No. 647,791. Patented Apr. 17, 1900.

# J. C. ARMOR.

## SPEED INDICATOR.

Application filed Mar. 22, 1899.)

(No Model.)

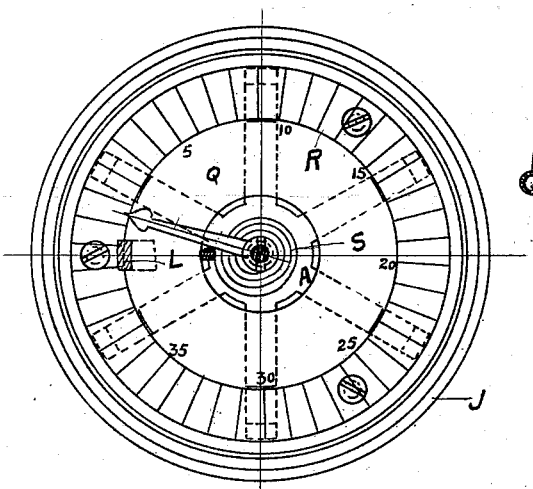


FIG. 2

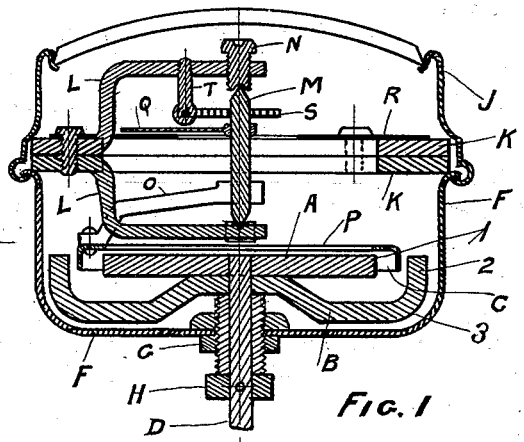


FIG. 1

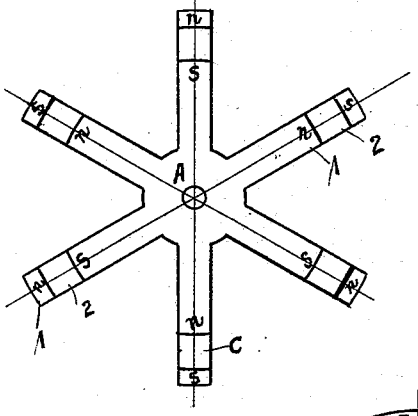


FIG. 3

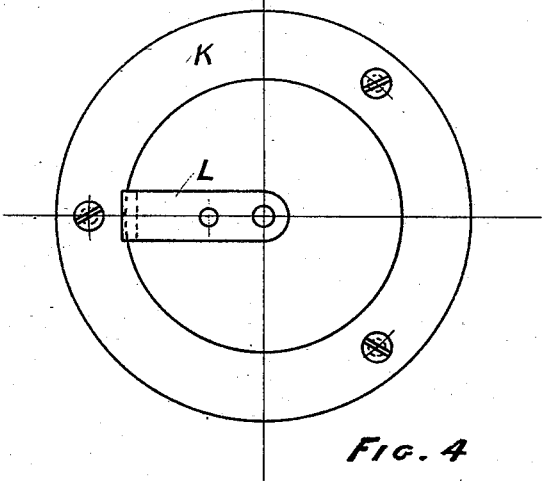


FIG. 4

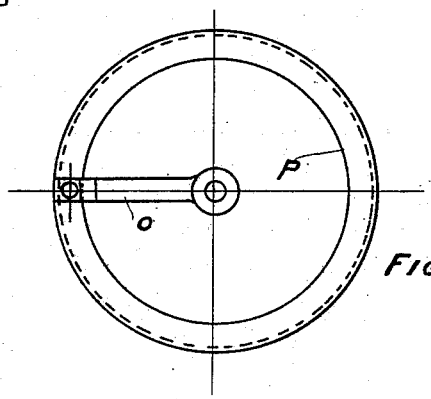


FIG. 5

WITNESSES:

INVENTOR

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# UNITED STATES PATENT OFFICE.

JAMES C. ARMOR, OF PITTSBURG, PENNSYLVANIA.

## SPEED-INDICATOR.

SPECIFICATION forming part of Letters Patent No. 647,791, dated April 17, 1900.

Application filed March 22, 1899. Serial No. 710,022. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES C. ARMOR, a citizen of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented new and useful Improvements in Speed-Indicators, of which the following is a specification.

The object of my invention is to provide an instrument for accurately determining the speed of moving bodies; and the same consists in the novel features of construction and in the combination and arrangement of parts hereinafter fully described and claimed, and illustrated by the accompanying drawings, in which—

Figure 1 is a vertical sectional view. Fig. 2 is a plan view. Figs. 3, 4, and 5 are detail views of portions of the instrument.

The magnet consists of the upper member A, having the radial arms 1, and the lower member B, having radial arms 2, upturned at 3 in line with and spaced from arms 2 to form annular space C. The magnet parts are stamped from suitable metal and the lower member B bent to proper form, the alternate arms having opposite polarity. The magnet is secured to the upper end of shaft D, rotatable in bushing E, which is vertically adjustable in the lower section F of the case. G is the bushing lock-nut, and H the shaft-collar.

Confined between jointed parts F and J of the case are the ring-plates K, carrying the oppositely-extending and inwardly-projecting arms L, which constitute bearings for arbor M, the upper arm carrying adjustable bearing-screw N. Secured to the arbor is arm O, carrying circular armature P, which depends in magnet-space C and is rotatable concentrically therewith.

Q is a pointer or hand carried by the arbor and working over dial R, secured to uppermost ring-plate K. The arbor and armature are held in normal position, with the pointer at zero, by hair-spring S, secured to the arbor and to pin T, depending from upper arm L.

The operation is as follows: Shaft D is geared to or operatively connected with the moving part whose speed is to be determined, so as to be rotated thereby at predetermined relative speed. The currents generated by the magnet when thus rotated have an impelling influence on the armature, causing the same to turn with arbor M against the pull of spring S, and the pointer moving therewith over the dial indicates the speed per hour or other unit of the moving part. By means of bushing E the vertical relation of the magnet and armature may be varied as circumstances may require, the greater the dependence of the armature in space C the greater being the impelling force. The instrument-case may be supported and held fixed in any suitable manner. (Not shown.)

By means of this instrument the speed of moving bodies of many and varied forms may be accurately determined, it being only necessary to so gear shaft D that it will have proper speed relative to the moving body or in lieu thereof to conform the dial to such movement.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. A speed-indicator comprising a rotary magnet, a vertical arbor having bearings above and concentric with the magnet, an arm projecting laterally from the arbor, a circular armature supported at one side by said arm, a spring for resisting the rotation of the armature in the direction of movement of the magnet, a pointer carried by the arbor, and a scale over which the pointer moves, substantially as shown and described.

2. A speed-indicator comprising a case, a rotatable magnet in the lower part thereof, ring-plates K secured in the case and carrying opposite inwardly-projecting bearing-arms L, arbor M mounted in the bearings, annular armature P sustained by the arbor, a spring for resisting rotation of the arbor, a pointer, and a dial, substantially as shown and described.

3. A speed-indicator comprising a shaft; a magnet secured to and rotatable with the shaft, said magnet consisting of the upper member A having radial arms 1, and lower member B having radial arms 2, arms 2 having angular extremities 3 alining with but

spaced from arms 1; a circular armature rotatably mounted concentrically with the said magnet and projecting into the space between arms 1 and extremities 3 of arms 2; a spring for resisting rotation of the armature; a pointer rotatable with the armature; and a dial; substantially as shown and described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

JAMES C. ARMOR.

Witnesses:
J. M. NESBIT,
C. C. LEAN.