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POWER CONTROL LOCKING MEANS

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Fig. 2.

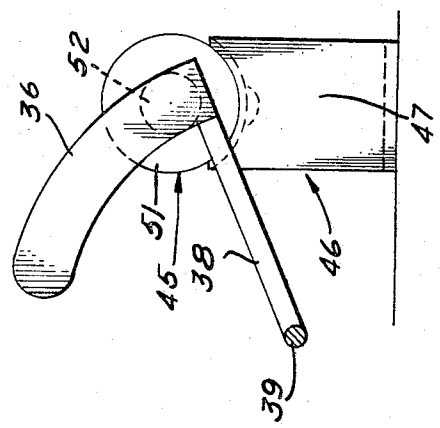
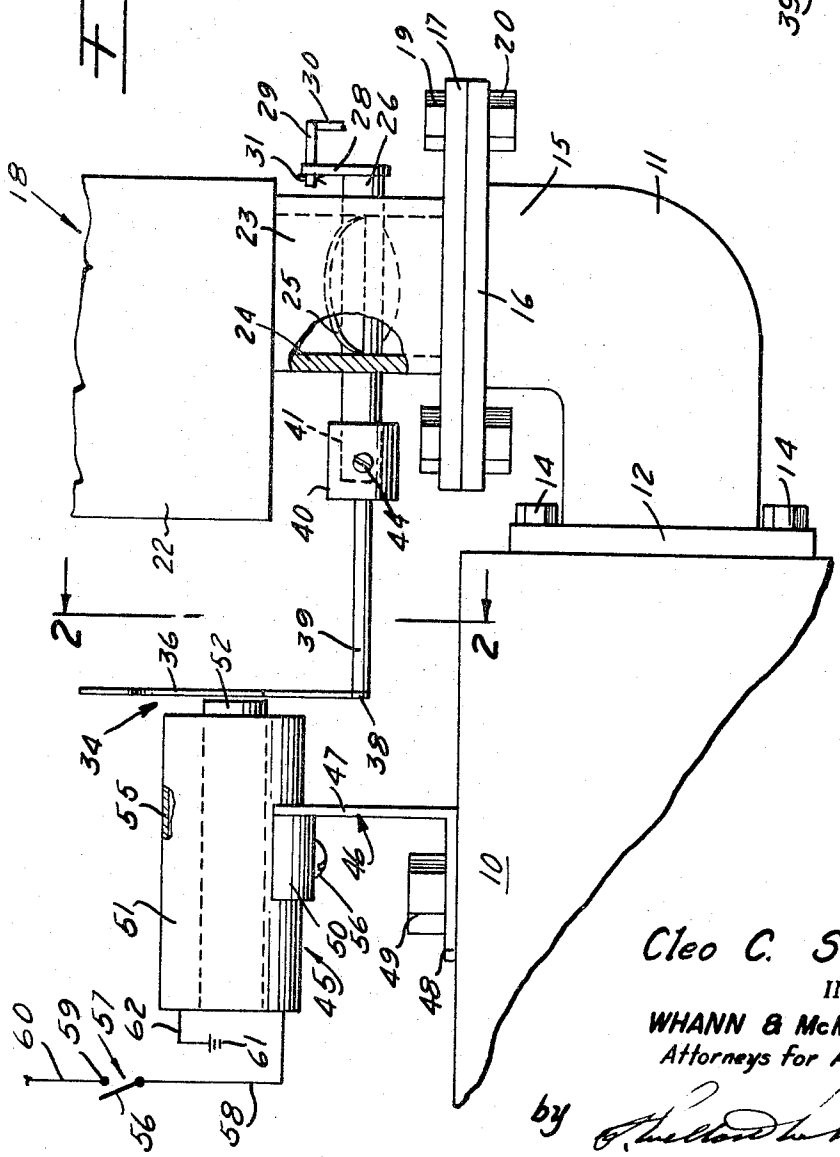


Fig. 1.



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POWER CONTROL LOCKING MEANS

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This invention relates generally to control means for various types of engines and relates more particularly to a locking mechanism for the throttle of such engines.

While the invention has particular utility embodied in a locking mechanism for the carburetor throttle of internal combustion engines and is shown and described in such connection, it is to be understood that its utility is not confined thereto since it may be embodied in other types of control means for various types of engines or other motive means.

There are many conditions and situations requiring locking of the throttle or other control for engines so that such setting will be exactly held against change. It is highly important that motor or engine vibration, expansion and contraction of parts due to temperature changes and/or other operating conditions, will not affect or change the position of the throttle or other control when locked.

The problem of thus locking the throttle or the like involves certain difficulties well known to those working in the art and it is an object of the present invention to provide a locking mechanism for the throttle valve of carburetors of internal combustion engines or other engine control means which will solve the above problem and the difficulties involved therein.

It is another object of the present invention to provide locking means of this character that will hold the throttle valve in the exact set positions required.

It is still another object of the invention to provide a device of this character that will not be affected by motor vibration, temperature changes or other operating factors.

It is a further object of the invention to provide a device of this character that is electrically operated.

It is a still further object of the invention to provide a device of this character that is simple in construction.

It is another object of the invention to provide a device of this character that has relatively few parts.

It is still another object of the invention to provide a device of this character that is effective and reliable in operation.

It is a further object of the invention to provide a device of this character that is relatively simple in construction and has a relatively few parts.

It is a still further object of the invention to provide a device of this character that may be easily and quickly installed.

It is another object of the invention to provide a device of this character that is relatively inexpensive to manufacture.

The characteristics and advantages of the invention are further sufficiently referred to in connection with the following detailed description of the accompanying drawings, which represent one embodiment. After considering this example, skilled persons will understand that variations may be made without departing from the principles disclosed and I conntemplate the employment of any structures, arrangements or modes of operation that are properly within the scope of the appended claims.

Referring to the drawings, which are for illustrative purposes only:

FIG. 1 is a side elevation of a mechanism embodying the present invention; and

FIG. 2 is a sectional view taken on line 2—2 of FIG. 1.

Referring more particularly to the drawings, there is

shown a cylinder head 10 to which the usual intake manifold 11 is attached, said intake manifold having a flange 12 provided with holes for reception of attaching screws 14 which are screwed into tapped openings provided therefor in the cylinder head. At its inlet end 15 the intake manifold 11 is provided with a flange 16 to which the attachment flange 17 of a carburetor, indicated generally at 18, is secured by means of screws 19 having securing nuts 20.

Only a portion of carburetor 18 is shown although it is to be understood that said carburetor 18 includes all of the usual parts and elements of a carburetor, carburetor 18 being of any well known type.

There is a carburetor body section 22 below which there is a throttle body section 23. An induction passage 24 extends through the carburetor, including the body section 22 and throttle body section 23. Within that portion of the induction passage extending through the throttle body section 23 there is a throttle valve 25 attached by any suitable well known means to a throttle shaft 26 which extends diametrically across the throttle body section. Throttle valve 25 is of the usual butterfly type although it is to be understood that any other type of throttle valve may be used. As is customary, the attaching flange 17 of the carburetor is at the lower end of the throttle body section 23.

Throttle shaft 26 has outer end portions which extend outwardly of the throttle body section and at one end there is a throttle lever 28 attached to said shaft in any well known manner so that movement of the lever will effect rotative movement of the throttle valve shaft 26. The throttle lever 28 has an opening adjacent its free end for operable reception of a laterally turned end portion 29 of an actuating rod 30 connected to and actuated by the accelerator. A cotter pin 31 received in an opening provided therefor in the free end portion of the laterally turned part 29 of the rod 30 secures the laterally turned portion 29 against separation from the throttle lever 28.

The mechanism for securing the throttle valve in any desired set position is indicated generally at 34 and includes an arcuately shaped armature 36 attached to the outer end of a bar 38. The other end of the bar is secured by welding, brazing, or the like, to one end of a shaft 39. At its opposite end shaft 39 is provided with a collar 40 having a bore 41 which extends axially from the free end of collar 40. Collar 40 is secured to the adjacent end of the rod or shaft 39 by any suitable means, such as brazing, welding, or the like, or the collar and shaft 39 may be formed integrally. Bore 41 receives an end portion of the throttle shaft 26 opposite the throttle lever and said collar is secured to said throttle shaft 26 by a set screw 44.

An electromagnet, indicated generally at 45, is supported by a bracket, indicated generally at 46.

Bracket 46 includes a vertical arm 47 and a laterally turned horizontal arm 48 having an opening therein for reception of one of the screws or studs 49 for securing the cylinder head to the block, not shown, of the motor or engine. Bracket 46 has an arcuately shaped cradle 50 which is secured to the upper end of arm 47 for reception of the electromagnet 45 which comprises a coil 51 and a soft iron core 52.

The electromagnet 45 is provided with an outer shell 55 of any suitable material and a screw 56, received in an opening provided therefor in the cradle 50, is screwed into a tapped opening in shell 55 for holding the electromagnet securely in the cradle. Any other suitable means may, of course, be used to secure the electromagnet in its position.

The coil 51 of the electromagnets 45 is connected to

a movable switch member 56 of a switch, indicated generally at 57 by means of a wire 58. Switch 57 has a fixed contact 59 engageable by the movable switch member 56 and said fixed contacts 59 is connected to any suitable source of power by a wire 60. Wire 60 may be connected to the battery of the vehicle in which the mechanism is installed or it may be connected to said battery through the ignition switch or the like. Coil 51 is also connected to a ground 61 by means of a wire 62 to thereby complete the electric circuit when switch 57 is closed.

Arcuate shaped armature 36 is of any suitable temporarily magnetizable material, such as, for example, soft iron. The bar 38 is sufficiently flexible so that when the switch 57 is closed and coil 51 thereby energized said armature is drawn against the adjacent end of the core 52 of the electromagnet 45 against the resistance of the resilient bar and is held on said core 52. The end of the core 52 adjacent the armature is substantially parallel to the plane of said armature and the plane of the path of movement of said armature so that when the armature is in engagement with said core end it will be held securely in place.

Normally, the switch 57 is in the open position and when it is desired to set the throttle valve in a selected position the accelerator pedal is depressed in the usual manner. Since the accelerator pedal is connected to the throttle shaft 26 by means of the rod 30 and throttle lever 28, such actuation of the accelerator pedal effects opening of the throttle valve and when said valve is at the preselected desired position switch 57 is closed to energize coil 51 and pull the armature 36 against the adjacent end of the core 52. The armature 36 will then be held in the set position and will not move from its position against the core 52 even under heavy vibration such as might occur when the mechanism is installed on certain types of trucks, or the like.

When it is desired to allow the throttle valve to return to the closed or idling position, switch 57 is opened so that the coil 51 is de-energized. The armature 36 is then released and the spring normally returning the throttle valve to the closed position and the accelerator to its normal position for a closed throttle valve, functions to close the throttle valve and move the accelerator pedal to its uppermost position.

Switch 57 may be located in any convenient place. It may be on the instrument panel of a truck or the like, or in any other desired location. It is to be noted that this switch is of a type that when closed will remain in position until opened manually or by any other suitable means.

The invention and its attendant advantages will be understood from the foregoing description and it will be apparent that various changes may be made in the form, construction and arrangement of the parts of the invention without departing from the spirit and scope thereof or sacrificing its material advantages, the arrangement hereinbefore described being merely by way of example, and I do not wish to be restricted to the specific forms shown or uses mentioned except as defined in the accompanying claims, wherein various portions have been separated for clarity of reading and not for emphasis.

I claim:

1. Mechanism for locking in a predetermined preset position the throttle valve of a carburetor operably connected with the intake manifold of an internal combustion engine, said carburetor having a rotatable throttle shaft adapted to be actuated by the accelerator of said engine, comprising:

(A) a shaft extension having an axial collar at one end, said collar having a bore extending axially inwardly from its free end in which is received an end portion of said throttle shaft;

(B) means for securing said collar on said throttle shaft whereby said collar and shaft extension will rotate with said throttle shaft;

(C) a resilient bar having one end attached to said shaft extension and extending radially therefrom;

(D) an armature of soft iron having one end secured to the free end of said bar, and being swingable in an arcuate path about the axis of said shaft extension;

(E) an electromagnet comprising a core of soft iron and an electric coil disposed about said core, one end of said core being in a plane parallel to the plane of the armature movement and being positioned in slightly spaced relation to said armature;

(F) support means for said electromagnet for supporting same in said position, said support means being secured to an adjacent portion of the engine; and

(G) means for connecting said coil to a source of electrical energy, said means including a switch having a movable switch member movable between an open and a closed position, said switch member remaining in whichever position it is moved to until moved to the other position.

2. The combination of a carburetor having an induction passage with a throttle valve therein mounted on a throttle shaft adapted to be rotated to position said throttle valve with means for locking said throttle valve in an adjusted position, the locking means comprising:

(A) a shaft extension having an axially arranged collar at one end, said collar having a bore extending axially inwardly from its free end in which is received an end portion of said throttle shaft;

(B) means for securing said collar on said throttle shaft whereby said collar and shaft extension will rotate with said throttle shaft;

(C) a resilient bar attached to said shaft extension and extending radially therefrom;

(D) an armature of soft iron having secured to the free end of said bar for swinging movement in an arcuate path centered on the axis of said shaft extension;

(E) an electromagnet mounted in fixed relation to said armature and comprising a core of soft iron and an electric coil disposed about said core, one end of said core being in a plane parallel to the plane of the armature movement and being positioned closely adjacent to said armature; and

(F) means for connecting said coil to a source of electrical energy, said means including a switch having a movable switch member movable between an open and a closed position.

3. Mechanism for locking the throttle valve of a carburetor having a rotatable throttle shaft in adjusted positions, comprising:

(A) a shaft extension axially connected to said throttle shaft;

(B) a resilient bar attached to said shaft extension and extending radially therefrom;

(C) an armature of temporarily magnetizable material secured to the said bar; and

(D) an energizable electromagnet comprising a core of temporarily magnetizable material and an electric coil disposed about said core, one end of said core being in a plane parallel to the plane of the armature and being positioned in closely spaced relation to said armature.

4. In locking means for securing the throttle valve of a carburetor in adjusted positions:

(A) an arcuately shaped armature of magnetically attractable material operably connected with said throttle valve;

(B) an electromagnet comprising a core and a coil disposed thereon, one end of said core being adjacent to but spaced from said armature;

(C) resilient means included in the operable connection between said armature and throttle valve, said

resilient means carrying said armature for movement through an arc, said resilient means having the same radial center as the armature, said armature, throughout its movement, being close enough to said core so as to be magnetically attracted against said core against the resistance of said resilient means when said coil is energized; and

(D) means for controlling the energization of said coil.

5. In locking means for securing an adjustably movable carburetor throttle valve in an adjusted position:

(A) an elongate armature of magnetically attractable material having guided movement in a predetermined path in response to the adjusting movements of said throttle valve;

(B) an electromagnet comprising a core and a surrounding energizable coil, one end of said core being positioned at one side of the path of movement of said armature, said core end and said armature being supported for relative movements to engaged and non-engaged positions; and

(C) resilient means normally maintaining said armature and said one end of said core in spaced relation to permit freedom of movement of the armature along said path, but yieldably permit relative magnetic movement of the armature and said core end into engagement when said core is energized, said resilient means comprising a resilient support having unitary movement with the throttle valve.

References Cited

UNITED STATES PATENTS

2,131,888	10/1938	Harris	188—164 X
2,673,627	3/1954	Stava et al.	188—165
2,765,058	10/1956	Struthers	251—89 X
2,916,116	12/1959	Eddy et al.	123—102 X
3,251,444	5/1966	Erban	188—164 X

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