L. E. BLANCHARD.

SPEEDOMETER.

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1,021,036. Patented Mar. 26, 1912.

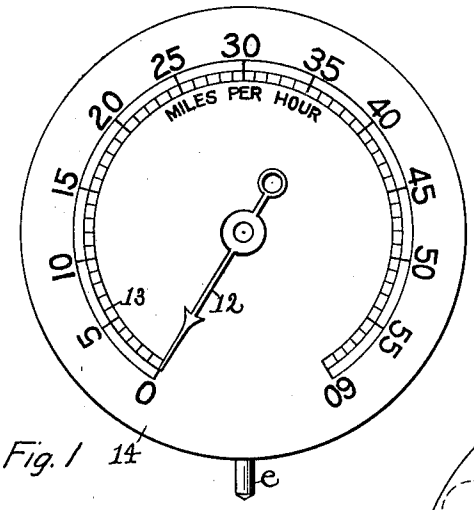

Fig. 1

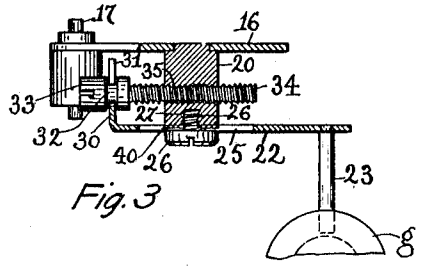

Fig. 3

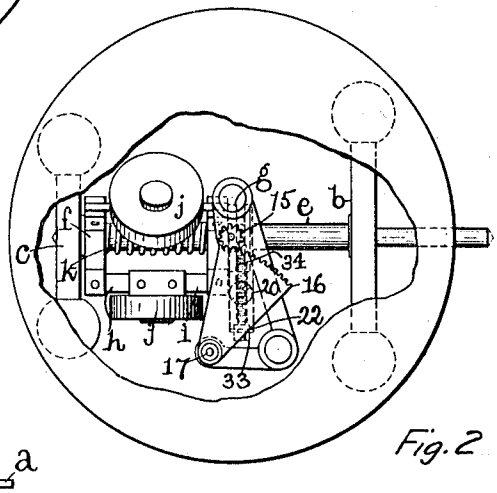

Fig. 2

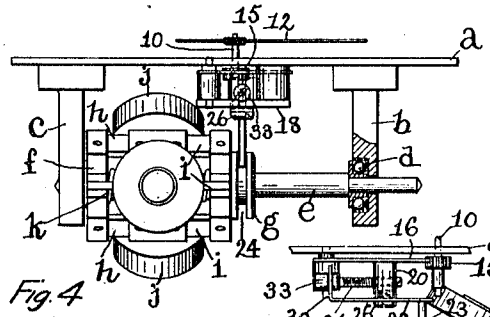

Fig. 4

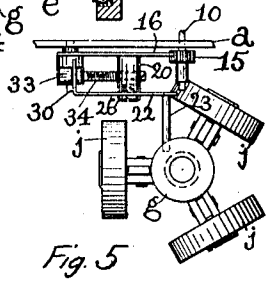

Fig. 5

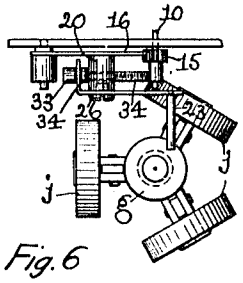

Fig. 6

Witnesses.
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UNITED STATES PATENT OFFICE.

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SPEEDOMETER.

1,021,036. Specification of Letters Patent. Patented Mar. 26, 1912.

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To all whom it may concern:

Be it known that I, LEON E. BLANCHARD, a citizen of the United States, residing in Boston, county of Suffolk, and State of Massachusetts, have invented an Improvement in Speedometers, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention relates to speedometers of that class in which a pointer or index indicative of speed is operatively connected with a centrifugally operated governor.

The present invention has for its object to provide a simple, inexpensive, reliable and durable instrument, having an adjustable connection between the centrifugally operated governor and the gearing which operates the pointer or index, whereby irregularities or differences in the strength of the governor springs may be compensated for, thereby allowing stock springs to be used without in the least affecting the accuracy of the instrument.

Another feature of the invention consists in providing an adjusting device, which is located substantially at right angles to the governor shaft, so as to permit adjustments to be made without moving the pointer from its zero position.

These and other features of this invention will be pointed out in the claims at the end of this specification.

Figure 1 is a plan view of one form of speedometer embodying this invention; Fig. 2, a plan view with parts broken away of the instrument shown in Fig. 1; Fig. 3, a detail in section on an enlarged scale of the adjusting device to be referred to; Fig. 4, a detail in elevation of parts of the instrument shown in Fig. 1, looking toward the right therein, and Figs. 5 and 6, details to be referred to.

Referring to the drawings, *a* represents a plate or disk constituting the framework for the operative parts and having depending brackets or walls *b*, *c*, which support in suitable roller bearings *d* the shaft *e* of a centrifugally operated governor, preferably of the construction herein shown and comprising a collar *f* fast on the shaft *e*, a second collar *g* loose thereon and connected with the collar *f* by levers *h*, *i*, provided with weights *j*, and a helical spring *k* encircling the shaft *e* between the collars *f*, *g*, and acting to normally move the collar *g* away from the collar *f*. The collar *g* is operatively connected with the vertical shaft 10 extended through the disk *a* and provided above the latter with a pointer or index 12, which coöperates with graduations 13 on a dial 14 to indicate the speed at which the vehicle, such as an automobile, is traveling. The pointer shaft 10 has mounted on it a pinion 15 located below the plate or disk *a*, and meshing with a segmental gear 16 fast on a shaft 17, journaled in the disk *a* and in a bar 18 suitably secured to said disk below the same. The segmental gear 16 has secured to it a depending stud or post 20 (see Figs. 3, 5 and 6), to which is adjustably secured a slide plate or bar 22 provided at one end as herein shown with a depending stud or pin 23, which has its lower end extended into an annular groove 24 in the collar *g*. The slide bar 22 is provided as herein shown with a longitudinally extended slot 25, through which is passed a screw 26, whose threaded shank engages a threaded socket 27 in the under side or lower end of the post or stud 20 and whose head serves to firmly clamp the adjusting bar 22 in fixed relation to the said post or stud.

The slide bar 22 is provided at its rear end with an upturned flange or arm 30 provided with forked fingers 31, which enter an annular groove 32 in the head 33 of an adjusting screw, whose shank 34 is in threaded engagement with a hole 35 extended transversely through the post 20.

By reference to Figs. 3, 5 and 6, it will be seen that by loosening up on the clamping screws 26 and then turning the screw 33, the slide bar 22 may be moved longitudinally so as to move the pin 23 from its central position with relation to the collar *g* (see Fig. 3) either to the left as shown in Fig. 5 or to the right of the longitudinal center of the governor shaft *e* as shown in Fig. 6, or to any point intermediate these two extreme positions, and when properly positioned, said slide bar is secured in fixed relation to the segmental gear 16 by setting up the screw 26. In this manner, the connection between the segmental gear 16 and the governor shaft *e* is shortened or lengthened, according to the strength of the governor spring *k*, so that stock springs which may vary slightly in strength, may be used with-

out interfering with the accuracy of the instrument, for by means of the adjustable slide bar 22, the pointer or index 12 is always brought back to zero on the dial, when the spring *k* is in its expanded position with the governor shaft *e* at rest.

If the governor spring *k* is of the standard or normal strength, the slide bar is adjusted so that the pin 23 is central with relation to the collar *g* and its shaft, and if the governor spring is weaker than the normal spring, the slide bar is adjusted so that the pin 23 engages the collar at the right of the central position, after the manner represented in Fig. 6, whereas if the governor spring is stronger than the normal, the slide bar is adjusted so that the pin 23 engages the collar *g* at the left of the central position after the manner represented in Fig. 5.

When the governor spring is normal, the pointer coincides with the graduation indicative of the speed of the governor shaft. If the governor spring is weaker, centrifugal force acting through the weights move the collar *g* a greater distance than it is moved under the normal conditions for a given speed, and to compensate for this greater movement of the collar, the pin 23 is adjusted to the right of its normal position after the manner shown in Fig. 6, so as to obtain the proper reading on the dial corresponding to the speed of the governor shaft. When the spring is stronger than the normal, the collar *g* is moved a less distance and this is compensated for, by moving the pin 23 to the left, after the manner shown in Fig. 5.

By reference to Fig. 2, it will be noticed, that the slide bar 22 is movable in a path at right angles or substantially so to the governor shaft, which enables said bar to be adjusted without moving the pointer 12 from the zero mark on the dial.

It is preferred to provide the collar *g* with an annular groove 24 into which the end of the pin 23 extends and to make the pin of a diameter substantially equal to the width of the groove, as by so doing the pointer 12 and its actuating gearing 15, 16, are positively connected with the centrifugal governor, so as to be moved positively in opposite directions; that is, when the grooved collar *g* is moved longitudinally on the governor shaft in one direction by the weights *j* in response to centrifugal action, the pointer is positively moved in one direction over the dial to indicate the speed of the vehicle, and when the speed diminishes and the spring *k* expands and moves the collar *g* in the opposite direction, the pointer is positively moved over the dial back toward the zero mark. While it may be preferred to employ the adjustable slide bar and pin 23 with the grooved collar *g* to make the positive connection above described, it is not desired to limit the invention in this respect.

To relieve the clamping screw 26 from the work of securing the slide bar 22 against lateral movement with relation to the post 20, the latter is provided at its end with a projection 40, which extends into the slot 25 in said bar.

Claims.

1. In an instrument of the class described, in combination, a pointer or index, a shaft on which said pointer is mounted, a pinion on said shaft, a segmental gear meshing with said pinion, a centrifugally operated governor provided with a collar having an annular groove, a pin extended into said groove, a slide bar carrying said pin and provided with a longitudinally extended slot, a post on said segmental gear having a threaded socket, a screw extended through said slot and into said socket to secure said slide bar in fixed relation to said post, and a screw extended transversely of said post and engaging said slide bar, substantially as described.

2. In an instrument of the class described, in combination, a pointer or index, a shaft on which said pointer is mounted, a pinion on said shaft, a segmental gear meshing with said pinion, a centrifugally operated governor provided with a collar, a pin engaging said collar, a slide bar carrying said pin, means for securing said slide bar in fixed relation to said segmental gear, and means for adjusting said slide bar and pin with relation to said collar, substantially as described.

3. In an instrument of the class described, in combination, a dial provided with graduations, a pointer or index, a shaft on which said pointer is mounted substantially concentric with relation to said dial, toothed gearing to rotate said shaft, a centrifugally operated governor, a slide bar carried by said gearing, a device on said slide bar cooperating with said governor, and means to secure said slide bar in fixed relation to said gearing, substantially as described.

4. In an instrument of the class described, in combination, a pointer or index, a shaft on which said pointer is mounted, a pinion on said shaft, a gear in mesh with said pinion, a centrifugally operated governor having a movable collar, a device carried by and secured in fixed relation to said gear and engaging with said collar, said device being adjustable on said gear, for the purpose specified.

5. In an instrument of the class described, in combination, a pointer or index, a shaft on which said pointer is mounted, gearing to oscillate said shaft, a centrifugally operated governor, a device carried by and secured in fixed relation to said gearing to move therewith and coöperating with said

governor, said device being adjustable on said gearing, for the purpose specified.

6. In an instrument of the class described, in combination, a pointer or index, a shaft on which said pointer is mounted, a pinion on said shaft, a gear to drive the said pinion, a centrifugally operated governor provided with a collar, a device coöperating with said collar, a slide bar carrying said device, means for securing said slide bar in fixed relation to said gear, and a screw for adjusting said slide bar and device with relation to said collar.

In testimony whereof, I have signed my name to this specification in the presence of two subscribing witnesses.

LEON E. BLANCHARD.

Witnesses:

JAS. H. CHURCHILL,

J. MURPHY.