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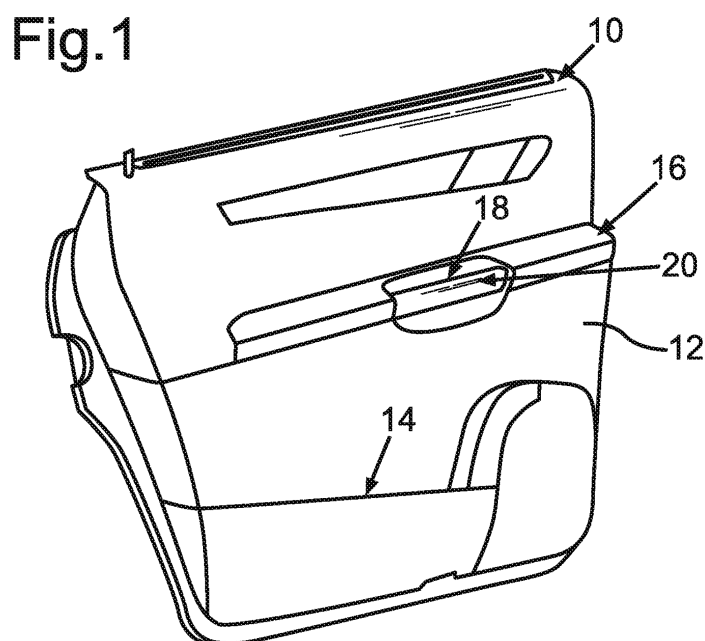
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(56) Documents Cited:  
**GB 2059370 A** **GB 0779517 A**  
**DE 001154362 A** **DE 102009052685 A**  
**US 20060145513 A1**

(58) Field of Search:  
INT CL **E05B**  
Other: **EPODOC, TXTE, WPI, Internet**

(54) Title of the Invention: **Door trim assembly for a side door of a vehicle, in particular a passenger vehicle**  
Abstract Title: **Vehicle door arm rest with handle assembly**

(57) A door trim assembly 10 for a side door of a vehicle comprising at least one interior trim panel 12 comprising an armrest 16 which has a handle recess 18 and a door handle 20 located in the handle recess 18, the handle being movable in relation to the interior trim panel (12) from a rest position (R Fig 2, 4) into at least one actuating position (A Fig 2, 4) for unlatching a door lock. The handle may be pivoted and/or translationally moveable in relation to the door trim panel. The handle may slide in and out of the arm rest (Fig 2) or alternatively pivot, the pivot axis being parallel with the longitudinal axis of the arm rest (Fig 3) or vertical (Fig 4).



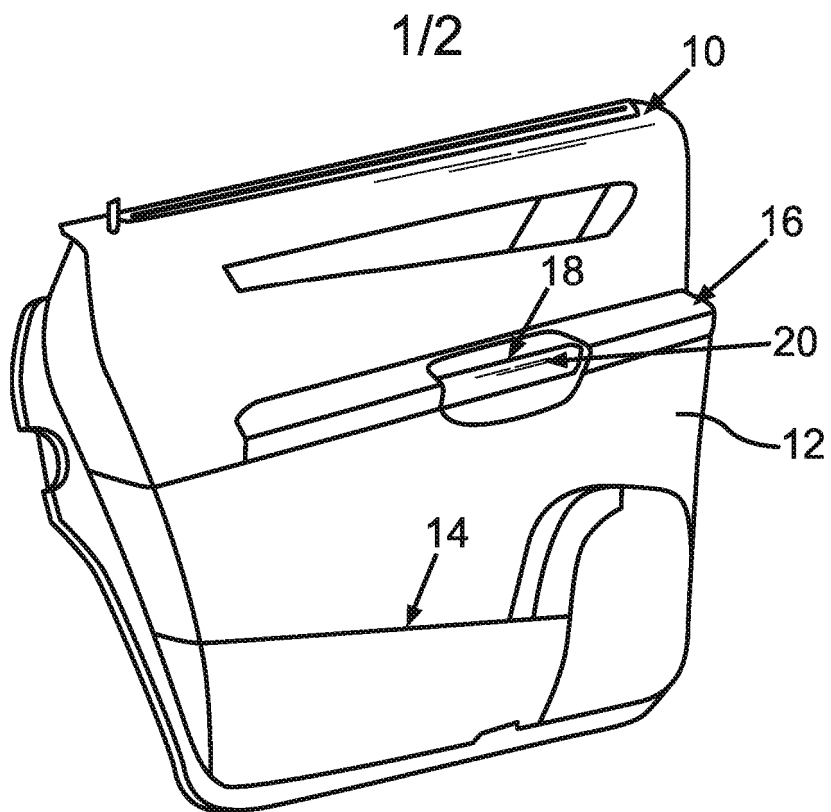


Fig.1

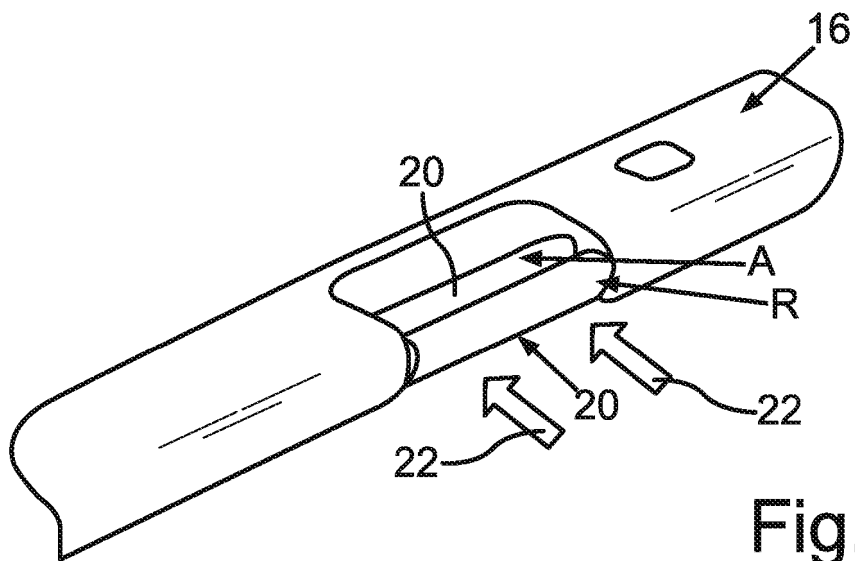


Fig.2

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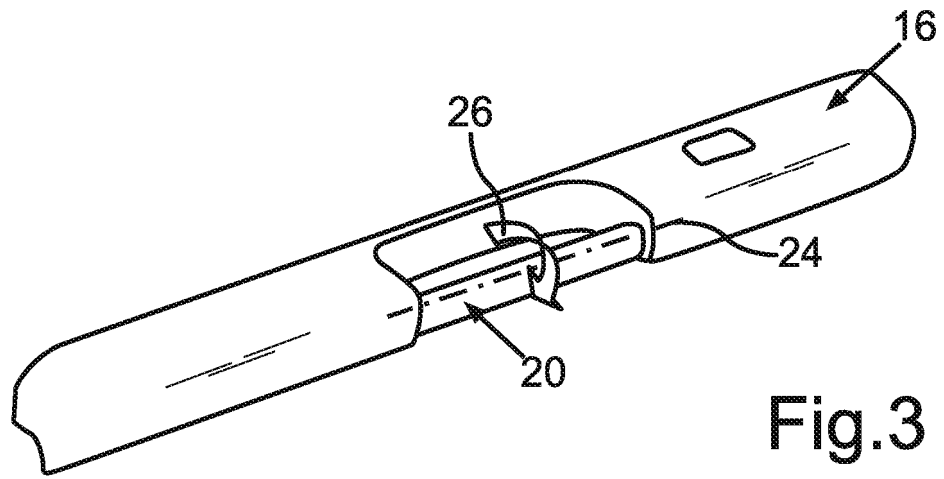


Fig.3

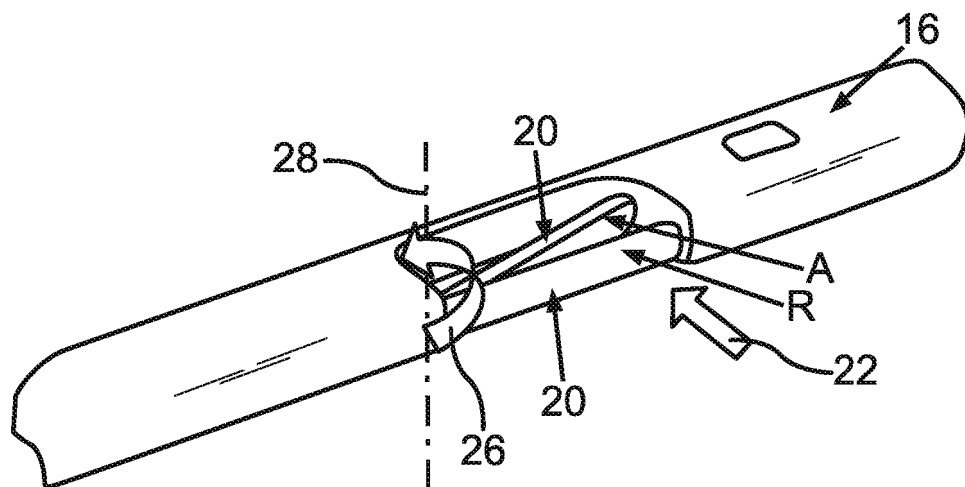


Fig.4

## Door Trim Assembly for a Side Door of a Vehicle, in particular a Passenger Vehicle

The invention relates to a door trim assembly for a side door of a vehicle, in particular a passenger vehicle, according to the preamble of patent claim 1.

Such door trim assemblies for side doors of vehicles are well known from the general prior art. The door trim assembly comprises at least one interior trim panel by means of which at least one structure element of the side door can be covered at least partially towards the interior of the vehicle. The interior trim panel comprises an arm rest by means of which an arm of a passenger of the vehicle can be supported. The arm rest has a handle recess. The door trim assembly further comprises a door handle being arranged in the handle recess.

Conventionally, the door handle is attached to the arm rest or formed in one piece with the arm rest so that the door handle is immobile in relation to the arm rest. A passenger of the vehicle can grab the door handle thereby placing their fingers in the handle recess. Thus, the passenger's hand can enclose at least a major portion of the door handle. For example, the passenger can move the side door via the door handle between a closed position and at least one open position.

Conventionally, the side door has a door lock which is locked in the closed position of the side door. Thereby, the side door is locked in the closed position by means of the door lock so that the door does not open unintentionally.

In order to open the side door, the door lock is to be unlocked. For this purpose the side door conventionally comprises an additional door opening lever movable in relation to the trim panel. The door opening lever is provided in addition to the door handle. By actuating the door opening lever, the door lock can be unlatched so that the side door can be moved from the closed position into the open position.

It is an object of the present invention to provide a door trim assembly of the above mentioned kind which allows for realizing a particularly comfortable actuation of the side door.

This object is solved by a door trim assembly having the features of patent claim 1. Advantageous embodiments with expedient and non-trivial developments of the invention are indicated in the other patent claims.

In order to provide a door trim assembly for a side door of a vehicle, the door trim assembly allowing for realizing a particularly comfortable actuation of the side door, according to the present invention the door handle is movably arranged on the interior trim panel, the door handle being movable in relation to the interior trim panel from a rest position into at least one actuating position for unlatching a door lock. This means a door lock of the side door can be unlatched by moving the door handle from the rest position into the actuating position, the door lock locking the side door in its closed position. Thus, the side door can be moved from its closed position into at least one open position by actuating the door handle. The door handle according to the present invention can be used for both unlatching the door lock and moving the side door between the open position and the closed position. Hence, a door opening lever which is conventionally provided in addition to the door handle can be avoided.

Thereby, the number of parts of the door trim assembly and the side door as a whole can be kept particularly low. This leads to a high safety of the side door especially with regard to side impacts. Since the number of parts of the side door can be kept particularly low, the risk of parts moving around in the interior of the vehicle in the case of an impact can be kept very low.

Conventionally, door opening levers of side doors are not only used for unlatching the door lock but also abused for moving the side door as a whole between the open position and the closed position. This may cause failure of the door opening lever or a mechanism operable via the door opening lever. Since, according to the present invention, the door handle is used for unlocking the door lock and moving the side door as a whole, said problems caused by abusing a conventionally provided door opening lever can be avoided.

Moreover, gaps of the door trim assembly according to the present invention can be kept particularly small since a conventional door opening lever can be avoided and the door handle can sit flush with respect to the arm rest. Thereby, gaps between the door handle and the arm rest can be kept very small.

Furthermore, the door lock can be unlatched by actuating the door handle very comfortably. Since the door handle is integrated in the arm rest, a very little movement of an arm and a hand resting on the arm rest is sufficient to actuate the door handle and, thus, unlatch the door lock. Hence, the effort for unlatching the door locking moving the side door can be minimized.

For example, the door handle is translationally movable in relation to the interior trim panel. Alternatively or additionally, the door handle can be pivotable in relation to the interior trim panel about a pivot axis.

In an advantageous embodiment of the invention, the pivot axis extends in the vertical direction of the vehicle or in direction of the longitudinal extension of the arm rest.

In a further advantageous embodiment of the invention, the door handle is movable from the rest position into the actuating position in the transverse direction of the vehicle towards the outside. In other words, the door handle can be pushed towards the outside of the vehicle thereby unlocking the door lock and pushing the side door from its closed position into its open position simultaneously. This leads to a very comfortable actuation of the side door.

Further advantages, features, and details of the invention derive from the following description of preferred embodiments as well as from the drawings. The drawings show in:

- Fig. 1            a schematic and perspective side view of a door trim assembly according to a first embodiment for a side door of a passenger vehicle, the door trim assembly comprising at least one interior trim panel comprising an arm rest which has a handle recess, wherein the door trim assembly further comprises a door handle being arranged in the handle recess and movably arranged on the interior trim panel, the door handle being movable in relation to the interior trim panel from a rest position into at least one actuating position for unlatching a door lock;
- Fig. 2            a schematic and perspective side view of the arm rest according to Fig. 1;
- Fig. 3            a schematic and perspective side view of the arm rest of the door trim assembly according to a second embodiment, and

Fig. 4 a schematic and perspective side view of the arm rest of the door trim assembly according to a third embodiment.

In the figures the same elements or elements having the same function are indicated with the same reference sign.

Fig. 1 shows a door trim assembly 10 for a side door of a passenger vehicle. The door trim assembly 10 comprises at least one interior trim panel 12 by means of which at least one structure element of the side door can be covered in the transverse direction of the passenger vehicle towards the passenger vehicle's interior. The interior trim panel 12 comprises a storage compartment 14 in which small goods such as but not limited to drinking cans can be stowed. Moreover, the interior trim panel 12 comprises an arm rest 16 for supporting an arm of a passenger of the passenger vehicle. The arm rest 16 has a handle recess 18.

Furthermore, the interior trim panel 12 comprises a door handle 20 arranged in the handle recess 18. A passenger of the passenger vehicle can grab the door handle 20 by placing their fingers at least partially in the handle recess 18. Thereby, the hand of the passenger can enclose the door handle 20 so that the passenger can grab the door handle 20 firmly.

The side door not shown in Fig. 1 is pivotably arranged on the body of the passenger vehicle. Thus, the side door can be moved between a closed position and at least one open position. In the closed position a door opening of the body is covered by the side door. In the open position the door opening is uncovered at least partially.

In order to prevent the side door from opening unintentionally, the side door has a door lock. In the closed position of the side door the door lock is locked, wherein a bracket of the door lock engages a striker attached to the body of the passenger vehicle. In order to open the side door the door lock is to be unlatched so that the bracket held on the side door is disengaged from the striker.

The door handle 20 is movably arranged on the interior trim panel 12, wherein the door handle 20 is movable in relation to the interior trim panel 12 from a rest position shown in Fig. 1 into at least one actuating position shown in Fig. 2. By moving the door handle 20 from the rest position into the actuating position, the door lock of the side door is unlatched. Thus, in order to open the side door the door handle 20 is to be moved from the rest position into the actuating position.

Figs. 1 and 2 show the door trim assembly 10 according to a first embodiment in which the door handle 20 is translationally movable in relation to the interior trim panel 12. As can be seen from Fig. 2, the door handle 20 is movable from the rest position into the actuating position in the transverse direction of the passenger vehicle towards the outside. This movement is illustrated in Fig. 2 by directional arrows 22. In Fig. 2, the rest position is designated with reference sign "R" and the actuating position is designated with reference sign "A" in Fig. 2.

The door handle 20 can be used for both unlatching the door lock and moving the side door, especially from the closed position into the open position. Since the door handle 20 is movable from the rest position R in to the actuating position A towards the interior trim panel 12 and in the transverse direction of the vehicle towards the outside the door lock can be unlatched and the side door can be pushed open via the door handle 20 simultaneously.

Fig. 3 shows the arm rest 16 and the door handle 20 of a second embodiment of the door trim assembly 10. According to the second embodiment the door handle 20 is pivotably held on the arm rest 16 about a pivot axis 24. Thus, the door handle 20 can be pivoted or rotated in relation to the arm rest 16 about the pivot axis 24. This rotational movement is illustrated by a directional arrow 26.

As can be seen from Fig. 3, the pivot axis 24 extends in the direction of the longitudinal extension of the arm rest 16. The direction of the longitudinal extension of the arm rest 16 coincides at least substantially with the longitudinal direction of the vehicle. Thus, the movement of the door handle 20 in relation to the arm rest 16 is realized in a very space-saving way.

Fig. 4 shows the arm rest 16 and the door handle 20 of a third embodiment of the door trim assembly 10. According to the third embodiment the door handle 20 is pivotably held on the arm rest 16 so that the door handle 20 can be pivoted in relation to the arm rest 16 about a pivot axis 28.

As can be seen from Fig. 4, the pivot axis 28 extends at least substantially in the vertical direction of the vehicle. Moreover, the door handle 20 according to the third embodiment is pivotable from the rest position R into the actuating position A towards the interior trim panel 12 and in the transverse direction of the vehicle towards the outside. Thus, by

pushing the door handle towards the outside the door lock can be unlatched and the side door can be pushed open simultaneously.

## List of reference signs

|    |                     |
|----|---------------------|
| 10 | door trim assembly  |
| 12 | interior trim panel |
| 14 | storage compartment |
| 16 | arm rest            |
| 18 | handle recess       |
| 20 | door handle         |
| 22 | directional arrow   |
| 24 | pivot axis          |
| 26 | directional arrow   |
| 28 | pivot axis          |
| A  | actuating position  |
| R  | rest position       |

## Claims

1. A door trim assembly (10) for a side door of a vehicle, the door trim assembly (10) comprising:
  - at least one interior trim panel (12) comprising an armrest (16) which has a handle recess (18),
  - a door handle (20) being arranged in the handle recess (18),characterized in that the door handle (20) is movably arranged on the interior trim panel (12), the door handle (20) being movable in relation to the interior trim panel (12) from a rest position (R) into at least one actuating position (A) for unlatching a door lock.
2. The door trim assembly (10) according to claim 1, characterized in that the door handle (20) is translationally movable in relation to the interior trim panel (12).
3. The door trim assembly (10) according to any one of claims 1 or 2, characterized in that the door handle (20) is pivotable in relation to the interior trim panel (12) about a pivot axis (24, 28).
4. The door trim assembly (10) according to claim 2, characterized in that the pivot axis (24, 28) extends in the vertical direction of the vehicle or in the direction of the longitudinal extension of the armrest (16).
5. The door trim assembly (10) according to any one of the preceding claims, characterized in that the door handle (20) is movable from the rest position (R) into the actuating position (A) in the transverse direction of the vehicle towards the outside.



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**Examiner:** Mr Philip Lawrence

**Claims searched:** 1-5

**Date of search:** 15 July 2014

## Patents Act 1977: Search Report under Section 17

### Documents considered to be relevant:

| Category | Relevant to claims | Identity of document and passage or figure of particular relevance                                  |
|----------|--------------------|-----------------------------------------------------------------------------------------------------|
| X        | 1-5                | GB779517 A<br>(FORD), see whole document.                                                           |
| X        | 1-5                | GB2059370 A<br>(FIAT), see whole document.                                                          |
| X        | 1-5                | DE1154362 A<br>(BMW), see Figures.                                                                  |
| X        | 1, 2, 5            | DE102009052685 A<br>(DAIMLER), see WPI Abstract Accession No. 2010-G83594, Figures and Para [0017]. |
| X        | 1-3                | US2006/0145513 A1<br>(FORD), see Abstract and Figures 2 & 3.                                        |

### Categories:

|   |                                                                                                           |   |                                                                                                                  |
|---|-----------------------------------------------------------------------------------------------------------|---|------------------------------------------------------------------------------------------------------------------|
| X | Document indicating lack of novelty or inventive step                                                     | A | Document indicating technological background and/or state of the art.                                            |
| Y | Document indicating lack of inventive step if combined with one or more other documents of same category. | P | Document published on or after the declared priority date but before the filing date of this invention.          |
| & | Member of the same patent family                                                                          | E | Patent document published on or after, but with priority date earlier than, the filing date of this application. |

### Field of Search:

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC<sup>X</sup> :

Worldwide search of patent documents classified in the following areas of the IPC

E05B

The following online and other databases have been used in the preparation of this search report

EPODOC, TXTE, WPI, Internet

### International Classification:

| Subclass | Subgroup | Valid From |
|----------|----------|------------|
| E05B     | 0085/12  | 01/01/2014 |