N. O. ANDERSON.

ELECTRIC SWITCH.

APPLICATION FILED JUNE 23, 1913.

1,102,562. **Patented July 7, 1914.**

Fig. 1.

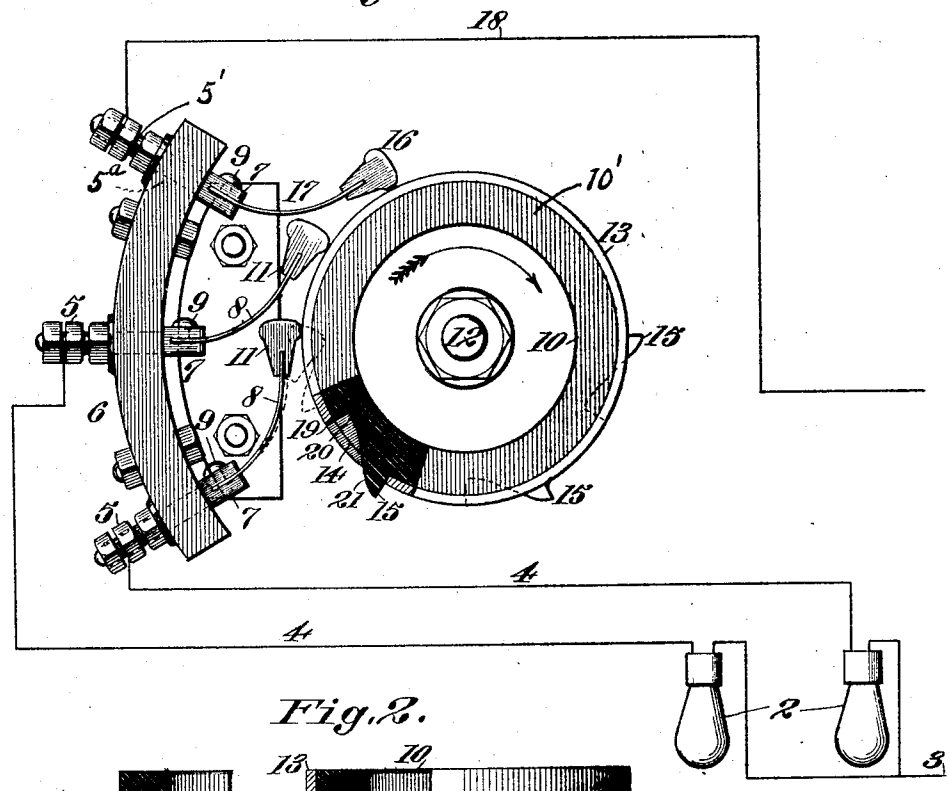
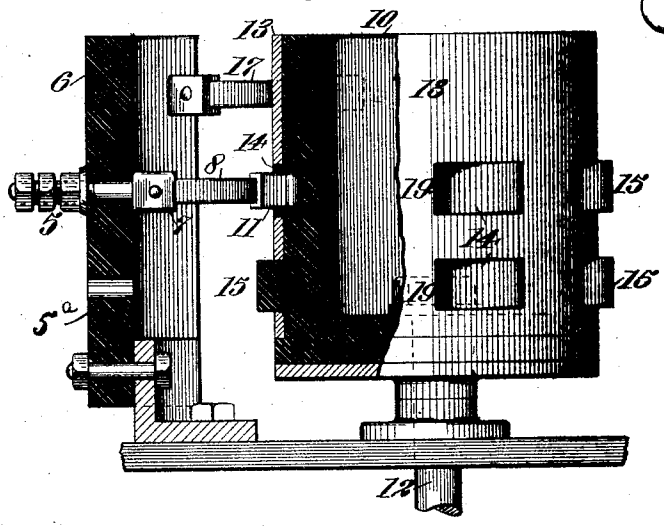


Fig. 2.



WITNESSES:

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ELECTRIC SWITCH.

1,102,562. Specification of Letters Patent. Patented July 7, 1914.

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To all whom it may concern:

Be it known that I, NILS O. ANDERSON, a subject of the King of Sweden, residing in the city and county of San Francisco and State of California, have invented new and useful Improvements in Electric Switches, of which the following is a specification.

This invention relates to illuminating apparatus, and particularly to a switch for controlling multi-colored electric lights.

It is one of the objects of the present invention to provide in combination with multi-colored electric lights, and their respective circuits, a novel and simple controller or switch for intermittently and simultaneously closing the respective light circuits, and which switch is so designed as to meet and comply with the various building and electrical regulations and which is operated constantly with a minimum consumption of power.

The invention consists of the parts and the construction and combination of parts as hereinafter more fully described and claimed, having reference to the accompanying drawings, in which—

Figure 1 is an end elevation, partly broken away and in section of the improved switch and lighting circuits. Fig. 2 is a side elevation and partial section of the same.

The present switch is designed particularly for controlling the energization of electrical circuits which are used in connection with illuminating apparatus, or with advertising novelties. In the present case the illumination is produced by differently colored electric lamps 2, which are shown as connected to a lead wire 3 on one side and having separate respective conductors 4 extended to, and electrically connected with, respective binding posts 5 which are removably inserted through slots 5ª provided therefor in a non-conducting support 6. The binding posts 5 are shown as provided at the inner surface of the support 6, which is here shown as arcuate in end elevation with slotted heads 7 for receiving the ends of circuit brushes 8, which are clamped in the sockets 7 by screws 9. The circuit brushes 8 are preferably of flexible material and are disposed tangential to a cylindrical barrel or drum 10, and each of the brushes is provided with a suitably shaped bearing piece or shoe 11, which shoes are successively spaced about the circumference of the barrel 10 in a common plane and are held yieldable thereagainst by the flexible brushes 8.

It is one of the important objects of the present switch to evolve a structure which will occupy a minimum amount of space and yet provide for the energization of a large number of lights, when desired. To that end the arcuate support 6 is preferably formed and arranged concentrically with the barrel or drum 10, which latter is shown as secured upon a driving shaft 12 to which power may be transmitted from any suitable source. By arranging the wipers or brushes 8 in a common plane it will be seen that a large number of them may be arranged in the support 6 to bear circumferentially upon the drum 10, and as many parallel series of circumferentially arranged brushes may be utilized as will be necessary to energize a given number of lights. The barrel or drum 10 has a surface or shell portion, as 13, preferably of conducting material, and the body of the drum or barrel may be formed of a non-conducting material 10′ upon which the shell 13 is mounted, and thereby insulated from the shaft 12 and its bearing.

In order to produce intermittent or successive or simultaneous energization of any of the lights 2, the shell 13 is shown as provided with a series of circumferentially spaced apertures 14 of sufficient width to prevent the shoes 11 from engaging the sides of the apertures, and of such length as may be desired, and which will determine the period during which the lamp or lamps will remain deënergized so long as the brush shoes are traversing the apertures 14, during which time the circuit from the brushes 8 to the cylinder or shell 13 will be interrupted.

In operation, the drum 10, which is of insulating material, will be revolved by the shaft 12, and thus the apertures 14 will pass successively below the shoes 11, which are yieldably held against the surface of the shell 13 by their resilient arms or brushes 8. As an aperture approaches and passes beneath the shoes 11, the latter will snap quickly over upraised shoulders 15 of the drum 10; these shoulders projecting slightly above the surface of the shell 13 and insuring the quick completion of a circuit as a shoe rides off of the insulating shoulders 15 and drops onto the conductor or shell 13 which is in constant electrical contact with a shoe 16 on an arm 17 mounted in its re-

spective socket 7. To the socket 7 of the uppermost binding post designated 5′ is connected the terminal or other main 18, which, in conjunction with the lead 3, forms a complete circuit through the brushes 8, the shell 13, and the respective lights whenever any of the brushes are bearing upon the conducting surface 13 of the drum; the shoe 16 of the main lead running upon a portion of the conductor or shell 13, which is circumferentially continuous and uninterrupted, with circuit breaking apertures 14.

As clearly shown in Fig. 1, one edge of the circuit breaking pockets or apertures 14, in the shell or cylinder 13, is cut sharply, as at 19, and the immediate under portion of the drum 10 is relieved, as at 20, so that as the drum revolves the shoes 11 will successively snap over the shoulder 19 and into the recess or relief 20 which is formed in the non-conducting drum 10. The surface of the latter is formed with a gradual upward rise, as at 21, terminating in the outwardly projecting shoulder 15, off of which the shoe will snap onto the immediately following area of the conducting shell 13 while the drum is revolving.

From the foregoing it will be seen that a large number of lamps can be reliably and safely controlled by arranging as many brushes 8 in a common plane circumferentially about the drum 10 with their shoes bearing tangentially upon the conducting shell 13, and as the pockets of the shell 13 pass successively beneath the shoes 11 of the brushes 8, the circuits to the respective lamps to which the brush conductors 4 are connected will be interrupted. If it is desired to simultaneously illuminate a number of the lights at one time, this may be accomplished by leaving a relatively large arc or area of the conductor 13 imperforated, whereupon the several shoes 11 would be in simultaneous bearing and electrical contact with the surface 13 and consequently complete the circuits of these respective lights.

By increasing the length of the drum with its shell 13 any desired number of parallel series of apertures 14 may be provided and the apertures may be electrically staggered with relation to each other in the several series as shown in Fig. 2 in which the shoulder 15 shown in section is out of longitudinal alinement with the pocket 14 shown in section, so that a great variety of effects can be produced by the proper timing of the energization of the lamp circuits.

It is understood that a complete circuit through any one of the lamps would be as follows: Current would come in on the main lead 18, traverse its binding post 5, thence along its brush 17, shoe 16 onto the shell 13 which at that portion traversing the shoe 16 would be imperforate, and thence through the shell 13 to any of the brushes 11 bearing thereon, thence through the respective binding post 5 and light wires 4 to the lamps 2, and from these to the return lead 3.

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

1. An electric switch for intermittently opening and closing electric circuits, comprising a rotary cylindrical conductor with a series of circumferentially alined apertures, a driving device and support for the conductor, an arcuate bearing concentrically arranged about the cylinder, a series of radial binding posts inserted in said bearing, with clamps at their inner ends, and curved flexible switch blades mounted in the clamps and bearing tangentially on the cylinder in the plane of said apertures, and a switch blade and its clamp mounted on the bearing and engaging an imperforate part of the cylinder for constantly electrifying the same.

2. An electric switch for intermittently opening and closing electric circuits, comprising a rotary cylindrical conductor with a series of circumferentially alined apertures, a driving device and support for the conductor, an arcuate bearing concentrically arranged about the cylinder, a series of radial binding posts inserted in said bearing, with clamps at their inner ends, and curved flexible switch blades mounted in the clamps and bearing tangentially on the cylinder in the plane of said apertures, and a switch blade and its clamp mounted on the bearing and engaging an imperforate part of the cylinder for constantly electrifying the same, said support being a non-conductor and having depressions into which the ends of the flexible blades snap through the apertures.

3. An electric switch for intermittently opening and closing electric circuits, comprising a rotary cylindrical conductor with a series of circumferentially alined apertures, a driving device and support for the conductor, an arcuate bearing concentrically arranged about the cylinder, a series of radial binding posts inserted in said bearing, with clamps at their inner ends, and curved flexible switch blades mounted in the clamps and bearing tangentially on the cylinder in the plane of said apertures, and a switch blade and its clamp mounted on the bearing and engaging an imperforate part of the cylinder for constantly electrifying the same, said support being a non-conductor and having depressions into which the ends of the flexible blades snap through the apertures, the bottoms of said depressions being curved upwardly and outwardly above the apertures.

4. An electric switch for intermittently opening and closing electric circuits, consisting of a body formed of insulating material and a shell formed of conducting ma-

terial and placed over said body, said body and shell having registering apertures, said body also having shoulders which lead from the apertures of the body and project through the shell and extend beyond the periphery of the shell, and a bearing having spring arms thereon the free ends of which arms are for engagement in said apertures and with the shoulders.

5. An electric switch for intermittently opening and closing electric circuits, consisting of a body formed of insulating material and a shell formed of conducting material and placed over said body, said body and shell having registering apertures, and a bearing having spring arms thereon the free ends of which arms are for engagement in said apertures, said arms and apertures being so proportioned that the sides of the free ends of the arms when in said apertures will be in spaced relation to the side walls which the apertures in the shell define.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

NILS O. ANDERSON.

Witnesses:
IRVINE SINNETT,
W. W. HEALEY.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."