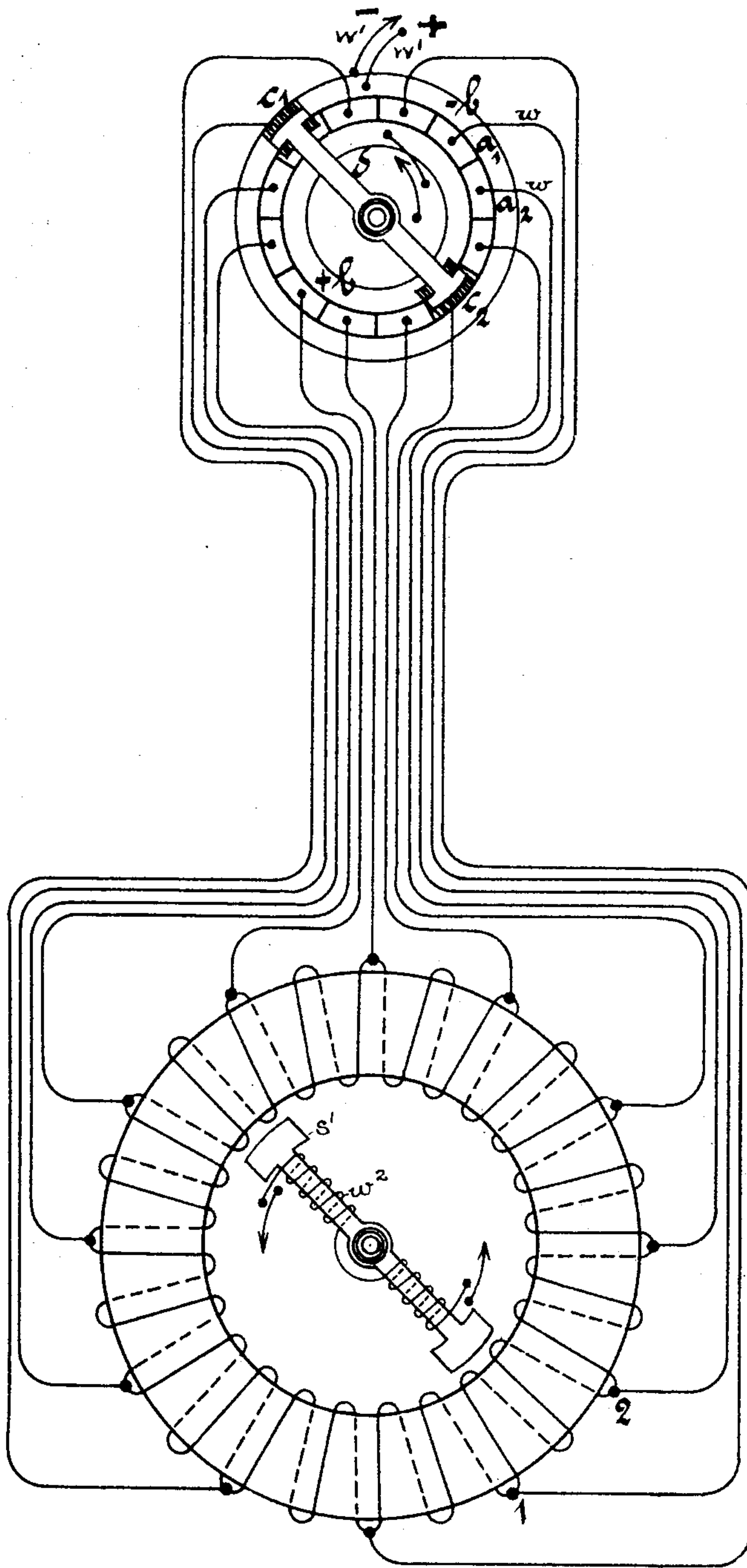


(No Model.)

A. UTZINGER.
INDICATOR.

No. 500,359.

Patented June 27, 1893.



Witnesses
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UNITED STATES PATENT OFFICE.

AUGUST UTZINGER, OF NUREMBERG, GERMANY, ASSIGNOR TO SHUCKERT & CO., OF SAME PLACE.

INDICATOR.

SPECIFICATION forming part of Letters Patent No. 500,359, dated June 27, 1893.

Application filed February 9, 1893. Serial No. 461,575. (No model.) Patented in Germany February 19, 1891, No. 63,938; in England January 16, 1892, No. 936, and in Belgium March 7, 1892.

To all whom it may concern:

Be it known that I, AUGUST UTZINGER, a citizen of Switzerland, residing at Nuremberg, Bavaria, Germany, have invented a new and useful Improvement in Electromechanical Devices for Producing Corresponding Positions in Transmitting and Receiving Apparatus, (for which I have obtained Letters Patent in Germany, No. 63,938, dated February 19, 1891; in England, No. 936, dated January 16, 1892, and in Belgium, dated March 7, 1892,) of which the following is a specification.

My invention is directed especially to improvements in electro-mechanical devices for producing corresponding motion between like or similar parts of two mechanisms widely separated and it has for its object, the application of this generic principle in ships or dial telegraphs, steering apparatus for vessels and analogous apparatus which require that a transmitter and a receiver shall be so arranged and connected with each other that the position of the moving parts of each shall always be the same under all conditions of operation of the transmitter.

To illustrate my meaning, it is an essential feature of a dial telegraph that when the index hand of the transmitter points to a certain sign, letter or character the corresponding index hand of the receiver must be so arranged and so connected to intervening mechanism uniting the two instruments that the receiver's index hand will point to the same sign, letter or character as does the index hand of the transmitter. My improved apparatus is especially designed to accomplish this result and to this end my invention is directed to the novel method of and apparatus hereinafter described and claimed.

In order that a full and clear understanding of my invention may be had reference is had to the accompanying drawing, which is a diagrammatic illustration of the simplest form of my apparatus, illustrating a transmitter and a receiver united by a series of conducting wires.

The transmitter consists of a series of circularly arranged contacting plates $a' a^2$ each of which is connected through an independent conductor w , running to correspondingly

disposed coils wound around a ring like magnetic core after the manner of a Gramme ring, said ring like core and windings constituting the magnetic field of the receiver.

s is a transmitting arm pivotally secured at the center of the transmitter and carrying at its outer extremities two conducting or contacting brushes $c' c^2$. The conducting contact brush c' is adapted to bridge electrically the space between the outer conducting ring b and the contact plates $a' a^2$, while the other contact brush c^2 is adapted to bridge electrically the space between the same contact plates and the inner conducting ring b . The outer and inner conducting rings b are respectively connected to the poles of a stationary source of electrical energy not shown. The receiver has pivoted at the center of its ring an armature s' corresponding in general form to that of the transmitting arm s . This armature is either in the nature of a permanent magnet or is made an electro-magnet by a coil w^2 connected through contact brushes, not shown, with a fixed source of electrical energy. The two contacting brushes $c' c^2$ are so arranged that the current always flows through oppositely disposed pairs of conductors w and magnetizes the ring coil in such manner as to rotate the armature s' to a position corresponding identically with the position of the arm s of the transmitter.

Instead of arranging the contact pieces $a' a^2$ in a plane, they might be joined together on a cylinder, so that the transmitter would assume the contour or shape of an ordinary Gramme commutator to which could be connected on the right and on the left, a sliding ring brush holder which could be rotated around the cylinder.

The operation of the apparatus is as follows: The current from a stationary source of electrical energy, not shown, enters one of the rings b by one of the conductors w' and passes thence say to the contact brush c' from said brush to that one of the contact plates a upon which it is resting at that time, and thence by conductor w to that portion of the coils of the receiver with which it is connected; dividing into two paths it passes thence to the opposite conductor w and to the other con-

tact plates a' a^2 and contact brush c^2 , thence through the inner contact ring b and by the conductor w' to the starting point. Consequently the magnetic core of the Gramme
5 like ring is magnetized and the armature s' of the receiver caused to assume the position of strongest magnetic effect, which is that corresponding with the position of the transmitting arm s .

10 It will be readily appreciable that with the use of sufficiently powerful currents transmitted through the conductors w' the armature s' of the receiver may be caused to exert considerable power, thereby rendering it possible to utilize said armature either in the direct application of power to a rudder of a
15 vessel or to the control of mechanism of any nature desired by the user.

do not limit myself to the special form of
20 apparatus herein shown and described as I believe it is broadly new with me to transmit electrical energy through a series of electrical conductors to a receiver which will impart to its moving part a motion always corresponding to the moving part of the transmitter and
25 my claim is generic in this particular.

Having thus described my invention, what

I claim, and desire to secure by Letters Patent of the United States, is—

The combination of a transmitter containing a circularly arranged series of contact
30 plates and a pair of contact brushes and contact rings adapted to connect the said contact plates in pairs with the poles of a source of electricity, with a receiver containing a
35 circularly arranged series of coils connected with each other and adapted to produce a relative angular motion between itself and a diametrically arranged armature, and a group
40 of conductors equal in number to the contact plates, each conductor connecting one of the said contact plates of the transmitter with one of the junctions between consecutive coils of the receiver, the whole being adapted
45 to operate substantially as described and for the purposes set forth.

In testimony whereof I have hereunto subscribed my name this 18th day of January, 1893.

AUGUST UTZINGER.

Witnesses:

JACOB BIERLEIN,
THEODOR STORS.