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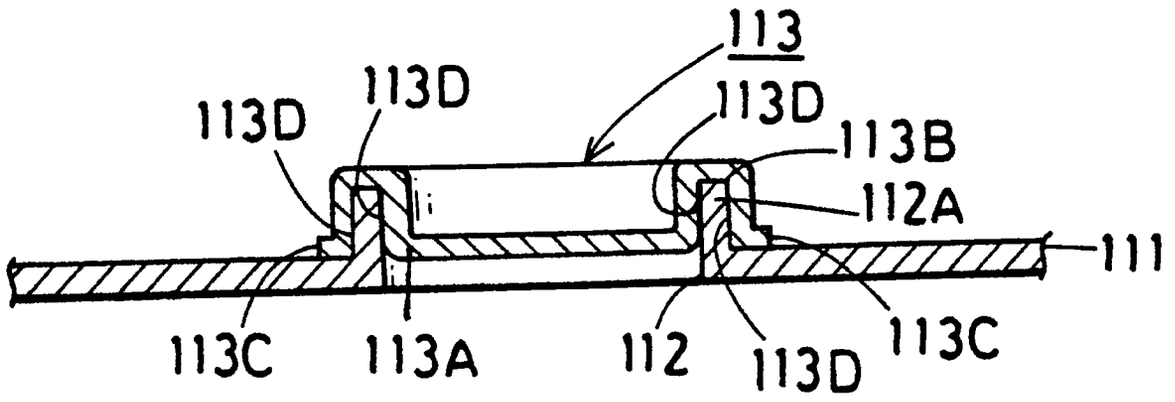
(54) A masking arrangement and masking methods.

(57) A masking structure to protect a hole (112) of in article (111) from a surface treatment is provided in the present invention.

Said masking structure comprises a hole in an article with a boss (112A) around it and a masking member (113) consisting of a member having a groove (113B) near its edge, wherein said masking member is attached onto said hole by inserting said boss round said hole into said groove of said masking member.

FIG. 1



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A MASKING ARRANGEMENT AND MASKING METHODS

The present invention relates to a masking arrangement and masking methods adapted to protect a hole in an article from a surface treatment.

When a surface treatment is effected on the surface of an article, and if said surface of said article has a hole in which said surface treatment should not be effected, said hole needs to be protected by said masking member.

Hitherto, as shown in Fig. 3, a masking member (103) consisting a vessel type inserting part (103)A and a flange (103)B extending from the upper edge of said inserting part (103)A has been provided to protect a hole (102) in an article (101).

Said masking member (103) is attached onto said hole (102) by applying it to a boss (102)A surrounding said hole (102). In the case that said surface treatment has a heating process and said masking member (103) is made of a thermo-plastic material, said masking member (103) may contract by said heating since said masking member has residual strain when said masking member is molded and falls into said hole (102) as shown in Fig. 4. As a result, said hole (102) cannot be completely protected by said masking member (103) during said surface treatment process.

Accordingly, an object of the present invention is to provide improved masking protection for a hole if an article from a surface treatment, and reduce the chance of contraction of a masking member into said hole of said article.

According to the present invention, there is provided a masking arrangement comprising, in an article to be surface heated, a hole with a boss round it, and a masking member consisting of a member having a groove near its edge wherein said masking member is attached by said boss round said hole being received in said groove of said masking member.

This invention also provides a method of masking a hole and a boss which is around it which are provided in an article to be surface treated by attaching to the boss a member having a groove near its edge, in which the boss is received.

Further the invention provides a method of surface treating an article having a hole and a boss which is around it which are to be masked from the surface treatment, including the steps of attaching to the boss a member having a groove near its edge, in which the boss is received, performing the surface treatment and removing the member.

In addition the invention provides the use of a member for the purpose of masking a hole, which is in an article, and a boss which is around the hole, during surface treatment of the article, the member having a groove near its edge in which in use the boss is received.

In order that the invention may be more clearly understood, the following description is given, by way of example only, with reference to the accompanying drawings in which:

Fig. 1 and Fig. 2 relate to an embodiment of the present invention, and Fig. 3 and Fig. 4 relate to the prior art.

Fig. 1 is a partial side sectional view showing a hole in an article protected by a masking member.

Fig. 2 is a perspective view of said masking member.

Referring now to Fig. 1 and Fig. 2, a hole (112) in an article (111) is surrounded by a boss (112)A. A plate type masking member consists of a vessel type inserting part (113)A, a groove (113)B surrounding said inserting part (113)A, and a flange (113)C extending from the outside of said groove (113)B.

Said masking member (113) may be produced by the vacuum forming or press molding of a plastic sheet such as a polystyrene sheet, polyethylene sheet, polypropylene sheet, polyurethane sheet, or the like, a foamed plastic sheet, such as a foamed polystyrene sheet, foamed polyethylene sheet, foamed polypropylene sheet, foamed polyurethane sheet, or the like, a laminated sheet consisting of a plural number of sheets selected from said plastic sheets and foamed plastic sheets. Further, said masking member (113) may be produced by expansion molding using expandable beads such as expandable polystyrene beads, expandable polyethylene beads, expandable polypropylene beads, or the like, or by injection molding using plastic pellets such as polystyrene pellets, polyethylene pellets, polypropylene pellets or the like. An inorganic filler such as calcium carbonate, talc, bentonite, fly ash, blast furnace slag or the like may be mixed in said plastics as a material of said masking member (113). When said inorganic filler is mixed in said plastics, the mechanical strength of said masking member (113) may be improved and the plastic needed for said masking member (113) may be reduced. Further if said masking member (113) is incinerated after use, the heat of combustion from said burnt masking member may be reduced since said inorganic filler in said masking member is incombustible. Therefore, the life of the incinerator may be prolonged.

Preferable plastic as the material for the masking member (113) may be a polyolefin such as polyethylene, polypropylene or the like since said polyolefin has solvent resistance.

Said masking member (113) is attached onto

said hole (112) by inserting said boss (112)A of said hole (112) into said groove (113)B of said masking member (113) before a surface treatment.

When said masking member (113) is heated and softened during said surface treatment, a contraction stress originating in the residual strain is generated in said masking member (113) but the contraction of said masking member (113) is prevented since said groove (113)B of said masking member (113) firmly holds said boss (112)A. Said boss (112)A may be firmly caught between the pair of walls (113)D, (113)D of said groove (113)B since the contraction force is generated in said groove (113)B. Accordingly, said masking member (113) is prevented from contracting by heating and so does not fall into said hole (112).

With the masking member in place, the surface treatment can be performed. The hole and boss are not subject to the surface treatment. After treatment, the masking member can be removed, e.g. by being pulled off, manually or by a robot, or can be destroyed by heating in situ. This leaves the hole and boss unaffected by the surface treatment. This invention is particularly useful for protecting parts of the surfaces of substantial manufactured articles such as car or other automobile bodies.

Claims

1. A masking arrangement comprising, in an article to be surface heated, a hole with a boss round it, and a masking member consisting of a member having a groove near its edge wherein said masking member is attached by said boss round said hole being received in said groove of said masking member.
2. A method of masking a hole and a boss which is around it which are provided in an article to be surface treated by attaching to the boss a member having a groove near its edge, in which the boss is received.
3. A method of surface treating an article having a hole and a boss which is around it which are to be masked from the surface treatment, including the steps of attaching to the boss a member having a groove near its edge, in which the boss is received, performing the surface treatment and removing the member.
4. The use of a member for the purpose of masking a hole, which is in an article, and a boss which is around the hole, during surface treatment of the article, the member having a groove near its edge in which in use the boss is received.
5. The invention of any preceding claim wherein said masking member has residual strain when it is molded.
6. The invention of any preceding claim wherein said masking member is made of a plastic sheet, which may include an inorganic filler, and or may be a foamed plastic sheet.
7. The invention of claim 6, wherein said plastic sheet is a polyolefin sheet.
8. The invention of any preceding claim wherein the article is a part of an automobile.
9. The invention of claim 8 wherein the masking member is vacuum formed.

FIG. 1

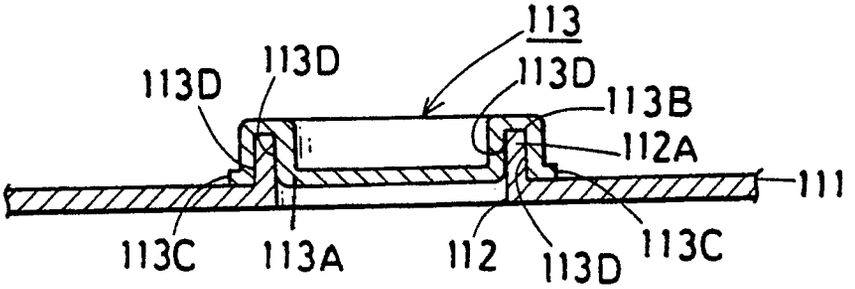


FIG. 2

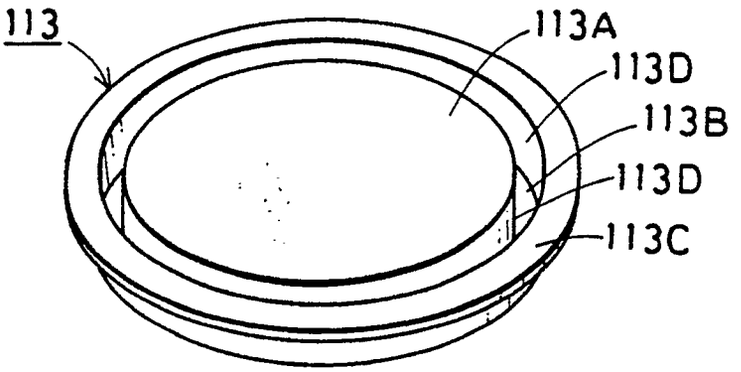


FIG. 3

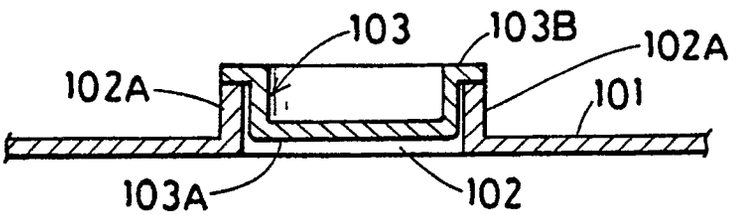
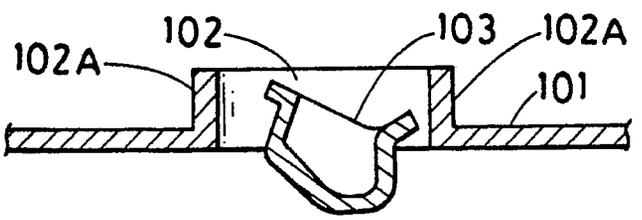


FIG. 4



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EUROPEAN SEARCH REPORT

Application Number

EP 90 31 2499

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.5)
X	FR-A-2 623 734 (SOFITEC) * Figures 1a,1b,1c; page 2, lines 1-13 *	1-5	B 05 D 1/32 B 05 C 21/00
X	EP-A-0 331 455 (BOWTHORPE-HELLERMANN) * Figure 2 *	1-5	
A	CH-A-5 780 54 (OXY METAL FINISHING CORP.) * Figures 2a,2b *		

TECHNICAL FIELDS SEARCHED (Int. Cl.5)

C 25 D
B 05 C
B 05 D

The present search report has been drawn up for all claims

Place of search	Date of completion of search	Examiner
The Hague	15 February 91	NGUYEN THE NGHIEP

CATEGORY OF CITED DOCUMENTS

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