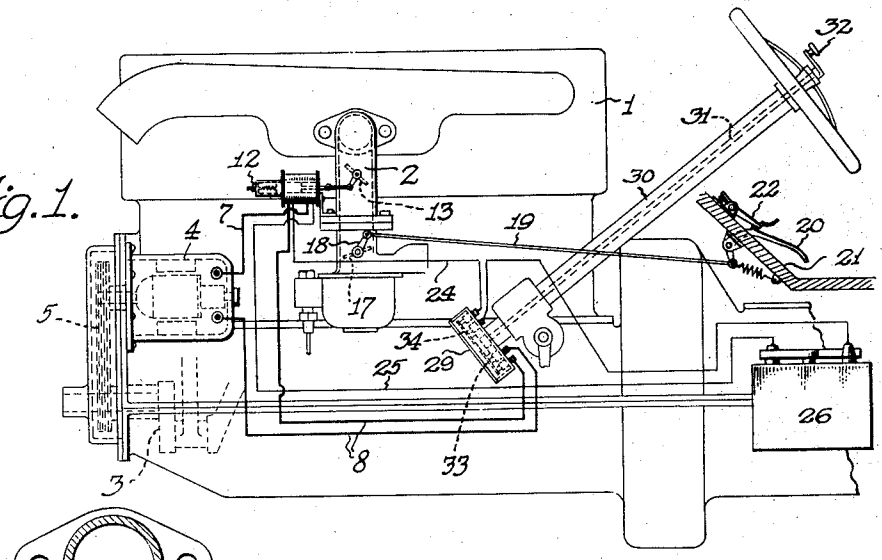
Aug. 25, 1931. H. D. GUMPPER 1,820,272

ELECTRIC GOVERNOR FOR AUTOMOBILES

Filed Aug. 2, 1929

Fig. 1.



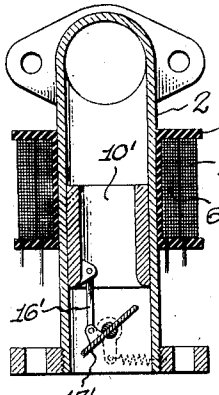


Fig. 3.

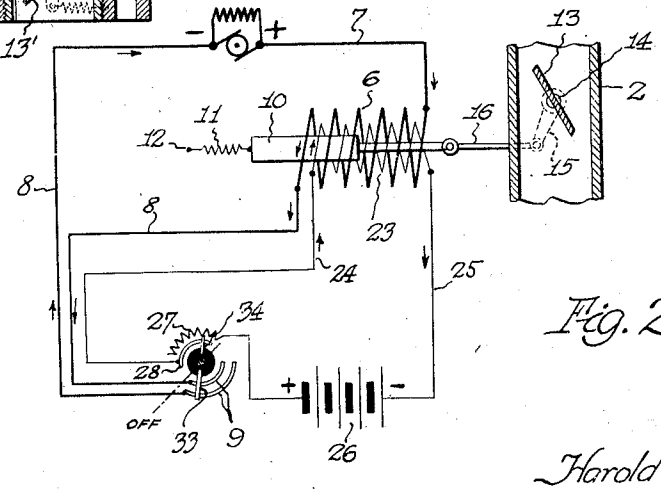


Fig. 2.

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ELECTRIC GOVERNOR FOR AUTOMOBILES

Application filed August 2, 1929. Serial No. 383,105.

The present invention pertains to a novel electric governor for automobiles, and the principal object is to provide a system of this character wherein mechanism depending on the speed of the motor in turn controls the fuel intake to the motor. In this respect, the governor mechanism functions as a constant speed device, but the invention further provides means whereby such constant speed may be varied from time to time. In other words, the device may be set for a given speed which will be maintained until the setting is altered.

The invention comprises essentially a generator driven by the motor and energizing a solenoid which acts on a valve in the fuel intake pipe. The relation among these parts is such that when the motor and generator slow down, as in ascending a hill, the valve in the intake pipe is opened wider to speed up the motor. Conversely, a tendency of the motor to exceed the predetermined speed results in closing of the fuel valve and the consequent slowing down of the motor and generator. The regulating mechanism for determining the particular constant speed desired consists in a winding opposed to the solenoid and embodied in a separate circuit supplied from another source of current, such as a battery. In this winding circuit is a variable resistance which determines the amount of current supplied to the winding. The adjustment of this resistance determines the resultant effect of the generator speed on the solenoid and fuel valve.

The invention is fully disclosed by way of example in the following description and in the accompanying drawings, in which

Fig. 1 is a side elevation of an automobile motor equipped according to the invention;

Fig. 2 is a wiring diagram of the system; and

Fig. 3 is a detail section of a modified construction.

Reference to these views will now be had by use of like characters which are employed to designate correponding parts throughout.

In Fig. 1 is illustrated an automobile motor 1 having the usual fuel intake pipe 2 and crank shaft 3. On the motor is suitably mounted a generator 4 geared to the crank shaft, as indicated diagrammatically by the numeral 5.

Adjacent the pipe 2 is a solenoid 6 having its ends connected to the terminals of the generator by conductors 7 and 8. The conductor 8, however, carries a pair of spaced contact members 9 which constitute a break in the generator-solenoid circuit unless bridged. Within the solenoid 6 is a core 10 which is normally drawn against the direction of attraction by means of a spring 11 connecting the core to a fixed member 12. At a point in line with the axis of the solenoid, the pipe 2 is provided internally with a valve 13 of the butterfly type. The axis or shaft 14 of the valve is equipped with an arm 15 which in turn is linked as at 16 to the core 10.

With the contacts bridged by means which will presently be described, an increase of speed of the fly wheel and generator causes the core 10 to be drawn into the solenoid 6, resulting in a closing movement of the valve 13 whereby the motor tends to slow down. Conversely, as the motor and generator tend to slow down by increased load, the attraction on the core 10 diminishes and the latter is withdrawn by the spring 11, whereupon the valve 13 is opened wider to increase the speed of the motor. Thus, the apparatus thus far described operates as a constant speed device.

The pipe 2 is further equipped with the usual throttle 17 at a point behind the valve 13. An arm 18 attached to the valve is linked, as at 19, to an accelerator pedal 20 on the floor board 21, in the usual manner. A latch 22 is pivoted to the floor board and is adapted to hold the pedal 20 in its depressed position in order to maintain the valve 17 open, so that the fuel supply may be controlled exclusively by the valve 13.

The apparatus for maintaining a given desired constant speed includes a winding 23 preferably within and opposite to the solenoid 6. The ends of this winding are joined by conductors 24 and 25 to a battery 26 or other source of current supply. The conductor 24, however, is broken by a resistance 27 and a contact 28 adjacent to and spaced from each other. These parts are located near to the contacts 9, as shown more

clearly in Fig. 2, and in a housing 29 at the lower end of the steering post 30, as shown in Fig. 1. A shaft 31 passes through the post and is equipped at one end with an operating handle 32 while at the other end are two conducting arms 33 and 34. The former is adapted to bridge the contacts 9 and the latter to connect the resistance 27 to the contact 28. By adjustment of the handle 32, the amount of resistance operative in the battery-winding circuit may be varied. The winding sets up an opposition to the magnetic action of the solenoid 6, and inasmuch as the current passing through the winding may be varied, the resultant effect of the solenoid 6 is likewise varied. It will now be apparent that the constant speed which the motor tends to maintain is dependent on the adjustment of the variable resistance. The arms 33 and 34 are so related to the parts which they engage that, when turned to the off position indicated in Fig. 2, they are disengaged from the members 9, 27 and 28 and thus open both circuits. Thus, the governing mechanism may be withdrawn from service whenever desired.

In Fig. 3 is illustrated a modified construction for maintaining the solenoid and winding at a substantially constant temperature, so that the action thereof will not vary with changes of temperature in the motor and associated parts. With this object in view, the fuel intake pipe 2 is surrounded by an insulating spool 35 on which is first wound the solenoid 6′ and then the opposed winding 23′. The core 10′ of the solenoid slides within the pipe 2 and is linked, as at 16′ to the auxiliary valve 13′ substantially in the manner already described, with reference to Figs. 1 and 2. The constant flow of fuel through the pipe 2 has a cooling effect on the solenoid and winding, maintaining them at a constant temperature, so that variations due to temperature changes are avoided.

Although specific embodiments of the invention have been illustrated and described, it will be understood that various alterations in the details of construction may be made without departing from the scope of the invention as indicated by the appended claims.

What I claim is:—

1. In combination with a gasoline motor having a fuel intake pipe, a governor comprising a generator geared to said motor, a solenoid connected to said generator, a core in said solenoid, a valve in said pipe and connected to said core, a winding opposed to said solenoid, means for supplying current to said winding concurrently with the connection of said solenoid to said generator, and a variable resistance connected between said means and said winding.

2. In combination with a gasoline motor having a fuel intake pipe, a governor comprising a generator geared to said motor, a solenoid connected to said generator, a core in said solenoid, a valve in said pipe and connected to said core, a winding opposed to said solenoid, means for supplying current to said winding concurrently with the connection of said solenoid to said generator, said solenoid and winding being wound around said pipe, and a variable resistance connected between said winding and said means.

3. In combination with a gasoline motor having a fuel intake pipe, a governor comprising a generator geared to said motor, a solenoid connected to said generator, a core in said solenoid, a valve in said pipe and connected to said core, a winding opposed to said solenoid, means for supplying current to said winding concurrently with the connection of said solenoid to said generator, and a common switch for breaking said solenoid-generator circuit and the winding circuit.

4. In combination with a gasoline motor having a fuel intake pipe, a governor comprising a generator geared to said motor, a solenoid connected to said generator, a core in said solenoid, a valve in said pipe and connected to said core, a winding opposed to said solenoid, means for supplying current to said winding concurrently with the connection of said solenoid to said generator, a variable resistance connected between said means and said winding, and a common switch for operating said resistance and breaking said solenoid-generator circuit.

In testimony whereof I affix my signature.

HAROLD D. GUMPPER.