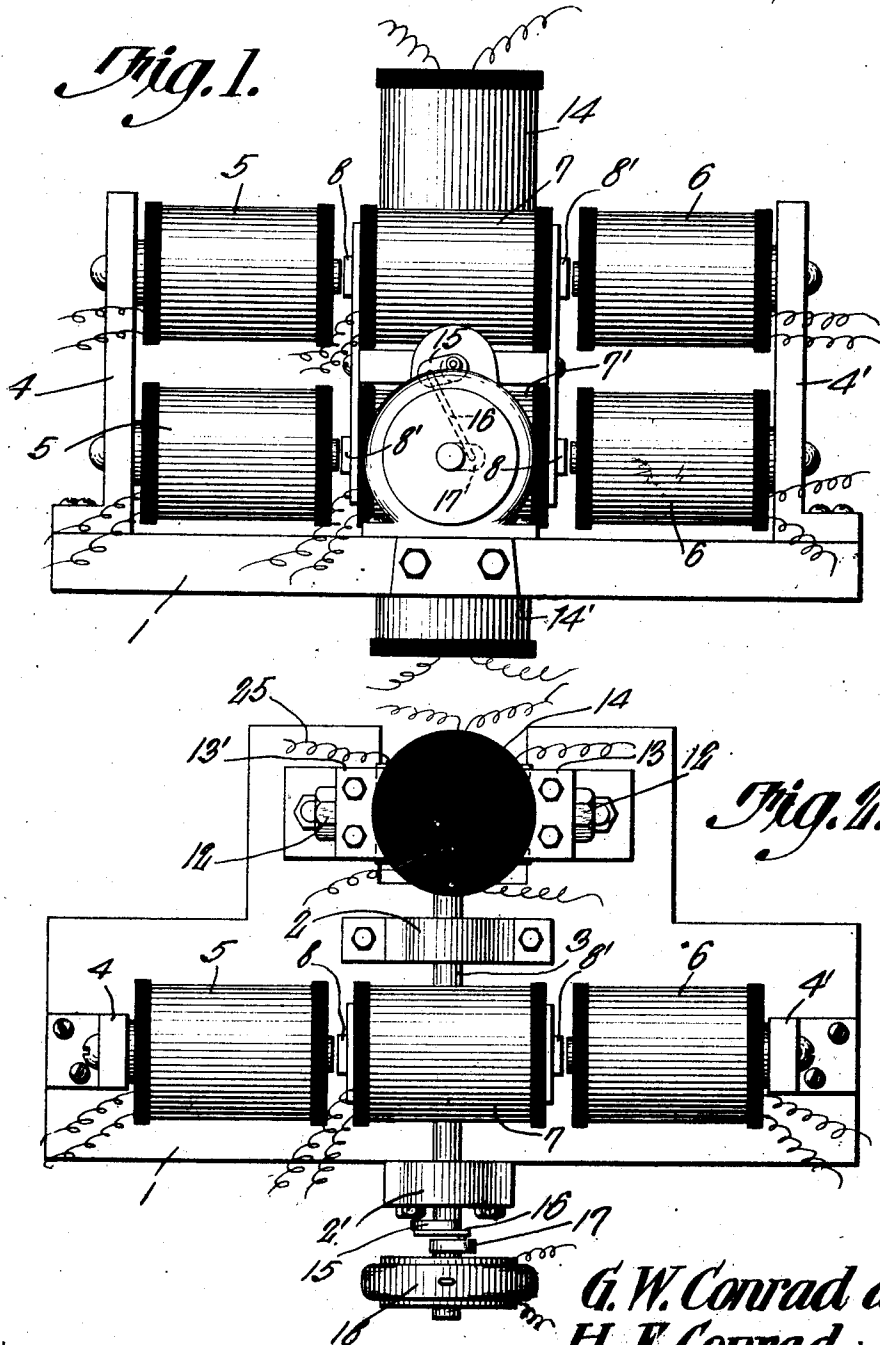


G. W. & H. E. CONRAD.
 CONVERTER.
 APPLICATION FILED APR. 29, 1912.

1,048,500.

Patented Dec. 31, 1912.

2 SHEETS—SHEET 1.



Witnesses

J. P. Gossin
L. H. Wilson

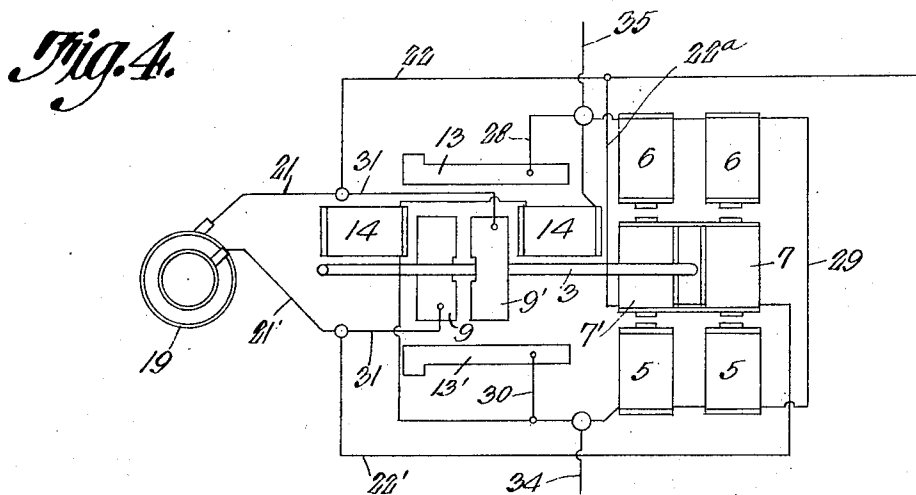
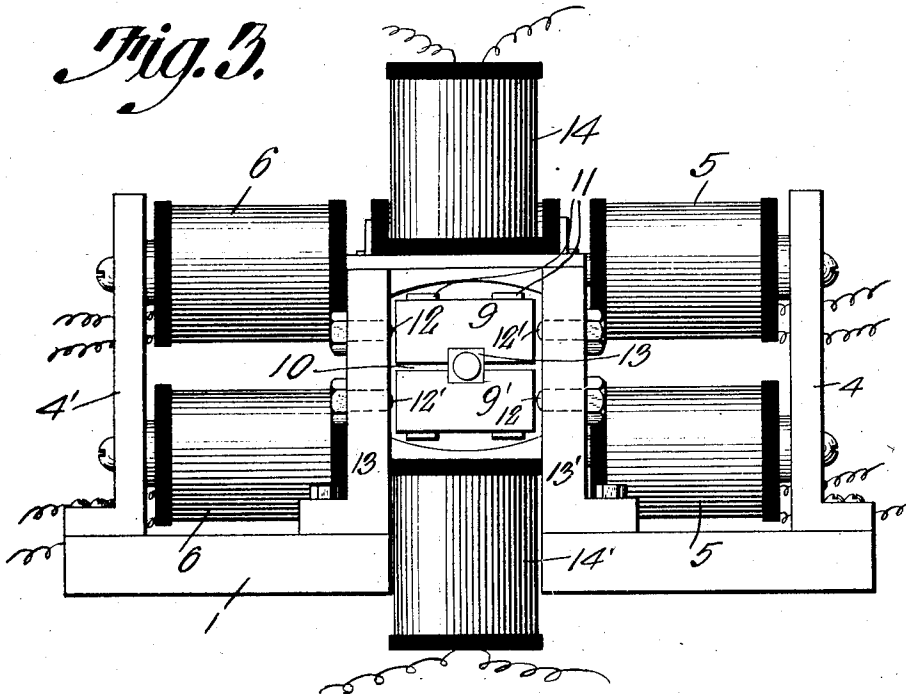
by

G. W. Conrad and
H. E. Conrad Inventors
C. A. Snow & Co.
 Attorneys

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 Attorneys

UNITED STATES PATENT OFFICE.

GEORGE W. CONRAD AND HARRY E. CONRAD, OF NANTY GLO, PENNSYLVANIA.

CONVERTER.

1,048,500.

Specification of Letters Patent.

Patented Dec. 31, 1912.

Application filed April 29, 1912. Serial No. 694,012.

To all whom it may concern:

Be it known that we, GEORGE W. CONRAD and HARRY E. CONRAD, citizens of the United States, residing at Nanty Glo, in the county of Cambria, State of Pennsylvania, have invented a new and useful Converter, of which the following is a specification.

The present invention relates to improvements in converters, the primary object of the invention being the provision of a novel form of electromagnetically actuated means for converting an alternating current into a direct, or a direct current into an alternating current, the apparatus when employed for converting an alternating current into a direct current being automatically due to the alternation of the current, while when employed for converting a direct current into an alternating current is actuated by a motor to properly oscillate the armature for providing the proper conversion.

With the foregoing and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed can be made within the scope of what is claimed without departing from the spirit of the invention.

In the drawings—Figure 1 is a side elevation of the complete converter. Fig. 2 is a top plan view thereof. Fig. 3 is a side elevation taken from the opposite side to that of Fig. 1. Fig. 4 is an electrical diagram of the complete apparatus when connected for converting an alternating current into a direct current.

Referring to the drawings, the numeral 1 designates the base of the converter, which has mounted thereon, the two journaling standards 2 for the reception of the oscillatory shaft or armature 3. Disposed upon the base in spaced relation, are the two metal supports 4 and 4', which carry the respective pairs of electromagnets 5 and 6. The cores of the respective pairs of magnets 5 and 6 are disposed toward each other and in spaced relation so that the shaft or armature 3 is passed centrally through the space between the cores of said electromagnets and in a line equidistantly from the center of such cores, so that the shaft 3 will be dis-

posed at right angles in the space between the respective pairs of electromagnets.

Connected to and carried by the shaft or armature 3 in the space between the pairs of the electromagnets 5 and 6, are two electromagnets 7 and 7', the cores 8 and 8' of which are disposed in a line with the respective cores of the pairs of electromagnets 5 and 6, as clearly shown in Fig. 1, and the purpose of which will presently appear.

The two contact plates 9 and 9' are connected to the inner end of the armature or shaft 3 and are insulated therefrom by means of the block 10 of insulation, the bolts 11 being employed to properly connect the contact plates 9 and 9' relative together and upon the shaft or armature 3. The respective ends of these contact plates 9 and 9' are disposed in spaced relation to the inner ends of the contact screws 12 and 12' carried by the two standards 13 and 13' connected to the base and upon opposite sides of the shaft 3 and contact plates 9 and 9', as clearly shown in Fig. 3.

Connected to the base and to the upper end of the standards 13 and 13' and having their cores disposed in spaced relation above and below the respective contact plates 9 and 9', are the blow coils 14 and 14'.

Where the converter is employed for use in converting a direct to an alternating current, the armature or shaft 3 is provided with the crank arm 15 which has connected thereto a link 16, said link 16 being operably connected to a crank 17 operated by a motor 18, said link and crank being so disposed that the rotation of the motor 18 will impart an oscillation to the armature 3 and consequently the electromagnets 7 and 7'.

In Fig. 4, the alternating current generator 19 has led therefrom, the main current conductors 21—21'. The conductors 22, 22' and 22^a connect the alternating current electromagnets 7—7' to the conductors 21—21'. Led from the contact posts 13—13' are the conductors 28 and 30 respectively, the conductor 30 leading to the coils 5—5', with a conductor 29, connecting the coils 5—5' to the coils 6—6', which latter coils have connected to them the conductor 28. The coils 5—5' and 6—6', are polarized and are therefore excited by a direct current, and retain a constant polarity at their inner ends adjacent to the cores of the coils 7—7', such constancy depending upon the direction of

flow of the direct current. Therefore should an alternating current be caused to pass through the coils 7—7', the coils will be moved due to the cores 8, being south poles, while the cores 8' are north poles. If the cores of coils 5—5', and 6—6', are for instance south poles, an alternating current is passed through the coils 7—7', and their polarity will be reversed at each alternation.

10 This will impart oscillatory movement to the shaft or armature 3. As the armature or shaft 3 is moved to one side, the current will flow to contacts 9, through the conductors 21 and 31, while in contact with the post 13, to the contact points 12, thus directing the current through the conductor 28, coils 6—6', the conductor 29, the coils 5—5', the conductor 30, the posts 13', and the lower contact point 12 to the contacts 9'. When

20 the armature or shaft 3 is moved in the opposite direction, the current will flow in an opposite direction, that is to the contacts 9', the lower contact point 12', the post 13, the conductor 28, the coils 6—6', the conductor 29, the coils 5—5', the conductor 30, the post 13', the upper contact point 12 and line of force set up by these coils 14—14', are placed upon and insulated from the posts 13—13', one above the other. These

30 are affected by a direct current, so that the line of force set up by these coils 14—14', will pass between the plates 9—9' and the posts 13—13' to prevent sparking which occurs when converting direct to alternating

35 current and vice versa. The conductors 34—35 are the mains for the direct current after being converted from alternating current.

While herein is described the invention in detail and is illustrated a combination embodying various features, which may at times be used to advantage, it is not the intention or desire of claimants to be limited to the particular arrangement shown or to an arrangement embodying the various auxiliary features, except as particularly pointed out in the appended claims.

What is claimed is:

1. An electrical current converter, having
- 50 a shaft mounted for oscillation, a pair of electromagnets carried by said shaft, two

pairs of electromagnets disposed in spaced relation, one pair upon each side of the electromagnets of the shaft and spaced therefrom to permit of the oscillation of the 55 electromagnets and the shaft, a pair of contacts carried by and insulated from the shaft, collector plates disposed astride the contact plates and to which the converted current conductors are connected, and two blow coils, one above and one below the contact plates, the current to be converted being led to all of the electromagnets, the blow coils and the contact plates.

2. The combination with an alternating 65 current source, and direct current lead conductors, of a mechanism for converting the alternating into a direct current, comprising a shaft disposed to be oscillated due to the effect of the alternating current thereupon, 70 two superposed electromagnets connected to said shaft, two pairs of electromagnets disposed in spaced relation, one pair upon each side of the electromagnets of the shaft, said two pairs of electromagnets being connected 75 to the source of alternating current and disposed to affect the electromagnets of the shaft to oscillate the shaft, said electromagnets of the shaft also being connected to said alternating current source, a pair of 80 contacts carried by and insulated from the shaft, said contacts being connected to the respective leads from the alternating source, two collector plates disposed astride the contact plates and connected to the respective 85 leads for the direct current, said contact plates of the shaft being disposed to alternately engage the collector plates to convert the alternating current led to said contact plates and to the collector plates into a direct 90 current, and two blow coils one above and one below the contact plates connected in series and with the alternating current source.

In testimony that we claim the foregoing 95 as our own, we have hereunto affixed our signatures in the presence of two witnesses.

GEORGE W. CONRAD.
HARRY E. CONRAD.

Witnesses:

JOHN F. CONRAD,
J. R. WEAVER.