating space, first contacts arranged substantially in a circle on the base and engaging the first conducting member, all but one of the first contacts being narrower than the insulating space of the first conducting member, and said one of the first contacts being long enough to bridge the insulating space of the first conducting member, second contacts arranged substantially in a circle of less diameter than that of the first-specified circle and engaging the second conducting member, all but one of the second contacts being narrower than the insulating space of the second conducting member, and said one of the second contacts being long enough to bridge the insulating space of the second conducting member, and means for supplying current to each of said longer contacts.

2. A switch comprising a base, a main shaft mounted to rotate and to move endwise in the base, an auxiliary shaft mounted to rotate on the main shaft, both shafts being rotatable at the will of an operator, means for holding the auxiliary shaft against endwise movement independently of the main shaft, a first conducting member rotatable with the auxiliary shaft and having an insulating space, a second conducting member rotatable with the main shaft and of less diameter than the first conducting member, the second conducting member having an insulating space, first contacts arranged substantially in a circle on the base and engaging the first conducting member, all but one of the first contacts being narrower than the insulating space of the first conducting member, and said one of the first contacts being long enough to bridge the insulating space of the first conducting member, second contacts arranged on the base substantially in a circle of less diameter than that of the first-specified circle and engaging the second conducting member, all but one of the second contacts being narrower than the insulating space of the second conducting member, and said one of the second contacts being long enough to bridge the insulating space of the second conducting member, means for supplying current to each of said longer contacts, and spring means cooperating with the base and with the main shaft, to move the shafts endwise and rearwardly, thereby to cause the first conducting member to engage the first contacts and to cause the second contact member to engage the second contacts.