No. 7,287. PATENTED APR. 16, 1850.

J. H. LILLIE.

ELECTROMAGNETIC ENGINE.

Fig. 2.

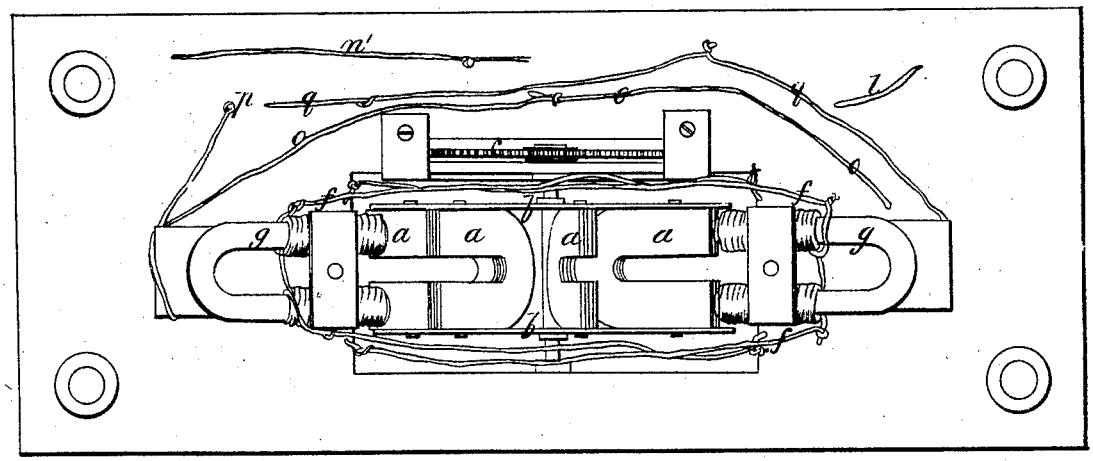


Fig. 1.

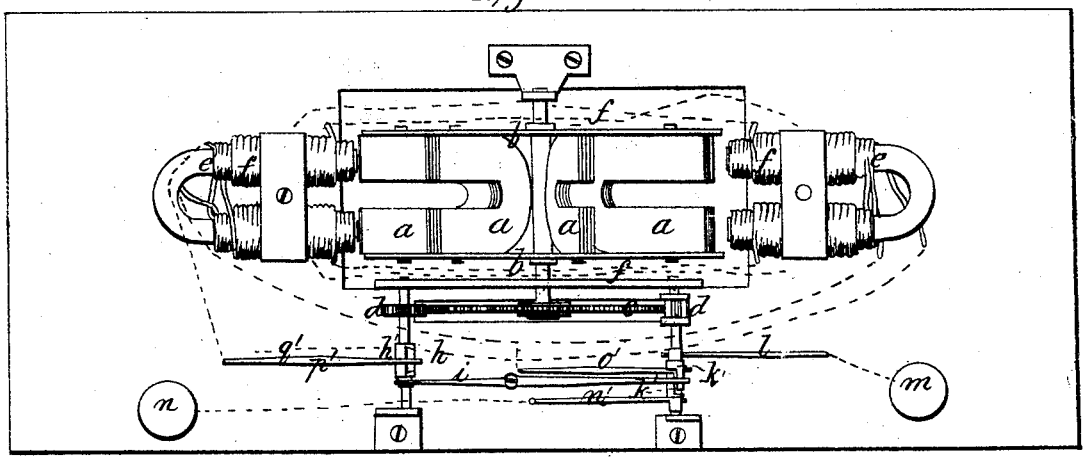
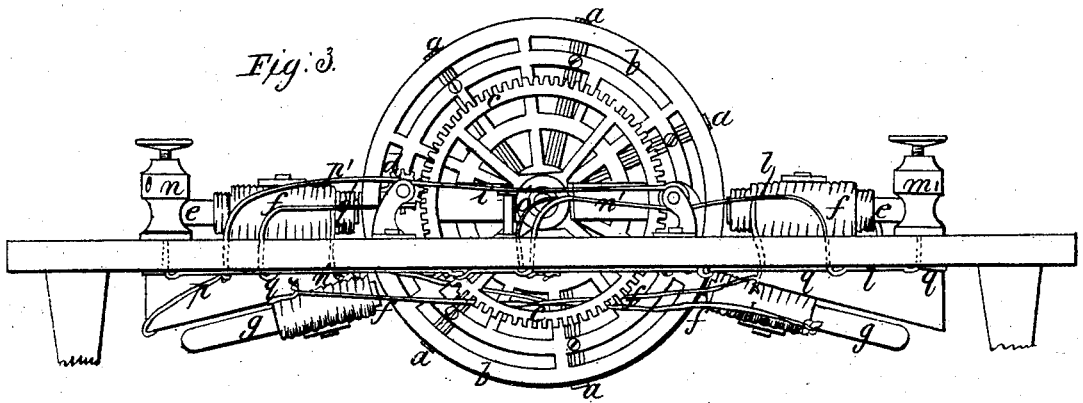


Fig. 3.



UNITED STATES PATENT OFFICE.

JOHN H. LILLIE, OF JOLIET, ILLINOIS.

IMPROVEMENT IN ELECTRO-MAGNETIC ENGINES.

Specification forming part of Letters Patent No. 7,287, dated April 16, 1850.

To all whom it may concern:

Be it known that I, JOHN H. LILLIE, of Joliet, in the county of Will and State of Illinois, have invented a new and useful Machine for Electro-Magnetic Power; and I do hereby declare that the following is a full, clear, and exact description of the principle or character which distinguishes it from all other things before known, and of the usual manner of making, modifying, and using the same, reference being had to the accompanying drawings, in which—

Figure 1 is a top plan. Fig. 2 is a bottom plan. Fig. 3 is a side elevation.

My invention consists in the employment of a number of permanent horseshoe-magnets, compound or single, revolving on a wheel in front of an electro magnet or magnets fixed stationary to the frame; and in conjunction therewith I employ a helix of fine wire around the outside of the electro-magnet, for the double purpose of producing other electro-magnets and to destroy the secondary or vibratory currents in my first electro-magnet. I also employ a new and convenient pole-changer, connected with the wheel of permanent magnets by gearing, as hereinafter described.

The construction of the apparatus is as follows: A series of any given number of permanent compound or single U-magnets, *a*, are placed in a wheel, *b*, properly constructed for the purpose, in a radial position, with their poles projecting a little beyond the periphery of the wheel, as clearly shown in the drawings. On one end of the axis of this wheel there is a large spur-wheel, *c*, which drives two pinions, *d*, to which the brake-pieces are attached, to be more particularly described hereinafter.

The frame on which the wheel is supported serves to hold two electro-magnets, or more, as the case requires. These electro-magnets *e* are on a line radial from the shaft, one on each side, and are constructed in any of the well-known ways of U-formed electro-magnets. Around the coils upon these magnets are fine wires *f*. (Represented by red lines, the blue lines being the wires of the magnet.) These secondary coils *f* are connected with electro-magnets *g*, placed below, as seen in the drawings, where they form a circuit and cause the electro-magnets *g* to be magnetized by means of this arrangement, and for the purpose also of destroying the secondary currents. These magnets are so placed as to aid in the propulsion of the wheel, the coil *f* from the electro-magnet *e* on one side being connected with the secondary magnet *g* on the opposite side, as clearly shown in the drawings.

The break-piece *h h'* is formed of two parts, one half of which, *h*, is a non-conductor, the other half, *h'*, a conductor, connected by means of a spring, *i*, with the opposite cut-off shaft in such a way as to be thrown alternately onto one or the other of two insulated break-pieces, *k k'*, by which the current is made to pass in one direction or the other through either of the coils. One of these break-pieces, *k*, is connected with the battery by means of the spring *l* through the binding-screw *m*. The other break-piece, *k'*, is connected with the opposite binding-screw, *n*, by the spring *n'*. One end of each of the two primary blue coils are connected by the wire *o* with the break-piece or current-changer *k k'* by means of the spring *o'*. The other ends of these coils are alternately connected with the spring *i* to close the current by means of the wires *p* and *q* and springs *p' q'*.

By this arrangement it will be seen that the electro-magnets are charged with opposite poles to the permanent magnets, and when the magnets come opposite their centers the poles are changed by the revolution of the break-piece *k k'*, and the permanent magnets are repelled.

I find it is necessary to have the permanent magnets long; otherwise their poles will be changed by a powerful current in the electro-magnets. This feature I deem important. The auxiliary electro-magnets are aids to the main ones, and their action is too apparent on an inspection of the drawings to require further description.

Having thus fully described my improvements in electro-magnetic machinery, what I claim therein as new, and for which I desire to secure Letters Patent, is—

1. The employment of induced electricity as above stated in producing magnetism in the secondary electro-magnets, to be used as a motive power in connection with the prime mover, and to neutralize the secondary currents of the principal magnets formed by the direct current from the battery.

2. The combination of the magnet-changer *h h'* and pole-changer *k k'*, substantially in the manner and for the purpose set forth.

Witnesses: JOHN H. LILLIE.
J. J. GREENOUGH,
GEORGE W. PERRY.