

(12) **UK Patent Application** (19) **GB** (11) **2 175 646 A**

(43) Application published 3 Dec 1986

(21) Application No **8613309**

(22) Date of filing **2 Jun 1986**

(30) Priority data

(31) **8513876**

(32) **1 Jun 1985**

(33) **GB**

(51) INT CL<sup>4</sup>

**B60R 25/04**

(52) Domestic classification (Edition H):

**F1B 2Z**

(56) Documents cited

**GB 1589885**

**US 3803551**

**US 3773138**

**GB 1043962**

(58) Field of search

**F1B**

**Selected US specifications from IPC sub-class B60R**

(71) Applicant

**Steve Barrow,**

**16 Irby House, Tulse Hill Estate, London SW2**

(72) Inventor

**Steve Barrow**

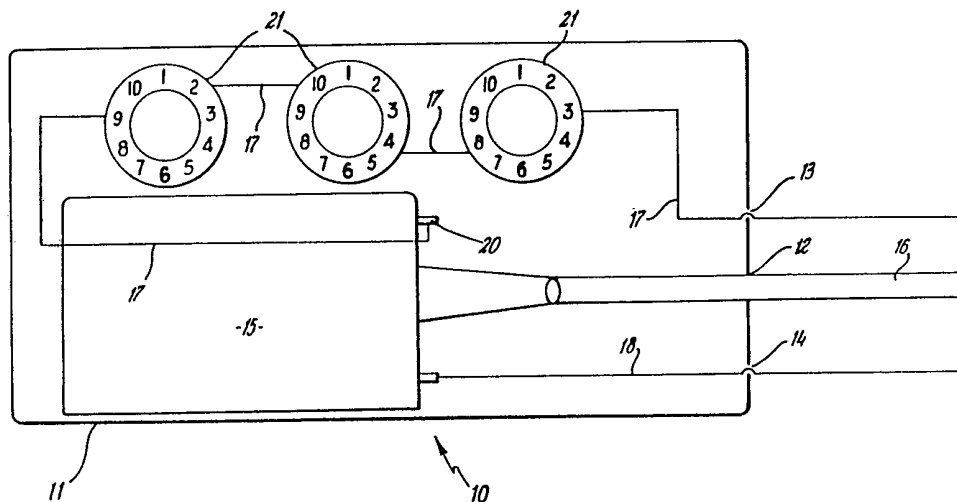
(74) Agent and/or Address for Service

**Neil Berry,**

**17 St Ann's Square, Manchester M2 7PW**

(54) **Vehicle security devices**

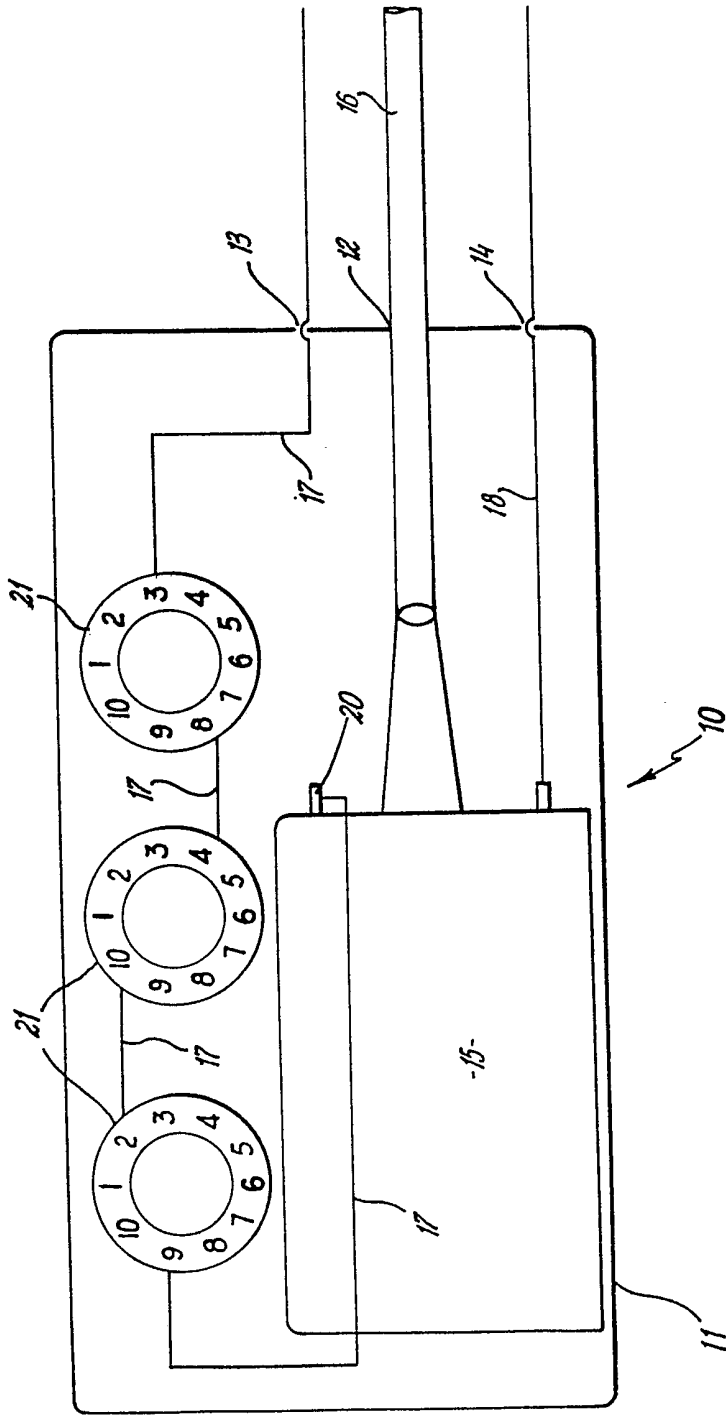
(57) The ignition coil 15 for an internal combustion engine of a motor vehicle is mounted in a housing 11 and three or more multi-position switches are connected in series in an input and/or return line 17, 18 of the coil which has a high tension output 16. The coil is energized only when each switch is in a predetermined position. The switches are controlled by external knobs 21 which are set at random when leaving the vehicle. An electronic switching device controlled by an external keyboard, or a key operated switch in the low tension line can be used instead of the multiposition switches.



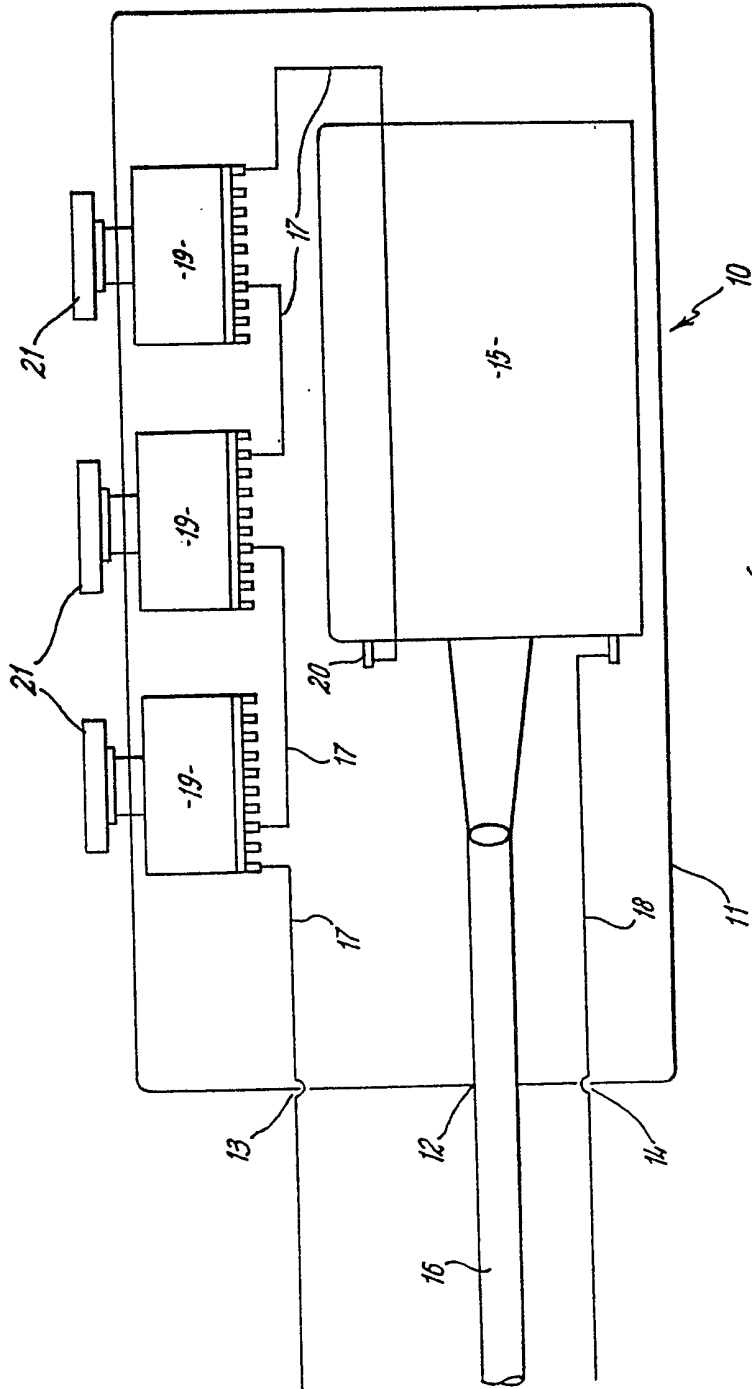
**Fig. 1**

**GB 2 175 646 A**

113



**FIG. 1**



**FIG. 2**

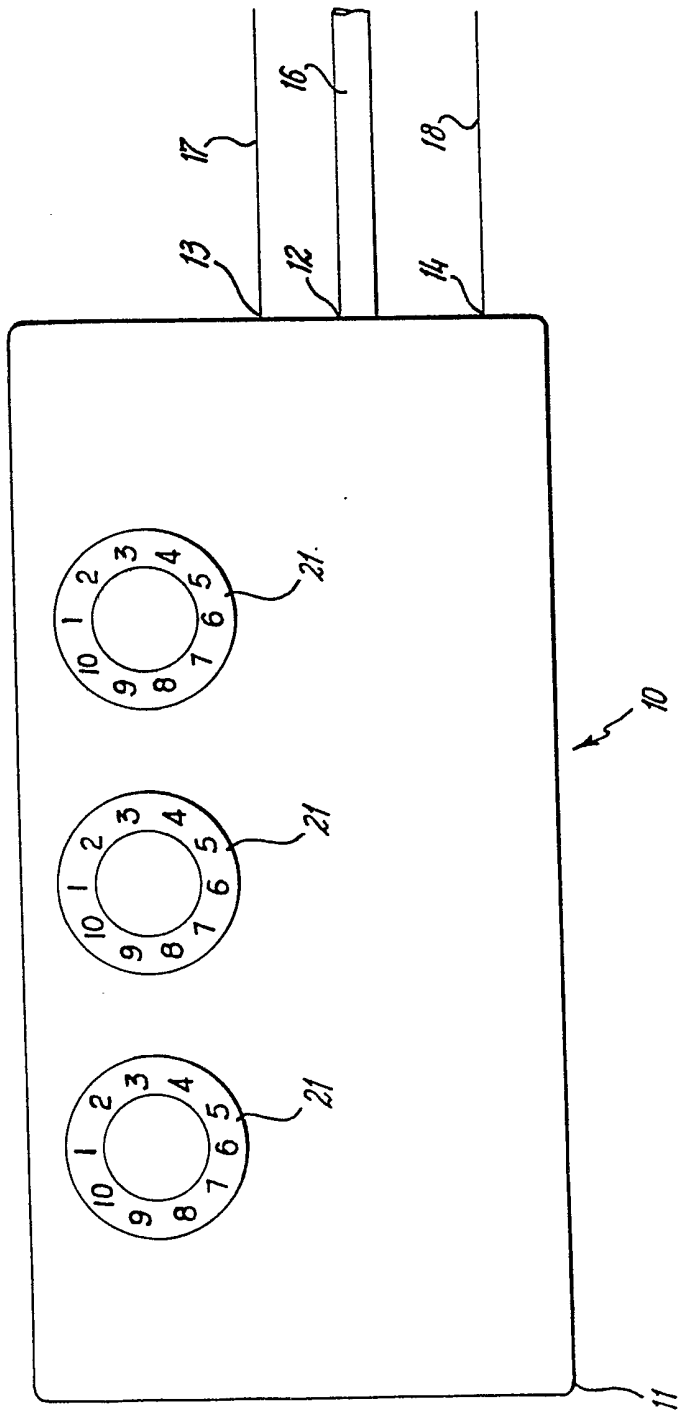


FIG. 3

## SPECIFICATION

**Security devices**

5 The present invention relates to security devices for motor vehicles.

The theft of motor vehicles is an ever-increasing problem and numerous attempts have been made to provide security systems for motor vehicles. In this regard one of the major problems with motor vehicle security is that the arrangement of electrical components within the vehicle usually allows a thief easily to start the vehicle without using the existing ignition system. In this connection most thieves use a method known as "hot-wiring" whereby a wire is connected from the vehicle battery to the power supply side of the ignition coil. In this way, power is supplied to the ignition system and the vehicle need only be started by shorting the starter motor solenoid or by "clutch-starting", for example.

According to one aspect of the present invention there is provided a security device for an ignition system of a vehicle having an internal combustion engine having an ignition coil, said device comprising a housing adapted to be mounted on the vehicle and enclose the vehicle ignition coil; access means to allow connection of the low tension input lead, low tension return lead and a high voltage output lead to said ignition coil; and a security switch means mounted within said housing and operable from the exterior of said housing, said switch means being connectable to said ignition coil via a connection within said housing and said switch means being connectable in series with at least one of said low tension leads.

40 The invention includes a motor vehicle having an internal combustion engine with an ignition system comprising an ignition coil, a housing for the coil, electrical connections for the coil extending into the housing, and switch means in the housing operable by means outside the housing for controlling the energizing of the coil.

The security switch means may comprise three multi-position switches in series, the coil being energized only when each switch is in a respective predetermined one of said multi-positions.

Each switch may have ten possible positions.

55 The invention includes a security device however defined for a motor vehicle and a motor vehicle having an ignition coil security device however defined.

The invention may be performed in various ways and one specific embodiment with possible modifications will now be described with reference to the accompanying drawings in which:

65 *Figure 1* is a cut away plan view of the security device of a preferred embodiment;

*Figure 2* is a cut away side view of the security device shown in Fig. 1; and

*Figure 3* is a full plan view of the security device shown in Fig. 1.

70 As seen in Figs. 1, 2 and 3, a security device 10 for a motor vehicle comprises an outer case or housing 11 which completely encloses an ignition coil 15 of an internal combustion engine. An aperture 12 in the case 11 allows a high voltage output wire 16 to be connected to the coil 15. A similar aperture 14 in the case 11 allows access for a power supply or low tension wire 18 to be connected to the coil 15 and a further aperture 13 in the case 11 allows a low tension wire 17 to be connected to one of three switches 19 mounted in the case 11. The switches 19 are series-connected with the wire 17 and a terminal 20 of the ignition coil 15.

85 The switches 19 are substantially conventional ten position switches having operating knobs 21 with the numerals one to ten marked thereon. The switches are inside the housing 11 and the knobs are outside the housing 11. Wire 17 can be either the input or return (output) wire in the low tension circuit of coil 15.

Each multi-position switch 19 has the wire 17 connected to a terminal corresponding to only one position so that the three switches 95 allow current to flow only when they are each in the respective predetermined one of the ten possible positions. The predetermined positions are preferably different in each of the three switches. One or more or all of the switches may be in the line 18 within housing 11.

100 The operation of the security device 10 of the preferred embodiment is as follows. When the motor vehicle is parked the control knobs 21 on the switches 19 are randomly rotated before leaving the vehicle. In this way, current is prevented from flowing in the wire 17 and the vehicle cannot be started until the correct combination is selected by rotating the control knobs 21 to the respective predetermined positions. The case 11 is a rigid structure and, accordingly, the coil is not accessible to a potential thief, for example to connect an alternative power supply wire to the ignition coil 15.

115 It will therefore be appreciated that an unauthorized user could only start the motor vehicle by destroying the security device 10 and employing the conventional "hot-wiring" technique or by supplying a new ignition coil and making the appropriate connections.

120 It will also be apparent that the security device forms an ignition coil isolator and makes it unnecessary to include a conventional key-operated ignition switch in the vehicle or in vehicles already fitted with a conventional switch makes it unnecessary to remove the ignition key when leaving the vehicle.

130 The foregoing describes only one embodiment of the present invention and modifica-

tions may be made thereto without departing from the scope of the present invention. For example, the three multi-position switches can be replaced with an electronic switching device including a numerical keyboard which supplies power to the coil when the correct predetermined combination is entered on the keyboard by pressing appropriate keys, the keyboard being outside the housing.

Each switch 19 could have less than or more than ten positions; the switches 19 need not all have the same number of possible positions or terminals. There could be more than three switches 19 in series.

Alternatively, the three multi-position switches can be replaced with a substantially conventional key-operated switch.

#### CLAIMS

1. A security device for an ignition system of a vehicle having an internal combustion engine, the device comprising a housing adapted to be mounted on the vehicle and enclose the vehicle ignition coil; access means to allow connection of the low tension input lead, low tension return lead and a high voltage output lead to said ignition coil; and a security switch means mounted within said housing and operable from the exterior of said housing, said switch means being connectable to said ignition coil via a connection within said housing and said switch means being connectable in series with at least one of said low tension leads.

2. A security device as claimed in claim 1, in which the security switch means comprises three multi-position switches in series, the coil being energized only when each switch is in a respective predetermined one of said multi-positions.

3. A security device as claimed in claim 2, in which each switch has ten possible positions.

4. A security device as claimed in any preceding claim, in which the security switch means is adapted to be partly in a supply line to the coil and partly in a return line from the coil.

5. A security device as claimed in claim 1, in which the security switch means comprises a keyboard controlling the closing of said security switch means.

6. A security device for an ignition system of a vehicle having an internal combustion engine substantially as hereinbefore described with reference to and as illustrated in the accompanying drawings.

7. A motor vehicle having an internal combustion engine with an ignition system comprising an ignition coil, a housing for the coil, electrical connections for the coil extending into the housing, and switch means in the housing operable by means outside the housing for controlling the energizing of the coil.

8. A motor vehicle as claimed in claim 7,

in which the switch means comprises three multi-position switches in series, the coil being energized only when each switch is in a respective predetermined one of said multi-positions.

9. A motor vehicle as claimed in claim 7 or claim 8, in which the switch means is partly in a supply line to the coil and partly in a return line from the coil.

10. A motor vehicle as claimed in claim 7, in which the means outside the housing comprises a keyboard controlling the closing of said switch means.

11. A motor vehicle having an ignition coil controlled by a security device as claimed in any one of claims 1 to 6.

12. An assembly comprising a housing, an ignition coil in the housing for a motor vehicle, switch means in the housing for controlling in use the energizing of the coil, and means operable from outside the housing for operating the switch means.

13. An assembly as claimed in claim 12, in which the switch means comprises a plurality of multi-position switches.

Printed in the United Kingdom for  
Her Majesty's Stationery Office, Dd 8818935, 1986, 4235.  
Published at The Patent Office, 25 Southampton Buildings,  
London, WC2A 1AY, from which copies may be obtained.