Aug. 25, 1931. L. E. RUSSELL ET AL 1,820,678

AUTOMOBILE CONTROL

Original Filed June 8, 1928 2 Sheets-Sheet 1

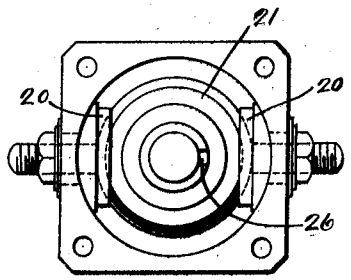


Fig. 3

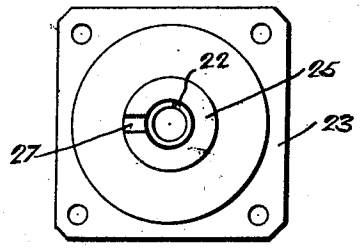


Fig. 4

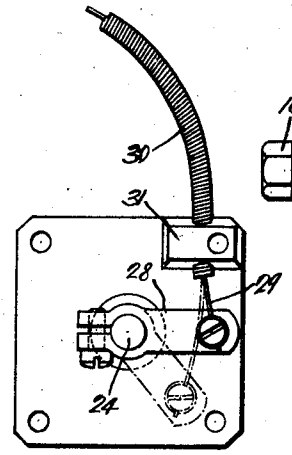


Fig. 2

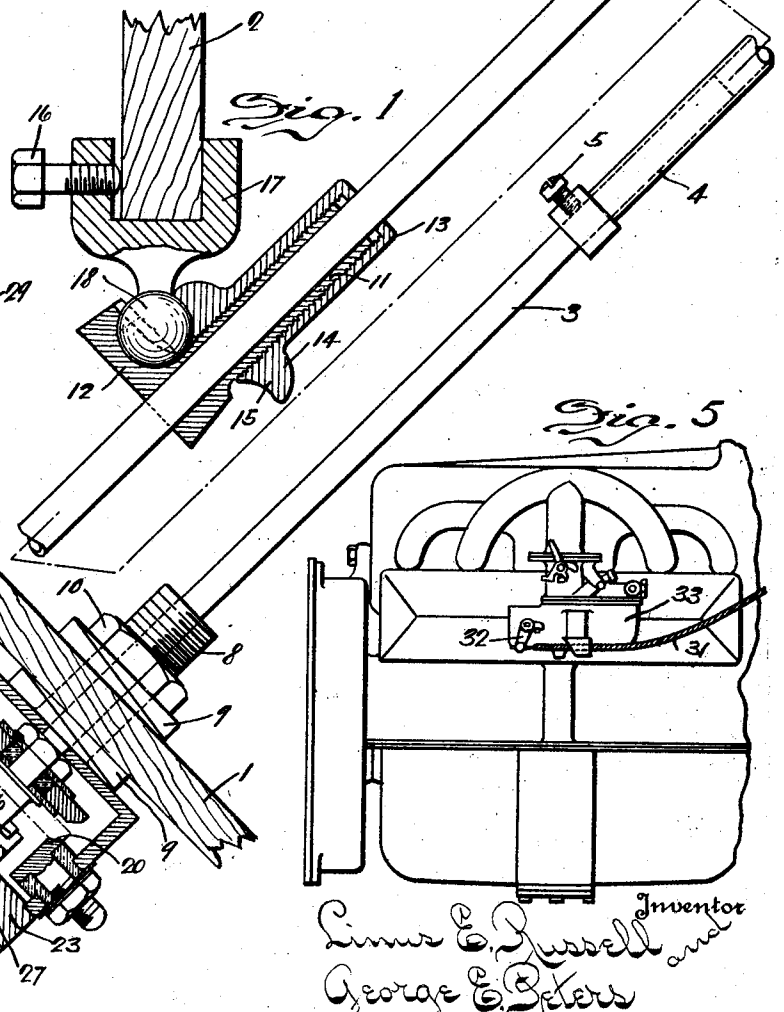


Fig. 1

Fig. 5

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AUTOMOBILE CONTROL

Original Filed June 8, 1928 2 Sheets-Sheet 2

Fig. 6.

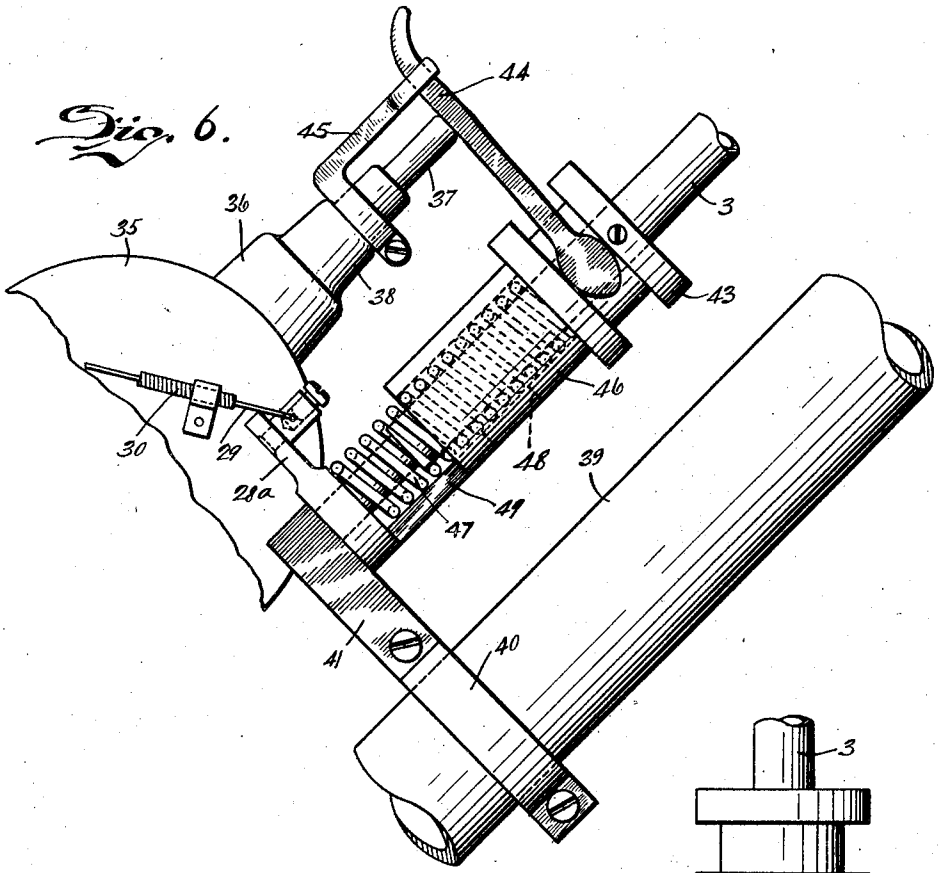


Fig. 7.

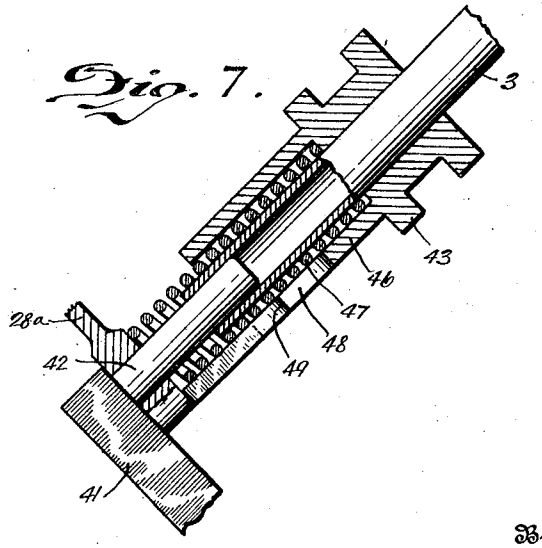
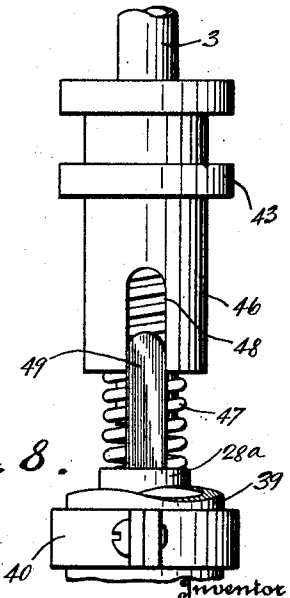


Fig. 8.



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UNITED STATES PATENT OFFICE

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AUTOMOBILE CONTROL

Application filed June 8, 1928, Serial No. 283,988. Renewed July 16, 1931.

Our invention relates to motor vehicle control devices, and more particularly, to a common operating means for the motor starter and choke or priming device.

Ordinarily a motor starter device is controlled by a foot pedal usually located far forwardly on the foot board and in a more or less inconvenient position while the carburetor choke or priming means is controlled by a manually operated device upon the dash or cowl board. The operations of both the starter pedal and the choke control plunger or lever are closely associated in the starting of the motor and frequently it is necessary to manipulate both. By the present invention, the motor starter and the fuel regulation are brought under control of a single operative device consisting of a shaft having both rocking and reciprocatory motion which extends upwardly and rearwardly within the vehicle within easy reach of the driver. In order that the device be equally applicable to vehicles of different styles and of different manufacture and also to accommodate a device to the desires of drivers having different ideas of the most convenient location of such control device, the shaft is made telescopic so that it may be extended or contracted and is provided with universal mounting in order that it may be disposed in different angular positions. The shaft carries adjacent to its lower end a contact disc or circuit closer element which engages and interconnects two spaced electrical contacts pertaining to the electric starter when the shaft is longitudinally depressed, regardless of the position of revoluble adjustment of such shaft. The shaft also carries a rock arm operatively connected with the regulating means of the carburetor of the motor and operated by the rocking motion of the shaft independent of its longitudinal adjustment. The connection of the rock arm with the carburetor regulator means is preferably, though not necessarily, by means of a flexible Bowden wire connection and the rock arm is preferably, though not necessarily, coupled with the shaft for unison rocking motion, but permitting independent reciprocatory motion.

The object of the invention is to simplify the construction, as well as the means and mode of operation of vehicle motor control devices, whereby they will not only be cheapened in construction, but will be more efficient in use, positive in operation, uniform in action, conveniently located, easily operated and unlikely to get out of repair.

A further object of the invention is to locate the motor starter and fuel regulating means within easy reach of the driver in order that these devices may be easily manipulated while maintaining normal driving position and perfect control of the steering wheel.

A further object of the invention is to provide a common control device for two or more operative mechanisms, which will be simple in construction and capable of being readily and quickly applied to existing machines without reconstruction or rearrangement of parts.

A further object of the invention is to provide a universal mounting for such control means which will enable the device to be readily accommodated to conditions existing on different makes of motor vehicles and to accommodate the device to the desires and convenience of different drivers.

With the above primary and other incidental objects in view as will more fully appear in the specification the invention consists of the features of construction, the parts and combinations thereof and the mode of operation, or their equivalents, as hereinafter described and set forth in the claims.

Referring to the accompanying drawings, wherein is shown the preferred, but obviously not necessarily the only form of embodiment of the invention, Fig. 1 is a side elevation partly in section of the assembled motor control device forming the subject matter hereof. Fig. 2 is an end view of the lower end of the assembled device. Figs. 3 and 4 are interior views of the operating shaft, Fig. 4 being an interior view of the closure plate removed from such head with the mounting for the rock arm, while Fig. 3 is an interior view of the head showing the

circuit closing switch. Fig. 5 is a side elevation of a portion of a motor illustrating the connection of the motion transmitting means with the carburetor control arm.

Figs. 6, 7 and 8 illustrate a modification of the construction shown in the preceding figures, of which Fig. 6 is a side elevation, Fig. 7 is a longitudinal sectional view and Fig. 8 is a detail view from the right of Fig. 6.

Like parts are indicated by similar characters of reference throughout the several views.

Referring to the accompanying drawings, 1 indicates the floor board of a motor vehicle body and 2 the cowl board or dash thereof. Extending upwardly and rearwardly from the floor board to a point beyond the cowl board or dash and within easy reach of the driver is a control shaft capable of independent rocking and reciprocatory movements. To accommodate the device to machines of different size and to enable the control shaft to be extended within easy reach of the driver, such shaft preferably though not necessarily, comprises two telescopic sections 3 and 4 fixedly connected to each other in their relatively adjusted positions by a set screw 5 or other suitable locking means. The control shaft is provided at its upper end with an operating knob 6 by which the shaft may be conveniently rotated to and fro and also reciprocated as the occasion may require. Carried at the lower end of the control shaft and preferably supported upon the floor board 1 is a chambered operating head 7 having a tubular exteriorly threaded neck 8 projecting through the floor board 1 and within such neck 8 the shaft section 3 has a bearing for both rocking and longitudinal movement. To provide a limited degree of universal adjustment of the operating head 7 relative to its support, which in this case is the floor board 1, pairs of beveled washers 9 which by their relative revoluble adjustment change the angularity of their opposite faces, are interposed between the mounting head 7 and the floor board on one side and between the lock nut 10 screw threaded upon the neck 8 and the opposite side of the floor board. By the relative rotation of the washers of each pair the axis of the head 7 and the control shaft may be variously disposed in angular relation with the plane of the floor board 1 to enable the upper end of the control shaft to be brought to the desired or most convenient position.

At its upper end the control shaft is supported for both rocking and reciprocatory movement in a bearing sleeve 11 provided at one end with a head 12 having in its lateral face a concave depression or recess. Screw threaded or otherwise secured upon the bearing sleeve 11 is a second sleeve 13 carrying a peripheral flange or collar 14 having in its lateral face an annular concave groove 15 which registers with the concave recess in the adjacent face of the head 12 of the first mentioned sleeve. Secured upon the cowl board or dash 2 by a clamp screw 16 is a bifurcated bracket 17 carrying a substantially spherical head 18 seating at one side within the concave recess of the head 12 and at its opposite side in the concave lateral groove of the flange 14. This coupling affords a universal adjustment for the bearing sleeve 11 and after the sleeve is properly positioned it may be immovably secured by tightening the sleeve 13 to clamp the spherical head 18 between such grooved flange 14 and the head 12 of the bearing sleeve 11. Obviously other forms of universal connection may be employed for supporting the bearing sleeve 11.

Within the chamber of the head 7 are located two spaced electrical contacts 20—20 insulated from the head 7 and pertaining to the electrical circuit of the motor starter. These contacts are shown as studs having beveled heads interiorly of the chamber of the head 7 and stems insulated from such head 7 projecting exteriorly thereof for connection with the motor starter and with the battery or other source of electrical energy. Fixedly mounted upon the shaft section 3 within the head 7 is a circuit closing disc 21 insulated from the shaft. The shaft is normally held in its retracted position by the helical retracting spring 22 thereby holding the disc 21 out of engagement with the contact members 20. However, upon the depression of the control shaft the circuit closing disc 21 is brought into engagement with the contact 20 and thereby interconnecting such contacts and closing the motor circuit.

Revolubly mounted in the closure plate 23 of the head 7 is a stud 24 arranged in axial alignment with the control shaft and having therein a socket or recess 25 to receive the end of the control shaft in which socket is located the retracting spring 23. A key or stud 26 carried by the end of the reciprocatory shaft section engages in a slot or key way 27 in the revoluble stud 24 and thereby couples such stud 24 or shaft extension with the control shaft for unison rocking or rotary motion, but permits the control shaft a limited reciprocatory or longitudinal movement independent of the rotary stud 24, during which movement the key or stud 26 travels within the slot 27 against the tension of the retracting spring 23.

Mounted exteriorly of the head 7 upon the protruding end of the rotary stud 24 is a rock arm 28. To this rock arm is secured one end of a flexible reciprocatory transmission wire 29, the flexible guide tube 30 of which is fixedly clamped to the head 7 within a clamp lug 31. The motion transmitting means is a conventional form of Bowden

wire transmitter. The rocking movement of the arm 28 transmits to the wire 29 a reciprocatory motion within the guide tube 30. The opposite end of the motion transmitting wire 29 is connected with the control arm 32 of the carburetor 33 of the motor vehicle engine as illustrated in Fig. 5. Thus the choke or primer arm 32 of the carburetor may be oscillated to and fro to regulate the fuel supply to the motor in unison with the rocking motion of the control shaft. This rocking motion is effected entirely independent of the reciprocation of the control shaft and may be effected to any desired degree.

The construction heretofore described is of universal application to motor vehicles of various manufacture, regardless of their detail construction. However, to provide a control device embodying the principles and features of construction heretofore described, but which may be more cheaply and economically manufactured for application to a new style of motor vehicle of popular make there is shown in Figs. 7 and 8 a modified construction. The popular type motor vehicle referred to is provided with a starter 35 on which is mounted a housing 36, the switch within which is controlled by a depressible plunger 37 mounted for reciprocatory movement in a guide tube 38. The present type of control device is supported upon the steering post 39 by means of a collar 40 having an arm 41 from which projects upwardly a guide or pilot stud 42. The reciprocatory rock shaft 3 of the present construction is preferably of tubular form or is counterbored at its lower end to receive the pilot stud 42 upon which the control shaft 3 is capable of both axial and rotary motion. Secured upon the reciprocatory rock shaft 3 is a peripherally grooved collar 43 in which engages the bifurcated extremity of the switch operating lever 44, the oposite extremity of which is fulcrumed in an upstanding arm supporting bracket 45 clamped upon the guide tube 38 of the starter switch. Loosely journalled upon the pilot stud 42 immediately above the supporting arm 41 and below the end of the reciprocatory control shaft 3 is a rock arm 28*a* to which is connected the reciprocatory wire 29 extending through the guide tube 30 connecting with the throttle control arm. Extending downwardly from the peripherally grooved collar 43 is a tubular sleeve or housing 46 enclosing a helical spring 47 surrounding the guide stud 42 at the lower end of the reciprocatory rock shaft 3. This spring 47 abuts at its lower end upon the rock arm 28*a* while its upper end abuts upon the collar 43 interiorly of the housing or sleeve 46. The control shaft 3 is depressible upon the guide or pilot stud 42 against the tension of the spring 47. Such reciprocatory movement of the control shaft 3 against the yielding resistance of the spring 47 does not affect the lock arm 28 controlling the carburetor regulating arm 32, but such movement does effect an oscillation of the switch operating lever 44 depressing such arm with the movement of the control shaft 3 and thereby depressing the switch plunger 27 to close the switch within the housing 36 and start the motor. Upon release of pressure upon the control shaft 3 the spring 47 returns the depressed shaft upwardly and with it restores the switch operating lever 44 allowing the switch operating plunger to rise.

The spring housing or sleeve 46 is longitudinally slotted as indicated at 48. The rock arm 28*a* carries an upwardly extending finger 49 projecting within the slot or key way 48 of the sleeve or housing 46. During the reciprocatory movement of the control shaft 3 before described, the slotted housing 46 and finger or key arm 49 of the rock arm 28 move idly relative to each other. These parts, however, serve as a clutch connection between the reciprocatory rock shaft 3 and the rock arm 28*a*, which upon rotary motion of the shaft 3 causes the arm 28*a* to move with it on its pivotal connection upon the guide or pilot stud 42. Thus, during a rocking motion of the shaft 3, the rock arm 28*a* will be oscillated to and fro to reciprocate the control wire 29 leading to the carburetor control arm 32 without, however, affecting the switch control lever 44, but during such rotary motion rides idly in the peripheral groove of the collar 43. The construction is such that the rotary motion of the control shaft 3 to adjust the carburetor and the reciprocatory motion of such shaft to operate the starting switch 37 may be effected independently of each other, or they may be effected simultaneously. The control shaft 3 may be actuated to reciprocate the starter switch plunger 37 in any position of rocking adjustment of the arm 28*a* and likewise the arm 28*a* may be adjusted to regulate the carburetor adjustment with the shaft 3 in either its depressed or released position.

The construction shown in Figs. 6 to 8 embody but few parts and may be quickly and easily applied to automobiles of the type referred to. In applying the device, the starter pedal which originally is connected directly to the switch plunger 37, is removed and the bracket arm 45 is clamped upon the guide tube 38 of the starter switch to support the fulcrum end of the lever 44 which rests upon the plunger 37. The clamp collar 40 is secured to the steering post 39 to support the control shaft and its connections thereon and the reciprocatory wire 39 is connected to the regulating lever 32 to the carburetor.

Cross reference is made to our co-pending applications pertaining to analogous subject matter, to wit, Sn. 261,953 filed March 15, 1928; Sn. 302,849 filed Aug. 29, 1928; Sn. 306,543 filed Sept. 12, 1928; Sn. 308,289 filed Sept. 25, 1928; and Sn. 317,467 filed Nov. 5, 1928.

From the above description it will be apparent that there is thus provided a device of the character described possessing the particular features of advantage before enumerated as desirable, but which obviously is susceptible of modification in its form, proportions, detail construction and arrangement of parts, without departing from the principle involved or sacrificing any of its advantages.

While in order to comply with the statute the invention has been described in language more or less specific as to structural features it is to be understood that the invention is not limited to the specific details shown, but that the means and construction herein disclosed comprises the preferred form of several modes of putting the invention into effect and the invention is, therefore, claimed in any of its forms or modifications within the legitimate and valid scope of the appended claims.

Having thus described our invention, we claim:

1. Means for operating a starter switch and controlling the fuel supply of an explosive engine, including a reciprocatory rock shaft, an electrical contact pertaining to the starter, a circuit closer member carried by the shaft and engageable with said contact in all positions of revoluble adjustment of the rock shaft, a rock arm connected with the shaft for unison rocking motion, but independent of which the shaft is capable of reciprocatory movement, and an operative connection between said arm and the fuel supply regulator of the engine, said shaft being longitudinally movable to effect the engagement of the circuit closer element and contact independent of the adjustment of the rock arm and further capable of rocking movement to effect the regulation of the fuel supply independent of the reciprocation of said shaft.

2. Means for operating a starter switch and controlling the fuel supply of an explosive engine, including a reciprocatory rock shaft, a circuit closer disc carried thereby, a pair of spaced electrical contacts pertaining to the starter engaged by said disc upon reciprocation of the shaft in any position of rocking adjustment thereof, a recessed shaft extension with which the said shaft has telescopic engagement, a spring within the recess of said extension against the tension of which the shaft is capable of limited longitudinal movement independent of its rocking adjustment, said shaft and shaft extension being interengaged for unison rocking movement, but capable of independent relative longitudinal movement, a rock arm carried by the shaft extension, and a connection between the rock arm and the fuel regulating means of the engine.

3. Means for operating a starter switch and controlling the fuel supply of an explosive engine, including a reciprocatory rock shaft, a rock arm actuated thereby, a Bowden wire connection between the rock arm and the carburetor adjusting member of the engine, whereby the fuel supply is regulated by the rocking adjustment of the shaft, and an electric switch closed by the reciprocatory adjustment of the shaft regardless of the adjusted position of the rock arm.

4. A control device for an explosive engine having an electrical starter and a carburetor control means, including a shaft capable of both revoluble and reciprocatory movement, an electrical circuit closer member carried by the shaft, electrical contacts in the engine starter circuit engaged by the circuit closer member in any position of revoluble adjustment of the shaft upon reciprocatory movement of said shaft, a rock arm actuated by the revoluble movement of the shaft, and a reciprocatory connection between the rock arm and the carburetor control means operated by the movement of the rock arm.

5. In a device of the character described, the combination with a starter switch and a fuel supply regulator for an explosive engine, of common operating means therefor including a manually operable rock shaft capable of longitudinal reciprocatory movement, and means operatively connecting the shaft with both said devices whereby the starter switch is operated by one movement and the fuel supply regulator is operated by the other of said movements.

6. In a device of the character described, the combination with a starter switch and a fuel supply regulator for an explosive engine, of common operating means therefor, including a manually operable shaft capable of both reciprocatory and rotary motion, an operative connection whereby the fuel supply is regulated by the rotation of the shaft, said starter switch being operated by the reciprocatory movement of the shaft in any position of revoluble adjustment.

7. Means for operating a starter switch and simultaneously controlling the fuel supply of an explosive engine, including a reciprocatory rock shaft, an electrical contact controlling the starter, a circuit closer element carried by the shaft and engageable with said contact upon reciprocation thereof, and an operative connection between

said shaft and a carburetor of the explosive engine actuated by the rocking motion of the shaft to regulate the fuel supply.

8. An electrical switch including a pair of spaced electrical contacts, a shaft capable of both rocking and reciprocatory motion, a circuit closer member carried by the shaft and movable into bridging engagement with the spaced electrical contacts in different positions of rocking adjustment of the shaft, and a regulating device controlled by the rocking movement of the shaft independent of its reciprocatory adjustment, whereby the said shaft is common to both the switch and regulating device.

9. In a device of the character described, a housing, a pair of contacts carried interiorly thereof, a shaft mounted in the housing for reciprocatory and rocking motion, a disc carried by the shaft within the housing, and moved into circuit closing engagement with the contacts by the reciprocation of the shaft, a second shaft journalled in said housing in axial alignment with the first shaft, coupling means by which the shafts are connected for unison rocking motion but enabling independent longitudinal movement of the first shaft, a motion transmitting means including a guide tube, and a reciprocatory element within the guide tube, a clamp on said housing for said guide tube and an operative connection between the reciprocatory element within the tube and said second shaft for converting the rocking motion thereof into reciprocatory motion of said motion transmitting element.

10. Means operating a starter switch and controlling the fuel supply of motor vehicle engine, including a shaft capable of both rocking and reciprocatory motion, said shaft extending upwardly and rearwardly through the floor board of the vehicle, an operating head located beneath the floor board, circuit closing means and fuel regulating means.

11. Means operating a starter switch and controlling the fuel supply of a motor vehicle engine including a shaft capable of both rocking and reciprocatory motion, circuit closing means and fuel regulating means located beneath the floor board of a motor vehicle and controlled by said shaft, a supporting head for said parts, a screw threaded neck carried thereby projecting through the floor board, beveled washers carried by said neck providing limited universal adjustment for said supporting head and a clamp nut on said neck for securing the head in fixed adjusted relation with the floor board, said shaft extending through said neck, and by its adjustment controlling the circuit closing and fuel regulating means.

12. In a construction of the character described, a telescopic shaft capable of independent rocking and reciprocatory motions, circuit closing and fuel regulating means independently controlled thereby, a mounting for said telescopic shaft having a limited degree of universal adjustment for supporting the shaft, and means for locking the sections of the telescopic shaft in adjusted relation with each other.

13. In a construction of the character described, a shaft capable of independent rocking and reciprocatory motion, circuit closing and fuel regulating means independently controlled thereby, a mounting for said telescopic shaft having a limited degree of universal adjustment for supporting the shaft, and means for locking the sections of the telescopic shaft in adjusted relation with each other.

14. In a construction of the character described, a shaft capable of independent rocking and reciprocatory motions, circuit closing and fuel regulating means independently controlled thereby, and a mounting for said shaft having a limited degree of universal adjustment.

15. In a construction of the character described, a shaft capable of independent rocking and reciprocatory motion, circuit closing means and fuel regulating means independently controlled thereby, spaced mountings for said shaft, one of which is engageable with the floor board and the other with the dash of a motor vehicle, both of said mountings being capable of limited degrees of universal adjustment relative to their supports.

16. In a construction of the character described, a shaft capable of independent rocking and reciprocatory motion, circuit closing means and fuel regulating means independently controlled thereby, a mounting for the lower end of said shaft engageable with the floor board of a motor vehicle, and a mounting sleeve for the upper end of the shaft, a bifurcated support engageable with the dash of the motor vehicle and a universal connection between the bifurcated support and the mounting sleeve.

17. In a construction of the character described, a shaft capable of independent rocking and reciprocatory motion, circuit closing means and fuel regulating means independently controlled thereby, and a mounting therefor including a bearing sleeve having a head containing a concave recess, a second sleeve enclosing the first sleeve having at one end a flange collar having in its face an annular concave groove substantially registering with the said recess, and a supporting member having a substantially spherical head seating in said recess at one side and in the groove at its other side.

18. A manually operable control member common to the starter switch and the carburetor adjusting member of a vehicle mo-

tor, comprising a control rod extending through the floor of the vehicle and within convenient grasping distance of the driver, said rod being capable of independent endwise thrust and to and fro rocking motions, an operative connection between the rod and carburetor controlled by the rocking motion of said rod to effect the adjustment of the carburetor, said rod being operatively connected with an operative element of the starter switch for closing the switch by the endwise thrust motion of the rod.

19. A manually operable control member common to the starter switch and the carburetor adjusting member of a vehicle motor, comprising a control rod extending through the floor of the vehicle and within convenient grasping distance of the driver, said rod being capable of independent to and fro motions in transverse directions, said rod being operatively connected with the starter switch for actuation by movement in one direction and a flexible reciprocatory transmission member operatively connected with the carburetor adjusting member and actuated by the movement of the rod in the other direction.

20. A manually operable control member common to the starter switch and the carburetor adjusting member of a vehicle motor, comprising a control rod extending through the floor of the vehicle and within convenient grasping distance of the driver, said rod being capable of independent to and fro endwise motion and to and fro rocking motion in a direction transverse to the direction of such endwise motion, said rod being operatively connected with the motor starter switch for actuation thereof by its endwise motion and a flexible reciprocatory transmission member operatively connected with the carburetor adjusting member and actuated by the to and fro rocking motion of the rod transversely to its endwise motion.

21. Manually operable means for adjusting the carburetor and operating the starter of a vehicle motor, comprising a manually operable control rod capable of independent rocking and endwise motion, means operatively connecting the rod with the carburetor adjustment member for actuation thereof by the rocking motion of the rod, said rod being operatively connected with the starter switch for operation thereof by its thrust motion.

22. A manual operating means common to the starter switch of a vehicle motor and the carburetor adjustment thereof comprising a control rod capable of both endwise thrust motion and rocking motion, said rod being operatively connected with the starter switch for operation thereof by its endwise thrust motion. and interconnecting means between the rod and the carburetor adjusting means operable by the rocking motion of the rod independent of its thrust motion.

23. In an apparatus of the character described, a control rod extending through the floor board of a motor vehicle with its upper end within convenient grasping distance of the vehicle driver, and having its lower end operatively connected with the vehicle motor starting switch, and an operative connection between the rod and the adjusting member of the motor carburetor, one of said members being operated by an endwise thrust motion of the control rod, the other device being operable by a rocking motion of the rod, such endwise and rocking motions being effective independently of each other.

24. The combination with a motor starter switch and a carburetor regulating member to be independently actuated, of a control member capable of independent rocking and longitudinal motion, a Bowden wire transmission element connecting the carburetor regulating member with the control member for actuation by rocking adjustment of the latter, said control member being operatively connected with the motor starter switch for closing said switch by the longitudinal movement of the control member independent of its rocking action.

25. The combination with a motor starter switch and a carburetor regulating member to be independently actuated, of a control member common thereto and capable of independent rocking and longitudinal motion, a Bowden wire transmission element connecting the carburetor regulating member with the control member, said control member being operatively connected with the motor starter switch for closing said switch by the operation of the control member through one of the aforementioned independent motions, said Bowden wire transmission element being actuated to adjust the carburetor regulating member by the movement of the control member through the other of its said independent motions.

26. The combination with a motor vehicle including a starter switch, and a carburetor regulating element, of independently operable control elements for the starter switch and carburetor regulating member, and a common actuating member for said control elements.

27. The combination with a vehicle motor including a starter switch and a carburetor regulating means, of a manually operable control member therefor common to both the starter switch and the carburetor regulating means, said control member being capable of movement in different directions; and operative connections between the control member and the starter switch and between the control member and carburetor

regulating means whereby the movement of the control member in one direction will operate the starter switch independent of the operation of the carburetor regulating means and its movement in a different direction will operate the carburetor regulating means independent of the operation of the starter switch.

In testimony whereof, we have hereunto set our hands this 25th day of May, A. D. 1928.

LINUS E. RUSSELL, JR.
GEORGE E. PETERS.