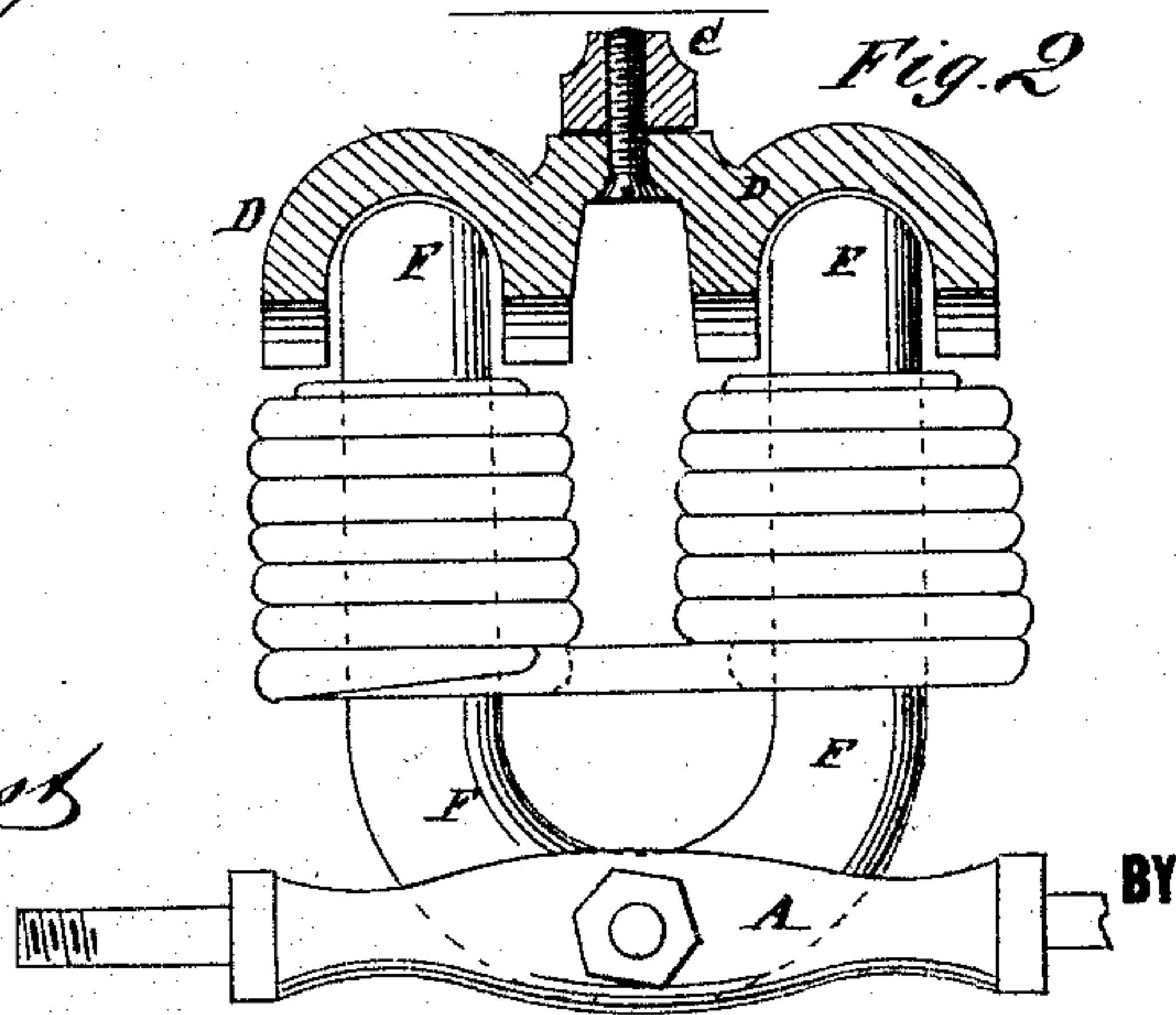
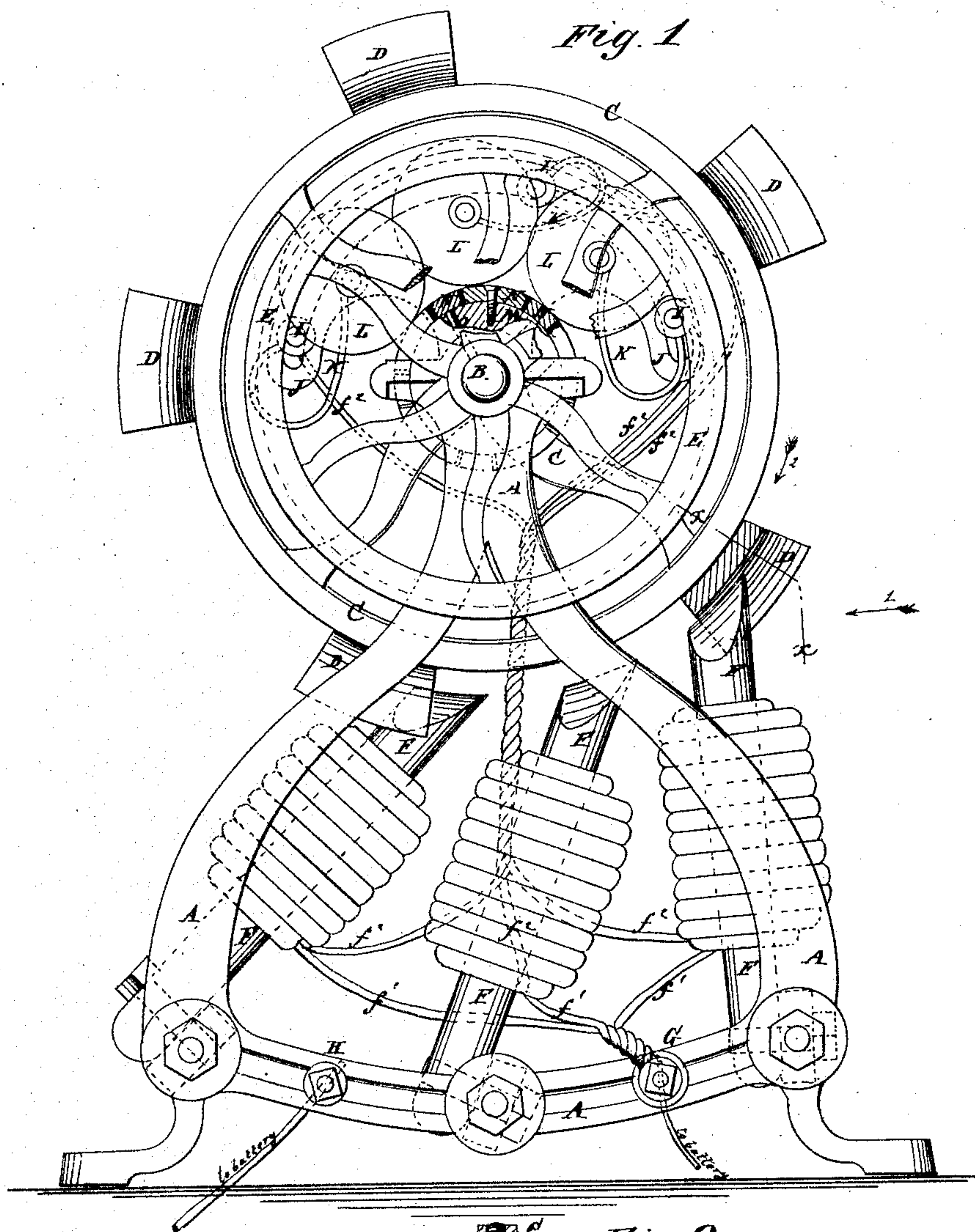


**C. J. B. GAUME.**  
**Electro-Magnetic Motors.**

No. 156,920.

Patented Nov. 17, 1874.



**WITNESSES:**  
*A. W. Almqvist*  
*O. Sedgwick*

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**ATTORNEYS.**



# UNITED STATES PATENT OFFICE.

CHARLES J. B. GAUME, OF BROOKLYN, NEW YORK.

## IMPROVEMENT IN ELECTRO-MAGNETIC MOTORS.

Specification forming part of Letters Patent No. **156,920**, dated November 17, 1874: application filed December 29, 1873.

*To all whom it may concern:*

Be it known that I, CHARLES J. B. GAUME, of Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in Electro-Magnetic Engine, of which the following is a specification:

Figure 1 is a side view of my improved engine, parts being broken away to show the construction. Fig. 2 is a longitudinal section of one of the armatures, taken through the line  $x x$ , Fig. 1, and shown in connection with its magnet.

Similar letters of reference indicate corresponding parts.

My invention has for its object to furnish an improved electro-magnetic engine for driving sewing-machines and other light machinery, which shall be so constructed that the magnets and armatures may be in contact with each other long enough for the magnets to exert their full power.

The invention will first be fully described, and then pointed out in the claim.

A represents the frame-work of the engine, in bearings in the upper part of which revolves the shaft B, to the middle part of which is attached the wheel C, to the rim of which the armatures D are secured. To one end of the shaft B is attached a pulley, E, from which motion is taken to the machinery to be driven. To the lower part of the frame A are attached the magnets F, from each of which a wire,  $f^1$ , leads to a clamp, G, with which a wire leading to the battery is connected. The other wire leading to the battery is connected with a clamp, H, attached to the frame A, which frame A thus forms part of the circuit. From each of the magnets F a wire,  $f^2$ , leads to a bolt, I, secured to an arched bar or plate, J, attached to or formed upon the top of the frame A. The bolts I, as many of which are used as there are magnets, are secured by nuts in slots formed in the bar or plate J, and curved upon the arc of a circle having its center in the axis of the shaft B, so that the bolts I can be readily adjusted as required. To the inner end of each of the bolts I is attached one end of a curved spring, K, to the other end of which is pivoted a wheel,

L, which revolves upon the surface of the wheel M, attached to the shaft B. The body of the wheel M is formed of wood or other suitable non-conducting material, and its face is covered with transverse strips of metal N, made alternately narrower and wider, and the adjacent edges of which are insulated from each other by narrow strips of pasteboard, or other suitable non-conducting material. The narrow strips N are connected with the shaft B by metallic pins, screws, or wires O, so that when one of the wheels L passes upon the narrow strips N the circuit will be closed, and when the said wheels pass upon the wider strips N the circuit will be broken. The wheel L, strips N, armatures D, and magnets F are so arranged that the circuit will be closed as each armature passes upon each magnet, and will be broken as it passes from said magnet. The armatures D are made in the form of a double U, the U's being connected with each other by a center bar or plate, by which the armatures are secured to the rim of the wheel C so as to overlap the sides of the ends of the magnets, as shown in Figs. 1 and 2, which ends are also rounded off, as is also shown in Figs. 1 and 2.

By this construction of the armatures D and the ends of the magnets F the armatures will be kept in contact with magnets long enough for the magnets to exert their full power between the closing and opening of the circuit, even when the armature-wheel C is revolving rapidly.

This invention is an improvement of my patented machine, in which the polar extremities of the magnets were tangential to the face of the revolving wheel carrying the armatures. In that the faces were plain tangents, and the faces alone were used to attract the armatures. The object in this is to give a greater extent of polar surface, and, in addition, to utilize an amount of magnetic force not found in the faces themselves. For this purpose the tangential ends are rounded, the line of curvature being at right angles to the tangential line, and the armatures made of U shape, the bowl or bottom of the U corresponding to the rounded face of the pole, while the extended

sides of the U embrace, to a greater or less extent, an exposed side portion of the poles, and thus utilize that force which is exerted by the sides of the poles.

I am aware that V-shaped magnets and armatures have been used. In such, however, it is expressly provided that the two shall always coincide, so that all the force used shall be in direct radiating lines to the axis of the core, while in my arrangement I utilize that radiation at or near the poles in all directions.

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

In an electro-motor, the combination of the magnets having the rounded and tangential polar extremities and the double-U-shaped armatures, substantially as set forth.

CHARLES J. B. GAUME.

Witnesses:

JAMES T. GRAHAM,  
T. B. MOSHER.