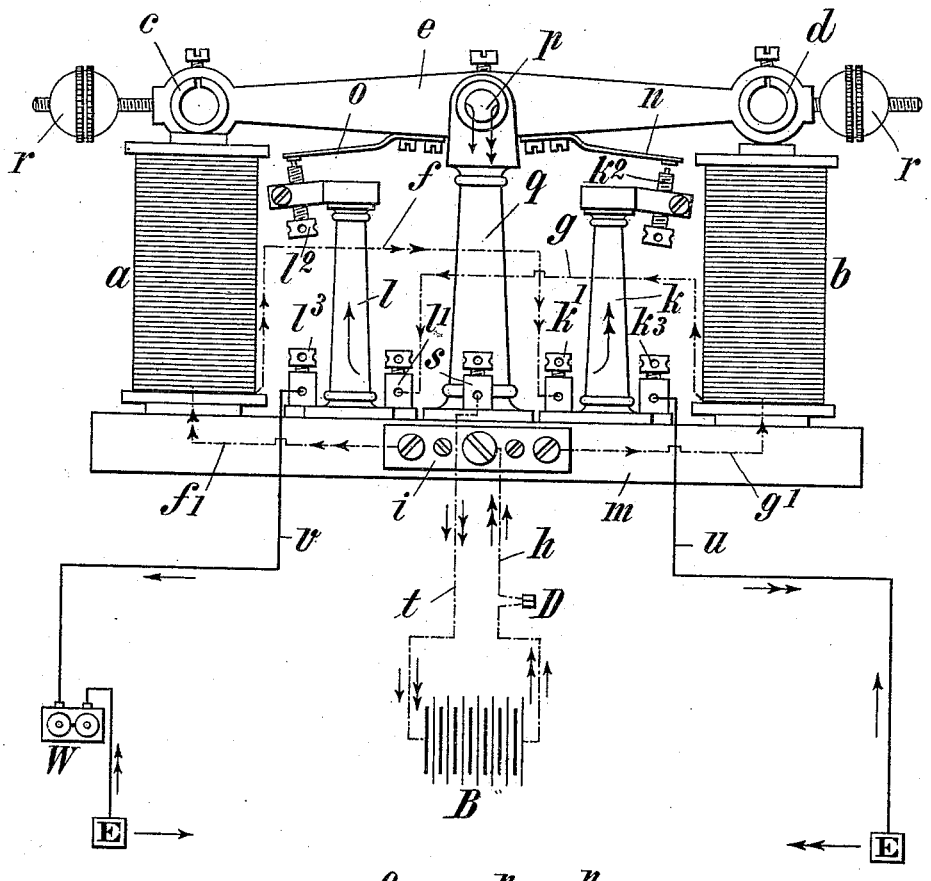
(No Model.)

F. S. F. SCHNEIDER.

APPARATUS FOR TRANSFORMING CONTINUOUS ELECTRIC CURRENTS INTO ALTERNATING CURRENTS.

No. 524,911. Patented Aug. 21, 1894.

Fig. 1.



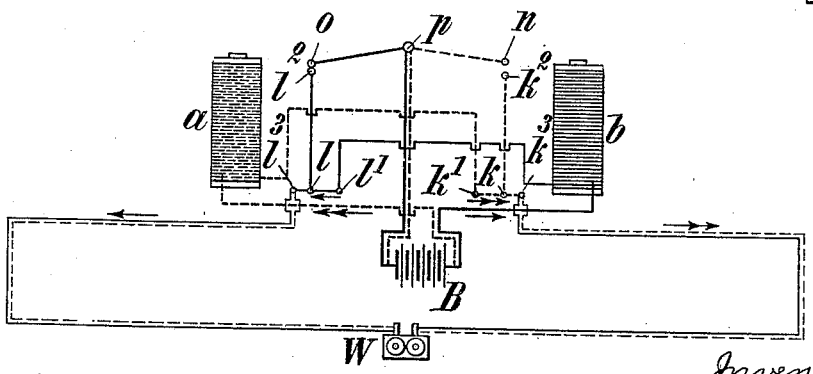


Fig. 2.

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FRANZ SEVIRIN FERDINAND SCHNEIDER, OF FULDA, GERMANY.

APPARATUS FOR TRANSFORMING CONTINUOUS ELECTRIC CURRENTS INTO ALTERNATING CURRENTS.

SPECIFICATION forming part of Letters Patent No. 524,911, dated August 21, 1894.

Application filed March 20, 1894. Serial No. 504,434. (No model.)

To all whom it may concern:

Be it known that I, FRANZ SEVIRIN FERDINAND SCHNEIDER, electrical engineer, a subject of the Emperor of Germany, residing at Fulda, in the Empire of Germany, have invented certain new and useful Improvements in Apparatus for Transforming Continuous Electric Currents into Alternating Currents, of which the following is a specification, reference being had to the accompanying drawings.

My invention relates to apparatus for transforming continuous electric currents into alternating currents.

In the accompanying drawings—Figure 1 is a side elevation of my improved apparatus, showing the circuits and battery; and Fig. 2 is a diagram which will be understood from the detailed description.

An apparatus constructed according to my said invention comprises two electromagnets *a b* and a pair of armatures *c d* which are arranged to be moved by means of a rocking lever *e* in such a manner that, while always remaining in the field of the electromagnets *a*, *b*, they can only approach the cores alternately. The ends of the conducting wires *f' g'* and *f g* joining the exciting coils of these electromagnets are on the one hand attached to a connecting piece *i* permanently united with the negative conducting wire *h* of the battery B, and on the other hand to a binding screw *k'* or *l'* at the base of each of the columns *k l* which are fixed to the bed plate *m* of the apparatus with interposition of an insulator. These columns present at their upper end a contact piece, such as a screw k^2 or l^2, opposite to which I provide another contact piece, such as a plate spring *n* or *o*, attached to the said rocking lever *e*. The dimensions of the two pairs of contact pieces k^2, *n* and l^2, *o* are such that a contact will take place only when the armature of that arm of the rocking lever is attracted to which the respective pair belongs. The rocking lever *e* supported by the pivot *p* of a central column *q* forked at its upper end, presents moreover at each end a counter-weight *r* preferably made of two parts and adapted to be adjusted by means of a screw thread. These counterweights are designed to overbalance one of the arms, for instance that which is on the left hand side in the arrangement shown, so that when no current flows through the apparatus the rocking lever occupies the position indicated, that is to say, the armature *c* bears upon the core of the electromagnet *a* and the spring *o* upon the screw l^2, while neither the contact pieces k^2 *n* or the armature *d* and the core of the electromagnet *b* are in contact. If now the battery circuit is closed by means of a suitable press button D or the like the current will pass through the conducting wires *h g'*, the coil of the electromagnet *b* on the right and through the wire *g* to the binding screw *l'*, contact pieces l^2 and *o*, the rocking lever *e* and its pivot *p*, the central column *q*, secured for this purpose upon the bed plate *m* with interposition of a nonconductor, to the binding screw *s*, to which the positive wire *t* of the battery B is joined. The electromagnet *b* excited in this manner attracts its armature *d;* the contact pieces l^2 *o* come out of contact and cause the interruption of the circuit passing through the coil of the electromagnet *b*, while the contact pieces k^2 *n*, close the circuit through the coil of the electromagnet *a* on the left in a similar manner as set forth with reference to that on the right hand side. Accordingly the left hand arm of the rocking lever is now lowered by the attraction of the armature *c*, and the circuit for the left hand electromagnet is then interrupted by the separation of the contact pieces k^2 *n*, but the circuit for the right hand electro-magnet is closed again by the contact of the parts l^2 *o*, &c., the interruption of one circuit always taking place after the other circuit has been closed.

At the base of the columns *k l* I provide, besides two binding screws *k' l'*, also the binding screws k^3, l^3 which permit of the joining for example of a telephone or telegraph wire *u v* connected to earth. Into this wire, in which for instance a known alternating current alarm W is included, pass the extra currents which occur when the circuits leading through the coils of the electromagnets are closed and opened. As the main currents differ in their direction this is also the case with regard to the extra currents. In the position shown in Fig. 1, the extra current produced by the electromagnet *a* will, after the circuit has been interrupted at k^2, flow as fol-

lows, that is to say through f, k', k^3 u, E E W v l^3 l l^2 o p q t B h i f. These extra currents may also be strengthened by induction coils. Such an apparatus, by reason of its small dimensions, is adapted to be arranged in the casing of a microscope, and renders it superfluous to set a crank in motion, such as is necessary in the case of rotary inductors.

The alternating current produced in this manner may be utilized in various manners and for various purposes. Thus the alternating extra currents may for instance be used for regulating the movement of clocks. Moreover the alternating extra currents may be employed directly for telegraphing. The rocking lever then serves as a key, while the key included in the conducting wire and resembling the clapper of an alternating current bell will, by means of the extra current, make the same vibrations or signs at the receiver stations.

A certain amount of energy is of course used for the operation of this apparatus; the useful effect consists in employing with loss of energy short current pulsations of high tension, which is desirable in certain circumstances, in lieu of the currents of weak tension which last longer and are taken from the battery.

What I claim is—

1. In a transformer, the combination with two electromagnets included in two primary circuits and a battery common to both circuits, of a rocking armature carrying contacts operating to alternately make and break said circuits, and a secondary conductor having its terminals connected with the primary circuits between the magnets and the circuit breakers, substantially as described.

2. In a transformer, the combination with the electromagnets a, b, included in two primary circuits, the contacts k^2, l^2, forming the terminals of said circuits, a battery common to both of said circuits, a rocking armature e carrying contacts n, o, adapted to alternately engage the contacts k^2, l^2, a conductor connecting said armature with the battery, and a secondary conductor having its terminals connected with the primary circuits between the magnets and the circuit breakers, substantially as described.

3. In a transformer, the combination with the electromagnets a, b, of the rocking armature e carrying the contacts n, o, the contacts k^2, l^2, adapted to be engaged thereby, the battery B, the connecting plate i, a conductor connecting said plate with the battery, two conductors connecting said plate with the magnets and with the contacts k^2, l^2, a conductor connecting the rocking armature with the battery, and a secondary conductor having its terminals connected with the primary circuits between the magnets and the circuit breakers, substantially as described.

In testimony whereof I have hereunto set my hand this 3d day of March, 1894.

FRANZ SEVIRIN FERDINAND SCHNEIDER.

Witnesses:

JEAN GRUND,

C. L. THEODOR MÜLLER.