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ACCELERATOR ATTACHMENT.

APPLICATION FILED NOV. 4, 1916.

1,284,523.

Patented Nov. 12, 1918.

Fig. 1.

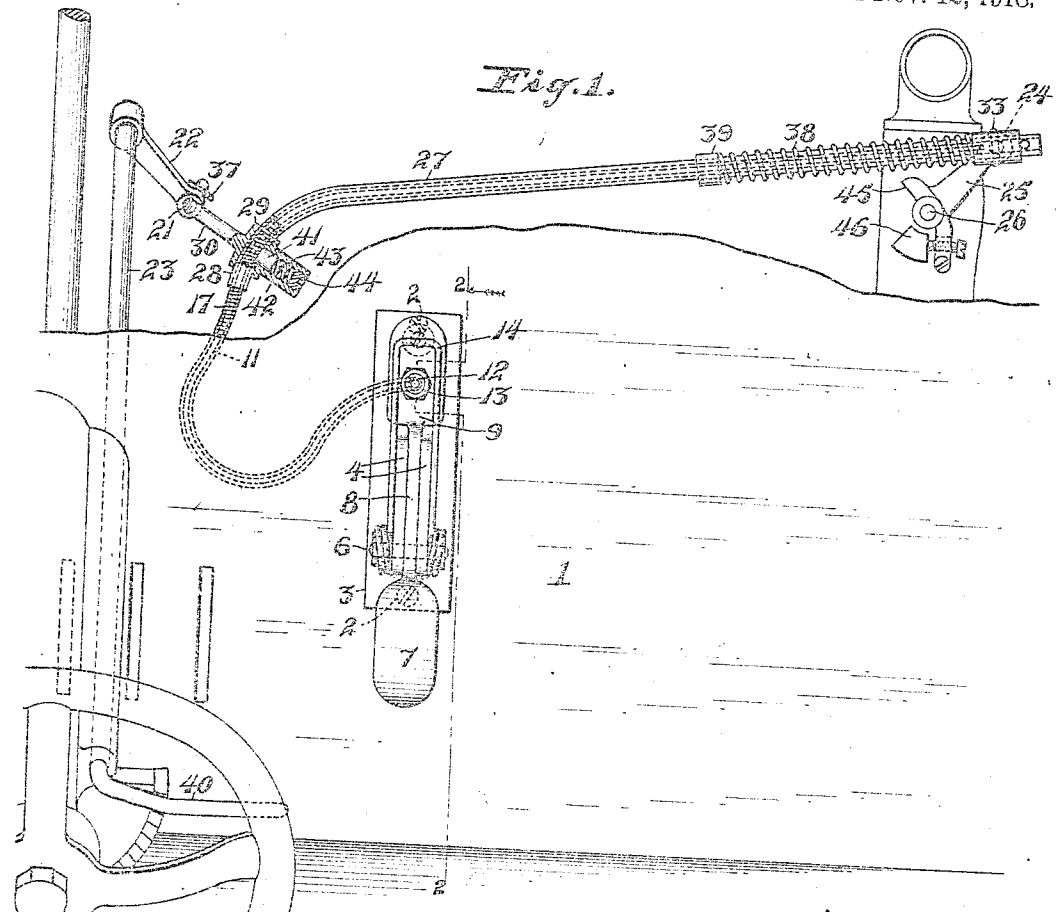


Fig. 2.

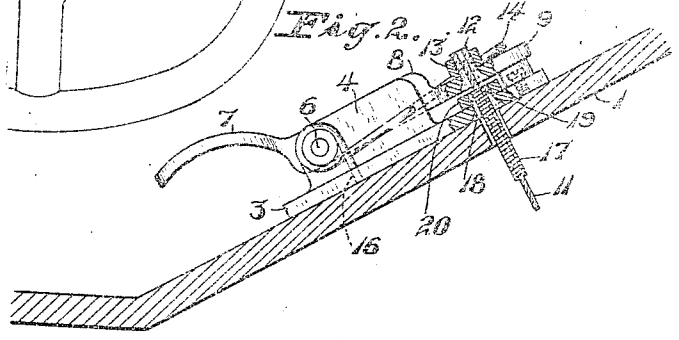


Fig. 4.



Fig. 5.

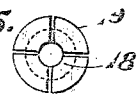
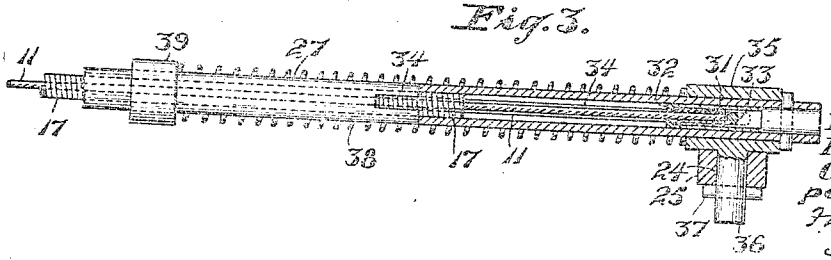


Fig. 3.



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ACCELERATOR ATTACHMENT.

1,284,523. Specification of Letters Patent. Patented Nov. 12, 1918.

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To all whom it may concern:

Be it known that we, LLOYD M. WILLIAMS, PERCY J. WILLIAMS, and CHESTER L. WILLIAMS, citizens of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented new and useful Improvements in Accelerator Attachments, of which the following is a specification.

One object of the present invention is to provide means whereby the throttle of an internal combustion engine of a motor car can be controlled either by the hand or by the foot.

A further object is to provide an attachment which can easily be adapted to cars at present in use, especially Ford cars, having only hand-operated means of control by which said means of control may also be operated by the foot.

A further object is to provide means whereby each means of control is entirely independent of the other, so that, when either of said means is operated, it will not affect the operation of the other means.

In the accompanying drawing, Figure 1 is a broken plan view of a portion of an automobile showing our improved mechanism attached thereto; Fig. 2 is a longitudinal section of the same on the line 2—2 of Fig. 1; Fig. 3 is an enlarged broken side view of a portion of the mechanism; Fig. 4 is a side view, and Fig. 5 a bottom plan view, of a clamp.

Referring to the drawing, 1 indicates a foot-board of a Ford car, certain mechanism carried by the foot-board and not essential to our invention being herein omitted. Secured by screws 2 to said foot-board is a base plate 3, on which are secured parallel upright plates 4, through which extends a pivot pin 6, on which is pivoted a foot lever having a pedal portion 7 adapted to be depressed by the foot and a lever portion 8 extending between, and guided by, said upright plates. The forward end 9 of the foot lever is turned at right angles to the lever portion 8, and through an aperture in said forward end 9 extends the nearer terminal portion of a stout wire or cable 11, here shown as the latter, the extreme end of which is secured by a clamp 12 having a split beveled outer or lower portion compressed around said cable 11 by being drawn up against a beveled socket in the under side of the lever 7 by means of a nut 13 screwed on the threaded nearer or upper end of said clamp. The terminal portions of a strong yoke-shaped spring 14 are coiled around said pivot pin 6, and its ends are secured in sockets 16 in the base plate. The middle portion of said yoke bears downward upon the forward end 9 of said foot lever in front of the cable. Said cable is contained within a flexible tube 17 of coiled wire, one end of said tube being secured in a clamp 18 having a split beveled outer portion 19, contracted around said tube 17 by a nut 20 screwed upon said clamp.

In applying the attachment to a Ford car, there is first removed a rod or link which has bent ends extending downwardly, one in a hole 21 in the outer end of a crank arm 22 attached to the rod 23 extending alongside the steering post and operated by the throttle lever, and the other through a hole 24 in the outer end of a crank arm 25 attached to a rock shaft 26 which operates the throttle valve of the carbureter. Said rod having been removed, there is substituted therefor a rigid tube 27 curved near one end, as shown at 28, said curved portion 28 being secured in a sleeve 29 attached to one end of a short arm 30, the other end of which is bent downwardly and extends through said hole 21. Through this tube 27 extends the flexible tube 17 and the cable 11, said cable 11 extending beyond the flexible tube 17 about twice the distance of its travel necessary to fully open the throttle, as hereinafter explained, and to a point near the farther end of the tube 27, and being there secured within a short tubular head 31 contained in a short tube 32, which is secured around the head 31, by reason of its inner end being contracted around the cable 11, and being thereby prevented from moving outwardly by the abutment of said contracted end against the inner end of the head 31, and also by reason of a pin 33 extending through diametrically opposite holes in said tube 32 near its outer end and outside of, and abutting against, the outer end of, the head 31, and thus preventing the movement of the tube 32 inwardly on the cable 11. Said tube 32 is slidable in the tube 27, and the pin 33 extends also through longitudinally extending diametrically opposite slots 34 in said

tube 27, and through holes in a tube 35 slidable around the tube 27, and from which depends a stem 36 received within said hole 24. The bent end of the arm 29 and the stem 36 are secured in their respective holes by cotter pins 37. A spring 38 coiled around the tube 27 is compressed between said tube 35 and a collar 39 on said tube 27, and normally presses said tube 35, and therefore also the far end of the cable 11, toward the far end of said tube 27.

When the foot lever is depressed, the cable 11 is raised within the tube 17 of coiled wire, and the far end of said cable 11 is thus drawn inwardly within the tube 17, thereby, by means of the tube 35, rocking the shaft 26, and opening the throttle valve.

The construction does not interfere with the operation of the throttle valve by the hand mechanism 40 for that purpose, for, if said hand mechanism be operated, then the shaft 26 is rocked and the tube 27 is shifted longitudinally, carrying with it the tube 17 and cable 11, thereby actuating the throttle valve in the same way as was done through the medium of the rod which was displaced by said tube 27.

It is important, however, for the success of the above operation, that the resistance offered by the friction of the tube 17 of coiled wire within the outer tube 27 should be greater than the sum of the resistance to compression of the coil 38 and the frictional resistance opposing the opening of the throttle valve, for the following reasons: It will be observed that the cable 11 and flexible tube 17 do not extend in a straight course from the base plate 3 to the tube 27, but are curved. Now if said cable 11 and flexible tube 17 could easily assume a straight, or more nearly straight, form, instead of having the curvature shown on the drawing, then the effect of depressing the foot lever might be, not to open the throttle valve, but simply to move said cable 11 and flexible tube 17 into a position more nearly straight. In that case, the nearer end of the cable 11 would move upwardly above the plate 3, being drawn upwardly by the foot lever 7. The nearer end of the flexible tube 17 cannot, however, so move upwardly, being secured in the clamp 18. But if the friction between the flexible tube 17 and the tube 27 were sufficiently small, then, at the same time that the cable 11 moved upwardly above the plate 3, the outer portion of said tube 17 would move outwardly within the tube 27, and both the cable 11 and the flexible tube 17 would assume a more nearly straight form between the foot-board 1 and the tube 27. Then the cable 11 would be drawn upward by the foot lever without having any effect upon the throttle valve, the farther end of the cable 11 being stationary and its nearer end moving upwardly, and the nearer end of the tube 17 being stationary and its remote end moving outward.

This result is avoided by providing that the friction between the flexible tube 17 and the tube 27, or parts connected therewith, is greater than the resistance to compression of the coiled spring 38 and the frictional resistance to the opening of the throttle valve. The means we have provided for this purpose comprises a pin 41 slidable in a tube 42 secured to the tube 29, the head of said pin being pressed against the flexible tube 17 by a coiled spring 43, compressed between said pin and a screw plug 4 screwed in the outer end of said tube 42. By means of said screw plug the pressure of said spring 43 can be varied as desired to vary the pressure of the pin 41 upon the flexible tube 17 and thus vary the frictional resistance to the sliding movement of the tube 17 within the tube 27.

When the hand lever is operated to open the throttle valve, and the foot lever is actuated for the same purpose, said depression will have no effect on the results, provided that the hand lever is fully actuated, so as to bring the extension 45 from the valve lever or crank arm 25 against a stop 46. The effect of the depression of the foot lever would be to shift the tube 17 to the right, or away from the operator, and upon releasing said foot lever, said tube 17 will be shifted to the left or toward the operator.

But, should the hand lever be actuated to only partly open the throttle valve, said extension will not abut against the stop 46. If, then, the foot lever is depressed, the result will be, first, to move the crank arm 25 until said extension abuts against said stop, and then the flexible tube 17 will be shifted to the right, or from the operator, until the foot lever is fully depressed. Upon releasing the foot lever, the throttle valve will close until it has reached the starting point at which the foot lever was depressed, said point being determined by the position of the hand lever, and, while the throttle is closing, the tube 17 would shift to the left, or toward the operator, until the foot lever comes back to its normal position.

If the foot lever is fully depressed to open the throttle valve, and the hand mechanism is then actuated for the same purpose, this will have no effect upon the results, since the only result will be to shift the tube 17 to the left, and upon operating the hand mechanism to close the throttle, the tube 17 will be shifted to the right.

But, if the foot lever is only partly depressed to open the throttle valve, and the mechanism is used for the same purpose, the result will be to continue the opening movement of the throttle valve until the extension 45 abuts against the stop 46, when the tube 17 will shift to the right. Then, upon turn-

ing the hand mechanism to close the throttle valve, said throttle valve will close until it has reached the starting point determined by the operation of the foot lever, when the tube 17 will shift to the right until the hand mechanism is moved to the position corresponding to full closure of the throttle valve. Then upon releasing the foot lever, the throttle valve will fully close.

We claim:—

1. In combination, a throttle valve crank arm of a motor car, a hand-operated mechanism for moving said arm, comprising a rock shaft, a crank arm thereon and a resilient connection between said crank arms, a foot lever, a flexible tube, one end of which is supported by said connection, and a flexible wire within the tube one end of which is operatively connected to the first-named crank arm, the other ends of the tube and wire, being, one of them stationary and the other connected to the foot lever.

2. In combination, a throttle valve crank arm of a motor car, a hand-operated mechanism for moving said arm, comprising a rock shaft, a crank arm thereon and a resilient connection between said crank arms, a foot lever, a flexible tube, one end of which is movably supported by said connection, and a flexible wire within the tube one end of which is operatively connected to the first-named crank arm, the other ends of the tube and wire, being, one of them stationary and the other connected to the foot lever.

3. In combination, a throttle valve crank arm of a motor car, a hand-operated mechanism for moving said arm, comprising a rock shaft, a crank arm thereon and a resilient connection between said crank arms, a foot lever, a flexible tube, of which one end is stationarily held adjacent to the foot lever and the other end is movably supported by said resilient connection, and a flexible connection within the flexible tube, of which one end is connected to said foot lever and the other end is operatively connected to the first-named crank arm.

4. In combination, a throttle valve crank arm of a motor car, a hand-operated mechanism for moving said arm comprising a rock shaft, a crank arm thereon, a tube of which one end is pivotally supported by the second-named crank arm and the other end is slidably supported by the first-named crank arm and having a fixed stop thereon, a coiled spring compressed between said first-named crank arm and said stop, a flexible tube in said first-named tube, a foot lever adjacent to which one end of said last-named tube is stationarily located, and a connection between said foot lever and said first-named crank arm and contained in said flexible tube.

5. In combination, a throttle valve crank arm of a motor car, a hand-operated mechanism for moving said arm comprising a rock shaft, a crank arm thereon, a tube of which one end is pivotally supported by the second-named crank arm and the other end is slidably supported by the first-named crank arm and having a fixed stop thereon, a coiled spring compressed between said first-named crank arm and said stop, a flexible tube in said first-named tube, a foot lever adjacent to which one end of said last-named tube is stationarily located, a connection between said foot lever and said first-named crank arm and contained in said flexible tube, and means for resisting the free movement of said flexible tube in said first-named tube.

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