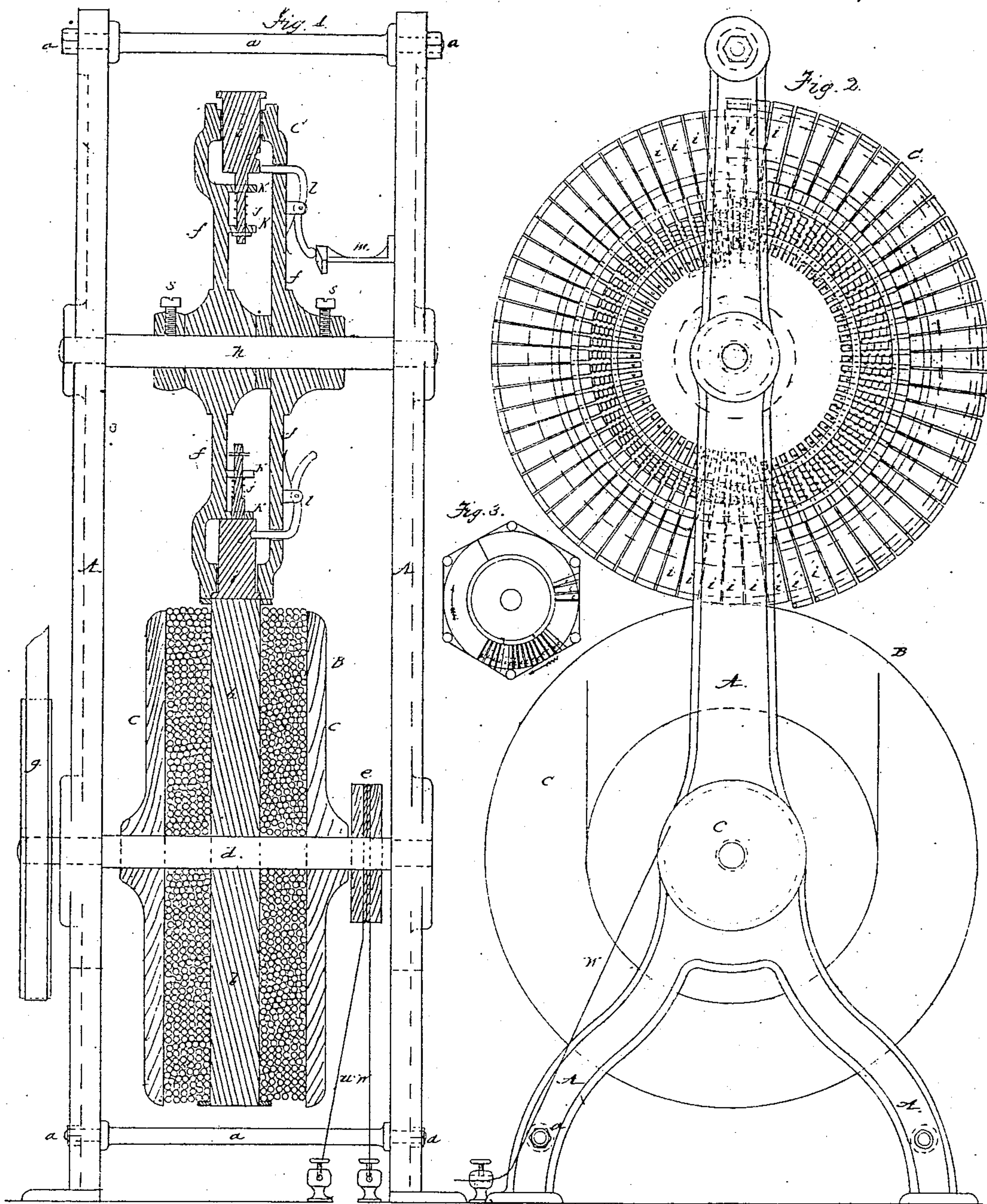


*A. J. B. De Morat.*

*Imp<sup>d</sup> Electro-Magnetic Engine.*

*N<sup>o</sup> 80463*

*Patented Jul. 28, 1868.*



*Witness  
C. Hawes  
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*Inventor,  
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# United States Patent Office.

ALEXANDER JOHN B. DE MORAT, OF PHILADELPHIA, PENNSYLVANIA.

Letters Patent No. 80,463, dated July 28, 1868.

## IMPROVEMENT IN ELECTRO-MAGNETIC ENGINES.

The Schedule referred to in these Letters Patent and making part of the same.

### TO ALL WHOM IT MAY CONCERN:

Be it known that I, ALEXANDER JOHN B. DE MORAT, of Philadelphia, in the county of Philadelphia, in the State of Pennsylvania, have invented a new and improved Engine or Mode of Applying Electric, Magnetic, or Galvanic Fluid as a motive-power; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and the letters of reference marked thereon.

The nature of my invention consists in the use of permanent or electro-magnets, so arranged with armatures as to allow a constant current without the necessity of any interruption or breaking, (as has always been the case heretofore, where motion or power has been attempted to be obtained, by engines, through the use of electricity, magnetic or galvanic fluid, or their combinations.) Thus much greater velocity, more constant and regular motion, and much greater power can be obtained from the same amount of electric, magnetic, or galvanic current.

To enable others skilled in the art to make and use my invention, I will proceed to describe the construction of this engine as exhibited in the accompanying drawings—

Figure 1 being a front view, and

Figure 2 being a side and sectional view—

Similar letters representing similar parts of each.

Letters A represent a strong frame, of metal or wood, (which may stand vertical, as represented, or horizontal,) fastened firmly together by means of the rods *a*, with screws and burrs at each end, as at *a'*.

B represents a circular magnet of two or more poles, with the iron disk *b*, and fine insulated wire wound on each side in a coil, and kept in their place by the wooden or non-conducting flanges *c*, the whole upon the revolving shaft *d*. Upon this same shaft, *d*, is a wooden wheel, *e*, with two metal bands separated from each other as conductors, connected with the two extremities of the metallic coils, and upon these bands press two spring wires, *w*, connected with the poles of the galvanic battery. Upon one extremity of the shaft *d* is the driving-pulley *g*.

C represents a complete circle or wheel of many armatures. *f*, the iron flanges fastened upon the revolving shaft *h* by the screws *S*. *i*, the iron armatures, moving freely in the flanges *f*, not touching the circumference of the flanges *f*, when out, and moving easily in the brass or other diamagnetic metal sockets, *k*. *j*, the coil-springs, to force the armatures *i* outward, when not held inward by the latches *l*. *m*, the arm attached to the frame A, on the end of which the outer ends of the latches *l* strike, thus lifting the latches *l* out of the notches *o* in the armatures *i*, and the springs *j* are allowed to force the armatures *i* outward, as at *i'*.

In fig. 2 is represented about half of the armatures, *i'*, out of the flanges *f*, while the other armatures, *i*, are still against the flanges *f*. As soon as the magnet B is rendered active, the armatures *i'* are attracted angularly, producing a motion by the tendency to close or to form contact. This is not possible without producing two motions, one causing the system to revolve, the other sending the armatures inward against the flanges *f*, as *i*, fastening them there by the latches *l*, fig. 1, after having produced their intended effects. In that position they form but one mass with the flanges *f*, or otherwise understood as the curves of equilibrium, balanced magnetically on the other side by the same iron flanges, *f*, without the magnetic effect of the armatures, which at this stage are out, and are individually insulated from each other. Were this not so, it would require a great force to make them move when once in contact with the magnet. No impediment should be placed there, as on their freedom to move upward depends the whole and vital element to obtain the motive-power.

When the armatures *i* have been pressed inward against the flanges *f*, the latches *l* fall into the notches *o*, and keep the armatures *i* in that position until they pass beyond the sphere of attraction, afterward released by the arm *m*, as before mentioned, and the springs *j* then press the armatures upward or outward, as *i'*.

If more desirable, these armatures *i'* on the wheel C, as mentioned and described as above, can be themselves electro-magnets in place of the circular magnet B, and for armatures attract on one or more curves, or a number of planes tangential each part of the circle, in the form of a hexagon or other polygon, where the

attraction would be effected, so as to form an endless chain or elastic band, supported at angle of the polygon on a wheel, and each edge of the chain or band supported by a diamagnetic metallic groove; this chain or band revolving with the magnet C, as seen in fig. 3.

On a large scale, a more desirable construction may be adopted. Instead of the disk B, a series of U-form electro-magnets, radiating from a common centre, their poles of the same sine, separated or united at their heads, as the case may be, forming a continuous circle, or a double wheel. A series of such can be placed on a shaft or axis.

What I claim as my invention, and desire to secure by Letters Patent, is—

The combining and arranging of a series of magnets, with magnets or armatures, revolving, or other motion, which are made to pass from a sphere of equilibrium into a sphere of attraction, thereby obtaining a motive-power by the motion produced, resulting from the power of attraction, when one or more permanent or electro-magnets are placed angularly against curves or plain surfaces of any metal possessing magnetic properties, and in this motion at the same time to bring back the system into a neutral limit or sphere of equilibrium, and in that state to arrest and carry it beyond the limits of attraction, (without the necessity of breaking circuit,) then afterward released for a subsequent action, as herein set forth and described, or any other, substantially the same, which will produce these intended effects.

ALEX. J. B. DE MORAT.

Witnesses:

W. P. HIBBIRD,  
M. R. DE MORAT.