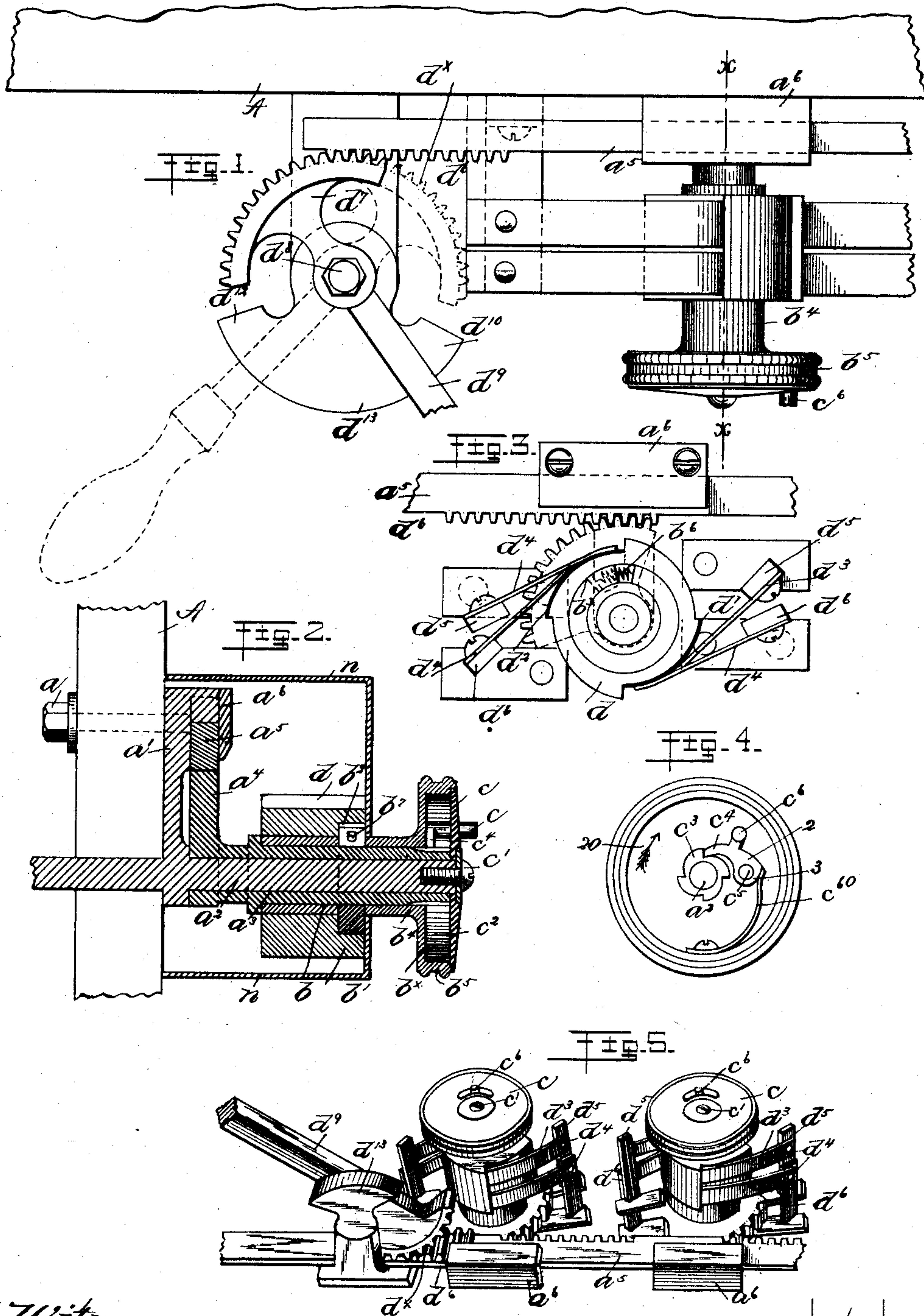


(No Model.)

J. M. ANDERSEN.
SWITCH BOARD.

No. 430,054.

Patented June 10, 1890.



Witnesses
Geo. B. Huntington
Frederick L. Emery

Inventor.
Johan M. Andersen,
by Leroy Gregory
Attys.

UNITED STATES PATENT OFFICE.

JOHAN M. ANDERSEN, OF BOSTON, MASSACHUSETTS, ASSIGNOR OF ONE-HALF
TO ALBERT ANDERSON, OF SAME PLACE.

SWITCH-BOARD.

SPECIFICATION forming part of Letters Patent No. 430,054, dated June 10, 1890.

Application filed March 20, 1890. Serial No. 344,649. (No model.)

To all whom it may concern:

Be it known that I, JOHAN M. ANDERSEN, a subject of the King of Norway and Sweden, but at present residing at Boston, county of Suffolk, State of Massachusetts, have invented an Improvement in Switch-Boards, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention relates to switch-boards for electric circuits of that class in which a number of switches may be operated simultaneously or individually, and has for its object to improve and simplify the construction of the same, whereby the said switches may be readily placed in position to be operated simultaneously or individually.

My invention in switch-board therefore consists in the combination, with a plurality of switches, each consisting of a movable hub provided with a conducting and insulated surface, contact-brushes co-operating therewith, and a handle to move said hub, of a gear for each switch provided with a sleeve, a locking device to secure said handle to the said sleeve, and a rack-bar to move said gears, whereby movement of the gear may impart movement to the hub, substantially as will be described.

Other features of my invention will be pointed out in the claim at the end of this specification.

Figure 1 is a top or plan view of a sufficient portion of a switch-board embodying my invention to enable it to be understood, only one switch being shown in said figure; Fig. 2, a section through the switch on line xx , Fig. 1, looking toward the right; Fig. 3, a front elevation of the switch shown in Fig. 2, the handle being removed; Fig. 4, a detail to be referred to; and Fig. 5, a view of the switch-board, showing the same as applied to a horizontal base.

Referring to Fig. 1, A represents a base, which may be of slate, wood, or other insulating material, to which the working parts of the switch-board are secured. The base A has secured to it, as by a bolt a , (see Fig. 2,) preferably, a number of metal plates or castings a' , each of which has secured to or

forming part of it a rod or shaft a^2 , preferably extended through the base A. The rod or shaft a^2 has mounted upon it a metallic sleeve a^3 , having secured to or forming part of it, preferably, a segmental gear a^4 , adapted to mesh with a rack-bar a^5 , movable in a guideway formed, as herein shown, by the casting a' and a plate a^6 , secured to said casting. The metal sleeve a^3 has mounted upon it, preferably, a metallic bushing b , having mounted upon it a hub b' , preferably of insulating material.

The bushing b at its front side is recessed or cut away, as at b^2 , to form a pocket, into which is extended a projection b^3 on a sleeve b^4 , secured to or forming part of a disk b^x , provided with an annular flange b^5 , and constituting the handle of the switch. The pocket b^2 has located within it a yielding buffer b^6 , preferably a spiral spring, one end of which bears against one side or wall of the pocket and the other end against the projection b^3 , the said spring being secured within the pocket in any suitable manner and, as herein shown, by means of a stud b^7 . The annular flange b^5 has co-operating with it a plate or disk c , herein shown as secured to the shaft a^2 by a screw c' , the said plate forming, with the disk b^x , a chamber c^2 .

The sleeve a^3 is extended within the chamber c^2 , and its periphery is notched, as herein shown, to form teeth c^3 , with which co-operates a locking device, herein shown as a pawl c^4 , pivoted, as at c^5 , to the disk b^x , the said pawl being herein shown as made flat or straight on two of its sides, as at 2 3, with which co-operates a spring c^6 , which is adapted to act upon the side 3 to keep the pawl in engagement with the teeth c^3 , and upon the side 2 to keep the pawl disengaged from the said teeth, when the said pawl is turned into position to engage the side 2 with the said spring. The pawl c^4 is provided with a stud or projection c^6 , extended through a slot in the plate or disk c , by which the said pawl may be turned on its pivot to disengage it from or engage it with the teeth c^3 . The hub b' , preferably of insulating material, is herein shown as provided on its periphery with eccentric portions d , to form teeth, there being preferably four such teeth, as shown in Fig.

3. Two of the said eccentric portions or teeth d , located diametrically opposite to each other, have secured to them two metal strips d' d'' , with which co-operate two sets of brushes d^3 d^4 , forming the terminals of an electric circuit, which may be an incandescent-lamp circuit or any other desired circuit, the remaining two portions or teeth d of the hub b' being of insulating material, so that when the said hub is turned, as will be described, to bring those portions under the brushes the circuits will be broken.

The brushes d^3 d^4 , forming the terminals to the electric circuit, are secured, as herein shown, to two independent castings or pieces d^5 d^6 , preferably extended through the base A and to which the circuit-wires are secured behind the said base.

The rack-bar a^5 is provided, preferably, near one end thereof with teeth d^6 on one side of the rack-bar, the said teeth having co-operating with them a segmental lever d^7 , pivoted, as at d^8 , and provided with gear-teeth d^8 , in mesh with the teeth d^6 , the said lever having a suitable handle d^9 , by turning which the said rack-bar may be moved to operate one or more of the said switches, as will be described.

The handle d^9 co-operates with two stops d^{10} d^{12} , herein shown as lugs on a plate or casting d^{13} , to which the segmental lever is pivoted.

Each individual switch is put in operative condition by turning the pawl c^4 so as to engage it with one of the teeth c^3 on the sleeve a^3 , the said pawl being held locked in the said position by the spring c^{60} , acting against its straight side 3. When the pawl c^4 is in engagement with a tooth of the sleeve a^3 , the hub b' may be rotated a quarter-turn by moving the lever d^9 from a position (indicated by full lines) in engagement with one stop, as d^{10} , into another position (indicated by dotted lines) in engagement with the stop d^{12} .

In order that the circuit may be broken substantially in an instant and thereby avoid sparking at the brushes or terminals d^3 d^4 , the sleeve a^3 is permitted to have a slight movement before the hub b' is moved, which is effected in the present instance by means of the pocket b^2 and yielding buffer b^6 therein, the projection b^3 on the sleeve b^4 being first moved to compress the yielding buffer, and when compressed the hub b' is then moved, together with the sleeve a^3 , until a tooth on the hub is passed from engagement with the brushes d^3 d^4 , and as soon as a tooth d has passed from under the brushes d^3 d^4

the spring or yielding buffer acts upon the loose hub b' and moves it independent of the sleeve a^3 , thereby making a quick and absolute break between the terminals or brushes d^3 d^4 .

The working parts of the switch in practice will be covered by a suitable shield or cover n , of insulating material, whereby all danger of shocks to the operator when working an individual switch and also short-circuiting through the shield or cover is obviated.

I claim—

1. In a switch-board, the combination, with a plurality of switches, each consisting of a movable hub provided with a conducting and insulated surface, contact-brushes co-operating therewith, and a handle to move said hub, of a gear for each switch provided with a sleeve, and a locking device to secure said handle to the said sleeve, and a rack-bar to move said gears, whereby movement of the gear may impart movement to the hub, substantially as described.

2. In a switch-board, the combination, with a plurality of switches, each consisting of a movable hub provided with a conducting and insulated surface, contact-brushes co-operating therewith, a handle loosely engaged with said hub, and a yielding buffer interposed between said handle and hub, of a gear provided with a sleeve upon which are mounted the said hub and handle and provided at its end with teeth, a pawl adapted to engage said teeth, and a rack-bar to move said hubs, substantially as described.

3. In a switch-board, the combination, with a plurality of switches, each consisting of a movable hub provided with a conducting and insulated surfaces and having a pocket, contact-brushes co-operating with said surfaces, a handle provided with a projection extended into the said pocket, and a yielding buffer interposed between said projection and hub, of a gear having a sleeve upon which are mounted the said hub and handle, teeth upon said sleeve, a pawl secured to said handle and adapted to engage said teeth, a spring to act on said pawl, and a rack-bar to engage said gears, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHAN M. ANDERSEN.

Witnesses:

JAS. H. CHURCHILL,
EMMA J. BENNETT.