A. LUZY.

ELECTROMAGNETIC APPARATUS INTENDED TO MAGNETIZE PERMANENT MAGNETS.

APPLICATION FILED NOV. 22, 1919.

1,398,526. Patented Nov. 29, 1921.

Fig. 1

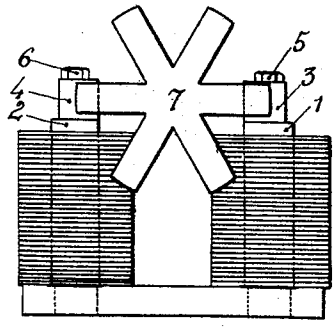


Fig 1a

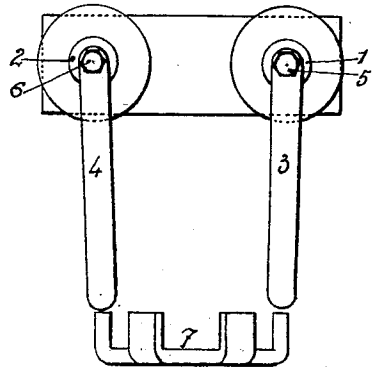


Fig. 2

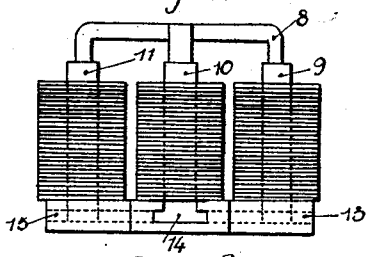


Fig. 2a

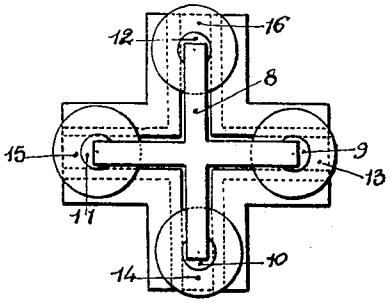


Fig 3

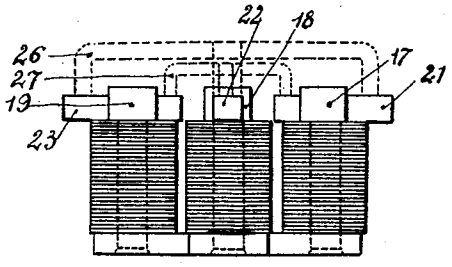


Fig. 4

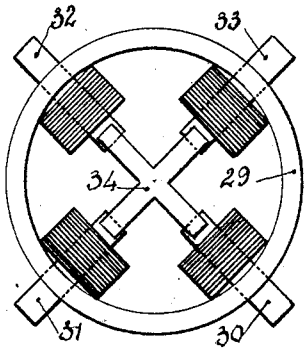
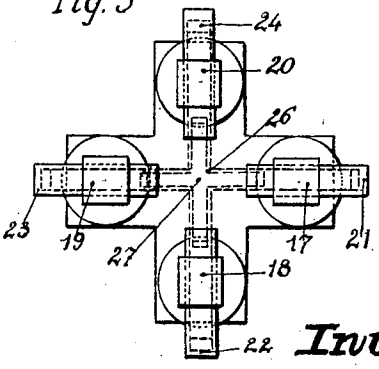


Fig. 3a



Inventor
A. Luzy,
By H. R. Kerslake
Attorney

UNITED STATES PATENT OFFICE.

ANTOINE LUZY, OF PARIS, FRANCE.

ELECTROMAGNETIC APPARATUS INTENDED TO MAGNETIZE PERMANENT MAGNETS.

1,398,526. Specification of Letters Patent. Patented Nov. 29, 1921.

Application filed November 22, 1919. Serial No. 340,069.

To all whom it may concern:

Be it known that I, ANTOINE LUZY, a citizen of the French Republic, and resident of 34 Rue Sorbier, Paris, France, have invented certain new and useful Improvements in Electromagnetic Apparatus Intended to Magnetize Permanent Magnets, (for which I have filed application in France Feb. 1, 1918,) of which the following is a specification.

The present invention relates to an electromagnetic apparatus intended to magnetize multipolar monobloc permanent magnets with alternate poles.

In this apparatus are combined the following:—1st, one or more than one electromagnet: 2nd, two different mechanical members some formed with fixed or movable polar extremities, the other forming one or more than one yoke so as to permit of the position of the electro-magnets being varied, the object of these two kinds of members being to adapt the magnetizing apparatus to different sizes of magnets.

The apparatus may be varied relatively to the number of electro-magnets which it contains, for example in the form of the polar extremities, the manner of mounting the electro-magnets on their yoke.

The accompanying drawing illustrates by way of example constructions in accordance with the present invention.

Figure 1 is a side elevation of the apparatus for magnetizing the multipolar magnets,

Fig. 1ª is a top plan of the apparatus,

Figs. 2 and 2ª represent side and top views, respectively, of a modification of the magnetizing apparatus,

Figs. 3 and 3ª represent side and top views, respectively of a further modification of the magnetizing apparatus,

Fig. 4 is a top plan of a further modification of the further modification of the apparatus.

Fig. 1 shows an arrangement of bi-polar electro-magnet having two inductive windings, which can be employed in the magnetization of any suitable number of monobloc multipolar magnets, but mainly for magnets of small dimensions and of limited number.

In the polar extremities of the soft iron cores 1 and 2 are provided with extensions formed by bars of soft iron 3 and 4, maintained in position by the screws 5, 6 in such manner that the bars can be displaced horizontally while pivoting about the screw which secures them and so that their free extremities can approach or recede from each other, in order to take magnets of different sizes. The bars 3 and 4 are intended to canalize the magnetic flux of the electromagnet and to screen the piece 7 to be magnetized from radiating flux which would tend to cause the formation of accidental polarities in the branches which are not in contact with the bars 3 and 4.

Figs. 2 and 2ª represent an arrangement of electro-magnet specially designed to magnetize the permanent monobloc magnets of a four pole arrangement, like the magnet 8, which is placed directly on the ends of the cores 9, 10, 11 and 12. In order that the arrangement therein shown may take magnets of different sizes, the lower ends of the cores engage in slots 13, 14, 15, 16 forming guides in the base piece, so that it is possible by moving the inductive coils to place them closer to or farther from the center of the apparatus.

Figs. 3 and 3ª show a further arrangement of electro-magnet for use in magnetizing tetrapolar monobloc magnets in which the cores of the bobbins are immovable in the slots. This arrangement is equally convenient for magnetizing magnets of different sizes. For this purpose the upper ends 17, 18, 19 and 20 of the cores are provided with rectangular slots in which the iron bars 21, 22, 23 and 24 slide and adapted to be rigidly fixed by any suitable means. According to its dimensions the piece to be magnetized is placed on the bars or surrounded by the bobbins or on the bars outside the bobbins as shown in dotted lines at 26, 27 in Fig. 3.

Fig. 4 shows a further arrangement of electro-magnet for magnetizing tetrapolar magnets. Four inductive bobbins are mounted radially in a circular or circumferential armature 29, the cores 30, 31, 32 and 33 of the bobbins being displaceable parallel to their axes in a direction toward and from the center of the arrangement; the said cores can be fixed by any suitable and convenient means. The piece 34 to be magnetized is placed at the center of the arrangement and on the polar ends of the cores.

The arrangement shown in Figs. 2, 3 and 4 can be varied in form and comprise all

the accessory members necessary to vary the distance which separates the polar ends in order to take magnets of any desired dimensions. The arrangements may comprise any suitable number of inductive bobbins and pairs of cores; it may even be employed to magnetize multipolar magnets having any suitable number of pairs of poles, consecutive poles of the same magnet being positive and negative alternately, that is north and south, if the windings on the inductive bobbins are disposed to this effect, the free polar ends of the cores may themselves be magnetized alternative negative and positive *i. e.* south and north.

The advantages of the present invention will be apparent if it be considered that the manufacture of monobloc multipolar permanent magnets with alternate poles has hitherto been considered an impossibility. These magnets can be employed for the same purpose as bi-polar magnets and further they can create new types of apparatus such as magneto machines with movable magnets, electric measuring apparatus, telephonic apparatus, portable electric lighting apparatus, apparatus for the measurement of time, in signaling and other purposes and perhaps in new and improved applications in the actual state of the industry.

The monobloc multipolar magnets can, like bi-polar magnets, form very powerful compound or composite magnets by grouping or super position.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. In an apparatus for magnetizing monobloc multipolar magnets having alternating poles, a base, electromagnets on said base having different polarities and solid cores projecting from the electromagnets on which are applied the corresponding ends of the monobloc magnet.

2. In an apparatus for magnetizing monobloc permanent magnets having alternating poles, a base, a group of electromagnets on said base having alternating polarities, cores in said electromagnets on which are simultaneously applied the corresponding ends of the magnet, and means for adjusting said electromagnets radially of the center of the base whereby to vary the relative positions of the polarized surface on which the poles of the magnet are applied.

3. In an apparatus for magnetizing monobloc permanent magnets having alternating poles, a base provided with diametral grooves radiating from the center thereof, electromagnets on said base having alternating polarities, cores in said electromagnets on which are simultaneously applied the corresponding ends of the magnet, and means for moving the electromagnets and their cores radially in said grooves.

4. In an apparatus for magnetizing monobloc permanent magnets having alternating poles, a base provided with diametral grooves, electromagnets having alternating polarities, cores in said electromagnets, the electromagnets and their cores being movable radially in the grooves, and metallic extensions attached to said cores to permit of the simultaneous application thereto of the corresponding ends of the magnet.

5. In an apparatus for magnetizing monobloc permanent magnets having alternating poles arranged in the form of a cup, a base provided with diametral grooves, electromagnets having alternating polarities, cores in said electromagnets, the electromagnets and their cores being movable radially in their grooves, and rods slidable perpendicular to the axis of the said cores to permit of the application thereto of the corresponding ends of the magnet.

In testimony whereof I have signed my name to this specification in the presence of a subscribing witness.

ANTOINE LUZY.

Witness:
CHAS. P. PRESSLY.