



Europäisches Patentamt  
European Patent Office  
Office européen des brevets



(11) **EP 0 926 306 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:  
**30.06.1999 Bulletin 1999/26**

(51) Int. Cl.<sup>6</sup>: **E05B 65/19, E05B 53/00**

(21) Application number: **98122703.6**

(22) Date of filing: **30.11.1998**

(84) Designated Contracting States:  
**AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU  
MC NL PT SE**  
Designated Extension States:  
**AL LT LV MK RO SI**

(30) Priority: **23.12.1997 IT TO971131**

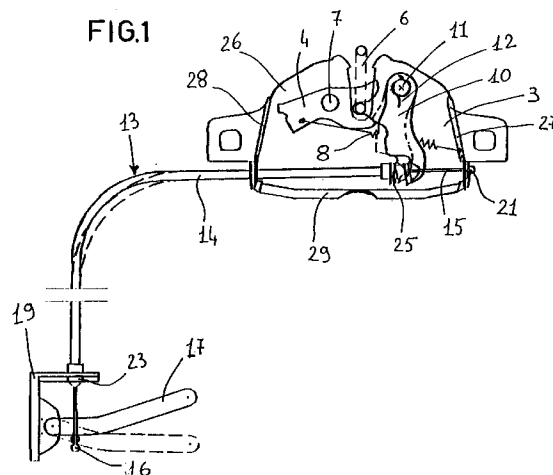
(71) Applicant: **FIAT AUTO S.p.A.**  
**10135 Torino (IT)**

(72) Inventors:  
• **Rinaldi, Giuseppe**  
**16011 Arenzano (GE) (IT)**  
• **Zantedeschi, Renzo**  
**10142 Torino (TO) (IT)**  
• **Doria, Mario**  
**10144 Torino (TO) (IT)**

(74) Representative:  
**Di Francesco, Gianni et al**  
**Ing. Barzanò & Zanardo Milano S.p.A.**  
**Corso Vittorio Emanuele II, 61**  
**10128 Torino (IT)**

(54) **Anti-effraction device for the hood of a vehicle**

(57) The object of the present invention is a coupler anti-effraction device for the hood of a vehicle, comprising a bolt member in the form of a coupling lever (4) that can be moved from a first position, in which it is hooked on to a pin (6) on the vehicle hood, and a second position, in which said pin (6) can be released from the lever (4). An off-hooking lever (10), rotatable from the position in which it is hooked on to the pin (6) of the engine hood, and a second position in which said lever (10) is released. A protection box (3), that can be mounted on the section of the compartment covered by the hood, for the pivoting of said coupling (4) and off-hooking levers (10). A Bowden cable (13) that activates said off-hooking lever (10) in reaction to the moving of a manoeuvre lever (17) located inside the vehicle. Said box (3) is designed in order that it is open only on the top section, when the hood is open; the Bowden cable (13) ends are connected to the manoeuvre lever (17)(one) and to a fixed point on the box, respectively. The Bowden cable jacket (14) ends are connected to a fixed point on the vehicle and to the non inserted end of the off-hooking lever (10) respectively.



EP 0 926 306 A1

## Description

[0001] The object of the present invention is to describe a device designed to impede the unauthorized opening of the hood of a vehicle.

[0002] In many types of vehicles, it is currently possible to move the coupling lever of the pin mounted on the engine hood by using a tool, such as a screwdriver, and manipulating the Bowden cable that transmits the signal from the vehicle compartment to the coupling device of the engine hood. The coupling device is not protected by external manipulations and even the Bowden cable is used in the common way, with the jacket fixed to two hold down points integral with the vehicle or any part of the vehicle itself.

[0003] It is an object of the present invention to provide a system that will make it possible to avoid the previously mentioned disadvantages.

[0004] The object of the invention is achieved by way of an anti-effraction device designed for the hood of a vehicle, presenting the characteristics of the first claim.

[0005] Other characteristics and advantages will appear clear in the following description, reference being made to enclosed figures, provided as non limiting examples, in which :

- Figure 1 is a front view of the system object of the present invention, before it is mounted on the vehicle, and
- Figure 2 is a partial view, from above, of the device illustrated in figure 1, mounted on the front section of the motor compartment.

Reference being made to the figures, in which 1 indicates the front of the motor compartment. Box 3 of fork-type coupling lever is mounted on this motor compartment. Said fork-type coupling lever hooks on to pin 6 of a hood (first position), for example an engine hood (not illustrated). Said lever 4 is released and can rotate on pin 7, fixed to box 3, and is maintained in the second position, and rotates in the anticlockwise direction for its entire run, by way of spring 8, connected to one end of box 3 on one end, and to the lever itself on the other end.

[0006] An off-hooking lever 10 is mounted on a second pin 11, rotatable as of position one, in which it acts with lever 4 to block it when it has hooked on to the hood pin, and position two in which it is released from said coupling lever 4. Lever 10 is maintained in a normally rotated second position by way of spiral-type spring 12.

[0007] A Bowden cable 13, composed of jacket 14 and of the internal cable 15, is located with cable 15, connected to one end 16 by way of a manoeuvre lever 17, mounted in the inside of the vehicle compartment, on flask 19, and on the other end 21 to box 3.

[0008] The cable jacket 14 is fixed on one end 23 to flask 19, and on the other end 25 to the non positioned

end of the off-hooking lever 10.

[0009] Box 3 is composed of a front wall 26, two lateral walls 27 and 28, and one end wall 29, in order that once it is fixed on compartment 1 of the motor compartment, only the top section can be accessed from the outside, with the engine hood open, of course. If, on the contrary, the engine hood is closed, it is impossible to access the lever in any way, to free the coupling lever and off-hook pin 6 of the engine hood.

[0010] It is also impossible to rotate the lever by pulling the Bowden cable from the outside with jacket 14, since end 25 of the jacket is connected to the off-hook lever 10, the latter therefore rotates in the clockwise direction, and therefore in the direction in which the coupling lever is eventually blocked.

[0011] If, on the contrary, cable 15 is pulled with lever 17, since the other end of the cable is held down in a fixed point, the cable run is reduced, and, consequently, jacket 14, which has a fixed length. It is also impossible for it to move, with end 23, since it is connected to a fixed, non moving point on the vehicle, so it will exert pressure on lever 10 and will force it to rotate in the anti-clockwise direction, in its first off-hook position of the coupling lever 14.

## Claims

1. Coupling anti-effraction device designed for the hood of a vehicle, composed of : a coupling lever, movable from position one, in which it hooks on to a pin located on the hood, and position two, in which said pin can be released from the lever. An off-hook lever, rotatable from position one, in which is blocks said coupling lever in the position in which it hooks on to the pin on the engine hood, and position two, in which said coupling lever is released; a protection box, that can be mounted on the one section of the compartment covered by the hood, on which are located said coupling and off-hooking levers; a Bowden cable designed to activated said off-hooking lever in response to the movement of a manoeuvre lever located in the inside of the vehicle, characterised by the fact that the box (3) is designed in such a way to be opened on the upper section when the hood is open, that the ends of the cable (15) of the Bowden cable are connected to the manoeuvre lever (17) and to a fixed point on the box (3) respectively, and that the ends of the of the Bowden cable jacket (14) are connected to a fixed point on the vehicle and to the non inserted end of the off-hooking lever (10) respectively.
2. Coupling anti-effraction device as claimed in claim 1, characterised by the fact that the box (3) is composed of a front wall (26), two lateral walls (27 28), and one end wall (29).

FIG.1

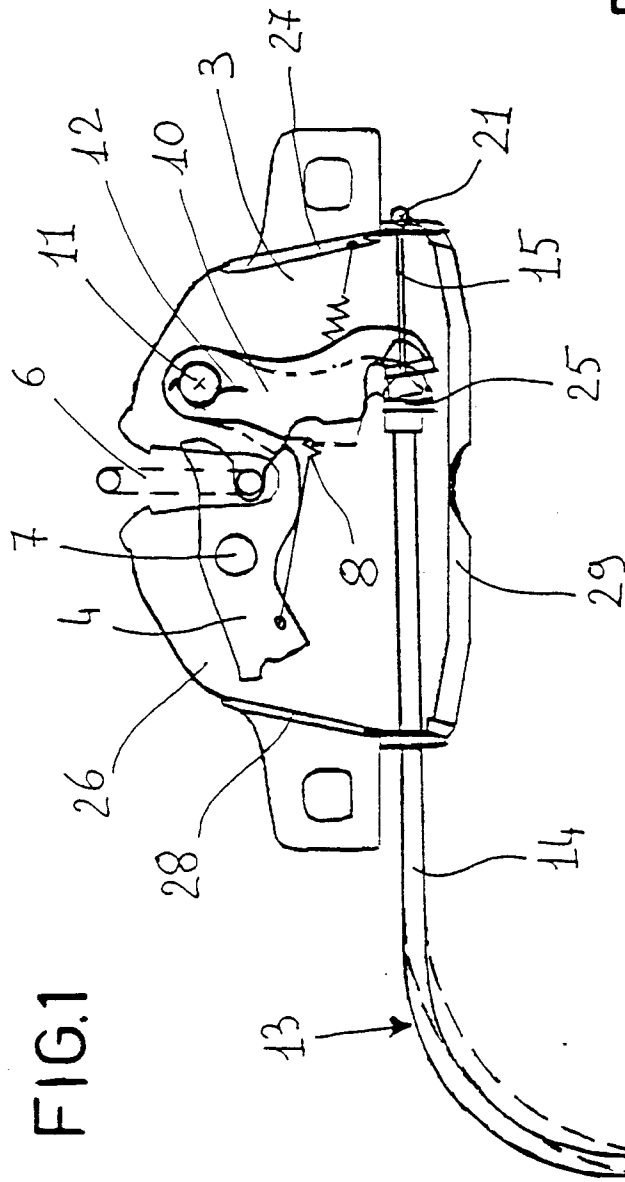
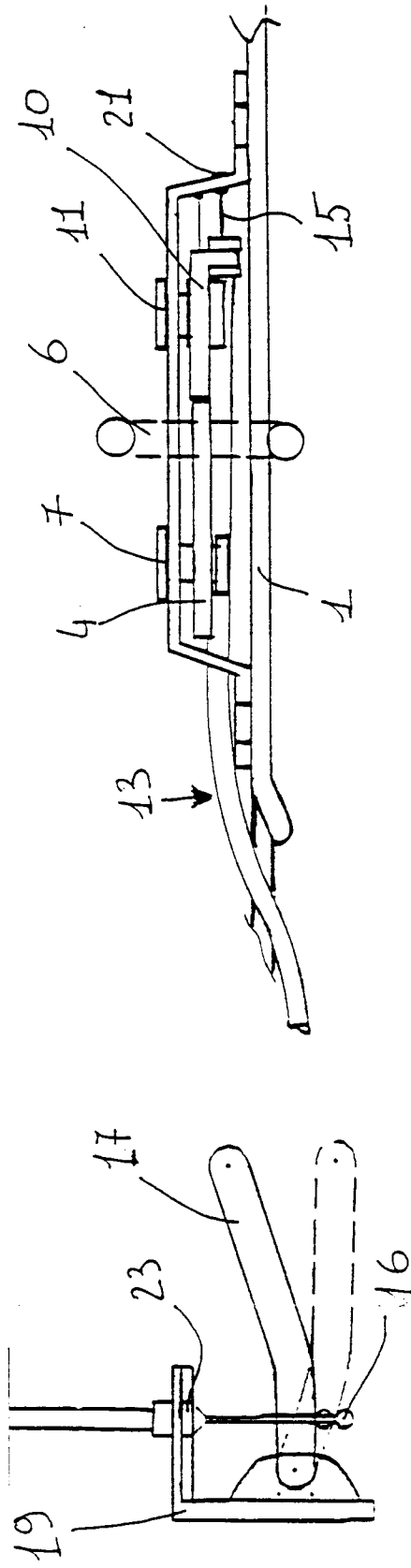


FIG.2





European Patent  
Office

# EUROPEAN SEARCH REPORT

Application Number  
EP 98 12 2703

| DOCUMENTS CONSIDERED TO BE RELEVANT                                                                                                                                                                                                                    |                                                                                                                                                                    |                                                                                                                                                                                                                                                                              |                                                 |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|
| Category                                                                                                                                                                                                                                               | Citation of document with indication, where appropriate, of relevant passages                                                                                      | Relevant to claim                                                                                                                                                                                                                                                            | CLASSIFICATION OF THE APPLICATION (Int.Cl.6)    |
| Y                                                                                                                                                                                                                                                      | GB 2 291 466 A (C E MARSHALL)<br>24 January 1996<br>* page 1, paragraph 2 *<br>* page 4, paragraph 3; figures 1-4 *<br>---                                         | 1,2                                                                                                                                                                                                                                                                          | E05B65/19<br>E05B53/00                          |
| P,Y                                                                                                                                                                                                                                                    | US 5 720 506 A (BELLEW COLBY LENN ET AL)<br>24 February 1998<br>* the whole document *<br>---                                                                      | 1,2                                                                                                                                                                                                                                                                          |                                                 |
| A                                                                                                                                                                                                                                                      | EP 0 100 855 A (NISSAN MOTOR)<br>22 February 1984<br>* the whole document *<br>---                                                                                 | 1                                                                                                                                                                                                                                                                            |                                                 |
| A                                                                                                                                                                                                                                                      | US 3 966 242 A (VITALIS RAYMOND)<br>29 June 1976<br>* the whole document *<br>---                                                                                  | 1                                                                                                                                                                                                                                                                            |                                                 |
| A                                                                                                                                                                                                                                                      | GB 747 041 A (FORD MOTOR COMPANY LIMITED)<br>* page 1, line 22-27; figures 1-6 *<br>---                                                                            | 1,2                                                                                                                                                                                                                                                                          |                                                 |
| A                                                                                                                                                                                                                                                      | DE 44 43 034 A (BOCKLENBERG & MOTTE BOMORO) 26 October 1995<br>* column 1, line 7-18 *<br>* column 1, line 52-54 *<br>* column 3, line 13-18; figures 1-4 *<br>--- | 1,2                                                                                                                                                                                                                                                                          | TECHNICAL FIELDS<br>SEARCHED (Int.Cl.6)<br>E05B |
| A                                                                                                                                                                                                                                                      | GB 2 276 413 A (NISSAN EUROP TECH CENTRE)<br>28 September 1994<br>* abstract; figures 1-5 *<br>---                                                                 | 1,2                                                                                                                                                                                                                                                                          |                                                 |
| A                                                                                                                                                                                                                                                      | US 3 937 505 A (DEMPSEY) 10 February 1976<br>* column 1, line 58 - column 2, line 9;<br>figures 1-4 *<br>---                                                       | 1,2                                                                                                                                                                                                                                                                          |                                                 |
| A                                                                                                                                                                                                                                                      | US 5 348 355 A (OYHA TAKEJI)<br>20 September 1994<br>* the whole document *<br>---                                                                                 | 1                                                                                                                                                                                                                                                                            |                                                 |
|                                                                                                                                                                                                                                                        |                                                                                                                                                                    | -/--                                                                                                                                                                                                                                                                         |                                                 |
| The present search report has been drawn up for all claims                                                                                                                                                                                             |                                                                                                                                                                    |                                                                                                                                                                                                                                                                              |                                                 |
| Place of search<br>THE HAGUE                                                                                                                                                                                                                           |                                                                                                                                                                    | Date of completion of the search<br>27 April 1999                                                                                                                                                                                                                            | Examiner<br>Westin, K                           |
| CATEGORY OF CITED DOCUMENTS<br>X : particularly relevant if taken alone<br>Y : particularly relevant if combined with another document of the same category<br>A : technological background<br>O : non-written disclosure<br>P : intermediate document |                                                                                                                                                                    | T : theory or principle underlying the invention<br>E : earlier patent document, but published on, or after the filing date<br>D : document cited in the application<br>L : document cited for other reasons<br>& : member of the same patent family, corresponding document |                                                 |

EPO FORM 1503 03 82 (P04C01)



European Patent  
Office

# EUROPEAN SEARCH REPORT

Application Number  
EP 98 12 2703

| DOCUMENTS CONSIDERED TO BE RELEVANT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                         |                                                          |                                                     |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|----------------------------------------------------------|-----------------------------------------------------|
| Category                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Citation of document with indication, where appropriate, of relevant passages           | Relevant to claim                                        | CLASSIFICATION OF THE APPLICATION (Int.Cl.6)        |
| A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | US 5 118 146 A (WATANUKI YOSHIO)<br>2 June 1992<br>* the whole document *<br>---        | 1                                                        |                                                     |
| A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | US 5 305 960 A (HEALEY EDMUND T)<br>26 April 1994<br>* abstract; figures 1-3 *<br>----- | 1                                                        |                                                     |
| The present search report has been drawn up for all claims                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                         |                                                          | <b>TECHNICAL FIELDS SEARCHED (Int.Cl.6)</b><br><br> |
| Place of search<br><b>THE HAGUE</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                         | Date of completion of the search<br><b>27 April 1999</b> | Examiner<br><b>Westin, K</b>                        |
| <b>CATEGORY OF CITED DOCUMENTS</b><br>X : particularly relevant if taken alone<br>Y : particularly relevant if combined with another document of the same category<br>A : technological background<br>O : non-written disclosure<br>P : intermediate document<br>T : theory or principle underlying the invention<br>E : earlier patent document, but published on, or after the filing date<br>D : document cited in the application<br>L : document cited for other reasons<br>& : member of the same patent family, corresponding document |                                                                                         |                                                          |                                                     |

EPO FORM 1503 03/82 (P04/C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.**

EP 98 12 2703

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on  
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

27-04-1999

| Patent document<br>cited in search report |   | Publication<br>date | Patent family<br>member(s) |   | Publication<br>date |
|-------------------------------------------|---|---------------------|----------------------------|---|---------------------|
| GB 2291466                                | A | 24-01-1996          | EP 0694663                 | A | 31-01-1996          |
| US 5720506                                | A | 24-02-1998          | WO 9823832                 | A | 04-06-1998          |
| EP 0100855                                | A | 22-02-1984          | JP 59009724                | A | 19-01-1984          |
|                                           |   |                     | DE 3374150                 | A | 26-11-1987          |
| US 3966242                                | A | 29-06-1976          | FR 2261398                 | A | 12-09-1975          |
|                                           |   |                     | DE 2507091                 | A | 21-08-1975          |
|                                           |   |                     | GB 1493332                 | A | 30-11-1977          |
| GB 747041                                 | A |                     | NONE                       |   |                     |
| DE 4443034                                | A | 26-10-1995          | DE 19544746                | A | 05-06-1996          |
| GB 2276413                                | A | 28-09-1994          | NONE                       |   |                     |
| US 3937505                                | A | 10-02-1976          | NONE                       |   |                     |
| US 5348355                                | A | 20-09-1994          | KR 9602072                 | Y | 14-03-1996          |
| US 5118146                                | A | 02-06-1992          | JP 2582178                 | B | 19-02-1997          |
|                                           |   |                     | JP 4076173                 | A | 10-03-1992          |
| US 5305960                                | A | 26-04-1994          | NONE                       |   |                     |