

(No Model.)

J. BOYER.
SPEED INDICATOR.

No. 460,460.

Patented Sept. 29, 1891.

Fig. I,

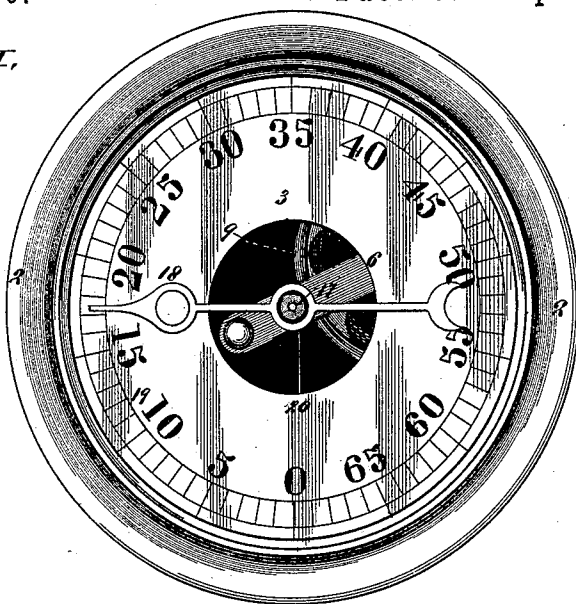


Fig. II,

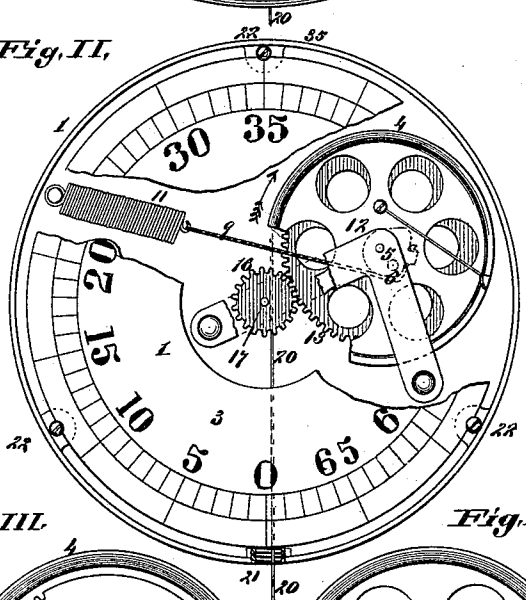


Fig. III,

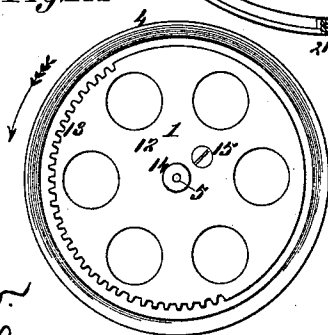
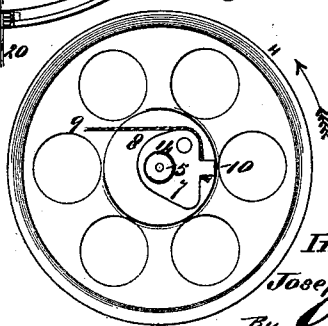


Fig. IV,



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UNITED STATES PATENT OFFICE.

JOSEPH BOYER, OF ST. LOUIS, MISSOURI, ASSIGNOR TO THE BOYER RAILWAY
SPEED RECORDER COMPANY, OF SAME PLACE.

SPEED-INDICATOR.

SPECIFICATION forming part of Letters Patent No. 460,460, dated September 29, 1891.

Application filed April 26, 1890. Serial No. 349,684. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH BOYER, of the city of St. Louis, in the State of Missouri, have invented a certain new and useful Improvement in Speed-Indicators and for other Things, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

This indicator is intended more especially for use upon the recording-indicator patented to me February 1, 1887, No. 356,916; but it may be applied to many other uses. It has an eccentric bearing for the spring-cord, by which the index-finger is turned in one direction, so that the force exerted by the spring upon the mechanism is unvarying in all positions of the finger. The face of the indicator is made adjustable, so that the numbers on the face may be arranged in any desired position relatively to the other parts.

Figure I is a front view of the indicator. Fig. II is a front view with parts broken away. Fig. III is an inside view of the sheave or grooved pulley and cog-segment. Fig. IV is an inside view of the sheave or grooved pulley with the cog-segment removed, showing the eccentric spring cord-bearing.

1 is a cylindrical case having a removable rim 2, in which is set a glass 3.

4 is a sheave or pulley, whose shaft 5 has bearing in the back of the case 1 and in the bracket 6. Upon the inner side of this sheave is a block or cam 7, having a cord-bearing face 8.

9 is a cord or wire, one end of which is fixed to the block 7 at 10 and the other end fixed to a spring 11, which is attached to the case 1 at the other end. The construction is such that the spring tends to turn the sheave in the direction of the arrow in Figs. II, III, and IV, and the form of the bearing-face 8 is such that the amount of power exerted by the spring upon the sheave is unvarying, for as the tension of the spring increases as it is drawn out the cord bears against a part of the face 8 that is nearer the center or axis 5 of the sheave, so that its purchase upon the sheave is diminished. Other means may be employed for accomplishing this result—as, for instance, a helical gear.

12 is a plate having at its edge cog-segment

13. This plate is attached to the pulley in such a way that the cog-segment is concentric with the sheave. The means of attachment is shown in Fig. III, the segment-plate 12 having a central orifice fitting a boss 14 of the sheave and an orifice for the passage of a screw 15, which engages in the sheave.

16 is a pinion, which engages the cog-segment 13.

17 is the pinion-shaft, which has bearing (like the shaft of the sheave) in the case 1 and the bracket 6.

18 is the index-finger, which is upon the pinion-shaft, so as to turn with it.

19 is the index plate or face, having numbers to indicate the speed of travel.

20 is a cord or wire, one end of which is attached to the sheave, and which passes along the peripheral groove of the sheave, so that when it is drawn outward from the case it will turn the sheave in opposition to the spring 11, and thus rotate the index-finger before the face 19. The construction and connections are such that as the speed of the object to which the indicator is connected increases the cord or wire 20 is drawn outward from the case, and as the speed decreases the spring 11 will draw the cord 20 back into the case, so that the index-finger will at all times indicate the speed.

When used in connection with my indicator described in Patent No. 356,916, to which reference has been made, the cord passes around a sheave or sheaves and is attached to the piston-rod, the arrangement being such that the upward movement of the piston-rod causes the cord 20 to be drawn outward from the case 1.

I have called the flexible connection 9 between the spring 11 and the shaft 5 a "cord" or "wire," and have described the eccentric 7 8 as upon the side of the sheave. It is obvious that any other suitable flexible connection 9 may be used in place of the cord or wire, and it is also apparent that the eccentric cord-bearing 7 8 may be attached to any part of the shaft 5 without essential change in the parts.

It will be seen that the relative position of the index-finger and indicator may be such that the case should be set to bring the aper-

ture 21 for the passage of the cord or wire 20 in various positions in different cases. In order to allow this to be done and to allow the dial to be placed in the proper or preferred position with the zero-mark at bottom, the dial is made adjustable in a rotary direction, being held in place by marginal screws 22 or equivalent means of attachment engaging its edges.

10 I claim as my invention—

1. In an indicator, an index-finger, a pulley having an eccentric block, a cord or wire connected to the block at a point most remote from the pivot of the latter for moving same in one direction, and a spring for the reverse motion so connected that the tension on said cord or wire is constant for all positions of the index-finger.

2. In an indicator, an index-finger, a spring provided with a cord or its equivalent, and a

mechanism to which the cord is connected and through which the finger is moved by the spring, said mechanism having an eccentric bearing for said cord, substantially as and for the purpose set forth.

3. In an indicator, an index-finger, a spring provided with a cord or its equivalent, and a mechanism to which the cord is connected and through which the finger is moved by the spring, said mechanism consisting, essentially, of a sheave, an eccentric block united to the sheave and to which the cord is attached, a cog-segment united to the sheave, and a pinion engaged by the segment and to which the finger is united, substantially as and for the purpose set forth.

JOSEPH BOYER.

In presence of—

THOS. KNIGHT,
E. S. KNIGHT.