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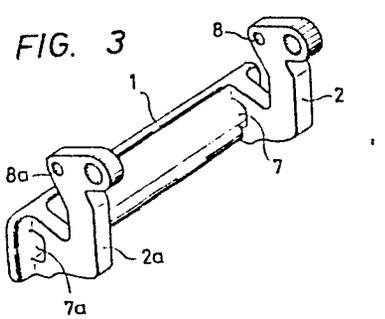
(54) Automobile external door handle unit.

(57) The door handle unit includes a moulded plastics external door handle proper (1) and two operating arms (2, 2*a*) mechanically connected with door lock means (not shown) arranged in an automotive vehicle door. The handle proper (1) and the operating arms (2, 2*a*) are integrally united rigidly as one piece plastics moulding and is characterised by the provision of a respective bridge structure (7, 7*a*) at the root end of each operating arm (2, 2*a*) where the latter join with the handle proper (1). This has the effect of avoiding the formation of defective contraction marks during moulding.

FIG. 3



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AUTOMOBILE EXTERNAL DOOR HANDLE UNIT

The present invention relates to automobile external door handle units, i.e. handle units intended for mounting on the exteriors of automotive vehicle doors. As is commonly known, such a door handle unit may often be mounted on its door in such a way that the door can be prepared for opening by manually raising, from outside, a door handle proper of the unit and the door can then be actually opened by the person standing outside the vehicle pulling it open, if an internal push button has previously been pushed down within the vehicle.

Hitherto known door handle units of this kind have usually been made by zinc die-casting, or from sheet steel by pressing operations. More recently,

however, they have been made of plastics materials, so as to achieve weight reduction.

The known door handle unit comprises an external door handle proper and at least one, but generally two, operating arms which are mechanically connected with door lock means arranged in or on the automobile door. The handle proper and the operating arms are united rigidly, and in one piece, when of plastics material.

Experience shows, however, that aesthetically-undesirable contraction marks may be created on the front surface of the handle proper, during the molding thereof, and/or also on the uniting root ends of the operating arms. If these contraction marks should arise, the commercial value of the product is adversely affected.

It is,therefore, an object of the present invention to provide an automobile external door handle unit in which the occurrence of such disadvantageous contraction marks is minimised or substantially obviated.

For attaining such object, the automobile external door handle unit according to this invention comprises an outside door handle proper and at least one operating arm which is mechanically connected with door lock means arranged in an automotive vehicle door, the handle proper and the operating arm being united rigidly and in one piece, being of plastics material, is characterised by the provision of a material-thieving bridge structure at the root end of the operating arm where it is united with the handle proper.

This and further objects, features and advantages of the invention will appear more clearly as the description proceeds with reference to the accompanying drawing, in which:

Fig. 1 is a front view illustrating a known construction of door handle unit whereon conventional disadvantageous contraction marks have been shown diagrammatically to enable the manner in which these conventional defects are obviated or minimised in accordance with the invention to be appreciated;

Fig. 2 is a cross-section which corresponds to the section line II-II' of Fig. 1, still illustrating a handle unit of conventional form;

Fig. 3 is a perspective view of the handle proper of the handle unit of Fig. 1, when seen from the rear side thereof, especially for the illustration of the manner in which the operating arms of the unit of the invention are united with the handle proper; and

Fig. 4 is a part-sectional end view corresponding to Fig. 3.

In the following, a preferred embodiment of the present invention will be described in detail and with reference to Figs. 3 and 4 of the accompanying drawing.

Before entering into the invention, a comparative conventional construction of automobile external door handle unit which constitutes the background of the invention will be described briefly with reference to Figs. 1 and 2.

The conventional external door handle unit is

denoted generally by a reference character "A" in Fig. 1. This comprises an external door handle proper 1 made of a hard and rigid plastics material such as phenolic resin. A pair of remote operating arms 2 and 2a are rigidly united with the door handle proper 1. Numeral 3 indicates a housing element, again of a hard and rigid plastics material and adapted for housing the door handle proper 1 as shown.

Numerals 4 and 4a represent a pair of mutually-remote supporting stems which are rigid with the rear portion of the housing element 3, although the respective connecting portions therebetween are not specifically shown.

Each of the arms 2, 2a and the respective stems 4, 4a are mutually and pivotably connected by means of pivot pin 5, 5a, respectively. Therefore, the handle proper 1 can be manipulated to turn relative to the housing element 3 and around the common axis, not shown, through the two pins 5 and 5 a.

One stop end 6' of a return spring 6 surrounding the pin 5 abuts the stem 4, while the opposite stop end 6" thereof abuts on the related arm member 2 for preserving return energy within the coil spring 6. A similar arrangement is made with a respective coil spring 6a relative to the corresponding members 2a and 4a. Similar stop ends of the coil spring 6a are denoted with the numerals 6a' and 6a", respectively.

The operating arms 2 and 2a are formed with respective connecting openings 8 and 8a which are mechanically linked, through link means B, so as to enable the door lock to be released by raising the handle proper 1. Upon release of the once raised handle proper 1, the door lock will return to its locked condition under the influence of the return springs 6 and 6a.

With the prior art automotive outside handle unit "A" so far shown and described, it has been specifically experienced that disadvantageous contraction marks will appear at the time of molding of the handle proper 1 and on the front surface

thereof, as indicated schematically at $\underline{a}_1$ and $\underline{a}_2$, and in correspondence with the roots or attaching portions of the operating arms 2 and 2$\underline{a}$, respectively.

The locations of these portions $\underline{a}_1$ and $\underline{a}_2$ will be appreciated by consideration of Fig. 2 in combination with Fig. 1.

For avoiding these defects and in accordance with the characterising feature of the invention, the attaching root portion of each arm 2 or 2$\underline{a}$, is formed with a material-thieving bridging portion 7, 7$\underline{a}$ respectively. These material-thieving bridges 7 and 7$\underline{a}$ can be seen clearly in Figs. 3 and 4. The provision of these bridging portions is surprisingly effective to prevent the formation of the contraction marks $\underline{a}_1$, $\underline{a}_2$ and a handle unit of highly pleasing appearance is thus obtained.

As has been ascertained by practical experience and as will be understood from the foregoing description, the inventively improved automobile external door handle unit configuration obviates the disadvantageous formation of aesthetically

undesirable contraction marks such as those shown and indicated at $\underline{a}_1$ and $\underline{a}_2$ in Fig. 1, in a particularly simple, yet remarkably meritorious manner.

CLAIMS:

1. An automobile external door handle unit, comprising an external door handle proper and at least one operating arm which is mechanically connected with door lock means arranged in an automobile door, the handle proper and the operating arm being united rigidly and in one piece, being of plastics material, the unit being characterised by the provision of a meterial-thieving bridge structure at the root end of the operating arm where it is united with the handle proper.

2. A door handle unit according to claim 1 further characterised in that an operating arm is provided at each end of said handle proper, each said operating arm having a respective said bridge structure at its root end where it is united with the handle proper.

FIG. 1

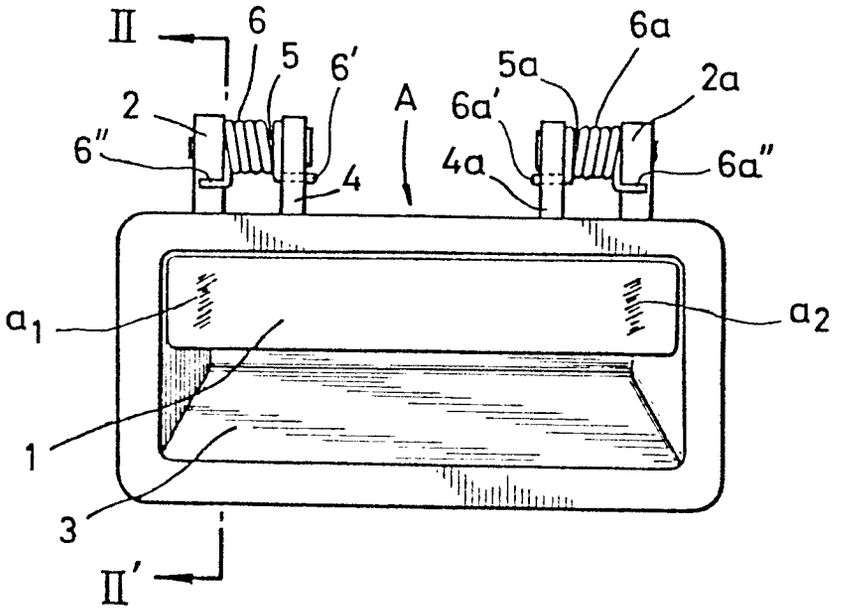


FIG. 2

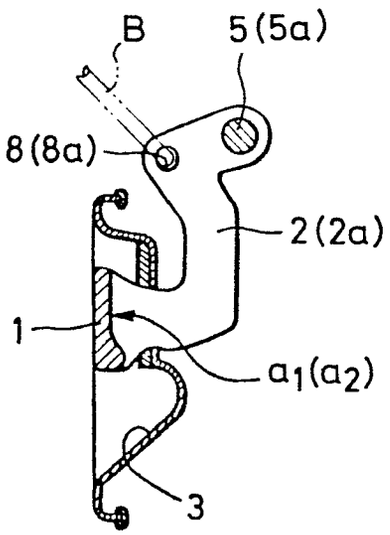
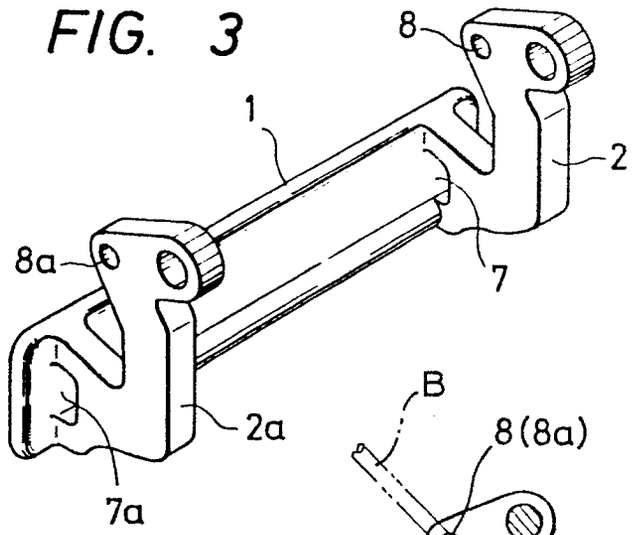


FIG. 3



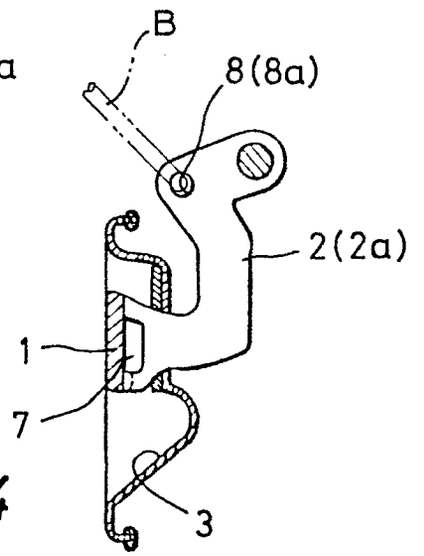


FIG. 4

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EUROPEAN SEARCH REPORT

0183880
Application number

EP 84 30 8528

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 4)
X	G. SCHREYER: "Konstruieren mit Kunststoffen", part 1, 1972, pages 251,260, Carl Hanser Verlag, Munich, DE. -----	1	E 05 B 5/00

TECHNICAL FIELDS SEARCHED (Int Cl 4)

E 05 B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	05-08-1985	VAN BOGAERT J.A.M.M.

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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