J. H. LAWRENCE.

ELECTRICAL SWITCH.

APPLICATION FILED AUG. 27, 1913.

1,118,024. Patented Nov. 24, 1914.

Fig. 1

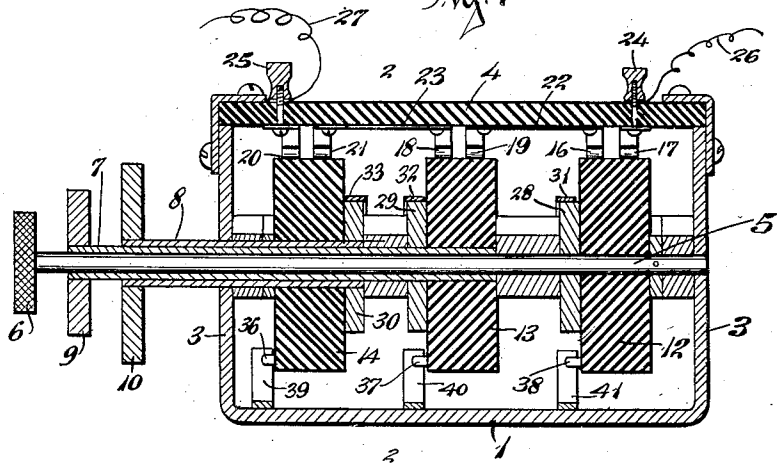


Fig. 2

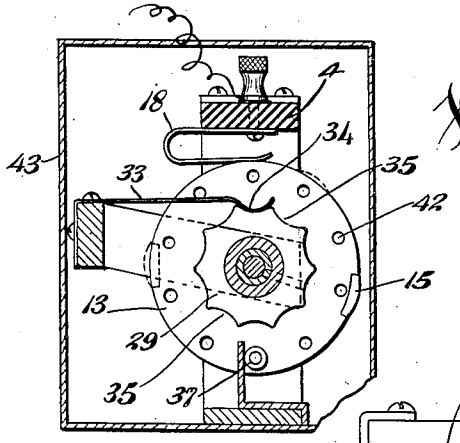
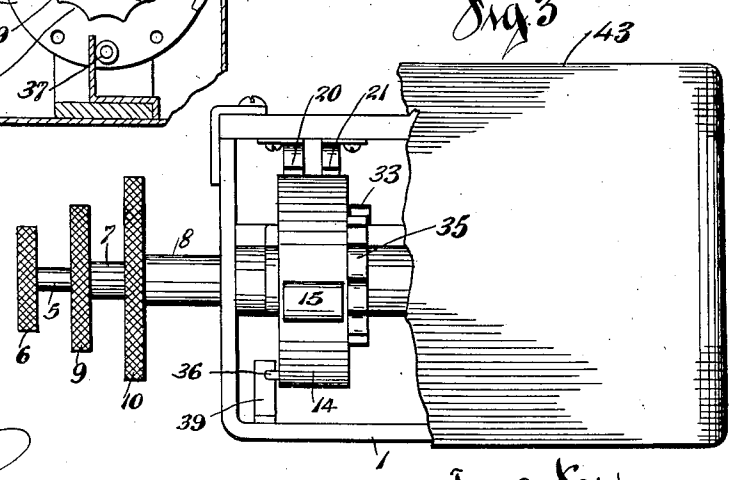


Fig 3



Witnesses

Olive E. Harman

Anna F. Dienst

Inventor

John H. Lawrence

by Alfred M. Allen

Attorney

UNITED STATES PATENT OFFICE.

JOHN H. LAWRENCE, OF COVINGTON, KENTUCKY, ASSIGNOR TO JACOB J. GEISEN, OF COVINGTON, KENTUCKY.

ELECTRICAL SWITCH.

1,118,024. Specification of Letters Patent. Patented Nov. 24, 1914.

Application filed August 27, 1913. Serial No. 786,873.

To all whom it may concern:

Be it known that I, JOHN H. LAWRENCE, a citizen of the United States, and a resident of the city of Covington, in the county of Kenton and State of Kentucky, have invented certain new and useful Improvements in Electrical Switches, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to electrical switches to be placed in the electric circuit in an automobile or other motor vehicle comprising a plurality of commutation disks or pieces with proper insulation and contact parts, whereby to complete the circuit a definite arrangement of the disks or pieces must be provided. Heretofore it has been necessary to adjust such commutation devices that have been proposed for electrical switches by moving the parts into the proper position under the eye of the operator, and such devices have not been capable of convenient use in the dark.

It is the object of my present invention to provide a construction, to be hereinafter particularly pointed out and claimed, in which the commutation devices can be properly arranged to complete the circuit by the sense of touch, so that the movements can be readily made in the dark, or at any time without requiring the visual attention of the user.

Another object is to provide for the easy and convenient changing of the combination, should this at any time become desirable.

In the drawings, Figure 1 is a central longitudinal section of my improved construction. Fig. 2 is a cross section, taken on the lines 2, 2, of Fig. 1. Fig. 3 is a side elevation with the casing partly broken away.

The operating parts are mounted in a convenient frame comprising bottom 1, sides 3, 3, of suitable material, and a top 4 of fiber or other insulating material. Mounted in the sides or ends of the frame is a shaft 5, provided with a knurled head 6 for rotating same, and mounted to rotate on this shaft are a series of hollow shafts 7, 8, one inside the other and each provided with a knurled head 9, 10. The several shafts are of different lengths, and upon each one is securely mounted a disk 12, 13, 14, of insulating material such as fiber. Inset into the face of each of these disks and smooth with the periphery thereof, is a contact plate 15 of suitable conducting material, and secured on the under surface of the top piece 4 are two spring contact fingers 16, 17, for the disk 12; 18, 19, for the disk 13; and 20, 21, for the disk 14. The pairs of fingers for each disk are separated from each other and electrical connection can only be made through the contact plate 15, with which connection is made when the disk has been rotated to the proper position by its knurled head. The fingers 16, 19, 18, 21, are in electrical connection through the plates 22, 23 respectively, while the spring fingers 17 and 20 are in connection with the posts 24, 25 respectively, the wires 26, 27 completing the circuit. Secured to the side face of each disk is a notched wheel 28, 29, 30, and spring plates 31, 32 and 33 are provided for each notched wheel respectively, with the outer end 34 of these spring plates curved to engage the notches 35 of the notched wheels. As the disks are turned, it will be evident that the spring plate for each notched wheel will slip into the respective notches and momentarily hold the disk so that it can readily be determined by the touch, as each notch is passed in rotating any particular disk. Each disk is provided with a pin 36, 37, 38, projecting from the side face of the disk, and as the disks are severally rotated, these pins come into contact with a fixed stop 39, 40, 41, one for each disk. The pins 36, 37, 38, can be secured in any one of the series of holes 42 in the side face of each disk, so that the position the contact plate of the disk will occupy when the pin is against the stop can be varied as desired. The operating devices are inclosed in a cover or casing 43 so as to completely inclose all of the parts except the knurled heads.

By setting the stop pins 36, 37 and 38 in the faces of their respective disks so that the spring plate 31 will engage two notches in the wheel 28 to bring the contact plate under the spring fingers 16, 17, and the disk 13 so that four notches will have to be passed, and the disk 14 so that six notches will have to be passed, we will then have a combination of two, four and six to bring the contact plates in engagement with the proper spring fingers so that the electric circuit will be completed.

When the user desires to break the circuit, either one or all of the knurled heads may be turned back to bring the stop pins against the stops. Then the operator knows that by moving the disks over two, four and six notches respectively, the circuit will be complete. This can be done in the dark, merely by the sense of touch, or by hearing the spring plates drop into the notches.

While I have illustrated only three disks for use in breaking the circuit, of course it will be understood that other disks can be added, and with the addition of each separate disk the number of commutations is of course very largely increased. To set the contact pieces in proper alinement to complete the circuit, it is necessary to turn back each disk to the stop position, and commence from that point to rotate from the required number of notches. By opening the case and changing the position of the stop pins, the combination can be instantly changed whenever it becomes necessary.

While in the specific embodiment of my invention as illustrated in the drawings, I have shown a certain construction, it will of course be understood that the substitution of equivalents and variation in the parts may be made without departing from the spirit of my invention. The switch construction can be inserted at any desired convenient position in the electric circuit and the casing can be bolted on the support so as to completely inclose the operating parts and prevent access or inspection by any unauthorized person.

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

1. In an electric switch, a plurality of insulation devices adapted to be moved step by step, a contact plate seated on each insulation device, conducting fingers arranged in pairs one for each device, one finger of each pair in electrical connection with a corresponding finger of the adjacent pair, means for moving each insulation device to complete the electric circuit through the pair of conducting fingers for said device, and notched pieces for each insulation device, with a spring arm in engagement therewith to indicate to the touch the step-by-step movement of each insulation device to close the circuit, and stops for each insulation device to fix the initial position thereof as desired.

2. In an electric switch, a plurality of insulation devices adapted to be moved step by step, a contact plate seated on each insulation device, conducting fingers arranged in pairs one for each device, one finger of each pair in electrical connection with a corresponding finger of the adjacent pair, means for moving each insulation device to complete the electric circuit through the pair of conducting fingers for said device, and notched pieces for each insulation device, with a spring arm in engagement therewith to indicate to the touch the step-by-step movement of each insulation device to close the circuit, and adjustable stops for each insulation device to fix the initial position thereof in any predetermined arrangement.

3. In an electric switch, a plurality of insulation disks adapted to be rotated step by step, a contact plate seated on each insulation disk, conducting fingers arranged in pairs one for each disk, one finger of each pair in electrical connection with a corresponding finger of the adjacent pair, means for rotating each insulation disk to complete the electric circuit through the conductors, and notched wheels for each insulation disk, with a spring arm in engagement therewith to indicate to the touch the step-by-step movement of each insulation disk to close the circuit, and stops for each insulation disk to fix the initial position thereof as desired.

4. In an electric switch, a plurality of insulation disks adapted to be rotated step by step, a contact plate seated on each insulation disk, conducting fingers arranged in pairs one for each disk, one finger of each pair in electrical connection with a corresponding finger of the adjacent pair, means for rotating each insulation disk to complete the electric circuit through the conductors, and notched wheels for each insulation disk, with a spring arm in engagement therewith to indicate to the touch the step-by-step movement of each insulation disk to close the circuit, and adjustable stops for each insulation disk to fix the initial position thereof in any predetermined arrangement.

5. In an electric switch, a plurality of rotating insulation devices, a contact plate seated on each insulation device, conducting fingers arranged in pairs one for each device, one finger of each pair in electrical connection with a corresponding finger of the adjacent pair, and means for moving each insulation device to complete the electric circuit through the pair of conducting fingers for said device.

JOHN H. LAWRENCE.

Witnesses:
HOMER H. HOSBROOK,
ANNA F. DIEUST.