

(No Model.)

E. WESTON.

MAGNETIC SPEED INDICATOR.

No. 277,179.

Patented May 8, 1883.

Fig. 1.

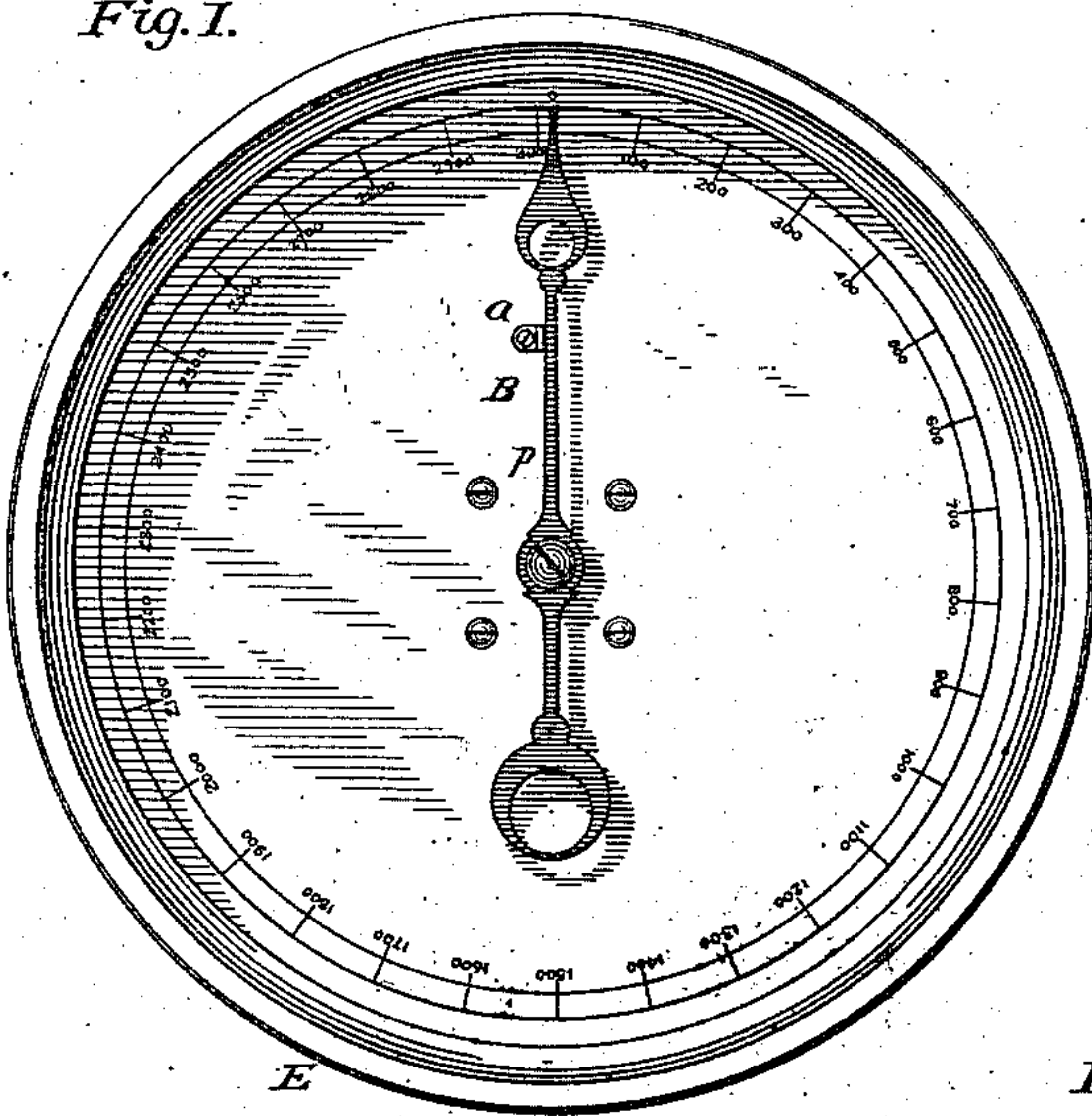


Fig. 3.

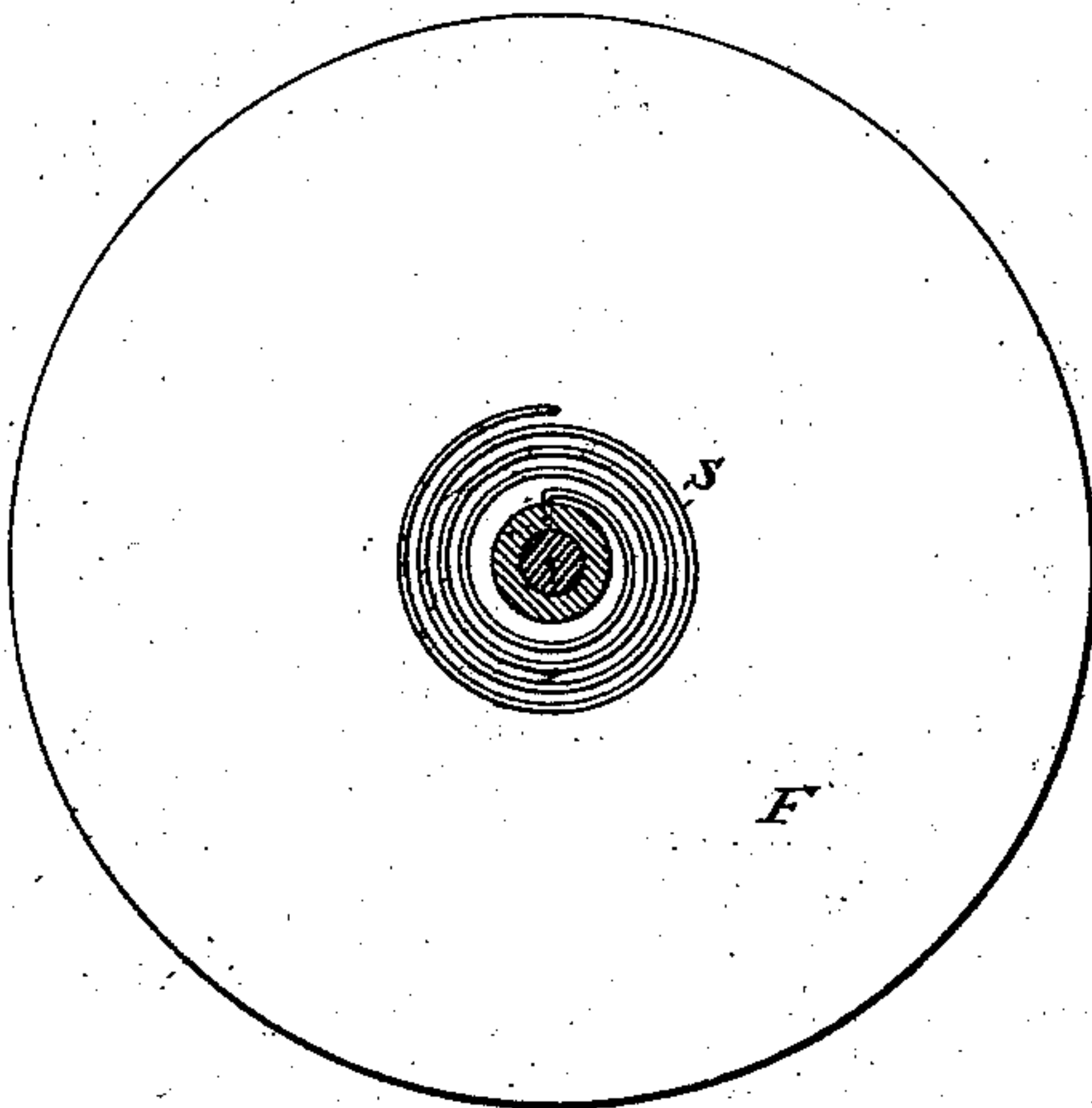


Fig. 2.

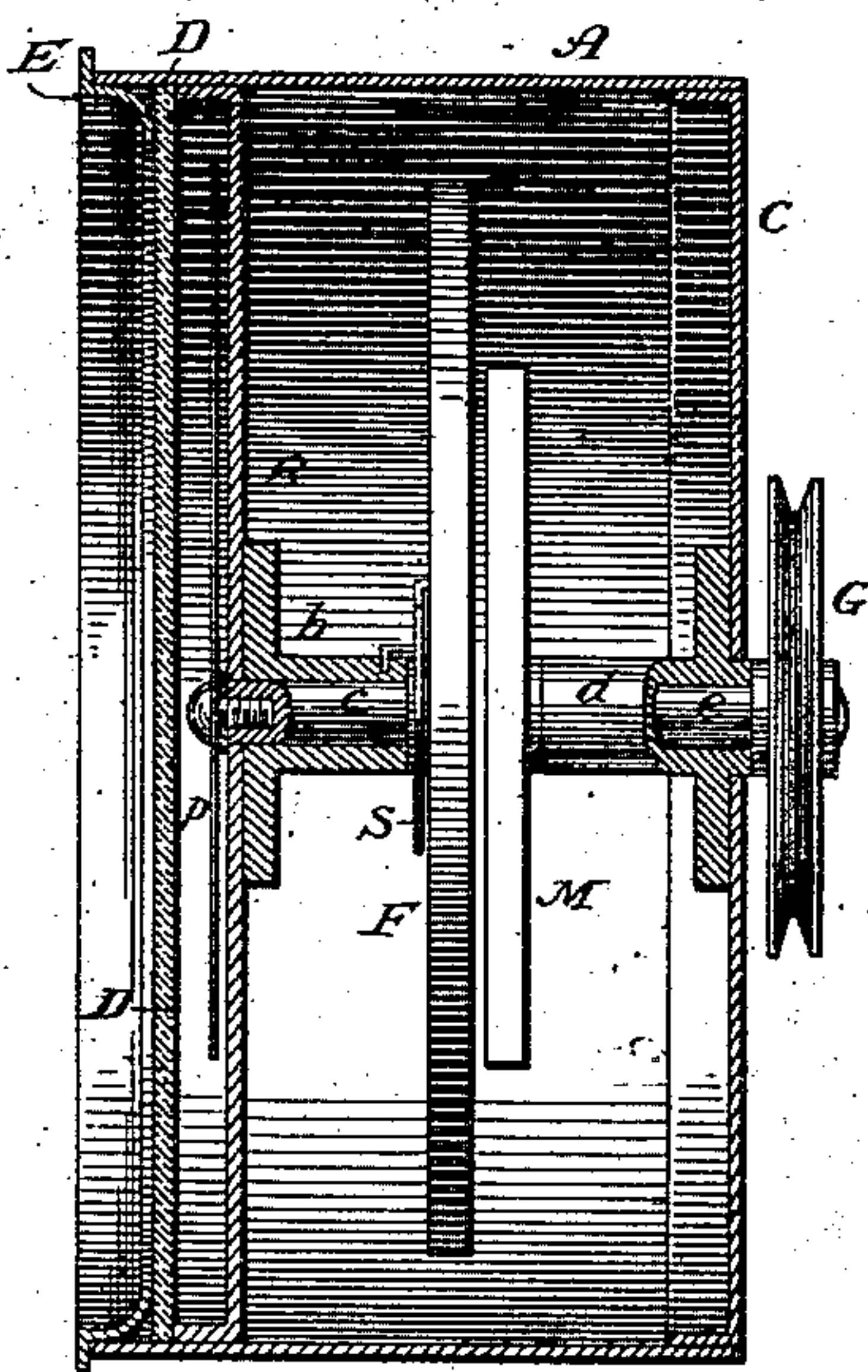


Fig. 4.



Attest:

Raymond de Baras.
W. Kirby

Inventor:

Edward Weston
By Purser H. Page
atty.

UNITED STATES PATENT OFFICE.

EDWARD WESTON, OF NEWARK, NEW JERSEY.

MAGNETIC SPEED-INDICATOR.

SPECIFICATION forming part of Letters Patent No. 277,179, dated May 8, 1883.

Application filed January 19, 1883. (No model.)

To all whom it may concern:

Be it known that I, EDWARD WESTON, a subject of the Queen of Great Britain, and a resident of Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Magnetic Speed-Indicators, of which the following is a specification, reference being had to the drawings accompanying and forming a part of the same.

It is well known that if one or both poles of a magnet be held in face of a metal disk mounted so as to rotate freely and revolved about the axis of the disk a tendency to rotate in the same direction as the magnet is imparted to the disk. This tendency is due to a certain drag or pull exercised by the poles upon the disk, and is proportional, or practically so, to the speed of revolution of the poles, assuming that their magnetic strength remains the same. This fact I have taken advantage of in constructing a device for indicating the speed of shafts, or of rotating bodies generally, the principle of construction and operation of such device being substantially as follows: I mount a disk of metal, preferably copper, upon a spindle which carries a suitable pointer. With the disk is connected a spring or equivalent device, which, as the disk is turned from its normal position of rest, is distended or wound up, as the case may be. In face of the disk I mount on a spindle a short magnet, either a permanent or an electro magnet, and upon the spindle I fix a pulley or some other means for imparting to it a speed of rotation corresponding to that of the shaft or body the speed of which it is desired to ascertain. The rotation of the magnet imparts to the disk a tendency to turn against the force of the spring connected with it, and as this tendency is always the same for a given rate of speed it may be taken as a measure of the speed. The position of the disk under the influence of the revolving magnet is indicated by the pointer. I have in the drawings shown a simple and practicable application of this principle in a speed-indicator for shafts, and I will now describe the same by reference to the figures.

Figure 1 is a face view of the instrument;
50 Fig. 2, a central vertical section of the same;

Fig. 3, a plan view of the metal disk, showing its spindle in section; Fig. 4, a view of the magnet.

Similar letters indicate corresponding parts in all the figures.

The letter A designates a cylindrical casing with front and rear plates, B C. Upon the face of the front plate, B, is cut or pasted a scale inclosed by a glass plate, D, which is retained in place by a bezel, E. To the inner face of plate B is fixed a metal block or sleeve, b, through which passes a spindle, c, carrying a pointer, p, that sweeps over the scale. To the inner end of spindle c is fixed a copper disk, F.

S is a spiral spring, the ends of which are made fast to the sleeve b and to the disk F, respectively, so that the disk, when turned, increases the tension of the spring. A stop, a, upon the face of plate B limits the backward movement of the disk F and pointer p.

To the inner face of the rear plate, C, is secured a sleeve, d, serving as a bearing for a spindle, e. To the outer end of this spindle is fixed a pulley-wheel, G, or it may be a friction-disk or other equivalent device, for connecting the spindle with a rotating body. To the inner end of spindle e is fixed a short bar-magnet, M. It may be stated that this magnet may be of soft iron and wound with a coil of insulated wire, through which a definite amount of current may be passed in many well-understood ways when the apparatus is in use.

When the pulley-wheel G or its equivalent is connected with a rotating shaft the motion imparted to the magnet M pulls the disk F around against the force of spring S. The pointer is thus moved over the scale and indicates the force exercised upon the disk by the magnet, and therefore the speed at which the magnet is rotating. By a simple series of experiments the scale may be laid off for varying speeds, so that the position of the pointer will indicate the number of revolutions per unit of time of the spindle e or the shaft with which it is connected.

It is evident that the mechanical construction of the apparatus may be greatly varied—as, for instance, the pointer or other means for

indicating the speed may be connected with the magnet and the disk revolved by the rotating shaft, for it is well known that the disk may be caused to move the magnet as well as the magnet the disk; also, that any continuous conductor similar to a disk may be used in its stead.

What I claim is—

1. The combination of a magnet and a continuous conductor mounted or arranged so that the rotation of one induces a tendency to rotate in the other, a spring or similar means for preventing the free rotation of one, and means, substantially as described, for indicating changes in its position and the speed of the other corresponding to such position, as set forth.

2. The combination, with a spindle, a pointer, and a metal disk, and a spring for preventing the free rotation of the disk, of a magnet capable of being caused to revolve in face of the disk in such manner that the disk will be moved in proportion to the speed of revolution of the magnet, as and for the purpose set forth.

3. The combination of two spindles, a pointer, and metal disk secured to one, a magnet and pulley or its equivalent secured to the other, and a spring connected with the disk or its spindle and to a fixed object, these parts being constructed and arranged in such manner that a rotary movement imparted to the magnet may partially turn the metal disk, as and for the purpose set forth.

4. The combination, with box A and front and rear plates, B C, of the spindles *c e*, pointer *p*, and disk F, secured to spindle *c*, and magnet M and pulley G, secured to spindle *e*, these parts being constructed in substantially the manner set forth.

In testimony whereof I have hereunto set my hand this 17th day of January, 1883.

EDWARD WESTON.

Witnesses:

RAYMOND F. BARNES,
W. FRISBY.