Jan. 9, 1923.

1,441,663.

F. P. COOPER.

DUPLEX ACCELERATOR.

FILED OCT. 1, 1921.

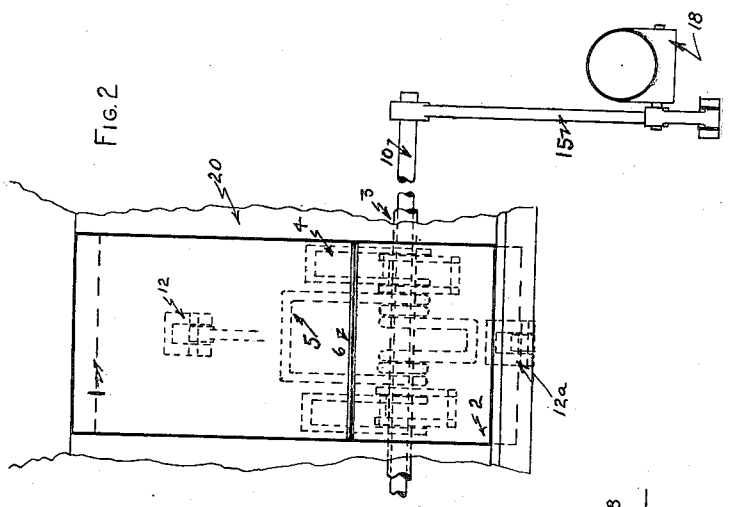

FIG. 2

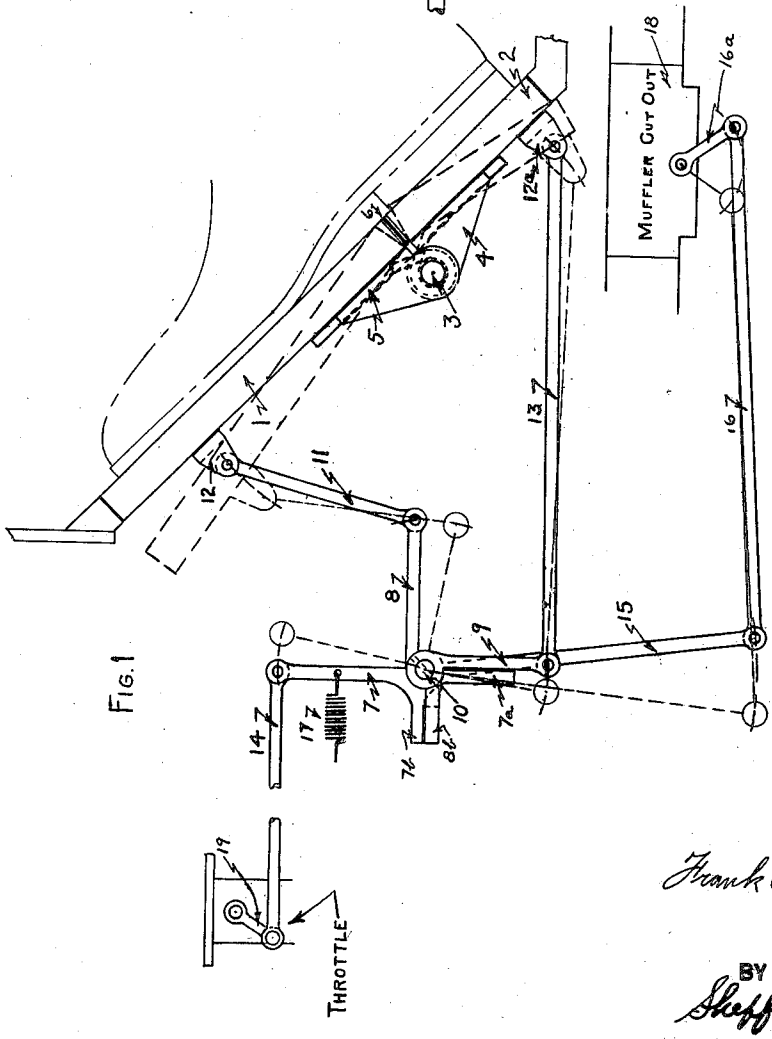

FIG. 1

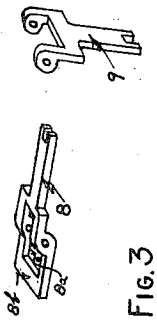

FIG. 5

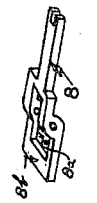

FIG. 3

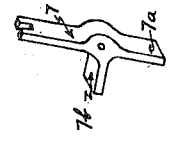

FIG. 4

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UNITED STATES PATENT OFFICE.

FRANK P. COOPER, OF BROOKLYN, NEW YORK.

DUPLEX ACCELERATOR.

Application filed October 1, 1921. Serial No. 504,722.

To all whom it may concern:

Be it known that I, FRANK P. COOPER, a citizen of the United States of America, and a resident of the borough of Brooklyn, city, county, and State of New York, have invented certain new and useful Improvements in Duplex Accelerators, of which the following is a full and complete disclosure.

My invention relates to control apparatus for automobile engines and has as its principal object the provision of means whereby the driver may govern the throttle valve of the engine alone or the throttle valve and the muffler cut-out simultaneously, as desired.

The novel features of my invention are pointed out with particularity in the appended claims. The invention itself, however, with further objects and advantages, will best be understood from the following description taken in connection with the accompanying drawing, in which,—

Fig. 1 is a side view of a control mechanism according to my invention.

Fig. 2 is a front view of the apparatus illustrated in Fig. 1.

Figs. 3, 4 and 5 are detail perspective views of parts appearing in Figs. 1 and 2.

In the drawing 1 indicates a treadle member designed for operation by the ball of the foot, member 1 being pivoted on the axis 3. Also pivoted on axis 3 is a treadle member 2 adapted to be operated by the heel of the foot, the ball of which rests on treads 1. Members 1 and 2 are suitably journalled on axis 3 by brackets 4 or other suitable means, the adjacent edges of members 1 and 2 embracing a plane which includes the axis 3 and 1 provide a coil spring 5 which serves to normally hold the members 1 and 2 against the stop bar 6 which lies between the adjacent edges and is fastened to a suitable support.

Parallel to the axis 3 I mount a second axis 10 and on axis 10 I mount, according to my invention, a bell crank 7, a fork 8, a yoke 9, and lever 15. The fork 8 is connected to treadle member 1 at point 12 by means of link 11 and the yoke 9 is connected to treadle member 2 at point 12^a by means of link 13. Bell crank 7 is connected at its upper end to the throttle valve 19 by means of link 14. The axis 10 also has fixed thereto a downwardly extending lever 15 which connects to a link 16, the latter connecting in turn to the lever 16^a of the muffler cutout. The upper portion of bell crank 7 is connected to a spring 17 which normally holds the upper portion of this crank in a vertical position, the throttle then being closed. The bell crank 7 also has two parts in addition to the upper part just mentioned, one of which, 7^a, extends vertically downward when the upper portion of the lever is vertical and the other of which, 7^b, extends horizontally when the other two parts are vertical. The fork 8 has an opening 8^a therein through which part 7^a of the bell crank extends downwardly when the parts are assembled, and the fork has also a cross piece 8^b which normally extends beneath and in contact with the horizontal portion 7^b of bell crank 7. Moreover, the yoke 9 is so assembled on the axis of shaft 10 that it normally lies in contact with and at the right of part 7^a, when viewed as in Fig. 1. The yoke 9 and lever 15 are fixed to shaft 10, whereas crank 7 and fork 8 may turn freely on the shaft as an axis.

If, now, the operator or driver wishes to open the throttle more or less without opening the muffler cutout he presses down with the ball of his foot on treadle member 1, thereby throwing this member into position shown in dotted lines in Fig. 1, parts 8 and 11 also being thrown into the dotted line position. The fork 8 is thus turned about the axis 10 in the clockwise direction as viewed in Fig. 1, the cross piece 8^b being thereby raised and pushed upwardly on the arm 7^b of bell crank 7. The crank 7 is thus turned also in the clockwise direction against the spring 17 as indicated in dotted lines in Fig. 1 However, this movement of parts 8 and 7 will not effect yoke 9, since it will be seen from Fig. 1 that a clockwise movement of the bell crank 7 will move part 7^a away from yoke 9 without disturbing the yoke. The muffler cutout will thus be undisturbed when the member 1 is pushed down since shaft 10 and lever 15 will not be operated.

When it is desired to operate both the muffler cutout and the throttle, the operator pushes down on treadle 2 thereby throwing link 13 and yoke 9 in the clockwise direction, as indicated in dotted lines in Fig. 1. The yoke 9 will then push against the part 7^a of bell crank 7 turning the bell crank clockwise and opening the throttle as above and at the same time yoke 9 will turn the

shaft 10 and with it the lever 15, turning this lever also in clockwise direction and throwing lever 15, link 16 and lever 16ª into the dotted line position indicated in Fig. 1 and thereby opening the muffler cutout 18.

It will be seen, according to my invention, treadle numbers 1 and 2 may be mounted to lie normally flush or level with the floor board 20, the dividing plate 6 between treadle members being preferably fixed to the floor board 20. Consequently the foot of the operator rests flat on the accelerator in a natural position and on the level with the floor board. Moreover, the mechanism is controlled entirely by the foot of the operator and without necessity of his moving his foot from the accelerator proper. By merely pushing with his toe or his heel, he may open merely the throttle alone or both the throttle and the muffler cutout. It is well known that the use of such a cutout has advantages when the automobile is under heavy load as in climbing a heavy grade, but the inconveniences connected with operating such cutout as formerly installed and the question of installation of such prior arrangements have been such as to greatly discourage their use. It will be seen that a muffler cutout according to my invention is readily installed and operated, at the same time permitting the use of an accelerator control of maximum convenience and simplicity, which is novel with me and forms a part of my invention.

Having thus described my invention, I claim:

1. In an automobile in combination, a throttle, a muffler cut-out, and two treadle members mounted to lie in contact with a given foot simultaneously, means whereby the operation of one of said treadle members operates said throttle without said cut-out, and means whereby the operation of the other of said treadle members operates both said throttle and said muffler cut-out.

2. In an automobile in combination, a throttle, a link connected thereto, a treadle member, a link connected to said treadle member, two lever arms pivoted on a given axis and acting as a unit when operating said throttle, said arms being connected to said links one to each, a second treadle member, a throttle cutout, and means whereby said lever arms and said cutout are operated from said second mentioned treadle member.

3. In an automobile in combination, a floor board, and a combined throttle and muffler cut-out control comprising two individually operable treadle members normally in the plane of said floor board.

4. In an automobile, a combined muffler cut-out and throttle control comprising two treadle members normally in the same plane, connections whereby one of said treadle members controls only the throttle, and connections whereby the other of said treadle members controls both the throttle and the muffler cut-out.

5. In an automobile in combination, a throttle, a link connected thereto, a bell crank lever connected to said link, a shaft on which said lever is free to turn, a fork mounted on said shaft and also free to turn thereon, said fork operating said bell lever when turned in one direction but not when turned in the other direction, an operator controlled member, a link connecting said member directly to said fork, a yoke fixed to said shaft and adapted to turn said shaft and bell lever at the same time, a muffler cut-out, a link connecting said yoke and said cut-out, a second operator controlled member, and a link connecting said yoke directly to said second mentioned member.

FRANK P. COOPER.