

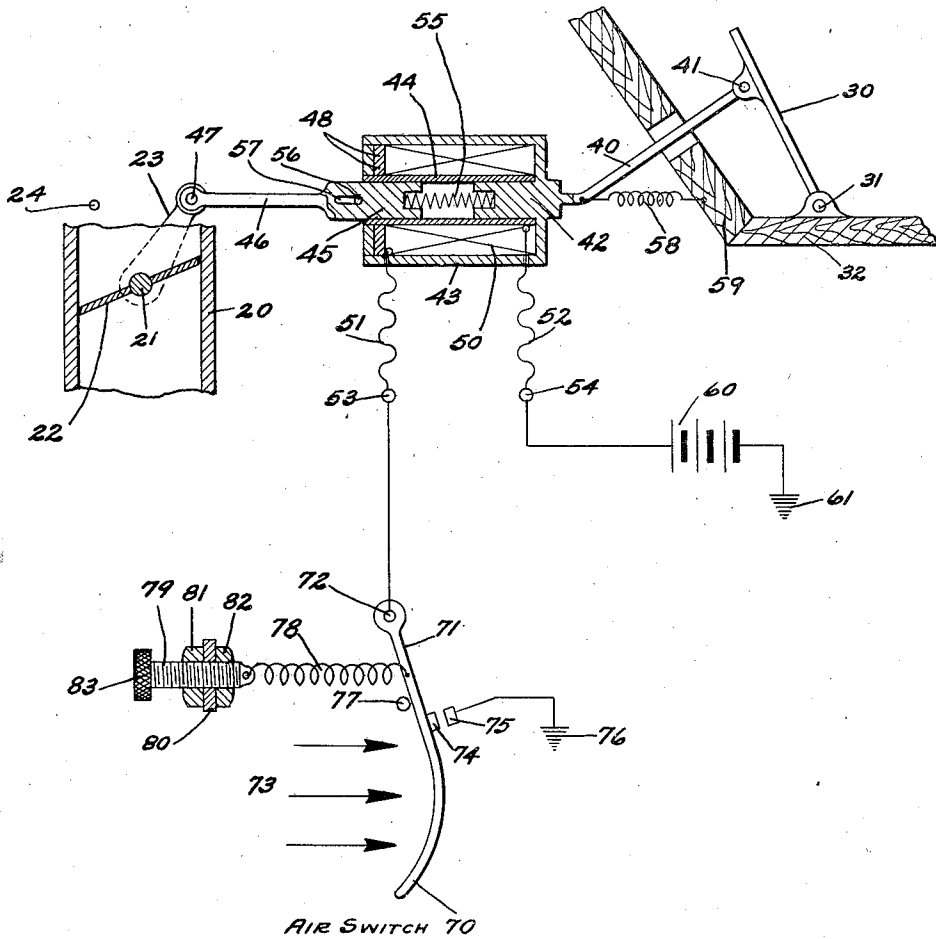
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E. M. CLAYTOR

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ENGINE THROTTLE GOVERNOR.

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INVENTOR
EDWARD M. CLAYTOR
BY

Spencer Hardman & Fehr
his ATTORNEYS

UNITED STATES PATENT OFFICE

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ENGINE THROTTLE GOVERNOR

Edward M. Claytor, Anderson, Ind., assignor to
General Motors Corporation, Detroit, Mich., a
corporation of Delaware

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This invention relates to engine throttle governors and particularly to governors for use with automobile engines.

It is an object of the present invention to provide means for limiting the speed of an engine and hence the speed of the vehicle propelled by it.

In the disclosed embodiment of the present invention, the operating link between the throttle operating or accelerator pedal and the throttle lever on the carburetor includes a collapsible portion which is operated by an electro-magnet. This collapsible portion is normally extended so that the accelerator pedal may be operated to move the throttle valve to fully open position, which may be necessary when the engine is developing full power at moderate speed. A switch, which closes in response to conditions which are present when it is attempted to operate the vehicle at high speed, connects the electromagnet with a current source. This results in a collapsing or shortening of the link between the accelerator pedal and the throttle lever at the carburetor. Thus the throttle valve is closed automatically in response to high speed operation, although the operator may maintain the accelerator pedal in a position which normally would cause the throttle valve to be wide open. Thus the governor acts upon the throttle independently of the manipulation of the accelerator pedal.

Further objects and advantages of the present invention will be apparent from the following description, reference being had to the accompanying drawing wherein a preferred embodiment of one form of the invention is clearly shown.

In the drawing:

The figure is a diagram of the throttle governor embodying the present invention.

Referring to the drawing, 20 designates an engine fuel passage across which extends a throttle shaft 21 carrying a butterfly throttle valve 22. Shaft 21 is operated by a lever 23 moved from the idle position shown in the drawing to a position in contact with a stop 24 which the lever 23 will strike when the valve 22 is wide open. Throttle lever 23 is operated by a foot or accelerator pedal 30 hinged at 31 upon the floor 32 of the vehicle. Pedal 30 is connected with lever 23 by a collapsible link which comprises a link member 40 attached at 41 to the pedal 30 and terminating in a magnetizable core member 42, centrally disposed with respect to a magnetizable shell 43. The core 42 is received by a non-magnetizable tube 44 which provides a support and guide for

a magnetizable armature 45 terminating in a link member 46, pinned at 47 to the lever 23. The non-magnetizable tube 44 is supported also by discs 48, of magnetizable metal, which cooperate with the shell 43 to provide an enclosure for a magnet coil 50, the leads 51 and 52 of which are flexible and are connected with terminals 53 and 54 respectively. A spring 55 is located between the core 42 and armature 45 in order to hold these parts in separated relation and, hence, the link members 40 and 46 in normally extended relation. The separation of member 45 from member 42 is limited by a pin 56, of non-magnetizable metal, which passes through a slot 57 in armature 45. A tension spring 58 connecting link member 40 with the toe board 59 of the vehicle serves to hold the parts of the throttle control in normal position as shown in the drawing, the throttle 22 being in engine-idle position.

The magnet coil 50 is energized by a battery or other current source 60, grounded at 61 and connected with the terminal 54. The control of the connection between the battery 60 and the coil 50 is effected by an air switch 70, comprising a vane 71, pivoted at 72 and located in an air current represented by arrows 73. Pivot 72 is connected with terminal 53. This air current is created by the engine radiator cooling fan so that the force of the air current 73 is proportionate to the speed of the fan, hence, to the speed of the engine which drives it. The vane 71 carries a contact 74 engageable with a contact 75, grounded at 76. Normally the vane 71 is held in contact-open position and against a stop 77 by tension spring 78 fixed at one end to the vane 71 and at the other to a screw 79 which passes through a plain hole in a bracket 80 and which receives adjusting nuts 81 and 82. The screw 79 is provided with a knurled head 83 so that the screw may be held from rotating while the nuts 81 and 82 are turned in order to adjust the position of the screw 79 with respect to the bracket 80. In this way the tension of the spring 78 is adjusted so that greater or less wind pressure upon the vane 71 will be required to move it into contact-making position.

When the speed of the engine and hence the speed of the cooling fan attains a certain value such that the air current represented by arrows 73 exerts a pressure upon the vane 71 sufficiently to overcome the spring 78, contact 74 will engage contact 75 thus connecting the battery 60 with the magnet coil 50. Then the coil 50 will produce magnetism sufficient to overcome the resistance of the spring 55 and to cause the arma-

ture 45 to move toward the core 43. The throttle lever 23 and the throttle 22 will be moved clockwise from full open position to a partly closed position, thereby maintaining the speed of the engine within a predetermined limit regardless of the position of the accelerator pedal 30 at that time.

When the speed of the engine is decreased, the pressure against the vane 71 will decrease until the spring 78 overcomes it and separates the contacts 74 and 75. Then the magnet coil 50 will be disconnected from the battery and the electromagnet forming a part of the link will be deenergized, thereby permitting the link to expand by the movement of armature 45 away from the core 42 due to the expansion of the compressed spring 55.

In this manner, maintenance of the throttle 22 in a wide-open position such as would cause over-speeding of the engine is prevented because, when the engine begins to over-speed, the throttle will move automatically to partly-open position thereby reducing the speed of the engine. However, if the engine is required to carry a load which would tend to reduce its speed, the throttle 22 may be fully opened by movement of the accelerator pedal 30 because, so long as the speed is below a predetermined value, the air switch cannot close and hence the linkage between the accelerator pedal and the throttle cannot be collapsed.

While the embodiment of the present invention constitutes a preferred form, it is to be understood that other forms might be adopted, all coming within the scope of the claims which follow.

What is claimed is as follows:

1. An engine governing system, comprising a throttle valve, a manually operated throttle control member for moving the valve toward fully open position, a collapsible link connecting the member and the valve, electromagnetic means for collapsing said link, a current source, and an engine speed responsive switch for connecting the means and current source.

2. An engine governing system, comprising a throttle valve, a manually operated throttle control member for moving the valve toward fully open position, a collapsible link connecting the member and valve, said link including a solenoid electromagnet and an armature, a spring normally maintaining said magnet and armature extended, a current source and an engine speed responsive switch for connecting the magnet and source.

3. An engine governing system, comprising a throttle valve, a manually operated throttle control member for moving the valve toward fully open position, a collapsible link connecting the member and valve and comprising a solenoid electromagnet connected with the member and an armature connected with the valve, a coiled spring located between the armature and magnet core and normally maintaining the magnet and armature extended, a current source and an engine speed responsive switch for connecting the magnet and source.

4. A system for governing an internal combustion engine comprising a throttle valve, manually operable means for moving the valve toward fully open position, and means for modifying the operation of said manual means and comprising an electromagnet, a current source and a switch actuated by a blast of air from the cooling fan of the engine for connecting the electromagnet with the current source.

5. A system for governing an internal combustion engine comprising a throttle valve, manually operable means for moving the valve toward fully open position, said means including a collapsible link, and means for modifying the action of said throttle control means, said modifying means comprising an electromagnet for collapsing said link, a current source and a switch for connecting the magnet with the current source, said switch being an air switch responsive to a blast of air created by the engine cooling fan.

EDWARD M. CLAYTOR.