April 2, 1940. W. J. SMITH 2,196,125

FOOT CONTROL

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Fig. 1.

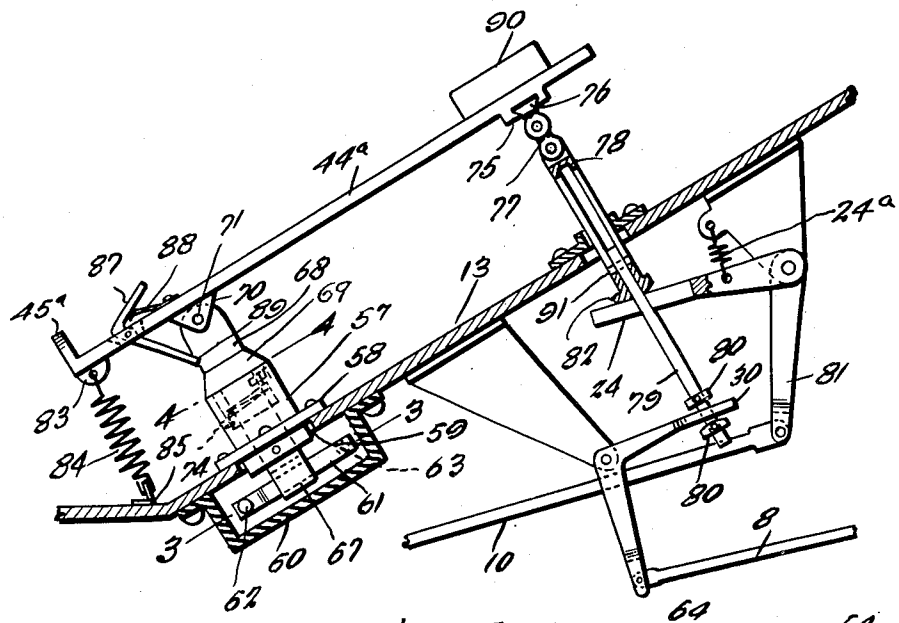


Fig. 3.

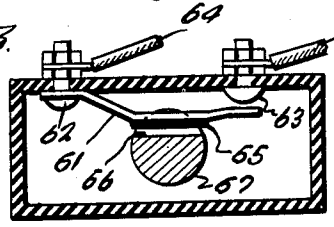
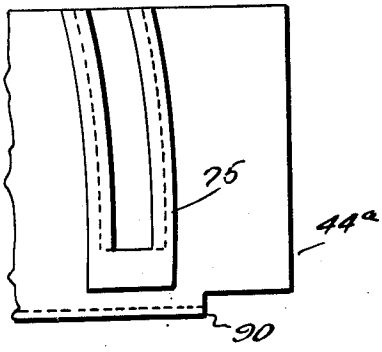


Fig. 2.



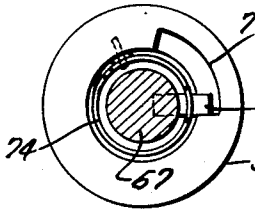


Fig. 4.

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Fig. 5.

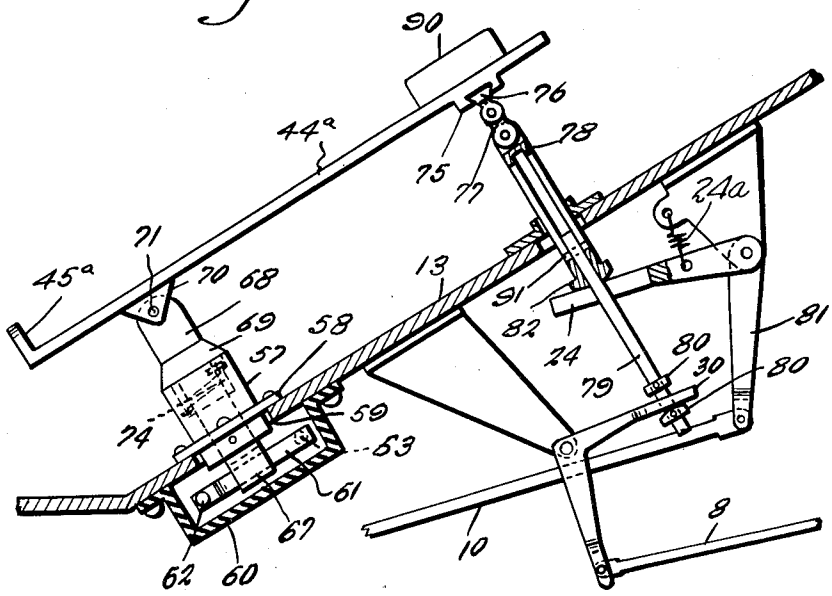
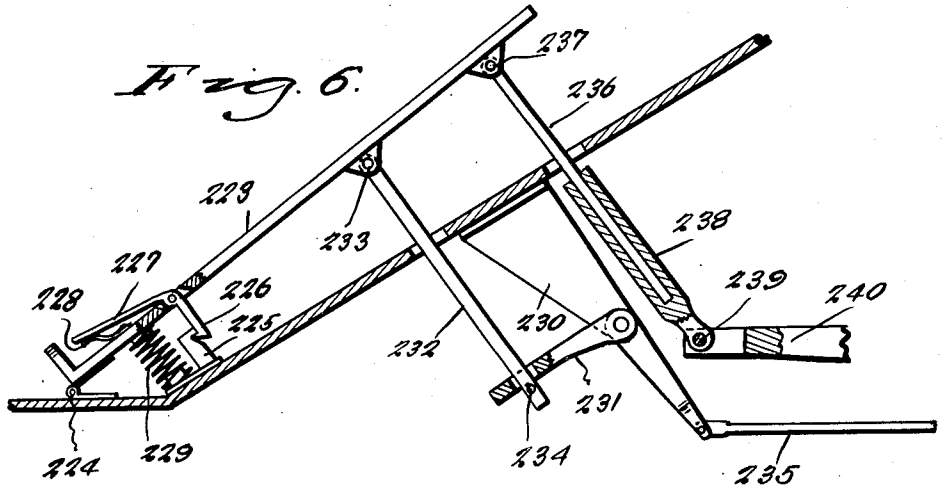


Fig. 6.



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UNITED STATES PATENT OFFICE

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FOOT CONTROL

William J. Smith, Delaware City, Del.

Application May 8, 1937, Serial No. 141,544

14 Claims. (Cl. 192—3)

The present invention relates to new and useful improvements in foot controls and more particularly to controls whereby the brakes and accelerator of a motor vehicle can be controlled from a single foot pedal. This is a continuation in part of my co-pending application Serial No. 110,544 filed November 12, 1936.

An important object of the invention is to provide a single control for operating both the brakes and accelerator of a motor vehicle through the agency of means whereby the control can be operated in different directions.

Another important object of the invention is to provide a control of the character stated which is of simple construction and which is positive acting in operation.

These and other important objects and advantages will be found in the following specification.

In the drawings:

Figure 1 represents a side elevational view of the control with parts in section.

Figure 2 is a fragmentary bottom plan view of the under portion of the pedal.

Figure 3 is a sectional view substantially on the line 3—3 of Figure 1.

Figure 4 is a cross sectional view substantially on the line 4—4 of Figure 1.

Figure 5 is a side elevational view with parts in section of the control shown in Figure 1 without the heel spring and catch.

Figure 6 is a side elevational view partly in section of another modified form of the invention.

Referring to the drawings wherein like numerals designate like parts, it can be seen that numeral 44a indicates the brake pedal which is provided with the heel plate 45a. Numeral 57 denotes a block having a flange 58 which is secured to the toe board 13 so that the lower portion of the block depends through the opening 59 in the toe board.

A housing 60 of dielectric material is secured against the bottom side of the toeboard 13 under the opening 59 and has a spring contact finger 61 secured at one end as at 62 to one side of the housing. The opposite end of the spring finger 61 is normally sprung from the contact 63 and these contacts 62—63 are connected by the wire 64 with the battery and the usual starting motor of the vehicle. A plate of insulation 65 is provided on the spring finger 61 in opposed relation to the flat portion 66 of the depending shank 67 of the post 68, while the post 68 is provided with the shoulder portion 69 bearing upon the upper end of the block 57. An ear 70 depends from the pedal 44a and is pivotally connected as at 71 to the upper end of the post 68. As is clearly shown in Figure 4 the shank 67 is provided with a lug 72 operating in the ninety degree slotway 73 in the block 57, so that the shank 67 is only permitted to turn a quarter turn. A coiled compressible spring 74 has one end connected to the shank 67 and the other end to the block 57 so that the pedal 44a is always retained in proper straight forward position.

An arcuate-shaped dovetail guide 75 is provided on the under portion of the forward end of the pedal 44a and receives the dovetail-shaped bar 76 which is connected by the pivot 77 to the barrel 78. This barrel is disposed through an opening in the toe board 13 and receives at its lower end portion the rod 79 which at its lower end is provided with a pin and slot connection 80 to the accelerator 30 of the accelerator bell crank. The brake rod 10 is connected to the bell crank 81 which, in turn, is provided with the aforementioned yoke 24 against which the head 82 of the barrel 78 is engageable.

From an ear 83 on the pedal, at the heel thereof extends the tension spring 84 which connects to a lug 85 secured to the floor board.

A rockable catch 87 is provided on the foot pedal 44a. A spring 88 engages with the trip 87 and serves to hold the lower end engaged with the notch 89 on the post 68. When the pedal 44a is to be rotated on the block 57 to operate the switch shown in Figure 3, the side of the shoe can be brought to bear with pressure against the upstanding flange 90 at the forward end portion of the pedal 44a.

Obviously when the pedal is depressed, the head 82 and the barrel 78 will serve to operate the brakes while the rod 79 is free to slide in the barrel 78. However, on the up-stroke of the pedal 44a the cross pin 91 at the upper end of the rod 79 will engage the lower end of the slotted barrel 78 so that the rod 79 is pulled upwardly and the accelerator operated.

Figure 5 discloses substantially the same construction as is represented in Figure 1 and the same numerals are employed to designate like parts, except that in Figure 5, the spring 84 and catch 84 are eliminated.

The operation in this form of the invention is that when the pedal is in neutral position and no foot pressure is exerted on either end of the pedal, the spring 24a holds the brake in brake unapplied position, but when pressure is exerted on the toe portion of the pedal the brakes are applied against the tension of the spring 24a.

On the other hand, when heel pressure is exerted on the pedal 44a the pedal is rocked in the opposite direction, allowing the spring 24a to disengage the brakes, while a pull is exerted on the rod 79 to effect acceleration.

Another form of the invention is shown in Figure 6 and this form consists of the pedal 223 hingedly connected at its rear end as at 224 to the floor board.

A notched keeper 225 rises from the toe board and is engageable by the claw head 226 at the lower end of the bell crank 227 which is engageable at its upper end by the heel of the operator. A spring 228 engaged with the upper end of the bell crank 227 serves to engage the claw head 226 with the keeper 225. A coiled compressible spring 229 is interposed between the toe board and the pedal 223 so as to normally tend to urge the pedal in an upward direction.

At the underside of the toe board is the bracket 230 on which is located the bell crank 231. A rod 232 is pivotally connected at its upper end as at 233 to the pedal 223 while at its lower end the same extends through an opening in one end of the bell crank 231 and is provided with a cross pin 234 at a point below the said end of the bell crank so that the bell crank can only be operated by the rod in the upward movement of the rod. Numeral 235 represents the usual accelerator control rod extending from the bell crank.

A second rod 236 is pivotally secured at its upper end as at 237 to the bottom side portion of the pedal 223 while its lower end is slidable in the barrel 238, the lower end of which is pivotally secured as at 239 to the brake operating bell crank 240. It can be seen, that by depressing the pedal 223 the rod 236 will operate the brake bell crank 240. By pressing downwardly on the trip 227 the same can be disengaged from the keeper 225 and by releasing the foot gradually, the spring 229 will raise the pedal so that the pin 234 and the rod 232 will lift the corresponding end of the bell crank 231 to the end that the accelerator will be controlled.

While the foregoing specification sets forth the invention in specific terms, it is to be understood that numerous changes in the shape, size and materials may be resorted to without departing from the spirit and scope of the invention as claimed hereinafter.

Having described the invention what is claimed as new is:

1. In combination, a foot pedal, means for rotating and rocking the said foot pedal, said foot pedal being provided with a rotatable member adapted to rotate with the pedal, a switch adapted to be actuated by the said rotatable member, vehicle control means and a slidable connection between the vehicle control means and the foot pedal.

2. In combination, a foot pedal, means for rotating and rocking the said foot pedal, said foot pedal being provided with a rotatable member adapted to rotate with the pedal, a switch adapted to be actuated by the said rotatable member, vehicle control means and a slidable connection between the vehicle control means and the foot pedal, a post for supporting the rotary member and a releasable catch between the pedal and the rotatable member.

3. In combination, a pedal, brake operating means, accelerator operating means, means rockably supporting the pedal, connecting means between one end of the pedal and both operating means, and external force applying means connected to the opposite end of the pedal for normally tending to urge the pedal in one direction, and a catch associated with the pedal for holding the pedal in neutral position against the tension of said external force applying means.

4. In combination, a pedal, brake operating means, accelerator operating means, means rockably supporting the pedal, connecting means between one end of the pedal and both operating means, and external force applying means connected to the opposite end of the pedal for normally tending to urge the pedal in one direction and a foot releasable catch carried by the pedal for preventing the effect of the last mentioned means on the pedal.

5. In combination, a foot pedal, means for rotating and rocking the said foot pedal, said foot pedal being provided with a rotatable member adapted to rotate with the pedal, a switch adapted to be actuated by the said rotatable member, said pedal and rotatable member being adapted to be rocked without affecting the switch, vehicle control means and a slidable connection between the vehicle control means and the foot pedal.

6. In combination, a foot pedal, an accelerator control, a brake control, means rockably supporting the pedal, a connection between the pedal and the controls, spring means tending to urge the pedal in one direction to maintain one of the controls operating, and a heel operated catch mounted in close proximity to the heel portion of the foot pedal adapted to hold said pedal against operation by said spring means.

7. In combination, a foot pedal, an accelerator control, a brake control, means rockably supporting the pedal, a connection between the pedal and the controls, spring means tending to urge the pedal in one direction to maintain one of the controls operating, and a catch adapted to hold said pedal against operation by said spring means, and means permitting rotation of the pedal, said pedal being adapted to be rotated without affecting the position of the catch.

8. In combination, a foot pedal, an accelerator control, a brake control, means rockably supporting the pedal, a connection between the pedal and the controls, spring means tending to urge the pedal in one direction to maintain one of the controls operating, and a catch adapted to hold said pedal against operation by said spring means, and means whereby the pedal can be rotated, and a switch operated by said pedal when the latter is rotated.

9. In combination, a foot pedal, an accelerator control, a brake control, means rockably supporting the pedal, a connection between the pedal and the controls, spring means tending to urge the pedal in one direction to maintain one of the controls operating, said connection comprising a member pivoted to the pedal, a member slidably connected to the pivoted member, abutting means between the pivoted and sliding members, one of the said members being adapted to actuate the accelerator control and the other member the brake control.

10. In combination, a foot pedal, an accelerator control, a brake control, means rockably supporting the pedal, a connection between the pedal and the controls, spring means tending to urge the pedal in one direction to maintain one of the controls operating, said connection comprising a member pivoted to the pedal, a member slidably connected to the pivoted member, abut-

ting means between the pivoted and sliding members, one of the said members being adapted to actuate the accelerator control and the other member the brake control, said accelerator and brake controls each including a rod, and a bell crank operatively connecting each of the rods with its corresponding pivoted or sliding member.

11. In combination, a foot pedal, an accelerator control, a brake control, means rockably supporting the pedal, a connection between the pedal and the controls, spring means tending to urge the pedal in one direction to maintain one of the controls operating, said connection comprising a member pivoted to the pedal, a member slidably connected to the pivoted member, abutting means between the pivoted and sliding members, one of the said members being adapted to actuate the accelerator control and the other member the brake control, and a transversely slidable connection between the pivoted member and the pedal and means permitting rotation of the pedal.

12. In combination, a foot pedal, an accelerator control, a brake control, means rockably supporting the pedal, a connection between the pedal and the controls, spring means tending to urge the pedal in one direction to maintain one of the controls operating, said connection comprising a member pivoted to the pedal, a member slidably connected to the pivoted member, abutting means between the pivoted and sliding members, one of the said members being adapted to actuate the accelerator control and the other member the brake control, and a transversely slidable connection between the pivoted member and the pedal and means permitting rotation of the pedal, and switch means adapted to be operated when the pedal is rotated.

13. In combination, a foot pedal, an accelerator control, a brake control, means rockably supporting the pedal, a connection between the pedal and the controls, spring means tending to urge the pedal in one direction to maintain one of the controls operating, and a catch adapted to hold said pedal against operation by said spring means, a portion of the catch extending above the pedal.

14. In combination, a foot pedal, an accelerator control, a brake control, means rockably supporting the pedal, a connection between the pedal and the controls, spring means tending to urge the pedal in one direction to maintain one of the controls operating, and a heel operated catch mounted in close proximity to the heel portion of the foot pedal adapted to hold said pedal against operation by said spring means, and means pivotally connected to the pedal and operatively connected to the said accelerator and brake controls.

WILLIAM J. SMITH.