

The machine, as a philosophical instrument, operates with beautiful and surprising effect, and no reason can be discovered why the motion may not be indefinitely continued.

2. Rotating Machine, composed entirely of electro-magnets both in its fixed and revolving members.

A machine of this construction has been this day, March 29, 1837, exhibited to me by Mr **Thomas Davenport** himself, who came from New York to New Haven for that purpose.

It is the same machine that has already been described, except that the exterior fixed circle is now composed entirely of electro-magnets.

The entire apparatus is therefore constructed of soft unmagnetic iron, which being properly wound with insulated copper wire, is magnetized in an instant by the power of a very small battery.

The machine is the identical one used before, except that the exterior circle of permanent magnets is removed, and in its place is arranged a circle of soft iron, divided into two portions, to form the poles:

These semicircles are made of hoop iron, one inch in width, and one eighth of an inch in thickness. They are wound with copper wire insulated by cotton—covering about ten inches in length on each semicircle, and returning upon itself, by a double winding, so as to form two layers of wire, making on both semicircles about one thousand and five hundred inches.

The iron was not wound over the entire length of one of the steel semicircles; but both ends were left projecting, and being turned inward, were made to conform to the bend of the other part; each end

that is turned inward and not outward is about one third of the length of the semicircle. These semicircles being thus fitted up, so as to become, at pleasure, galvanic magnets, were placed in the same machine that has been already described, and occupied the same place that the permanent steel magnets did before. The conducting wires were so arranged, that the same current that charged the magnets of the motive wheel, charged the stationary ones, placed around it, only one battery being used. It should be observed, that the stationary galvanic magnets thus substituted for the permanent steel ones were only about half the weight of the steel magnets. This modification of the galvanic magnet is not of course the best form for efficiency; this was used merely to try the principle, and this construction may be superseded by a diffe-

rent and more efficient one. But with this arrangement, and notwithstanding the imperfection of the mechanism of the machine, when the battery, requiring about one quart of diluted acid to immerse it, was attached, it lifted 16 lbs. very rapidly, and when the weight was removed, it performed more than 600 revolutions per minute.

So sensible was the machine to the magnetic power, that the immersion of the battery one inch into the acidulated water, was sufficient to give it rapid motion, which attained its maximum, when the battery was entirely immersed. It appeared to me that the machine had more energy with the electro-magnets, than with those that were permanent, for with the smallest battery, whose diameter was three inches and a half, its height five inches and a half, and the number of concentric cylinders three of copper and three of zinc, the instrument manifested as great power as it had done with the

galvanic magnet. With the small battery and with none but electro or galvanic magnets, it revolved with so much energy as to produce a brisk breeze, and powerfully to shake a large table on which the apparatus stood.

Although the magnetization of both the stationary and revolving magnets was imparted by one and the same battery, the magnetic power was not immediately destroyed by breaking the connexion between the battery and the stationary magnet; for when this was done, the machine still performed its revolutions with great, although diminished energy; in practice this might be important, as it would give time to make changes in the apparatus, without stopping the movement of the machine.

Viennent ensuite des conclusions qui ont été omises pour ne pas trop allonger le teste publié dans le Rutland Herald du 23/05/1837

Nothing since the discovery of gravitation, and of the structure of the celestial system, is so wonderful as the power evolved by galvanism—whether we contemplate it in the muscular convulsions of animals, the chemical decomposition, the solar brightness of the galvanic light, the dissipating, consuming heat, and, more than all, in the magnetic energy which leaves far behind all previous artificial accumulations of this power, and reveals, as there is full reason to believe, the grand secret of terrestrial magnetism itself. B. S.

New Haven, March 31, 1837.

Claim of Thomas Davenport.

In the words of the patent taken out, this invention “consists in applying magnetic and electro-magnetic power as a moving principle for machinery, in the manner described, or in any other substantially the same in principle.”