

April 6, 1937.

P. A. HEINRICH
ACCELERATOR CONTROL

2,076,460

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2 Sheets-Sheet 1

Fig. 1.

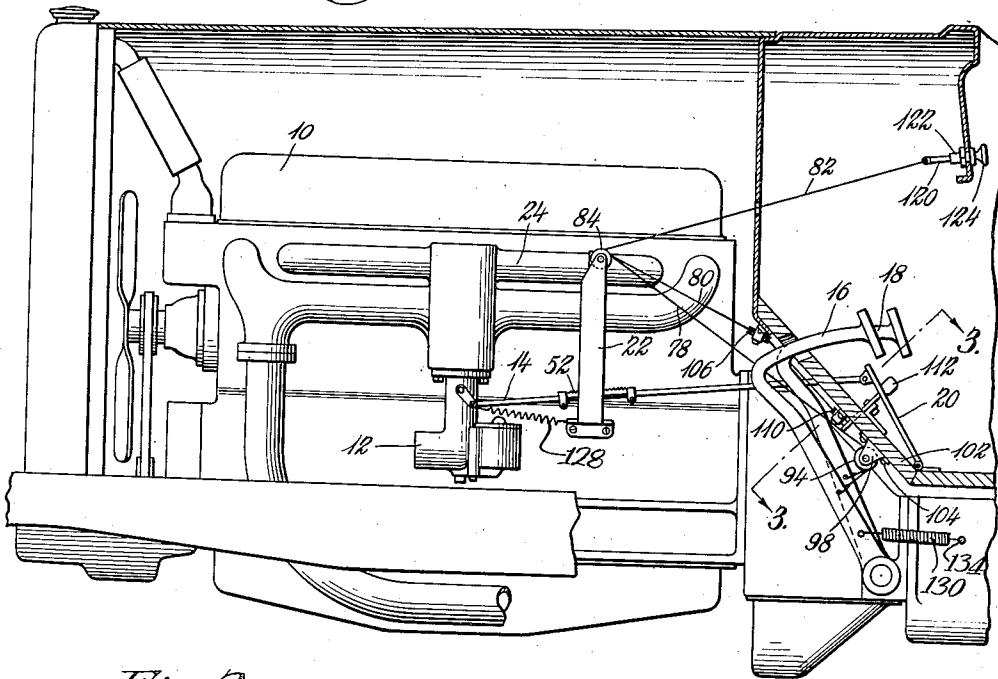


Fig. 2.

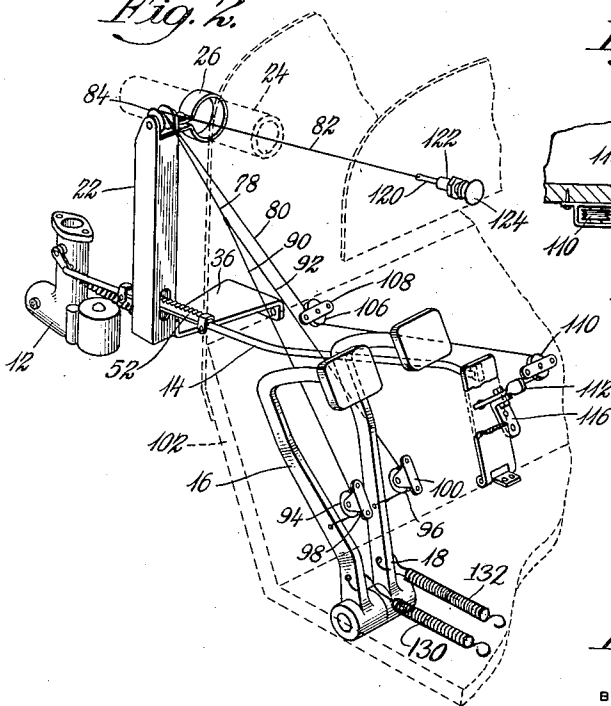
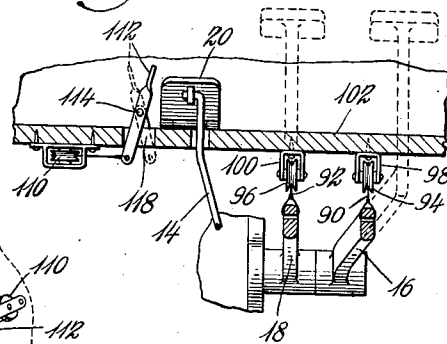


Fig. 3.



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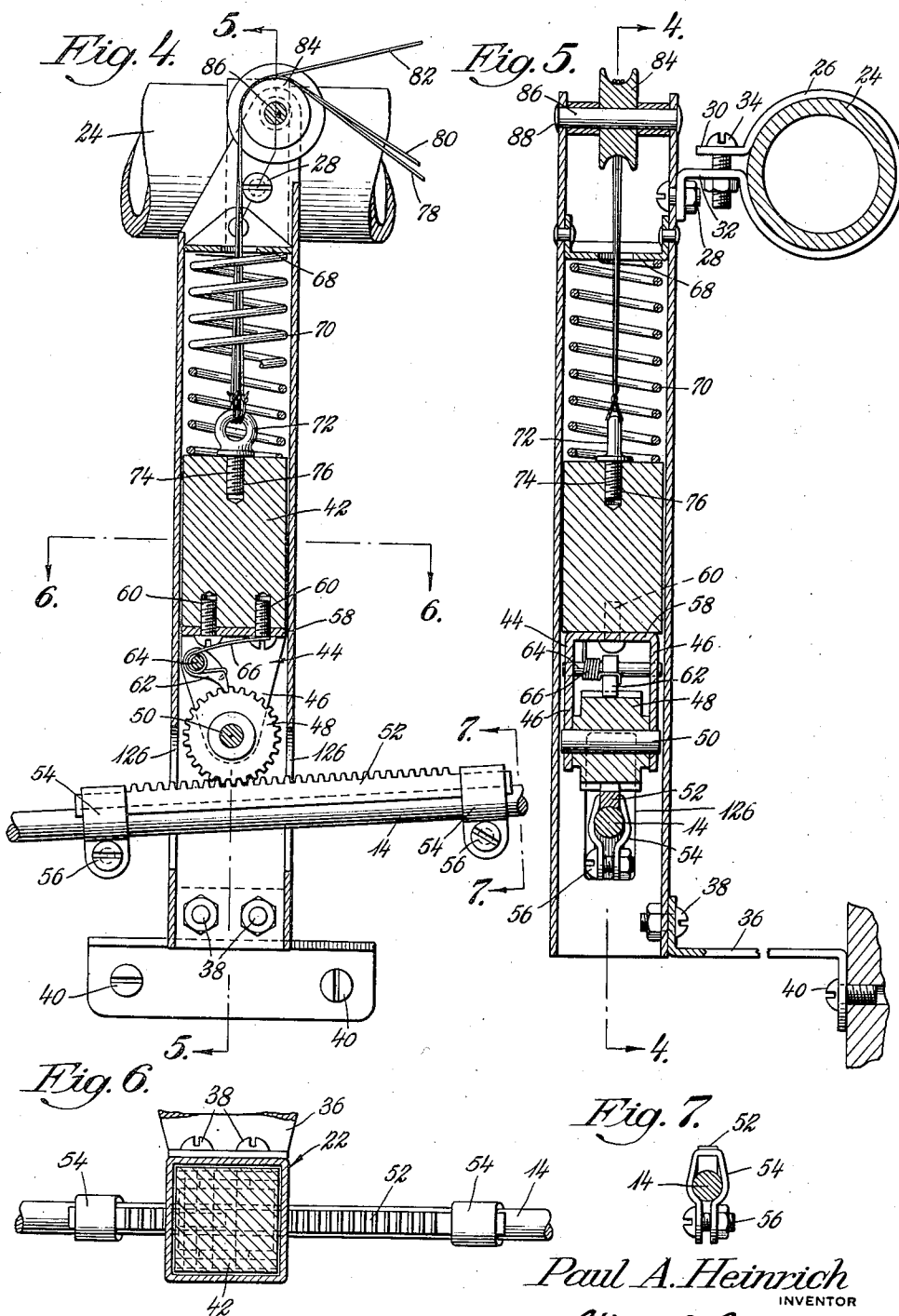
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UNITED STATES PATENT OFFICE

2,076,460

ACCELERATOR CONTROL

Paul A. Heinrich, Chicago, Ill.

Application September 30, 1935, Serial No. 42,931

8 Claims. (Cl. 192—.01)

My invention relates to the operation of internal combustion engines, and has among its objects and advantages the provision of an improved accelerator control.

In the accompanying drawings:

Fig. 1 is a side elevation of an engine with my invention associated therewith;

Fig. 2 is a perspective view of the invention;

Fig. 3 is a sectional view along the line 3—3 of Fig. 1;

Fig. 4 is a sectional view along the line 4—4 of Fig. 5;

Fig. 5 is a sectional view along the line 5—5 of Fig. 4;

Fig. 6 is a sectional view along the line 6—6 of Fig. 4; and

Fig. 7 is a sectional view along the line 7—7 of Fig. 4.

In the embodiment selected to illustrate my invention, I make use of an internal combustion engine 10 including a carburetor 12 and an accelerator rod 14. The engine includes conventional clutch and brake pedals 16 and 18, respectively, as well as a foot pedal 20 for operating the accelerator rod 14.

My invention comprises a tubular member 22 rectangular in cross section having its upper end secured to the intake manifold 24 by means of a bracket 26. This bracket comprises a metal strap bent to substantially encircle the intake manifold, with one end of the strap bolted to the tubular member 22 at 28, and the opposite end 30 positioned in parallel relation with the horizontal reach 32, each of which is provided with an opening for the reception of a bolt 34 for clamping the bracket onto the intake manifold.

To the lower end of the tubular member 22 I fasten a bracket 36 by means of a bolt 38. The opposite end of the bracket is fastened to the engine proper by means of a bolt 40.

Within the tubular member 22 I position a slidable weight 42, the lower end of which is provided with a U-shaped bracket 44, between the legs 46 of which I mount a pinion 48. The gear is rotatably mounted upon a shaft 50 carried by the legs 46 and the gear is normally arranged in mesh with a rack 52 fastened to the accelerator rod 14 by means of clamps 54 firmly clamped thereto by means of bolts 56.

The bight 58 of the bracket 44 is fastened to the lower end of the weight 42 by means of screws 60 passing through openings in the bight and having threaded relation with the weight. The pinion 48 may be rotated in a clockwise direc-

tion, when viewing Fig. 4, when the pedal 20 is pressed inwardly, but the pinion is restrained from counterclockwise-rotation by a pawl 62 fixedly connected with a shaft 64 rotatably mounted within openings in the legs 46.

I provide a spring 66 for yielding holding the pawl 62 in engagement with the pinion 48. Within the upper end of the tubular member 22 I rivet a plate 68 and between the plate and the upper end of the weight 42 I position a compression spring 70. This spring tends to urge the weight 42 in the direction of the accelerator rod 14 for holding the pinion 48 in mesh with the rack 52. The pinion 48 may be moved out of mesh with the rack 52 by lifting the weight 42 against the tension of the spring 70. To this end I provide an eye 72 having a threaded shank 74 threaded into a bore 76 in the weight 42. To the eye 72 I connect three cables 78, 80, and 82, which cables pass over a grooved wheel 84 rotatably mounted on a shaft 86 having its ends passing through openings in the tubular member 22 and riveted at 88 for connecting purposes.

The cable 78 is branched at 90 and 92, and the branches pass over grooved wheels 94 and 96, respectively, which branches are respectively connected with the clutch pedal 16 and the brake pedal 18. The wheels 94 and 96 are rotatably carried by brackets 98 and 100, which brackets are fastened to the inclined part 102 of the floor board by screws 104. Thus, pressure upon either of the pedals 16 or 18 lifts the pinion 48 out of engagement with the rack 52.

The cable 80 passes around a grooved wheel 106 carried by a bracket 108 fastened to the floor board part 102 and around a second grooved wheel 110 fastened to the part 102 in the same way. From the wheel 110 the cable leads to a lever 112 pivotally mounted at 114 to a bracket 116 carried by the part 102. This lever extends through a slot 118 in the part 102, and its upper end is arranged in operative relation with the pedal 20, whereby the pinion 48 may be lifted out of engagement with the rack 52 by a slight lateral shifting of the foot of the operator when the foot is positioned on the pedal 20.

In Fig. 1, I illustrate the cable 82 as being connected with a rod 120 slidably mounted within a tubular member 122 and provided with a knob 124 to facilitate manual retraction. The rod 120 may be pulled outwardly for disengaging the pinion 48. When retracted, the rod 120 remains in its shifted position until pressed inwardly, whereby the pinion 48 may be permanently disen-

gaged. The rod 20 is of the type employed in many radiator shutter controls for automobiles.

My invention provides means whereby the accelerator rod is latched in various adjusted positions, but the construction operates to release the accelerator rod 14 upon a slight movement of either of the pedals 16, 18, or 112. The arrangement eliminates the necessity for any additional attention on the part of the driver for rendering the pinion 48 inoperative. With the pinion 48 arranged in mesh with the rack 52, I eliminate the necessity for constant pressure upon the pedal 20, thus greatly relieving the driver. Referring to Fig. 4, the tubular member 22 is provided with openings 126 through which the accelerator rod 14 and the rack 52 extend.

In operation, the spring 70 holds the pinion 48 in mesh with the rack 52 regardless of the road conditions over which the car is travelling. The clamps 54 permit the rack 52 to be adjusted longitudinally of the accelerator rod. The car speed in the latched condition of the accelerator rod will depend upon which tooth of the pinion 48 the pawl 62 is engaged with for holding purposes. Rotation of the pinion 48 sufficiently far to bring the pawl into engagement with the next tooth will, of course, vary the speed of the car somewhat. In making the rack 52 adjustable on the accelerator rod, I provide an adjustment whereby the accelerator rod 14 may be latched in a predetermined position representing the exact speed desired.

In Fig. 1 a return spring 128 is connected with the accelerator rod 14 and the bracket 122 for operating the accelerator rod in the conventional manner. Fig. 2 illustrates return springs 130 and 132 connected with the clutch and brake pedals 16 and 18, respectively. These springs may be anchored to the vehicle in any suitable manner as suggested at 134 in Fig. 1.

Without further elaboration, the foregoing will so fully explain my invention that others may, by applying current knowledge, readily adapt the same for use under various conditions of service.

I claim:

1. The combination of an accelerator rod having a rack, a clutch pedal, a brake pedal, a pedal for operating the accelerator rod, a weight-operated pinion including a pawl co-operating with said rack for latching the accelerator rod in various shifted positions, means connecting said weight-operated pinion and said brake and clutch pedals for moving the pinion out of holding relation with the rack for releasing the accelerator rod upon shifting of either of the pedals, and foot-operated means connected with the weight-operated pinion for releasing the accelerator rod independently of any shifting movement of the clutch or brake pedals.

2. The combination of an accelerator rod having a rack, a clutch pedal, a brake pedal, a pedal for operating the accelerator rod, a weight-operated pinion including means for latching the pinion co-operating with said rack for latching the accelerator rod in various shifted positions, means connecting said weight-operated pinion and said brake and clutch pedals for moving the pinion out of holding relation with the rack for releasing the

accelerator rod upon shifting of either of the pedals, foot-operated means connected with the weight-operated pinion for releasing the accelerator rod independently of any shifting movement of the clutch or brake pedals, and manually controlled means for releasing the accelerator rod independently of said pedals or foot-operated means.

3. In an automotive vehicle, the combination of an accelerator rod having a rack, a weight, guide means for the weight, a pinion carried by said weight and normally arranged in mesh with said rack, a pawl for limiting rotary movement of the pinion in one direction, and means connected with said weight and accessible by the driver of the vehicle for shifting the weight, to move the pinion out of holding relation with said rack.

4. In an automotive vehicle, the combination of an accelerator rod having a rack, a weight, guide means for the weight, a pinion carried by said weight and normally arranged in mesh with said rack, a pawl for limiting rotary movement of the pinion in one direction, and a plurality of means connected with said weight and accessible by the driver of the vehicle for shifting the weight, to move the pinion out of holding relation with said rack.

5. In an automotive vehicle, the combination of an accelerator rod having a rack, a weight, guide means for the weight, a pinion carried by said weight and normally arranged in mesh with said rack, a pawl for limiting rotary movement of the pinion in one direction, means connected with said weight and accessible by the driver of the vehicle for shifting the weight, to move the pinion out of holding relation with said rack, and a spring co-operating with said weight and said guide means for pressing the pinion against said rack.

6. In an automotive vehicle, the combination of an accelerator rod having a rack, a weight, guide means for the weight, a pinion carried by said weight and normally arranged in mesh with said rack, a pawl for limiting rotary movement of the pinion in one direction, a plurality of means connected with said weight and accessible by the driver of the vehicle for shifting the weight, to move the pinion out of holding relation with said rack, and a spring co-operating with said weight and said guide means for pressing the pinion against said rack.

7. In an automotive vehicle, the combination of an accelerator rod having a rack, latch means including a pinion normally arranged in mesh with said rack, means for adjusting the rack longitudinally of the accelerator rod, and manually operable means for shifting the pinion into and out of engagement with the rack.

8. In an automotive vehicle, the combination of an accelerator rod having a rack, a pinion and means for moving the pinion into mesh with said rack, a pawl for limiting the rotary movement of the pinion in one direction, and means connected with said first-named means and accessible by the driver of the vehicle for moving the pinion out of holding relation with said rack.

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