

P. F. RICE.
THROTTLE CONTROL FOR ENGINES.
APPLICATION FILED JUNE 18, 1918.

1,330,986.

Patented Feb. 17, 1920.

Fig. 1.

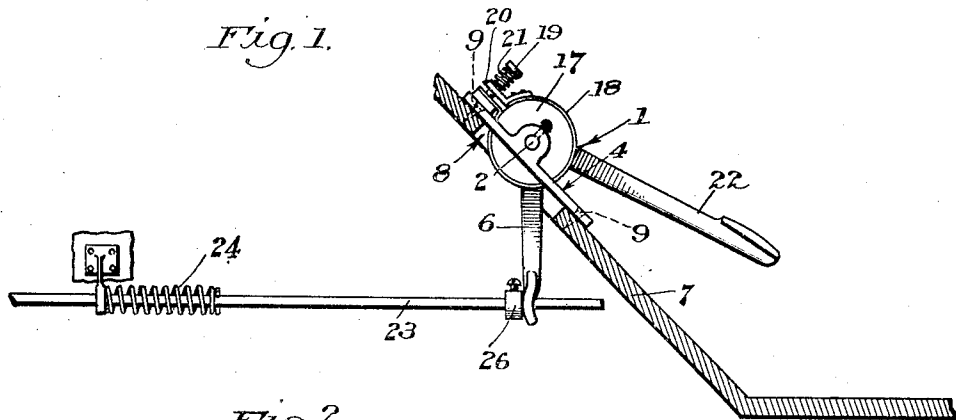


Fig. 2.

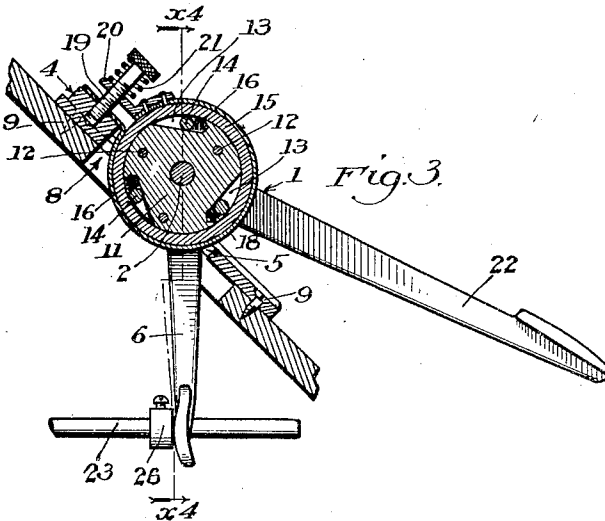
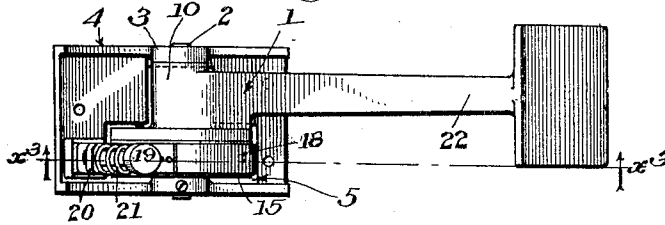
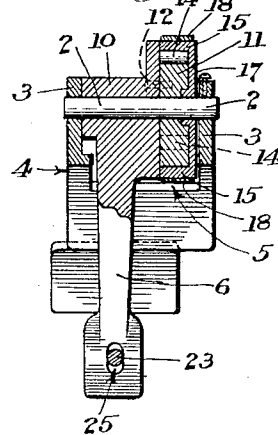


Fig. 4.



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UNITED STATES PATENT OFFICE.

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THROTTLE CONTROL FOR ENGINES.

1,330,986.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, PERCY F. RICE, a citizen of the United States, residing at Tustin, in the county of Orange and State of California, have invented a new and useful Throttle Control for Engines, of which the following is a specification.

The invention pertains more especially to foot operated throttle controls and an object thereof is to produce a throttle control of this character which will function to normally support the foot of the operator.

It is well known that the usual foot throttle control is relatively sensitive to pressure and that when the pressure varies by even a slight amount variation is produced in the supply of mixture to the engine. Especially is this true of the more flexible types of motors such as the six, eight and twelve cylinder engines.

It is also well known that it is very tiresome to the foot and leg employed by the driver on the known types of foot throttle control of an automobile for they are under more or less strain throughout the period of time in which the car is being driven. In an effort to minimize such strain, more or less, various forms of foot rests have been provided adjacent the foot lever to aid in supporting the foot that controls the throttle. However, such foot rests take very little strain off of the foot and it is evident that the foot must be continually adjusted on the rest so as to gain any advantage at all from the use of such rest.

An object of this invention is to so construct the device that the foot control member itself will function to support, without movement thereof, the weight of the foot and leg of the driver.

Other objects and advantages will appear in the subjoined detailed description.

The accompanying drawings illustrate the invention.

Figure 1 is a side elevation of a throttle control built in accordance with the provisions of this invention, a fragment of the footboard of a vehicle being shown in section, and a fragment of the throttle-operating rod and the spring therefor also being shown.

Fig. 2 is an enlarged plan view of the throttle control shown in Fig. 1, the throttle operating rod and its spring being omitted.

Fig. 3 is a reduced sectional elevation of

the throttle control on line w^3-w^3 , Fig. 2, fragments of the footboard and throttle operating rod also being shown.

Fig. 4 is an elevation mainly in section on line indicated by w^4-w^4 , Fig. 3.

There is provided a foot operated member 1 of any suitable construction. In the instance shown in the drawings the foot-operated member 1 is in the form of a lever journaled or pivoted by a pin 2 which is supported at its ends in standards 3 of a support 4. The support 4 is provided with an opening 5 between the standards 3 to permit the arm 6 of the lever to project downward beneath the footboard 7 of the vehicle on which the device is mounted, said footboard having an opening 8 to accommodate those portions of the lever 1 which project beneath the support 4. The support 4 is attached by any suitable means to the footboard 7 and in the instance shown in the drawings the attachment is made by screws 9.

The pivot 2 of the lever 1 passes through the hub 10 of the lever, one end of the hub thrusting against one of the standards 3. The other end of the hub 10 is provided with a ratchet member 11 which may be formed integral with the hub 10 or, as shown in the drawings, may be fastened to said hub by screws 12 or their equivalents. Thus, in effect, the ratchet member 11 forms a portion of the lever 1 and is rotated when the lever 1 is operated. The ratchet member 11 is provided in its periphery with recesses 12 which are of sufficient depth at one end to accommodate roller pawls 14. The depth of the recesses 13 is gradually reduced toward one end thereof so that the rollers 12 when in the reduced portions of the recesses are crowded into frictional engagement with the inner face of a drum 15 when the ratchet member is turned clock-wise in Figs. 1 and 2 of the drawings. Springs 16 normally press the roller pawls into engagement with the drum 15 so that the pawls will always be in position for gripping the drum. The roller form of pawl and ratchet device just described is not in itself new and has only been described in detail to make clear the operation of the invention. The roller form of pawl and ratchet device is preferred as it effects instantaneous gripping without any lost motion as would be the case if the ordinary

toothed ratchet member and pivoted pawl were employed.

The drum 15 is provided with an end wall 17 which fits against the outer face of the ratchet member 10 and the outer face of the end wall 17 is adapted to thrust against the adjacent standard 3 to limit sideplay.

The drum 15 forms a brake drum for a brake band 18 on the periphery of the brake drum. One end of the brake drum 18 is connected by a screw 19 to the support 4 and the other end of said brake band is provided with an ear 20 through which the screw 19 passes. Pressure of the brake band 18 on the brake drum is produced by a coil spring 21 surrounding the screw 19 between the ear 20 and the head of said screw. It is clear that the pressure and friction of the brake band on the brake drum may be varied at will by adjusting the screw 19 so as to place the spring 21 under more or less pressure. Screwing the screw 19 in increases the friction of the brake band on the drum and screwing it out decreases the braking friction.

In practice the screw 19 will be adjusted to cause sufficient friction between the brake band and drum to support the outer end of the foot engaging arm 22 of the lever 1 against such pressure as would be produced on the arm 22 by the driver's foot resting on the arm 22 when the muscles of the foot and leg are more or less relaxed. The pawl and ratchet device is so arranged that the rollers 14 grip the drum 15 when the outer end of the lever arm 22 is pushed downward. Thus it is clear that to push the arm 22 downward it will be necessary for the driver to exert sufficient pressure to overcome the friction between the brake band and drum. The lever arm 6 is so connected by a throttle operating rod 23 with the throttle of the engine, not shown, that downward pressure on the operating arm 22 causes opening of the throttle. Thus to increase the speed of the engine, or obtain greater power, the driver will press downward on the arm 22 to overcome the frictional resistance between the brake band and drum.

When the driver desires to decrease the speed or power of the engine, he will raise his foot thus allowing the usual throttle control spring 24 to retract the throttle control rod 23 which in turn swings the lever arm 6 rearward to rotate the ratchet member 11 counterclockwise in Fig. 3. When the ratchet member 11 is thus turned counterclockwise the rollers 14 are ineffective to

grip the drum 15 and consequently the lever arm 22 will be sprung upward.

The connection between the throttle control rod 23 and lever arm 6 is preferably a loose connection, as shown in the drawings, and, in this instance, the rod 23 passes through a slot 25 in the lever arm 6 and a collar 26 is provided on the rod 23 to be engaged by the lever arm 6 when the lever arm 22 is depressed by the operator to increase the opening of the throttle valve. This loose connection just described is provided so that the throttle valve can be controlled by the usual hand lever without interference by the pressure of the operator's foot.

It is understood that modifications of the hereinbefore described construction may be made and that the invention is only limited within the spirit and scope of the construction defined in the appended claims.

I claim:

1. A throttle control comprising a foot-operated member, means to connect said foot-operated member to the throttle valve of an engine, a ratchet device connected with the foot-operated member, means tending to turn the ratchet device in one direction to raise the foot-operated member, and means to produce a braking effect on the ratchet device when said device is turned in the opposite direction.

2. The combination with a throttle-operating member and means to retract said member, of a foot-operated member connected with the throttle-operating member, and means operative by movement of the foot-operated member in one direction to resist said movement, the movement-resisting means being inoperative when the foot-operated member is moved in the opposite direction by retraction of the throttle-operating member.

3. The combination with a throttle-operating member and means to retract said member, of a foot-operated member connected with the throttle-operating member, and means operative on depression of the foot-operated member to resist the depressing movement, the movement-resisting means being inoperative on the retractive movement of the throttle-operating member.

Signed at Los Angeles, California, this 11th day of June, 1918.

PERCY F. RICE.

Witnesses:

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