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A. GREENSPAN

3,004,170

AUTOMOBILE THEFT PROTECTION DEVICE

Filed Dec. 24, 1958

2 Sheets-Sheet 1

FIG. 1.

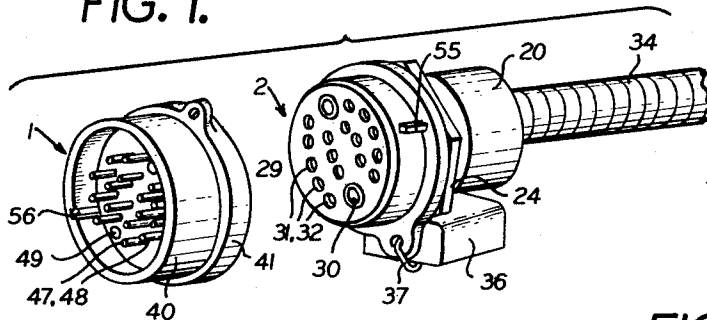


FIG. 2.

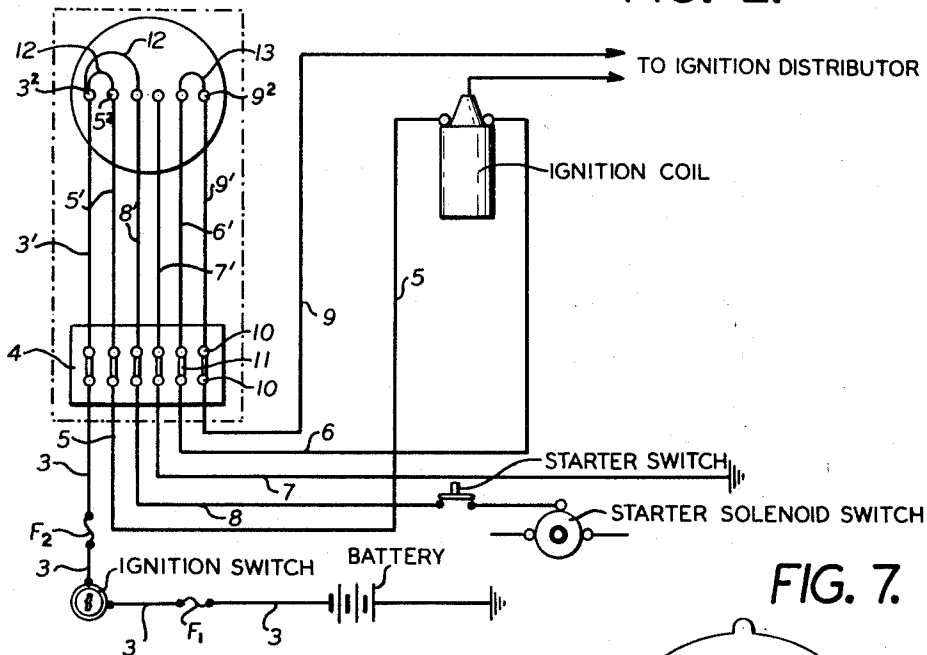


FIG. 7.

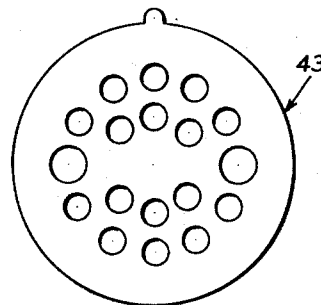
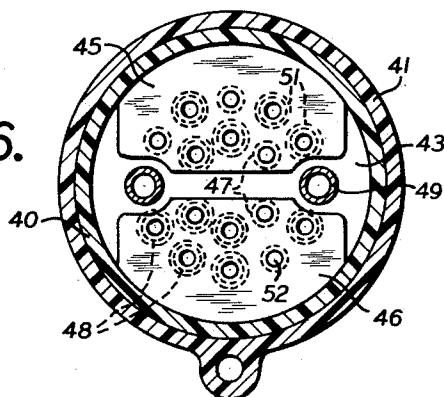


FIG. 6.



INVENTOR

BY

ATTORNEY



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## AUTOMOBILE THEFT PROTECTION DEVICE

Arnold Greenspan, 352 Seymour Ave., Newark, N.J.

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7 Claims. (Cl. 307-10)

This invention relates to theft protection devices for automobiles.

Automobiles as presently used are generally provided with a so-called ignition key or switch requiring the use of the appropriate key for energizing the starter and ignition systems. The protection afforded against theft is, however, very poor since the keys are easily duplicated and it requires no special skill to start the car by the use of a jump wire, by-passing the ignition switch.

The general object of the present invention is to provide a substitute or auxiliary theft protection device capable of economical installation in existing vehicles of a wide variety of makes and models and which affords theft protection under all ordinary circumstances.

With this and other objects which will appear in the following full description in mind, a theft protection device embodying the invention in a preferred form will now first be described with reference to the accompanying drawing, and the features forming the invention will then be pointed out in the appended claims.

In the drawing:

FIG. 1 is an exploded isometric showing a theft protection device;

FIG. 2 is a circuit diagram showing schematically the installation of a device of FIG. 1 in an automobile wiring system;

FIG. 3 is an enlarged sectional view of the device of FIG. 1, on the line 3-3 of FIG. 6;

FIG. 3A is a further detail of FIG. 3;

FIG. 4 is a view on line 4-4 of FIG. 2 of a connection box used in the system of the invention;

FIG. 5 is a view showing an ignition coil protector element used in the system of the invention;

FIG. 6 is a section on the line 6-6 of FIG. 3; and

FIG. 7 illustrates a perforated insulating disc used in the device of FIG. 1.

In the theft protection system of the invention, the connections to various essential elements of the car electrical system, such as the ignition coil, the distributor and the starter, are carried through a connection device comprising cooperating elements for establishing the required connections, one of which elements preferably takes the form of a removable plug. The number of arrangements of the connections and cooperating elements is such as to prevent unauthorized use of the vehicle without the removable element or a complete knowledge and working diagram of the system which is not available to the prospective thief under any ordinary conditions.

In the preferred system, a connection element in the form of a plug member indicated generally at 1 and socket member indicated generally at 2 is utilized. The arrangement of the plug and socket elements and the interconnections between these elements and connection to the wiring system of the car can be varied, but for clarity of description one method of connecting the elements is shown schematically in FIG. 2 and will be described before describing the details of structure of the theft protection device.

FIG. 2 indicates the relevant elements of a typical automobile electrical system, it being understood that any other usual elements may be involved but are not indicated as they are not necessary to an understanding of the present invention.

The car battery has one terminal grounded to the car frame as usual and the other terminal is connected

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through a fuse  $F_1$  to the ignition switch as usual. The hot wire 3 leads from the other terminal of the battery through fuse  $F_1$ , the ignition switch and fuse  $F_2$  to a connection box 4. Lines 5 and 6 from the ignition coil also lead into the box 4 as does a ground connection 7 and a connection 8 leading through the starter switch 2 to the starter solenoid switch. A connection 9 from the ignition distributor completes the connections into the box 4 in the embodiment illustrated. The connections 3 and 5-9 are preferably bunched together and protected by BX or other sheathing as they approach the connection box 4. The connection box comprises a number of connecting screws 10 and strips 11 for connecting the conductors 3 and 5-9 to conductors 3' and 5'-9' respectively. Conductors 3' and 5'-9' are bunched together and protected by BX or other sheathing from the connection box 4 to the theft device socket element 2 where they are connected to selected sockets 3<sup>2</sup> and 5<sup>2</sup>-9<sup>2</sup>. By means of the plug element and their interconnections as described, connections 12 and 13 are established leading from the conductor 3' to each of the conductors 5' and 8' and from the conductor 6' to conductor 9', as indicated in FIG. 2. Removing the plug element 1 will, as later described in detail, remove the connection elements 12, 13, thus interrupting the connection to the ignition coil, the distributor and the starter. The ground connection 7' is dead and functions in the manner described below.

As will be apparent if the plug element 1 is not in place, the operation of the vehicle requires the establishment of a number of connections, no simple jumping procedure being available, and the arrangement and construction of the elements, as will be made clear below, is such that operation without the plug element 1 is impossible under ordinary conditions.

The connection device 1, 2 is shown in detail in FIGS. 1, 3 and 6. The socket element 2 comprises a casing 20 of suitable plastic material which is generally cylindrical and has a flange 21 for abutting against a bracket member 22 having an opening for sliding over the device 2. Threading 23 on the casing 20 and a cooperating nut 24 provide for clamping the bracket 22 against the flange 21 and the device may be installed in any convenient location in the vehicle, as, for example, under the dash board or instrument panel member 25 for securing the bracket member 22 thereto by suitable bolts 26 or other fastening means. The interior of the casing 20 is enlarged toward its outer end and formed with a shoulder 27 against which plate elements 28, 29 abut, being held in place as by means of a tubular rivet 30. Elements 28 and 29 support a number of individual sockets 31 and 32, which sockets are to all appearances identical. Sockets 31, however, are electrically dummy sockets, no connections being made thereto, while sockets 32 are connected, as indicated at 33, to the conductors 3' and 5'-9', previously referred to. In the embodiment illustrated, there are sixteen sockets arranged symmetrically with respect to an axial plane passing through the rivet 30, there being eight sockets to each side of this plane. The conductors 3', 5'-9' are bunched within the casing 20 and covered by BX sheathing 34, providing with a retainer bushing 35 within the casing 30, in the usual way. As will be apparent, the socket element 2 can be assembled together with its conductors by assembling the conductors together with elements 28, 29, 34 and 35, passing the cabled elements back through the end opening in housing 20 and then riveting the member 30 to hold the parts in assembled condition. The socket element 2 is also provided with a dust cap 36 connected to it by a link 37 and serving to cover the sockets when the cooperating plug 1 is not in place. It will be observed that with the dust cap 36 in position, the device is unobtrusive and presents

the appearance of any of various elements commonly found in automobiles and blocking off unused openings or serving various other purposes.

The plug element 1 comprises a housing 40 and cover 41 secured thereto, a prong supporting plate 42, insulating discs 43, 44 and connector plates 45 and 46. Prongs 47, 48 are provided, being indistinguishable from outward appearance, but the prongs 47 being electrically active and the prongs 48 being dummies. The assembly is held together by means of rivet 49 holding the plate 42, insulating discs 43, 44 and connector plates 45, 46 together against the end wall 50 of the housing 40. Dummy prongs 48 are supported in bores in the member 42 and have heads 51 holding them against outward movement. These heads abut against the insulating disc 43, holding the prongs in place also against inward movement. Prongs 47 also pass through bores in the element 42 and through openings in the insulating disc 43, terminating in reduced ends 52 which are received in connector plate 45 or 46 as the case may be. Shoulders at the base of the reduced ends 52 of the element 47 abut against the plates 45, 46, while the enlarged ends 51 on prongs 48 abut against the insulating plate 43. It will be apparent that all elements of the member 1 are securely held in place by the construction described.

Element 45 may constitute the connection 12 previously referred to, while element 46 constitutes the connection 13, element 46 having associated with it two active prongs 47, while element 45 has associated with it three active prongs 47, these prongs being so positioned as to cooperate with the appropriate active socket element 32. The elements are guided into engagement in proper orientation to each other as by means of a rib 55 and groove 56 in the elements 2 and 1, respectively (FIG. 1).

It will be observed, in the construction illustrated, that, since there are eight prongs associated with the two connector plates 45 and 46, respectively, and that any two or three of these may be active, that there are twenty-eight different combinations of active prongs available in one case and fifty-six in the other. Moreover, since any combination with respect to one connector plate may be used in conjunction with the other, there are over fifteen hundred possible combinations available. The combinations with respect to the socket element are similar, except that in this case, there is an additional live socket 32 to which the ground connection 7' is connected, but which cooperates with a dead prong 48 instead of a live prong 47. This will be connected as desired.

In manufacturing the device, the socket element 2 and the plug element 1 and spare plug element 1 are preferably assembled at the same time and immediately packaged together, the assembly being controlled by an instruction sheet indicating the live and dead prong and socket connections. The combination of live and dead socket and prong elements, accordingly, is not known for any group of cooperating prong and socket elements or indicated in any way as by serial number or otherwise.

The BX cable containing the connection from the socket element 2 leads to a connection box 4, as previously mentioned, which box contains a connector strip having the appropriate elements 10, 11 for connecting the respective wires. This box also has a cover 4' secured by means of bent over tongue elements 4'' and is of such structure that it can be opened only by breaking the cover. The BX cables entering this box are held in place by internal bushings, and a further protection device may be utilized, consisting of a contact spring 60 secured to a screw 10 in which the hot wire 3 is connected and held from engaging the metal wall of the box by an insulating element 61 attached to the cover 4'. Upon removal of the cover 4', the insulating strap will engage the metal box wall at 62, thus connecting the hot wire 3 to the automobile frame and producing a short circuit so as to blow the fuse F<sub>2</sub>.

A cover 63 for the ignition coil may be provided to

prevent ready access to the connections to this element.

If it is attempted to circumvent the theft protection device as by sawing through the BX adjacent the device, the result will almost inevitably be to connect the hot wire connection 3' to the ground connection 7', thus producing a short circuit and blowing the fuse F<sub>2</sub>, putting the ignition system out of commission. Similarly, if it is attempted to locate and identify the live connection in the socket element by means of jump wires, the probable result will be to connect the hot wire 3' to the ground connection 7', again blowing the fuse F<sub>2</sub>. Any such jumping procedure is, in any event, impractical, without a knowledge of the specific wiring arrangement of the device and the principles of its construction.

The plug element 1 may be normally left in place or normally removed when the car is not in use, according to circumstances. When removed, it is not bulky and may be carried in the pocket like a key.

If the plug element 1 is lost, and the spare is not available, it is possible with the aid of a circuit diagram and appropriate testing equipment to identify the live connections in the socket element and to construct a suitable plug or replace the plug temporarily by separate connections. It is preferred, however, not to do this but merely to replace the entire unit as far as back to the connection box 4. This operation, is actually a very simple one, involving merely the replacing of the unit 2 together with its cabled connections (which are identified by color) and the breaking open of the connection box 4 and removal of the contact element 60. The removed element 2 and connections may be then discarded or returned to the factory for the construction of a special mating plug element 1. Ordinarily, however, the removed equipment is merely discarded and replaced.

What is claimed is:

1. An automobile theft protection device comprising a socket element attached to the car and a cooperating plug element insertable in and removable from the socket element, the plug element comprising two sets of prongs, one set comprising two live prongs and a plurality of dummy prongs and the other set comprising three live prongs and a plurality of dummy prongs, first and second connector plates connecting the live prongs of the respective two sets together and an insulator plate insulating the dummy prongs of the two sets from the said connector plates, and the socket element comprising a socket for receiving the prongs of the plug element, connections from the battery and two car operating elements to the sockets receiving the three live prongs of the second said set, and connections for a further car operating element to the sockets receiving the two live prongs of the first said set.

2. An automobile theft protection device comprising a socket element attached to the car and plug element removably insertable therein for forming connections in automobile operating circuits when so inserted, the plug element comprising a casing, a holding plate, insulating plate and a pair of connector plates stacked within the casing in that order, and means fastening the said plates in position in the casing, the holding plate having a plurality of similar bores for receiving plugs, the insulating plate having apertures aligned with the said bores, one connector plate having apertures aligned with a number of the said bores and the other having apertures aligned with others of the said bores, externally identical live and dummy prongs carried in the bores of the holding plate, the live prongs extending through apertures in the insulating plate into apertures of the connecting plates and forming electrical connections therewith, and the dummy prongs having heads engaging the insulating plate around the apertures therein for spacing the said dummy prongs from the connector plates, there being three such live prongs connected to one of the connector plates and two such live prongs connected to the other, the dummy prongs aligned with each connector plate being

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a multiple of the live prongs, the socket element having sockets for receiving the live and dummy prongs and connections to the car wiring system for the sockets which receive the said live prongs.

3. An automobile theft protection device according to claim 2, in which there are substantially equal numbers of prongs aligned with each of the two said connector plates.

4. An automobile theft protection device according to claim 2, in which the socket element has a ground connection to one of the sockets which receives a dummy prong.

5. An automobile theft protection device according to claim 2, in which the said reduced ends are gripped in the said bores to hold them against extraction from the plugs.

6. An automobile theft protection device according to

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claim 5, in which the said reduced ends are riveted or stacked to hold them in place.

7. An automobile theft protection device according to claim 6, in which the said dummy prongs have heads of larger diameter than the insulating plate apertures and the holding plate has countersinks receiving the said heads.

#### References Cited in the file of this patent

#### UNITED STATES PATENTS

1,410,443	Anderton	Mar. 21, 1922
1,472,843	Jackson et al.	Nov. 6, 1923
1,549,325	Murray	Aug. 11, 1925
1,679,771	Hemingway	Aug. 7, 1928
2,868,905	Meyer	Jan. 13, 1959