R. D. MOYER.

ELECTRIC SWITCH DEVICE.

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990,285.

Patented Apr. 25, 1911.

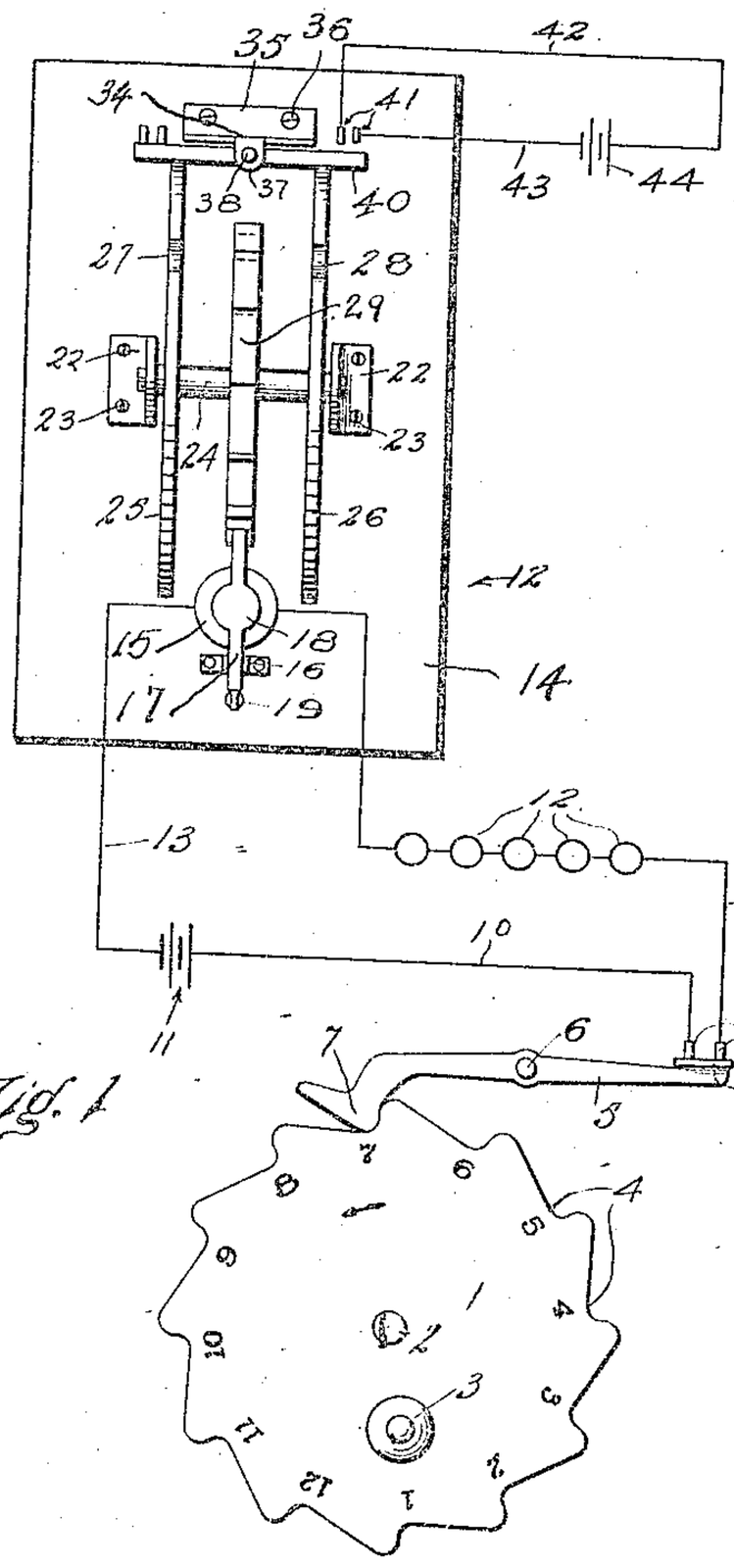

Fig. 1.

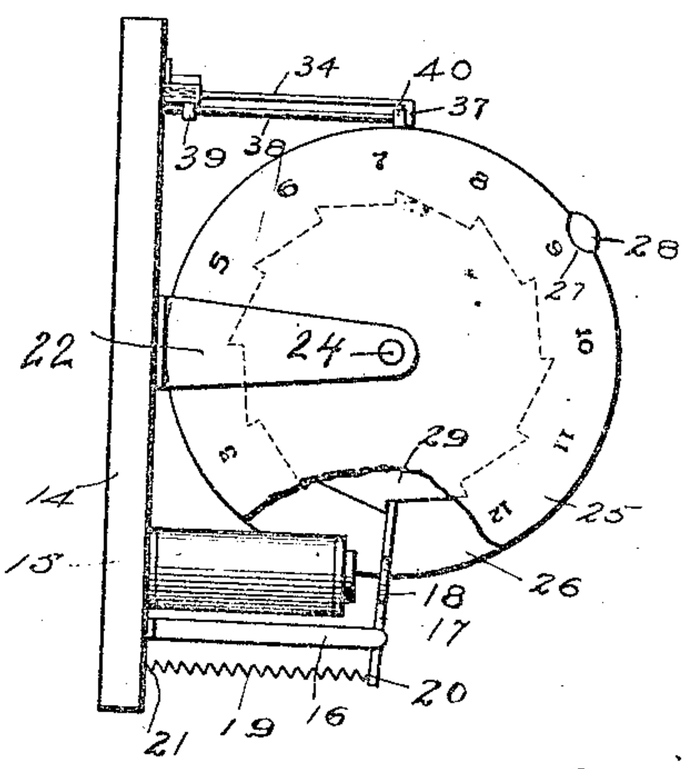

Fig. 2.

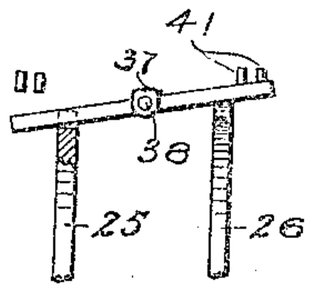

Fig. 3.

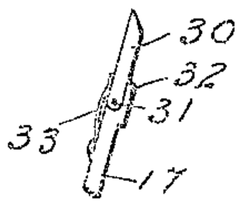

Fig. 4.

Witnesses

L. L. Freeman.

F. P. Fishburn.

Inventor

R. D. Moyer,

By C. L. Parker, Attorney

UNITED STATES PATENT OFFICE.

ROBLEY D. MOYER, OF TAMPA, FLORIDA, ASSIGNOR OF ONE-HALF TO HENRY B. RIDEN, OF TAMPA, FLORIDA.

ELECTRIC SWITCH DEVICE.

990,285. Specification of Letters Patent. Patented Apr. 25, 1911.

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To all whom it may concern:

Be it known that I, ROBLEY D. MOYER, citizen of the United States, residing at Tampa, in the county of Hillsboro and State of Florida, have invented certain new and useful Improvements in Electric Switch Devices, of which the following is a specification.

My invention relates to a device which will enable an operator at a central office to close a selected one of a plurality of outlying circuits.

An important object of my invention is to provide a device of the above character, which is adapted to close a selected one of a plurality of circuits, and at the same time open the remaining circuits.

A further object of my invention is to provide a device of the above character, which is actuated by a single rotary disk.

The final object of my invention is to provide a device of the above character, which is simple in construction, easy to operate and will not be liable to get out of order.

In the accompanying drawing, forming a part of this specification, and in which like numerals are employed to designate like parts throughout the same, Figure 1 is a detailed elevation of the device installed in one of the outlying stations, the circuits associated therewith being shown diagrammatically. Fig. 2 is a side view of the device illustrated in Fig. 1, a portion thereof being broken away. Fig. 3 is a fragmentary detail view of a portion of the device, shown in Fig. 2. Fig. 4 is a detail view of one end of the lever 17.

In the drawings wherein the preferred embodiment of my invention is illustrated, 1 designates a rotary disk mounted upon a fixed pin 2. The disk 1 is located at the central office and is provided with a handle 3 by which the same may be rotated. The disk 1 is provided upon its periphery with a plurality of spaced notches 4 which correspond in number to a plurality of outlying circuits. Each of the notches 4 corresponds to a selected one of the plurality of outlying circuits above referred to. Arranged to coöperate with the disk 1 is a lever 5, which is pivotally mounted at its center upon a fixed pin 6. The lever 5 is provided with an angular end 7 adapted to fit within the notches 4. The opposite end of the lever 5 is provided with a contact plate 8. The contact plate 8 is adapted to engage contacts 9 which are connected to the ends of wires 10 which constitute the lead wire from the source of current 11. The lead wire 10 has connected in series therewith a plurality of outlying stations 12. A return wire 13 is connected to one of the outlying stations 12 and to the source of current 11.

At each of the outlying stations 12, is arranged a circuit closing mechanism, comprising a supporting plate 14 upon which is rigidly mounted an electro-magnet 15, which has electrical connections with the wires 10 and 13. Below the electro-magnet 15 and connected with plate 14 is a supporting arm 16, upon the free end of which is pivotally mounted an actuating lever 17, formed of soft iron and provided centrally thereof with an enlarged circular portion 18, serving as an armature in connection with the electro-magnet 15.

By the construction so far described it is obvious, that when the angular end 7 of the lever 5 is arranged within one of the notches 4, the contact plate 8 will engage the contacts 9 whereby the electro-magnet 15 will be accordingly energized. The lever 17 with its armature 18 is then drawn into engagement with the electromagnet. When the contact plate 8 is disconnected from the contacts 9, by the rotation of the disk 1, the circuit is broken and the electro-magnet is accordingly deënergized. The lever 17 is then returned to its normal position by means of a retractile coil spring 19 which is connected to said lever at 20 and to the plate 14 at 21. Centrally of the plate 14 and above the electro-magnet 15, are arranged alined spaced brackets 22 which are rigidly connected to the plate 14 as at 23. The outer ends of the brackets 22 are apertured for the reception of a rotary shaft 24. Upon the rotary shaft 24 and near its ends are rigidly mounted like circular disks 25 and 26. The disk 25 is provided upon its periphery with a cut out portion or notch 27 and the disk 26 is provided upon its periphery with an upstanding ear 28, said ear 28 being in transverse alinement with the cut out portion 27. Between the disks 25 and 26 is disposed a ratchet wheel 29 which is centrally and rigidly mounted upon the rotary shaft 24. The ratchet wheel 29 is arranged

so that its teeth may be engaged by the lever 17 when said lever 17 is drawn inwardly for engagement with the electro-magnet 15. The lever 17 is provided upon its free end with a finger 30 which is pivotally connected to said lever as at 31. The lever 17 is further provided upon one side thereof with a fixed strip 32 which extends beyond the end of the lever 17 and engages the pivotally mounted finger 30 for preventing the oscillation of the same in one direction. The finger 30 will thus engage the teeth of the ratchet wheel 29 and rotate said ratchet wheel. When the lever 17 is returned to its normal position, the finger 30 may be oscillated to clear the ratchet teeth. The finger 30 is normally held in engagement with the strip 32 by means of a bow-spring 33 which is rigidly mounted upon the lever 17. Above the disks 25 and 26 is arranged a supporting bracket 34 having a base 35 which is rigidly connected to the plate 14 as at 36. The outer end of the supporting bracket 34 is bent downwardly as at 37, and is apertured for the reception of a rock shaft 38, the inner end of which is journaled within the plate 14. The rock-shaft 38 is provided near its inner end with a fixed metal bar 39. The rock-shaft 38 has rigidly connected thereto near its outer end a second bar 40 which lies in the same plane with the bar 39. The bar 40 is disposed to rest upon the disks 25 and 26 and said bar 40 is normally in a horizontal position. When the disks 25 and 26 are rotated so that one end of the bar 40 is raised by the ear 28 and the other end of said bar 40 accordingly forced within the opening 27, the raised end of the metal-bar 39 will then engage contacts 41 for closing a circuit comprising wires 42 and 43 and a source of current 44.

In the operation of my device, if it is desired to close a circuit at one of the outlying stations corresponding to the notch upon the disk 1 designated by the numeral 9 near said notch, the disk 1 is rotated in the direction of the arrow until the angular end 7 fits within the notch 9. When the angular end 7 engages the notch 8 during the revolution of the disk 1, the electro-magnet 15 is energized and the disks 25 and 26 accordingly rotated a step. Upon further rotation of the disk 1 and when the angular end 7 fits within the notch 9, the coil 15 is again energized, whereby the disks 25 and 26 are moved so that the ear 28 engages the bar 40 as above described and closes the last named circuit. It is to be understood that there are a plurality of the similar circuit closing devices comprising the disks 25 and 26, there being one of these devices at each of the outlying stations 12 and all of which are in series and simultaneously moved by the closing of the circuit when the end 7 fits within the notches 4. The disks 25 and 26 forming a part of each of the circuit closing devices above referred to are provided with a corresponding ear 28 and opening 27, which are to be located upon the disks 25 and 26 at points indicated by the numerals other than the numeral 9, for the location designated by the numeral 9 has already been used. By this construction a selected one of a plurality of outlying circuits may be readily closed by rotating the disk 1 so that the end 7 is arranged within one of the notches 4 which correspond to said selected circuit.

It is to be understood that I have shown the disk 1 provided with notches numbered from 1 to 12 inclusive, showing that there are 12 outlying circuits. However, it is to be understood that the number of notches and corresponding number of outlying circuits may be increased or diminished as desired.

Having fully described my invention, I claim:—

1. In a device of the character described, a support, a rotatable disk connected therewith and provided upon its periphery with a projection, an oscillatory circuit closing device disposed near said disk to be engaged by said projection, means to return said oscillatory circuit closing device to its normal position when out of engagement with said projection, and means to rotate said disk.

2. In a device of the character described, a support, a plurality of rotatable disks connected therewith, an oscillatory circuit closing device to be actuated by said disks, an electrical device for rotating said disks, a circuit including said electrical device, and means to close said circuit.

3. In a device of the character described, a support, a plurality of rotatable disks connected therewith, an oscillatory circuit closing device disposed in coöperative relation to said disks, said disks being provided with means to oscillate said circuit closing device, and electrical means to rotate said disks.

4. In a device of the character described, a support, a plurality of rotatable disks connected therewith, an oscillatory circuit closing device disposed to coöperate with said disks, one of said disks being provided upon its periphery with an ear and the other of said disks being provided with a cut-out portion, a ratchet wheel to rotate said disks, an electrical device for intermittently moving said ratchet wheel, an electrical circuit including said electrical device, a third rotatable disk provided with a plurality of notches, and means actuated by the third disk for closing the last named circuit.

5. In a device of the character described, a support, a plurality of rotatable disks connected therewith, a swinging circuit closing device disposed to engage said disks,

said disks being provided with means to effect the oscillation of the circuit closing device, a ratchet wheel rigidly connected with said disks, an electro-magnet disposed near said ratchet wheel, a swinging lever serving as an armature for the electro-magnet and adapted to engage the ratchet wheel for rotating the same, a circuit including said electro-magnet, and means for closing said circuit.

6. In a device of the character described, a support, a rotatable disk connected therewith and provided upon its periphery with engaging means, an oscillatory circuit closing device, including a rock-shaft and bar connected therewith, said bar being actuated by said engaging means, means to return said circuit closing device to its normal position when said bar is out of engagement with said engaging means, and an electrical device to rotate said disk.

In testimony whereof I affix my signature in presence of two witnesses.

ROBLEY D. MOYER.

Witnesses:
H. C. UTLEY,
W. S. CATHCART.