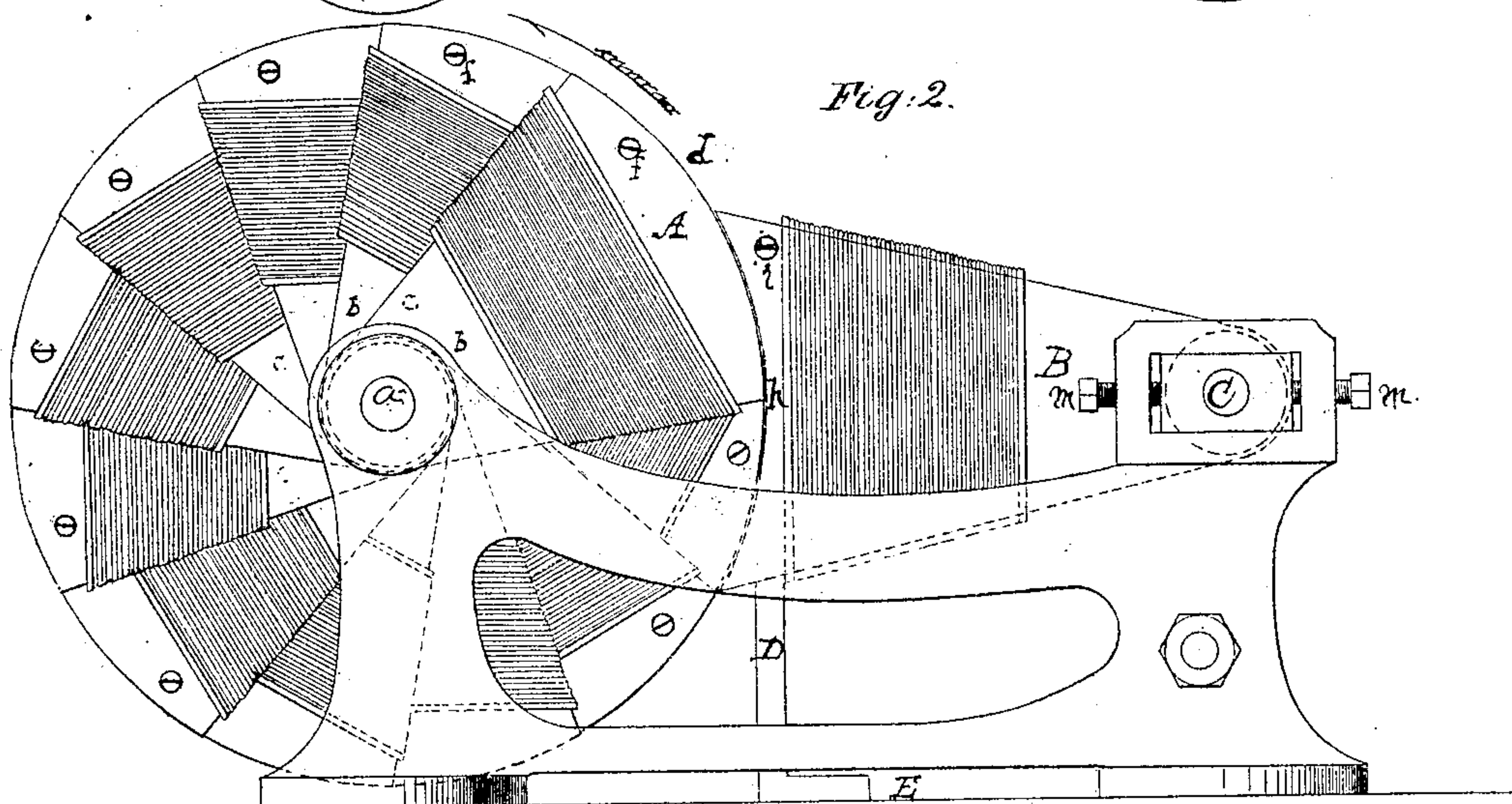
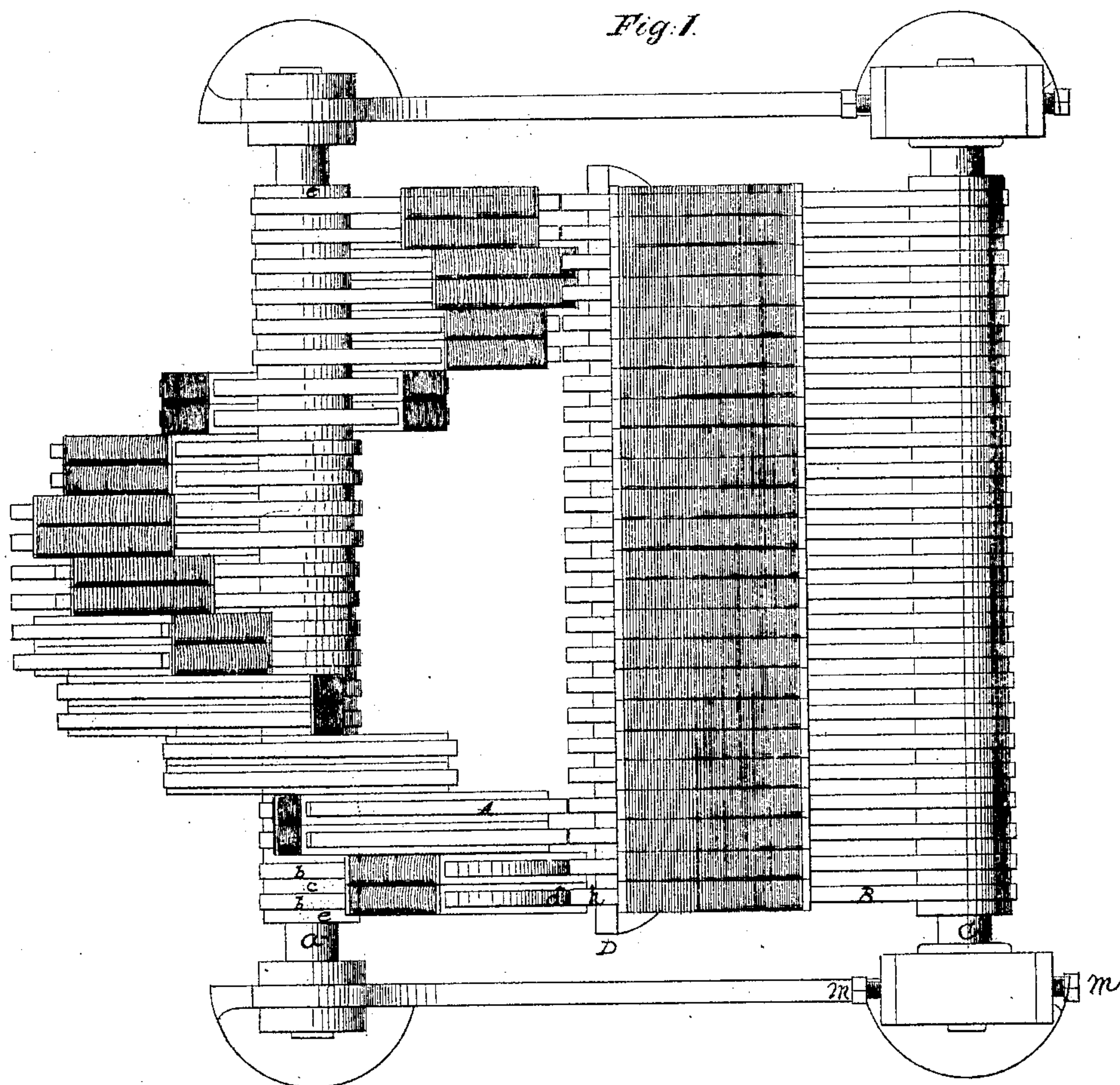


H. M. PAINE.  
MAGNETIC ENGINE.

No. 103,229.

Patented May 17, 1870.



Witnesses:  
H. M. Pierson  
Jas. Stanbrough

*H. M. Paine*



# United States Patent Office.

HENRY M. PAINE, OF NEWARK, NEW JERSEY, ASSIGNOR TO HIMSELF  
AND M. S. FROST, OF NEW YORK CITY.

*Letters Patent No. 103,229, dated May 17, 1870.*

## IMPROVEMENT IN MAGNETIC ENGINES.

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

I, HENRY M. PAINE, of city of Newark, and State of New Jersey, have invented certain Improvements in the Construction of Rotary Sector Magnet Engines, of which the following is a specification.

The nature of my invention relates to a peculiar and novel mechanical arrangement of my sector magnet for purposes of motive force, which has for its object economy of space, cost of construction, and rigidity of parts.

The value of the magnet attraction being inversely as the square of the distance, it becomes necessary, in order to obtain the best results, to work the poles in as close juxtaposition as possible. To accomplish this requirement, even in very small engines, with the poles working with a between-space of two one-hundredths of an inch without contact by spring of frame or other parts, requires a heavy cumbrous frame and shaft.

To avoid this necessity, I so arrange both the rotating and fulcrum magnets that all strain of attraction will be resisted by the longest cross-section of the magnets themselves, and thus just in the ratio that the magnets are enlarged the increased strain is met.

I take any required number of magnet sector limbs A, Figures 1 and 2, and pass the driving-shaft *a*, figs. 1 and 2, through their several tie-bolt ends *b*, with washers *c* between, to secure even spacing for the current wire. These sector-limbs are then so arranged on the shaft as to make the poles *d* describe a circle as regards their path of rotation, and a thread of one or more revolutions as regards the length of the shaft. They are then bound in their position by the nuts *e*

and screw-bolts *f*, which pass through one series of limbs into the next, till the whole series is securely held in its required position.

It will be seen that this combination presents the longitudinal section of the sector limbs to the strain.

The fulcrum magnets B are bound on one common bolt, C, figs. 1 and 2, in the same manner that the rotating magnets A are held, and their poles *h* are bound by the rods *i* passing through the whole series, which make one uniform breast of sector limbs, the axis of all lying in one common plane.

As in the rotating magnets, so in these, all the strain is met and resisted by the longitudinal section of the limbs, and this extreme stiffness of construction allows the two series of magnets to be brought in close and accurate range of motion by means of the adjusting screws *m*.

The magnets A revolving in the direction of the arrow, will subject the fulcrum magnets B to a downward strain, which is met by the bridge D resting firmly on the bed-plate E.

What I claim as my invention is—

1. The arrangement of the magnets A on the shaft.
2. The breast of fulcrum magnets in their combination with the rotating magnets A, all substantially in the manner and for the purpose specified.

HENRY M. PAINE.

Witnesses:

JAS. STANBROUGH,

H. M. PIERSON,

M. S. FROST.