(No Model.) 2 Sheets—Sheet 1.

J. F. SEIBERLING.

ELECTRIC MOTOR OR GENERATOR.

No. 450,639. Patented Apr. 21, 1891.

Fig. 1.

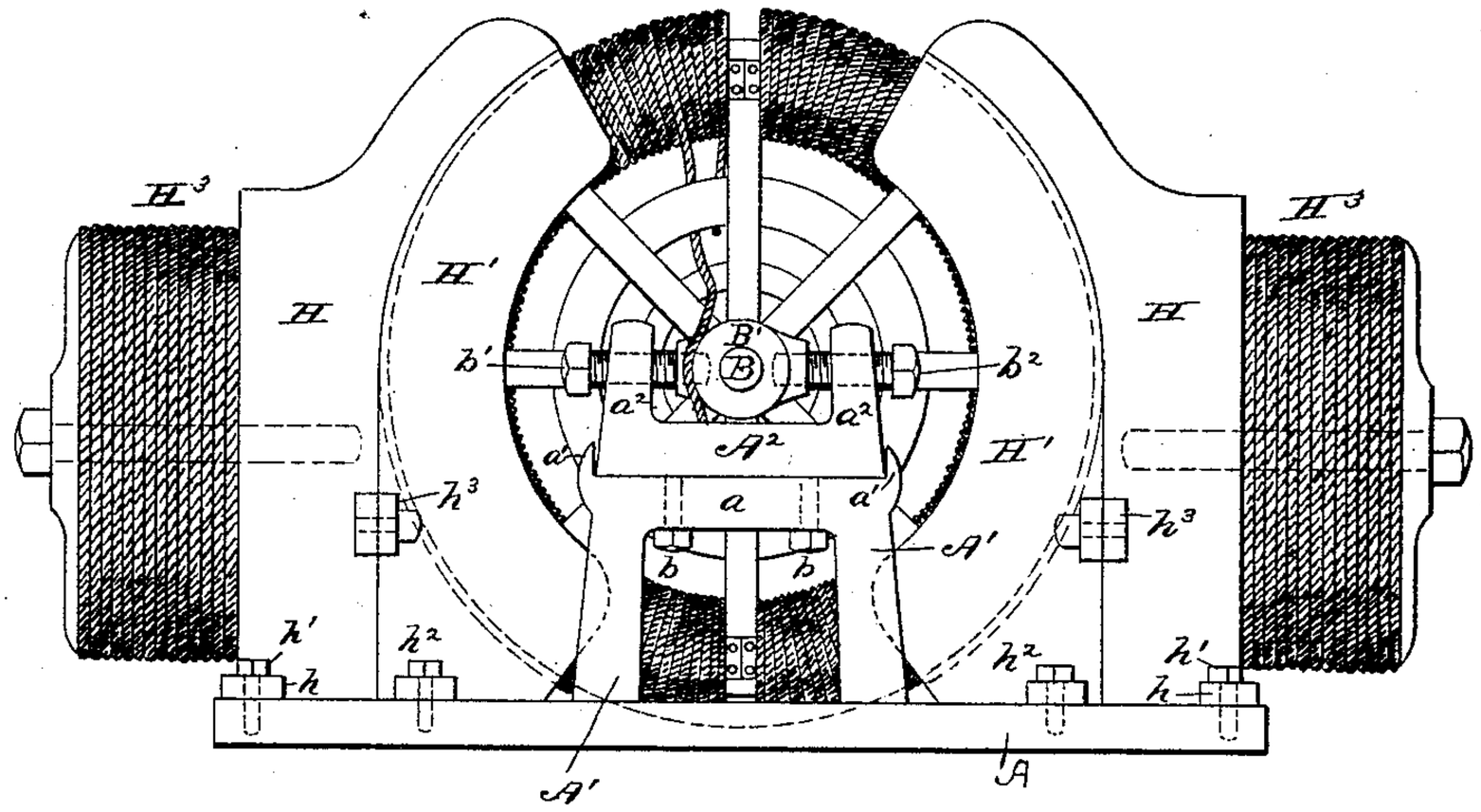
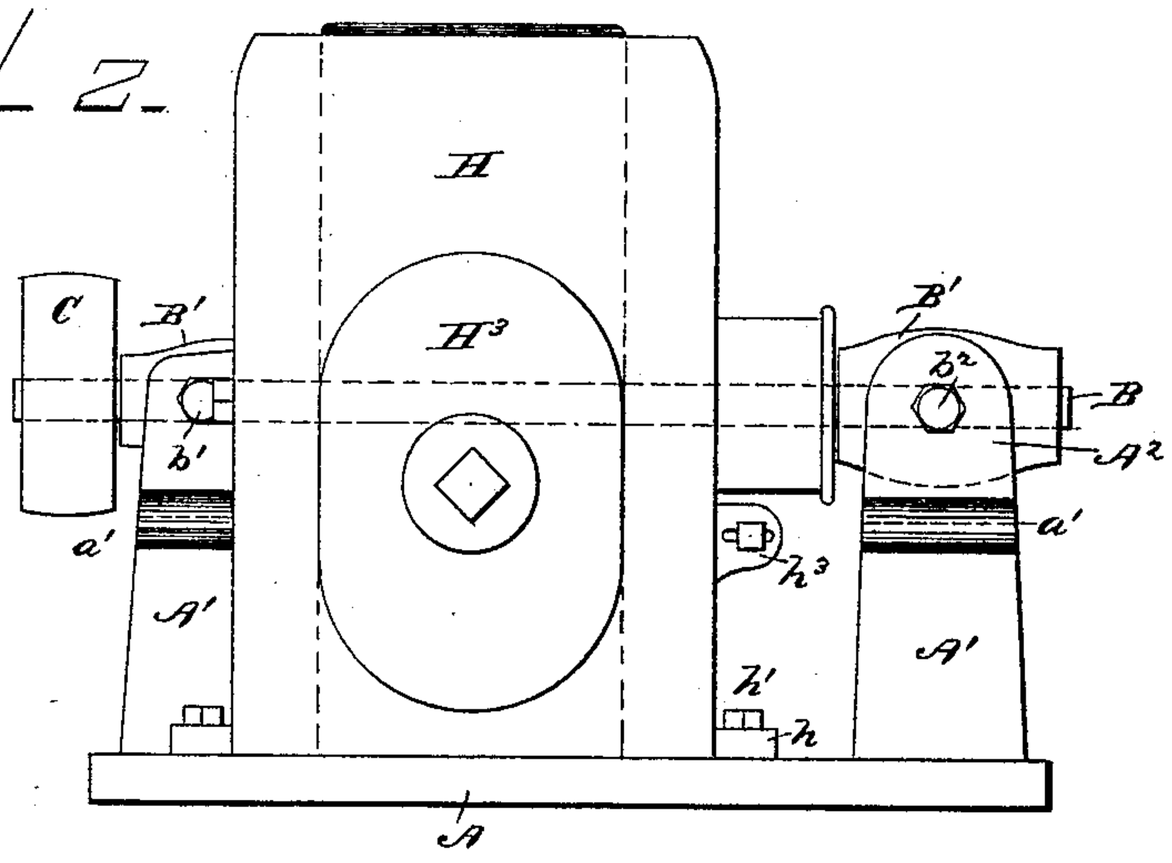


Fig. 2.



WITNESSES:

Alvin Belt

C. F. Belt

INVENTOR

Jno. F. Seiberling

BY

Dill Smith & Lon

ATTORNEYS.

(No Model.) 2 Sheets—Sheet 2.

J. F. SEIBERLING.

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Fig. 3.

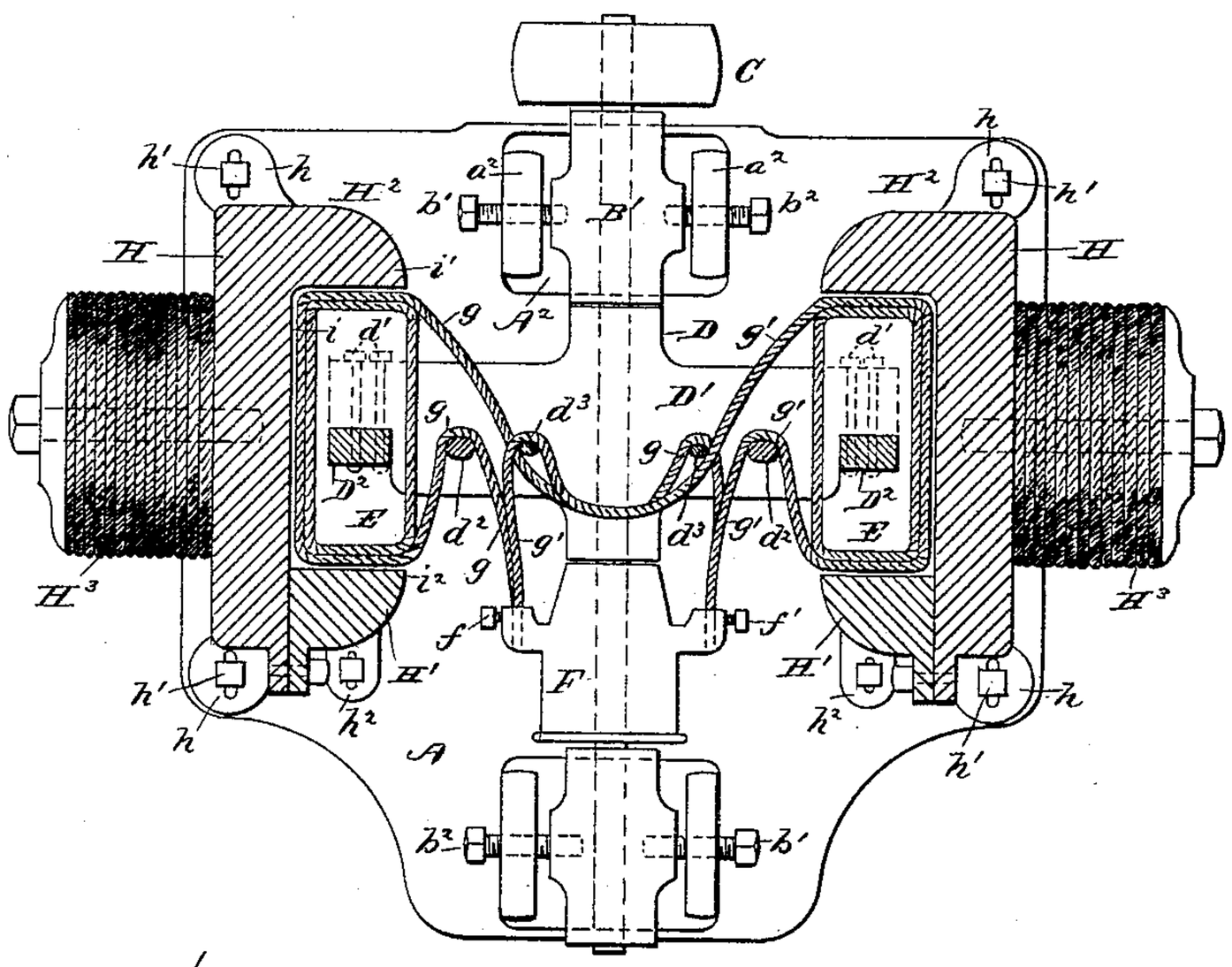


Fig. 4.

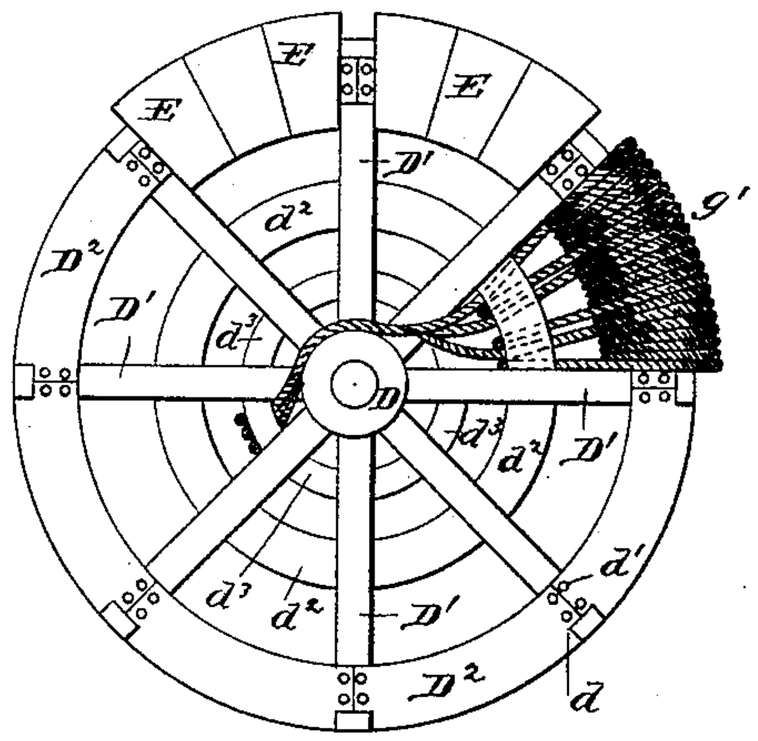
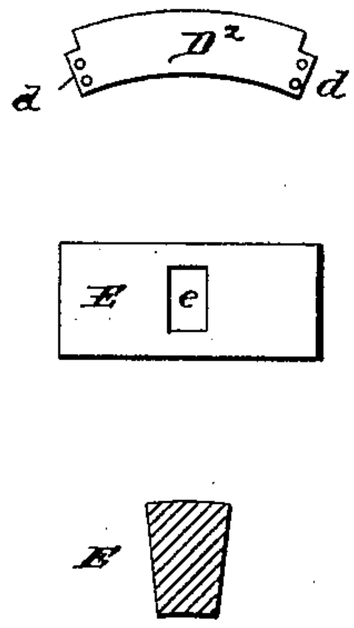


Fig. 5.



WITNESSES:

A. Bruce Bell

C. J. Bell.

INVENTOR

Jno. F. Seiberling

BY

A. L. Smith & Son

ATTORNEYS.

UNITED STATES PATENT OFFICE.

JOHN F. SEIBERLING, OF AKRON, OHIO.

ELECTRIC MOTOR OR GENERATOR.

SPECIFICATION forming part of Letters Patent No. 450,639, dated April 21, 1891.

Application filed November 17, 1890. Serial No. 371,704. (No model.)

To all whom it may concern:

Be it known that I, JOHN F. SEIBERLING, a citizen of the United States, and a resident of Akron, county of Summit, and State of Ohio, have invented a new and useful Improvement in Electric Motors, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification.

My invention relates to the construction of the pole-pieces of the field-magnets in two parts, adjustable one relative to the other and having faces adjustable at the sides of the armature; also, to the construction of the armature for facilitating removal and repair of its parts; and it further relates to certain details of construction and arrangement of parts for facilitating their adjustment, all as hereinafter described and claimed.

In the accompanying drawings, Figure 1 represents my improved motor in side elevation. Fig. 2 is an end elevation of the same. Fig. 3 is a plan view showing the magnets and armature in section. Fig. 4 is a side elevation of the armature, and Fig. 5 shows in detail parts of the armature.

A indicates the base-plate or frame on which the parts of the machine are mounted, and A′ A′ standard-brackets thereon, one on either side and composed each of uprights having at their upper ends a horizontal connecting-bar *a*, provided at its ends with upright ears *a′ a′*, between which is secured a bearing-block A^2, having perforated upright lugs or ears a^2 a^2 at its ends, the perforations in said ears being screw-threaded to receive set-screws *b′* and b^2, the points of which enter sockets in the sides of and support bearing-sleeves or trunnion-blocks B′. The blocks A^2, with the trunnion-blocks supported therein, are made adjustable vertically by means of screws *b b*, passing up through the horizontal bar *a*, and by adjusting the screws *b′* and b^2 said trunnion-blocks B′ and the armature-shaft B, journaled therein, can be adjusted laterally, as required.

The shaft B has a band or driving wheel C, fast on one end, and between the trunnion-blocks B′ B′ it has the armature and the commutator secured to it in any suitable manner. The armature is made in the form of a wheel having a central hub D, provided with radial arms or spokes D′, which are recessed near their outer ends to receive the shouldered ends *d* of the sections or segments D^2, which form the rim, and are secured in the notched or recessed ends of the radial arms D′ by means of screws or bolts *d′*. Upon the rim thus formed and between the radial arms D′ the core E, also made in sections, is mounted, one or more sections in each space between the arms D′ D′, and each provided with a central perforation *e*, adapting it to receive and be held in place by the removable rim-segment on which it is mounted. These sections, one of which is shown in outer face view and in cross-section in Fig. 5, are each wound separately, thus adapting it in case of injury to be taken off by removing the bolts *d′*, connecting its section of rim with the arms D′, after which it can be removed from said section and rewound or repaired and replaced without disturbing the other sections of the rim or core. The wheel or armature has two rings d^2 and d^3 cast on or secured to its arms D′ between its hub and rim and forming connecting cross bars or braces, which serve to support the ends of the wires *g* or *g′*, extending to and from the core-sections and between it and the commutator, (indicated at F,) and which may be of any usual or preferred construction. The wire *g* is shown with one end connected to and extending from one pole or binding-screw *f* of the commutator in loop form into and partly around the ring d^2 or over said ring, reference being had to Fig. 3, thence to the core-block E, around which it is wrapped in any usual manner of forming the coil, the other end of the wire passing from the core-block down under the ring d^3 on the side adjacent to said block, thence crossing to the opposite side of the hub at the sides of the intervening spokes, as shown in Fig. 4, and over the ring d^3 upon that side and down to the opposite pole or binding-screw *f′* of the commutator, as shown. The wire *g′* passes in the reverse direction from the pole *f′* around the ring d^2 and its core-block, and thence under and over the ring d^3 to the pole *f*, as shown. By simply detaching the ends of the wires on any one section of rim and removing the bolts fastening said

section the section or sections of core thereon can be readily removed and repaired and replaced or renewed, as required.

The pole-pieces of the field-magnets are made concave on their inner adjacent faces, conforming to the peripheral surface of the armature, as shown in Fig. 1, and are made each in two parts H and H′, the part H being angular or L-shaped in cross-section, as shown in Fig. 3, and secured to the base-plate A by means of slotted ears and bolts *h* and *h′*, which permit its lateral adjustment. The part H′ is similarly secured to the base-plate by a slotted ear and a bolt at h^2, and to the part H by means of laterally-projecting slotted ears and a bolt at h^3, which permit its adjustment with or independently of the main portion H. The part H′ forms a projecting flange on the face of the plate H, similar to and opposite the flange H^2, making the magnet approximately U-shaped in cross-section, as shown in Fig. 3. To the backs or outer sides of these pole-pieces the field-wires (indicated at H^3) are applied, arranged in any usual or suitable manner. The armature reaches within the concave and open U-shaped side of the magnet, which is thus provided with three faces, (indicated at *i* and *i′* i^2, *i* facing the peripheral face of the armature, and *i′* and i^2 the sides thereof,) thereby exposing greatly-increased surface to the armature as compared with the ordinary construction.

By the arrangement of the adjusting-screws *b b* and *b′* and b^2, in connection with the bearing and trunnion blocks A^2 and B′, the armature-shaft and armature can be readily adjusted either vertically or laterally to bring it into the required relation to the faces of the magnets, and the magnets themselves can be adjusted laterally bodily, or the part H′ can be adjusted relatively to the part H for bringing the side faces *i′* and i^2 into proper and most effective relation to the sides of the armature.

By the construction of the armature-wheel as described all obstructions or projections are removed from the sides and periphery of the armature, and the opposing faces of the magnets can consequently be brought into the most effective relation.

Having now described my invention, I claim as new—

1. In an electric motor, the pole-pieces of the field-magnets, constructed each in two parts, one of which is made adjustable laterally relatively to the other, substantially as described.

2. The combination, in an electric motor, of the pole-pieces of the field-magnets, having each three surfaces conforming to the sides and periphery of the armature, and one of which surfaces is adjustable to and from the opposing surface, and the armature having its sides and periphery unobstructed, substantially as described.

3. The combination, in an electric motor, of the armature, the adjustable pole-pieces, made each in two parts and having at the sides of the armature opposing faces, one of which is adjustable relative to the other, having surfaces on both sides and at the periphery of said armature, and the adjustable shaft on which said armature is mounted, substantially as described.

4. The combination, with an armature having three unobstructed sides, of the adjustable pole-pieces of the field-magnets, made each in two parts adjustable one relative to the other and having three faces conforming to said three armature-sides, and the field coils or wires secured to the backs of said adjustable pole-pieces, substantially as described.

5. The armature-wheel having the recessed radial arms, the notched and removable rim-sections, and rings d^2 and d^3, connecting said arms between the hub and rim, substantially as described.

6. The combination, in an armature-wheel, of the removable rim-segments, made each in a single piece having shouldered ends, the radial arms having notched or recessed ends to receive said shouldered segment ends, the core-sections mounted on said rim-segments, and the bolts for uniting the segments to the radial arms, substantially as described.

7. The combination, in an electric motor, of an armature-wheel having radial arms, the connecting-rings or cross-bars between said arms, the sectional rim, the core, also made in sections separately wound, and the commutator connected therewith, substantially as described.

In testimony whereof I have hereunto set my hand this 10th day of November, A. D. 1890.

JNO. F. SEIBERLING.

Witnesses:
C. V. HUGHES,
H. I. MCGILL.