Oct. 23, 1923. 1,471,497

J. L. MARTIN, JR

INTERNAL COMBUSTION ENGINE

Filed April 12, 1922 3 Sheets-Sheet 1

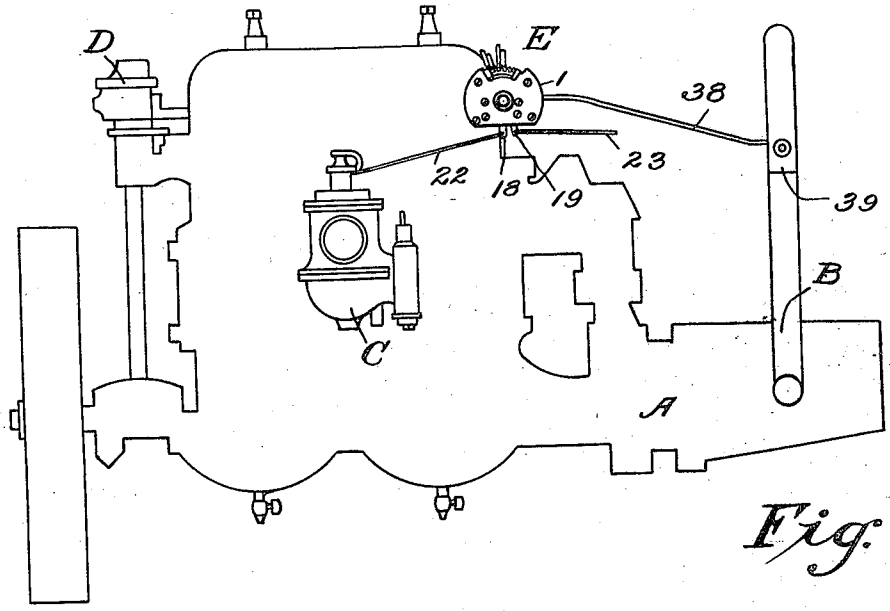
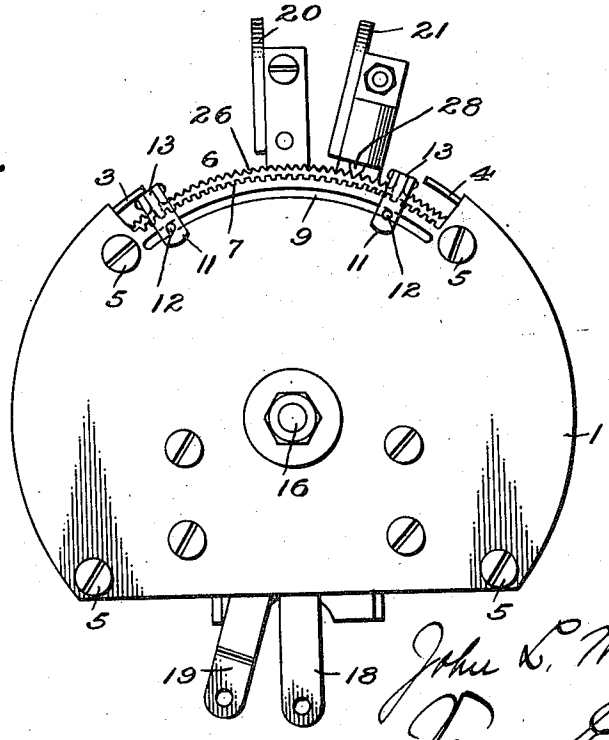


Fig. 1.

Fig. 2.



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Fig. 3.

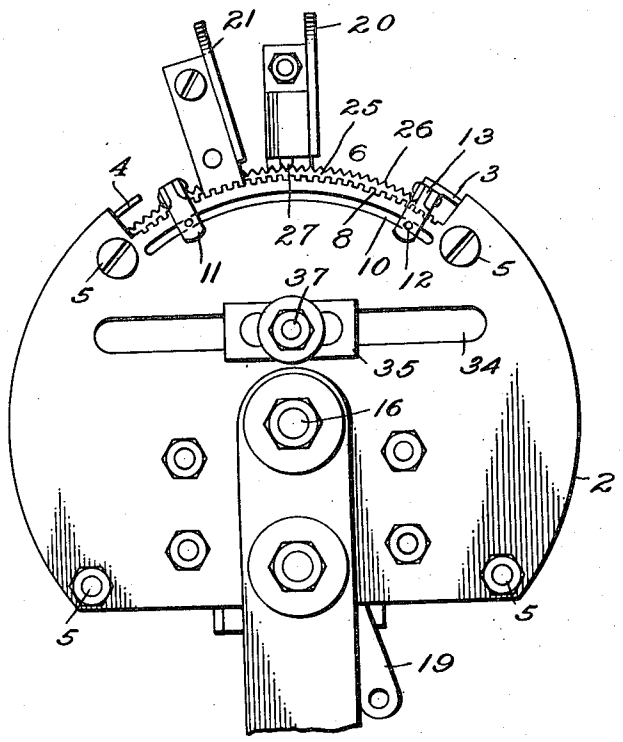
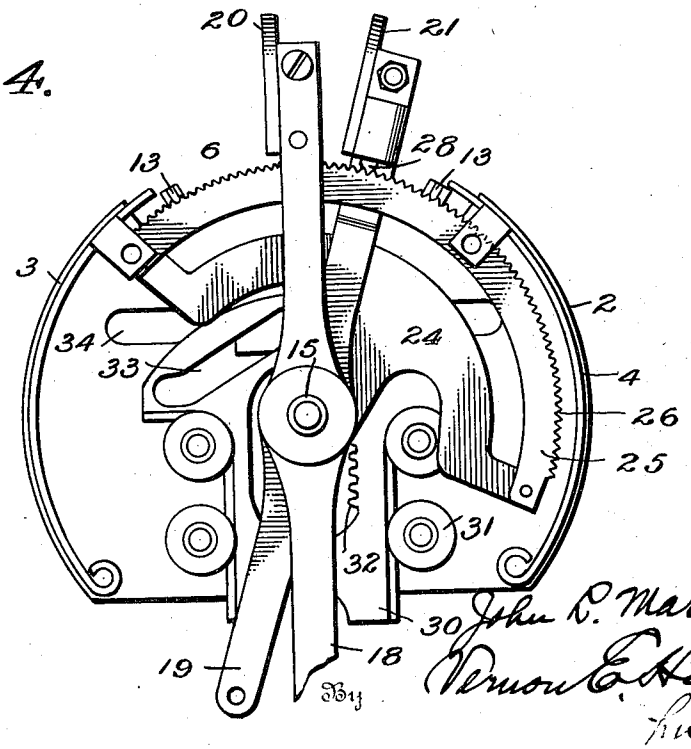


Fig. 4.



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3 Sheets-Sheet 3

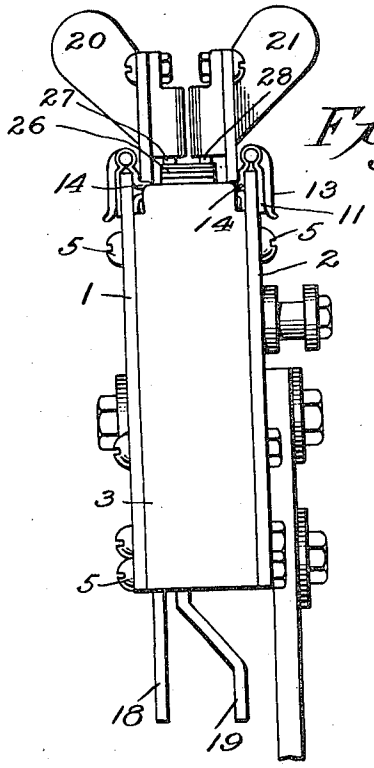


Fig. 5.

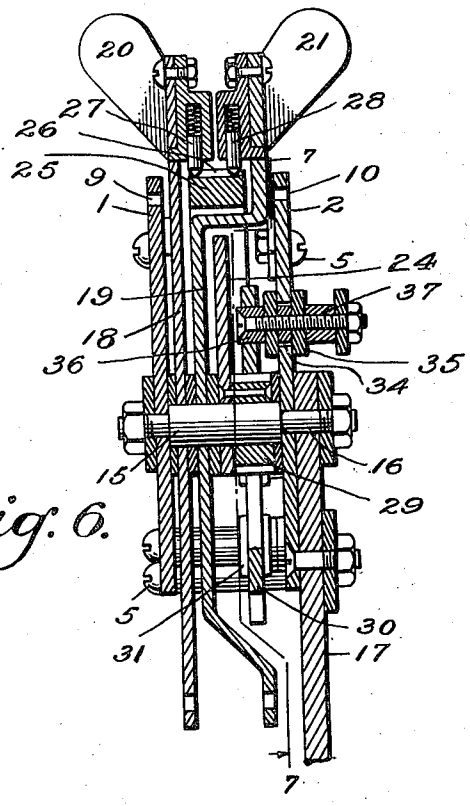
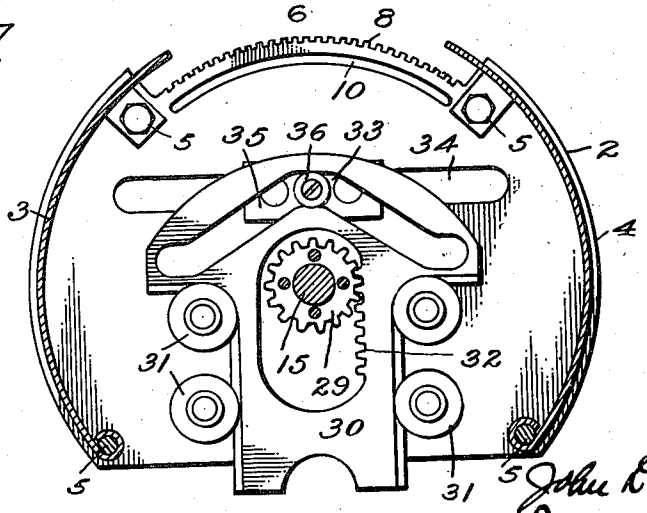


Fig. 6.

Fig. 7.



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By

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Patented Oct. 23, 1923. 1,471,497

UNITED STATES PATENT OFFICE.

JOHN LUSCOMBE MARTIN, JR., OF NEWPORT NEWS, VIRGINIA.

INTERNAL-COMBUSTION ENGINE.

Application filed April 12, 1922. Serial No. 551,792.

To all whom it may concern:

Be it known that I, JOHN LUSCOMBE MARTIN, Jr., a citizen of the United States, residing at Newport News, in the county of Warwick and State of Virginia, have invented certain new and useful Improvements in Internal-Combustion Engines, of which the following is a specification.

This invention relates to improvements in internal combustion engines, and the object is to arrange an automatic mechanism actuated by the clutch control whereby the timer mechanism may be retarded or advanced and the carbureter throttled or opened simultaneously with the actuation of the clutch control means.

In the usual type of internal combustion engine the ignition and gas are controlled by levers attached to and working on a fixed quadrant secured to the engine at any convenient point. An impulse applied to either of these levers is transmitted by a rod to the carbureter or timer and the required adjustment is in this way made. A spring ratchet pin in the lever bearing against the teeth in the quadrant prevents any accidental motion. In most engines, if allowed to run at standard going ahead, or working speed with clutch in neutral the virbrations would be detrimental to the construction of the boat or bed and to the engine itself, and if with the engine slowed down and clutch in neutral, the clutch was to be advanced, letting the engine take the strain while slowed down the result would be stalling. This necessitates the adjustment of gas and spark when any changes are made in the clutch or reverse gear. My invention abolishes the necessity of any adjustments at the throwing in or out of the clutch or reverse gear, by an automatic co-operation with the reverse or clutch gear lever. The method used to accomplish this, can be better explained after a description of the parts.

In the accompanying drawings:

Figure 1 is a view showing the device attached.

Fig. 2 is a front view of the device.

Fig. 3 is a rear view of the device.

Fig. 4 is a front view with the front plate removed.

Fig. 5 is an end view.

Fig. 6 is a transverse vertical sectional view.

Fig. 7 is a sectional view taken on line 7—7 of Fig. 6.

The letter A indicates an engine of the usual type, B, the clutch control lever, C, the carbureter, D, the timer, and E, the automatic controlling device, consisting preferably of the following construction:

The casing preferably consists of front and back circular plates 1 and 2 and end members 3 and 4 secured together by suitable bolts 5—5. The end members 3 and 4 are of such a length as to form an opening 6 at the top of the casing. The front and back circular plates 1 and 2 are cut away and notched as at 7 and 8 and directly below the notched portions are semi-circular grooves 9 and 10. Slidably arranged in each of these grooves are two sets of adjustable stops each consisting of a forked member 11, the lower ends of which are connected by a transverse pin 12 which passes through the semi-circular groove in the side plates 1 and 2. The numeral 13 indicates a pivoted stop arranged at the upper end of the forked member 11, said stop when in its lower position adapted to engage the notched portion of the side plates. An abutment 14 extends laterally from the forked member for a purpose hereinafter described.

The numeral 15 indicates a shaft extending transversely through the front and back plates 1 and 2, a portion thereof being restricted as at 16 forming a means for securing the casing to a supporting bracket 17. Rotatably mounted upon this shaft within the casing are two actuating levers 18 and 19 which extend upwardly through the opening in the casing and are provided at the extreme upper ends with ears 20 and 21 whereby they may be manually controlled, the stops 11 acting to limit their movement in either direction as may be desired. The lower end of the lever 18 is connected to the valve of the carbureter by a link 22 while the lower end of the lever 19 is connected by a link 23 to the timer mechanism.

As stated it is desirable to control these levers automatically by the clutch control lever in order to properly control the timer mechanism and the carbureter when the engine is running idle or under a load. To accomplish this I preferably use the following mechanism:

Pivotally mounted upon the shaft 15 between the actuating lever 18—19 is a semi-circular member 24. The numeral 25 indicates a semi-circular segment notched as at 26 on its outer periphery. Carried by the

actuating levers 18 and 19 are spring pressed dogs 27 and 28 which engage the toothed segment 25 under such a tension that a movement of the segment imparts a like movement to the levers 18 and 19. Rotatably mounted upon the shaft 15 is a pinion 29 which in turn is keyed to the segment 24. To impart a rotary motion to this pinion I preferably provide a vertically movable plate 30 supported by suitable rollers 31 bearing against the outer edges of the plate acting as a guide for the plate 29 when moved vertically. An elongated opening arranged centrally of the plate 30 is preferably provided along one edge thereof with teeth 32 which mesh with the pinion 29. The upper end of the vertically movable plate 30 is provided with an inverted V-shaped slot 33. Extending horizontally of the back plate 2 is a slot 34 in which is slidably mounted a block 35, carrying on the inner end thereof a roller 36 which is received in the inverted V-shaped slot 33, and projecting laterally from the block 35 is a stud 37, which is connected by a link 38 to the clutch control lever 39. Therefore, it will be seen that when the block 35 is moved in either direction the plate 24 is moved vertically, imparting a rotary movement to the semi-circular tooth segment 25 which in turn imparts a rotary movement to the actuating levers 18 and 19 which as described are connected to the timer mechanism, and the carbureter. As mentioned, the actuating levers 18 and 19 are limited in their movement by the stop 11, the spring pressed dogs 27 and 28 permitting the toothed segments 25 to rotate over a greater movement with respect to the actuating levers 18 and 19 should the clutch control lever 39 be moved a sufficient distance.

While I have shown this device as being controlled primarily by the clutch control lever it is obvious that the device may likewise be used in connection with reversible propeller mechanism whereby it would be connected with the prime controller means of such a mechanism.

It is obvious that this device may be applied to many different makes of engines by more or less slight changes in construction, therefore, I do not wish to limit myself to the exact structure as shown.

I claim:

1. A speed governing device for internal combustion engine comprising a pivoted lever connected to the fuel supply, a pivoted lever connected to the timer mechanism, a rotary segment having engagement with said pivoted levers, said segment being connected with the clutch control mechanism whereby the said pivoted levers are simultaneously actuated upon the movement of the clutch control mechanism.

2. An automatic controlling means for internal combustion engines comprising a casing, actuating levers pivotally mounted therein, connecting link connecting said levers to the fuel supply and the timer mechanism, a rotary notched segment arranged between said actuating levers, spring actuated dogs carried by said levers and adapted to engage said notched segment, and means controlled by the clutch control mechanism whereby said rotary notched segment is rotated and a relatively rotary movement is imparted to said pivoted lever.

3. An automatic controlling means for internal combustion engines comprising a casing, actuating levers pivotally mounted therein, connecting links connecting said levers to the fuel supply and the timer mechanism, a rotary notched segment arranged between said actuating levers, spring actuated dogs carried by said levers and adapted to engage said notched segment, a pinion connected with said rotary segment, a vertically movable member adapted to impart a rotary movement to said notched segment, and means connected to the clutch control mechanism for actuating said vertical movable member.

4. An automatic controlling means for internal combustion engines comprising a casing, actuating levers pivotally mounted therein, connecting links connecting said levers to the fuel supply and the timer mechanism, a rotary notched segment arranged between said actuating levers, spring actuated dogs carried by said levers and adapted to engage said notched segment, a pinion connected to said rotary segment, a vertically movable member in engagement with said pinion, said vertically movable member being provided with an inverted V-shaped slot, and a reciprocating member in engagement therewith and connected with the clutch control mechanism, whereby the pivoted levers are moved simultaneously.

In testimony whereof I affix my signature.

JOHN LUSCOMBE MARTIN, JR.