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J. F. SCHYLANDER

1,764,055

CENTRIFUGAL SWITCH

Filed Sept. 9, 1926

Fig. 1.

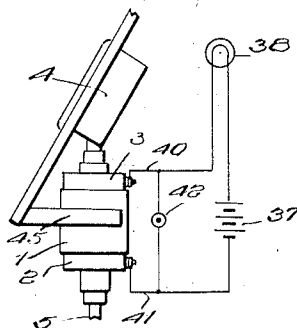


Fig. 2.

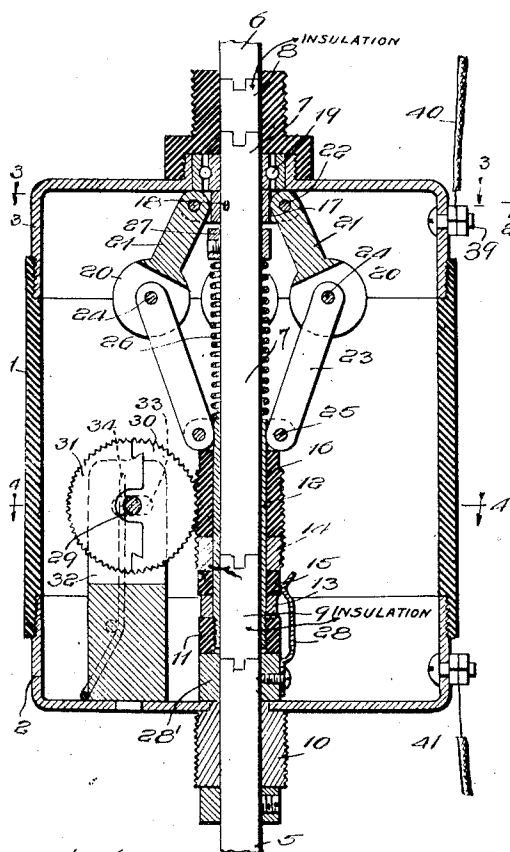


Fig. 3.

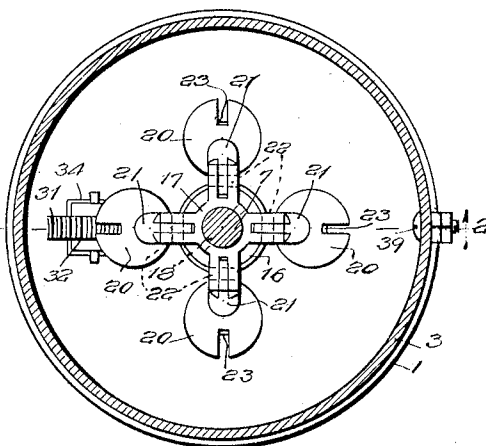
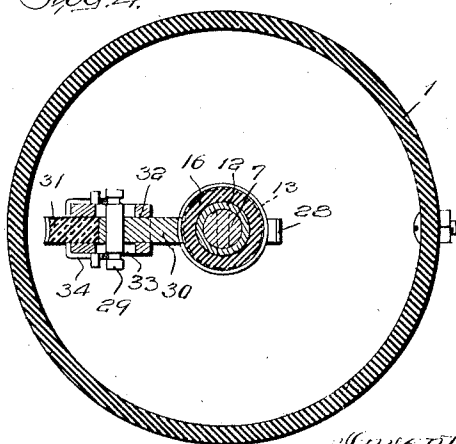


Fig. 4.



Witnesses:

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UNITED STATES PATENT OFFICE

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CENTRIFUGAL SWITCH

Application filed September 9, 1926. Serial No. 134,493.

My invention belongs to that general class of devices known as speed indicators, and relates more particularly to a device applicable on vehicles for signaling or indicating to traffic officers or other persons certain speeds at which the vehicle may be traveling. The invention has among its objects the production of a device of the kind described which is simple, compact, durable, reliable, accurate, inexpensive, and satisfactory for use wherever found applicable. More particularly it has as an object the production of a device for giving varied signals whereby different speeds are indicated in different manners and may be separately distinguished.

Many other objects and advantages of the construction herein shown and described will be obvious to those skilled in the art from the disclosure herein given.

To this end my invention consists in the novel construction, arrangement and combination of parts herein shown and described, and more particularly pointed out in the claims.

In the drawings, wherein like reference characters indicate like or corresponding parts:

Fig. 1 is a perspective view illustrating more or less diagrammatically the device, its installation and the circuit controlled by the device;

Fig. 2 is a cross-sectional view through the device;

Fig. 3 is a cross-sectional view taken substantially on line 3—3 of Fig. 2; and

Fig. 4 is a sectional view taken substantially on line 4—4 of Fig. 2.

The present invention is in the nature of an improvement on the speed indicator signal device illustrated in U. S. Patent No. 1,723,222 to Wattells.

Referring to the drawings, I provide a governor casing or housing consisting of one or more parts as shown, an intermediate portion 1, preferably of fiber, bakelite, or equivalent material, provided with caps or ends 2 and 3. The device is installed so that its mechanism is driven by the same mechanism

that drives the speedometer. As illustrated in Fig. 1, 4 may represent a speedometer and 5 the speedometer shaft operatively connected with a suitable movable part of the vehicle. Ordinarily, the speedometer shaft 5 is connected directly with a shaft 6 as shown in Fig. 2 which is part of the speedometer mechanism which I have illustrated. However, I provide an interconnecting shaft which I prefer to make up of a shaft 7 connected with shaft 6 but insulated therefrom by a shaft section 8 of insulating material or the like, the part 7 being likewise insulated from the shaft portion 5 by an intermediate shaft section 9 of insulating material. As shown, the bottom end or plate 2 is provided with a shaft bearing 10. Slidably arranged on the shaft portion 7 is a sleeve 12 which carries a contact 13 and also a contact 14. These contacts in the construction shown are secured to the sleeve and in electrical contact therewith. There are also provided collars or sleeves 11, 15, and 16 of insulating material such as fiber or the like. Provided on the shaft 7 is a collar 17, this being secured to the shaft by a pin 18 or equivalent means for the purpose. If desired, anti-friction bearings 19 may be arranged in the upper head 3 so as to reduce friction. The collar 17 and sleeve 12 are connected by a governor mechanism consisting of the balls 20 formed with links 21 pivotally secured to the collar 17 by pins 22 or the equivalent. Links 23 are pivotally secured to the balls 20 by pins 24 and to the sleeve 12 by pins 25. An adjustable collar 27 is also provided on the shaft 7 and interposed between this collar and this sleeve is a spring 26 which tends to normally maintain the balls of the governor as shown in Fig. 2.

A switch member 28 cooperates with the contact 13 when the shaft is rotated at sufficient speed to cause the governor to raise the sleeve and with it the contact 13, thereby closing the circuit as will be hereinafter described. The switch member 28 is secured to a collar 28' secured to the shaft 5 and rotatable therewith. When the shaft is rotated, carrying with it the governor mech-

anism and contact 13, it also rotates the switch member 28, the only wear on the member 28 and the contact, as well as on the insulating collars, being from the raising and lowering of the sleeve 12 by the action of the governor. It has been found in practice that this action is far more satisfactory than where the switch member is in the form of a stationary brush resting on a rotary contact. This particular circuit when closed gives a continuous signal so long as the speed is maintained between certain limits. Generally, the parts are so adjusted that this contact will be closed at a speed of twenty-five miles an hour of the vehicle. As the speed increases, the governor raises the sleeve still further and with it the contact member 14. The member 14 and the collar 16 are preferably threaded as most clearly shown in Fig. 2, and are arranged to cooperate with a toothed member preferably made up of parts 30 and 31, the part 30 being of conducting material while part 31 is of insulating or non-conducting material. This toothed element is pivotally supported on a shaft 29 carried by the support 32. It will be noted that the bearing for the shaft 29 is preferably elongated so as to allow a slight play, the element or gear being maintained in contact with the collar 14 or collar 16 by a spring 34 or its equivalent. Obviously, as the shaft 7 is rotated, carrying with it the collars or sleeves 14 and 16, the threaded portions of these parts cause the gear 30—31 to be rotated on its shaft 29, bringing first the portion of conducting material and when the portion of insulating material into engagement with one or the other of the collars. When the shaft is raised by the increase of speed of the shaft 7 a circuit will be closed between the contact collar 14 and 30—31 every time the conducting portion 30 comes in contact with 14. At a constant speed of say thirty-five miles an hour, the circuit will be intermittently closed and opened. The length of the intervals of closed and open will, of course, depend upon the relative positions of the parts and may be made as desired. It should be such that there is an appreciable visible break in the circuit. It will be noted that the construction is such that the rotation of the sleeve as well as its sliding movement in the shaft rotates the contact member 30—31. That is, the sleeve is freely movable up and down under the control of the governor, and the device is immediately operative under sudden speed changes.

I have not considered it necessary to illustrate in detail the various kinds of signals that may be employed, such as a bell, a horn, or a light. Generally, I prefer a light as it is noiseless and yet may be readily observed and the vehicle more easily identified. In this case, the light may be mounted

where desired, for example, on the cowl in front of the windshield, on the radiator, or other prominent and easily visible point.

I have diagrammatically illustrated a circuit in Fig. 1, in which 37 represent a battery or source of energy, 38 a light, and 40—41 conductors. One conductor, for example 40, is operably connected with binding posts 39 electrically connecting it with the end piece 3, while the other conductor may be connected with the cap 2, or a connection made through a ground.

The method of connecting up may be varied. I have shown in Fig. 1 a test circuit in which a push button 42 or the equivalent may be provided so that a traffic officer may test the device to see that the lamp 38 is operative and the signal in working condition. Obviously, speedometer shaft, the conductors, signal 38, etc., should be so encased that they can not be tampered with or disconnected without same being readily obvious to the traffic officer. Usually they are placed in armored conductors or housings and so sealed that tampering is not convenient. The device may be secured in place in any suitable manner, for example, I have shown the casing part 1 secured to the dash or portion of the instrument board by a bracket 45.

When the device is installed and adjusted, for example, to give a signal for twenty-five miles an hour or at thirty-five, when the car is running below twenty-five miles no signal will be given. When twenty-five miles is reached, a light will burn continuously. When thirty-five miles an hour is reached, the connecting sleeve 13 will have been moved out of contact with the member 28 and the signal will be flashed intermittently, and it will be noted that owing to the improved contacts or circuit breaker employed the intermittent flashing of the signal may be so arranged that flashes are separated sufficiently so as not to appear like a continuous signal. This enables one signal light to give a plurality of different signals. Obviously, the two circuit breakers may be arranged to control separate circuits and lamps and different colors may be employed. However, this tends to cause confusion and the signals are not so readily understood. It will be apparent that additional switch members similar to 28 or to the worm wheel 30—31 may be employed within the casing without modifying the governor mechanism and contacts carried thereby, for controlling other circuits and signal devices and giving additional indications for other speeds. This is so obvious from the disclosure herein given that I have not considered it necessary to describe it in detail. As the car comes down the road, it is possible to observe the approximate speed and determine whether or not it is exceeding the legal limit by ob-

serving the signal, the intermittent flash particularly indicating that the car is traveling at a speed of thirty-five miles or above. The figures twenty-five and thirty-five miles are merely illustrative, it being understood that the instrument may be adjusted. The use of the device tends to curb speeding, and it does curb it as it signals and exposes it.

Having thus described my invention, it is obvious that various immaterial modifications may be made in the same without departing from the spirit of my invention; hence I do not wish to be understood as limiting myself to the exact form, construction, arrangement and combination of parts herein shown and described or uses mentioned.

What I claim as new and desire to secure by Letters Patent is:

1. In a device of the kind described, a rotatable shaft provided with a sleeve of nonconducting material and an associated sleeve of conducting material secured thereto, said sleeves being slidably mounted on said shaft and provided with a continuous spiral groove at the exterior thereof constituting a thread, a rotatable wheel having a toothed periphery arranged to engage with said sleeve, a portion of said periphery being formed of conducting material and another portion thereof being formed of nonconducting material, said portions bounding sectors on said wheel, and means controlled by the rotative speed of said shaft for moving said sleeves longitudinally on said shaft.

2. In a device of the kind described, a rotatable shaft provided with a sleeve of nonconducting material and an associated sleeve of conducting material slidably mounted on said shaft, said sleeves being provided with a continuous spiral thread at the exterior thereof, a rotatable contact member engaging said threaded sleeve and driven thereby, a portion of the periphery of said member being formed of conducting material and another portion thereof being formed of nonconducting material, said portions bounding sectors on said wheel, and means controlled by the rotative speed of said shaft for moving said sleeves longitudinally on said shaft.

3. In a device of the kind described, a circuit controller comprising a shaft provided with a sleeve slidably mounted thereon and rotatable therewith, said sleeve carrying a collar of non-conducting material and a collar of conducting material secured thereto and spirally threaded at the exterior to form a continuous thread on the collar, a gear constructed with faces of conducting and non-conducting material having teeth arranged to mesh with said thread and rotatable upon a longitudinal movement or a rotatable movement of said sleeve.

4. In a device of the kind described, a

circuit controller comprising a shaft provided with a governor including a sleeve slidably mounted on the shaft and rotatable therewith, a collar of non-conducting material and a collar of conducting material secured to the sleeves and spirally threaded at their exteriors to form a continuous thread, a contact member having faces of conducting and non-conducting material constructed with teeth arranged to mesh with said thread, and means for maintaining the said contact member in operative relation with said threaded collars and rotatable upon a longitudinal movement or a rotatable movement of said sleeve.

5. In a device of the kind described, a rotatable shaft provided with a sleeve of nonconducting material and an associated sleeve of conducting material secured thereto, said sleeves being slidably mounted on said shaft and provided with a continuous spiral groove at the exterior thereof constituting a thread, a rotatable wheel having a toothed periphery arranged to engage with said sleeve, a portion of said periphery being formed of conducting material and another portion thereof being formed of nonconducting material, said portions bounding sectors on said wheel, means controlled by the rotative speed of said shaft for moving said sleeves longitudinally on said shaft, and means for maintaining said wheel in operative relation with said sleeves.

6. In a device of the kind described, a rotatable shaft provided with a sleeve of nonconducting material and an associated sleeve of conducting material slidably mounted on said shaft, said sleeves being provided with a continuous spiral thread at the exterior thereof, a rotatable contact member engaging said threaded sleeves and driven thereby, a portion of the periphery of said member being formed of conducting material, and another portion thereof being formed of nonconducting material, said portions bounding sectors on said wheel, means controlled by the rotative speed of said shaft for moving said sleeves longitudinally on said shaft, and means for maintaining said member in operative relation with said sleeves.

7. In a device of the kind described and in combination, a speed indicator comprising a rotatable shaft, a governor including a sleeve slidably mounted on the shaft and rotatable therewith, an annular portion of said sleeve being formed of conducting material and another annular portion thereof being formed of nonconducting material, said sleeve being threaded to provide a worm, a worm wheel in mesh therewith, said wheel being provided with a face portion of nonconducting material and a face portion of conducting material and said wheel being rotatable upon rotation of said sleeve with

the shaft or longitudinal movement of the sleeve, and means for yieldingly maintaining said wheel in operative relation with said worm whereby the wheel and worm constitute a circuit breaker.

8. In a device of the kind described and in combination, a vehicle speed signal device comprising a rotatable shaft, a governor including a sleeve slidably mounted on said shaft and rotatable therewith, said sleeve having a threaded external portion constituting a worm gear and comprising annular sections of conducting and nonconducting material, a worm wheel in mesh with said gear and provided with face portions of conducting material and of nonconducting material, said wheel being rotatable upon rotation of said sleeve with said shaft, a contact member mounted on said shaft and fixed against longitudinal movement thereon, the members being so arranged that when said contact member is in contact with a conducting section of said sleeve said gear will be in engagement with a nonconducting section thereof, and vice versa.

9. In a device of the kind described and in combination, a rotatable shaft, a sleeve slidably mounted on said shaft and comprising alternate annular sections of conducting and of nonconducting material, a member engaging said sleeve and rotatable thereby, certain portions of the periphery of said member being formed of conducting material and other portions being formed of nonconducting material, and means controlled by the rotative speed of said shaft for moving said sleeve longitudinally thereon.

10. In a device of the kind described and in combination, a rotatable shaft, a sleeve slidably mounted on said shaft and comprising alternate annular sections of conducting and of nonconducting material, a member engaging said sleeve and rotatable thereby, certain portions of the periphery of said member being formed of conducting material and other portions being formed of nonconducting material, a contact member engaging said sleeve, said sleeve being movable longitudinally relative to said contact member, and means controlled by the rotative speed of said shaft for moving said sleeve longitudinally thereon.

11. In a device of the kind described and in combination, a rotatable shaft, a sleeve slidably mounted on said shaft and comprising alternate annular sections of conducting and of nonconducting material, a member engaging said sleeve and rotatable thereby, certain portions of the periphery of said member being formed of conducting material and other portions being formed of nonconducting material, a contact member rotatably mounted on said shaft but fixed against longitudinal movement thereof, said contact member engaging said sleeve, and

means controlled by the rotative speed of said shaft for moving said sleeve longitudinally thereon.

In testimony whereof, I have hereunto signed my name.

JOHN F. SCHYLANDER.

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