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Vehicle handle unit and a method for its assembly.

The present invention relates to a vehicle handle unit consisting of two parts, an inner one and an outer one (i.e. the handle) which are being assembled to a vehicle door in correspondence to a large radius indentation with interposition of single-use spacer inserts mounted below levers hinged in the inner part so that any contact between the handle and door is prevented when the handle is to be mounted.

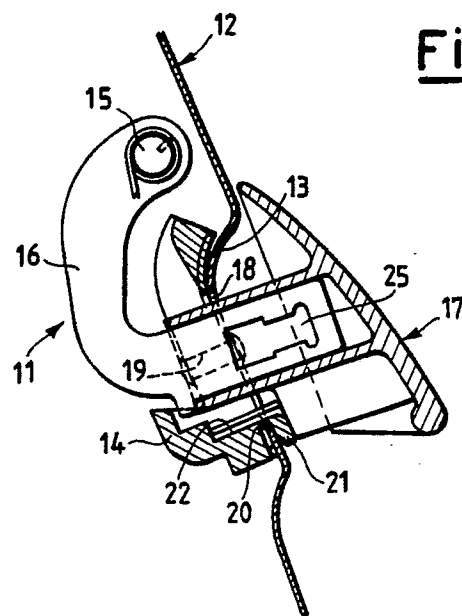


Fig.4

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This invention relates to a vehicle handle unit and a method for its assembly.

Various types of vehicle handles are known, these involving various problems both in terms of the door design and in terms of their assembly. In this respect, the handle unit is generally assembled onto already painted parts, and this must therefore be done with care in order not to ruin already completed paintwork.

Totally holed handle cavities are currently provided in doors, leading to considerable structural weakness. This weakness can be obviated by metal or plastics cover pieces, but these result in problems of corrosion, air sealing and consequent internal vehicle noise. Current handle units also suffer from the problem of difficulty in aligning the indentation profile with the handle.

The object of the present invention is to overcome the said drawbacks of the known art by providing a vehicle handle unit in which the handle indentation does not weaken the structure, so dispensing with the need for stiffening covers while at the same time allowing more reliable assembly of the unit, such that the unit provides a good seal and does not damage the paintwork during assembly.

This object is attained by a vehicle handle unit to be associated with an indentation provided in a vehicle door, characterised in that said unit consists of a part internal to said indentation comprising a pair of levers hinged to a base member, said levers being provided with elastic fixing means and tensioning springs, said indentation being of large radius and comprising slots to allow passage and articulation of said levers, and an external part consisting of a handle to be fixed to said levers by said elastic means, said handle being provided with caps of rubbery material for sealing purposes, said handle entirely covering the impression of said indentation.

Said base member is provided with a pair of seats for receiving respective spacer inserts of plastics material, said seats being positioned below said levers, said spacer inserts preventing contact between said handle when mounted on said levers and said vehicle door.

According to the invention said inserts are freely withdrawable. In a preferred embodiment of the present invention said spacer inserts are substantially of L cross-section, one arm of said L engaging a respective tooth provided on said levers.

On that end outwards of said indentation, said spacer inserts are preferably provided with a projection to facilitate their extraction from said seats.

To obtain a large-radius indentation, said indentation must be formed by pressing.

Said indentation also comprises holes for fixing said internal part of said unit to said door.

The present invention also provides a method for assembling a handle unit such as that described heretofore, consisting of a first stage in which the internal part of a handle unit is fixed onto a door in a position corresponding with a holed indentation, said internal part comprising elastically hinged levers for insertion through holes of said indentation, a second stage in which said levers are raised and inserted into appropriate seats provided below the seats of profiled spacer inserts, said inserts maintaining said levers partly raised, a third stage in which a handle is mounted and snap-fitted onto said partly raised levers, and a fourth and final stage in which said handle rigid with said levers is raised and said spacer inserts withdrawn.

According to the invention said fourth and final stage can be deferred in time as required.

The characteristics and further advantages of the present invention will be more apparent from the description given hereinafter by way of non-limiting example with reference to the accompanying drawings in which:

Figure 1 is a section through a handle unit according to the invention shown partly exploded;

Figure 2 is a section through the assembled elements of Figure 1;

Figure 3 is a further partly exploded sectional view of the elements of Figure 1; and

Figure 4 is a section through the elements of the handle unit according to the invention shown assembled in their final configuration.

In the figures the reference numeral 11 indicates overall a handle unit according to the invention and 12 indicates the profile of a vehicle door comprising an indentation 13.

The handle unit consists of a part internal to the indentation 13 comprising a base member 14 on which levers 16 are hinged at 15, and a part external to the indentation 13 consisting of a handle 17.

The indentation 13 is formed of very large radius which enables it to be press-formed, and is provided with a pair of slots 18 for passage and articulation of the levers 16. Holes 19 are also provided for securely fixing the base member 14 to the indentation. In the indentation there is also provided a longitudinal aperture 20 in which an edge 21 of the base member engages, its purpose being to support the internal part of the handle unit during one stage of assembly. The base member 14 is also provided, in a position below the levers 16, with seats 22 into which substantially L-shaped spacer inserts 23 can be inserted. One arm of the insert 23 engages a tooth 24 provided on the levers 16 to maintain the levers 16 in a partly raised position. To facilitate extraction of the inserts 23 they are provided with a projection 26 on that

end outwards of the indentation 13. The levers 16 are also provided with elastic means 25 for snap-fitting the handle 17 (by pressing).

Figures 1 to 4 show in sequence the main assembly stages.

In Figure 1 the internal part is fixed to the indentation, the spacer inserts are in their respective seats, and the handle has not yet been inserted.

Figure 2 shows the handle fixed to the levers. During this stage, especially if on the assembly line, the fitter is required to exert a certain pressure on the handle, and if the spacer inserts were not present there would be a risk of impact against already painted parts.

Figures 3 and 4 show how the spacer inserts are disengaged, this being an operation which can be carried out subsequently, in that these can be removed from the vehicle at any time up to its delivery to the purchaser.

Claims

1. A vehicle handle unit to be associated with an indentation provided in a vehicle door, characterised in that said unit consists of a part internal to said indentation comprising a pair of levers hinged to a base member, said levers being provided with elastic fixing means and tensioning springs, said indentation being of large radius and comprising slots to allow passage and articulation of said levers, and an external part consisting of a handle to be fixed to said levers by said elastic means, said handle being provided with caps of rubbery material for sealing purposes, said handle entirely covering the impression of said indentation, said base member also being provided with a pair of seats for receiving respective spacer inserts of plastics material, and positioned below said levers, said spacer inserts preventing contact between said handle when mounted on said levers and said vehicle door. 25
2. A handle unit as claimed in claim 1, characterised in that said inserts are freely withdrawable. 30
3. A handle unit as claimed in claim 2, characterised in that said spacer inserts are substantially of L cross-section, one arm of said L engaging a respective tooth provided on said levers. 35
4. A handle unit as claimed in claim 2, characterised in that said spacer inserts are provided on that end outwards of said indentation with a bent portion to facilitate their extraction from said seats. 40
5. A handle unit as claimed in claim 1, characterised in that said indentation must be formed by pressing. 45
6. A handle unit as claimed in claim 1, characterised in that said indentation also comprises holes for fixing said internal part of said unit to said door. 50
7. A method for assembling a handle unit such as that described heretofore, consisting of a first stage in which the internal part of a handle unit is fixed onto a door in a position corresponding with a holed indentation, said internal part comprising elastically hinged levers for insertion through holes of said indentation, a second stage in which said levers are raised and inserted into appropriate seats provided below the seats of profiled spacer inserts, said inserts maintaining said levers partly raised, a third stage in which a handle is mounted and snap-fitted onto said partly raised levers, and a fourth and final stage in which said handle rigid with said levers is raised and said spacer inserts withdrawn. 55
8. A method as claimed in claim 7, characterised in that said fourth and final stage can be deferred in time as required.

Fig.1

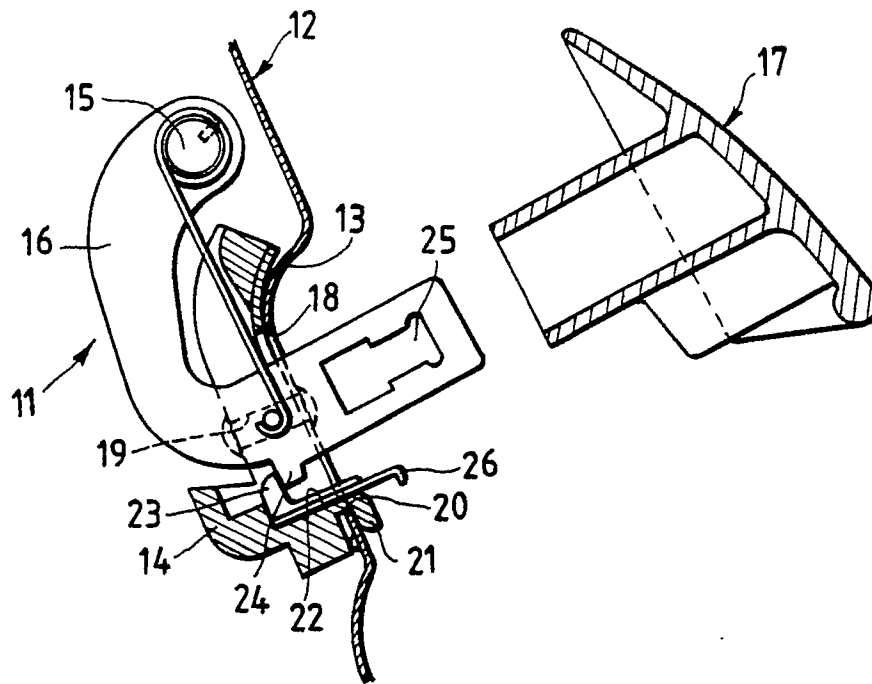


Fig.2

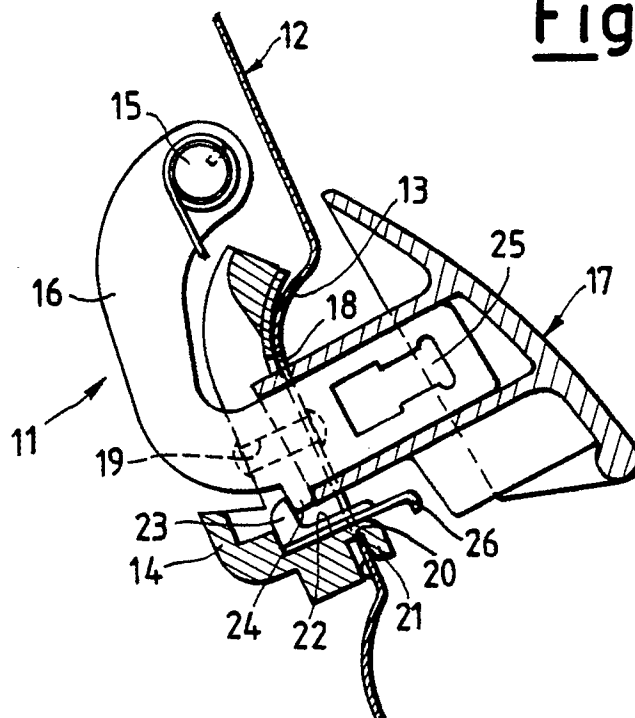


Fig.3

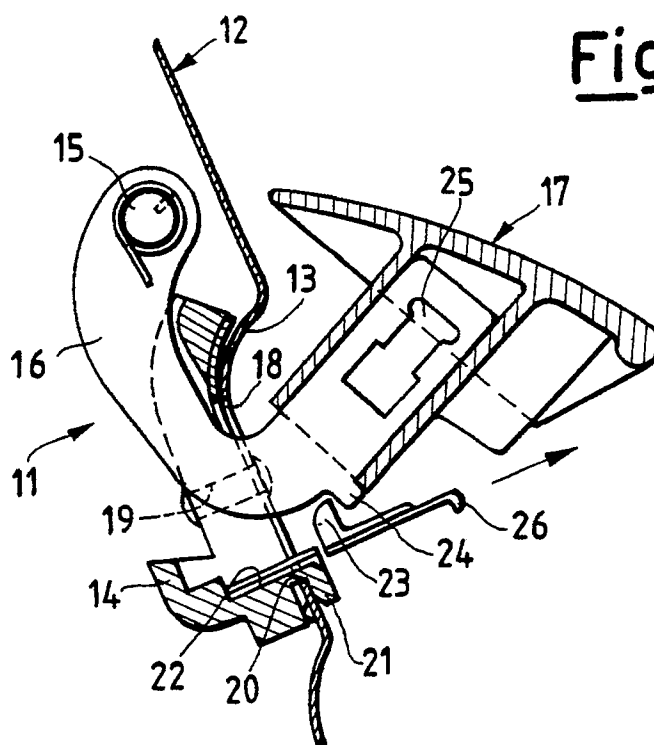
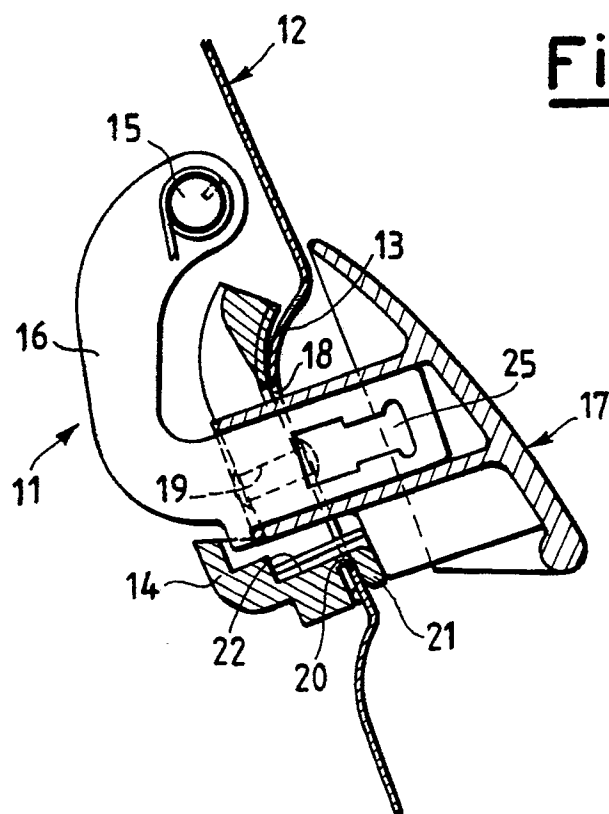


Fig.4





European Patent
Office

EUROPEAN SEARCH REPORT

Application Number

DOCUMENTS CONSIDERED TO BE RELEVANT			EP 91201176.4
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
A	<u>US - A - 3 785 686</u> (ARMSTRONG) * Fig. 1-9; claims 1-18 * --	1, 2, 6, 7, 8	E 05 B 1/00
A	<u>GB - A - 2 090 318</u> (NISSAN MOTOR COMPANY LTD.) * Fig. 1-8; claims 1-12 * --	1, 2, 4, 5, 6, 7	
A	<u>US - A - 4 834 433</u> (KELLER) * Fig. 1-6; claims 1-7 * -- ----	1-7	
			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			E 05 B
The present search report has been drawn up for all claims			
Place of search VIENNA		Date of completion of the search 24-06-1991	Examiner CZASTKA
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			