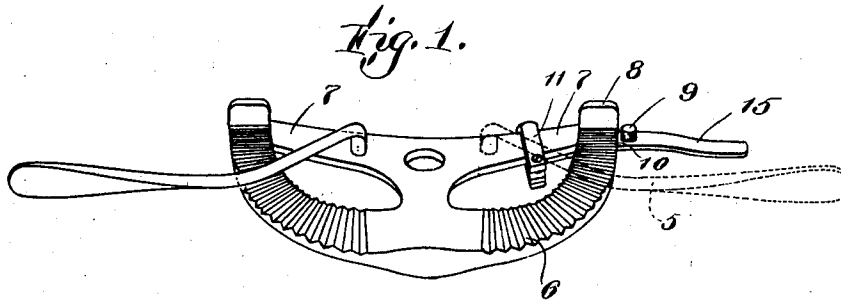
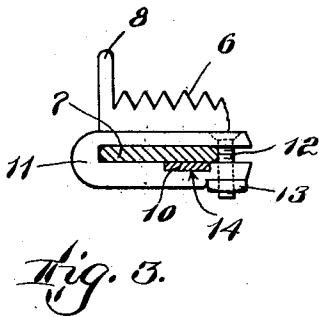
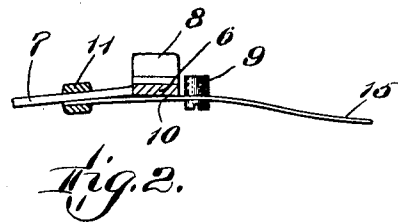
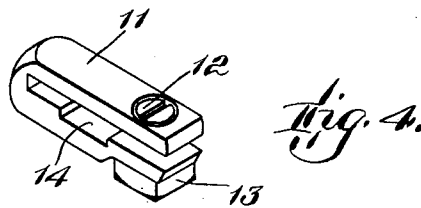


L. A. COWLES.
THROTTLE CONTROL FOR MOTORS.
APPLICATION FILED MAY 31, 1918.

1,360,894.

Patented Nov. 30, 1920.



Inventor:
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UNITED STATES PATENT OFFICE.

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THROTTLE CONTROL FOR MOTORS.

1,360,894.

Specification of Letters Patent.

Patented Nov. 30, 1920.

Application filed May 31, 1918. Serial No. 237,671.

To all whom it may concern:

Be it known that I, LUCIAN A. COWLES, a citizen of the United States, residing at Brockton, in the county of Plymouth and State of Massachusetts, have invented new and useful Improvements in Throttle Control for Motors, of which the following is a specification.

The present invention relates to means for controlling the operation of motors, particularly those with which automobiles are equipped, and has for its object to provide in connection with a throttle lever or handle, a stop adapted to arrest such lever or handle in the position where the supply of working fluid is throttled down to the amount under which the motor will run at light load, and is adapted to be moved out of the way of the lever or handle so that the latter may be further moved to close the throttle completely, or at least to such an extent as to cause stoppage of the motor. With this stop may be, and preferably is, combined a second stop which arrests the controller lever or handle in the position last indicated.

The purpose of the invention may be best understood by a brief description of the common systems of throttle controllers for automobile motors, with a statement of the improved result which is sought by the present invention. So far as I am aware, automobiles at present are universally equipped with one or another form of throttle lever mounted in connection with the steering wheel to be manipulated so as to open the throttle more or less widely. The movement of such lever in the throttle closing direction is limited by a stop so placed as to prevent further movement of the lever in that direction at the point where the supply of working fluid has been cut down to substantially the minimum at which the motor will run without load. In consequence of this condition the motor cannot be stopped when running without load by the manipulation of the throttle lever alone, but other means must be resorted to when it is desired to stop the motor. Now it frequently happens that when the car is traveling down hill the driver may wish to use the motor as a brake by causing it to stop functioning entirely, except as it is driven by the wheels of the car against the com-

pression developed in the motor cylinders. That is, in order to check the momentum of the car without using the ordinary brake, the driver may, if he desires, cause the resistance of the motor to perform this office; and in order that it may operate in this manner most effectively, the motor should be made to cease supplying any working impulse, however slight. But with motor cars as at present constituted the motor cannot be made to act in this manner, and then be caused to resume its normal functioning after reaching the bottom of the hill, so easily and conveniently as is desired, but it can only be accomplished by closing and opening at the proper time the switch which controls the electric ignition system. It is the purpose of my invention to make it possible to control the motor by the action of the throttle lever alone so that it may serve efficiently as a brake in traveling down hill and may be with equal ease again started in operation, but without at the same time making it possible for the driver to stall the motor unintentionally by moving the controller too far toward the throttle closing position.

My invention consists in the combination with a throttle controller of a stop having the purpose and functions above indicated. Also it consists in the stop being adapted to be provided and applied as an attachment to existing motor controllers on automobiles. Specifically the embodiment of the invention herein illustrated and described in the following specification is designed to be applied to the Ford car without requiring any substantial change in the existing throttle mechanism; but I claim as my invention the principle embodied in the device so shown and described without limitation to the details which may adapt it exclusively to any one make of car or motor.

In the drawings Figure 1 is a perspective view showing my invention applied to the controlling means of a specific motor car. Fig. 2 is an elevation of the device in which the invention particularly resides. Fig. 3 is a cross section of a part of the throttle lever quadrant showing my device in elevation. Fig. 4 is a perspective view of the attaching part of the device.

Like reference characters designate the same parts in all the views.

Having regard to the qualification previously expressed the part designated 5 represents the so-called throttle lever of the Ford car, the same being a handle which is mounted upon one end of a rod from which proper connections lead to the throttle valve controlling the supply of combustible mixture to the motor. This lever is adapted to be oscillated so as to adjust the throttle valve more or less widely open, and in being thus moved it sweeps over a quadrant 6 having teeth which hold it in position in the well known manner. As here shown, the quadrant is supported by arms, 7, 7 on the steering post housing of the automobile. At one end of the quadrant is a fixed stop 8 which, in the cars as put on the market, is arranged to stop the throttle lever when the valve is so nearly closed as to allow passage of the minimum quantity of mixture which will keep the motor in motion when running idly.

My invention is embodied in an additional stop 9 which is mounted close to the quadrant in position to arrest the throttle lever before the latter reaches the stop 8, and in connection therewith I adjust the connections from the throttle lever to the throttle valve so that the throttle will be wholly or substantially closed when the lever is brought up to the stop 8, but when the lever is brought up to the stop 9 the valve will be only so far closed as to cut down the combustible mixture to the minimum necessary for idle running.

Stop 9 is mounted upon a spring arm 10 which passes under the supporting arm 7 of the quadrant and is secured thereto by a clamp 11. Said clamp is so made as to embrace the arm 7 and the spring arm 10, and it may have any desired construction. As here shown it is a solid block which is nearly cut in two by a deep slot which enables it to straddle the arm 7; and in its free end it carries a clamping screw 12 on which is threaded a nut 13 whereby it may be caused to grip said arm. In that part of the clamp which passes under the arm there is formed a shallow notch or recess 14 to receive the end of the spring arm 10, and having such dimensions and abrupt limiting walls that it holds the spring arm fixed in position so that it cannot swing in either direction from its given location. This spring arm is provided with a projecting end or handle portion 15 for the purpose of enabling the stop 9 to be depressed out of the way of the throttle lever 5.

Under normal conditions the resiliency of the spring arm holds the stop 9 up so that it crosses the path of the throttle lever and is always at hand to limit the motion of said lever in the closing direction, whereby it prevents said lever from being so far moved accidentally as to close the throttle entirely

and cause the motor to stop; thus performing the same function as the stop 8 in the old arrangement.

Under all ordinary conditions except when the car is running down hill and the driver wishes to use the motor as a brake, the stop 9 functions in this manner; but in that special case the driver pushes down on the handle 15 so as to depress the stop 9 and then moves the throttle lever farther, until it passes over the stop 9 and brings up against the stop 8. Then the supply of combustible mixture is entirely cut off from the motor and the driving impulses are no longer generated thereby, but instead the motor is driven by the wheels of the automobile and all the internal resistance to the movement of the parts of the motor operates as a drag to prevent the rapid travel of the car. When it becomes necessary to start the motor again, the driver simply moves the throttle lever in the opening direction, and as soon as the throttle is opened widely enough the motor starts to develop power. When in the course of this opening movement the throttle lever has passed away from the stop 9, the latter is restored to its normal position by the resilience of the spring arm 10. The driver need not take thought to return the stop because the resilience of this arm does it automatically; all he needs to do is to let go of the handle 15 after he has once depressed the stop and has moved the throttle lever over it.

It is evident that numerous modifications in the specific structure and arrangement of the device as a whole and its several parts may be made, and will occur to the skilled mechanic, so as to obtain the results herein described in other cars and in specifically different ways. Wherefore I do not limit my claim to protection to the specific structure here shown, or in any other manner than as required by the express terms of the appended statements of claim. Also so far as this invention is concerned, the stop 8 is not an essential part of the combination, but it may be omitted if desired. In the new combination here described this stop is merely a means for preventing movement of the throttle lever beyond the completely closed position, and a stop for this purpose is not an absolute necessity. The feature of prime importance in this invention is the provision of a stop which arrests the throttle lever before the throttle has been so far closed as to stop the motor, but which may be rendered inoperative at will so as to permit the throttle to be wholly closed.

While I have described the member which controls the throttle as a lever, I have done so only for convenience of description and without intent to limit the invention to the combination with a controller which answers the mechanical definition of a lever. There-

fore, as here used the term "lever" is typical of any controlling element with which the stop device may be used, whether the same is movable angularly or in any other manner.

What I claim and desire to secure by Letters Patent is:—

1. The combination with a movable motor throttling lever of a stop for arresting movement of the same when the supply of working fluid is partly throttled, and means for supporting said stop with provision permitting its displacement out of the path of said lever, and constructed to guide the return of the stop into its arresting position.

2. The combination with a motor throttling member movable in a given path, of a stop normally located across said path, and holding means for the stop constructed to prevent its movement in the same direction as said throttling member, but permitting its transverse movement out of and into the said path.

3. The combination with a motor throttling movable element, of a stop and spring means for holding said stop displaceably in the path of said member and for automatically returning it to such position after having been displaced therefrom, said means being positive to prevent displacement of the stop in the direction of movement of the member.

4. The combination with a movable motor throttling member adapted to regulate the quantity of combustible fluid admitted to the motor, of a stop movable into and out of the path of said member, whereby when in one position to limit the movement of the member and in another position to permit movement of the member past it, and means for supporting and guiding said stop constructed and arranged to permit such movement and to return it into the first of the above named positions from the second named position.

5. The combination with a movable motor throttling member, of a stop, and means for holding said stop across the path of said member in position to arrest the same when the supply of combustible fluid is throttled to the minimum for running the motor under no load, said member and the stop having abrupt abutting portions constructed to prevent displacement of the stop from such path under pressure applied by the throttling member, said stop being displaceable from such path by force otherwise applied.

6. The combination with a throttling lever, of a stop, means including a spring for holding said stop in the path of said arm in position to arrest the arm when the motor is

throttled to the minimum supply of combustible mixture on which it will run idly, said means being constructed and arranged to prevent movement of the stop with said lever and in the same direction therewith, but to permit ready displacement of the stop in a transverse direction, whereby the lever may pass over the stop into position for fully shutting off such fluid.

7. The combination with a throttling lever, of a stop, means including a spring for holding said stop in the path of said arm in position to arrest the arm when the motor is throttled to the minimum supply of combustible mixture on which it will run idly, said means being constructed and arranged to prevent movement of the stop with said lever and in the same direction therewith, but to permit ready displacement of the stop in a transverse direction, whereby the lever may pass over the stop into position for fully shutting off such fluid, said spring then being effective to press the stop against the lever and to restore it into its previous position when the lever has been returned.

8. The combination with a motor throttling lever, of a quadrant over which the same moves, a spring arm clamped to a part of said quadrant and extending under the same, having a projecting handle by which it may be depressed, a stop attached to said arm near said quadrant and being normally held thereby across the path of the throttling arm, but being displaceable by depression of said handle from such path, whereby the throttling arm may pass over it, and means preventing movement of said spring arm and stop in the same directions as the arm.

9. The combination with a motor throttle controlling lever, a quadrant over which said lever is arranged to move, said quadrant having a fixed supporting arm, a clamp attached to said arm, a spring arm secured by said clamp to the supporting arm and extending under the quadrant, a stop mounted on said arm rising beside the quadrant in position to arrest the lever when the latter is in position for throttling down the motor, said clamp having means for preventing movement of the spring arm and stop with the throttling lever, but the spring arm being yielding to permit depression of the stop beneath the path in which the said lever moves, whereby a further movement of the lever sufficient to cause stoppage of the motor is permitted.

In testimony whereof I have affixed my signature.

LUCIAN A. COWLES.