W. H. HILL.

AUTOMATIC ELECTRICAL SWITCH.

APPLICATION FILED FEB. 8, 1915.

1,134,534. Patented Apr. 6, 1915.

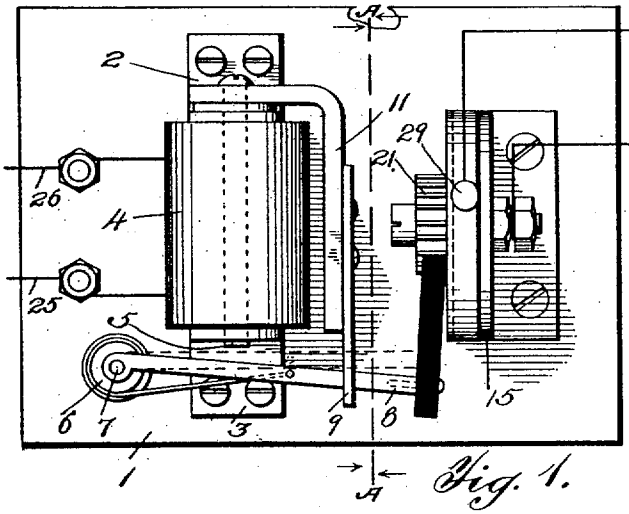


Fig. 1.

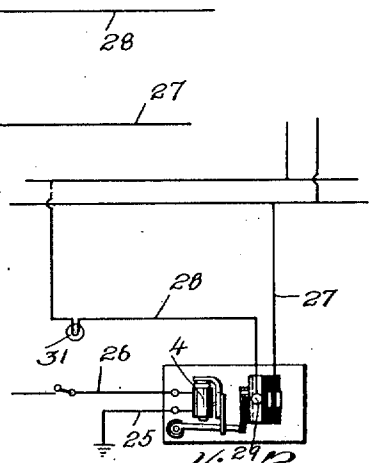


Fig. 2.

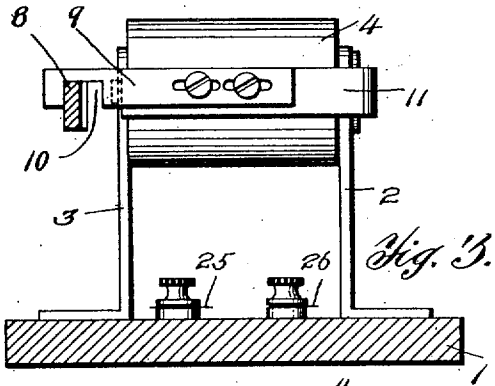


Fig. 3.

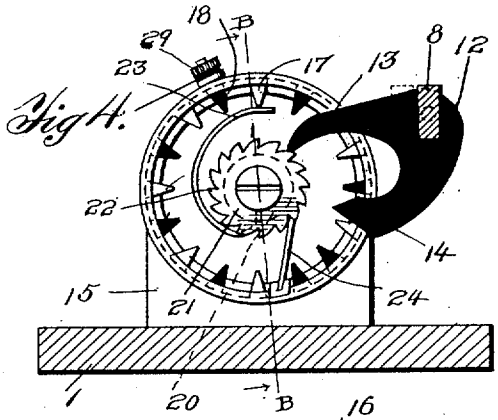


Fig. 4.

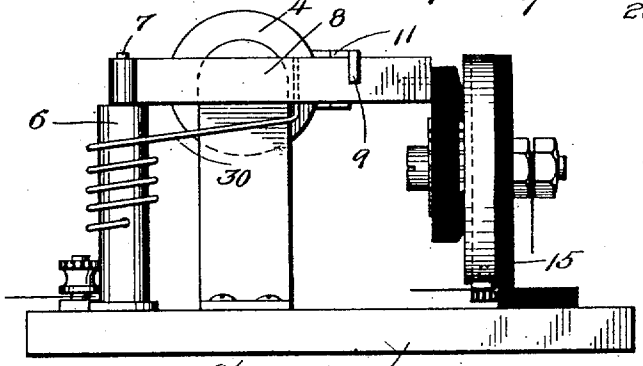


Fig. 5.

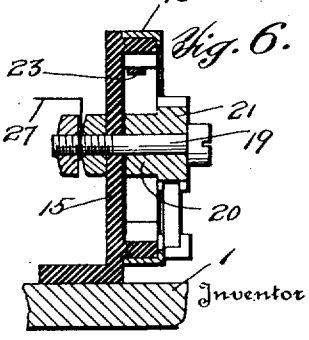


Fig. 6.

Witnesses

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AUTOMATIC ELECTRICAL SWITCH.

1,134,534. Specification of Letters Patent. Patented Apr. 6, 1915.

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To all whom it may concern:

Be it known that I, WILLIAM H. HILL, a citizen of the United States, residing at Oakwood, in the county of Paulding and State of Ohio, have invented certain new and useful Improvements in Automatic Electrical Switches, of which the following is a specification.

This invention relates to improvements in automatic electrical switches and has for its object to provide automatic means for opening and closing an electrical circuit.

Another object of the invention is to provide a rotatable circuit making and circuit breaking device.

Another object of the invention is to provide means for controlling the movement of an electrical switch.

Still another object of the invention is to provide means whereby an instantaneous movement of the switch arm is provided.

With the above and other objects in view which will be more fully set forth in the following specification, I have invented the device shown in the several views in the drawings in which:—

Figure 1 is a top plan view of my improved switch, Fig. 2 is a diagrammatical plan view of an electrical circuit shown in connection with my invention, Fig. 3 is a sectional view taken on line A—A Fig. 1, looking in one direction, Fig. 4 is a similar sectional view looking in the opposite direction, Fig. 5 is an elevational view of the device, and, Fig. 6 is a section taken on line B—B Fig. 4.

Like reference characters indicate like parts throughout the specification and in the several views in the drawings in which—

1 indicates a base of insulated material upon which is mounted a pair of brackets 2 and 3 which carry at their upper ends an electrical magnet 4 having a core 5. Also mounted upon the base is a post 6 having a reduced end 7 upon which is rotatably mounted an armature 8 the movement of which is controlled by an adjustable arm 9 having a cut-away portion 10 within which the armature 8 is movable. The arm 9 is adjustably mounted upon the extension bracket 11 supported upon the bracket 2.

Pivotally mounted upon the extreme free end of the armature 8 is a dog 12 having an intricate long pawl 13 and a short pawl 14. Also mounted upon the base 1 is an insulated bracket 15 to which is fixed a brass ring 16 from the inner annular surface of which depends a series of brass teeth 17. Combined with the brass teeth 17 are teeth 18 of the same size and shape formed of insulated material. Rotatably mounted upon the bolt 19 carried by the bracket 15 is a collar 20 having a ratchet wheel 21 formed thereon which is provided with a series of teeth 22. Fixed on the collar 20 is a resilient switch member 23 the upper end of which is adapted to alternately contact the teeth 17 and 18 as said collar is rotated upon the bolt 19 by means of the pawl 13, the pawl 14 being of such a length as to engage the teeth 22 after the pawl 13 has rotated the wheel 21 a pre-determined distance where it contacts a tooth 17 or a tooth 18 thereby checking the movement of said wheel to prevent the possibility of the switch from being thrown to great distance or with sufficient force to pass one of the teeth 17 or 18 thereby engaging the tooth 17 or 18 as the case may be. A spring arm 24 is fixedly mounted upon the inner surface of the ring 16 the free end of which engages said teeth 22 whereby upon the movement of the ratchet wheel 21 said arm engages one of the teeth 22, a backward movement of the ratchet wheel which would otherwise break the circuit because of the resilient switch 23 against the inclined walls of one of the teeth 17 or 18 thus shortening the standing contact between the member 23 and one of the teeth 17 or 18.

The magnet 4 is provided with a ground wire 25 and a supply source wire 26 whereby the magnet 4 may be energized from a central station. Upon the energizing of said magnet it attracts the armature 8 causing said armature to operate the dog 12 which in turn operates the ratchet wheel 21 and either makes or breaks the circuit between the lines 27 and 28, by means of the resilient switch 23, the line 27 being contacted by the bolt 19 which together with the collar 20 and switch 23 are electrical conductors. The line 28 is contacted at 29 with a ring 16 and teeth thereto which are

conductors. When the switch 23 is not engaged with one of the teeth 17 said circuit is closed and when not engaged with one of the teeth 18 circuit is broken. The armature 8 is normally thrown out of contact with the magnet by means of the spring 30.

From the above description it may be seen that from a central station the magnet 4 may be energized to either make or break the circuit which supplies the lamps 31 with current whereby said lamps may be lighted and turned off at will.

Having now described my invention that which I claim to be new and desire to procure by Letters Patent is:—

1. The described device consisting of an electromagnet and a pivoted armature adapted to be controlled thereby, means operable by said armature whereby the circuit may be alternately made and broken, said means consisting of a pivotally mounted dog on said armature in conjunction with a switch adapted to be operated by said dog, said switch comprising a rotatable and a fixed member, a resilient arm carried by said rotatable member, a series of teeth on said fixed member adapted to be engaged alternately by said arm, certain of said teeth being of conducting material, and connected with an electrical source, certain other of said teeth being of insulating material and adapted to break the circuit, a collar upon which said arm is fixedly mounted, a ratchet wheel integral with said collar adapted to be engaged by said dog, and means for preventing a reverse movement of said collar.

2. The described device consisting of an electromagnet and a pivoted armature adapted to be controlled thereby, means operable by said armature whereby the circuit may be alternately made and broken, said means consisting of a pivotally mounted dog on said armature in conjunction with a switch adapted to be operated by said dog, said switch comprising a rotatable and a fixed member, a resilient arm carried by said rotatable member, a series of teeth on said fixed member adapted to be engaged alternately by said arm, certain of said teeth being of conducting material, and connected with an electrical source, certain other of said teeth being of insulating material and adapted to break the circuit, a collar upon which said arm is fixedly mounted, a ratchet wheel integral with said collar adapted to be engaged by said dog, means for preventing a reverse movement of said collar, a ring upon which said teeth are mounted.

3. The described device consisting of an electromagnet and a pivoted armature adapted to be controlled thereby, means operable by said armature whereby the circuit may be alternately made and broken, said means consisting of a pivotally mounted dog on said armature in conjunction with a switch adapted to be operated by said dog, said switch comprising a rotatable and a fixed member, a resilient arm carried by said member, a series of teeth on said fixed member adapted to be engaged alternately by said arm, certain of said teeth being of conducting material, and connected with an electrical source, certain other of said teeth being of insulating material and adapted to break the circuit, a collar upon which said arm is fixedly mounted, a ratchet wheel integral with said collar adapted to be engaged by said dog, and means for preventing a reverse movement of said collar, a ring upon which said teeth are mounted, said teeth projecting inwardly from the inner surface of said ring.

4. The described device consisting of an electromagnet and a pivoted armature adapted to be controlled thereby, means operable by said armature whereby said circuit may be alternately made and broken, said means consisting of a pivotally mounted dog on said armature in conjunction with a switch adapted to be operated by said dog, said switch comprising a rotatable and a fixed member, a resilient arm carried by said member, a series of teeth on said fixed member adapted to be engaged alternately by said arm, certain of said teeth being of conducting material, and connected with an electrical source, certain other of said teeth being of insulating material and adapted to break the circuit, a collar upon which said arm is fixedly mounted, a ratchet wheel integral with said collar adapted to be engaged by said dog, and means for preventing a reverse movement of said collar, a ring upon which said teeth are mounted, said teeth projecting inwardly from the inner surface of said ring, said teeth being spaced apart.

5. The described device consisting of an electromagnet and a pivoted armature adapted to be controlled thereby, means operable by said armature whereby said circuit may be alternately made and broken, said means consisting of a pivotally mounted dog on said armature in conjunction with a switch adapted to be operated by said dog, said switch comprising a rotatable and a fixed member, a resilient arm carried by said member, a series of teeth on said fixed member adapted to be engaged alternately by said arm, certain of said teeth being of conducting material, and connected with an electrical source, certain other of said teeth being of insulating material and adapted to break the circuit, a collar upon which said arm is fixedly mounted, a ratchet wheel integral with said collar adapted to be engaged by said dog, means for preventing a

reverse movement of said collar, a ring upon which said teeth are mounted, said teeth projecting inwardly from the inner surface of said ring, said teeth being spaced apart, said conducting and insulating teeth being mounted upon said ring.

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

WILLIAM H. HILL.

Witnesses:

GEO. WEDDERBURN,

JOSEPH J. O'BRIEN.