

Description

The present invention relates to a new masking member. More particularly, the present invention relates to a new masking member consisting of a thermoplastic resin in which an inorganic filler is mixed. The masking member is used to protect a part of an article from a surface treatment such as coating, plating, phosphotizing and the like, and the masking member may be removed from said part after said surface treatment. Said masking member should have a good mechanical strength and heat resistance to avoid break of said masking member during storage, transportation and the like and deformation during heating process of the surface treatment. Further said masking member should be easily burnt up after use.

Hitherto, a masking member having a vessel form and consisting of a thermoplastic resin film has been provided to protect a hole of an article from a surface treatment (Japanese Patent Publication No. 248,249/1985). Said masking member is easily mass-produced by such as vacuum forming, and the like since said masking member consists of said thermoplastic resin film which has a good moldability. On the other hand, the mechanical strength and the heat resistance of said masking member is not enough and said masking member is apt to break during storage, transportation, and the like and apt to deform during heating process of said surface treatment since the residual stress originating from the molding remains in said masking member.

Further a large quantity of said thermoplastic resin as the material of said masking member is wasted since said masking member fully consists of said thermoplastic resin and still further, in the case of combustion treatment of the waste masking member, a large quantity of heat of combustion is generated to damage the combustion furnace.

EP-A-0243498 discloses a paint comprising carbon black and a resinous component, which paint may be painted onto a surface and then dried to form a strippable masking film. Such a paint is time consuming to both apply and dry and requires special equipment for this. Furthermore, the paint is not suited for application to three dimensional surfaces.

According to the present invention there is provided a molded masking member consisting of a thermoplastic resin in which an inorganic filler is mixed.

Said inorganic filler may reinforce said thermoplastic resin of said masking member to give said masking member a good mechanical strength, and further said inorganic filler gives said masking member a good thermal conductivity and as the result said masking member has a good heat resis-

tance. Further, as said inorganic filler reduces the ratio of said thermoplastic resin in said masking member, said thermoplastic resin as the material of said masking member can be saved and heat of combustion can be also reduced generated from the combustion treatment of the waste masking member.

Embodiments of the present invention will now be described, by way of example only, with reference to the accompanying drawings, in which:

Figure 1 is a perspective view of a first embodiment of the present invention.

Figure 2 is a partial side sectional side view of the first embodiment of the present invention after coating.

Figure 3 is a partial side sectional view of the first embodiment of the present invention in the case of removing the masking member from the article.

Figure 4 is a perspective view of a second embodiment of the present invention.

Figure 5 is a perspective view of a third embodiment of the present invention.

Figure 6 is a partial side sectional view of the third embodiment of the present invention after coating.

Figure 7 is a partial perspective view of the third embodiment of the present invention in the case of said third embodiment being produced.

Figure 8 is a perspective view of a fourth embodiment of the present invention.

Figure 9 is a perspective view of a fifth embodiment of the present invention.

Figure 10 is a perspective view of a sixth embodiment of the present invention.

Figure 11 is a side sectional view of the sixth embodiment of the present invention.

Figure 12 is a perspective view of a seventh embodiment of the present invention.

Figure 13 is a perspective view of an eighth embodiment of the present invention.

Figure 14 is a perspective view of a ninth embodiment of the present invention.

Figure 15 is a perspective view of a tenth embodiment of the present invention.

Figure 16 is a perspective view of an eleventh embodiment of the present invention.

Figure 17 is a perspective view of the eleventh embodiment of the present invention in the case of said first embodiment being produced.

Figure 18 is a partial side sectional view of the eleventh embodiment of the present invention after coating.

Figure 19 is a partial side sectional view of the eleventh embodiment of the present invention in case of protection of a protruding part.

Figure 20 is a perspective view of a twelfth embodiment of the present invention.

Figure 21 is a partial side sectional view of the twelfth embodiment of the present invention after coating.

Figure 22 is a perspective view of a thirteenth embodiment of the present invention.

Figure 23 is a perspective view of a fourteenth embodiment of the present invention.

Figure 24 is a perspective view of a fifteenth embodiment of the present invention.

Figure 25 is a partial side sectional view of the fifteenth embodiment of the present invention after coating.

Figure 26 is a perspective view of a sixteenth embodiment of the present invention.

Figure 27 is a partial side sectional view of the sixteenth embodiment of the present invention after coating.

Figure 28 is a perspective view of the seventeenth embodiment of the present invention.

Figure 29 is a partial side sectional view of the seventeenth embodiment of the present invention.

Figure 30 is a perspective view of the eighteenth embodiment of the present invention.

Figure 31 is a partial side sectional view of the eighteenth embodiment of the present invention after coating.

Figure 32 is a perspective view of the nineteenth embodiment of the present invention.

Figure 33 is a perspective view of the twentieth embodiment of the present invention.

Figure 34 is a perspective view of the twentyfirst embodiment of the present invention.

Figure 35 is a perspective view of the twentysecond embodiment of the present invention.

Figure 36 is a perspective view of the twentythird embodiment of the present invention.

Figure 37 is a partial side sectional view of the twentythird embodiment of the present invention after coating.

Figure 38 is a side sectional view of the twentyfourth embodiment of the present invention.

Figure 39 is a perspective view of the twentyfifth embodiment of the present invention.

Figure 40 is a perspective view of the twenty-sixth embodiment of the present invention.

Figure 41 is a perspective view of the twentyseventh embodiment of the present invention.

Figure 42 is a perspective view of the twenty-eighth embodiment of the present invention.

Figure 43 is a perspective view of the twenty-ninth embodiment of the present invention.

Figure 44 is a partial side sectional view of the twenty-ninth embodiment after coating.

Figure 45 is a perspective view of the thirtieth embodiment of the present invention.

Figure 46 is a partial side sectional view of the thirtieth embodiment of the present invention.

Figure 47 is a perspective view of the thirtyfirst embodiment of the present invention.

Figure 48 is a partial side sectional view of the thirtyfirst embodiment of the present invention.

Figure 49 is a perspective view of the thirtysecond embodiment of the present invention.

Figure 50 is a perspective view of the thirtythird embodiment of the present invention.

Figure 51 is a partial side sectional view of the thirtythird embodiment after coating.

Figure 52 is a perspective view of the thirtyfourth embodiment of the present invention.

Figure 53 is a perspective view of a car body of a practical example of the present invention.

Figure 54 is a perspective view of Part A to be protected by the masking member of the practical example.

Figure 55 is a perspective view of Part B to be protected by the masking member of the practical example.

Figure 56 is a perspective view of Part C to be protected by the masking member of the practical example.

Figure 57 is a perspective view of Part D to be protected by the masking member of the practical example.

Figure 58 is a perspective view of Part E to be protected by the masking member of the practical example.

Figure 59 is a perspective view of the thirtyfifth embodiment of the present invention.

Figure 60 is a side sectional view of the thirtyfifth embodiment of the present invention.

Figure 61 is a partial perspective view of the bumper.

Figure 62 is a partial side sectional view of the bumper when the bumper is coated.

Figure 63 is a partial side sectional view of the bumper in case of removing the masking member from the bumper.

Figure 64 is a perspective view of the thirtysixth embodiment of the present invention.

Figure 65 is a partial side sectional view of the thirtysixth embodiment of the present invention, in the case of attaching the masking member to a part of an article.

Figure 66 is a perspective view of the thirtyseventh embodiment of the present invention.

Figure 67 is a partial side view of the thirtyseventh embodiment of the coating.

Figure 68 is a partial side view of the thirtyseventh embodiment in the case of removing the masking member from the frame of the window.

DETAILED DESCRIPTION

A masking member of the present invention consists of a thermoplastic resin in which an inorganic filler is mixed. Said thermoplastic resin may be such as a polyethylene, a polypropylene, an ethylene-propylene copolymer, an ethylene-vinylacetate copolymer, a polyvinyl chloride, a polyvinylidene chloride, a polyvinyl fluoride, a polyvinylidene fluoride, polystyrene, polyamide, polyester and the like. Polyolefin such as a polyethylene, a polypropylene, and the like is a desirable thermoplastic resin as a material of the masking member of the present invention since said polyolefin has a good solvent resistance.

Said inorganic filler may be such as a calcium carbonate, a talc, a bentonite, a titan white, a carbon black, a rediron oxide, a glass powder, a celamic powder, a blast furnace slag, a flyash, and the like. A calcium carbonate is a desirable inorganic filler since said calcium carbonate has a good compatibility with said thermoplastic resin. Generally, 5 to 80% by weight, more desirably 10 to 60% by weight of said inorganic filler is mixed in said thermoplastic resin. In case that said inorganic filler is mixed to said thermoplastic resin less than 5% by weight, heat resistance and mechanical strength of said thermoplastic resin may be not enough, while in case that said inorganic filler is mixed to said thermoplastic resin more than 80% by weight, moldability and chemical resistance of said thermoplastic resin may be deteriorated.

The masking member of the present invention is produced by molding. Suitable molding methods include vacuum forming, press molding, injection molding, and the like. Vacuum forming is a particularly suitable molding method for mass-production of the masking member.

[Masking member A]

Masking member A is used to protect the even surfaces of an article.

Figure 1 to Figure 3 relate to a first embodiment of the present invention. Referring now to Fig. 1 to Fig. 3, a masking member(100) comprises a body(101) having a vessel form consisting of a rectangular bottom(101A) and perpendicular walls(101B) which extend upwards from the perimeter of said bottom(101A), with said body(101) manufactured by vacuum forming of a sheet consisting of said thermoplastic resin in which said inorganic filler is mixed. An adhesive layer(102) such as the pressure sensitive adhesive layer is formed on the under surface of said body(101) and said adhesive layer(102) is covered with a release sheet(103) such as a polyethylene film, a polypropylene film, a release paper and the like to prevent sticking to

another article, the hands of workers and the like when the masking members are handled, one placed upon another, transported, and the like.

When said masking member(100) is used, said release sheet(103) is removed from said adhesive layer(102) and said masking member(100) is then attached to an even part (201) of the surface of an article(200) by said adhesive layer(102) thereof, which is necessary to be protected from a surface treatment. After said masking member(100) is attached to said part(201), for example, a coating material is coated on the surface of said article(200) by such as spraying, dipping and the like to form a coating layer(300) as shown in Figure 2. Said part(201) of said surface of said article(200) is not subjected to said coating since said part(201) is covered with said masking member(100) and said coating layer(300) may be cut by an edge(104) of the body(101) of said masking member(100). Said part(201) may have hole(s) and in this case, said hole(s) is (are) also not subjected to said coating. After said coated article(200) is heated to dry and/or cure if desired, and said masking member(100) may be removed by a worker's hand as shown in fig. 3.

Figure 4 relates to a second embodiment of the present invention. In this embodiment, a masking member(110) comprises a body(111) having a vessel form consisting of a circular bottom(111A) and a perpendicular wall(111B) which extends upwards from the circumference of said bottom(111A), with said body(111) manufactured by vacuum forming of a sheet consisting of said thermoplastic resin in which said inorganic filler is mixed the same as the first embodiment of the present invention. An adhesive layer(112) is formed on the under surface of said body(111) and said adhesive layer(112) is covered with a release sheet(113) the same as the first embodiment of the present invention. Further, the body of said masking member of the present invention should have a suitable form according to the part to be protected from a surface treatment.

Figure 5 to Figure 7 relate to a third embodiment of the present invention. Referring now to Fig. 5 to Fig. 7, a masking member(120) comprises a body(121) having a vessel form consisting of a rectangular bottom(121A) and perpendicular walls(121B) which extend upwards from the perimeter of said bottom(121A), and a flange(122) which is extended from the upper edges of said walls(121B), with said body (121) manufactured by vacuum forming of a sheet consisting of said thermoplastic resin in which said inorganic filler is mixed the same as the first and second embodiments of the present invention. An adhesive layer(123) is formed on the under surface of said body(121) and said adhesive layer(123) is covered with a release

sheet(124) the same as the first and second embodiments of the present invention.

When said masking member(120) is used, said release sheet(124) is removed from said adhesive layer(123) and said masking member(120) is then attached to a even part(221) of the surface of an article(220) which is necessary to be protected from a surface treatment. After said masking member(120) is attached to said part(221), a coating material is coated on said surface of said article(220) to form a coating layer(320) as shown in Fig. 6. In this embodiment, said coating layer(320) may be more completely cut by said flange(122) of said masking member(120) than in the cases of the first and second embodiments of the present invention and, as the results, said masking member (120) may be more smoothly removed from said part(221) of said surface of said article(220).

A number of masking members(120) of this embodiment may advantageously be produced by vacuum forming from a sheet consisting of said thermoplastic resin in which said inorganic filler is mixed and the like as shown in Fig. 7. Referring to Fig. 7, a number of bodies(121) of masking member(120) are formed arranged in rows and lines, and each body(121) is connected to the other body(121) by the flange(122). Cutting lines(125) or grooves are formed between said flange(122) and another said flange(122) and when said masking member(120) is used, said masking member (120) is broken along said cutting lines(125) or grooves by hand. Said cutting lines(125) or grooves may be formed simultaneously with vacuum forming or after vacuum forming.

Figure 8 relates to a fourth embodiment of the present invention. In this embodiment a masking member(130) comprises a body(131) having a vessel form consisting of a rectangular bottom(131A) and perpendicular walls(131B) which extend upwards from the perimeter of said bottom(131A), a flange(132) which is extended from the upper edges of said walls(131B), and perpendicular walls(133) which extend upwards from the perimeter of said flange(132), with said body(131) manufactured by vacuum forming of a sheet consisting of said thermoplastic resin in which said inorganic filler is mixed the same as the first, second, and third embodiments of the present invention. An adhesive layer(134) is formed on the under surface of said body(131) and said adhesive layer(134) is covered with a release sheet(135) the same as the first, second, and third embodiments of the present invention. A coating layer may be more completely cut by said perpendicular walls(133) of said flange(132).

Figure 9 relates to a fifth embodiment of the present invention. In this embodiment, a masking

member (140) comprises a body(141) having a vessel form consisting of a circular bottom(141A) and a perpendicular wall(141B) which extends upwards from the circumference of said bottom(141A), a flange(142) which is extended from the upper edges of said wall(141B), and perpendicular wall(143) which extends downwards from the circumference of said flange(142), with said body(141) manufactured by vacuum forming of a sheet consisting of said thermoplastic resin in which said inorganic filler is mixed the same as the first to fourth embodiments of the present invention. An adhesive layer(144) is formed on the under surface of said body(141) and said adhesive layer(144) is covered with a release sheet(145) the same as the first to fourth embodiments of the present invention.

Figure 10 and Figure 11 relate to a sixth embodiment of the present invention. In this embodiment, a masking member(150) comprises a body(151) having a vessel form consisting of a rectangular bottom(151A) from which a grip (152) is risen and perpendicular walls(151B) which extend upwards from the perimeter of said bottom(151A), with said body(151) made of a sheet consisting of said thermoplastic resin in which said inorganic filler is mixed the same as the first to fifth embodiments of the present invention. An adhesive layer(153) is formed on the under surface of said body(151) and said adhesive layer(153) is covered with a release sheet(154) the same as the first to fifth embodiments of the present invention. The masking member(150) of this embodiment is easily handled by holding said grip (152) of said masking member(150) when said masking member (150) is attached to an even part of the surface of an article which is to be protected from a surface treatment and further, said masking member is easily removed by holding said grip(152) of said masking member(150) by a worker's hand.

Figure 12 relates to a seventh embodiment of the present invention. In this embodiment, a masking member (160) comprises a body(161) having a vessel form consisting of a circular bottom(161A) from which a grip(162) is risen and perpendicular wall which extend upwards from the circumference of said bottom(161A), with said body(161) manufactured by vacuum forming of a sheet consisting of said thermoplastic resin in which said inorganic filler is mixed the same as the first to sixth embodiments of the present invention. An adhesive layer(163) is formed on the under surface of said body(161) and said adhesive layer(163) is covered with a release sheet(164) the same as the first to sixth embodiments of the present invention.

Figure 13 relates to an eighth embodiment of the present invention. In this embodiment, a masking member(170) comprises a body(171) having a

vessel form consisting of a rectangular bottom-(171A) from which a grip(173) is risen and perpendicular walls(171B) which extend upwards from the perimeter of said bottom(171A), a flange(172) which is extended from the upper edges of said walls(171B), with said body(171) manufactured by vacuum forming of a sheet consisting of said thermoplastic resin in which said inorganic filler is mixed the same as the first to seventh embodiments of the present invention. An adhesive layer (174) is formed on the under surface of said body-(171) and said adhesive layer(174) is covered with a release sheet (175) the same as the first to seventh embodiments of the present invention.

Figure 14 relates to a ninth embodiment of the present invention. In this embodiment, a masking member(180) comprises a body(181) having a vessel form consisting of a rectangular bottom from which a grip(184) is risen and perpendicular walls-(181B) which extend upwards from the perimeter of said bottom(181A), a flange(182) which is extended from the upper edges of said walls(181B), and perpendicular walls(183) which extend upwards from the perimeter of said flange(182), with said body(181) manufactured by vacuum forming of a sheet consisting of said thermoplastic resin in which said inorganic filler is mixed the same as the first to eighth embodiments of the present invention. An adhesive layer(185) is formed on the under surface of said body(181) and said adhesive layer-(185) is covered with a release sheet(186) the same as the first to eighth embodiments of the present invention.

Figure 15 relates to a tenth embodiment of the present invention. In this embodiment, a masking member(190) comprises a body(191) having a vessel form consisting of a rectangular bottom(191A) from which a grip is risen and perpendicular walls-(191B) which extend upwards from the perimeter of said bottom(191A), a flange(192) which is extended from the upper edges of said walls(191B), and perpendicular walls(193) which extend downwards from the perimeter of said flange(192), with said body(191) manufactured by vacuum forming of a sheet consisting of said thermoplastic resin in which said inorganic filler is mixed the same as the first to ninth embodiments of the present invention. An adhesive layer(195) is formed on the under surface of said body(191) and said adhesive layer-(195) is covered with a release sheet(196) the same as the first to ninth embodiments of the present invention.

[Masking member B]

Masking member B is used to protect the even surfaces or the protruding parts of the article.

Figure 16 to Figure 19 relate to a eleventh embodiment of the present invention. Referring now to Fig. 16 to Fig. 19, a masking member(1100) comprises a body(1101) having a vessel form consisting of a square bottom(1101A), perpendicular walls(1101B) which extend upwards from the perimeter of said bottom(1101A), a flange(1102) which is extended from the upper edges of said walls(1101B), and an adhesive layer (1103) formed on the surface of said flange(1102), with said masking member(1100) manufactured by vacuum forming of a sheet consisting of said thermoplastic resin in which said inorganic filler is mixed. Said adhesive layer(1103) is covered with a release sheet(1104).

Said masking member(1100) may advantageously be produced by vacuum forming from a sheet consisting of said thermoplastic resin in which said inorganic filler is mixed and the like as shown in fig. 17. Referring to Fig. 17, a number of masking member(1100) are formed and arranged in rows and lines, and each masking member-(1100) is connected to the other masking member-(1100) by the flange(1102). Cutting lines(1105) or grooves are formed between said flange(1102) and another said flange(1102) and when said masking member(1100) is used, said masking member(1100) is broken along said cutting lines(1105) or grooves by hand. Said cutting lines(1105) or grooves may be formed on the surface or (and) the under surface of said flange(1102). Referring to Fig. 18, when said masking member(1100) is used, said release sheet(1104) is removed from said adhesive layer(1103) and said masking member(1100) is then attached to an even part(2101) of the surface of an article(2100) by said adhesive layer(1103) thereof. After said masking member(1100) is attached to said part(2101), said coating is effected on the surface of said article(2100) to form a coating layer(3100). Said part(2101) of said surface of said article(2100) is not subjected to said coating since said part(2101) is covered with said masking member(1100). After said coating, said coated article(2100) is heated to dry and/or cure if desired, and said masking member(1100) may also be removed by a worker's hand.

As shown in Figure 19, said masking member-(1100) is also used to protect a protruding part-(2102) of said article (2100) by covering said protruding part(2102) with said masking member-(1100).

Figure 20 and Figure 21 relate to a twelfth embodiment of the present invention. In this embodiment, a masking member(1110) comprises a body(1111) having a vessel form consisting of a circular bottom(1111A), an inner perpendicular wall-(1111B) which extends upwards from the circumference of said bottom(1111A), a flange(1112)

which is extended from the upper edge of said wall(1111B), and an outer perpendicular wall(1113) which extends downwards from the perimeter of said flange(1112), and an adhesive layer(1114) formed on the surface of said flange(1112), with said masking member (1110) manufactured by vacuum forming of a sheet consisting of said thermoplastic resin in which said inorganic filler is mixed the same as the prior embodiments of the present invention. Said adhesive layer(1114) is covered with a release sheet(1115) the same as the prior embodiments of the present invention.

When said masking member(1110) is used, said release sheet(1115) is removed from said adhesive layer(1114) and said masking member(1110) is then attached to an even part (2111) as shown in Fig. 21, of the surface of an article (2110) by said adhesive layer(1114) thereof, and said part (2111) has a hole(2112). After said masking member(1110) is attached to said part(2111), a coating is effected on the surface of said article(2110) to form a coating layer (3110). Said part(2111) including said hole(2112) is not subjected to said coating since said part(2111) is covered with said masking member(1110) and said coating layer(3110) may be cut by said outer perpendicular wall(1113) of said flange(1112) of said masking member(1110). After said coating, said coated article(2110) is heated to dry and/or cure if desired.

Figure 22 relates to a thirteenth embodiment of the present invention. In this embodiment, a masking member (1120) comprises a body(1121) having a vessel form consisting of a rectangular bottom(1121A) from which a grip(1123) is risen, perpendicular walls(1121B) which extend upwards from the perimeter of said bottom(1121A), a flange(1122) which is extended from the upper edges of said walls(1121B), and an adhesive layer(1124) formed on the surface of said flange(1122), with said masking member(1120) manufactured by vacuum forming of a sheet consisting of said thermoplastic resin in which said inorganic filler is mixed the same as the prior embodiments of the present invention, and said adhesive layer(1124) is covered with a release sheet(1125) the same as the prior embodiments of the present invention. The masking member(1120) of this embodiment is easily handled by holding said grip(1123) of said masking member(1120) when said masking member(1120) is attached to a part of the surface of an article which is to be protected from a coating and further, said masking member is easily removed by holding said grip(1123) of said masking member(1120) by a worker's hand.

Figure 23 relates to a fourteenth embodiment of the present invention. In this embodiment, a masking member(1130) comprises a body(1131) having a vessel form consisting of a circular

bottom(1131A), from which a grip(1133) is risen, an inner perpendicular wall(1131B) which extends upwards from the circumference of said bottom(1131A), a flange(1132) which is extended from the upper edge of said wall(1131B), an outer perpendicular wall(1134) which extends downwards from the perimeter of said flange(1132), and an adhesive layer(1135) formed on the surface of said flange(1132) with said masking member(1130) manufactured by vacuum forming of a sheet consisting of said thermoplastic resin in which said inorganic filler is mixed the same as the prior embodiments of the present invention, and said adhesive layer(1135) is covered with a release sheet(1136) the same as in the prior embodiments of the present invention.

The masking member(1130) of this embodiment is easily handled by holding said grip(1133) of said masking member (1130) when said masking member(1130) is attached to a part of the surface of an article which is to be protected from a coating and further, said masking member(1130) may be easily removed by holding said grip(1133) of said masking member(1130) by a worker's hand.

Figure 24 and Figure 25 relate to a fifteenth embodiment of the present invention. In this embodiment, a masking member(1140) comprises a body(1141) having a vessel form consisting of a rectangular bottom(1141A), inner perpendicular walls(1141B) which extend upwards from the perimeter of said bottom(1141B), an upper flange(1142) which is extended from the upper edges of said walls(1141B), outer perpendicular walls(1143) which extend downwards from the perimeter of said upper flange(1142), a lower flange(1144) which is extended from the lower edges of said outer walls (1143), and an adhesive layer(1145) formed on the surface of said upper flange(1142) with said masking member(1140) manufactured by vacuum forming of a sheet consisting of said thermoplastic resin in which said inorganic filler is mixed the same as the prior embodiments of the present invention, and said adhesive layer(1145) is covered with a release sheet(1146) the same as the prior embodiments of the present invention.

The masking member(1140) may be attached to an even part(2141) of the surface of a metal structure(2140) which is to be protected from a coating, and a coating layer(3140) may be more completely cut by said lower flange(1144) of said masking member(1140) than in the cases of the twelfth and fourteenth embodiments of the present invention since said lower flange(1144) of said masking member(1140) covers and protects the perimeter of said part(2141) of the surface of said article(2140) from said coating as shown in Fig. 25. Therefore, the removing of said masking member(1140) from said part(2141) may be more smooth

than in the cases of the twelfth and fourteenth embodiments of the present invention.

Figure 26 and Figure 27 relate to a sixteenth embodiment of the present invention. In this embodiment, a masking member(1150) comprises a body(1151) having a vessel form consisting of circular bottom(1151A), an inner perpendicular wall(1151B) which extends upwards from the circumference of said bottom(1151A), an upper flange(1152) which is extended from the upper edge of said wall(1151B), a middle perpendicular wall(1153) which extends downwards from the circumference of said flange(1152), a lower flange(1154) which is extended from the lower edge of said middle perpendicular wall(1153), an outer perpendicular wall(1155) which extends upwards from the circumference of said flange(1154), and an adhesive layer(1156) formed on the surface of said upper flange(1152) with said masking member(1150) manufactured by vacuum forming of a sheet consisting of said thermoplastic resin in which said inorganic filler is mixed the same as the prior embodiments of the present invention, and said adhesive layer(1156) is covered with a release sheet(1157) the same as the prior embodiments of the present invention.

The masking member(1150) may be attached to an even part(2151) in the surface of an article(2150) which is to be protected from a coating, and a coating layer(3150) may be still more completely cut by said lower flange(1154) and said outer perpendicular wall(1155) than in the case of the fifteenth embodiment of the present invention since the circumference of said part(2151) may be covered with both said lower flange(1154) and said outer perpendicular wall(1155) to protect said circumference of said part (2151) from said coating as shown in fig. 27. Therefore, the removing of said masking member(1150) from said part (2151) may be more smooth than in the cases of the prior embodiments of the present invention.

[Masking memberC]

Masking member c is used to protect the hole of the article.

Figure 28 and Figure 29 relate to the seventeenth embodiment of the present invention. Referring now to said figures, a masking member(1160) consists of an inserting part(1161) having a vessel form consisting of a circular bottom(1161A) and a perpendicular wall(1161B) which extends upwards from the circumference of said bottom(1161A), and a flange(1162) which is extended from the upper edge of said wall(1161B), said masking member(1160) manufactured by vacuum forming of a sheet consisting of said thermoplastic resin in which said inorganic filler is mixed. Said inserting part(1161)

has a taper form decreasing in diameter from the base of said inserting part(1161) to the top of said inserting part(1160).

When said masking member(1160) is used, said masking member(1160) protects the inside of a hole(2161) of an article(2160) by inserting said inserting part(1161) into said hole(2161) as shown in Fig.29, and said flange(1162) of said masking member(1160) covers the surroundings(2162) of said hole(2161). After which, a coating is effected on the surface of said article(2160) to form a coating layer (3160) and the inside and surroundings of said hole(2161) are not subjected to said coating. After said coating, said masking member(1160) may be removed from said hole (2161) by hand. After said masking member(1160) is removed from said hole(2161), said coating layer(3160) has not been formed inside and on said surrounding(2162) of said hole (2161). Further, said masking member(1160) can be used for many holes having different diameters since said inserting part(1161) of said masking member(1160) has a taper form as before mentioned.

Figure 30 and Figure 31 relate to the eighteenth embodiment of the present invention. In this embodiment, a masking member(1170) consists of an inserting part(1171) having a vessel form consisting of a circular bottom(1171A) and a perpendicular wall(1171B) which extends upwards from the circumference of said bottom(1171A) and a flange(1172) which is extended from the upper part of said wall(1171B). Said inserting part(1171) has a taper form decreasing in diameter from the base of said inserting part(1171) to the top of said inserting part(1171). Said masking member(1170) is manufactured by vacuum forming of a sheet consisting of said thermoplastic resin in which said inorganic filler is mixed.

Said masking member(1170) of this embodiment is used as same as the seventeenth embodiment and a coating layer (3170) may be cut by the upper edge of said inserting part (1171) as shown in Figure 31, and therefore, said masking member(1170) may be smoothly removed from the hole(2171) of the article(2170) without the obstruction of said coating layer(3170).

Figure 32 relates to the nineteenth embodiment of the present invention. In this embodiment, a masking member (1180) consists of an inserting part(1181) having a vessel form consisting of a circular bottom(1181A) and a perpendicular wall(1181B), and a flange(1182) which is extended from the upper edge of said wall(1181B). The width of said flange(1182) is smaller than the width of the flange(1162) of the masking member(1160) of the seventeenth embodiment and said flange(1182) having small width acts as a stopper of the masking member(1180) when said masking member-

(1180) is inserted into the hole.

Figure 33 relates to the twentieth embodiment of the present invention. In this embodiment, a masking member (1190) comprises an inserting part(1191) having a vessel form consisting of a circular bottom(1191A) from which a grip(1191C) is risen, and perpendicular wall(1191B) which extends upwards from the circumference of said bottom(1191A), and a flange(1192) which is extended from the upper edge of said wall(1191B). Said inserting part(1191) has a taper form decreasing in diameter from the base of said inserting part(1191) to the top of said inserting part(1191). Said masking member(1190) is manufactured by vacuum forming of a sheet consisting of said thermoplastic resin in which said inorganic filler is mixed. The masking member(1190) of this embodiment is easily handled by holding said grip(1191C) when said masking member(1190) is inserted into the hole of the article or removed from the hole.

Figure 34 relates to the twenty-first embodiment of the present invention. In this embodiment, a masking member (1200) consists of a inserting part(1201) having a vessel form consisting of a circular bottom(1201A) from which a grip(1201C) is risen and a perpendicular wall(1201B) which extends upwards from the circumference of said bottom (1201A) and a flange(1202) which is extended from the upper part of said wall(1201B). Said inserting part(1201) has a taper form decreasing in diameter from the base of said inserting part(1201) to the top of said inserting part(1201). Said masking member(1200) is manufactured by vacuum forming of a sheet consisting of said thermoplastic resin in which said inorganic filler is mixed. Said masking member(1200) of this embodiment is easily handled by holding said grip (1201C) when the masking member(1200) is inserted into the hole of the metal structure or removed from the hole as same as the twentieth embodiment of the present invention. Further, the coating layer coated on the article may be cut by the upper edge of said inserting part(1201) as same as the eighteenth embodiment so that said masking member (1200) is easily removed from the hole without the obstruction of said coating layer.

Figure 35 relates to the twenty-second embodiment of the present invention. In this embodiment, a masking member (1210) comprises an inserting part(1211) having a vessel form consisting of a circular bottom(1211A) from which a grip(1211C) is risen, a perpendicular wall(1211B) which extends upwards from the circumference of said bottom(1211A), and a flange(1212) which is extended from the upper edge of said wall(1211B). Said inserting part(1211) has a taper form decreasing in diameter from base of said inserting part(1211) to the top of said inserting part(1211) and the width of said

flange(1212) is smaller than the width of the flange(1192) of the masking member(1190) of the twentieth embodiment and said flange(1212) having small width acts as a stopper of the masking member(1210) when said masking member(1210) is inserted into hole.

Figure 36 and figure 37 relate to the twenty-third embodiment of the present invention. In this embodiment, a masking member(1220) consists of an inserting part(1221) having a vessel form consisting of a circular bottom(1221A) and a perpendicular wall(1221B) which extends upwards from the circumference of said bottom(1221A), and a flange(1222) which is extended from the upper edge of said wall(1221B), and has a perpendicular wall(1223) which extends upwards from the circumference of said flange(1222). Said inserting part(1221) has a taper form decreasing in diameter from the base of said inserting part(1221) to the top of said inserting part(1221). Said masking member(1220) is manufactured by vacuum forming of a sheet consisting of said thermoplastic resin in which said inorganic filler is mixed.

Said masking member(1220) of this embodiment is used as same as the seventeenth embodiment, and in this embodiment the coating layer(3220) may be cut by the edge of said perpendicular wall(1221B) as shown in figure 37, so that said masking member (1220) is easily removed from the hole (2221) of the article(2220) without obstruction of said article layer(3220).

Figure 38 relates to the twenty-fourth embodiment of the present invention. In this embodiment, a masking member (1230) consists of an inserting part(1231) having a vessel form consisting of a circular bottom(1231A) and a perpendicular wall(1231B) in the middle part of which a horizontal rib(1231C) is formed, and a flange(1232) which is extended from the upper edge of said wall(1231B).

Said masking member(1230) of this embodiment is used as same as the seventeenth embodiment and said horizontal rib(1231C) reinforces said wall(1231B) of said inserting part(1231) of said masking member(1230) so that said masking member(1230) is firmly inserted into the hole of the article.

Figure 39 relates to the twenty-fifth embodiment of the present invention. In this embodiment, a masking member(1240) consists of an inserting part(1241) having vessel form consisting of a cross-shaped bottom(1241A) and a perpendicular wall(1241B) which extends upwards from the perimeter of said bottom(1241A), a flange(1242) which is extended from the upper edge of said wall(1241B), and a perpendicular wall(1243) which extends upwards from the circumference of said flange(1242). Said masking member(1240) is manufactured by vacuum forming of a sheet consisting

of said thermoplastic resin in which said inorganic filler is mixed. In this embodiment, said inserting part(1241) is reinforced by said cross-shaped bottom(1241A) to prevent crushing of said inserting part(1241) of said masking member when said masking member(1240) is inserted into the hole of the article, and further said masking member(1240) is supported in the inner wall of said hole by only partially contacts at the tips(1241C) of said inserting part(1241) so that removing of said masking member(1240) from the hole may be very easy.

Figure 40 relates to the twenty-sixth embodiment of the present invention. In this embodiment, a masking member (1250) consists of an inserting part(1251) which has a vessel form and is divided into two crescent parts(1251A) and (1251B) by a grip(1251C) which is risen from the bottom of said inserting part(1251), and a flange(1252) which is extended from the upper edge of said inserting part(1251).

Said masking member(1250) of this embodiment is easily manufactured by vacuum molding and easily removed from the hole since said masking member(1250) partially contacts with the inner wall of the hole, since said inserting part(1251) is divided into two crescent parts(1251A) and (1251B) by said grip(1251C).

Figure 41 relates to the twenty-seventh embodiment of the present invention. In this embodiment, a masking member (1260) consists of an inserting part(1261) which has a vessel form and is divided into four parts(1261A), (1261B), (1261C) and (1261D) by a cross-shaped grip(1261E) which is risen from the bottom of said inserting part(1261), and a flange (1262) which is extended from the upper edge of said inserting part(1261).

Said masking member(1260) of this embodiment is used the same as the twenty-sixth embodiment and easier removed from the hole since the contacting area of said masking member(1260) with the inner wall of the hole is smaller than the case of the twenty-sixth embodiment so that said inserting part(1261) is divided into four parts(1261A), (1261B), (1261C), and (1261D) by said cross-shaped grip (1261E) and the sheet consisting of said thermoplastic resin in which said inorganic filler is mixed is saved in this embodiment comprising the masking member having the cylindrical inserting part.

Figure 42 relates to the twenty-eighth embodiment of the present invention. In this embodiment, a masking member (1270) consists of an inserting part(1271) having vessel form consisting of a cross-shaped bottom(1271A) and a perpendicular wall(1271B) which extends upwards from the perimeter of said bottom(1271A), a lower flange(1272) which is extended from the upper edge of said wall(1271B), a perpendicular wall(1273) which ex-

tends upwards from the circumference of said lower flange(1272), and an upper flange(1274) which is extended from the upper edge of said wall(1273). Said masking member(1270) is manufactured by vacuum forming of a sheet consisting of said thermoplastic resin in which said inorganic filler is mixed.

In this embodiment, said inserting part(1271) is reinforced by said cross-shaped bottom(1271A) to prevent crushing of said inserting part(1271) of said masking member when said masking member(1270) is inserted into the hole of the article, and further said masking member(1270) is supported in the inner wall of said hole by only partially contacts at the tips(1271C) of said inserting part(1271) so that removing of said masking member(1270) from the hole may be very easy. The film of the surface treatment may be more completely cut by said upper flange(1274) with said lower flange(1272) and said perpendicular wall(1273) than in the case of the twenty-fifth embodiment of the present invention.

Figure 43 and Figure 44 relate to the twenty-ninth embodiment of the present invention. In this embodiment, a masking member(1280) consists of an inserting part(1281) having vessel form consisting of a circular bottom(1281A) from which a grip(1281C) is risen and an inner perpendicular wall(1281B) which extends upwards from the circumference of said bottom(1281A), a lower flange(1282) which is extended from the upper part of said wall(1281B), an outer perpendicular wall(1283) which extends upwards from the circumference of said lower flange(1282), and an upper flange(1284) which is extended from the upper part of said wall(1283), and plural radiated grooves(1281D) and (1282A) are respectively formed in said lower flange(1282) and said upper flange(1284). Said inserting part(1281) has a taper form decreasing in diameter from the base to the top of said inserting part (1281). Said masking member(1280) is manufactured by vacuum-forming of a sheet consisting of said thermoplastic resin in which said inorganic filler is mixed.

As shown in Figure 44, said masking member(1280) is inserted a hole(2281) of an article(2280) the same as the twentieth embodiment and since a coating layer(3280) may be cut by said upper flange(1284) of said masking member (1280), the removing of said masking member(1280) from said hole(2281) may be very smooth without obstruction of said coating layer(3280) and further said grooves(1281D) and (1282A) respectively reinforce said lower and upper flanges(1282) and (1284).

Figure 45 and Figure 46 relate to the thirtieth embodiment of the present invention. In this embodiment a masking member(1290) consists of an inserting part(1291) having a vessel form consisting

of a circular bottom(1291A) and a perpendicular wall(1291B) which extends upwards from the circumference of said bottom(1291A) and on which plural perpendicular ribs(1291C) are formed, and a flange(1292) which is extended from the upper edge of said wall(1291B). Said inserting part(1291) has a taper form decreasing in diameter from the base to the top of said inserting part(1291). Said masking member is manufactured by vacuum forming of a sheet consisting of said thermoplastic resin in which said inorganic filler is mixed. In this embodiment, said perpendicular ribs(1291C) reinforce said perpendicular wall(1291B) to prevent crushing of said inserting part(1291) of said masking member(1290) when said masking member(1290) is inserted into a hole(2291) of an article(2290) as shown in figure 46 and said masking member(1290) is firmly held in said hole(2291) since said perpendicular ribs(1290C) of said masking member(1290) tightly contact to the inner wall of said hole.

Figure 47 and Figure 48 relate to the thirty-first embodiment of the present invention. In this embodiment, a masking member(1300) consists of an inserting part(1301) having a vessel form consisting of a circular bottom(1301A) from which a grip(1301D) is risen and a perpendicular wall (1301B) which extends upwards from the circumference of said bottom(1301A) and on which plural perpendicular ribs (1301C) are formed, and a flange(1302) which is extended from the upper edge of said wall(1301B). Said inserting part(1301) has a taper form decreasing in diameter from the base to the top of said inserting part(1301). Said masking member(1300) is manufactured by vacuum forming of a sheet consisting of said thermoplastic resin in which said inorganic filler is mixed. In this embodiment, said perpendicular ribs(1301C) reinforce said perpendicular wall (1301B) to prevent crushing of said inserting part(1301) of said masking member(1300) when said masking member(1300) is inserted into a hole(2301) of an article(2300) as shown in Figure 48 and said masking member(1300) is firmly held in said hole(2301) since said perpendicular ribs(1301C) of said masking member(1300) tightly contact to the inner wall of said hole(2301). Further, said masking member(1300) of this embodiment is easily handled by holding said grip(1301D) when said masking member(1300) is inserted into said hole (2301).

Figure 49 relates to the thirty-second embodiment of the present invention. In this embodiment, a masking member(1310) consists of an inserting part(1311) having a vessel form consisting of a circular bottom(1311A) from which a grip(1311D) is risen and a perpendicular wall(1311B) which extends upwards from the circumference of said bottom (1311A) and on which plural perpendicular

ribs(1311C) are formed, a lower flange(1312) which is extended from the upper edge of said wall(1311B), a perpendicular wall (1313) which extends upwards from the circumference of said flange(1312), and an upper flange(1314) which is extended from the upper edge of said perpendicular wall(1313). Said inserting part(1311) has a taper form decreasing in diameter from the base of said inserting part (1311) to the top of said inserting part (1311). Said masking member is manufactured by vacuum forming of a sheet consisting of said thermoplastic resin in which said inorganic filler is mixed.

In this embodiment, said perpendicular ribs(1311C) reinforce said perpendicular wall(1311B) to prevent crushing of said inserting part(1311) of said masking member(1310) when said masking member(1310) is inserted into the hole (2311) of the article(2310) and said masking member(1310) is firmly held in the hole since said perpendicular ribs (1311C) of said masking member(1310) tightly contact to the inner wall of said hole. Further, said masking member (1310) of this embodiment is easily handled by holding said grip(1311D) when said masking member(1310) is inserted into the hole as same as the thirty-second embodiment and the coating layer may be more completely cut by said upper flange(1314) with said lower flange(1312) and said perpendicular wall(1313) than in the case of the thirtieth and thirty-first embodiments of the present invention so that said masking member(1310) is more easily removed from the hole without the obstruction of the coating layer.

[Masking member D]

Masking member D is used to protect the extending part of the article.

Figure 50 and Figure 51 relate to the thirty-third embodiment of the present invention. In this embodiment, a masking member(1320) consists of a body(1321) having a cylindrical vessel form, which has a slit(1322) formed from the opening end of said body(1321). An extending part(2321) of the article(2320) to be protected is inserted into said slit(1322) of said masking member(1320) and the coating layer(3320) is not formed on said extending part(2321) since said extending part(2321) is protected by said masking member(1320) as shown in Figure 51. After coating, said masking member is removed by a worker's hand.

Figure 52 relates to the thirty-fourth embodiment of the present invention. In this embodiment, a masking member (1330) consists of a body(1331) having a square vessel form and a slit(1332) which is formed from the opening end of said body(1331). Said masking member is used the same as the thirty-third embodiment.

[Application of the present invention to the under side of the car body]

Figure 53 to Figure 58 relate to an applied embodiment in which the present invention is applied to the under side of the car body. A visco-elastic material is coated on the under side of the car body for corrosion, sound, and vibration-proof.

As shown in Fig. 53, the masking members of the present invention are attached to parts A, B, C, D and E of the under side(2341) of a car body(2340). Namely, as shown in Figure 57, the masking member C, such as said masking member(1160) of Figure 28 of the seventeenth embodiment may be attached to a hole(2341A) of part A into which a spring axis of a forward wheel is inserted and the circumference of the hole(2341A) is used as a bed for the spring. Therefore, the inside of the hole(2341A) is covered with the inserting part(1161) of the masking member(1160) and the circumference of the hole(2341) is covered with the flange(1162) of the masking member(1160) to protect these from the coating of visco-elastic material as a coating material.

As shown in Figure 55, the masking member B, such as said masking member(1110) of the twelfth embodiment is attached to a bolt(2341B) of part B which is used to attach a part to the underside(2341) of the car-body(2340).

As shown in figure 56, the masking member(1190) of the twentieth embodiment is inserted into a drainage hole(2341C), as shown in figure 57, the masking member D, such as the masking member(1320) of the thirty-third embodiment is attached to a bracket(2341D) of part D which is used to attach a part to the under side(2341) of the car-body(2340), and as shown in figure 58, the masking member(100) of the first embodiment is attached to a screw hole(2341E) which is used to attach a part to the underside(2341) of the car-body(2340). Thus, said hole(2341A), said bolt(2341B), said drawing hole(2341C), said bracket(2341D) and said screw hole (2341E) are protected by said masking members of the present invention from the coating of visco-elastic material.

[Masking member E]

Masking member E is used to protect the hollows of an article.

Figure 59 to Figure 63 relate to the thirteenth embodiment of the present invention. In this embodiment, a masking member(1340) consists of a body(1341) having a rectangular parallelepiped box form and an adhesive layer (1342) which is formed on the exterior of the circumference wall of said masking member(1340). Two deep longitudinal grooves(1341A), three shallow longitudinal grooves-

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(1341B), and a shallow horizontal groove(1341C) are formed on the bottom surface of said body(1341). Further, if desirable, said adhesive layer(1342) is covered with a release sheet which is removed when said masking member(1340) is used. Said masking member(1340) is manufactured by vacuum forming of a sheet consisting of said thermoplastic resin in which said inorganic filler is mixed. Said masking member(1340) is attached in the air intake(2351) which is located in the lower part of the bumper(2350) of the car. Said air intake (2351) has two longitudinal supporting pillars-(2351A), three longitudinal pieces(2351B), and a horizontal piece(2351C) as shown in Figure 61, and said longitudinal supporting pillars(2351A) are respectively inserted in said deep longitudinal grooves(1341A) of said masking member(1340), said longitudinal pieces(2351B) are respectively inserted in said shallow longitudinal grooves(1341B) of said masking member(1340), and said horizontal piece(2351C) is inserted in said shallow horizontal groove(1341C) when said masking member is attached in said air intake(2351). A paint is coated on said bumper(2350) by a spray gun(400) as shown in Figure 62 to form a coating layer(3350) and said coating layer(3350) is not formed on the inside of said air intake (2351) which is protected by said masking member(1340). After coating, said masking member(1340) is removed from said air intake-(2351) of said bumper(2350). As said masking member(1340) consists of said thermoplastic resin in which said inorganic filler is mixed, said masking member(1340) has a good heat resistance and does not deform during curing process of said coating layer(3350) so that said masking member-(1340) can be reused.

[Masking member F]

Masking member F is used to protect the projections of an article.

Figure 64 and Figure 65 relate to the thirtysixth embodiment of the present invention. In this embodiment, a masking member(1350) consists of a base(1351) and a pair of covering parts(1352) which is formed in said base(1351). Said masking member(1350) manufactured by vacuum forming of a sheet consisting of said thermoplastic resin in which said inorganic filler is mixed. A pair of projections(2362) of a part(2361) of an article(2360) which is necessary to be protected from a surface treatment are respectively inserted in said covering parts(1352) of said masking member(1350).

[Masking member G]

Masking member G is used to protect the frames of an article.

Figure 66 to Figure 68 relate to the thirtieth embodiment of the present invention. In this embodiment, a masking member(1360) consists of a base(1361) consisting of said thermoplastic resin in which said inorganic filler is mixed, an adhesive layer(1362) which is formed on the back side of said base(1361), and a release sheet(1363) which covers on said adhesive layer(1362). When said masking member(1360) is used, said release sheet(1363) is removed from said adhesive layer(1362) of said masking member(1360), and said masking member(1360) is attached to the frame(2372) of the window(2371) of the car-body(2370) by said adhesive layer(1362) thereof. After a paint is coated on said car-body(2370) to form a coating layer(3370) and said coating layer(3370) is cured by heating, said masking member(1360) is removed from the frame(2372) of the window(1371) of the car-body(2370). Said coating layer(3370) does not formed on said frame(2372) since said frame(2372) has been protected by said masking member(1360), and said masking member(1360) does not deform during said curing process so that said masking member(1360) can be reused.

Claims

1. A molded masking member consisting of a thermoplastic resin in which an inorganic filler is mixed.
2. A masking member as claimed in claim 1, wherein said thermoplastic resin is a polypropylene.
3. A masking member as claimed in claim 1 or 2, wherein said inorganic filler is a calcium carbonate.
4. A masking member as claimed in any of the preceding claims, wherein 5 to 80% by weight of said inorganic filler is mixed in said thermoplastic resin.
5. A masking member as claimed in claim 2 and 3, wherein 5 to 80% by weight of said calcium carbonate is mixed in said polypropylene.
6. A masking member as claimed in any of the preceding claims, consisting of a body (101, 111, 121, 131, 141, 151, 161, 171, 181, 191) having vessel form and an adhesive layer (102, 112, 123, 134, 144, 153, 163, 174, 185, 195) formed on an undersurface of said body.
7. A masking member as claimed in any of the preceding claims, consisting of a body (1101, 1111, 1121, 1131, 1141, 1151) having vessel

form, a flange (1102, 1112, 1122, 1132, 1142, 1152) which is extended from an upper edge of said body, and an adhesive layer (1103, 1114, 1124, 1135, 1145, 1156) formed on a surface of said flange.

8. A masking member as claimed in any of the preceding claims, consisting of an inserting part (1161, 1171, 1181, 1191, 1201, 1211, 1221, 1231, 1241, 1251, 1261, 1271, 1281, 1291, 1301, 1311) having a vessel form.
9. A masking member as claimed in any of the preceding claims, consisting of a body (1321, 1331) having a vessel form which has a slit (1322, 1332) formed from the opening end of said body.
10. A masking member as claimed in any of the preceding claims, having a form corresponding to a form of a part of an article to be protected from a surface treatment.
11. The use, in masking a part of an article from a surface treatment, of a molded masking member as claimed in any of the preceding claims.
12. A method of surface treatment of an article, comprising applying to a part of the article a molded masking member as claimed in any of the preceding claims, applying the surface treatment to the article, and removing the member from the part of the article.

Patentansprüche

1. Maskierungselement aus einem thermoplastischen Harz, dem ein anorganischer Füllstoff beigemischt ist.
2. Maskierungselement nach Anspruch 1, wobei das thermoplastische Harz ein Polypropylen ist.
3. Maskierungselement nach Anspruch 1 oder 2, wobei der anorganische Füllstoff ein Calciumcarbonat ist.
4. Maskierungselement nach einem der Ansprüche 1 bis 3, wobei dem thermoplastischen Harz 5 bis 80 Gew.-% des anorganischen Füllstoffes beigemischt sind.
5. Maskierungselement nach Anspruch 2 oder 3, wobei dem Polypropylen 5 bis 80 Gew.-% des Calciumcarbonats beigemischt sind.

Figure 66 to Figure 68 relate to the thirteenth embodiment of the present invention. In this embodiment, a masking member(1360) consists of a base(1361) consisting of said thermoplastic resin in which said inorganic filler is mixed, an adhesive layer(1362) which is formed on the back side of said base(1361), and a release sheet(1363) which covers on said adhesive layer(1362). When said masking member(1360) is used, said release sheet(1363) is removed from said adhesive layer(1362) of said masking member(1360), and said masking member(1360) is attached to the frame(2372) of the window(2371) of the car-body(2370) by said adhesive layer(1362) thereof. After a paint is coated on said car-body(2370) to form a coating layer(3370) and said coating layer(3370) is cured by heating, said masking member(1360) is removed from the frame(2372) of the window(1371) of the car-body(2370). Said coating layer(3370) does not formed on said frame(2372) since said frame(2372) has been protected by said masking member(1360), and said masking member(1360) does not deform during said curing process so that said masking member(1360) can be reused.

Claims

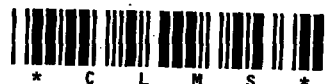
1. A molded masking member consisting of a thermoplastic resin in which an inorganic filler is mixed.
2. A masking member as claimed in claim 1, wherein said thermoplastic resin is a polypropylene.
3. A masking member as claimed in claim 1 or 2, wherein said inorganic filler is a calcium carbonate.
4. A masking member as claimed in any of the preceding claims, wherein 5 to 80% by weight of said inorganic filler is mixed in said thermoplastic resin.
5. A masking member as claimed in claim 2 and 3, wherein 5 to 80% by weight of said calcium carbonate is mixed in said polypropylene.
6. A masking member as claimed in any of the preceding claims, consisting of a body (101, 111, 121, 131, 141, 151, 161, 171, 181, 191) having vessel form and an adhesive layer (102, 112, 123, 134, 144, 153, 163, 174, 185, 195) formed on an undersurface of said body.
7. A masking member as claimed in any of the preceding claims, consisting of a body (1101, 1111, 1121, 1131, 1141, 1151) having vessel

form, a flange (1102, 1112, 1122, 1132, 1142, 1152) which is extended from an upper edge of said body, and an adhesive layer (1103, 1114, 1124, 1135, 1145, 1156) formed on a surface of said flange.

8. A masking member as claimed in any of the preceding claims, consisting of an inserting part (1161, 1171, 1181, 1191, 1201, 1211, 1221, 1231, 1241, 1251, 1261, 1271, 1281, 1291, 1301, 1311) having a vessel form.
9. A masking member as claimed in any of the preceding claims, consisting of a body (1321, 1331) having a vessel form which has a slit (1322, 1332) formed from the opening end of said body.
10. A masking member as claimed in any of the preceding claims, having a form corresponding to a form of a part of an article to be protected from a surface treatment.
11. The use, in masking a part of an article from a surface treatment, of a molded masking member as claimed in any of the preceding claims.
12. A method of surface treatment of an article, comprising applying to a part of the article a molded masking member as claimed in any of the preceding claims, applying the surface treatment to the article, and removing the member from the part of the article.

Patentansprüche

1. Maskierungselement aus einem thermoplastischen Harz, dem ein anorganischer Füllstoff beigemischt ist.
2. Maskierungselement nach Anspruch 1, wobei das thermoplastische Harz ein Polypropylen ist.
3. Maskierungselement nach Anspruch 1 oder 2, wobei der anorganische Füllstoff ein Calciumcarbonat ist.
4. Maskierungselement nach einem der Ansprüche 1 bis 3, wobei dem thermoplastischen Harz 5 bis 80 Gew.-% des anorganischen Füllstoffes beigemischt sind.
5. Maskierungselement nach Anspruch 2 oder 3, wobei dem Polypropylen 5 bis 80 Gew.-% des Calciumcarbonats beigemischt sind.



6. Maskierungselement nach einem der Ansprüche 1 bis 5, bestehend aus einem Körper (101, 111, 121, 131, 141, 151, 161, 171, 181, 191) in Form eines Hohlgefäßes und mit einer Klebstoffschicht (102, 112, 123, 134, 144, 153, 163, 174, 185, 195) auf der Unterseite des Körpers.

7. Maskierungselement nach einem der Ansprüche 1 bis 6, bestehend aus einem Körper (1101, 1111, 1121, 1131, 1141, 1151) in Form eines Hohlgefäßes, mit einem Flansch (1102, 1112, 1122, 1132, 1142, 1152), der sich von der Oberkante des Körpers aus erstreckt, und mit einer auf der Oberfläche des Flansches ausgebildeten Klebstoffschicht (1103, 1114, 1124, 1135, 1145, 1156).

8. Maskierungselement nach einem der Ansprüche 1 bis 7, bestehend aus einem Einsatzteil (1161, 1171, 1181, 1191, 1201, 1211, 1221, 1231, 1241, 1251, 1261, 1271, 1281, 1291, 1301, 1311) in Form eines Hohlgefäßes.

9. Maskierungselement nach einem der Ansprüche 1 bis 8, bestehend aus einem Körper (1321, 1331) in Form eines Hohlgefäßes und mit einem Schlitz (1322, 1332), der vom offenen Ende des Körpers aus ausgebildet ist.

10. Maskierungselement nach einem der Ansprüche 1 bis 9 mit einer Form entsprechend einer Form eines Teils eines Gegenstandes, der gegenüber einer Oberflächenbehandlung geschützt werden soll.

11. Verwendung eines Maskierungselements nach einem der vorstehenden Ansprüche zur Maskierung eines Teils eines Gegenstandes gegen eine Oberflächenbehandlung.

12. Verfahren zur Oberflächenbehandlung eines Gegenstandes durch Anbringen eines geformten Maskierungselements nach einem der vorstehenden Ansprüche an ein Teil des Gegenstandes, Oberflächenbehandlung des Gegenstandes und Abnehmen des Elements von dem Teil des Gegenstandes.

Revendications

1. Élément moulé formant cache, fait d'une résine thermoplastique à laquelle est mélangée une charge minérale.

2. Élément formant cache selon la revendication 1, dans lequel ladite résine thermoplastique est du polypropylène.

3. Élément formant cache selon la revendication 1 ou 2, dans lequel ladite charge minérale est du carbonate de calcium.

4. Élément formant cache selon l'une quelconque des précédentes revendications, dans lequel 5 à 80% en poids de ladite charge minérale est mélangée dans ladite résine thermoplastique.

5. Élément formant cache selon les revendications 2 et 3, dans lequel 5 à 80% en poids dudit carbonate de calcium est mélangé dans ledit polypropylène.

6. Élément formant cache selon l'une quelconque des précédentes revendications, comprenant un corps (101, 111, 121, 131, 141, 151, 161, 171, 181, 191) ayant la forme d'une cuve et une couche adhésive (102, 112, 123, 134, 144, 153, 163, 174, 185, 195) formée sur la surface de dessous dudit corps.

7. Élément formant cache selon l'une quelconque des précédentes revendications, formé d'un corps (1101, 1111, 1121, 1131, 1141, 1151) ayant une forme de cuve, d'un rebord (1102, 1112, 1122, 1132, 1142, 1152) qui part d'un bord supérieur dudit corps et d'une couche adhésive (1103, 1114, 1124, 1135, 1145, 1156) formée sur une surface dudit rebord.

8. Élément formant cache selon l'une quelconque des précédentes revendications, comprenant une partie d'insertion (1161, 1171, 1181, 1191, 1201, 1211, 1221, 1231, 1241, 1251, 1261, 1271, 1281, 1291, 1301, 1311) ayant une forme de cuve.

9. Élément formant cache selon l'une quelconque des précédentes revendications, comprenant un corps (1321, 1331) ayant une forme de cuve qui comporte une fente (1322, 1332) formée depuis l'extrémité dudit corps qui s'ouvre.

10. Élément formant cache selon l'une quelconque des précédentes revendications, ayant une forme qui correspond à la forme d'une partie d'un article que l'on veut protéger contre un traitement de surface.

11. Utilisation, pour masquer une partie d'un article contre un traitement de surface, d'un élément moulé formant cache selon l'une quelconque des précédentes revendications.

12. Procédé de traitement de surface d'un article, comprenant l'application sur une partie de l'article d'un élément moulé formant cache selon



l'une quelconque des précédentes revendications, l'application du traitement de surface à l'article et le retrait de l'élément de la partie de l'article.

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