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SPEED INDICATOR.  
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960,329.

Patented June 7, 1910.

Fig. 1.

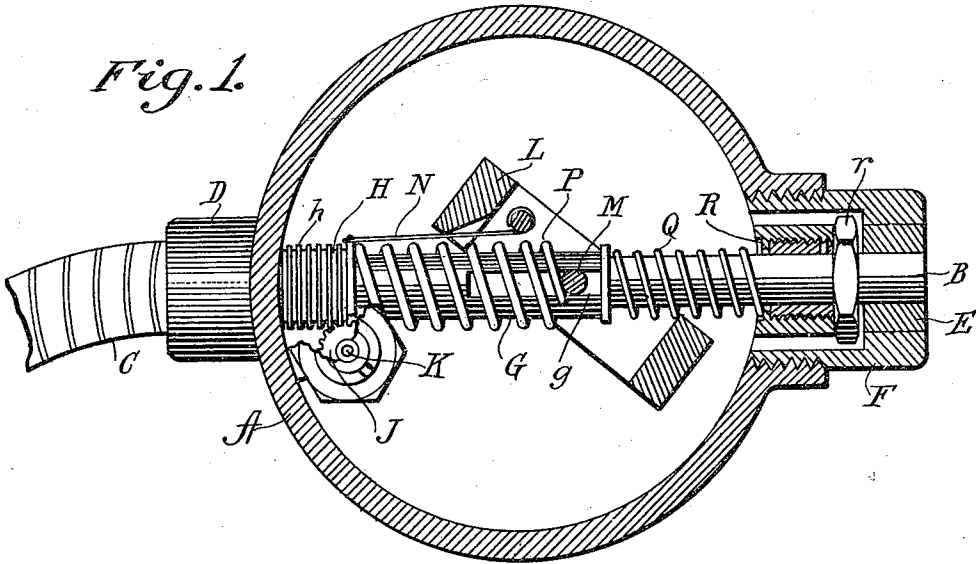
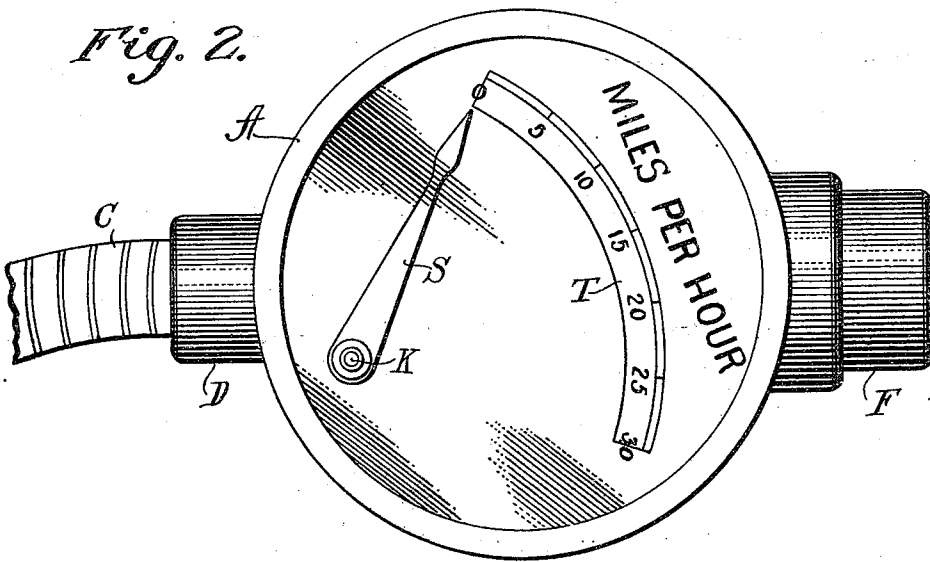


Fig. 2.



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# UNITED STATES PATENT OFFICE.

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## SPEED-INDICATOR.

960,329.

Specification of Letters Patent.

Patented June 7, 1910.

Application filed July 12, 1909. Serial No. 507,142.

*To all whom it may concern:*

Be it known that I, ALEXANDER M. HUDSON, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Speed-Indicators, of which the following is a specification.

This invention relates to speed indicators, more particularly, to that class of devices constructed to show the velocity of a moving vehicle in miles per hour, in which a shaft passes through a body pivotally connected to and revolving with the shaft, the said body being inclined to the shaft when at rest, and approaching more and more nearly a position perpendicular to the shaft as the speed of rotation increases. The pivoted body which is thus moved by the centrifugal effect is connected with suitable contrivances for moving a hand upon a dial or scale, and it is the object of this invention to produce a speed indicator of the type stated having parts of special arrangement and particular construction, whereby it is believed the manufacture is cheapened and simplified, the adjustment rendered more convenient, and the accuracy of the instrument correspondingly increased.

The objects set forth are attained by fashioning and associating the parts substantially as illustrated in the accompanying drawings, of which—

Figure 1 represents a plan view, somewhat enlarged, showing the invention with the casing and pivoted body in section to expose the working elements. Fig. 2 is a front exterior view.

Throughout the drawings and description, the same letter is employed to refer to the same part.

The specially constructed and arranged parts are inclosed in a casing A of suitable form, through which passes a shaft B, driven by the customary flexible shaft C, or otherwise. The shaft B is supported in bearings D, E and the terminal bearing thimble F, which is removable as indicated in Fig. 1.

The body which is acted upon centrifugally and through which the shaft B passes is centrally apertured for the movable sleeve G also which surrounds the shaft as shown in Fig. 1. The sleeve has at one end, a lengthwise slot *g* that will be again mentioned. The other end H of the sleeve

is slightly increased in diameter and provided with circular teeth *h* arranged to mesh with the teeth of pinion J on the transverse small shaft K.

The body or weight L, when at rest assumes the attitude illustrated. It is pivotally supported upon the pin M that passes diametrically through the shaft B and through the slot *g* in the sleeve G. The rod N pivotally connects the body L and the sleeve G.

The remaining parts may be best described in explaining the mode of operation of this invention. Let it be assumed that the revolution of the shaft B throws the pivoted body L toward its perpendicular position with respect to the shaft. The sleeve G is now moved to the right against the force of the spiral spring P, shown on the sleeve, with one end bearing on the sleeve at the head H, and the other end pressing against the pin M that extends diametrically through the shaft B. The slot *g* and pin in the slot permit the movement of the sleeve lengthwise on the shaft.

During the operation the sleeve is in constant rotation, but, as has been stated, the teeth *h* are circumferential, and, while they engage the pinion J, the latter is only rotated when the sleeve moves longitudinally. As the pinion and small shaft K turn, so the inclination of the body L varies. Such variation being in accordance with the speed of revolution of shaft B, it follows that the movements of the pinion and shaft correspond with the speed of shaft B. That is to say, the greater the speed of shaft B, the greater the movement of pinion J and small shaft K from their original positions illustrated.

In practice, it would be difficult to construct and temper the spiral spring P to afford accurately the resistance desired. Therefore, the adjusting spring Q is introduced upon the shaft, and the slotted end of the sleeve G bears against one end of the spring Q. The other end of the spring Q lies against the adjusting nut R, which is itself held in place by the jam nut *r*. Those nuts are reached by removing the thimble or end bearing F. It is thought to be made now plain that the force of the adjusting spring Q is against that of the main spring P, from which it takes as much of the effect of spring P as will cause the hand S, shown in Fig. 2, to move over scale T as desired.

Having now described this invention and explained the mode of its operation, what I claim is—

1. In a speed indicator, the combination  
 5 with a shaft, of a sleeve movable lengthwise  
 upon the shaft, the said sleeve having slots  
 extending lengthwise at one end and upon  
 opposite sides, the said shaft having a pin  
 10 extending diametrically and engaging the  
 said slots in the sleeve, a body having a central  
 aperture, the shaft and sleeve extending  
 through the said aperture of the body and  
 the body being pivotally supported by the  
 ends of said pin in the shaft, a connecting  
 15 rod joining the said body and the said sleeve,  
 a spring arranged on one side of the said  
 body and disposed to act against the sleeve  
 and against the ends of the said pin in the  
 shaft whereby the said body is yieldingly  
 20 held in an inclined position, and means acting  
 upon the sleeve on the other side of the  
 body whereby the yielding pressure upon  
 the said sleeve is adjusted.

2. In a speed indicator, the combination  
 25 with a shaft, of a sleeve movable lengthwise  
 upon the shaft, the said sleeve having slots  
 extending lengthwise at one end and upon  
 opposite sides, the said shaft having a pin  
 extending diametrically and engaging the  
 30 said slots in the sleeve, a body having a central  
 aperture, the shaft and sleeve extending  
 through the said aperture of the body and  
 the body being pivotally supported by the  
 ends of said pin in the shaft, a connecting

rod joining the said body and the said sleeve, 35  
 a main spring arranged upon one side of the  
 said body and disposed to act against the  
 sleeve and against the ends of said pin in  
 the shaft whereby the said body is yield- 40  
 ingly held in an inclined position, an ad-  
 justing spring acting upon the said sleeve  
 on the other side of the said body whereby  
 the yielding pressure upon the said sleeve is  
 adjusted, and means for adjusting the said  
 adjusting spring. 45

3. In a speed indicator, the combination  
 with a shaft, of a sleeve movable lengthwise  
 on the shaft, the said sleeve having slots  
 extending lengthwise, the said shaft having  
 a pin extending diametrically and engaging 50  
 the slots in the sleeve, a body having a central  
 aperture, the shaft and sleeve extending  
 through the said aperture of the body and  
 the body being pivotally supported by the  
 said pin through the shaft, a connecting rod 55  
 joining the said body and the sleeve, a spring  
 arranged on one side of the body and adapted  
 to act against the sleeve and against the  
 shaft, and another spring located upon the  
 other side of the said body and arranged to 30  
 act against the said sleeve and against the  
 shaft contrary to the first-mentioned spring.

In testimony whereof I affix my signature  
 in presence of two witnesses.

ALEXANDER MAY HUDSON.

Witnesses:

GEO. W. COLE,  
 WILLIAM MOP.