(No Model.) 4 Sheets—Sheet 1.

S. HELLEBRANDT.

DYNAMO ELECTRIC MACHINE.

No. 493,718. Patented Mar. 21, 1893.

Fig. 3.

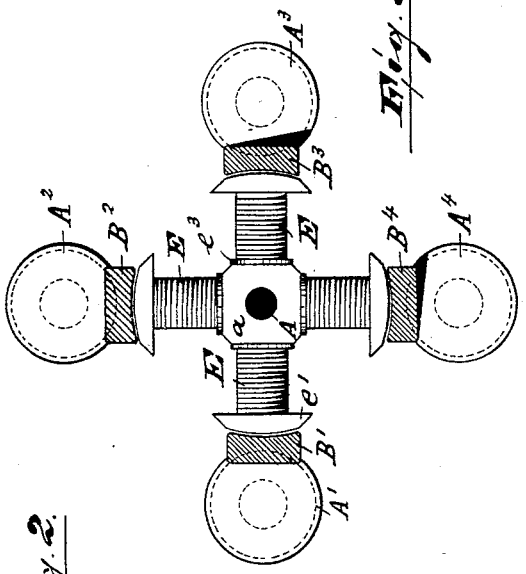
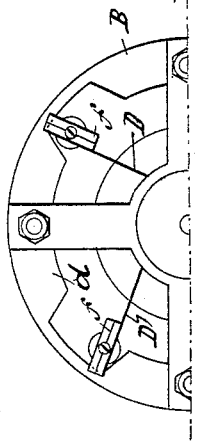


Fig. 1.

Fig. 2.



WITNESSES:

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D. M. Robertson.

INVENTOR:

Sante Hellebrandt

BY Gartner & Co

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(No Model.) 4 Sheets—Sheet 2.

S. HELLEBRANDT.

DYNAMO ELECTRIC MACHINE.

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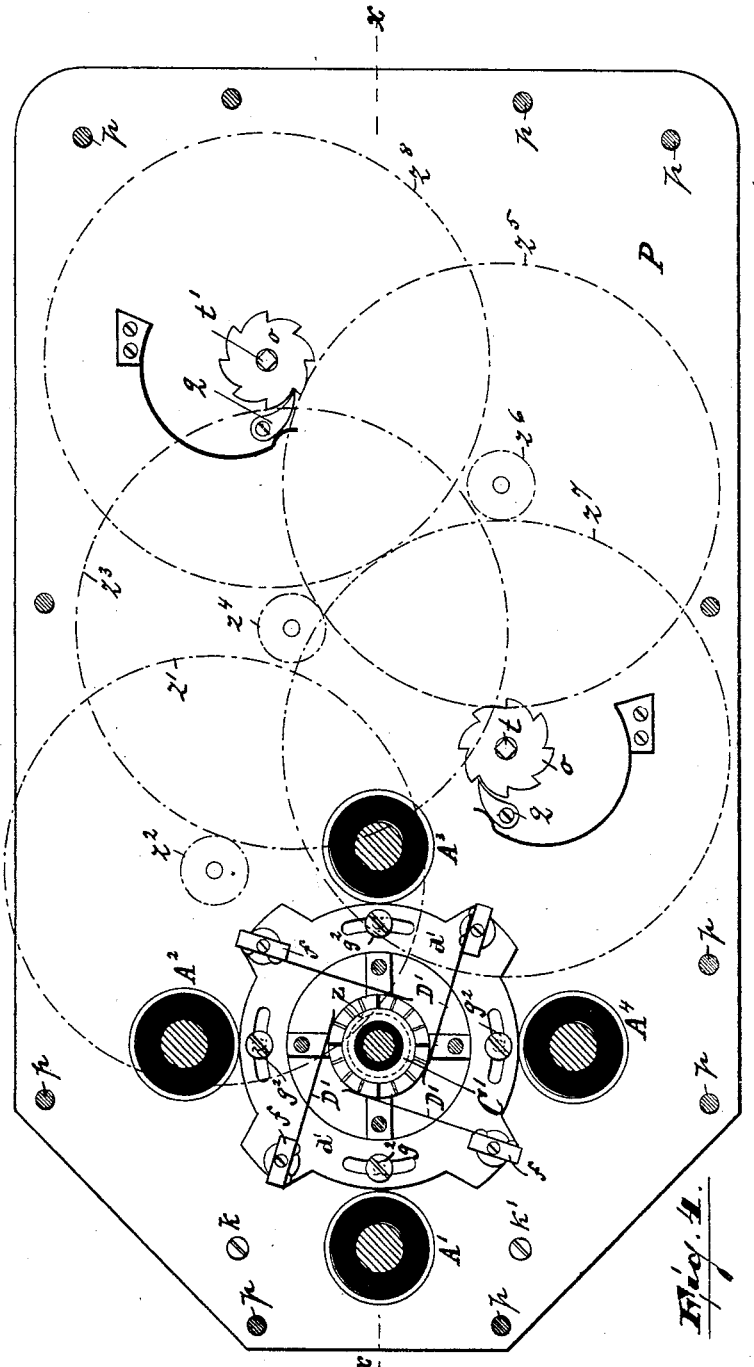

Fig. 4.

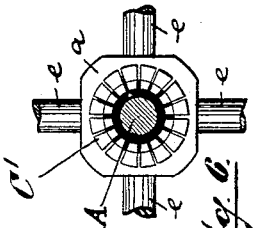

Fig. 6.

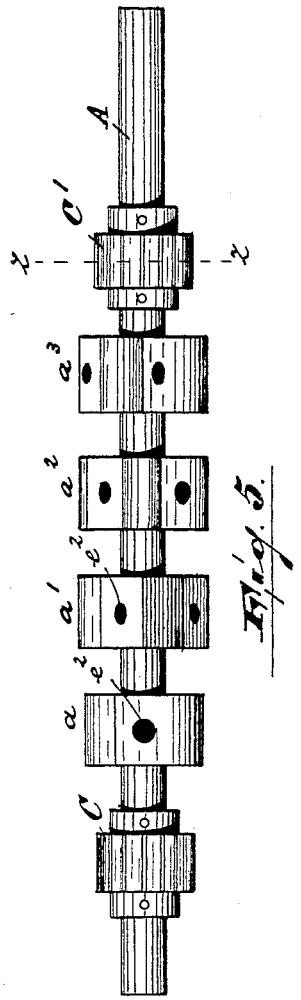

Fig. 5.

WITNESSES:

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(No Model.) 4 Sheets—Sheet 3.

S. HELLEBRANDT.

DYNAMO ELECTRIC MACHINE.

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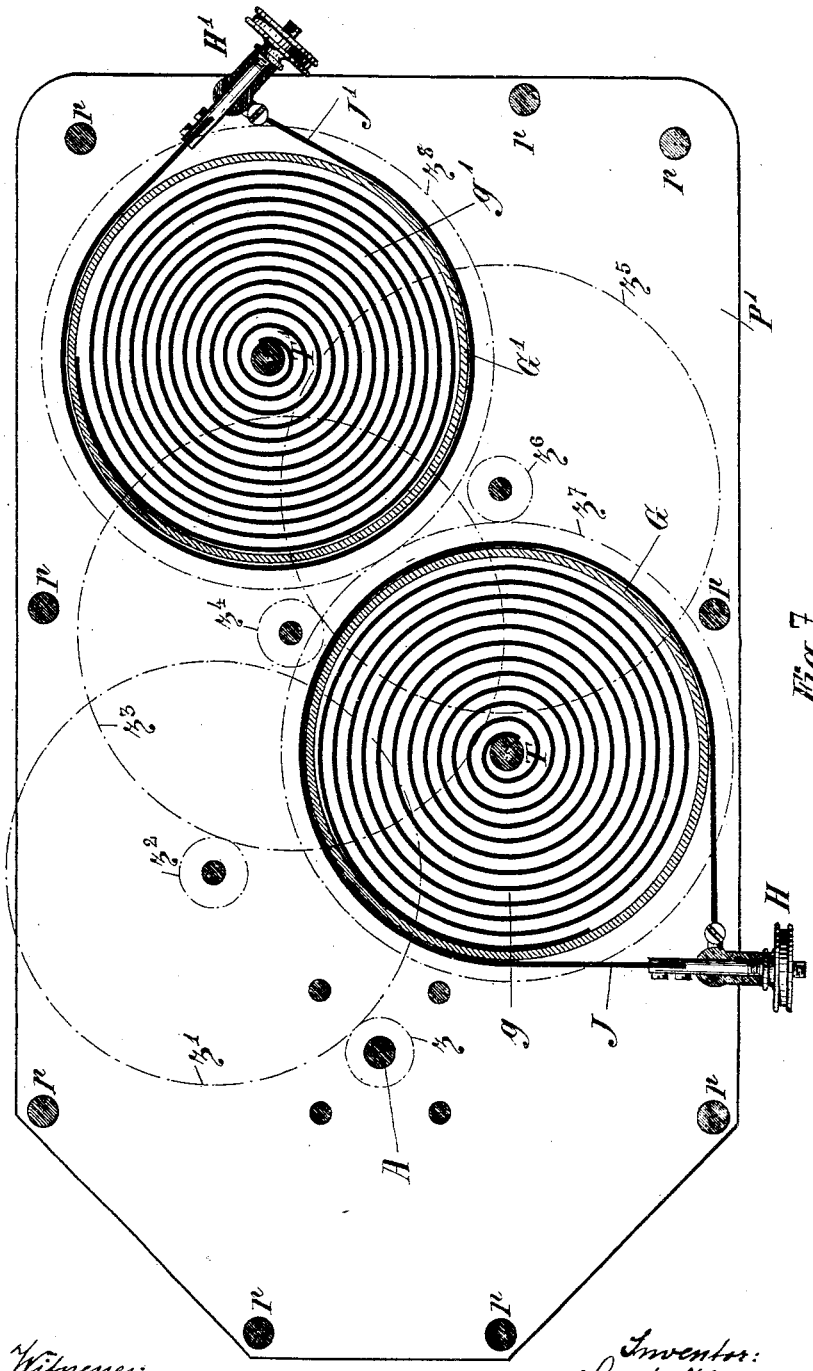

Fig. 7.

Witnesses:
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D. Robertson.

Inventor:
Sante Hellebrandt
by Gartner & Scott Atty's

(No Model.) 4 Sheets—Sheet 4.

S. HELLEBRANDT.

DYNAMO ELECTRIC MACHINE.

No. 493,718. Patented Mar. 21, 1893.

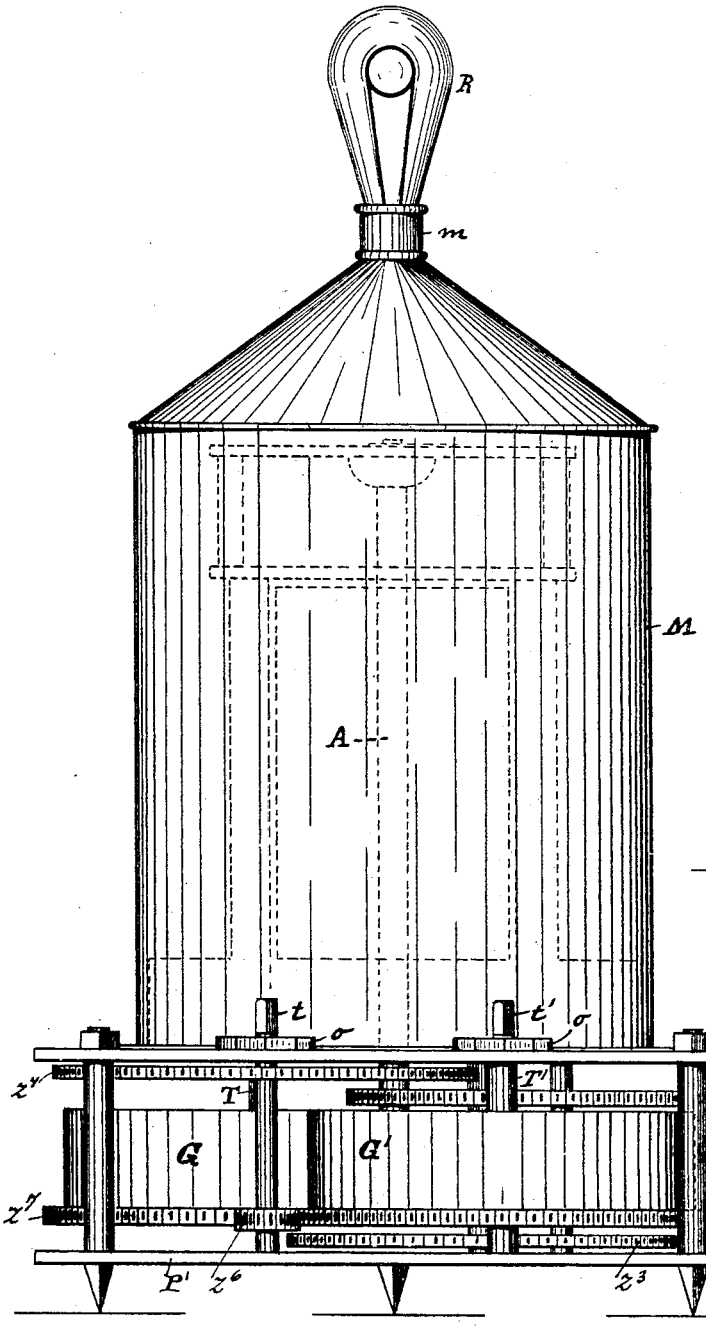

Fig. 8.

WITNESSES:
Wm. D. Bell
D. M. Robertson.

INVENTOR:
Sante Hellebrandt
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UNITED STATES PATENT OFFICE.

SANTA HELLEBRANDT, OF PRZEMYSL, AUSTRIA-HUNGARY.

DYNAMO-ELECTRIC MACHINE.

SPECIFICATION forming part of Letters Patent No. 493,718, dated March 21, 1893.

Application filed May 25, 1892. Serial No. 434,320. (No model.)

To all whom it may concern:

Be it known that I, SANTA HELLEBRANDT, a subject of the Emperor of Austria-Hungary, residing at Przemysl, Austria-Hungary, have invented a new and useful Dynamo-Electric Machine with Mechanical Power, of which the following is a specification.

The object of this invention is to provide a dynamo, simple and durable in construction, of great efficiency, and which dynamo can be used, in connection with its driving mechanism, as generators for an electric table lamp.

The invention consists in the improved table lamp, its dynamo, and driving mechanism, and the combination and arrangements of the various parts thereof, substantially as will be hereinafter more fully described and finally embodied in the clauses of the claim.

Referring to the accompanying drawings, in which like letters of reference indicate corresponding parts in each of the several views: Figure 1. is a sectional view on line *x*, *x*, Fig. 4; Fig. 2. is a top plan view of one half of the upper portion of the dynamo; Fig. 3. is a sectional view on line *y*, *y*, Fig. 1; Fig. 4. is a plan view of the dynamo and its driving mechanism; Fig. 5. is a detail view of the dynamo shaft; Fig. 6. is a sectional view on line *z*, *z*, Fig. 5; Fig. 7.—a sectional view on line *v*, *v*, Fig. 1. (the driving wheels being shown in dotted lines,) and Fig. 8. is a side elevation of a table lamp in connection with the dynamo and its driving mechanism.

In said drawings A represents the shaft, adapted to be revolved in ball bearings L, L'. Said shaft is provided with four squared blocks or disks *a*, *a'*, a^2, a^3, to which are secured the electro magnets E. Each electro magnet, consists of the soft iron core *e*, provided with an outer concentrically, curved plate *e'*, the threaded portion e^2, (by means of which it is secured to its respective blocks *a*) and a metal disk e^3 secured to the core *e*, and adapted to form in connection with the plate *e'*, the space for the coils of insulated wire. The electro magnets E are so arranged, as to form sections or series of four, and each lower section is turned 22.5 degrees, that is to say, each magnet forms with its lower one an angle of 22.5 degrees. The winding of each adjoining section is reversed; the magnets on *a* and a^2 are wound to the right, the magnets on *a'* and a^3—to the left, or vice versa. These four series of electro magnets form the armature, which is adapted to be revolved between the field magnet poles B', B^2, B^3, B^4, secured to the electro-magnets A', A^2, A^3, A^4, the latter being again secured to the top plate P of the box, containing the driving mechanism. The magnets A', A^2, A^3, and A^4, are wound in the same direction, and their field magnet poles B' B^2, B^3, and B^4, are connected at their tops by the iron plate B. Each of the commutators C, C' consists of sixteen insulated segmental portions, which are connected by wires with the electro-magnets E; the two ends of each magnet are connected to the corresponding sections of the upper and lower commutators. The brushes D, D', are secured to plates *d*, *d'* respectively (made out of hard rubber or any suitable material,) and can be adjusted separately by means of screws *f*, or all together by screws g^2, working in elongated slots arranged in plates *d*, *d'*, as clearly shown in Fig. 4. One end of the wire coils of each field magnet (A', A^2, A^3, A^4,) is connected with its respective brush D', the other end—with the binding post K; the binding post K' with the brushes D.

At one quarter revolution of the armature, there are generated the following currents; in the electro magnets on *a*—four in positive direction; on *a'*—four in negative direction; on a^2—four in positive direction, and on a^3—four in negative direction, that is: eight positive and eight negative, or at one complete revolution of the armature—thirty two positive and thirty-two negative directed currents, which results in: sixty-four (in series of four) changing currents, with other words: one current is changed sixteen times during one revolution of the armature.

To the shaft A is secured the pinion *z*, receiving its motion through intermeshing gear wheels *z'*, z^2, z^3, z^4, z^5, z^6, from the gear wheels z^7 and z^8, operated by springs *g*, *g'*. The springs are wound in opposite directions. The inner ends of said springs are secured to shafts T, T' respectively, which are provided with pawls and ratchets *o* and *q* in the usual manner, and also with key holds *t*, *t'*, for winding. Around each spring is arranged a thin metal casing G (G'), which is again surrounded by a metal band J (J'), adapted to be tightened or loosened by

adjusting screw H (H′). By means of this adjusting screw the spring power, and thus the speed of the motor can be regulated, as will be manifest. When the motor is about to be started, the metal bands J, J′ are loosened (by operating their respective screws H, H′). The motor mechanism is arranged between the plates P and P′, stiffened by posts *p*, as clearly shown in Figs. 1 and 8.

In Fig. 8 of the drawings, the dynamo and its motor are shown in connection with a table lamp. For this purpose, the dynamo is surrounded with a metal casing M, which is provided at its top with any suitable lamp socket *m*, adapted to hold the incandescent lamp R, the latter being connected by wires, to the binding posts *k*, *k′*.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a dynamo the combination with the frame, the shaft, and the two commutators, of a series of electro-magnets arranged spirally on said shaft, a series of field magnets secured to the frame and provided with upwardly extending field magnet poles, a series of brushes operating on each of said commutators and adapted to be adjusted separately by means of screws, and in series—by means of slotted plates, to which they are secured, a pinion secured to the shaft and a spring motor operating said pinion substantially as described and set forth.

2. In a dynamo the combination with the frame, the shaft and the two commutators, of a series of electro-magnets arranged spirally on said shaft, a series of field magnets secured to the frame and provided with upwardly extending field magnet poles, a series of brushes operating on each of said commutators and adapted to be adjusted separately by means of screws and in series—by means of slotted plates, to which they are secured, a pinion secured to the shaft, springs arranged on the frame and adapted to operate said pinion by intermeshing gear wheels, and a regulating mechanism for controlling said springs, all said parts substantially as described and for the purposes set forth.

3. In a dynamo the combination with the frame, the shaft and the two commutators, of a series of electro-magnets arranged spirally on said shaft, a series of field magnets secured to the frame and provided with upwardly extending field magnet poles, a series of brushes operating on each of said commutators and adapted to be adjusted separately by means of screws and in series—by means of slotted plates, to which they are secured, a pinion secured to the shaft, springs arranged on the frame and adapted to operate said pinion by intermeshing gear wheels, a regulating mechanism for controlling said springs, a casing surrounding the current generating mechanism, a lamp socket arranged on top of said casing, and an incandescent lamp in said socket adapted to be operated from said dynamo, all said parts substantially as described and for the purposes set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

SANTA HELLEBRANDT.

Witnesses:
W. B. MURPHY,
MARIE GILBHAUS.