

R. W. ARMSTRONG.
ELECTRIC SWITCH MECHANISM.
APPLICATION FILED OCT. 26, 1907.

1,008,514.

Patented Nov. 14, 1911.

Fig. 2.

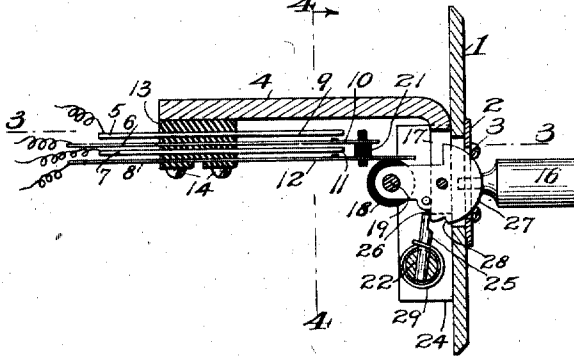


Fig. 1.

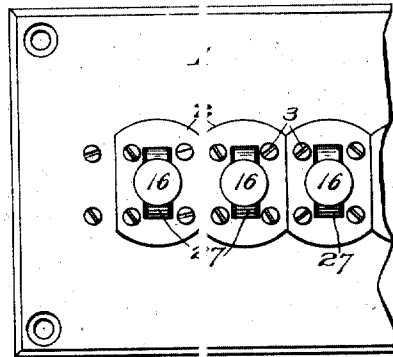


Fig. 3.

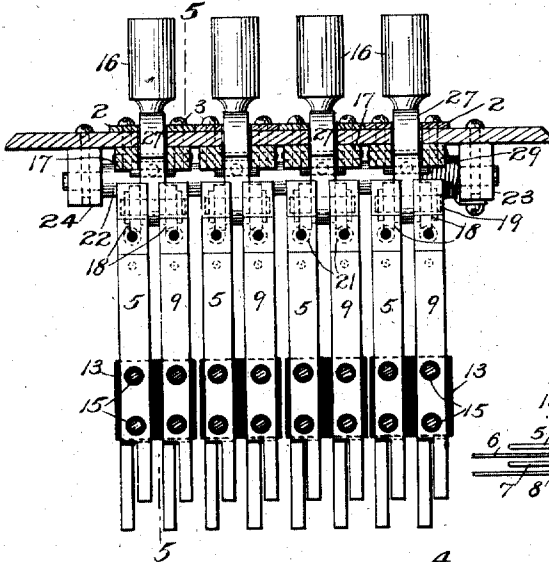


Fig. 4.

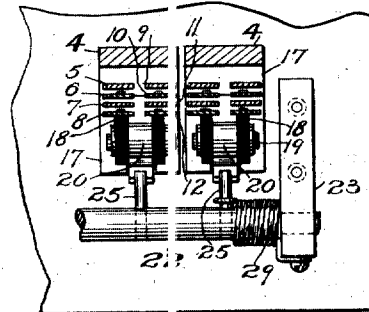


Fig. 5.

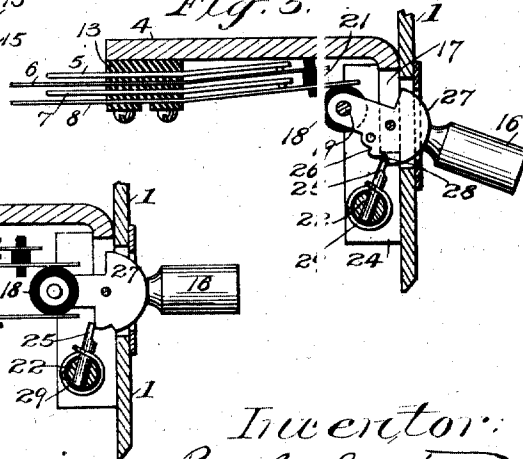
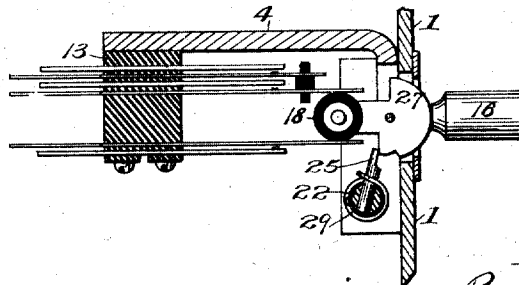


Fig. 6.



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UNITED STATES PATENT OFFICE.

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ELECTRIC SWITCH MECHANISM.

1,008,514.

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To all whom it may concern:

Be it known that I, RALPH W. ARMSTRONG, a citizen of the United States, residing at New York city, county of New York, and State of New York, have invented certain new and useful Improvements in Electric Switch Mechanism, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention relates to improvements in switch mechanisms for electric circuits, and particularly to mechanisms designed for controlling, through a plurality of keys, a number of electrical circuits.

As a full understanding of the improvements of the present invention can best be had from a detailed description of an organization embodying the same, such description will now be given in connection with the accompanying drawings, in which—

Figure 1 is a front view of a switch-board provided with switch mechanism embodying the present invention. Fig. 2 is a vertical section of the same. Fig. 3 is a plan view of the switch mechanism partly in section. Fig. 4 is a section on the line 4 of Fig. 2. Fig. 5 is a section on the line 5 of Fig. 3. Fig. 6 is a similar view with some of the parts in a different position so as to illustrate the operation of the switch mechanism inclosing circuits.

Referring to said drawings, 1 represents the switch-board or face plate of a switch-board, in which, as shown in the other figures of the drawing, are mounted the several parts of the switch mechanism embodying the present invention. Secured to this plate 1, by means of plates 2 and screws 3 passing therethrough, is a series of inwardly projecting arms or brackets 4, each carrying at its inner end two sets of superposed spring contact plates, one set comprising four plates 5, 6, 7, 8, and the other four contact plates 9, 10, 11, 12. These plates are insulated from each other and from the arm or bracket 4 by strips 13 of insulating material alternating with said plates and interposed between them and the arm or bracket 4 and the heads of the screws 14 by which they are secured to said arm or bracket 4, and are also insulated from said screws 14 by tubes 15 of insulating material through which the screws pass. Each set of

contact plates 5, 6, 7, 8 and 9, 10, 11, 12 controls two circuits; for example, contact plates 5, 6 constitute the terminals of one circuit, contact plates 7, 8 those of a second circuit, contact plates 9, 10 the terminals of a third circuit, and contacts 11, 12 the terminals of a fourth circuit, and these several spring plates normally occupy the position in which they are illustrated in Fig. 2, that is to say, with their free ends out of contact with each other and their circuits therefore open. The closing of these circuits is controlled by a series of keys 16 pivotally mounted in the downward extensions 17 of the arms or brackets 4, through which the screws 3 pass, as best shown in Figs. 5 and 6; one such key being provided for each two sets of contact plates 5 etc. and 9 etc. At its inner end each of these keys is provided with a pair of rollers 18 of insulating material mounted on a pin 19 in the inner end of the key stem, these two rollers being separated from each other by a hub 20 on such inner end of the key. In the position in which the key is shown in Fig. 2, which is its normal position, the several contact plates of the two sets of contact plates controlled by it are out of engagement with each other and their circuits therefore open. When the outer end of the key is depressed, however, the inner end hereof will, through its rollers 18 engaging the ends of the plates 8, 12 raise the latter to the position shown in Fig. 5, and, in so raising them, will force them into contact with the contact plates 7, 11, respectively, thus closing the circuits of which these plates constitute the terminals. At the same time the plates 8, 12 will, by reason of the interposition between them and the plates 6, 10, respectively, of plugs 21 of insulating material, raise the plates 6, 10 into engagement with the contact plates 5, 9, respectively, thus closing the circuits of which the plates 5, 6 and 9, 10 constitute the terminals. Upon the depression of the inner end of the key 16, these several contact plates will resume the positions in which the plates are shown in Fig. 2.

For the purpose of retaining the several plates in their contacting position upon the depression of the outer end of the key 16 controlling them, there is provided a wing 22 pivotally mounted in brackets 23, 24 secured to the inner face of the plate 1 and comprising upwardly projecting pins 25

(one for each key) normally resting against a shoulder 26 in a cam shaped disk 27 formed upon the key, and when the handle of the key is depressed it engages a notch 28 in said disk 27 and thus locks the key in such depressed position. The shaft of said wing 22 has coiled about it at one end a spring 29, one end of which is secured to said shaft or to one of the pins 25 thereon, and the other end of which is secured to the bracket 23, this spring normally tending to rock the wing and the pins 25 thereof inwardly toward the face plate, or, in other words, the locking position in which one of the pins is shown in Fig. 5. As before stated, there is one such pin 25 for each key 16, and, as a result of this construction, upon the depression of the handle of any key 16, the disk 27 thereof, engaging the pin 25 for that key, will rock the wing and all the pins 25 thereof rearwardly, thus releasing all of the previously depressed keys 16, which are then restored to their normal position (shown in Fig. 2) by the resiliency of the spring contact plates 5 etc. and 9 etc. bearing against the inner or roller ends of said keys.

What I claim is:—

1. In a switch mechanism, the combination of a plurality of independent sets of contacts; a pivotally mounted circuit closing key for each set, and a spring pressed wing common to all the keys and adapted to engage and lock each key operated in the position to which it is moved and to be in turn engaged and moved from locking position by each key operated to release a previously operated key from the wing, substantially as described.
2. In a switch mechanism, the combination of a plurality of independent sets of contacts, a pivotally mounted circuit closing key for each set, a spring-pressed wing common to all the keys for locking each key operated in the position to which it is moved, means on the key for so locking it to the wing and means on the key for engaging and moving it from locking position, when the key is operated, to release a previously operated key from the wing, substantially as described.
3. In a switch mechanism, the combination of a plurality of independent sets of contacts, a pivotally mounted circuit closing

key for each set, a spring-pressed wing common to all the keys for locking each key operated in the position to which it is moved, a notch or the like on the key for so locking it to the wing and a cam on the key for engaging and moving it from locking position, when the key is operated, to release a previously operated key from the wing, substantially as described.

4. In a switch mechanism, the combination of a plurality of independent sets of superposed spring contact plates, a pivotally mounted circuit closing key for each set, and a spring-pressed wing common to all the keys and adapted to engage and lock each key operated in the position to which it is moved and to be in turn engaged and moved from locking position by each key operated to release a previously operated key from the wing, substantially as described.

5. In a switch mechanism, the combination of a plurality of independent sets of superposed spring contact plates, a pivotally mounted circuit closing key for each set, a spring-pressed wing common to all the keys for locking each key operated in the position to which it is moved, means on the key for so locking it to the wing and means on the key for engaging and moving it from locking position, when the key is operated, to release a previously operated key from the wing, substantially as described.

6. In a switch mechanism, the combination of a plurality of independent sets of superposed spring contact plates, a pivotally mounted circuit closing key for each set, a spring-pressed wing common to all the keys for locking each key operated in the position to which it is moved, a notch or the like on the key for so locking it to the wing and a cam on the key for engaging and moving it from locking position, when the key is operated, to release a previously operated key from the wing, substantially as described.

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

RALPH W. ARMSTRONG.

Witnesses:

J. A. GRAVES,
PHILIP N. TILDEN.