Sept. 29, 1931. H. E. NORVIEL 1,825,413

ANTITHEFT DEVICE

Filed Jan. 6, 1928 2 Sheets-Sheet 1

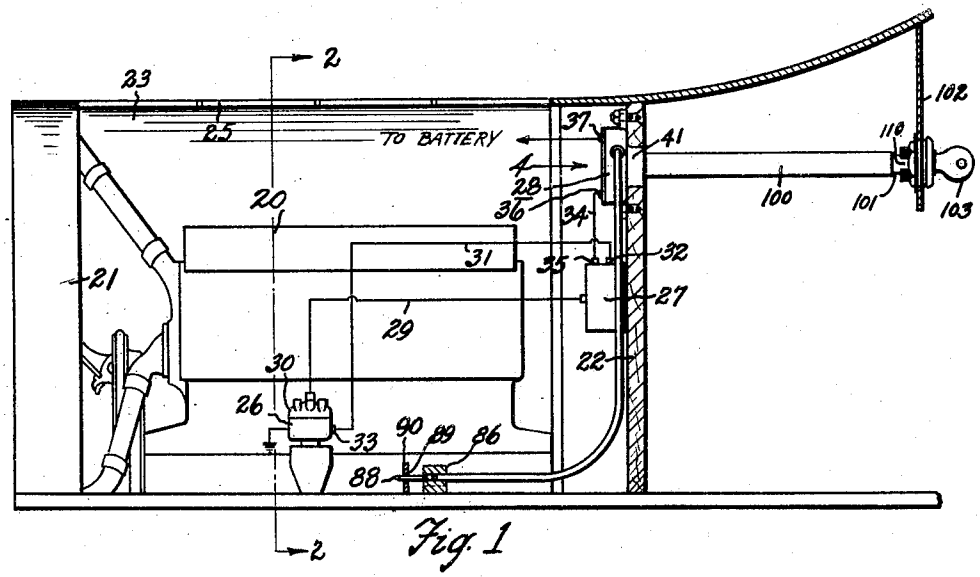


Fig. 1

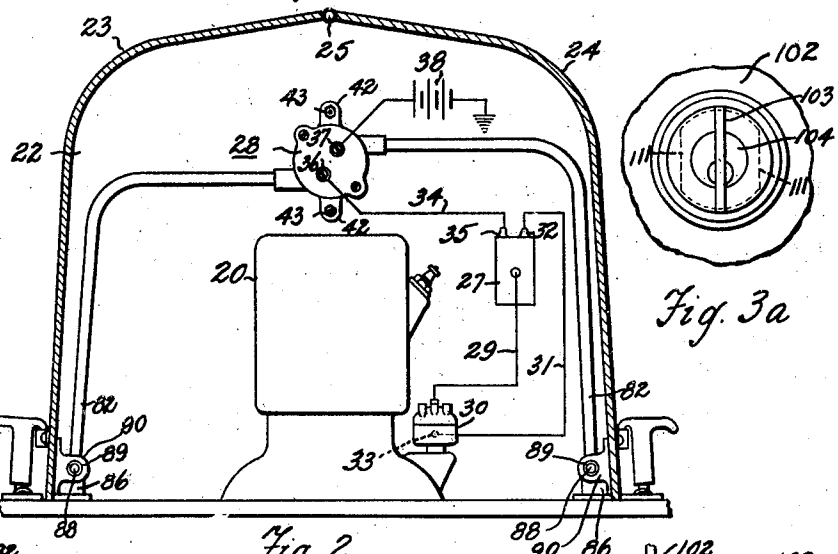


Fig. 2

Fig. 3a

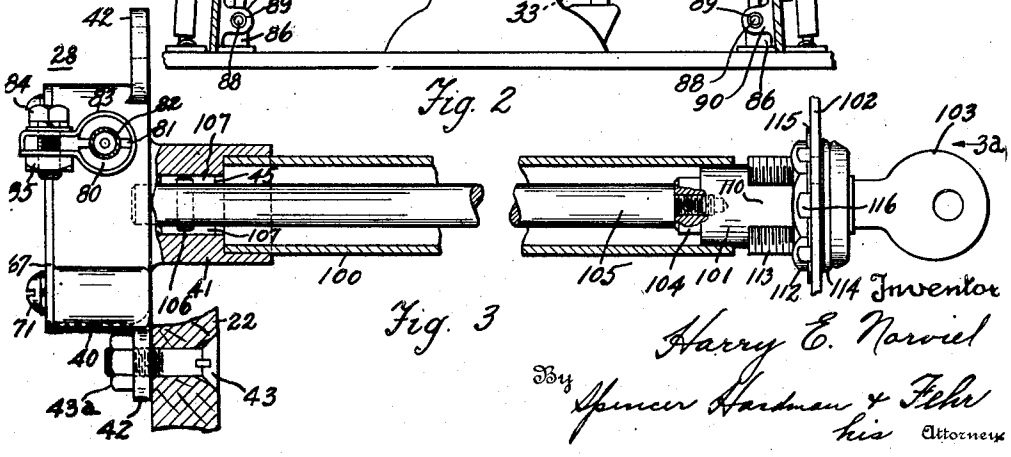


Fig. 3

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ANTITHEFT DEVICE

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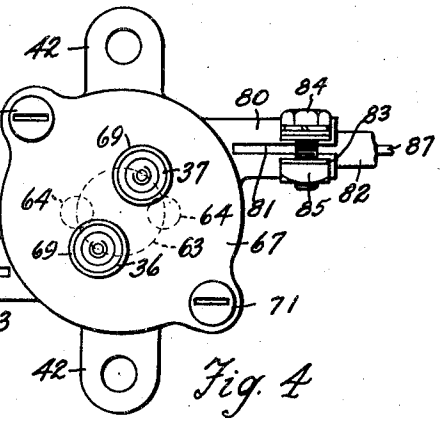


Fig. 4

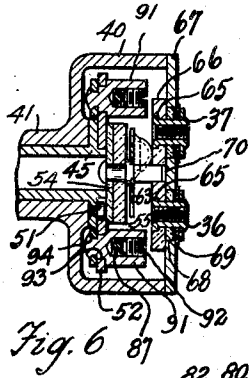


Fig. 6

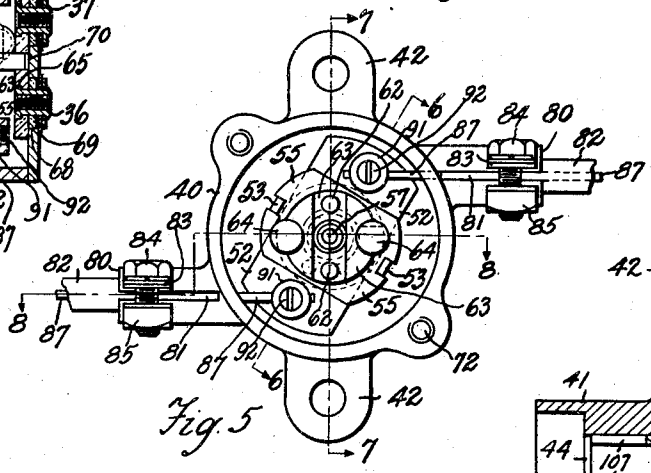


Fig. 5

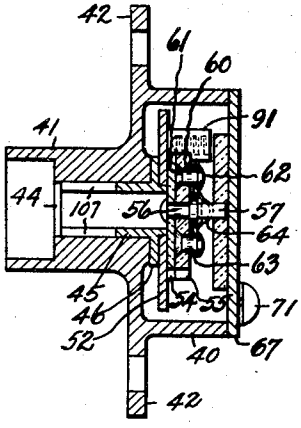


Fig. 7

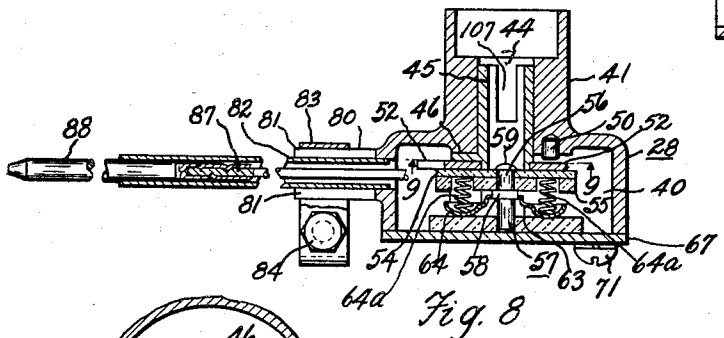


Fig. 8

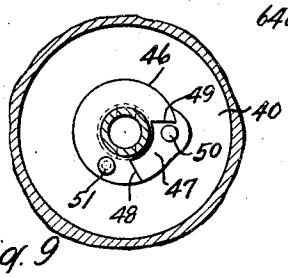


Fig. 9

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Patented Sept. 29, 1931 1,825,413

UNITED STATES PATENT OFFICE

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ANTITHEFT DEVICE

Application filed January 6, 1928. Serial No. 244,991.

This invention relates to devices for preventing the unauthorized use or theft of an automobile by a key operated device which locks in open position an ignition switch located under the hood and locks the hood of the engine to the side frames so that it cannot be raised to render the ignition apparatus and switch accessible.

One object of the invention is to provide certain improvements which will facilitate making repairs and replacements of different parts of such devices, without requiring the disassembly of parts not needing attention.

Further objects and advantages of the present invention will be apparent from the following description, reference being had to the accompanying drawings, wherein a preferred form of embodiment of the present invention is clearly shown.

In the drawings:

Fig. 1 is a fragmentary view, partly in longitudinal section, of an automobile showing the engine within the hood and the key operated mechanism for controlling the ignition switch and for locking the hood to the side frames of the automobile.

Fig. 2 is a sectional view on the line 2—2 of Fig. 1 but drawn to a slightly larger scale than Fig. 1.

Fig. 3 is a view on a still larger scale of the lock, electric switch and shaft for connecting the lock with the switch, the tube which encloses the shaft being shown in section.

Fig. 3*a* is a fragmentary view looking in the direction of arrow 3*a* in Fig. 3.

Fig. 4 is a view on the same scale as Fig. 3 and shows an elevation of the switch as viewed in a direction of the arrow 4 in Fig. 1.

Fig. 5 is a view similar to Fig. 4 with the cover of the switch removed.

Figs. 6, 7 and 8 are sectional views taken respectively on the lines 6—6, 7—7 and 8—8 of Fig. 5.

Fig. 9 is a sectional view on the line 9—9 of Fig. 8.

Referring to Figs. 1 and 2, 20 designates an internal combustion engine located between a radiator 21 and a partition or dashboard 22 which together with hood parts 23 and 24, hinged at 25, provide an enclosure for the engine, an ignition timer 26 connected therewith, an ignition coil 27, and an ignition switch 28. A wire 29 connects the high tension winding of the coil 27 with a center terminal of a distributor cap 30. A wire 31 connects a primary terminal 32 of the coil 27 with the insulated terminal 33 of the timer 26. A wire 34 connects the terminal 35 of the coil 27 with a terminal 36 of the switch 28. The other switch terminal 37 is connected with a battery or other current source 38 shown diagrammatically in Fig. 2. By mechanism within the switch case 28, the terminals 36 and 37 are bridged in order to connect the battery 38 with the coil 27 and timer 30.

The switch 28 comprises a cup-shaped case 40 having a tubular shank 41 which extends through a suitable opening in the partition wall 22. The case 40 is provided with apertured ears 42 for receiving bolts 43 which attach the case to the wall 22 as shown in Fig. 2. The tubular shank 41 provides a bearing 44 for a switch operating shaft 45 which is provided with a flange 46 notched at 47 to provide stops 48 and 49 which cooperate with a pin 50 attached to the case 40 in order to limit rotation of the shaft 45. The flange 46 carries a pin or stud 51 which is received by a suitable notch in a plate 52 (see Fig. 6) mounted upon the shaft 45 and drivingly connected therewith by the pin 51. The plate 52 is provided with lugs 53 which are received by suitable notches in a plate 54 in order to support the plate 54 and drivingly connect it with the plate 52. The plate 54 is connected with a non-conducting plate 55 by the shank 56 of a stud 57. The stud 57 is coaxial with the shaft 45 and extends through suitable holes in the plates 55 and 54, these plates being located between a shoulder 58 of the stud 57 and the riveted over end 59 of the stud. The plate 55 is also drivingly connected with the plate 52 by providing it with notches for receiving the lugs 53.

The plate 55 carries rivets 60 having flat heads 61 received by countersunk apertures

in the plate 55 and bearing against the plate 54 in order to limit axial movement of the rivets 60 relative to the plate 55. The rivets 60 have round heads 62 which are spaced from the plate 55. The shanks of the rivets 60 pass through suitable holes in a metal disc 63 which is formed of sheet metal thinner than the space between the head 62 of each rivet 60 and the plate 55. Thus, the metal disc 63 is drivingly connected with the plate 55 and hence with the shaft 45 and is free to move axially of the shaft to a limited extent. The disc 63 is provided with a central aperture to provide clearance for the shoulder 58 of the stud 57. The disc 63 is provided with spherical projections 64 urged by springs 64*a* into engagement with stationary switch contacts 65 (see Fig. 6) provided by the switch terminals 36 and 37 which are preferably in the form of tubular rivets for securing a non-conducting block 66 to a metal cover 67. Screws 71 engaging tapped holes 72 in the case 40 secure the cover 67 to the case. Each of the terminal members 36 and 37 is threaded internally for receiving a wire securing screw and is insulated from the cover 67 by insulating washers 68 and 69. The block 66 is provided with a hole 70 which is in alignment with the shaft 45 when the cover 67 is attached to the case 40. The hole 70 in the block 66 receives the stud 57 and therefore the plates 54 and 55 are held in alignment with the shaft 45.

The case 40 is provided with tubular extensions 80 each divided by longitudinal slots 81 to provide portions which may be clamped around one end of a Bowden wire tube 82. A clamping band 83 cooperates with a bolt 84 and a nut 85 to squeeze the two parts of the tubular extension 80 against the Bowden wire tube 82. The other ends of the Bowden wire tube 82 are attached to blocks 86 which are fastened to the automobile frame inside of the hood. Each tube 82 encloses a Bowden wire 87 having one end attached to a locking bolt 88 adapted to pass through a hole 89 in a lug 90 which is attached to the hood on the inside thereof. The Bowden wires 87 extend through the tubular extensions 80 and within the case 40 and each wire 87 passes through a stud 91 which is pivotally supported by the plate 52. Each wire 87 is clamped to the stud 91 by a set screw 92 which is threaded into a tapped hole in the stud and which engages that portion of the wire which extends across the threaded hole. Each stud 91 has a portion 93 reduced in diameter to form a journal within the plate 52 for the stud 91. The portion 93 is slightly greater in width than the thickness of the plate 52. Each stud is retained by riveting it to a washer 94.

A tube 100 extends from the tubular shank 41 of the switch case 40 and receives one end of a key barrel 101 which is attached in any suitable manner to a supporting plate 102 which may be the instrument board of the automobile. When the proper key 103 is inserted in the lock, a lock shaft 104 may be rotated by the key. Rotary motion is transmitted from the lock shaft 104 to the switch shaft 45 by a rod 105 attached at one end to the shaft 104 and provided at its other end with a pin 106 which extends into longitudinal slots 107 provided by the shaft 45. When the switch contact member 63 is in the position shown in the drawings, the ignition circuit will be interrupted and the locking bolts 88 will be extended through the lugs 90 which are attached to the hood members 23 and 24. In this way the ignition circuit is rendered inoperative and the ignition apparatus is locked within a case provided by the hood members 23 and 24 so that the ignition apparatus cannot be tampered with or the switch terminals 36 and 37 connected outside of the switch. When the switch contact members 64 are turned so as to engage the inner ends of the terminal rivets 36 and 37, the locking bolts 88 will be withdrawn from the lugs 90 and the ignition circuit will be closed so that the engine may be supplied with ignition.

The device is constructed so that either the lock or the switch may be removed from its support without disturbing the other, and so that parts of the switch may be removed from the switch case while the latter remains attached to its support. The Bowden wires and Bowden wire tubes may be removed while the switch case remains attached to its support.

The lock barrel 101, which is provided with flats 110, is received by a hole in the metal instrument panel 102 having corresponding flats 111. A nut 112 cooperates with the interrupted screw-threaded portions 113 of the barrel 101 to clamp the panel 102 between the nut 112 and a shoulder 114 of the barrel 101. To make difficult the removal of the barrel 101, there is provided a washer 115 having a central hole the same shape as the hole provided in the panel for the lock barrel, and having ears 116. The washer is located between the nut 112 and the panel 102 and, after the nut 112 is tightened, the ears 116 are bent against the flats of the nut to prevent turning the nut. It would require a thief with special tools a considerable period of time to remove the lock barrel so that the switch could be manipulated. After the nut has been removed the lock barrel and connecting shaft 105 can be removed by passing them through the panel 102 while the switch 28 remains assembled with the dash 22. The tube 100 is of hard metal and is loosely mounted upon the shank 41 of the switch case and upon the lock barrel 101. The tube 100 prevents the use of a pipe wrench upon the shaft 105 to turn it.

The switch 28 may be removed from the dash 22 provided the switch is unlocked so that the hood may be raised. The carriage bolts 43 which are used to attach the case 40 to the dash 22 have their threaded ends located on the engine side of the dash when they cooperate with nuts 43*a* to secure the case to the dash, and have their heads flush with the driver's side of the dash so that the bolts cannot be turned to permit removal of the switch without raising the hood. After the nuts 43*a* have been removed, the switch 28 may be removed from the dash without disturbing the lock.

After removing the switch case cover 67, loosening the screws 92 which attach the Bowden wires 87 to the plate 52, and loosening the nuts 85, the wires 87 and the tube 82 may be removed without removing the switch case 40 from the dash 22.

While tubes 82 remain attached to the switch case 40, and after removing the cover 67, the contact 63 may be removed from the supporting and driving plate 55. This may be done while the case 40 remains attached to the dash 22. After loosening screws 92 and withdrawing the Bowden wires 87 from the studs 91, all of the movable parts of the switch and Bowden wire operating means may be removed from the case.

By providing for the removability of certain parts without disturbing other parts, the maintenance of the device in service is greatly facilitated.

While the form of embodiment of the present invention as herein disclosed, constitutes a preferred form, it is to be understood that other forms might be adopted, all coming within the scope of the claims which follow.

What is claimed is as follows:

1. An anti-theft device for automotive vehicles comprising, in combination, a case, a shaft rotatably supported by the case, a plate supported by the shaft and connected therewith by an axially engageable coupling, a switch movable contact supported by the plate and connected therewith by an axially engageable coupling, a cover for the case carrying stationary contacts engaged by the movable contact, means for securing the cover to the case, and thereby preventing the disconnection of the shaft, plate and movable contact, and means operated by the plate for preventing the raising of the hood of the vehicle.

2. An anti-theft device for automotive vehicles according to claim 1 in which the hood is locked to the vehicle frame by means operated by Bowden wires which are attached to the plate of the switch at parts thereof eccentric to its axis.

3. An anti-theft device for automotive vehicles comprising, in combination, a cup-shaped case adapted to be attached to a support enclosed by the hood of the vehicle and having tubular extensions from opposite sides thereof, Bowden wire tubes detachably clamped to said tubular extensions, Bowden wires passing through said tubes, hood locking means operated by movement of the wires, a plate rotatably supported within the case, rotatable studs pivotally attached to the plate eccentric to its axis, means for attaching the wires to the studs, and means for turning the plate.

4. An anti-theft device for automotive vehicles comprising, in combination, a cup-shaped case attached to a support enclosed by the hood of the vehicle and having Bowden wire tubes detachably clamped to said case, Bowden wires passing through said tubes and operated by movement of a plate rotatably supported within the case, studs pivotally attached to the plate, means for attaching the wires to the studs, and means for turning the plate.

5. The combination with an automobile of a switch casing mounted beneath the hood, a lock secured in position with a keyway exposed at the front of the instrument board, a shaft fixed to said lock and extending into said switch casing, a tube connecting said switch casing and said lock, a sleeve shaft journalled within the shaft housing and drivingly connected with said shaft, said sleeve carrying a plate rotatable therewith and providing a pair of swivel posts, a pair of fixed contacts carried by a switch back, a contact plate drivingly supported by said sleeve in yielding engagement with said contacts and actuating wires secured to each of said swivel posts.

6. The combination with an automobile of a switch casing mounted beneath the hood, a lock secured in position with a keyway exposed at the front of the instrument board, a shaft fixed to said lock and extending into said switch casing, a tube connecting said switch casing and said lock, a flanged sleeve in said casing supporting the shaft and drivingly connected therewith, a pair of actuating plates supported for actuation for said sleeve, one of said actuating plates provided with swivel posts each connected with a Bowden wire for actuation of an element remote from said switch case, another of said actuating plates supporting a movable contact, and a switch back closing said casing providing fixed contacts for engagement with said movable member.

In testimony whereof I hereto affix my signature.

HARRY E. NORVIEL.