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(12) # EUROPEAN PATENT SPECIFICATION

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(54) **Masking member.**

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GB-A- 2 158 368
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Description

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.

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. A reusable point masking member, exhibiting both vertical and horizontal extensibility, is known from US-A-4,759,959. 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.

The masking member of the present invention is made of a sheet such as from plastics or rubber such as polystyrene, polyethylene, polypropylene, ethylene-proplylene copolymer, polyvinylchloride, polyvinylidene chloride, polymethacrylate, styrene-butadiene copolymer, acrylonitrile-butadiene copolymer, polybutadine 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 resinimpregnated

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 surface 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) indention(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 indention(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 indention(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) indention(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 indention(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 indention(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 according to claim 1 wherein said sheet is of plastics or rubber.

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

4. A masking member in accordance with claim 2 or 3 wherein said sheet contains an inorganic filler.

5. A masking member in accordance with claim 4, wherein said sheet is a polyolefin sheet and 10 to 500 weight parts of said inorganic filler is mixed in said polyolefin sheet.

6. A masking member in accordance with claim 1, wherein said sheet is a fiber sheet.

7. A masking member in accordance with claim 1, wherein said sheet is laminated sheet consisting of a soft elastic sheet and a rigid sheet.

8. A masking member according to any preceding claim produced by molding or vacuum forming of a sheet.

9. A masking member according to any preceding claim including an adhesive layer by which the masking member can be located on a surface to be protected.

10. A masking member according to any preceding claim including indentations at both ends of the masking member to receive projections from a surface to be protected.

11. A masking member according to any one of claims 1 to 9 including a bending part (135) of said masking member to engage a bent part of a body to be protected and projections (134) on said bending part to engage holes of said bent part

12. A masking member according to any one of claims 1 to 9 including pinching parts (144, 155) to engage a body to be protected.

13. 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.

14. A method according to claim 13, wherein said masking member is used to protect the lower half of a bumper of an automobile, or a part of a surface of the underside of an automobile.

Patentansprüche

1. Abdeckelement hergestellt durch Formen einer Bahn mit einer Form entsprechend einem Teil einer Oberfläche eines Artikels, der gegen eine Oberflächenbehandlung geschützt werden soll, wobei das Abdeckelement (eine) Verstärkungsrippe(n) aufweist.

2. Abdeckelement nach Anspruch 1, wobei die Bahn aus Kunststoff oder Kautschuk ist.

3. Abdeckelement nach Anspruch 1 oder 2, wobei die Bahn eine Polyolefin-Bahn ist.

4. Abdeckelement nach Anspruch 2 oder 3, wobei die Bahn einen anorganischen Füllstoff enthält.

5. Abdeckelement nach Anspruch 4, wobei die Bahn eine Polyolefinbahn ist und 10 bis 500 Gew.-Teile des anorganischen Füllstoffs in die Polyolefinbahn eingemischt sind.

6. Abdeckelement nach Anspruch 1, wobei die Bahn eine Faserbahn ist.

7. Abdeckelement nach Anspruch 1, wobei die Bahn eine Laminatbahn ist, die aus einer weichelastischen Bahn und einer starren Bahn besteht.

8. Abdeckelement nach einem der vorstehenden Ansprüche, hergestellt durch Formen oder Vakuumverformen einer Bahn.

9. Abdeckelement nach einem der vorstehenden Ansprüche, mit einer Klebstoffschicht, durch die das Abdeckelement auf einer zu schützenden Oberfläche lokalisierbar ist.

10. Abdeckelement nach einem der vorstehenden Ansprüche mit Vertiefungen an beiden Enden des Abdeckelements, um Vorsprünge von einer zu schützenden Oberfläche aufzunehmen.

11. Abdeckelement nach einem der Ansprüche 1 bis 9, mit einem gebogenen Abschnitt (135) des Abdeckelements, um einen gebogenen Teil eines zu schützenden Körpers aufzunehmen, und mit Vorsprüngen (134) an dem gebogenen Teil, um mit Bohrungen des gebogenen Teils in Eingriff zu kommen.

12. Abdeckelement nach einem der Ansprüche 1 bis 9, mit Klemmteilen (144), um mit einem zu schützenden Körper in Eingriff zu kommen.

13. Verfahren zur Oberflächenbehandlung eines Artikels, wobei ein Teil der Oberfläche des Artikels durch ein Abdeckelement nach einem der vorstehenden Ansprüche abgedeckt, die Oberflächenbehandlung ausgeführt und das Abdeckelement abgenommen wird.

14. Verfahren nach Anspruch 13, wobei das Abdeckelement verwendet wird, um die untere Hälfte einer Stoßstange eines Kraftfahrzeugs oder einen Teil einer Oberfläche der Unterseite eines Kraftfahrzeugs zu schützen.

Revendications

1. Elément de masquage produit par moulage d'une feuille ayant une forme qui correspond à une partie d'une surface d'un article devant être protégé d'un traitement de surface, dans lequel ledit élément de masquage comporte une (des) nervure(s) de renforcement.

2. Elément de masquage selon la revendication 1, dans lequel ladite feuille est en matière plastique ou en caoutchouc.

3. Elément de masquage selon la revendication 1 ou 2, dans lequel ladite feuille est une feuille de polyoléfine.

4. Elément de masquage selon la revendication 2 ou 3, dans lequel ladite feuille contient une charge inorganique.

5. Elément de masquage selon la revendication 4, dans lequel ladite feuille est une feuille de polyo-

léfine et 10 à 500 parts en poids de la charge inorganique sont mélangées à la feuille de polyoléfine.

6. Elément de masquage selon la revendication 1, dans lequel ladite feuille est une feuille en fibres.

7. Elément de masquage selon la revendication 1, dans lequel ladite feuille est une feuille stratifiée constituée par une feuille élastique souple et une feuille rigide.

8. Elément de masquage selon l'une quelconque des revendications précédentes, produit par moulage ou formage sous vide d'une feuille.

9. Elément de masquage selon l'une quelconque des revendications précédentes, comprenant une couche adhésive à l'aide de laquelle l'élément de masquage peut être disposé sur une surface devant être protégée.

10. Elément de masquage selon l'une quelconque des revendications précédentes, comprenant des encoches à ses deux extrémités afin de recevoir des saillies d'une surface devant être protégée.

11. Elément de masquage selon l'une des revendications 1 à 9, comprenant une partie cintrable (125) dudit élément de masquage pour entrer en contact avec une partie coudée d'un corps devant être protégé, et des saillies (134) sur ladite partie cintrable pour pénétrer dans des trous de ladite partie coudée.

12. Elément de masquage selon l'une des revendications 1 à 9, comprenant des éléments de serrage (144, 155) pour enserrer un corps devant être protégé.

13. Procédé de traitement de surface d'un article dans lequel une partie de la surface de l'article est recouverte avec un élément de masquage selon l'une quelconque des revendications précédentes, le traitement de surface est effectué et l'élément de masquage est retiré.

14. Procédé selon la revendication 13, dans lequel ledit élément de masquage est utilisé pour protéger la moitié inférieure d'un pare-chocs d'un véhicule automobile ou une partie d'une surface du dessous d'un véhicule.

Fig. 1

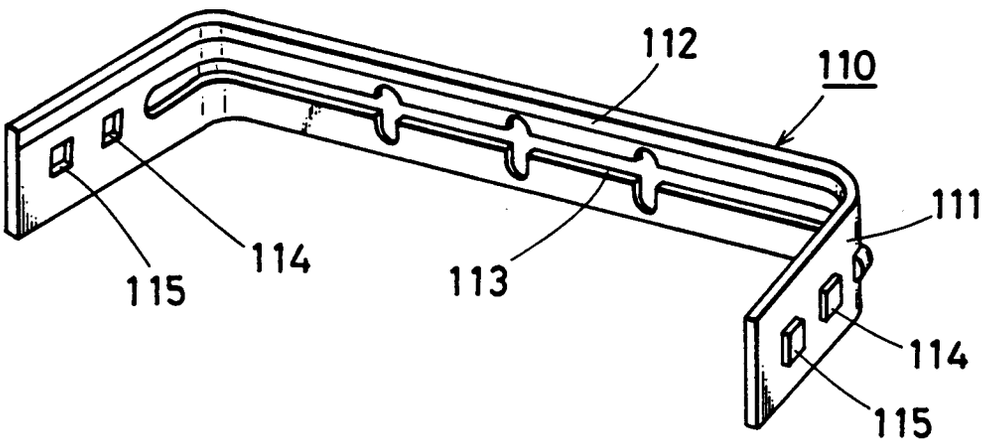

Fig. 2

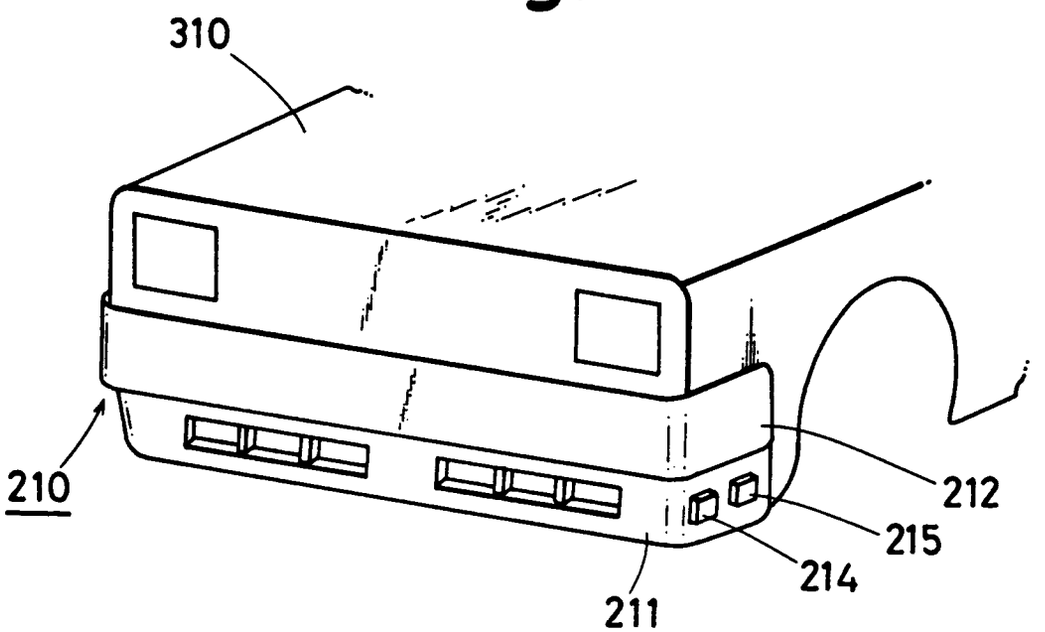

Fig. 3

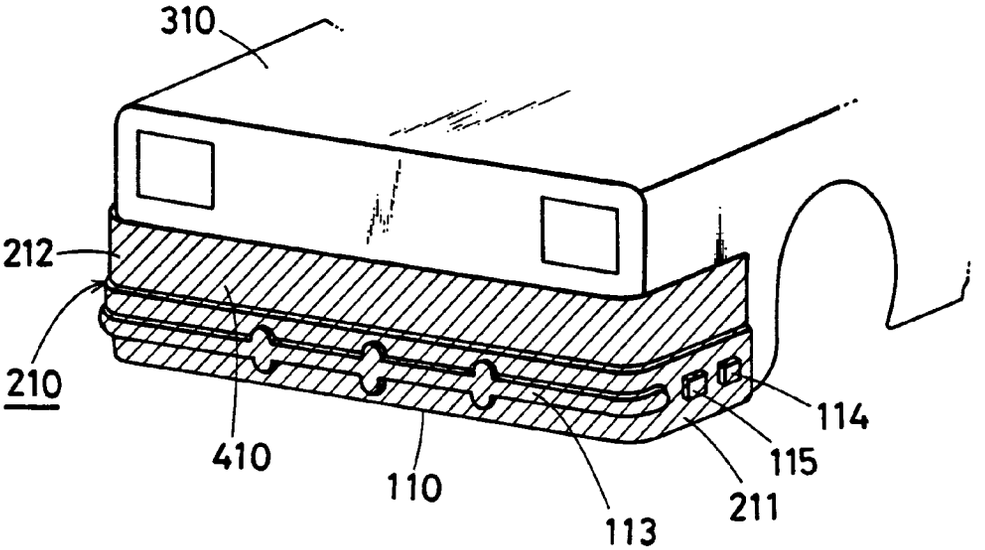

Fig. 4

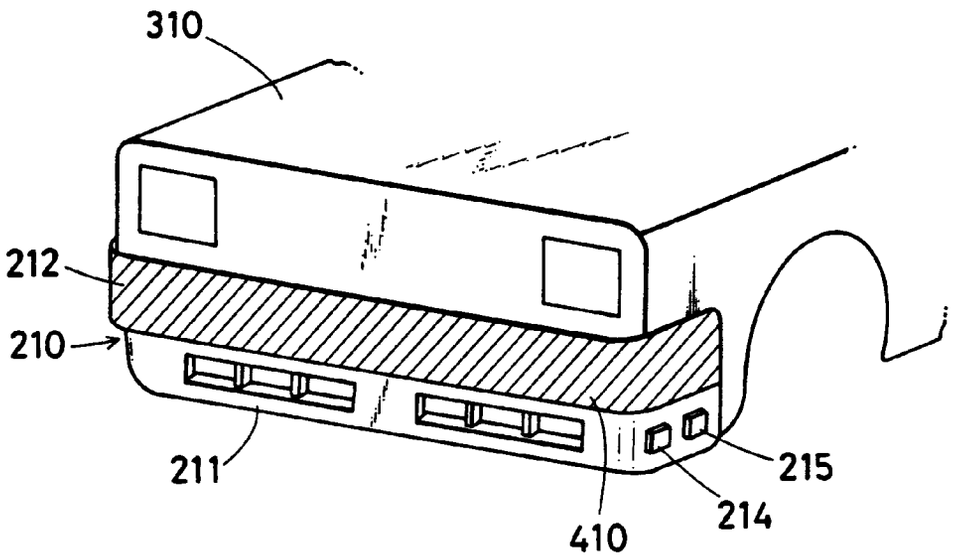

Fig. 5

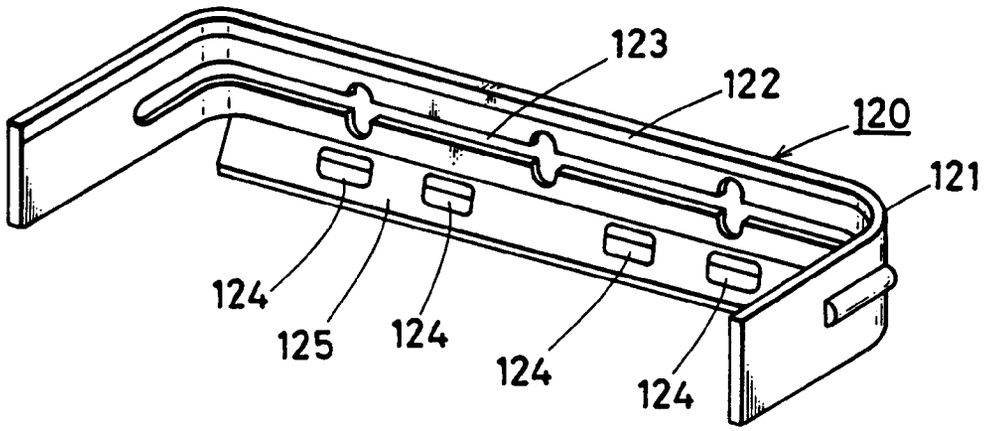
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Fig. 6

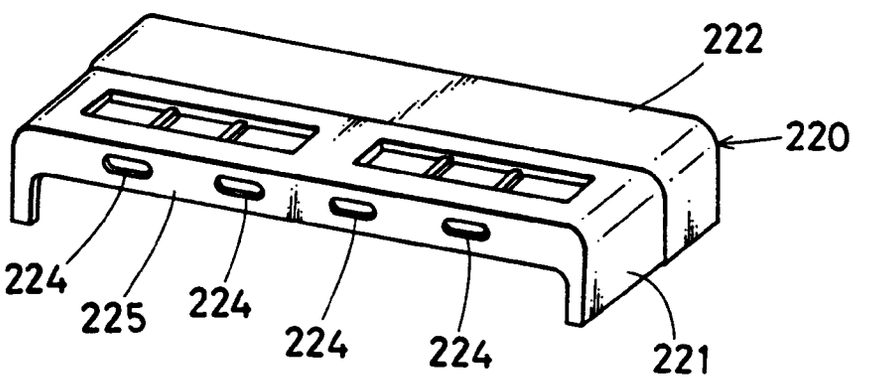
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Fig. 7

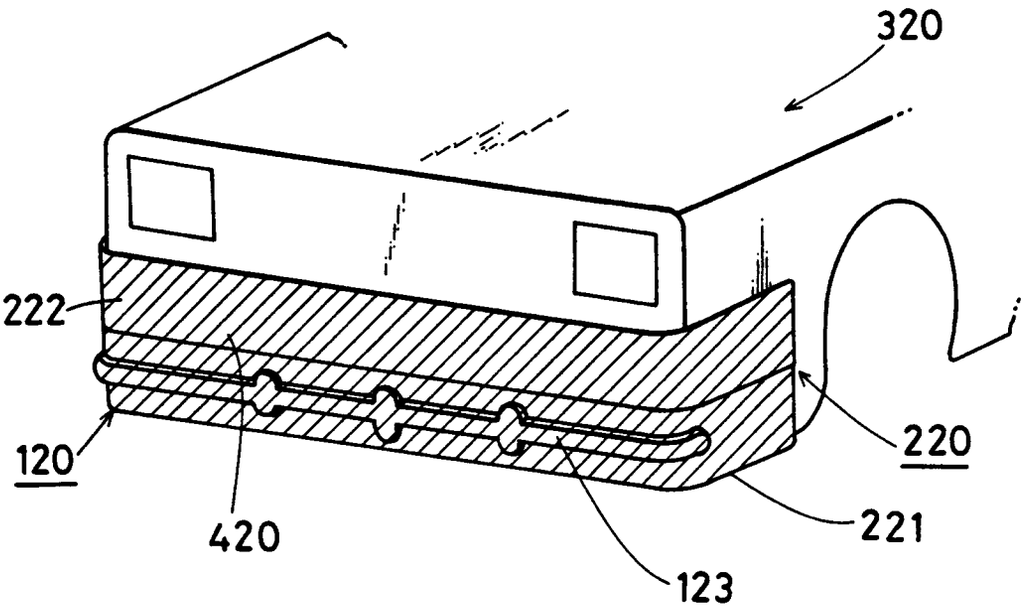

Fig. 8

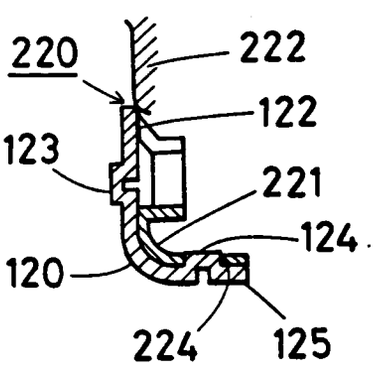

Fig. 9

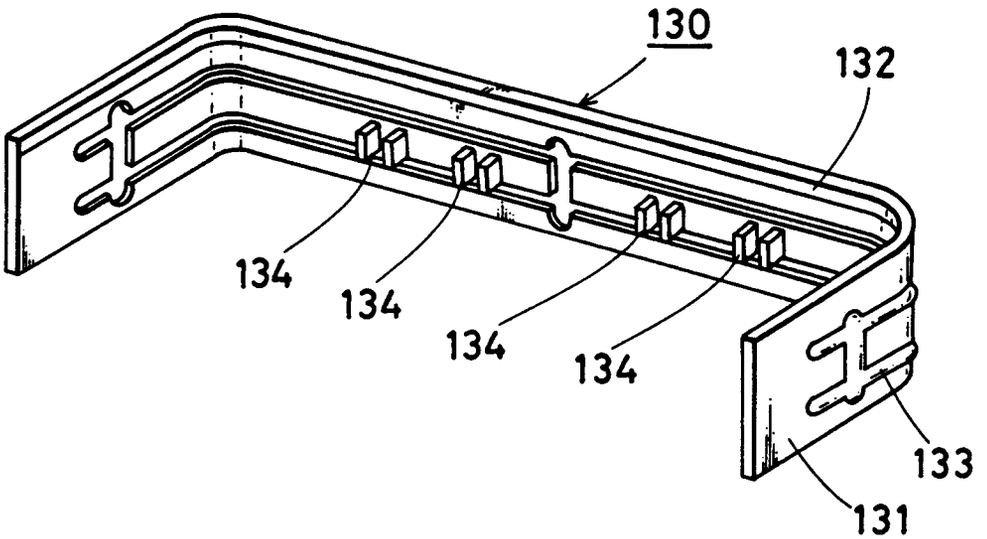

Fig. 10

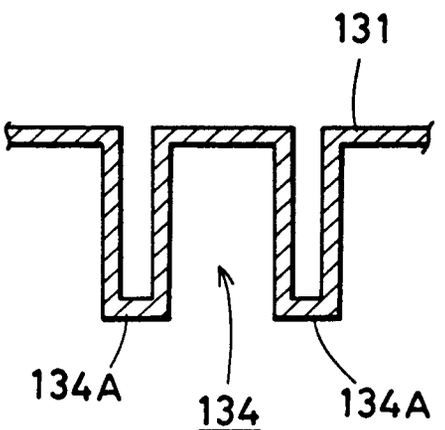

Fig.11

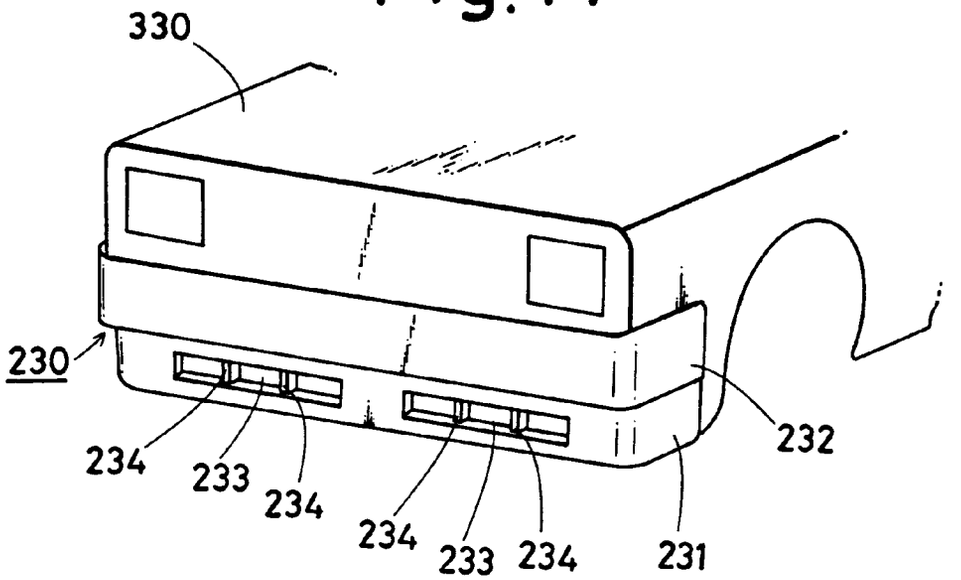
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Fig.12

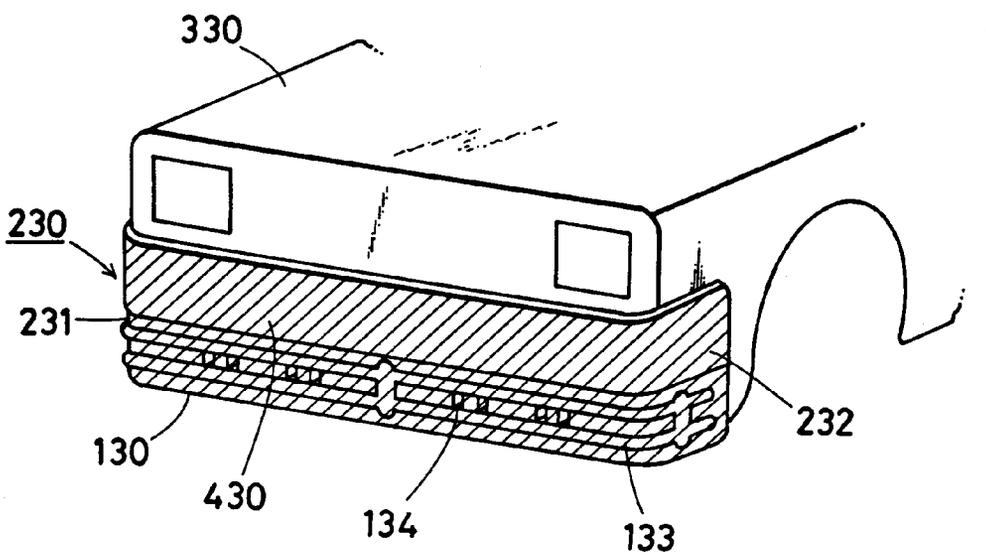
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Fig.13

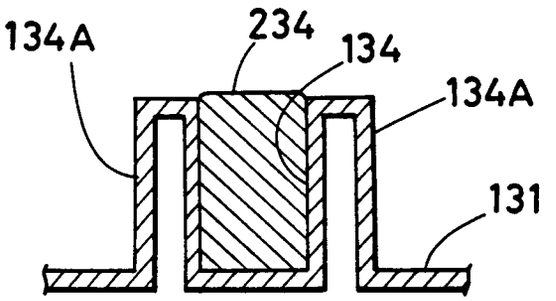

Fig.14

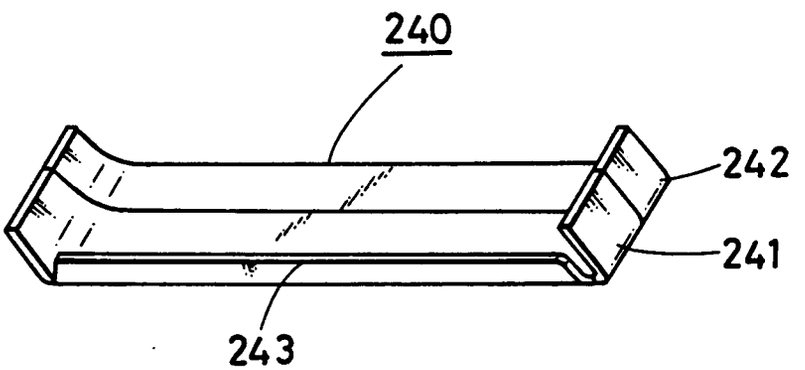

Fig. 15

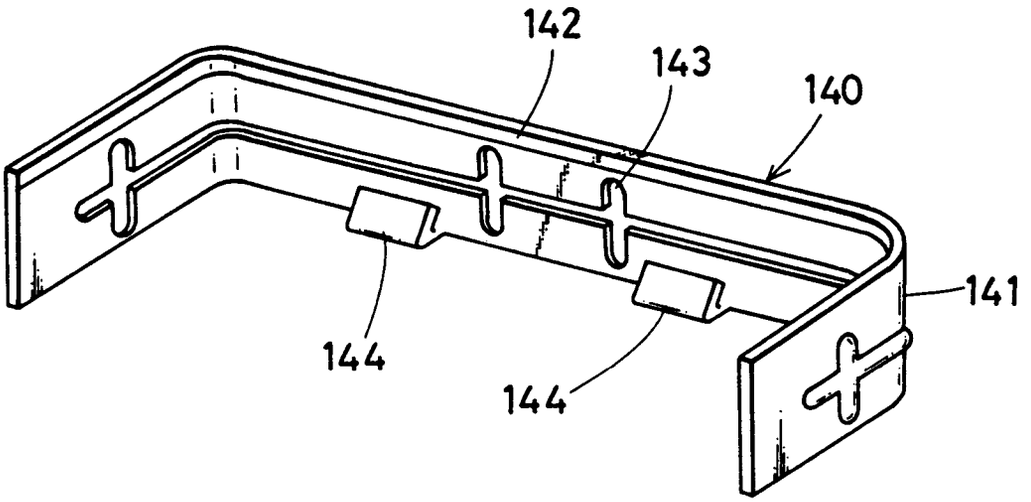

Fig. 16