June 27, 1939. P. H. KOLB 2,164,113

SPEED CONTROL ATTACHMENT FOR SPEEDOMETERS

Filed Oct. 5, 1936 2 Sheets-Sheet 1

Fig. 1.

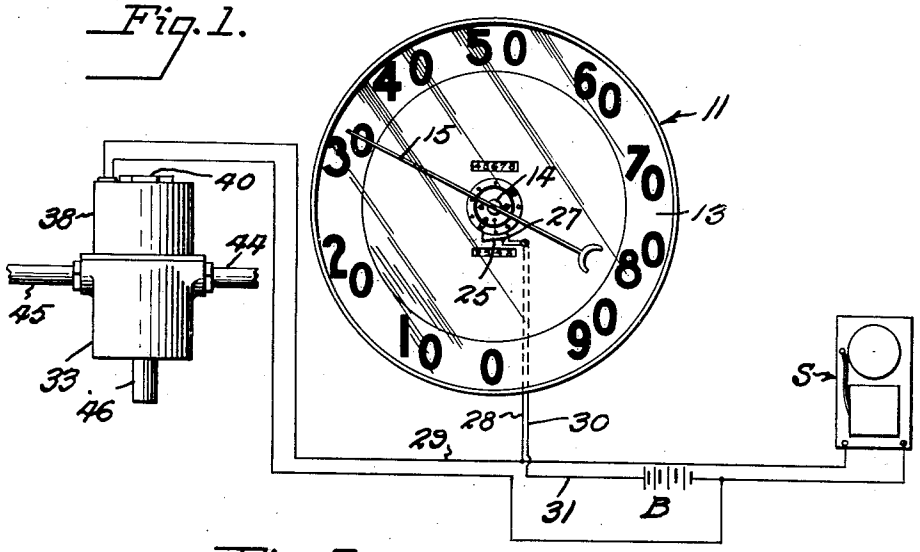


Fig. 2.

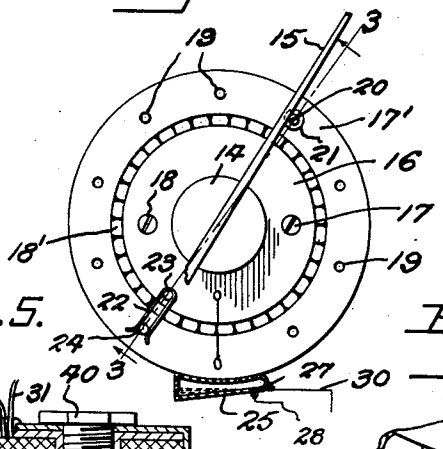


Fig. 3.

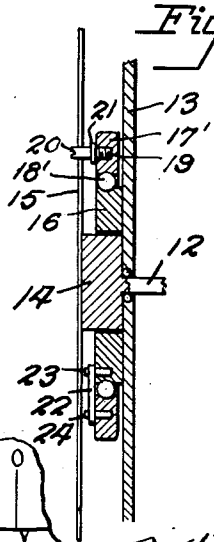


Fig. 5.

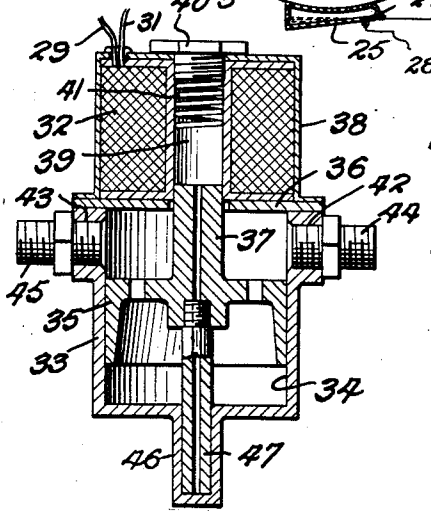
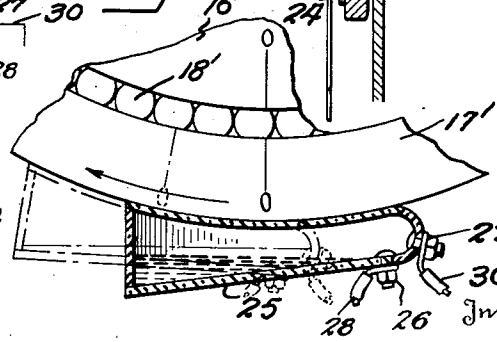


Fig. 4.



Inventor

P. H. Kolb

By Mason Fenwick & Lawrence

Attorneys

June 27, 1939. P. H. KOLB 2,164,113

SPEED CONTROL ATTACHMENT FOR SPEEDOMETERS

Filed Oct. 5, 1936 2 Sheets-Sheet 2

Fig. 6.

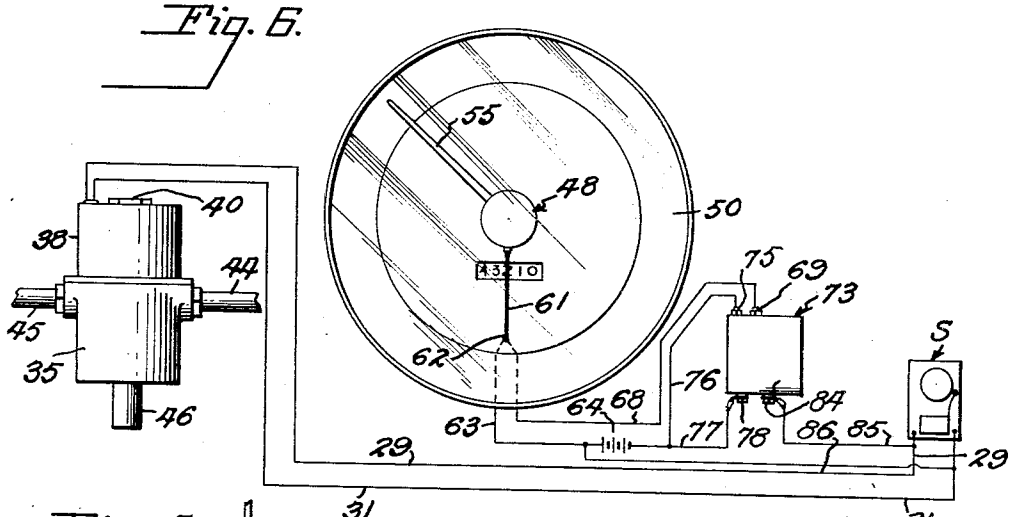


Fig. 8.

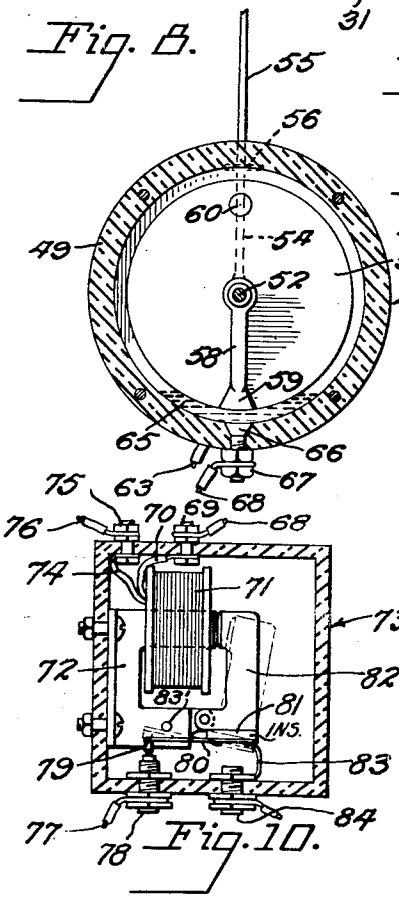


Fig. 10.

Fig. 9.

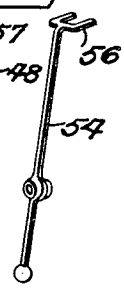
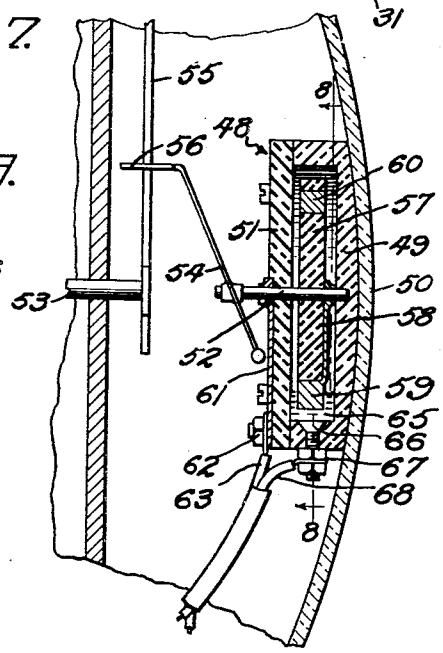


Fig. 7.



Inventor

P. H. Kolb

By Mason Fenwick & Lawrence

Attorneys

Patented June 27, 1939

2,164,113

UNITED STATES PATENT OFFICE

2,164,113

SPEED CONTROL ATTACHMENT FOR SPEEDOMETERS

Paul Huber Kolb, Williamsport, Pa.

Application October 5, 1936, Serial No. 104,136

2 Claims. (Cl. 200—56)

This invention relates in general to devices for controlling the speed of motor vehicles, and particularly to devices in the form of attachments for speedometers to stop the movement of such vehicles in excess of predetermined speed.

The main object of the invention is to provide a speed-control attachment which can be very cheaply manufactured and can be readily applied to standard types of speedometers such as are commonly employed on automobiles.

Other objects of the invention will become apparent as the detailed description thereof proceeds.

In the drawings:

Figure 1 is a diagrammatic layout illustrating one form of this invention as applied to a speedometer of standard construction;

Figure 2 is a detail, to an enlarged scale of the attachment illustrated in Figure 1;

Figure 3 is a section taken on the line 3—3 of Figure 2;

Figure 4 is a section taken lengthwise through a mercury switch which forms part of the aforesaid attachment;

Figure 5 is a central section taken lengthwise through a valve controlling the supply of fuel to the carburetor of an automobile;

Figure 6 is a diagrammatic lay-out of a modified form of the invention illustrated in Figure 1;

Figure 7 is a fragmentary section, to an enlarged scale of the form of the invention illustrated in Figure 6;

Figure 8 is a section taken on the line 8—8 of Figure 7;

Figure 9 is a perspective of an arm forming part of the speed control attachment; and

Figure 10 is a central vertical section through a magnetic switch forming part of the apparatus illustrated in Figure 6.

Referring to the drawings, in which similar parts are designated by like numerals:

The form of the invention illustrated in Figures 1 to 5 includes a speedometer 11 of standard construction, and assumed as being mounted on the dashboard of a motor vehicle.

The speedometer 11 comprises the usual speedometer shaft 12 mounted in suitable bearings (not shown) to rotate about the center of the indicator dial 13 provided with the usual numerals for indicating the speed of the vehicle. The shaft 12 has a disc 14 formed integral with or suitably secured to the outer end thereof, and an indicator needle 15 is secured to the disc 14 in position to travel over the indicator dial 13 in the usual manner.

The speed-control attachment for this speedometer comprises a ring 16 secured to dial 13 by means of the screws 17 and 18 coaxial with the speedometer shaft 12. A second ring 17' is mounted by ball bearing 18' to rotate freely around the ring 16. The second ring 17' is provided with a series of apertures 19 internally screwthreaded and spaced apart angularly to correspond with the speed indications on the dial 13. A pin 20 is screwthreaded to enter the apertures 19, and is provided with a flange 21 adapted to seat against the face of the ring 17' and maintain the pin projecting from said face in the path of movement of the indicator 15. A U-shaped spring 22 is fixed at its center to a pin 23 projecting from the face of the fixed ring 16. The branches of the spring 22 extend parallel to a radius of the ring 16 and on opposite sides of a pin 24 fixed to the outer ring 17'.

A mercury switch 25 is fixed to the lower end of the outer ring 17' in such position that when the said outer ring 17' is in normal position, as determined by the branches of the spring 22, the circuit through the contacts 26 and 27 is broken. The contact 26 is connected by wire 28 to a main wire 29; and the contact 27 is connected by a wire 30 to the main 31 in which a battery B is interposed. The closing of the circuit through wires 28 and 30 causes operation of an audible signal S, and also energizes a solenoid 32 to control the operation of valve mechanism interposed between a source of liquid fuel supply and the carburetor of the engine.

The valve mechanism controlled by the solenoid 32 comprises a casing 33 provided with a cylindrical bore 34 in which the piston 35 is mounted to reciprocate. The casing 33 is provided with a head 36 centrally apertured to receive a stem 37 which forms the armature for the solenoid 32, the latter being mounted in a casing 38 suitably secured to the upper end of the casing 33 and provided with a central bore 39 to receive slidably the stem 37 of the piston 35. The bore 39 is closed at the upper end of the casing 38 by a plug 40 to which may be attached a spring 41 forming a yielding stop for the stem 37. The casing 33 is provided with diametrically opposite screwthreaded bores 42 and 43 which receive the fittings 44 and 45, respectively, the fitting 44 being connected to a source of liquid fuel supply for the engine, while the fitting 45 is connected to the carburetor thereof.

The casing 33 is provided with an extension 46 in which is slidably mounted the piston rod 47

of the piston 35. The stem 37, the piston rod 47, and the piston 35 are bored so as to permit easy reciprocation of the piston 35 through such liquid fuel as may be contained in the casing 33.

In the operation of this form of the invention, the pin 20 is set into one of the apertures 19, corresponding to the speed at which this control mechanism is intended to operate the valve mechanism connected to the source of fuel supply. As shown in Figure 2 of the drawings, the pin 20 is set to control the operation of the gasoline valve when the vehicle reaches a speed of sixty miles per hour. As the vehicle increases in speed, the indicator 15 rotates in clockwise direction around the dial 13 until it contacts with the pin 20 at the sixty mile indication. Increase of speed causes the indicator 15 to rotate the outer ring 17' against the resistance of the spring 22 in a clockwise direction. This movement of the ring 17' causes the mercury switch 25 to move from the full line position shown in Figure 4 to the dotted line position, and thereby close the circuit between the contacts 26 and 27. Obviously the closing of the circuit between these contacts operates the signal S, and causes operation of the valve or piston 35 to shut off the fuel supply to the carburetor, and thereby effect the stopping of the motor.

In the form of the invention shown in Figures 6 to 10, the attachment designated generally by the reference numeral 48 is secured to the glass casing of the speedometer instead of to the dial thereof as in the form first described. The attachment 48 comprises a casing 49 of insulating material suitably secured to the glass cover 50 of the speedometer. The casing 49 is hollowed out to form a cup, to the rim of which is detachably secured the insulating cover 51.

A shaft 52 is mounted to rotate, in bearings suitably formed in the casing 49 and cover 51, about an axis coincident with the axis of the speedometer shaft 53. An operating arm 54 is secured to the shaft 52, and extends angularly and radially from the shaft 52 to engage the speedometer needle 55 by means of a U-shaped terminal 56 which straddles the speedometer needle 55.

Upon the shaft 52, which is of conducting material, there is adjustably mounted by friction fit a disc 57 of insulating material. To this disc 57 there is suitably secured a strip 58 of conducting material which terminates in a contact element 59 extending across the periphery of the disc 57, which may be counterbalanced by a plug 60 fixed in the aforesaid disc in proper position for this purpose.

To the cover 51 of the attachment, there is suitably secured a conducting strip 61 which, at one end, is in contact with the conducting shaft 52 and at its other end is connected to terminal 62 of a wire 63 connected to a battery 64. The cup 49 is partly filled with a suitable quantity of a liquid conductor such as mercury 65; and the rim of the cup is provided with a contact screw 66 extending from the interior of the cup through the said rim to be connected with the terminal 67 of a wire 68. The wire 68 is connected at its other end to a terminal 69, which in turn is connected by a wire 70 to one end of the winding 71 on a core 72 suitably supported on a wall of the casing 73. The other end of the winding 71 is connected by a wire 74 to a terminal 75 also mounted on said casing 73. A wire 76 connects the terminal 75 to a wire 77 connecting the battery 64 to a terminal 78 fixed to said casing 73.

The terminal 78 is located to make contact with a contact point 79 secured to one end of a conducting rod 80 fixed to a block of insulation 81 suitably secured to the lower end of an armature 82, which is pivoted to the lower end of the core 72 so as normally to swing by gravity to the dotted line position shown in Fig. 10. An insulator stop 83' on the core 72 in the path of swing of rod 80 limits the movement of the armature 82 away from the core 72. A wire 83 connects the rod 80 to a terminal 84 suitably secured to the bottom of the casing 73; and a wire 85 connects the terminal 84 to the wire 29 leading to the signal S and to the fuel supply valve in casing 38. The wire 63 is connected by a wire 86 to the wire 31 to complete the circuits through the said supply valve and the signal S.

In the operation of this form of the invention, the insulating disc 57 is set at such angle with respect to the shaft 52 that its conducting terminal 59 will enter the conducting fluid 65 only when the shaft 52 shall have been rotated by the indicator shaft 55 through an angle corresponding to the speed at which it is desired to effect stoppage of the engine. In this form of the invention, the control arm 54 is always in contact with the speedometer indicator 55, and the setting for maximum speed must be effected by rotation of the insulating disc 57 about the shaft 52.

While I have shown these forms of speed-control attachment as connected to control the gas supply to an internal combustion engine, it must be understood that they are not to be limited to such use, as it is intended to use them for controlling any of the parts of an internal combustion engine effecting the operation thereof. Since this speed control device is applicable to standard motor vehicles wherein an ignition switch generally controls the electrical circuits and wherein the present device is only used when the vehicle is in operation, it is obvious that the customary ignition switch should also preferably control the power supply to this device.

Numerous variations may doubtless be devised by persons skilled in the art without departing from the principles of my invention. I, therefore, desire no limitations to be imposed on my invention, except such as are indicated in the appended claims.

What I claim is:

1. The combination of a fixed dial and a hand rotatable over said dial and a transparent cover therefor with an electric circuit including a source of electric energy, a circuit maker and breaker secured to said cover and including a cup of insulating material, a cover of insulating material for said cup, a shaft rotatably mounted in said cup and its cover and projecting toward said dial, means connecting said hand to said shaft to transmit rotation from said hand to said shaft, a disc frictionally mounted on and angularly adjustable about said shaft, conducting liquid in said cup, a contact terminal mounted on the cover of said cup and electrically connected to said shaft, a contact strip radially mounted on said disc and connected to said shaft within the cup, a contact terminal extending through the rim of said cup into contact with the liquid conductor, said terminals being electrically connected only when the contact terminal on the disc is immersed in the conducting liquid.

2. The combination of meter means having a fixed dial, a hand rotatable over said dial, a transparent cover therefor, and an electric circuit including a source of electric energy, a circuit maker and breaker having in effect relatively movable contacts and including a container of insulating material interiorly of said cover, a substantially disc-like member rotatably and angularly adjustably mounted in said cover, means connecting said hand to said disc to transmit rotation from said hand to said disc, a body of conducting liquid adapted to complete said circuit through said contacts, at least one of said contact terminals being radially positioned with respect to and movable with said disc, one contact terminal extending through said insulating container and adapted to contact with said conducting liquid, said terminals and circuit being electrically inter-connected only when the contact terminal associated with the disc is electrically connected to the other contact through the conducting liquid, as a result of the hand moving to a determinate position.

PAUL HUBER KOLB.