

E. BÜRGIN.  
Magneto-Electric Machine.

No. 224,642.

Patented Feb. 17, 1880.

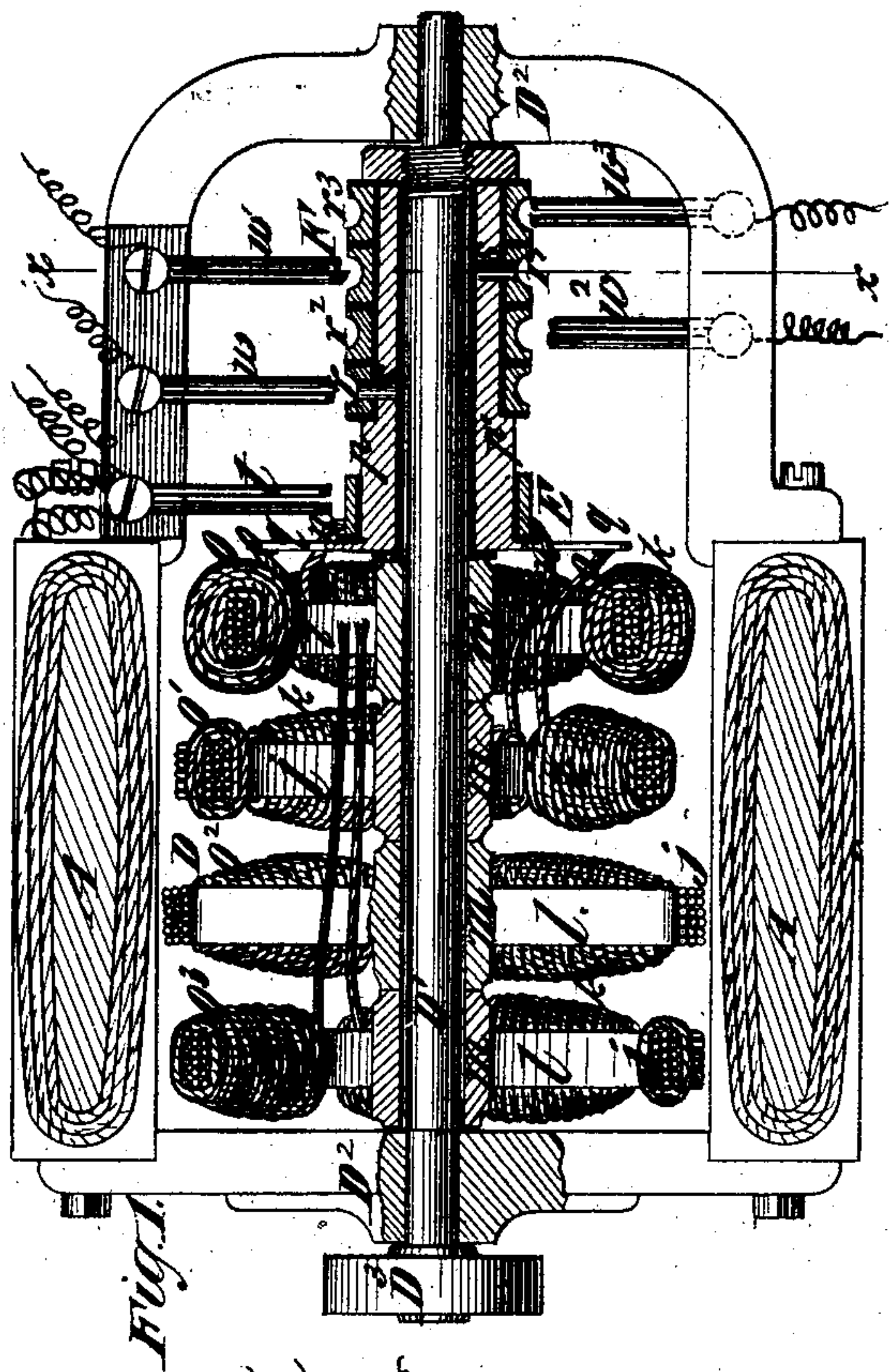


Fig. 1.

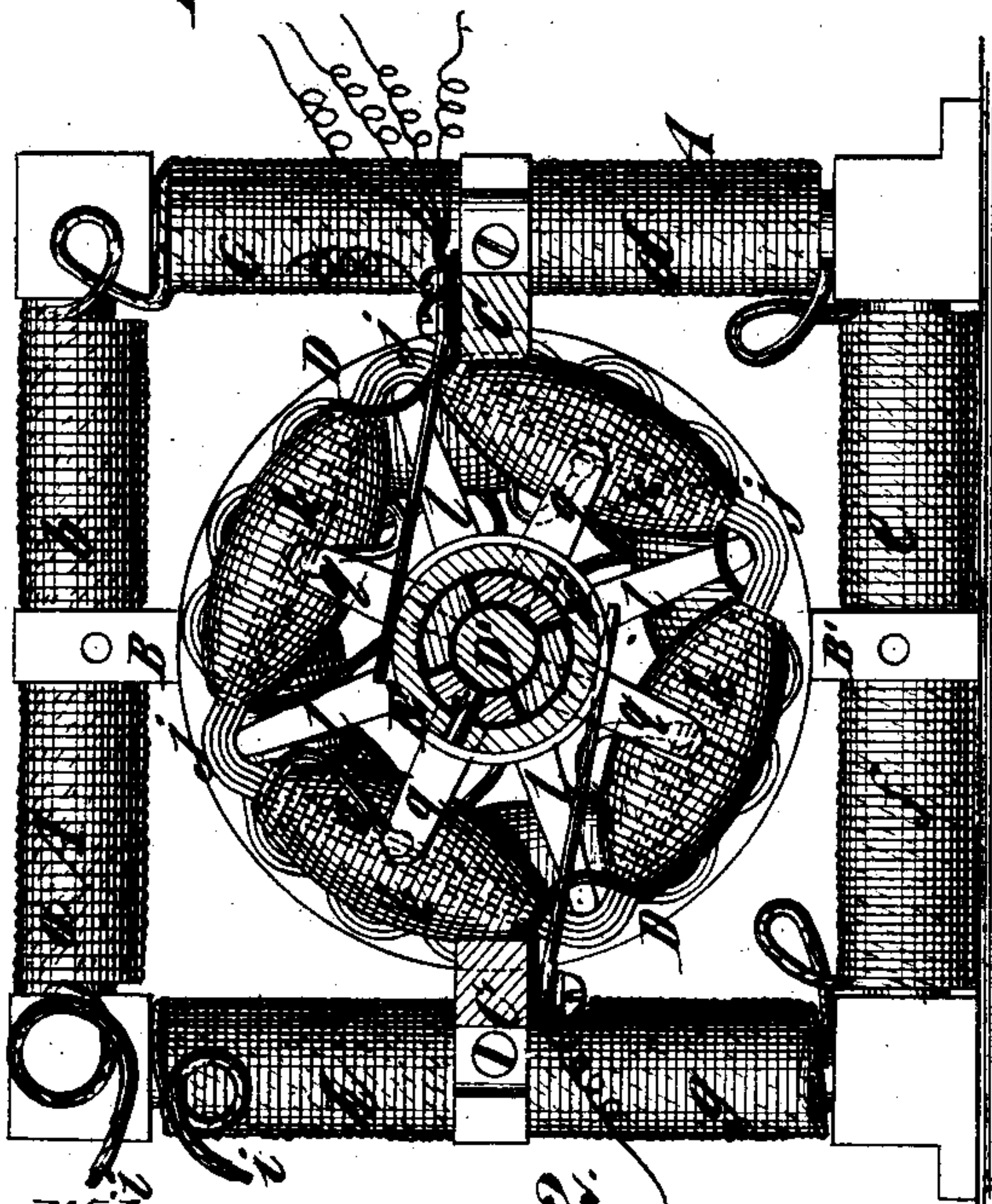


Fig. 2.

Witnesses  
John Decker  
Thomas E. Ruch

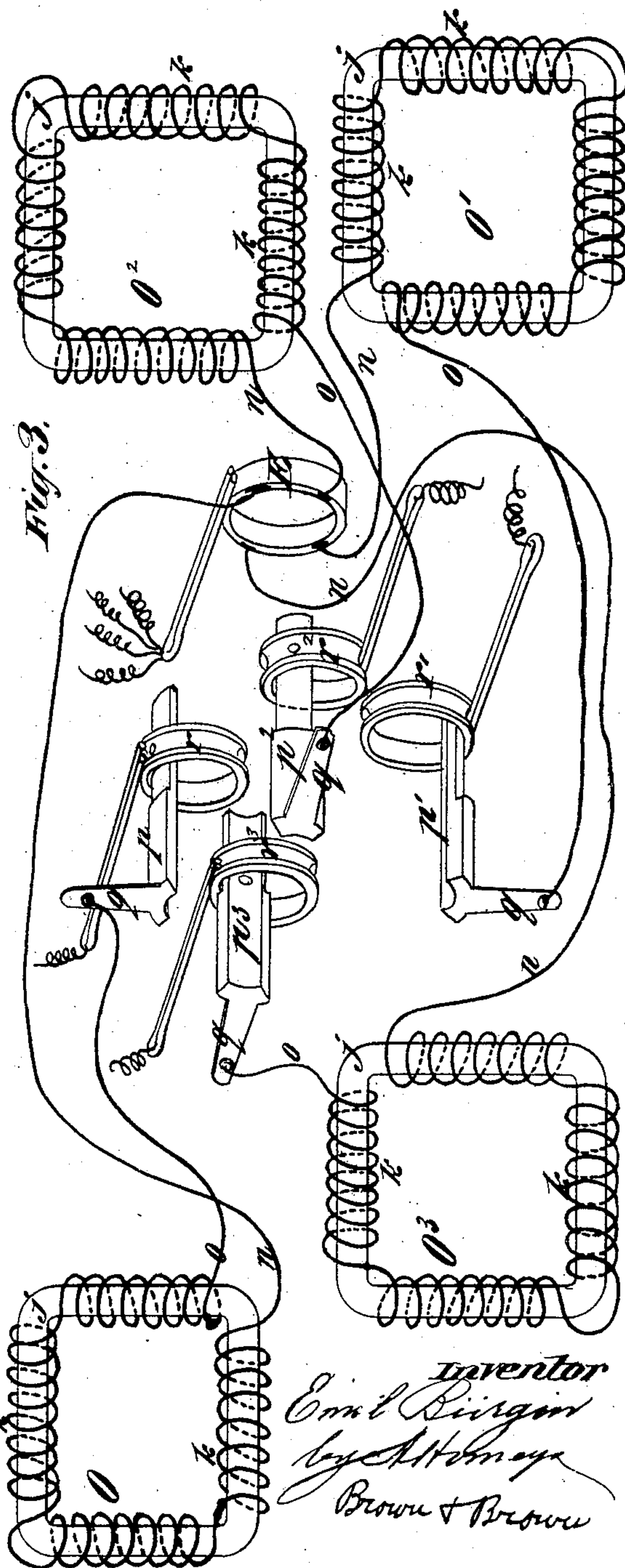


Fig. 3.

Inventor  
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# UNITED STATES PATENT OFFICE.

EMIL BÜRGIN, OF BASEL, SWITZERLAND.

## MAGNETO-ELECTRIC MACHINE.

SPECIFICATION forming part of Letters Patent No. 224,642, dated February 17, 1880.

Application filed June 14, 1879.

*To all whom it may concern:*

Be it known that I, EMIL BÜRGIN, of Basel, in the Republic of Switzerland, have invented certain new and useful Improvements in Magneto-Electric Machines, of which the following is a specification.

The object of my invention is to produce a compact and simple machine for the production of alternative currents of electricity.

10 My invention consists in a novel construction of the generating-cylinder, in a novel combination of a commutator with said cylinder, and in certain details of construction hereinafter to be described.

15 In the accompanying drawings, Figure 1 represents a longitudinal section of a machine embodying my improvements; Fig. 2, a transverse section on the dotted line  $xx$ , Fig. 1; and Fig. 3, a perspective view of the several  
20 elements composing the generating-cylinder and their connections with the several commutator-rings.

Similar letters of reference designate corresponding parts in all the figures.

25 A designates the stationary frame of the machine, which may be made of wrought or cast iron. It may be composed of two or several pieces, and is represented as wound with wire, forming coils  $a b c d e f g h$ , connected  
30 with each other so as to form poles B B' C C' when an electric current passes through them, and terminating at  $i$ .

D designates a rotary generating-cylinder mounted on a central shaft, D', supported in  
35 bearings D<sup>2</sup>, extending from the frame A. The said shaft is also provided with a pulley, D<sup>3</sup>, which may receive a belt for rotating the said shaft and generating-cylinder. The generating-cylinder D is composed of a number of  
40 separate elements, O O' O<sup>2</sup> O<sup>3</sup>, represented as each consisting of a polygonal core or ring,  $j$ , which is preferably made of soft wire and which has its sides wound with insulated wire, forming coils  $k$ .

45 The core or ring  $j$  of each element is supported by arms  $l$ , radiating from a hub,  $m$ , upon the shaft D', which arms may be made of any metal other than iron. The core or ring  $j$  of each element is shown as rectangular to correspond with the number of poles in the frame  
50 A; but it may be made in any polygonal form,

as hexagonal or octagonal, the frame A having its poles equal in number to the sides of the said core.

In order to make currents of electricity 55 passing from the machine continuous the elements composing the generating-cylinder are set spirally on the shaft, each being a little in advance of the one at its side.

The manner of forming the coils  $k$  of insulated wire upon the cores or rings  $j$  is clearly illustrated in Fig. 3. The wire is wound in different directions on alternate sides of the said cores or ring, and its two ends  $n o$  are connected to the commutator-rings, as herein- 65 after described.

The commutator shown consists of a sleeve insulated from and secured upon the shaft D' so as to rotate therewith, and composed of a series of segments,  $p p' p^2 p^3$ , all insulated 70 from each other and corresponding in number to the elements in the rotary generating-cylinder D. These segments have extending from them arms  $q$ , to which the wires  $o$ , leading from the elements of the generating-cyl- 75 inder, are connected, the element O being connected to the segment  $p$ , the element O' to the segment  $p'$ , the element O<sup>2</sup> to the segment  $p^2$ , and the element O<sup>3</sup> to the segment  $p^3$ .

E designates a ring insulated from and se- 80 cured to the aforesaid segments so as to rotate therewith, and to which the wires  $n$ , leading from the four elements of the generating-cylinder D, are connected.

The commutator F consists of a number of 85 rings,  $r r' r^2 r^3$ , insulated from and secured upon the aforesaid segments, and also insulated from each other. Each ring, however, is connected with one of said segments, so as to receive the electric current therefrom, and 90 the means here shown for effecting such connection consists of pins  $s$ , by which the said rings are secured to the several segments. Thus the ring  $r$  is connected by the segment  $p$  with the element O, the ring  $r'$  is connected 95 by the segment  $p'$  with the element O', and so on. It will thus be seen that the current of electricity passes from the commutator-finger  $t$ , bearing upon the ring E, to the several elements of the generating-cylinder D, and from 100 said elements passes to the several rings  $r r' r^2 r^3$ , and thence, through the commutator-fin-

gers  $w w' w^2 w^3$ , away from the machine to the locality where needed.

I claim as my invention—

1. The generating-cylinder D, composed of the elements O O' O<sup>2</sup> O<sup>3</sup>, arranged in helical relation with the shaft D'.

2. The connection of the coils  $k$  of the elements with the commutator F.

3. The iron frame A, provided with the coils  $a b c d e f g h$ , which are connected with each other so as to produce the poles B C B' C', substantially as and for the purpose set forth.

4. In an electro-magnetic machine, the com-

bination, with a generating-cylinder composed of elements O O' O<sup>2</sup> O<sup>3</sup>, each element consisting of a polygonal ring or core,  $j$ , having its sides wound with wire, of the ring E, with which all the elements are connected, and the rings  $r r' r^2 r^3$ , to which the said elements are connected separately through the segments  $p p' p^2 p^3$ , substantially as specified.

EMIL BÜRGIN.

Witnesses:

HAGENBACH BISCHOFF,  
BUSER STAEBELIN.