T. B. PATCH.

CLUTCH RELEASING MECHANISM.

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1,254,349. Patented Jan. 22, 1918.

Fig. 1.

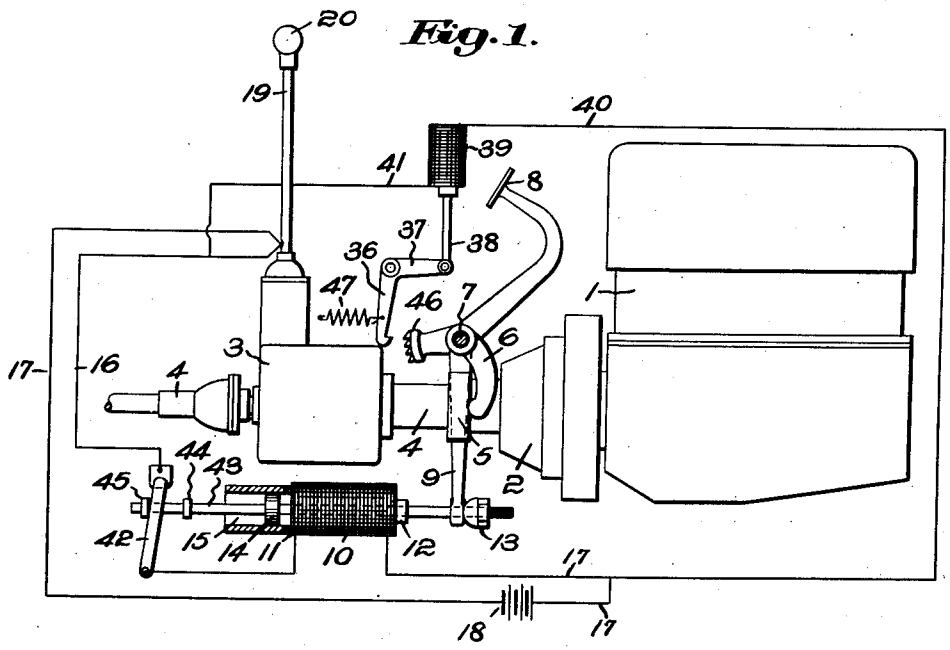
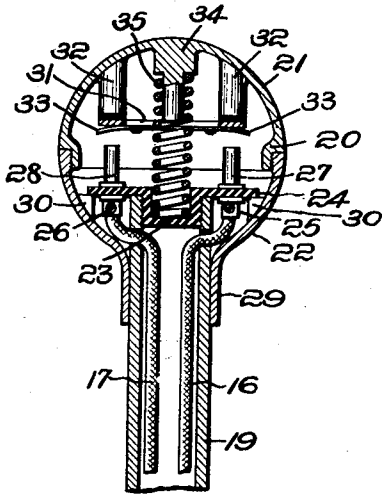


Fig. 2.



Inventor:
Theodore B. Patch,
by Emery Booth Janney & Varney
Attys.

UNITED STATES PATENT OFFICE.

THEODORE B. PATCH, OF BOSTON, MASSACHUSETTS.

CLUTCH-RELEASING MECHANISM.

1,254,349. Specification of Letters Patent. Patented Jan. 22, 1918.

Application filed October 18, 1916. Serial No. 126,405.

To all whom it may concern:

Be it known that I, THEODORE B. PATCH, a citizen of the United States, and a resident of Boston, county of Suffolk, and Commonwealth of Massachusetts, have invented an Improvement in Clutch-Releasing Mechanism, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

This invention relates to automobiles and particularly to the means for releasing the clutch on the transmission shaft from engagement with the driving shaft of the engine. My invention aims to provide improved means for quickly and easily releasing the clutch without the necessity for using the foot pedal as is now the common practice.

In the drawing of an illustrative embodiment of my invention described herein—

Figure 1 is a side elevation of so much of a conventional automobile engine and gear case, with my improved clutch releasing means incorporated therein, as is necessary for the present purpose, and

Fig. 2, a vertical, sectional detail on an enlarged scale of the shifting lever head equipped with means for operating the clutch releasing means.

Referring to Fig. 1, the engine 1, clutch 2, case 3, and gear, not shown, and transmission shaft 4, may be of any desired construction and are here shown only in elevation and of conventional form, as neither, *per se* forms any part of my invention.

The clutch 2, Fig. 1, may be provided with any convenient means as a collar 5, for engaging the actuating member, as a yoke 6, pivotally mounted at 7, on any suitable support, a foot pedal 8 being mounted also on the shaft 7, for use if desired.

At its lower end the pedal 8 carries a downwardly extended arm 9. This arm, shaft 7, and yoke 6, may be constructed and actuated by any convenient means and I have herein shown for that purpose a solenoid 10 of conventional construction, including a coil 11 and armature 12.

The armature 12 is extended to receive the arm 9 thereon and the position of the arm relative thereto may be adjusted by means of a nut 13, to the desired degree. The opposite end of the armature 12 may be provided with a head 14 received in a dash-pot 15 or other suitable cushioning means, to guard against too sudden a movement of the armature on the releasing of the clutch 2, which might produce an objectionable jar or shock.

The solenoid 10 is connected in the usual manner with an electric circuit 16, 17, including the battery 18, or other source of electricity.

Obviously the wires 16, 17, may be carried to any suitable switch therefor located at any convenient point, and herein I have shown, Figs. 1 and 2, a novel arrangement whereby the wires are carried to a hollow shifting lever 19, and within the same to its upper end or head to be referred to presently in detail.

By this means the switch or other means for closing the circuit and actuating the clutch can be controlled by the movement of the operator's hand as it grasps the lever head preparatory to shifting the gears. While any convenient construction may be used for effecting this result, I have conceived the novel means shown in detail in Fig. 2, wherein the upper end of the lever 19 is provided with a head 20 constructed of two parts 21, 22, threaded for engaging each other. The upper end of the lever itself is threaded internally to receive a cup-shaped insulating plate 23, as of fiber.

The flange 24 of the plate 23 carries on its lower face binding posts 25, 26, and on its upper face contacts 27, 28, connected with said posts. The wires 16, 17, are connected to the posts 25, 26. The lower half 22 of the head 20 is provided with a sleeve 29 which receives the upper end of the lever 19 and is movable thereon, the member 22 having lugs 30, 30, on its inner wall which engage the lower face of the flange 24 and thereby determine the movement of the head 20 in the upward direction.

The upper member 21 of the head 20 carries within it and suitably mounted, a contact plate 31, shown herein as mounted on posts 32, 32, and insulated therefrom.

To insure proper contact of this plate with the posts 27, 28, it may have movably secured to its lower face resilient members 33, 33, adapted to contact with the posts 27, 28, and yield as may be necessary therefor.

For normally holding the plate 31 out of

contact with the posts 27, 28, any convenient means may be used, but I have found the construction shown herein a satisfactory one. The member 21 carries a post 34 extended downwardly from its inner wall and a spring 35 is positioned thereon, one end being seated against the shoulder of the post while the opposite end is seated in the cup-shaped insulating plate 23.

When it is desired to release the clutch preparatory to shifting the gears, the operator grasps the head 20 with his hand, pressing downwardly thereon and closing the circuit 16, 17, causing the solenoid 10 to actuate the arm 9 and thereby to swing yoke 6 which, in turn, engages the collar 5, moving it to the left and throwing the pedal 8 forward, to disengage the clutch.

To economize in the use of the electric current required to hold the clutch 2 in the forward position, I have provided also the electrically actuated detent 36 which may be secured to any convenient part of the engine frame or chassis.

The detent is here shown as a bell crank lever, one arm 37 of which is connected by a link or other suitable member 38 with a second smaller, solenoid or magnet 39. This magnet is in the circuit 40, 41, also leading to the battery 18 and lever head 20, and it is energized simultaneously with the solenoid 10.

In the line 16 from the lever 19 to the solenoid 10 is a knife or other suitable switch 42. The armature 12 has a rod 43 extended from the head 14 thereof and movably connected as by insulating collars 44, 45, thereon with and adapted to actuate the switch 42.

When the circuit is closed by the operator pressing down on the lever head 20 as described, both the solenoid 10 and magnet 39 are energized. The armature 12 is drawn inwardly, releasing the clutch as described, and the detent 36 is thrown forward to engage a tooth on the sector 46 on the lower end of the clutch lever 8 which has been raised to hold the clutch in released position, and as the armature 12 moves the rod 43 thereon opens the switch 42 by contact of the collar 44 therewith, thus breaking that circuit.

The circuit 40, 41, however, is still closed and the detent 36 in engagement with the sector 46. This circuit remains closed until the operator, having shifted the gears, releases his pressure on the lever head 20, breaking the circuit 16, 17. The detent 36 is then withdrawn from engagement with the sector 46 by a spring 47 or any other suitable means, and the clutch returned to its normal position by the usual spring, not shown.

While I have herein shown and described a preferred embodiment of my invention, it is obvious that many modifications thereof may be made without departing from the spirit of the invention and within the scope of the appended claims.

Claims—

1. Clutch releasing means comprising a source of electricity, an electric circuit connected therewith, a clutch releasing member in the circuit and connected with the clutch, a gear shifting lever, a longitudinally movable head thereon and in the circuit, and means within the head for closing the circuit to actuate the releasing member.

2. Clutch releasing means comprising a source of electricity, an electric circuit connected therewith, a solenoid in the circuit and connected with the clutch, a gear shifting lever, a head movable thereon and means on the head and lever for closing the circuit to actuate the releasing member.

3. Clutch releasing means comprising a source of electricity, an electric circuit connected therewith, a clutch releasing member in the circuit, and connected with the clutch, a gear shifting lever and means thereon in the circuit and having sliding engagement with the lever for closing the circuit to actuate the releasing member.

4. Clutch releasing means comprising a source of electricity, an electric circuit connected therewith, a clutch releasing member in the circuit and connected with the clutch, a gear shifting lever, a head for said lever, and means on said head and in the circuit for closing the circuit to actuate the releasing member.

5. Clutch releasing means comprising a source of electricity, an electric circuit connected therewith, a clutch releasing member in the circuit and connected with the clutch, a shifting lever, contacts thereon connected with the circuit, and a hollow head for the lever having contacts thereon to cooperate with the lever contacts to close the circuit and actuate the releasing member.

6. Clutch releasing means comprising a source of electricity, an electric circuit connected therewith, a clutch releasing member in the circuit and connected with the clutch, a shifting lever, contacts thereon in said electric circuit, a movable head for the lever having contacts to coöperate with the first named contacts to close the circuit and actuate the releasing member, and means on the head for retaining the pairs of contacts normally out of engagement.

7. Clutch releasing means comprising a source of electricity, an electric circuit connected therewith, a clutch releasing member with a pedal thereon in the circuit and connected with the clutch, a freely, universally movable gear shifting lever, and means thereon for closing the circuit to actuate the releasing member.

8. Clutch releasing means comprising a source of electricity, an electric circuit con-

nected therewith, a clutch releasing member in the circuit and connected with the clutch, a clutch holding member also in the circuit, and means for closing the circuit to actuate the clutch releasing member.

9. Clutch releasing means comprising a source of electricity, an electric circuit connected therewith, a clutch releasing member in the circuit and connected with the clutch, a clutch holding device also in the circuit, a gear shifting lever, a head for said lever, and means on said head and in the circuit for closing the circuit to actuate the releasing member and the clutch holding device.

10. Clutch releasing means comprising a source of electricity, an electric circuit connected therewith, a clutch releasing member in the circuit and connected with the clutch, a circuit breaking device in the circuit and actuated by the clutch releasing member, a gear shifting lever, a head for said lever, and means on said head and in the circuit for closing the circuit to actuate the releasing member and the circuit breaking member.

In testimony whereof, I have signed my name to this specification.

THEODORE B. PATCH.