

(No Model.)

A. WURTS.
NON-ARCING SWITCH.

No. 537,259.

Patented Apr. 9, 1895.

Fig. 1.

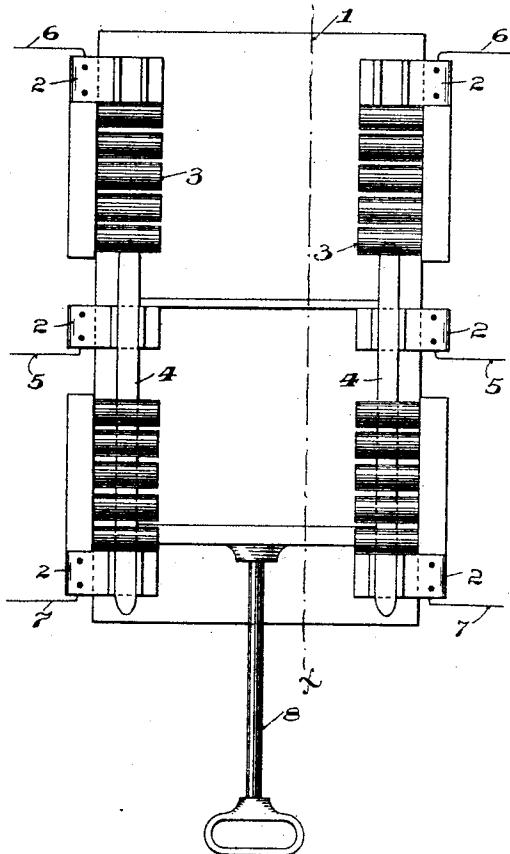


Fig. 2.

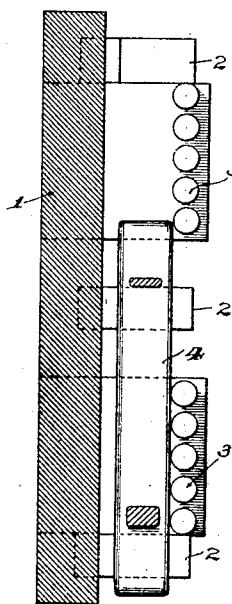
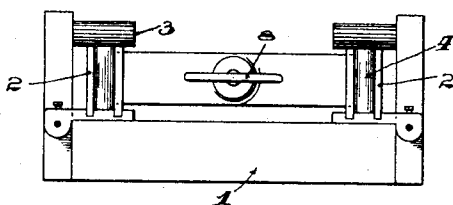


Fig. 3.



WITNESSES:

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ALEXANDER WURTS, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR TO THE
WESTINGHOUSE ELECTRIC AND MANUFACTURING COMPANY, OF SAME
PLACE.

NON-ARCING SWITCH.

SPECIFICATION forming part of Letters Patent No. 537,259, dated April 9, 1895.

Application filed April 14, 1893. Serial No. 470,313. (No model.)

To all whom it may concern:

Be it known that I, ALEXANDER WURTS, a citizen of the United States, residing in Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Non-Arcing Switches, (Case No. 549,) of which the following is a specification.

The object of my invention is the provision of a switch designed particularly for use in handling high potential currents of such a nature as to prevent the formation of injurious arcs on opening circuits.

Where switches are used in electrical systems of distribution for the transmission of large amounts of energy, great difficulty has been found in the occurrence of injurious and annoying arcs bridging between the movable and stationary contacts of switches as heretofore made, when such contacts are separated and the current broken. As the potentials handled become higher and the currents heavier these disadvantages increase in a rapid ratio, and it is therefore very desirable that some means be obtained for successfully avoiding these difficulties.

In the accompanying drawings, which illustrate my invention, Figure 1 is a plan view of a double-pole dynamo-changing switch built in accordance with my invention and showing circuits whereby a feeding line may be connected with one dynamo or set of dynamos or another at will. Fig. 2 is a longitudinal section of the same on the line *x x*. Fig. 3 is an end elevation of what is shown in Fig. 1.

I have shown the base of my switch at 1 in the figures, and mounted thereon are such stationary contacts, 2, as may be necessary for the purpose of accomplishing the desired changes in circuits whatever these changes may be. In the present case six of these are shown in the form of clips, three on each side of the base. In alignment with these stationary contacts on each side of the base and placed near the same, I have provided a series of arc extinguishers 3, preferably in the form of cylinders having their axes transverse to the base, as shown. These are supported in the required position in any desired manner.

At 4 are shown two movable contact bars

adapted to reciprocate over the base and in sliding contact with the extinguishers 3. These bars are adapted to be permanently embraced by the middle pair of terminal contacts 2, which in this case are connected to the feeders 5, which are to be put in communication with one or the other dynamo wires 6 and 7.

The movable contact bars 4 may be moved by means of the handle 8, or by any other desired instrumentality in such a manner as to have one end or the other of both bars embraced by the clips 2 attached to one or the other dynamo terminals. It is evident that by reciprocating this pair of bars from one extreme position to the other, the feeders may be supplied with current from either pair of dynamo terminals.

It is well known that where an arc is formed between two separating metallic parts under the circumstances named above, this arc is never horizontal, but is curved upward. By placing the extinguisher cylinders just above the movable bars 4, the arc which is started on the separation of the movable and stationary contacts is necessarily made to intersect these cylinders. These arc-extinguishing pieces I construct of non-arcing metal or an alloy of such a nature as will prevent the holding of an arc formed between two pieces made of the same. The properties of this metal and its nature are fully set forth in my Patent No. 470,773, dated March 15, 1892. These alloys are known as non-arcing metal. The arc, being thus obliged to traverse a path formed in part of non-arcing metal pieces separated by air spaces, will be extinguished by the action of the non-arcing metal and the disadvantages above pointed out will be avoided. It will, of course, be evident that these extinguishing bars or pieces are not necessarily cylindrical in form and that although it is desirable that the movable bars 4 slide in contact with these extinguishing pieces, it is not necessary to the operation of my invention.

I do not wish to be understood that the particular form of switch for the particular purpose shown in Fig. 1 is the only one to which my invention can be applied. Any one skilled in the art would be able to use my invention

for switches of various kinds having terminals of various natures placed in different relations to each other.

What I claim is—

- 5 1. In a switch, a stationary contact, a movable contact and a series of extinguisher bars in proximity to these contacts, composed of non-arcing metal, substantially as described.
- 10 2. In a reciprocating switch, a stationary contact, a sliding contact, and a series of extinguisher bars arranged substantially parallel to the path of the sliding contact and composed of non-arcing metal, substantially as described.
- 15 3. In a pole-changing switch, a reciprocating bar, two stationary pieces with which the respective ends of said reciprocating bar are adapted to be brought in contact a plurality of non-arcing metal pieces adjacent to said stationary pieces and a middle contact piece bearing permanently against said bar, substantially as described.
- 20 4. In a pole-changing switch, a reciprocating bar, two stationary pieces with which the ends of said bar are adapted to be brought in contact, a series of extinguisher bars of non-arcing metal supported above said reciprocating bar, substantially parallel thereto and near said stationary pieces, and a middle sta-

tionary contact piece bearing permanently upon said bar, substantially as described. 30

5. In a double-pole dynamo-changing switch, two substantially parallel reciprocating bars and means for moving them in unison in combination with stationary pieces adapted to make contact with each end of each bar upon its reciprocation, two middle contact pieces bearing permanently upon said bar and four sets of extinguisher pieces, one for each end of each bar composed of non-arcing metal and arranged near to and above said bar in rows, substantially parallel thereto, substantially as described. 35 40

6. In a switch, the combination with a stationary contact and a circuit making and breaking contact movable into and out of engagement therewith, of a plurality of non-arcing metal pieces located adjacent to said contacts and substantially bridging the space between them when separated, substantially as described. 45 50

In testimony whereof I have hereunto subscribed my name this 12th day of April, A. D. 1893.

ALEXANDER WURTS.

Witnesses:

JAMES WM. SMITH,
HAROLD S. MACKAYE.