Dec. 6, 1927. 1,651,377

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COIN CONTROLLED LOCK FOR ELECTRIC SWITCHES OF MOTOR VEHICLES

Filed Sept. 20, 1926 2 Sheets-Sheet 1

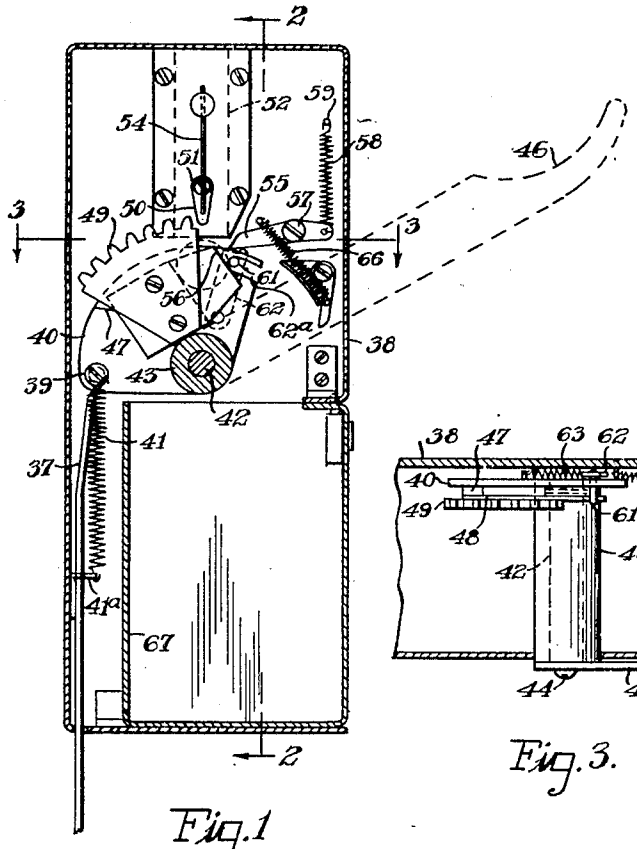

Fig. 1

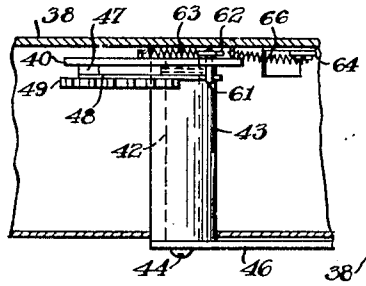

Fig. 3.

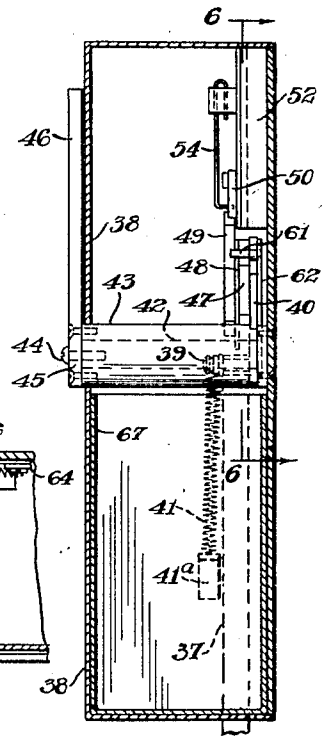

Fig. 2.

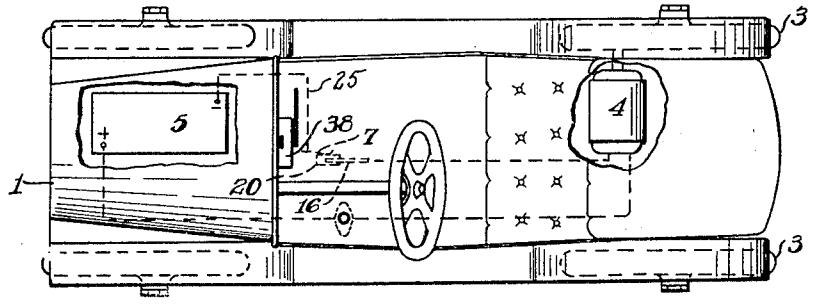

Fig. 4.

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COIN CONTROLLED LOCK FOR ELECTRIC SWITCHES OF MOTOR VEHICLES

Filed Sept. 20, 1926 2 Sheets-Sheet 2

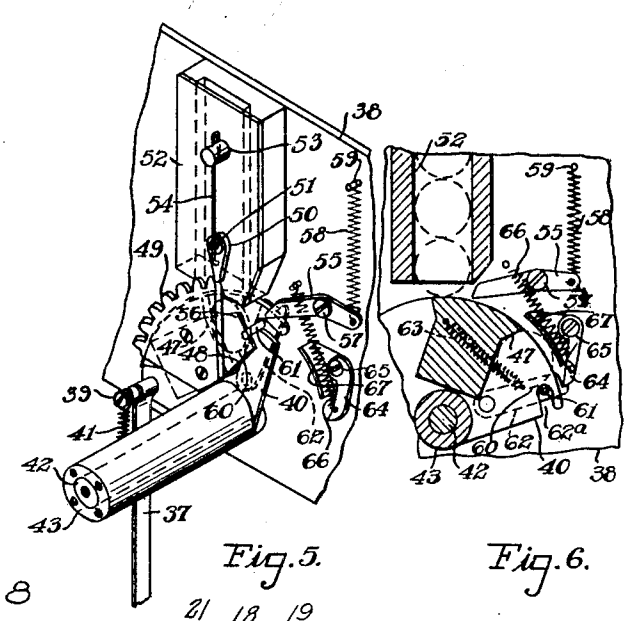

Fig. 5.

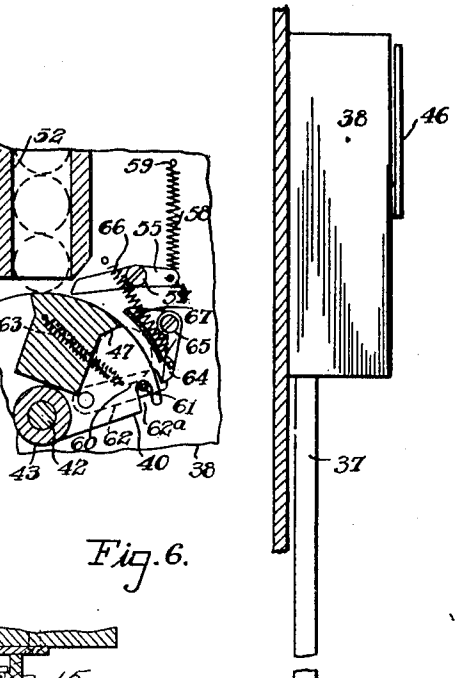

Fig. 6.

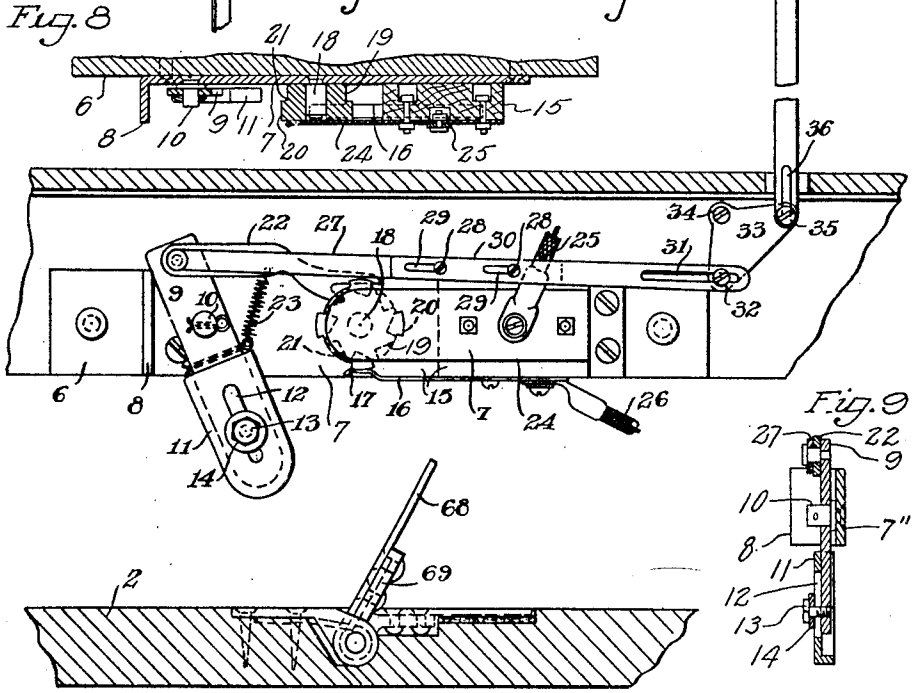

Fig. 8

Fig. 9

Fig. 7.

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Patented Dec. 6, 1927. 1,651,377

UNITED STATES PATENT OFFICE.

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COIN-CONTROLLED LOCK FOR ELECTRIC SWITCHES OF MOTOR VEHICLES.

Application filed September 20, 1926. Serial No. 136,472.

This invention relates to new and useful improvements in coin-controlled locks for the electric switches of motor vehicles.

It is the principal object of my invention to provide for motor driven vehicles, and more particularly the small storage-battery propelled cars of amusement parks, a coin-controlled device for closing the circuit including the electric motor. In pleasure parks especially, a coin-controlled car will promote economy and convenience of operation, and will prevent its use by unauthorized persons.

It is another object of my invention to provide for the unlocking of the motor switch mechanism of the car, a simple and efficient lock in which a coin, such as a nickel, forms an arched bridge over which the locking pawl will ride free of the switch arm when the coin is inserted in the coin chute.

Other important and incidental objects will be brought out in the following specification and particularly set forth in the subjoined claims.

In the accompanying drawings illustrating my invention, Figure 1 is a front view of my coin-controlled lock with the case in section. Figure 2 is a sectional view taken on the line 2—2 of Figure 1. Figure 3 is a sectional view taken on the line 3—3 of Figure 1. Figure 4 is a plan view of a small storage-battery driven car, showing the coin box located on the dash. Figure 5 is a perspective view of the lock mechanism. Figure 6 is a sectional view thereof taken on the line 6—6 of Figure 2. Figure 7 is a side view showing the relation of the coin-operated switch to the tripping device on the track below the car. Figure 8 is a transverse sectional view taken through the longitudinal plate supporting member and connected parts. And Figure 9 is a sectional view taken through the pawl actuating lever.

Referring to the accompanying drawings for a detailed description of my invention, the numeral 1 designates a motor vehicle such as a small storage-battery driven car, which is free to travel upon a track 2. Through a suitable connection with the rear wheels 3, 3, the car 1 is adapted to be driven by an electric motor 4 which is included in an electric circuit with a storage battery 5.

For the purpose of closing the motor circuit to start the motor 4, I have provided a coin-controlled lock to release the starting device illustrated in my pending application, Serial No. 56,222, although I do not wish to be limited to such starting means. Briefly, the starting device described in said application consists of the following parts: Referring to Figure 7, the numeral 6 designates a longitudinal member which is firmly secured to the car 1. Attached to the member 6 is a metal plate 7 having a flanged end 8 which, at the top and bottom, acts as a stop for a pawl-actuating lever 9 pivoted to the plate near its flanged end 8 by a pin 10.

Secured to the lower end of the lever 9 is an extension 11 formed with a lengthwise slot 12 through which there passes into a tapped hole in the lever a bolt 13 that carries between its head and the extension 11 a washer 14 which is wider than the slot 12. Secured to the plate 7 near its front end is a wood block 15 to the bottom of which there is secured an elongated spring contact 16 which is curved at its free end to form a raised contact portion 17. Immediately above the latter there is rotatably secured by a pin 18 to the plate 7, a segmental ratchet disc 19. Formed on the periphery of the latter adjacent its outer face is a number of segments 20, and on its periphery adjacent its inner face there are formed ratchet teeth 21 which do not extend beyond the bases of its segmental portions.

Adapted to engage the ratchet teeth 21 is a pawl 22 which is pivotally secured at its rear end to the upper end of the lever 9. Connected between the middle portion of the latter and the pawl is a helical spring 23 to normally hold the pawl in engagement with the ratchet teeth and to maintain the lever 9 in the inclined position shown in Figure 7, with its rear end in engagement with the upper portion of the flanged stop 8 on the plate 7.

For the purpose of completing the motor circuit through the disc 19 of the spring contact 16 when a segment 20 on the former is in engagement with the curved end 17 of the latter, there is provided a spring plate 24 which is secured at its rear end to the block 15. Secured to the spring plate 24 is a wire 25 which leads to the negative terminal of the storage battery 5, while a wire 26 secured to the spring contact plate 16 leads to the motor 4.

The coin-controlled means for closing and opening the motor circuit through the seg-

mental disc 19 will now be described. Pivotally secured to the upper end of the lever 9 is a link 27, to the outer end of which there are attached screws 28, 28 that freely project through slots 29, 29 respectively in the inner end of a link 30. The latter is formed at its outer end with a slot 31 to receive a screw 32 at one end of a bell crank plate 33 which is pivotally secured by a screw 34 to the car. The free end of this plate 33 carries a screw 35 which projects through a slot 36 in the lower end of a vertical member 37. The latter projects at its upper portion into a rectangular housing 38 secured to the dash of the car. By a screw 39 the upper end of the member 37 is connected, within the housing 38, to the lower left hand corner portion of a segmental back plate 40. A helical spring 41 is connected between the screw 39 and a stationary pin 41^a within the housing to normally maintain the member 37 in the position shown in Figure 5.

Secured within the middle portion of the housing 38 is an inner shaft 42 upon which there is rotatably mounted a sleeve 43 that is held on the shaft by a screw 44 projecting through the hub portion 45 of an operating lever 46. To the inner end of the sleeve 43 the back plate 40 is secured. Also attached to this back plate is a cam plate 47, while outside the latter there is carried by said back plate a retaining plate 48. Secured to the back plate 40 beyond the retaining plate 48 is a toothed quadrant 49. The teeth of this quadrant are adapted to be engaged by a conventional full stroke pawl 50 pivotally secured by a screw 51 to the outside face of a coin chute 52 attached to the inner wall of the housing 38. (See Figures 1, 2 and 5.) Secured to a projection 53 above the pawl 50 is the hook end of a spring wire 54 which has a right angled lower end to bear against the pawl 50 to hold it in engagement with the teeth of the quadrant 49 when the latter is moved under it by the lever 46.

The sleeve 43 is normally held against rotation by the engagement of a pawl 55 with a corner 56 of the retaining plate 48. This pawl 55, which is pivotally secured by a screw 57 to the housing 38, is held in the path of movement of the retaining plate 48 by a spring 58 secured between its rear end and a pin 59 attached to the housing wall. (See Figure 1.) However, when a coin 60 is dropped in the chute 52, it will lodge between the retaining plate 48 and the back plate 40, as shown in Figures 1 and 5, to form an arched bridge over which the pawl 55 will ride free of engagement with the retaining plate to permit the lever 46 to be turned a full stroke. The back plate 40 will be rotated by said lever to turn, through the link and lever connections hereinbefore described, the segmental disc 19 sufficiently to bring one of its segments 20 in engagement with the spring contact 16 to close the electric circuit through the motor 4 to start the car.

When the coin 60 descends to its before mentioned position between the retaining plate 48 and the back plate 40, it will be wedged between the cam plate 47 and a pin 61 which is attached to an arm 62 pivotally secured to the rear face of the back plate 40 and held in the back of a slot 62^a in said plate by a spring 63. As the back plate 40 moves downwardly to the position shown in Figure 6, the upper end of the arm 62, which is notched, will be engaged by a pawl 64 pivotally secured by a screw 65 to the housing wall and held in the path of the downward movement of said arm 62 by a spring 66. Now, when the lever 46 is returned to its normal position by the spring 41, the pin 61 will be held in a stationary position by the pawl 64 a sufficient length of time to permit the coin 60 to drop into a drawer 67 below. And as the back plate 40 continues its return movement, the arm 62 will come to such an angle with relation to the pawl 64 that the spring 63 will return it to its normal position, where the pin 61 will be at the rear end of the slot 62^a in said back plate.

In front of the pawl 64 I have provided a curved guard 67 for the coin 60 to prevent it from being thrown out of the slot which receives it by a too sudden movement of the operating lever 46. (See Figure 6).

When the lever 46 is returned to its normal position by the spring 41, the segment 20 on the disc 19 will still remain in engagement with the spring contact 16 to hold the motor circuit closed, since a reverse movement imparted to the link 30 by the downwardly traveling member 37 will move the pawl 22 away from the segmental ratchet disc 19.

For the purpose of automatically opening the motor circuit, I have provided the following means, although any other desired means may be employed for this purpose if desired. Referring to Figure 7, there is secured to the track 2 a hinged trip plate 68 which is held in the path of the extension 11 on the lever 9 by a spring 69. When the extension 11 on the lever 9 engages this trip plate, it will cause the pawl 22 to turn the disc 16 a sufficient distance to move the segment 20 out of engagement with the spring contact 16 to open the motor circuit to stop the car. This tripped movement of the lever 9 will not disturb the coin-controlled locking means above described, since the slot 31 in the link 30 permits the latter to be moved rearwardly by said lever without actuating the bell crank plate 33.

The connection between the links 27 and

30 is made adjustable by the screws 28 and slots 29, as is also the connection between the vertical member 37 and the plate 33, by the screw 35 and slot 36. (See Figure 7.)

I do not wish to be limited to the details of construction and arrangement herein shown and described, and any changes or modifications may be made therein within the scope of the subjoined claims.

Having described my invention, I claim:

1. In a motor vehicle, an electric motor, a switch for starting said motor, an electric circuit including said switch and motor, a switch actuator, a locking pawl adapted to hold the switch actuator against movement, and means for holding a coin for the locking pawl to ride over its curved periphery free of said actuator for the purpose specified.

2. In a motor vehicle, an electric motor, a switch for starting said motor, an electric circuit including said switch and motor, a switch actuator, and a locking pawl adapted to hold the switch actuator against movement until a coin is inserted in front of the pawl, whereupon the latter may ride over the curved periphery of the coin free of said actuator for the purpose specified.

3. A device of the type described, comprising a movable member, a pawl for locking said member against movement, and means to receive a coin in front of said pawl to permit the latter to ride over its curved periphery free from engagement with the movable member for the purpose specified.

4. A device of the type described, comprising a movable member, a pawl for locking said member against movement, means to receive a coin in front of said pawl to permit the latter to ride over it free from engagement with the movable member, and means for releasing said coin after the pawl has passed over it.

5. A device of the type described, comprising a rotatable member, means for turning the latter, a backing plate carried by said rotatable member, a retaining plate also carried by said member, and a pawl adapted to engage said retaining plate until a coin inserted between it and the backing plate permits the pawl to ride over its top curved surface free of said retaining plate.

6. A device of the type described, comprising a rotatable member, means for turning the latter, a backing plate carried by said rotatable member, a retaining plate also carried by said member, a pawl adapted to engage the retaining plate, and means to hold a coin received between the backing plate and the retaining plate in a position to permit the pawl to ride over it free of the retaining plate and to release said coin after the pawl has passed over it.

7. A device of the type described, comprising a rotatable member, means for turning the latter, a supporting plate secured to said member, a retaining plate secured to, and spaced from, the supporting plate, an arm pivotally secured to the supporting plate, a pin carried by said arm, an abutment in front of said pin, resilient means attached to said arm to draw the pin against a coin inserted between the supporting and retaining plates, to press it against said abutment, a pawl adapted to engage said retaining plate until a coin is inserted between the pin and the abutment, whereupon the pawl will ride over the coin free of the retaining plate when the rotatable member is turned toward the pawl, and a second pawl adapted to engage said arm at the end of said movement of the rotatable member to hold the pin stationary to release the coin upon the reverse movement of said rotatable member.

8. A device of the type described, comprising a shaft, a sleeve free to turn on said shaft, a lever secured to said sleeve to turn it, a supporting plate secured to the sleeve, a retaining plate secured to, and spaced from, the supporting plate, an arm having a notched outer end pivotally secured to the supporting plate, said supporting plate formed with a slot, a pin carried by said arm adapted to enter said slot, an abutment in front of said pin, a spring attached to said arm to draw the pin against a coin inserted between the supporting plate and the retaining plate, to press it against said abutment, a pawl adapted to engage said retaining plate until a coin is inserted between the pin and the abutment, whereupon the pawl will ride over the coin free of the retaining plate when the rotatable member is turned toward the pawl, and a second pawl adapted to engage the notched end of said arm at the end of said movement of the rotatable member to hold the pin in a stationary position to release the coin upon the reverse movement of said rotatable member.

In witness whereof I have hereunto set my hand this 17th day of September, 1926.

LEVITT LUZERN CUSTER.