

(No Model.)

C. E. KELLS, Jr.  
ELECTRIC POLE CHANGER.

No. 502,300.

Patented Aug. 1, 1893.

Fig. 1.

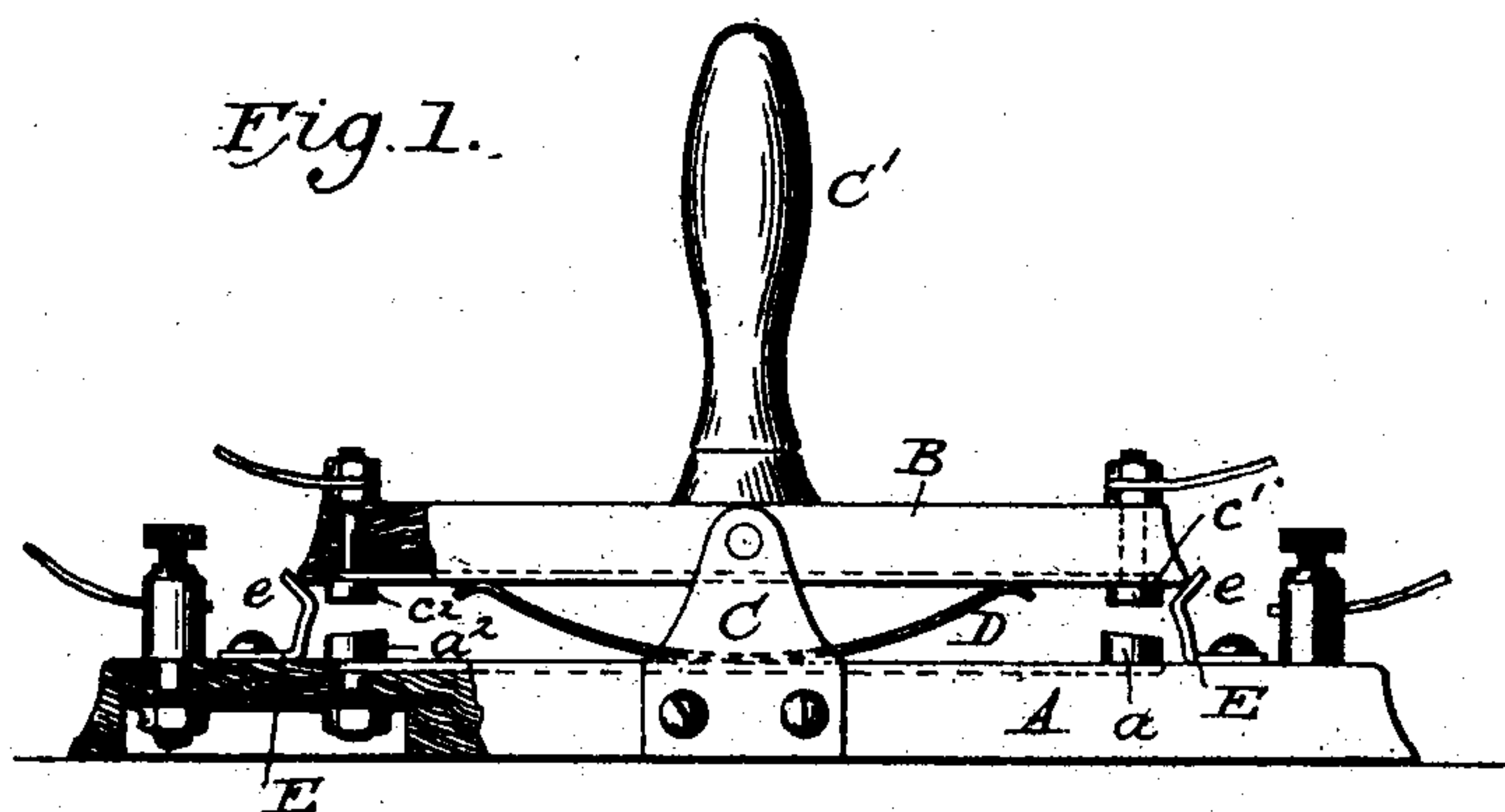


Fig. 2.

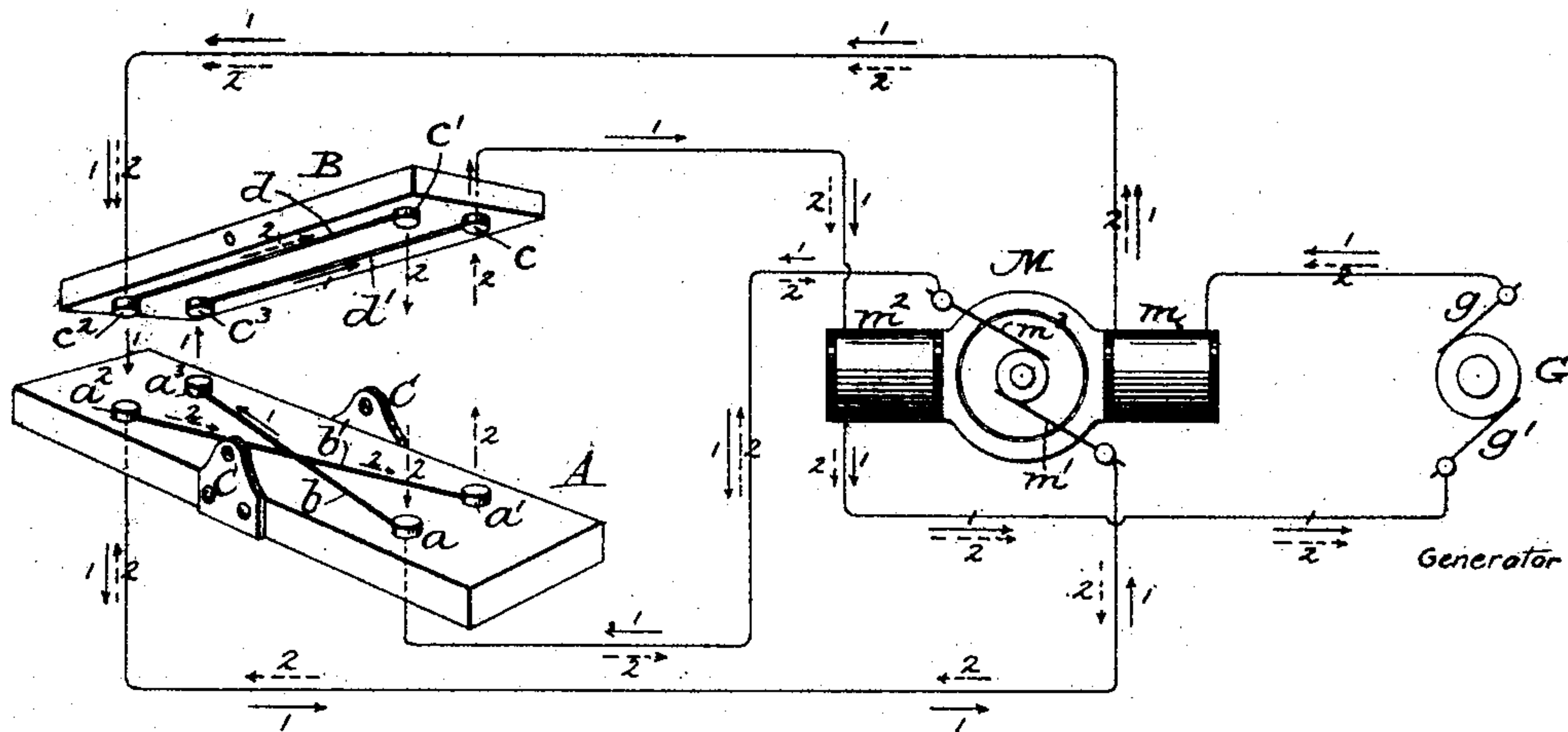
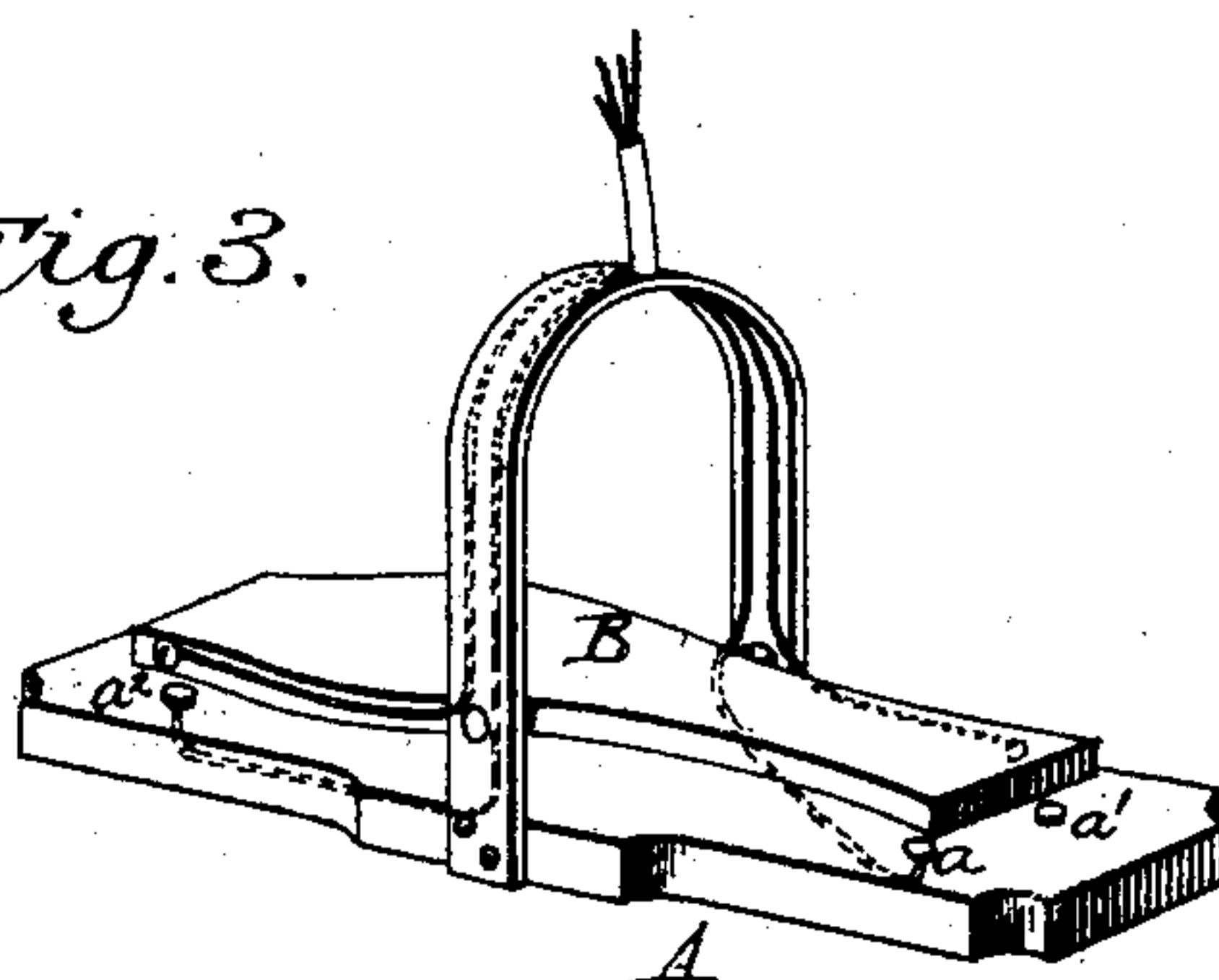


Fig. 3.



Witnesses;  
*Sidney P. Follingsworth*  
*C. M. Brooks*

Inventor  
C. Edmund Kells, Jr.  
by his attorneys,  
*Alfred Davidson Wright*

# UNITED STATES PATENT OFFICE.

CHARLES EDMUND KELLS, JR., OF NEW ORLEANS, LOUISIANA.

## ELECTRIC-POLE CHANGER.

SPECIFICATION forming part of Letters Patent No. 502,300, dated August 1, 1893.

Application filed February 23, 1893. Serial No. 463,427. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES EDMUND KELLS, Jr., a citizen of the United States, residing at New Orleans, in the parish of Orleans and State of Louisiana, have invented certain new and useful Improvements in Electric Switches or Circuit Changers, of which the following is a specification.

The object of my invention is to provide simple, efficient and readily operated devices for reversing and controlling an electric motor.

In carrying out my invention, I provide a base plate carrying contacts electrically connected with each other and electrically connected with an electric motor. To the base plate, I secure a movable contact carrier which is also electrically connected with the generator and with the electric motor. The contact carrier is movable, so that different sets of contacts may be brought into electrical connection with different sets of contacts on the base plate, so as to cause the electric current to pass in either direction through the motor.

In the accompanying drawings—Figure 1 is a side elevation partly in section, of my improved switch or circuit changer. Fig. 2 is a diagram showing the switch and its electrical connections. Fig. 3 is a perspective view of a modification.

The base plate A, is provided with four contacts  $a$   $a'$   $a^2$   $a^3$ . The diagonally opposite contacts  $a$  and  $a^3$  are electrically connected by a wire  $b$ , and the diagonally opposite contacts  $a'$  and  $a^2$ , are in like manner connected by a wire  $b'$ . The base plate may be of insulating material, or it may be made of other material insulated from the contacts. Above the base plate is a contact carrier B, pivoted or hinged on standards C to the base plate. It is provided, as shown in Fig. 1, with a handle C', but this is not necessary as the contact carrier may be moved by other means. It may be operated by electro-magnets, by foot power, or otherwise.

The contact carrier B, is provided with four contacts  $c$   $c'$   $c^2$   $c^3$ , the opposite contacts  $c'$  and  $c^2$  being connected by a wire  $d$ , and the opposite contacts  $c$  and  $c^3$  being in like manner connected by a wire  $d'$ . A spring D, normally holds the contact carrier in substan-

tially a horizontal position with all of its contacts out of electrical connection with the contacts of the base plate. To the base plate, at each end of the contact carrier, is secured a spring or catch E E', each of which is preferably made of spring metal bent at its upper end  $e$  to such a shape that it is adapted to engage with the adjacent edge of the contact carrier. The arrangement is such that when either end of the contact carrier is depressed, the catch is first pressed back; it then springs into place and holds down the depressed end of the contact carrier in such manner that the contacts at this end are held in electrical connection with the adjacent contacts in the base plate.

The binding screws are of any suitable construction, and the electrical connections may be made in any suitable way. In Fig. 3, I have shown a modification. In this instance, instead of employing a handle, I form the contact carrier B, in the form of a pedal which may be operated in the usual way. The contacts are arranged similarly to those shown in Figs. 1 and 2, and the circuit connections are made in substantially the same way.

In Fig. 2, M indicates an electric motor and G, a generator. The circuit connections are so clearly shown that they need not be specifically traced or described.

All of the eight contacts in the switch are electrically connected with the generator or motor. When the contact carrier B, is in a horizontal position, all the circuits are broken. When the contact carrier is tilted or depressed at one end to cause the contacts  $a^2$   $a^3$   $c^2$  and  $c^3$  to make electrical connection, the circuits will be as indicated by the arrows 1. Starting from the brush  $g$ , of the generator, it will be found that the circuit passes from the brush through the magnet  $m$ , thence to contact  $c^2$ , to contact  $a^2$ , thence to brush  $m'$  of the motor, thence to brush  $m^3$ , thence to contact  $a$ , then to contact  $a^3$ , then to contact  $c^3$ , thence to  $c$ , then through magnet  $m^2$  to brush  $g'$  of the generator. When the contact carrier is turned or tilted in the opposite direction, the contacts  $c$   $c'$  and  $a$   $a'$  will be in electrical connection, and the circuits will be as indicated by the dotted arrows 2, and it will be found that the current is reversed,



and the motor will be correspondingly reversed. Thus, by simply tilting the switch, the motor may be controlled at will.

I claim as my invention—

- 5 1. An electrical switch or circuit changer, comprising a bed plate carrying two sets of contacts, a pivoted contact carrier carrying two sets of contacts adapted to connect with the contacts of the bed plate, means for hold-  
10 ing the contacts of the contact carrier out of connection with the contacts of the bed plate, and catches at opposite ends of the bed plate for holding the contact carrier in either of its tilted positions, substantially as described.
- 15 2. The combination of the bed plate carrying two sets of contacts, the contact carrier carrying two other sets of contacts, a spring for holding the contact carrier in a horizontal position, a handle for tilting the contact carrier, and a spring catch at each end of the  
20 contact carrier for holding it in its tilted position.

- 25 3. The combination of a bed plate, four contacts carried thereby, the crossed wires connecting diagonally opposite contacts, the

contact carrier having two pairs of contacts, the wires connecting the directly opposite contacts, and means for shifting the contact carrier for changing the circuits.

4. The combination of a generator, an elec- 30 tric motor, and a switch or electric circuit changer, comprising a bed plate, two sets of contacts carried thereby, a contact carrier pivotally connected with the bed plate and carrying two sets of contacts, electrical con- 35 nections between the contacts on the bed plate, electrical connections between the contacts on the contact carrier, circuit connections between the contacts on the contact carrier, the contacts on the bed plate and the 40 electric motor and generator, and means for shifting the contact carrier to change the circuits, substantially as described.

In testimony whereof I have hereunto subscribed my name.

CHARLES EDMUND KELLS, JR.

Witnesses:

A. S. VINET,  
W. H. FREIS.