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SPEED WARNING FOR LINEAR SPEEDOMETER

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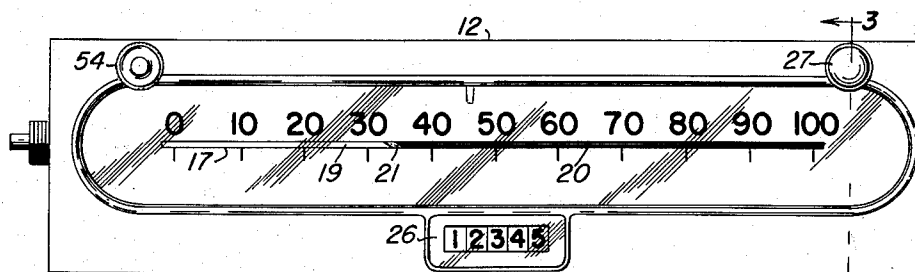


FIG. 1.

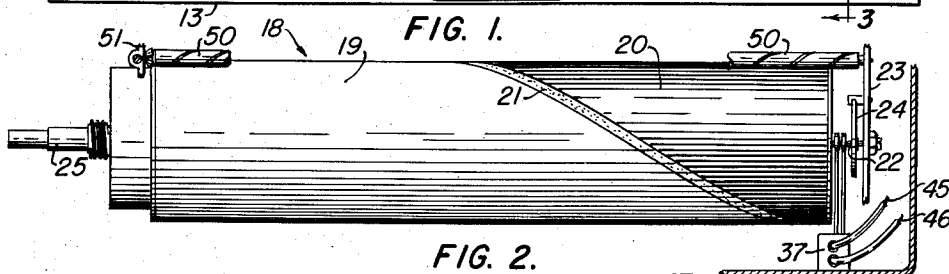


FIG. 2.

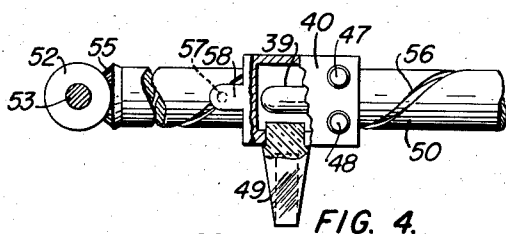


FIG. 4.

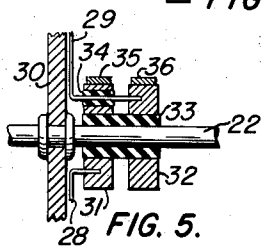


FIG. 5.

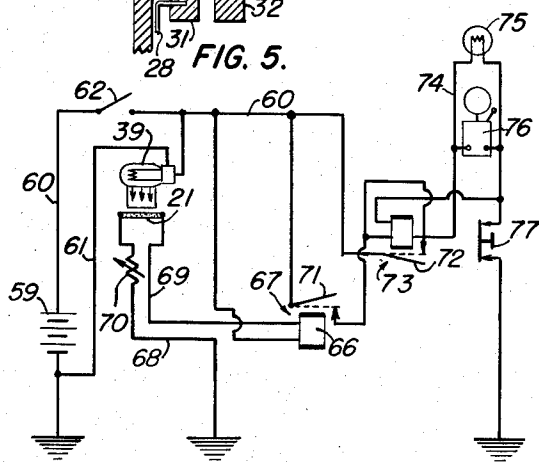


FIG. 7.

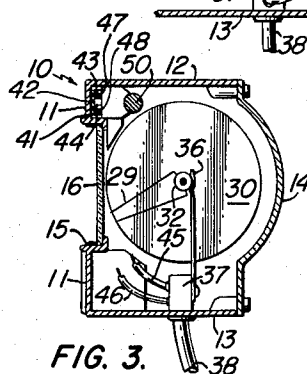


FIG. 3.

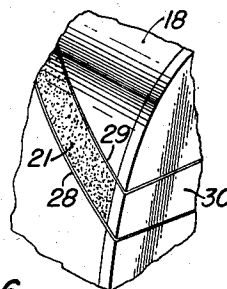


FIG. 6.

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SPEED WARNING FOR LINEAR SPEEDOMETER

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3 Claims. (Cl. 340—263)

This invention relates to speed warning devices for vehicles, particularly automobiles, and has reference to a speedometer alarm such as referred to in my prior Patent No. 2,771,597, issued November 20, 1956.

Speed alarms, as above referred to, are for the purpose of warning the driver of the vehicle that a pre-selected speed has been reached. Thus, the driver may increase or decrease the velocity of the vehicle. Particularly, such alarms are for alerting a drowsing or passive motorist and require physical exertion on his part to shut off the alarm and thereby bring him to a state of alertness not otherwise likely if the alarm automatically cuts itself off.

The present invention is directed to a speed alarm for operation with cylinder type speedometers now used in some late model automobiles. In such speedometers the pointers appear to move horizontally to register with horizontal indicia representing miles per hour. The apparent movement of the pointer is accomplished by rotation of the cylinder, viewed through a slot in the cylinder housing, where the cylinder's surface is divided by a helix and where the cylinder surfaces on each side of the division are of contrasting colors. The cylinder is rotated by conventional means such as employed in ordinary speedometers for moving speed indicator pointers.

An object of the invention is to provide low frictional resistance in a speed alarm applied to cylinder type speedometer and whereby the accuracy of the speedometer is not noticeably impaired.

A particular object is to provide a speed alarm for a cylinder type speedometer which may be set to alarm at any selected speed.

Another object is to provide an alarm for a cylinder type speedometer, which alarm may be activated either when accelerating or decelerating on reaching a selected speed.

A further object is to provide an electrically activated alarm for a cylinder type speedometer which may be wired to continuously alarm until manually disconnected regardless of subsequent acceleration or deceleration of the vehicle.

These and other objects will become apparent from the following description and accompanying drawing, wherein:

Figure 1 is a front elevation of a cylinder type speedometer showing a selector knob thereon in accordance with the present exemplary form of the invention.

Figure 2 is an elevational and sectional view showing the cylinder, electrical connections, part of the speedometer housing, and the speed alarm adjusting shaft.

Figure 3 is a sectional view taken approximately on line 3—3 of Figure 1.

Figure 4 is an enlarged elevational and sectional view of the adjusting shaft and activating light assembly.

Figure 5 is an enlarged sectional view of the slip ring assembly mounted on the speedometer cylinder shaft.

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Figure 6 is an enlarged broken perspective of an end of the speedometer cylinder showing electrical connections with the helix strip of semi-conductor material dividing the surface of the cylinder, and

Figure 7 is a schematic diagram of electrical circuits and components embodied in a preferred form of the invention.

The conventional cylinder type speedometer shown includes an elongated horizontal housing 10 having a front wall 11, top and bottom 12 and 13 and a removable back 14. The front wall 11 is inwardly shouldered, as at 15, to receive an elongated window or lens 16, one surface of which is covered with a translucent coating material, not numbered. The coating covers all of the surface of the lens except for a narrow horizontal slot 17 through which a part of the rotatable speedometer cylinder 18 is visible. Indicia, not numbered, is provided along the slot 17 in increments of miles per hour. The surface of the cylinder 18 is divided into two areas 19 and 20 of contrasting colors by a helix division therearound. As will become apparent, a feature of the invention has to do with a special helix strip 21 along the referred to division and hereinafter described in detail. Other parts of the conventional speedometer shown are the cylinder shaft 22, a bracket 23 in which the shaft is mounted, a hairspring 24 connecting said shaft with said bracket, and a cable connection 25 in the axial center and end of the cylinder opposite the hairspring. The mileage indicator 26 shown in Figure 1 forms no part of the present invention nor does the knob 27 for adjusting the latter.

In accordance with the present invention the helix 21 dividing the two cylinder areas 19 and 20 is a strip of semi-conductor material, such as cadmium sulphide, the sides of which are in electrical contact with uninsulated separate wires 28 and 29 which, in turn, are connected with an alarm circuit such as shown in Figure 7. The wires 28 and 29 extend over the end 30 of the cylinder 18 where they are electrically connected with slip rings 31 and 32. As shown in Figure 5, there is a tubular insulator 33 on the extending end of the cylinder shaft 22, and on which insulator the slip rings 31 and 32 are mounted. One of the slip rings 31 has a transverse insulator 34 therethrough for accommodating one of the wires 29, and which wire makes electrical contact with the other slip ring 32. The slip rings 31 and 32 are in turning contact with brushes 35 and 36 which extend upwardly from a junction box 37 mounted in the bottom 13 of the housing 10. The brushes 35 and 36 are supplied through a cable 38 extending downwardly through the housing bottom 13, as shown in Figure 2.

The semi-conductor material 21 is activated by means of a lamp 39 mounted for longitudinal movement relative to the indicia along the lens slot 17. In the exemplary form of the invention shown, the lamp 39 is mounted in a housing 40 which is slidably received in the recess 41 formed by the housing front 11, top 12 and upper shoulder 15. The vertical face of the recess 41 is provided with a strip of insulating material 42 extending along the length thereof and has spaced contact strips 43 and 44 mounted thereon, one above the other. The contact strips 43 and 44 are electrically connected with wires 45 and 46 extending from the junction box 37 and which wires are energized through the cable 38. Contacts 47 and 48 on the lamp housing 40 make sliding contact with the conductor strips 43 and 44.

Light from the lamp 39 is projected to the semi-conductor strip 21 through a prism 49 mounted in and extending downwardly through the lamp housing 40,

The prism shown is preferably of methyl-methacrylate resin, such as Plexiglas or Lucite, but it is to be understood that the light may be projected by other means within the spirit and intention of the invention.

The position of the lamp 39, housing 40 and prism 49 relative to the miles per hour indicia may be by means of an adjusting shaft 50, one end of which is journaled in the previously described bracket 23, and the other end in a fitting 51 inside of the speedometer housing 10. The fitting 51 rotatably supports a beveled gear 52 on a shaft 53 which extends outwardly through the housing front wall 11 where it is provided with a selector knob 54. The end of the adjusting shaft 50 is also provided with a beveled gear 55 which meshes with the first gear 52; thus, by means of rotating the knob 54, the adjusting shaft 50 may be rotated. There is a spiraled groove 56 in the surface of the adjusting shaft 50, and which groove engages a follower 57 on a projection 58 integral with the lamp housing 40.

Since the exemplary wiring diagram illustrated in Figure 7 is schematic, the leads thereof carry separate numbers, but it is to be understood that these leads include the described wire connections described in the foregoing. However, the lamp 39 and semi-conductor material 21 carry the same numbers as before. The lamp 39 is wired in series with the vehicle battery 59 by leads 60 and 61. One of the leads 60 includes a switch 62 which operates in conjunction with the ignition switch of the vehicle and whereby the circuit is energized only when the ignition of the engine is on. Opposite sides of the semi-conductor 21 are connected to control a relay coil 66 of a normally open relay 67. One of the leads 68 or 69 extending from the semi-conductor 21 may include a variable resistor 70 and whereby the effective sensitivity of the semi-conductor may be adjusted.

The first referred to lead 60 of the thus described circuit extends to the armature 71 of the relay 67 and to the armature 72 of a normally open locking relay 73. An alarm circuit 74 includes a warning lamp 75 and an audible alarm 76, and a manual button 77 between the alarm and ground. Since the holding coil of the normally open locking relay 73 is in parallel with the alarm circuit 74, the operation of the button 77 turns off the alarm 76 and warning lamp 75, and releases said relay.

In operation, the lamp is adjusted by means of the knob 54 to a selected maximum or minimum speed at which the alarm is to be activated. This adjustment is readily visible to the driver of the vehicle by reason of the depending position of the prism 49 and viewed through the translucent coating on the lens 16. When

the strip of semi-conductor material 21 is opposite the projected light from the lamp 39, the alarm 76 sounds and the warning light 75 is illuminated by reason of described circuits and activation thereof. Since the relay 73 in the alarm circuit 74 is of the locking type, the circuit is de-energized by operation of the manual switch 77 so that the alarm and warning light may be turned off and reset without turning off the ignition and stopping the motor of the automobile.

The invention is not limited to the exemplary construction herein shown and described, but may be made in various ways within the scope of the appended claims.

What is claimed is:

1. In combination with a cylinder type speedometer having a housing and wherein the cylinder of the speedometer is visible through an elongated slot; a speed warning device comprising a strip of semi-conductor material diagonally wound on the surface of said cylinder and having wires in electrical contact with the sides of said semi-conductor material, a light source adjacent the surface of said cylinder and projecting a spot of light thereon as wide as said strip of semi-conductor material, means activating said light source, an electrical alarm means, and means operatively connecting said alarm means with the wires in contact with said semi-conductor material.

2. The construction defined in claim 1 and including means longitudinally adjusting said light source relative to the length of said slot.

3. The construction defined in claim 2 and wherein said means longitudinally adjusting said light source is comprised of a rotatable adjusting shaft parallel with said cylinder, said shaft having a spiralled groove therein, a lamp housing, means slidably supporting said lamp housing parallel with said shaft, and a follower on said housing engaging said groove.

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