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Applicant: **NAGOYA OILCHEMICAL CO., LTD.**
213-5 Honowari Minamishibata-cho
Tokai-shi Aichi(JP)

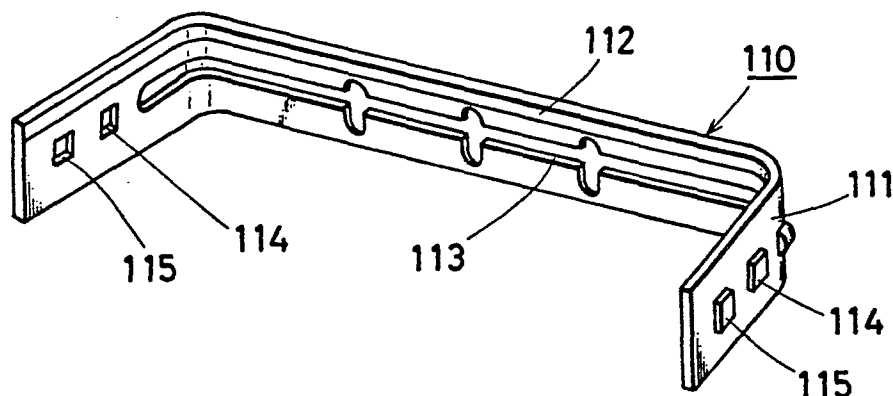
Inventor: **Horiki, Seinosuke, c/o Nagoya Oilchemical Co., Ltd.**
213-5 Honowari Minamishibata-cho
Tokai-shi Aichi(JP)
Inventor: **Makino, Reiji, c/o Nagoya Oilchemical Co., Ltd.**
213-5 Honowari Minamishibata-cho
Tokai-shi Aichi(JP)

Representative: **Senior, Alan Murray et al**
J.A. KEMP & CO 14 South Square Gray's Inn
London WC1R 5EU(GB)

Masking member.

A masking member (110) produced by the molding of a sheet (111) having a shape corresponding with a part of a surface of an article to be protected from a surface treatment, wherein said masking member (110) has (a) reinforcing rib(s) (113) is provided in the present invention. Said masking member (110) is attached to said part of said surface to protect said part from a surface treatment such as coating, plating, and the like.

Fig. 1



MASKING MEMBER

BACKGROUND OF THE INVENTION

The present invention relates to a masking member which protects a part of a surface of an article from a surface treatment such as coating, plating, vacuum evaporation, phosphatizing, and the like. More particularly, the present invention relates to a masking member produced by the molding of a sheet having a shape corresponding with a part of a surface of an article to be protected from a surface treatment wherein said masking member has (a) reinforcing rib(s). When a surface treatment is effected on the surface of an article, and if said surface of said article has (a) part(s) on which said surface treatment should not be effected for the reason that another surface treatment is effected on said part(s) after said surface treatment of said surface treatment spoils the appearance of said article and so on, said part(s) of said surface of said article may be covered and protected with said masking member.

DESCRIPTION OF THE PRIOR ART

Hitherto, adhesive tape has been used as a masking member to protect a part of a surface of an article such as a bumper of an automobile and the like. Namely, the adhesive tape is attached to said part of said surface to protect said surface from said surface treatment and after said surface treatment, said adhesive tape is removed from said surface. Said surface may not be affected by said surface treatment since said part of said surface was covered with said adhesive tape during said surface treatment.

Nevertheless, adhesive tape as a masking member has faults in that attaching and removing of the adhesive tape to/from said part of said surface take time and have a high labor cost, and further, the adhesive tape attached to said part of said surface is buried in the layer of said surface treatment and it is very difficult to find the end of said buried adhesive tape to remove said adhesive tape. Said faults of adhesive tape may seriously obstruct a mass-production line such as a coating line for automobiles. Accordingly, an object of the present invention is to save trouble when the masking member is attached/removed to/from a part to be protected. According to the present invention, there is provided a masking member produced by the molding of a sheet having a shape corresponding with a part of a surface of an article to be protected from a surface treatment wherein said masking member has (a) reinforcing rib(s). The

invention also provides a method of surface treatment of an article wherein a part of the surface is covered during the treatment with such a masking member which is removed after the surface treatment.

The invention will be better understood from the following description given by way of example, with reference to the drawings in which:-

FIG. 1 to FIG. 4 relate to a first embodiment of the present invention.

FIG. 1 is a perspective view of the masking member.

FIG. 2 is a partial perspective view of the front part of an automobile.

FIG. 3 is a partial perspective view of the front part of the automobile after coating.

FIG. 4 is a partial perspective view of the front part of the automobile after the masking member is removed from the bumper.

FIG. 5 to FIG. 8 relate to a second embodiment of the present invention.

FIG. 5 is a perspective view of the masking member.

FIG. 6 is a partial perspective view of the front part of an automobile.

FIG. 7 is a partial perspective view of the front part of the automobile after coating.

FIG. 8 is a cross sectional view of the lower half part of the bumper to which the masking member is attached.

FIG. 9 to FIG. 13 relate to a third embodiment of the present invention.

FIG. 9 is a perspective view of the masking member.

FIG. 10 is a cross sectional view of the pinching part of the masking member.

FIG. 11 is a partial perspective view of the front part of an automobile.

FIG. 12 is a partial perspective view of the front part of the automobile after coating.

FIG. 13 is a cross sectional view of the pinching part of the masking member into which a pillar is inserted.

FIG. 14 to FIG. 16 relate to a fourth embodiment of the present invention.

FIG. 14 is a perspective view of the bumper of the automobile.

FIG. 15 is a perspective view of the masking member.

FIG. 16 is a cross sectional view showing that the masking member is attached to the bumper.

DETAILED DESCRIPTION

The masking member of the present invention is made of a sheet such as from plastics or rubber such as polystyrene, polyethylene, polypropylene, ethylene-propylene copolymer, polyvinylchloride, polyvinylidene chloride, polymethacrylate, styrene-butadiene copolymer, acrylonitrile-butadiene copolymer, polybutadiene polyisoprene, polyisobutylene, polychloroprene, isoprene-isobutylene copolymer, natural rubber, polyurethane, melamine resin, urea resin, phenolresin, epoxyresin and the like; foams of said plastics; or said rubber; fiber sheet such as fabricrubber, knitting, non-woven fabric, paper, corrugated carboard and the like; thermoplastic resin - impregnated fiber sheet; thermosetting resin -impregnated fiber sheet; wooden sheet such as wood board, hardboard, plywood and the like; metal sheet and the like; laminated sheet consisting of a plural number of sheets selected from the group of said sheets. In cases where said masking member is made of a sheet from plastics or rubber, it is desirable to mix inorganic filler such as calcium carbonate, silica, talc, clay, bentonite, stone powder, blast furnace slag, flyash, and the like into said plastics or rubber since heat resistance, mechanical properties and the like of said masking member are improved by said inorganic filler and further, when a used masking member is burnt in a combustion furnace, a smaller combustion energy is produced so that said combustion furnace will stand long use. Usually, 10 to 500 weight parts, desirably 20 to 400 weight parts of said inorganic filler are mixed into said plastics. Further organic filler such as wood powder, organic, fiber powder, walnut powder, coconut powder, flour, chaff powder and the like may be mixed into said plastics or rubber. Still further, dyestuff, pigment, antioxidant, ultraviolet absorber plasticizer and the like may be mixed into said plastics or rubber. Polyolefin such as polyethylene, polypropylene and the like are desirable plastics for the material of the sheet of the masking member of the present invention since said polyolefin has high solvent resistance and is inexpensive, and of course, polyolefin in which said inorganic filler is mixed is a desirable material for said masking member. Polystyrene foam is also a desirable material for said masking member since said polystyrene foam is light and inexpensive, nevertheless, since said polystyrene foam has a low solvent resistance and a low heat resistance, it is desirable to laminate a suitable plastic or rubber onto said polystyrene foam.

Vacuum forming, press molding, casting, extrusion, injection, molding, paper making and the like may be used to produce the masking member of the present invention. The masking member of the present invention does not deform to maintain the shape corresponding with the part of the sur-

face of the article to be protected from surface treatment during the storage, the transportation, handling, and the like, since the masking member is reinforced by said reinforcing rib(s). Therefore the masking member of the present invention can protect completely the part to be protected.

Fig. 1 to Fig. 4 relate to a first embodiment of the present invention. Referring now to Fig. 1 to Fig. 4, a masking member (110) is produced by the molding of a sheet (111) and has a shape corresponding with the surface of the lower half (211) of a bumper (210) of an automobile (310) and indentions (114), (115) are formed in both ends of said masking member (110) wherein projections (214), (215) in both ends of said lower half (211) of said bumper (210) are inserted into said indentions (114), (115) of said masking member (110). Further, a reinforcing rib (113) is formed in said masking member (110) and an adhesive layer (112) is formed on the upper edge of the inside of said masking member (110).

Said masking member (110) is correctly, easily, and securely attached on said lower half (211) of said bumper (210) by inserting said projections (214), (215) of said bumper (210) into said indentions (114), (115) of said masking member (110) and adhering said adhesive layer (112) to the upper edge of said lower half (211) of said bumper (210), and then a paint (410) is coated on said bumper (210) as shown in Fig. 3. After said coating, said masking member (110) is easily removed from said bumper (210) and said paint (410) is not coated on said lower half (211) of said bumper (210) while said paint (410) is coated on the upper half (212) of said bumper (210) as shown in Fig. 4.

The masking member of the first embodiment is easily attached to a part of a surface of an article to be protected by inserting (a) projection(s) of said part into (an) indentation(s) of the masking member and said masking member is easily removed from said part by extracting said projection(s) of said part from said indentation(s) of said masking member. Accordingly, said masking member of the present invention can be correctly, easily, and securely attached to a part of a surface by the guide of said projection(s) of said part and said indentation(s) of said masking member.

Fig. 5 to Fig. 8 relate to a second embodiment of the present invention. Referring now to Fig. 5 to Fig. 8, a masking member (120) is produced by the molding of a sheet (121) and has a shape corresponding with the surface of the lower half (221) of a bumper (220) of an automobile (320) and a bending part (125) is elongated from the lower edge of said masking member (120) and projections (124) are formed on the surface of said bending part (125). Further, a reinforcing rib (123) is formed in said masking member (120) and an

adhesive layer (122) is formed on the upper edge of the inside of said masking member (120).

Said masking member (120) is correctly, easily, and securely attached on said lower half (221) of said bumper (230) by inserting said projections (124) of said masking member (120) into said holes (224) of the bending part (225) which is elongated from the lower half (221) of said bumper (220) and adhering said adhesive layer (122) to the upper edge of said lower half (221) of said bumper (220), and then a paint (420) is coated on said bumper (220) as shown in Fig. 7. After said coating, said masking member (120) is easily removed from said bumper (220) and said paint (420) is not coated on said lower half (221) of said bumper (220) while said paint (420) is coated on the upper half (222) of said bumper (220).

The masking member of the second embodiment is easily attached to a part of a surface of an article to be protected by inserting (a) projection(s) of said part into (an) indentation(s) of the masking member and said masking member is easily removed from said part by extracting said projection(s) of said part from said indentation(s) of said masking member. Accordingly, said masking member of the present invention can be correctly, easily, and securely attached to a part of a surface by the guide of said projection(s) of said part and said indentation(s) of said masking member.

Fig. 9 to Fig. 12 relate to a third embodiment of the present invention. Referring now to Fig. 9 to Fig. 12, a masking member (130) is produced by the molding of a sheet (131) and has a shape corresponding with the surface of the lower half (231) of a bumper (230) of an automobile (330) and pinching parts (134) are formed on the inside of said masking member (130) wherein pillars (234) of air inlets (233) of said lower half (231) of said bumper (230) are inserted into said pinching parts (134) of said masking member (130). As shown in Fig. 10, said pinching parts (134) are formed between a pair of walls (134A), (134A). Further, a reinforcing rib (133) is formed in said masking member (130) and an adhesive layer (132) is formed on the upper edge of the inside of said masking member (130).

Said masking member (130) is correctly, easily, and securely attached on said lower half (231) of said bumper (230) by inserting said pillars (233) of said bumper (230) into said pinching parts (134) of said masking member (130) and adhering said adhesive layer (132) to the upper edge of said lower half (231) of said bumper (230). Said pinching parts (134) of said masking member (130) respectively pinch said pillars (233) of air inlets (234) by the elasticity thereof so that said masking member (130) is securely attached to said lower half (231) of said bumper (230). After said masking

member (130) is attached to said lower half (231) of said bumper (230), a paint (430) is coated on said bumper (230) as shown in Fig. 12. After said coating, said masking member (130) is easily removed from said bumper (230) and said paint (430) is not coated on said lower half (231) of said bumper (230) while said paint (430) is coated on the upper half (232) of said bumper (230).

Fig. 14 to Fig. 16 relate to a fourth embodiment of the present invention. Referring now to Fig. 14 to Fig. 16, a masking member (140) is produced by the molding of a sheet (141) and has a shape corresponding with a lower half (241) of a bumper (240) of an automobile and pinching parts (144) are elongated from the lower edge of said masking member (140) wherein a bending part (243) elongated from the lower edge of said bumper (240) is inserted into said pinching parts (140) of said masking member (140). Further, a reinforcing rib (143) is formed in said masking member (140) and an adhesive layer (142) is formed on the upper edge of the inside of said masking member (140).

Said masking member (140) is correctly, easily, and securely attached on said lower half (241) of said bumper (240) by inserting said bending part (243) of said bumper (240) and adhering said adhesive layer (142) to the upper edge of said lower half (241) of said bumper (240). Said pinching parts (144) of said masking member (140) respectively pinch said bending part (243) of said bumper (240) by the elasticity thereof so that said masking member (140) is securely attached to said lower half (241) of said bumper (240). After said masking member (140) is attached to said lower half (241) of said bumper (240), a paint is coated said bumper (240) and after said coating, said masking member (140) is easily removed from said lower half (241) of said bumper (240).

Claims

1. A masking member produced by the molding of a sheet having a shape corresponding with a part of a surface of an article to be protected from a surface treatment wherein said masking member has (a) reinforcing rib(s).

2. A masking member in accordance with Claim 1, wherein said sheet is a polyolefin sheet.

3. A masking member in accordance with Claim 2, wherein said sheet is a polyolefin sheet in which an inorganic filler is mixed.

4. A masking member in accordance with Claim 3, wherein 10 to 500 weight parts of said inorganic filler is mixed in said polyolefin sheet.

5. A masking member in accordance with Claim 1, wherein said sheet is a fiber sheet.

6. A masking member in accordance with

Claim 1, wherein said sheet is a laminated sheet consisting of a soft elastic sheet and a rigid sheet.

7. A masking member in accordance with any one of claims 1 to 6 wherein said masking member is used to protect the lower half of a bumper of an automobile. 5

8. A masking member in accordance with any one of claims 1 to 6 wherein said masking member is used to protect a part of a surface of the under-side of an automobile. 10

9. A method of surface treatment of an article wherein a part of the surface of the article is covered with a masking member according to any preceding claim, the surface treatment is performed and the masking member is removed. 15

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Fig. 1

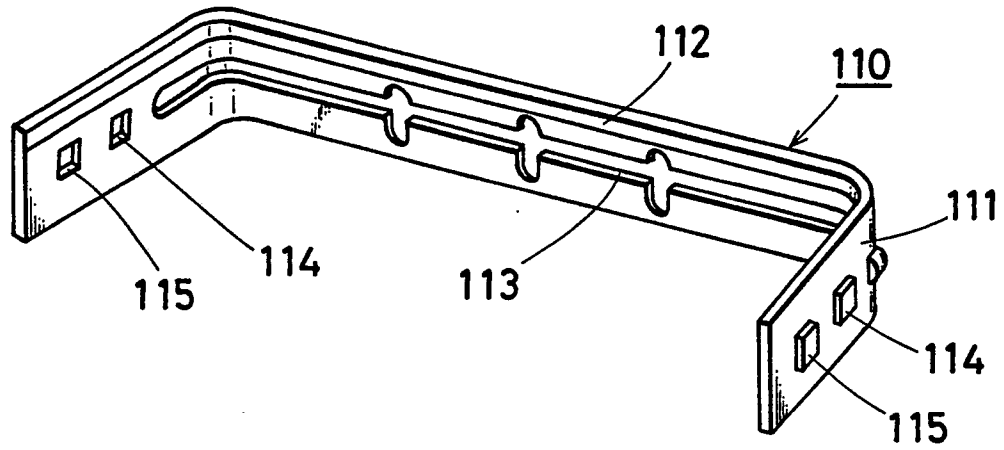


Fig. 2

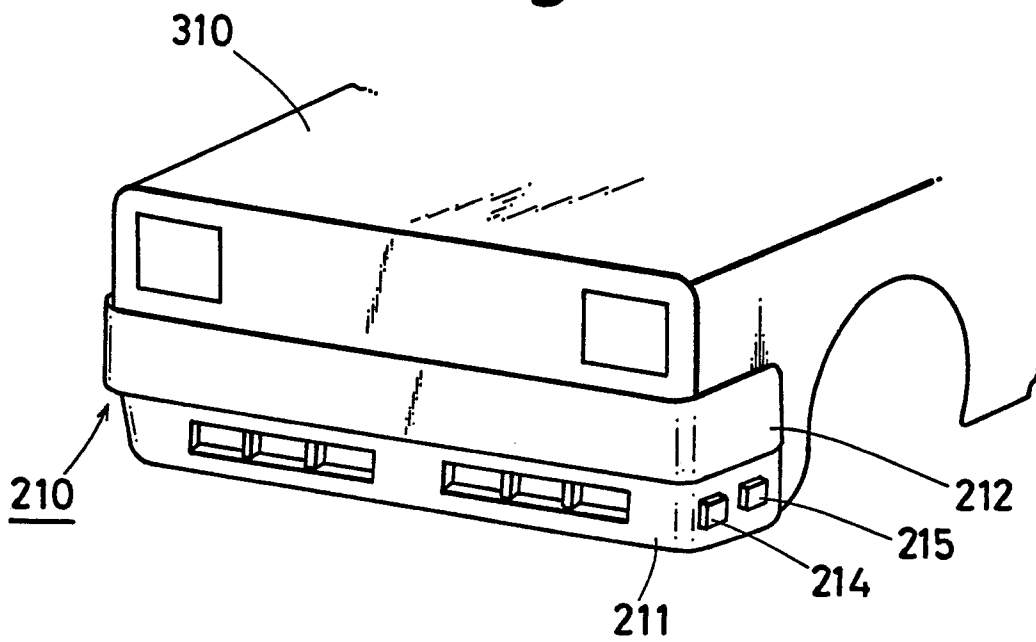


Fig. 3

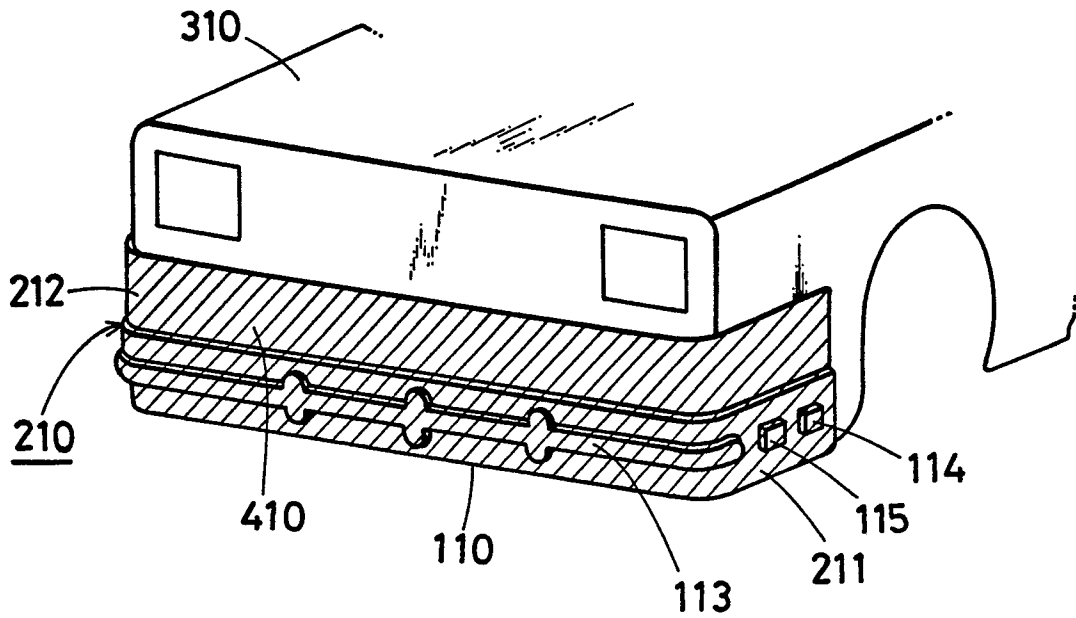


Fig. 4

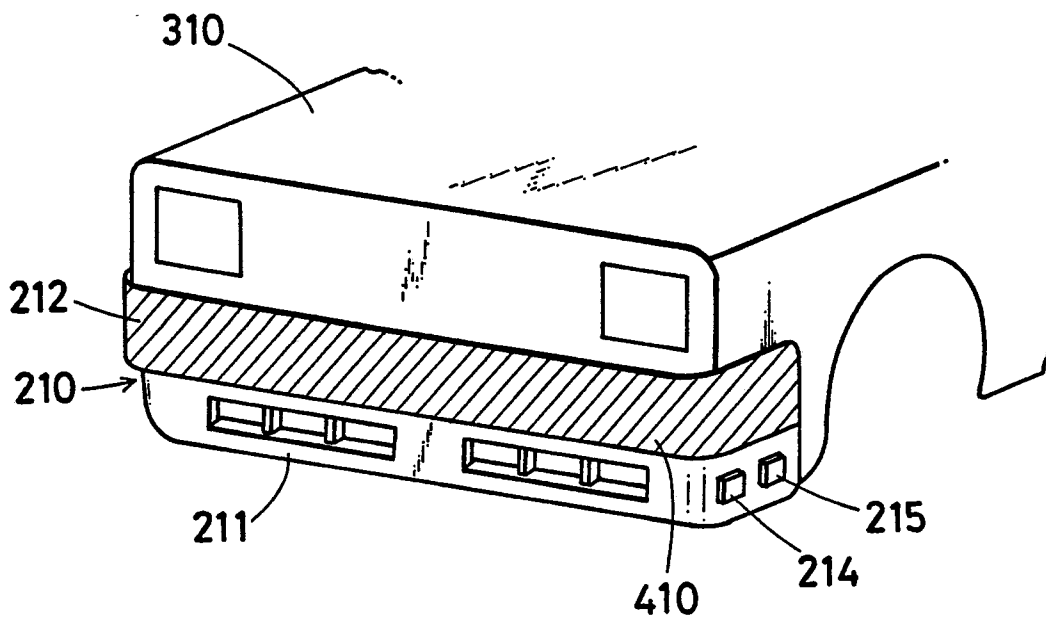


Fig. 5

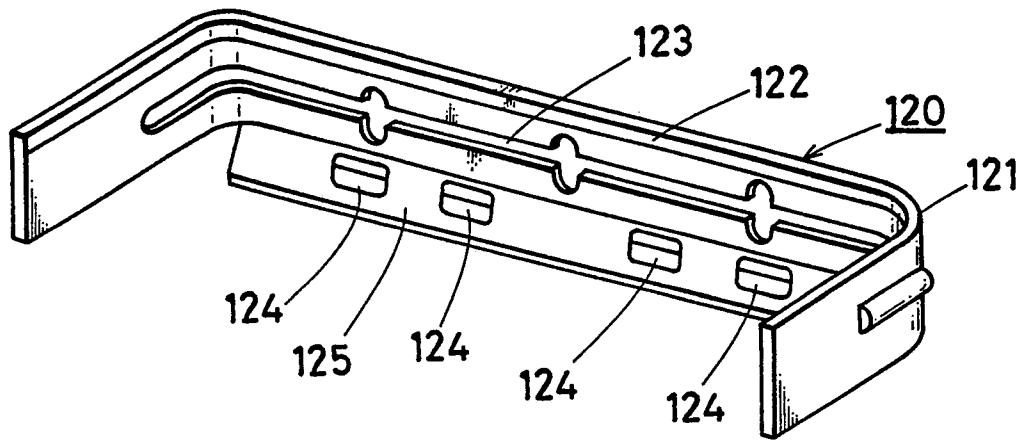


Fig. 6

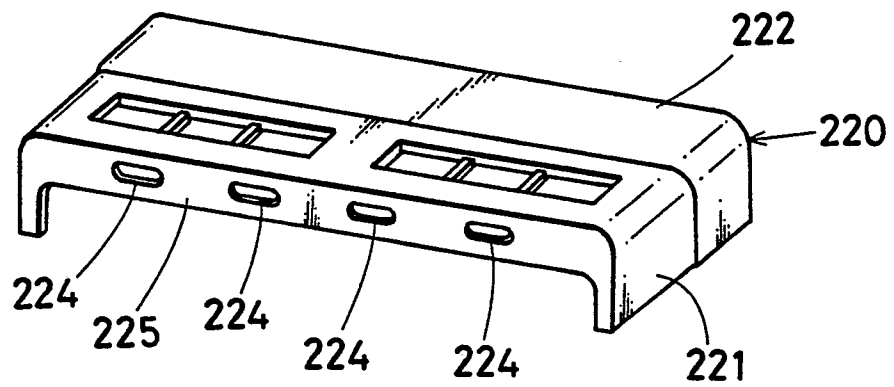


Fig. 7

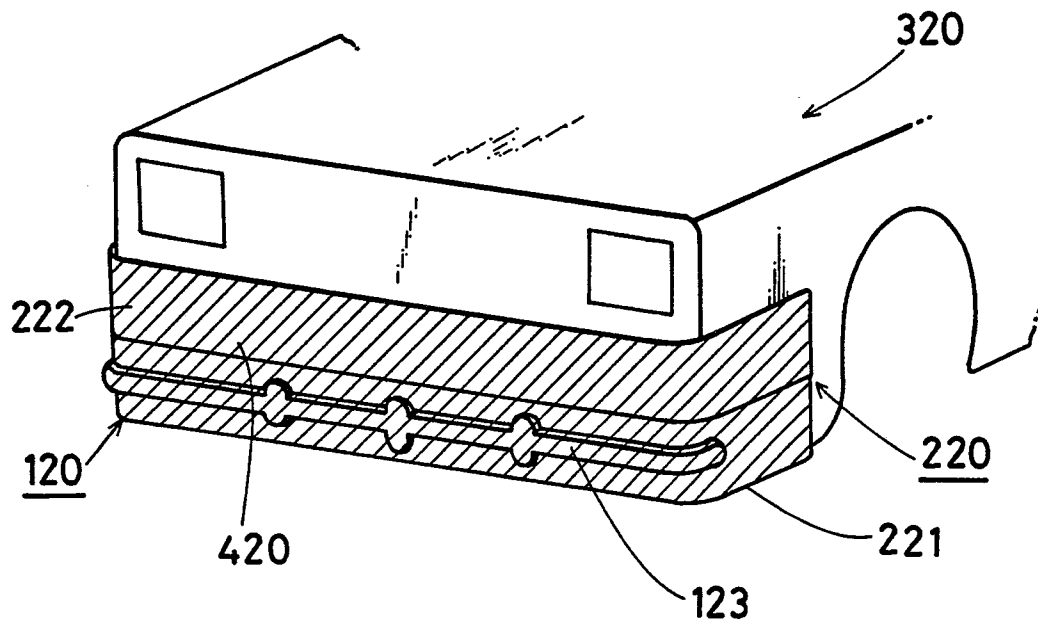


Fig. 8

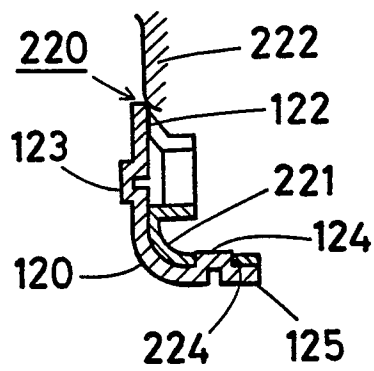


Fig. 9

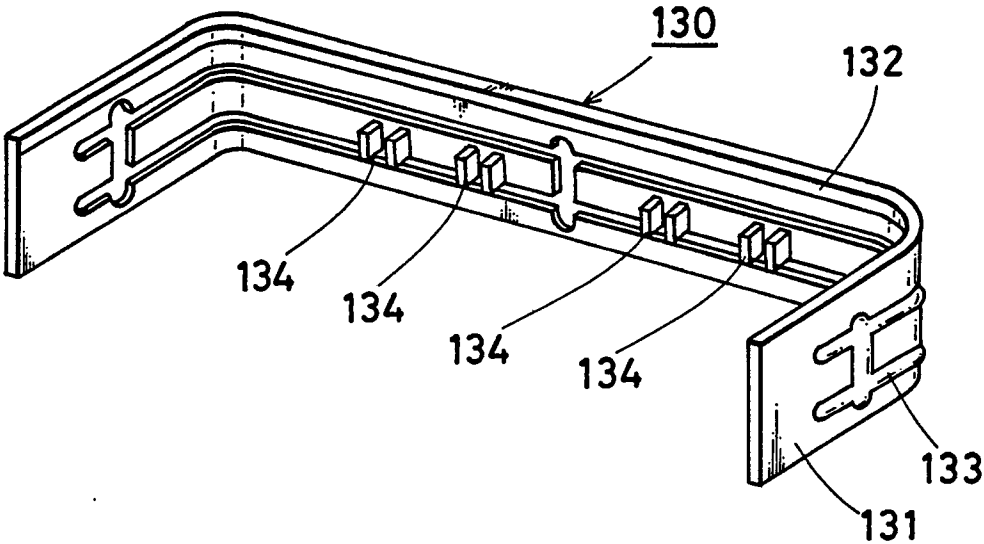


Fig. 10

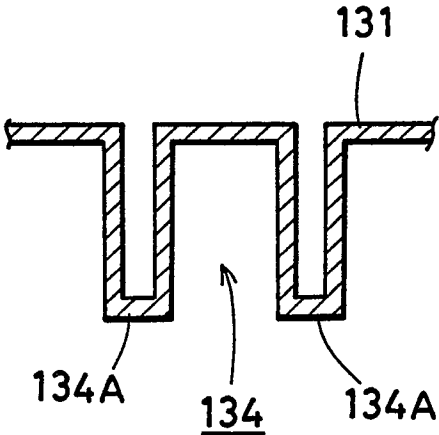


Fig.11

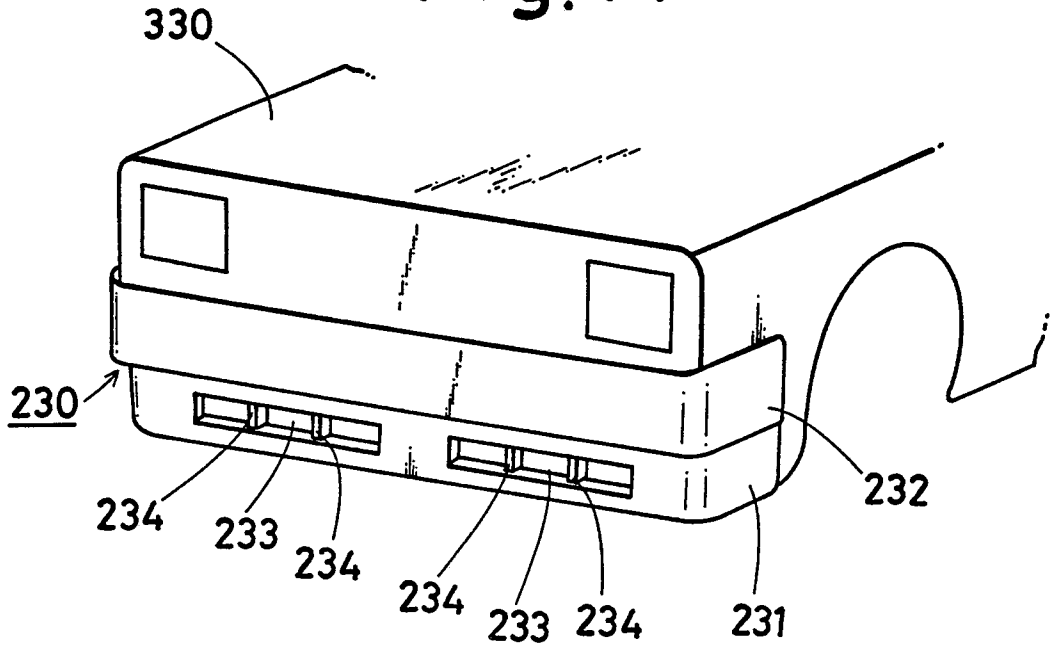


Fig.12

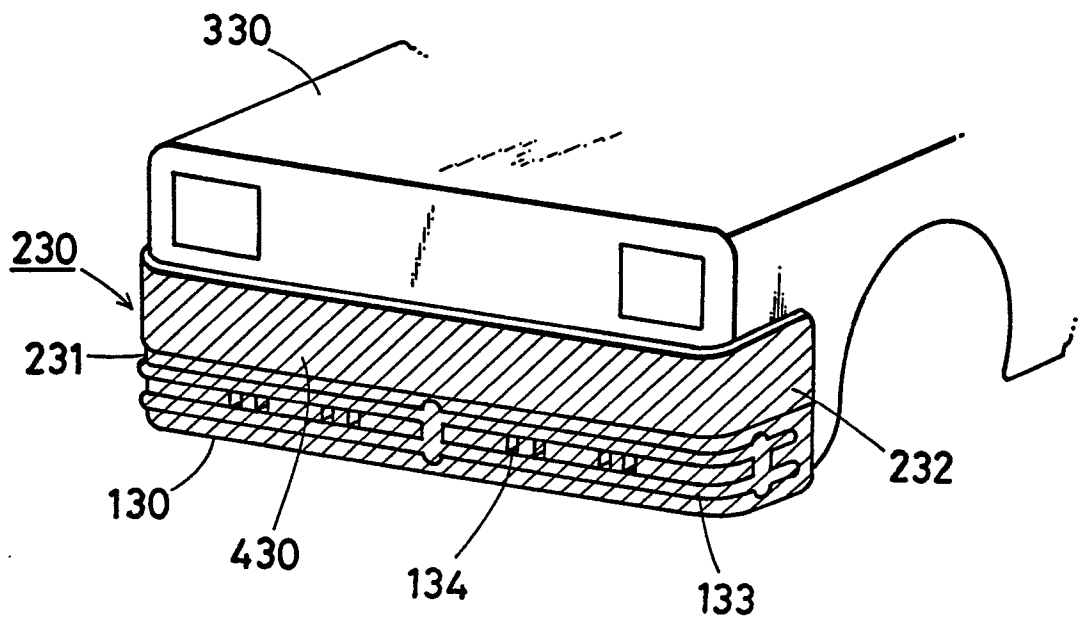


Fig.13

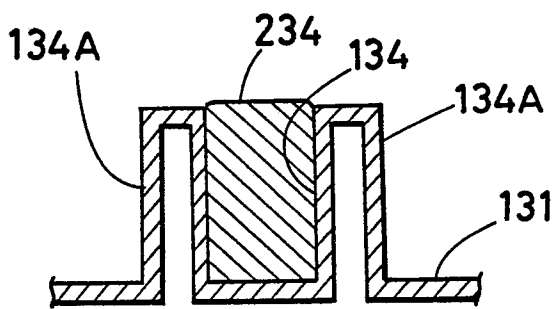


Fig.14

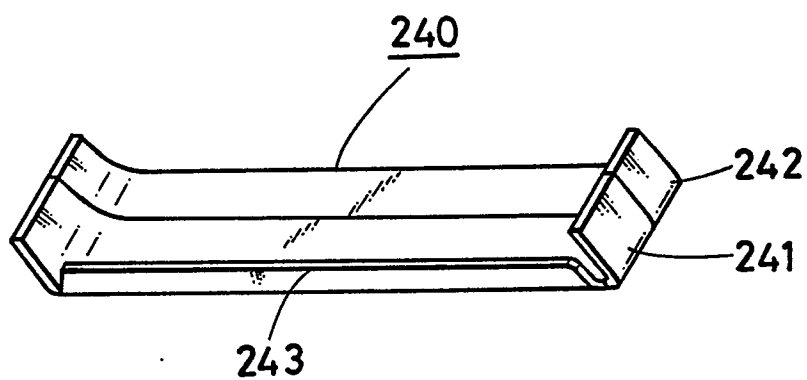


Fig. 15

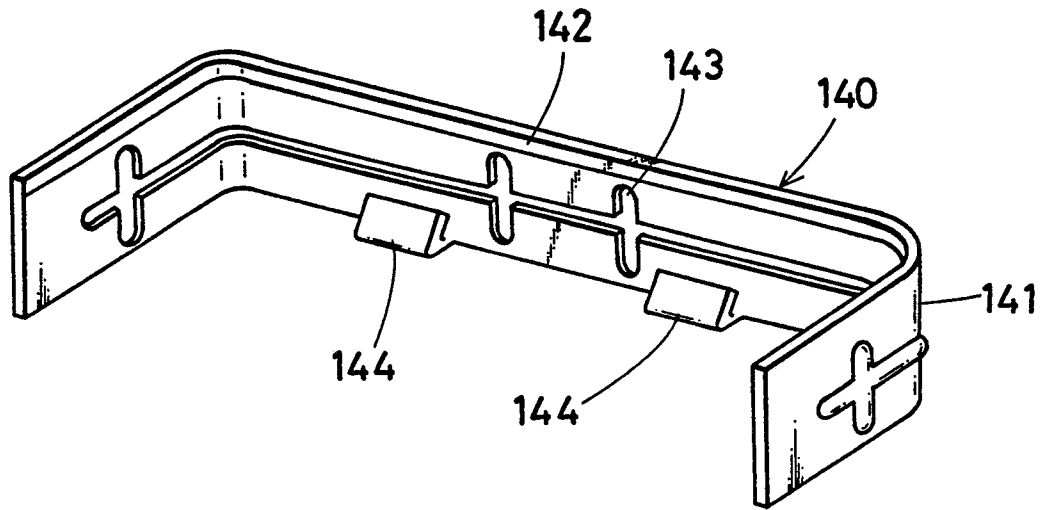
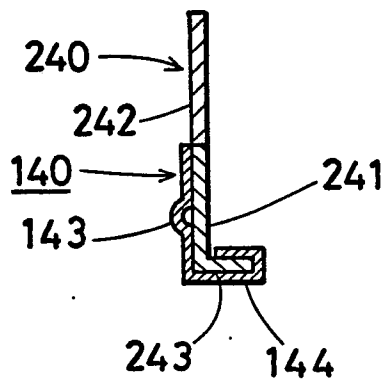


Fig. 16





DOCUMENTS CONSIDERED TO BE RELEVANT			EP 90301792.9
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 - 4 759 959</u> (GUY) * Totality * --	1,7	B 05 C 17/06 B 05 B 15/04
A	<u>GB - A - 2 158 368</u> (HONDA GIKEN KOGYO KK) * Totality * --	1	
A	<u>EP - A1 - 0 303 270</u> (NAGOYA OILCHEMICAL CO) * Totality * --	1	
A	<u>EP - A2 - 0 249 444</u> (NAGOYA OILCHEMICAL CO) * Page 6, line 18 - page 7, line 9 * --	1,2	
A	<u>DE - B - 2 112 731</u> (FRIELINGS DORF) * Totality * ----	1	
			TECHNICAL FIELDS SEARCHED (Int. Cl. ⁵) B 05 B B 05 C B 05 D
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
VIENNA		26-04-1990	SCHÜTZ
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			