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(54) **STEERING WHEEL**

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(57) **ABSTRACT**

"A steering wheel is provided with a garnish at a rim portion. A narrow portion of the garnish is disposed at a deformation portion of the rim portion and has a decreased width dimension. Thus, even when the deformation portion undergoes bending deformation, the narrow portion can be deformed in conformity with the bending deformation of the deformation portion."

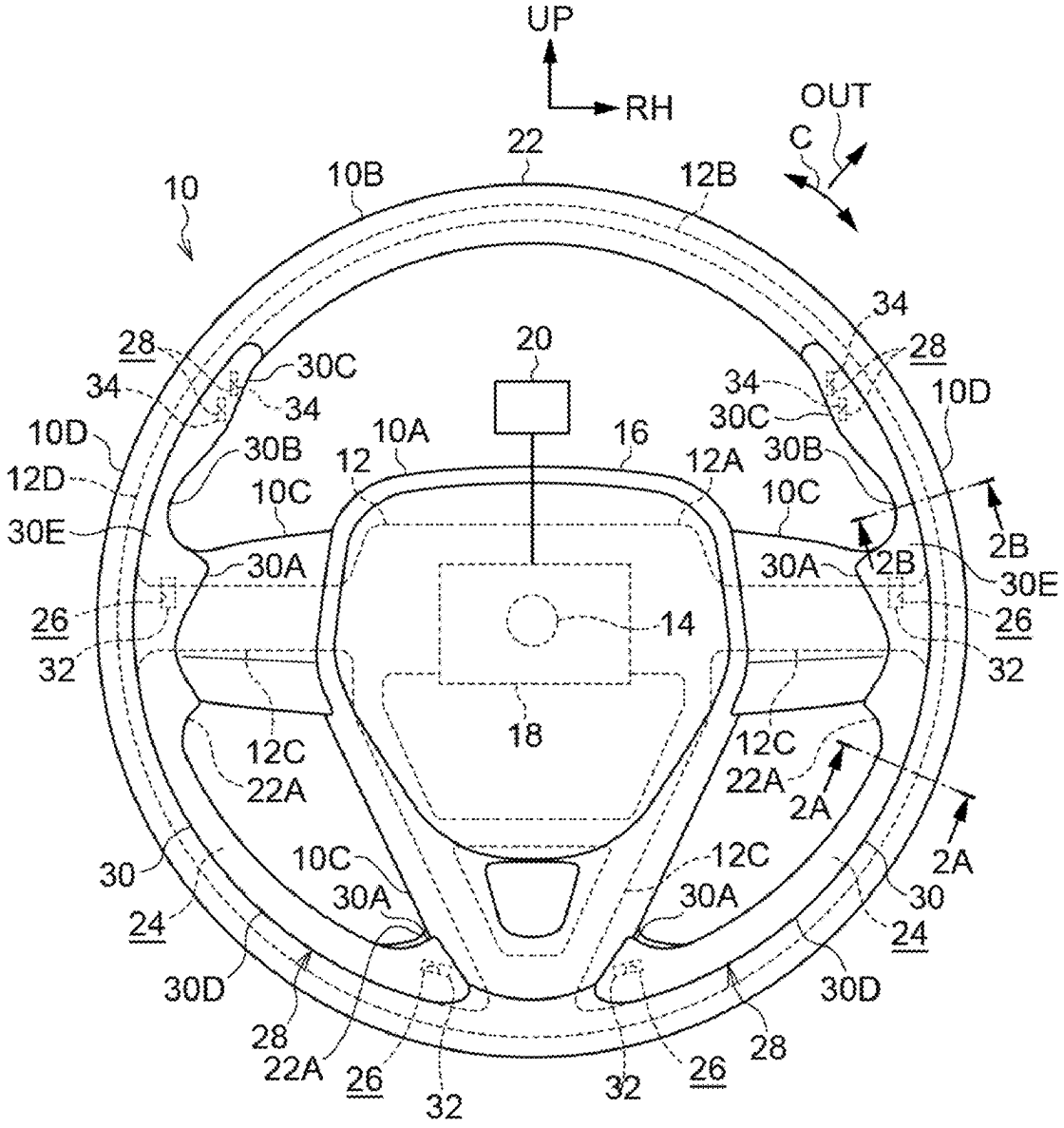


FIG.1

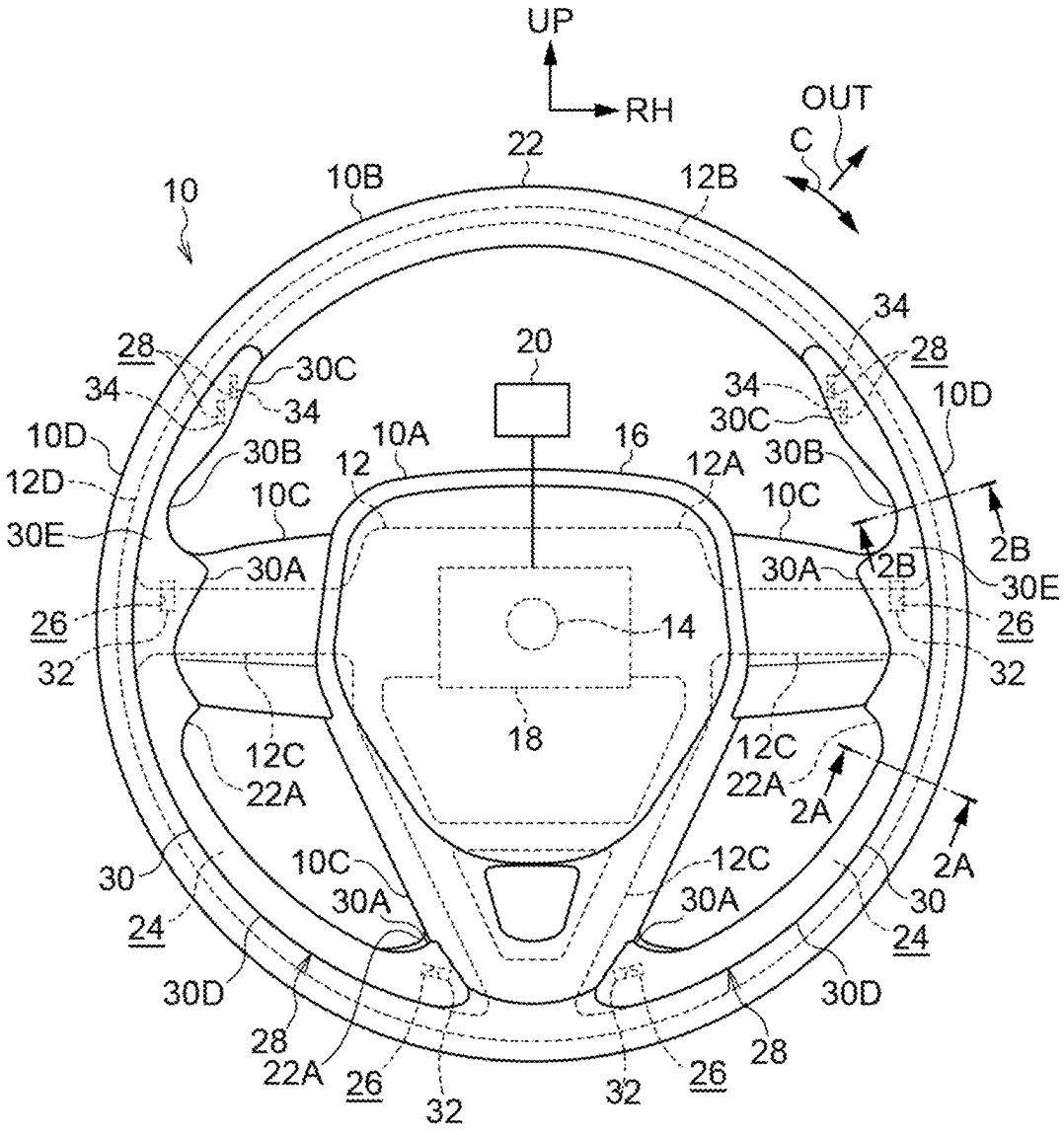

UP
RH
OUT
C
22
10
10B
12B
34
28
20
30C
34
34
28
10D
34
30C
10A
16
30B
10D
12
12A
30B
12D
10C
10C
2B
30E
30A
30A
2B
30E
26
14
26
32
32
18
12C
22A
12C
22A
2A
2A
30
10C
12C
30
30A
30A
24
24
30D
30D
28
28
22A
26
26
32
32

FIG.2A

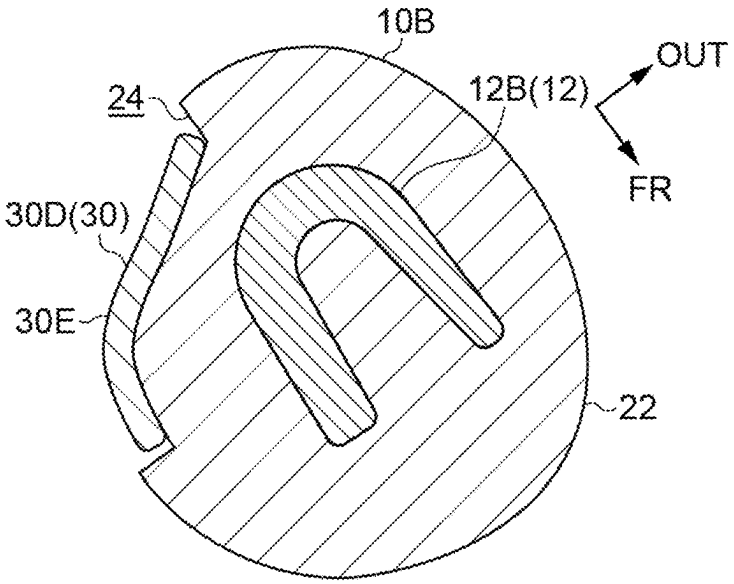

10B
OUT
24
12B(12)
FR
30D(30)
30E
22

FIG.2B

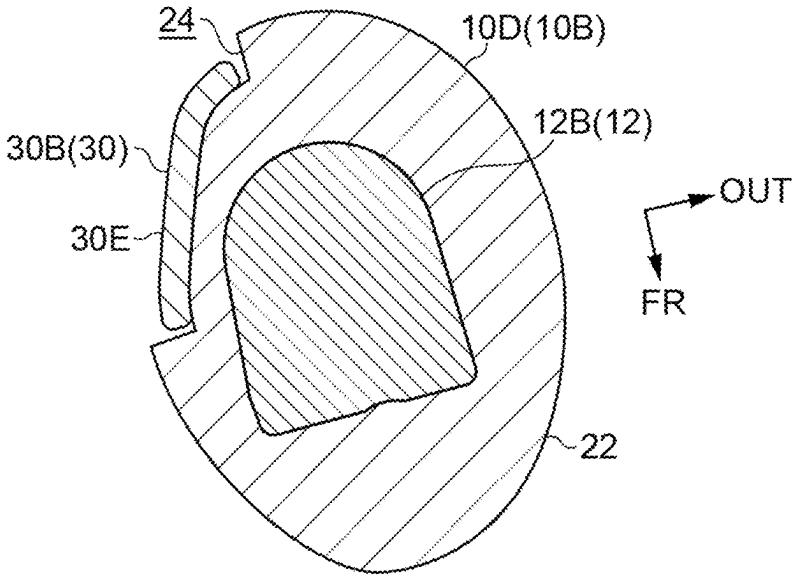

24
10D(10B)
12B(12)
30B(30)
OUT
30E
FR
22

FIG.3

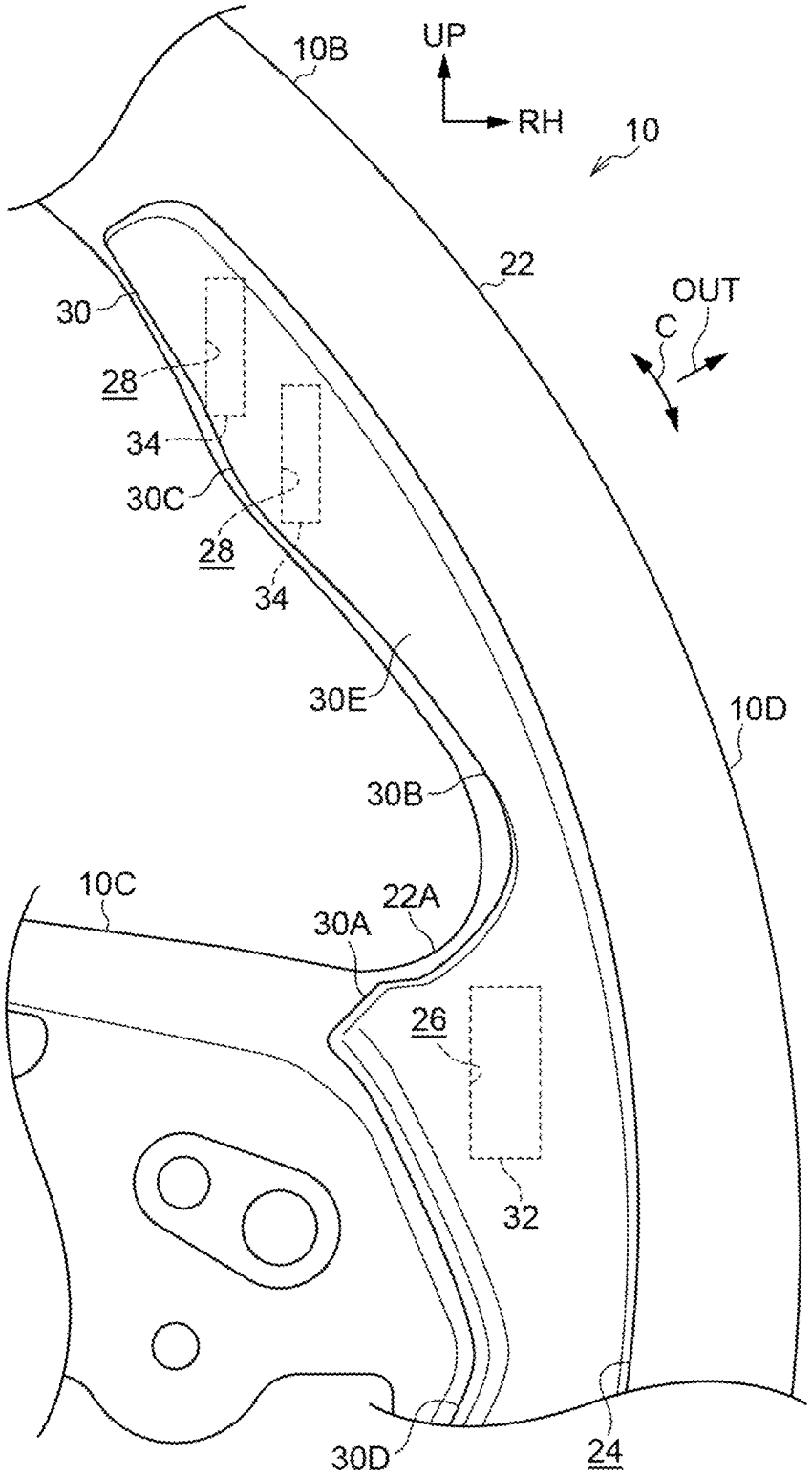

10B
UP
RH
10
22
OUT
C
30
28
34
30C
28
34
30E
10D
30B
10C
22A
30A
26
32
30D
24

FIG.4A

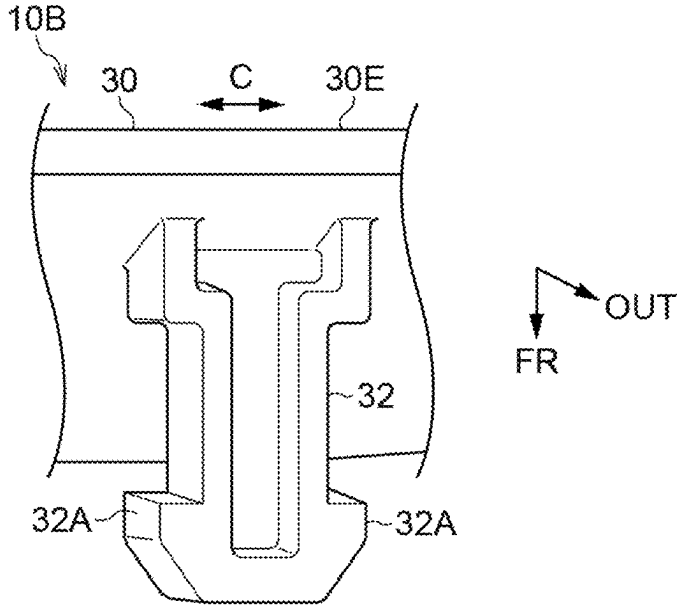


FIG.4B

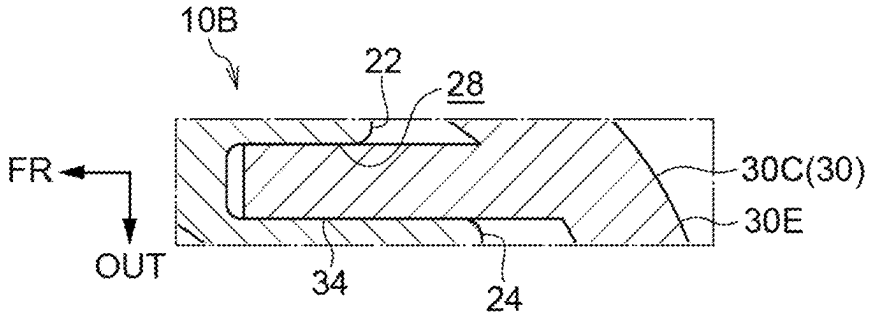


FIG.4C

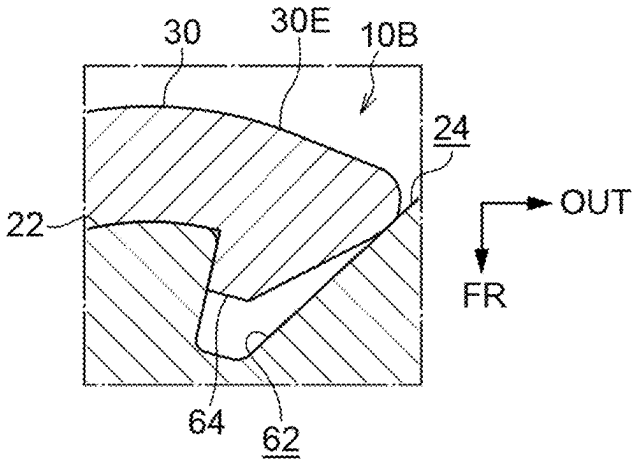


FIG.5

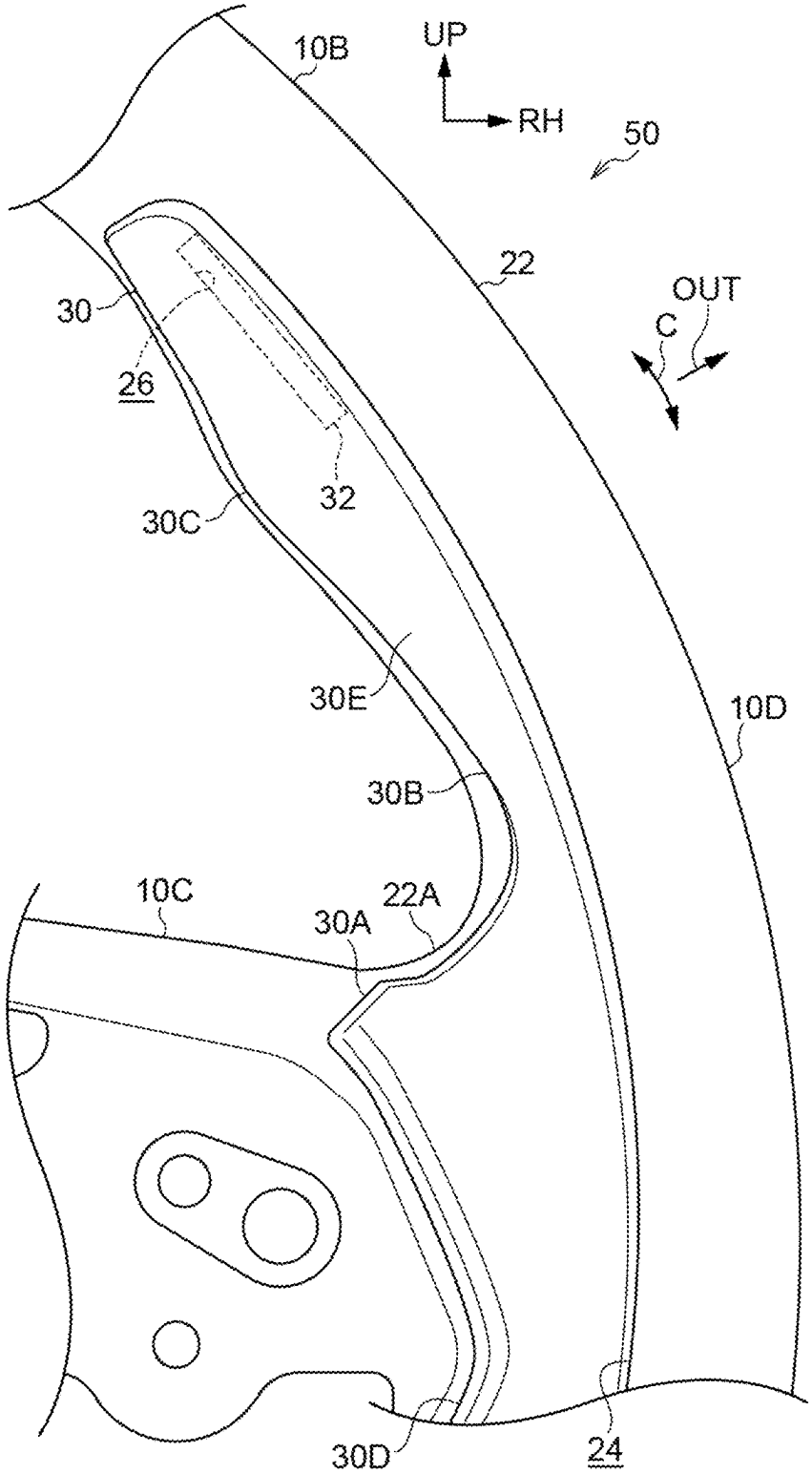


FIG.6

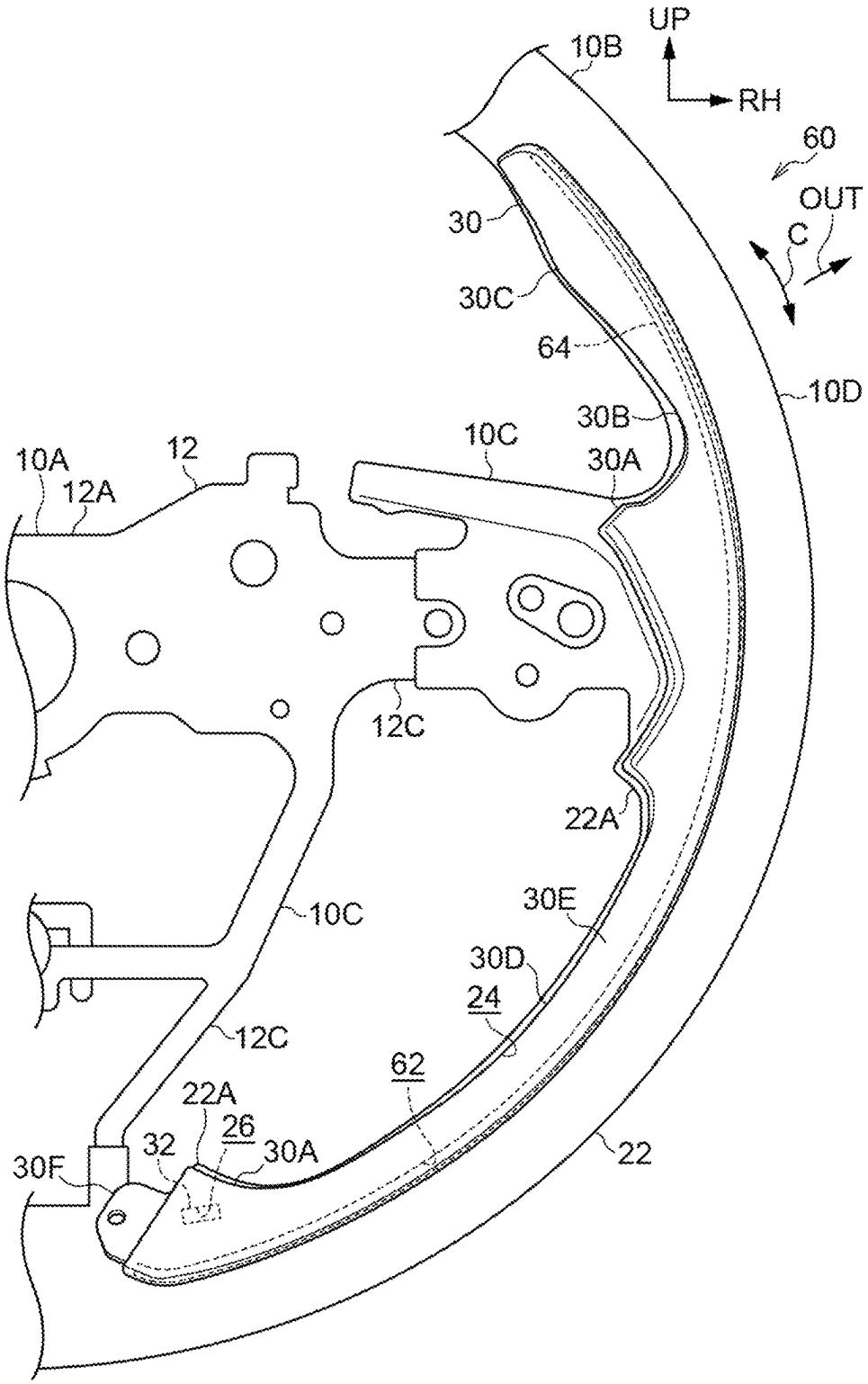
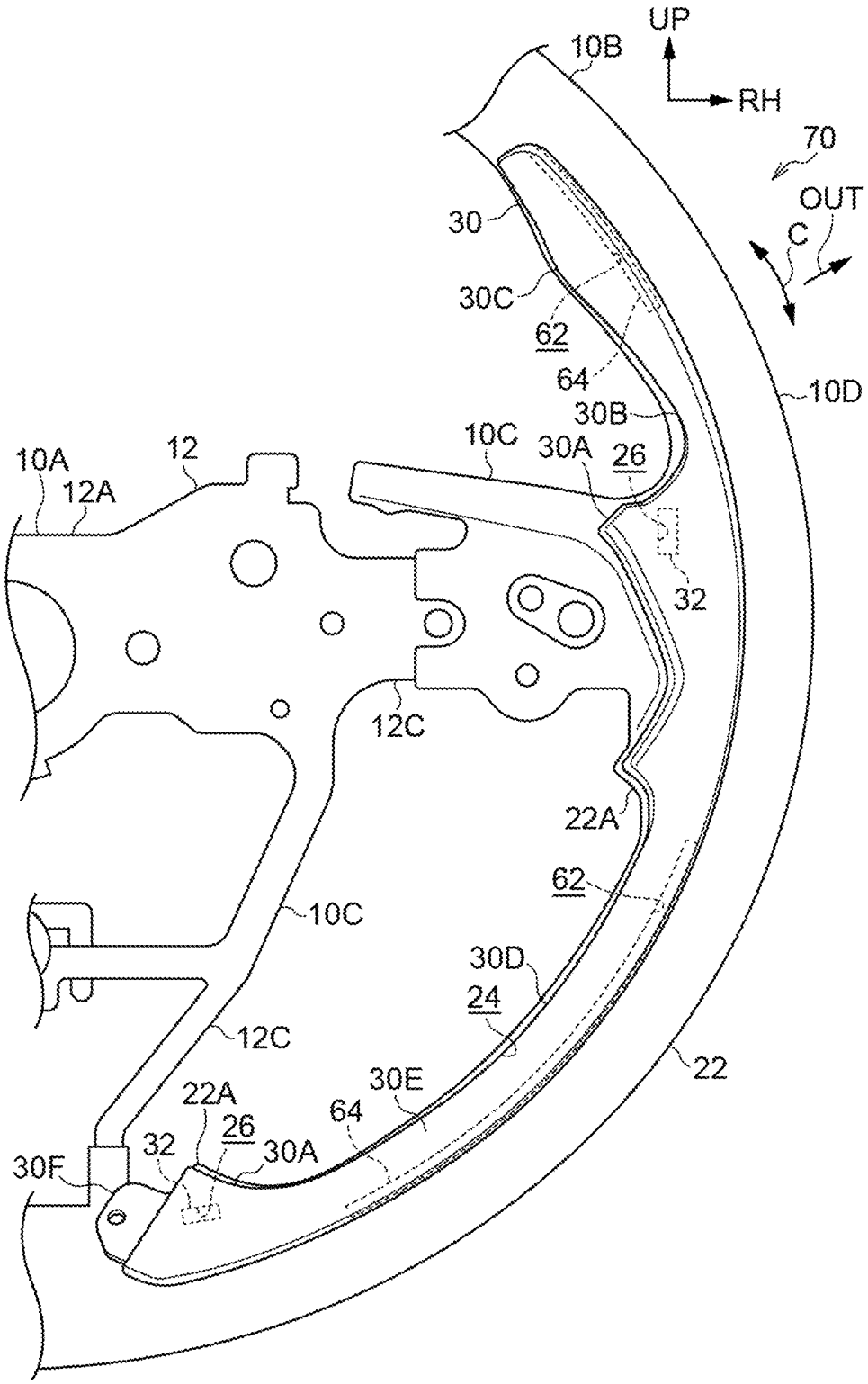

UP
RH
10B
60
OUT
C
30
30C
64
10D
30B
10C
30A
10A
12
12A
12C
22A
10C
30E
30D
24
12C
62
22A
26
32
30A
30F
22

FIG.7


UP
RH
10B
70
OUT
C
30
30C
62
64
30B
10D
10C
30A
26
10A
12
12A
32
12C
22A
62
10C
30D
24
12C
22
30E
22A
64
26
32
30A
30F

STEERING WHEEL

TECHNICAL FIELD

[0001] The present disclosure relates to a steering wheel at which decorative members decorate the grasped portion.

BACKGROUND ART

[0002] In the steering wheel disclosed in Japanese Patent Application Laid-Open (JP-A) No. 2016-68758, anchoring claw portions, anchoring pieces, projections for positioning, rib portions and reinforcing ribs are provided at a decorative garnish. The height dimension of the decorative garnish (the dimension in the wall thickness direction thereof) varies, and, at a ring portion, the decorative garnish is mounted to a mounting base portion and a covering layer.

[0003] Here, at this steering wheel, if the ring portion is deformed at the time of a collision of the vehicle, it is preferable that the decorative garnish be able to deform so as to follow the deformation of the ring portion.

SUMMARY OF INVENTION

Technical Problem

[0004] In view of the above-described circumstances, an object of the present disclosure is to provide a steering wheel in which decorative members can deform so as to follow the deformation of a grasped portion.

Solution to Problem

[0005] A steering wheel of a first aspect of the present disclosure includes: a grasped portion grasped by a passenger: a main body member provided at the grasped portion; and decorative members mounted to the main body member and decorating the grasped portion, and height dimensions, which are dimensions in wall thickness directions, of the decorative members vary, and wide portions, at which width dimensions that are dimensions circling around a length direction of the grasped portion are made to be large, and narrow portions, at which the width dimensions are made to be small, are provided at the decorative members.

[0006] In a steering wheel of a second aspect of the present disclosure, the steering wheel of the first aspect of the present disclosure includes engaging portions provided at the decorative members and engaged with the main body member.

[0007] In a steering wheel of a third aspect of the present disclosure, in the steering wheel of the second aspect of the present disclosure, the engaging portions are not provided at the narrow portions.

[0008] In a steering wheel of a fourth aspect of the present disclosure, in the steering wheel of the second aspect of the present disclosure, the engaging portions that are provided at the narrow portions have lower strength than the engaging portions that are provided at the wide portions.

[0009] In a steering wheel of a fifth aspect of the present disclosure, in the steering wheel of any one of the second aspect through the fourth aspect of the present disclosure, the engaging portions are fixing portions that are fixed to the main body member.

[0010] In a steering wheel of a sixth aspect of the present disclosure, the steering wheel of the fifth aspect of the present disclosure includes connecting portions that are provided at the decorative members, and that are electrically connected to a vehicle body side, and at whose peripheries the fixing portions are disposed.

[0011] In a steering wheel of a seventh aspect of the present disclosure, in the steering wheel of any one of the second aspect through the sixth aspect of the present disclosure, the engaging portions are latching portions that latch onto the main body member and that limit displacement of the decorative members with respect to the main body member.

[0012] In a steering wheel of an eighth aspect of the present disclosure, in the steering wheel of any one of the second aspect through the seventh aspect of the present disclosure, the engaging portions are disposed so as to not be orthogonal to the length direction of the grasped portion. Therefore, displacement of the decorative members with respect to the main body member can be limited.

Advantageous Effects of Invention

[0013] In the steering wheel of the first aspect of the present disclosure, the main body member is provided at the grasped portion that is grasped by a passenger. The decorative members are mounted to the main body member and decorate the grasped portion. Further, the height dimensions (the dimensions in the wall thickness directions) of the decorative members vary.

[0014] Here, wide portions and narrow portions are provided at the decorative members. The width dimensions (the dimensions circling around the length direction of the grasped portion) of the wide portions are made to be large, and the width dimensions of the narrow portions are made to be small. Therefore, the narrow portions of the decorative members can deform following the deformation of the grasped portion.

[0015] In the steering wheel of the second aspect of the present disclosure, the engaging portions of the decorative members are engaged with the main body member. Therefore, the decorative members can engage with the main body member.

[0016] In the steering wheel of the third aspect of the present disclosure, the engaging portions are not provided at the narrow portions. Therefore, the narrow portions can deform well following the deformation of the grasped portion.

[0017] In the steering wheel of the fourth aspect of the present disclosure, the strength of the engaging portions of the narrow portions is made to be lower than the strength of the engaging portions of the wide portions. Therefore, the engaging portions of the narrow portions impeding deformation of the narrow portions can be suppressed, and the engaging portions of the narrow portions can suppress breakage due to deformation of the narrow portions.

[0018] In the steering wheel of the fifth aspect of the present disclosure, the engaging portions are fixing portions, and the fixing portions are fixed to the main body member. Therefore, the decorative members can be fixed to the main body member by the fixing portions.

[0019] In the steering wheel of the sixth aspect of the present disclosure, the connecting portions of the decorative members are electrically connected to the vehicle body side. Here, the fixing portions are disposed at the peripheries of the connecting portions. Therefore, displacement of the connecting portions with respect to the main body member can be suppressed.

[0020] In the steering wheel of the seventh aspect of the present disclosure, the engaging portions are latching portions, and the latching portions latch onto the main body member, and displacement of the decorative members with respect to the main body member is limited. Therefore, displacement of the decorative members with respect to the main body member can be limited.

[0021] In the steering wheel of the eighth aspect of the present disclosure, the engaging portions are disposed so as to not be orthogonal to the length direction of the grasped portion. Therefore, the engaging portions can appropriately limit displacement of the decorative members in the radial direction of the grasped portion with respect to the main body member.

BRIEF DESCRIPTION OF DRAWINGS

[0022] FIG. **1** is a front view that is seen from a vehicle rear side and illustrates a steering wheel relating to a first embodiment of the present disclosure.

[0023] FIG. **2**A is a drawing illustrating a rim portion of the steering wheel relating to the first embodiment of the present disclosure, and is a cross-sectional view along line **2**A-**2**A of FIG. **1**.

[0024] FIG. **2**B is a drawing illustrating the rim portion of the steering wheel relating to the first embodiment of the present disclosure, and is a cross-sectional view along line **2**B-**2**B of FIG. **1**.

[0025] FIG. **3** is a front view that is seen from the vehicle rear side and illustrates the rim portion of the steering wheel relating to the first embodiment of the present disclosure.

[0026] FIG. **4**A is a drawing illustrating an engaging portion of a garnish at steering wheels relating to the first through a fourth embodiment of the present disclosure, and is a perspective view illustrating a fixing rib.

[0027] FIG. **4**B is a drawing illustrating the engaging portion of the garnish at the steering wheels relating to the first through the fourth embodiment of the present disclosure, and is a cross-sectional view illustrating a positioning rib.

[0028] FIG. **4**C is a drawing illustrating the engaging portion of the garnish at the steering wheels relating to the first through the fourth embodiment of the present disclosure, and is a cross-sectional view illustrating an urging rib.

[0029] FIG. **5** is a front view that is seen from the vehicle rear side and illustrates the rim portion of a steering wheel relating to a second embodiment of the present disclosure.

[0030] FIG. **6** is a front view that is seen from the vehicle rear side and illustrates the rim portion of a steering wheel relating to a third embodiment of the present disclosure.

[0031] FIG. **7** is a front view that is seen from the vehicle rear side and illustrates the rim portion of a steering wheel relating to the fourth embodiment of the present disclosure.

DESCRIPTION OF EMBODIMENTS

First Embodiment

[0032] A steering wheel **10** that serves as a steering wheel relating to a first embodiment of the present disclosure is illustrated in FIG. **1** in a front view seen from a vehicle rear side. Note that, in the drawings, the vehicle front side is indicated by arrow FR, the vehicle right side is indicated by arrow RH, and the upper side is indicated by arrow UP. Moreover, the peripheral direction of the steering wheel **10** is indicated by arrow C, and the radial direction outer side of the steering wheel **10** is indicated by arrow OUT.

[0033] The steering wheel **10** relating to the present embodiment faces the driver's seat of the vehicle at the vehicle rear side. The steering wheel **10** is disposed at the vehicle front side of the passenger (the driver, the contacting person) seated in the driver's seat.

[0034] As illustrated in FIG. **1**. a boss portion **10**A serving as a supported portion is provided at the central portion of the steering wheel **10**. A rim portion **10**B, which is annular as seen in a front view and serves as a grasped portion, is provided at the outer peripheral portion of the steering wheel **10**. Three spoke portions **10**C serving as connecting portions are provided between the boss portion **10**A and the rim portion **10**B. The spoke portions **10**C extend out from the boss portion **10**A toward the vehicle left side, the vehicle right side and the lower side, and are connected to the rim portion **10**B.

[0035] A metal core **12** that is made of metal and serves as a frame member is provided at the steering wheel **10**.

[0036] A boss metal core **12**A that is plate-shaped is provided at the central portion of the metal core **12**, and the boss metal core **12**A structures the boss portion **10**A. The boss metal core **12**A is fixed to the vehicle rear side end (the upper side end) of a steering shaft **14** that is solid cylindrical and serves as a supporting portion at the vehicle. The steering shaft **14** is disposed coaxially with the rim portion **10**B. The steering wheel **10** (the metal core **12**) is supported so as to be able to rotate integrally with the steering shaft **14**. Due to the passenger grasping the rim portion **10**B and rotatingly operating the steering wheel **10** in the peripheral direction, the steering shaft **14** is rotated around the central axis, and the vehicle is steered.

[0037] A rim metal core **12**B (refer to FIGS. **2**(A) and (B)) that is annular as seen in a front view is provided at the outer peripheral portion of the metal core **12**, and the rim metal core **12**B structures the rim portion **10**B. Three plate-shaped spoke metal cores **12**C are provided between the boss metal core **12**A and the rim metal core **12**B. The spoke metal cores **12**C extend out from the boss metal core **12**A toward the vehicle left side, the vehicle right side and the lower side (the radial direction outer side of the steering wheel **10**), and are connected to the rim metal core **12**B and structure the spoke portions **10**C.

[0038] A pad **16**, which is substantially box-shaped and is made of resin and serves as an accommodating member, is provided at the boss portion **10**A and the spoke portions **10**C. The interior of the pad **16** opens toward the vehicle front side. The pad **16** is attached to the vehicle rear sides of the boss metal core **12**A and the spoke metal cores **12**C. The pad **16** covers the vehicle rear sides of the boss metal core **12**A and portions of the spoke metal cores **12**C other than the portions thereof that are in vicinities of the rim portion **10**B.

[0039] An airbag device **18** is accommodated within the pad **16**. A bag-shaped airbag (not illustrated is provided within the airbag device **18** in a folded-up state. The airbag device **18** is electrically connected to a control device **20** (vehicle body side) of the vehicle.

[0040] A portion of the rim portion **10**B that is in the vicinity of the upper side of the spoke portion **10**C at the vehicle left side, and a portion of the rim portion **10**B that is in the vicinity of the upper side of the spoke portion **10**C at the vehicle right side, are made to be deformation portions **10**D.

[0041] A main body member **22** (refer to FIG. **2**A, FIG. **2**B and FIG. **3**) that is annular as seen in front view is provided along the entire length direction (the peripheral direction of the steering wheel **10**) and peripheral direction (the direction of circling around the length direction) of the rim portion **10**B. The main body member **22** is formed of a soft resin (e.g., is formed of polyurethane) and is elastic. The rim metal core **12**B is accommodated within the main body member **22**, and the main body member **22** is fixed to the rim metal core **12**B. The outer shape, in a cross-section orthogonal to the length direction, of the main body member **22** is substantially circular, and the main body member **22** structures the peripheral surface of the rim portion **10**B.

[0042] Projecting pillars **22**A, which are substantially shaped as rectangular pillars, are formed integrally with the vehicle left side end portion, the vehicle right side end portion and the lower end portion of the main body member **22**. The projecting pillars **22**A project out toward the radial direction inner side of the steering wheel **10**. Portions, which are in vicinities of the rim metal core **12**B, of the spoke metal cores **12**C are accommodated within the projecting pillars **22**A, and the projecting pillars **22**A are fixed to the spoke metal cores **12**C.

[0043] Fixing recesses **24** are formed at the vehicle left side and the vehicle right side of the main body member **22**, except for at the upper portion and the lower end portion of the main body member **22**. The fixing recesses **24** are disposed at the vehicle rear side of the main body member **22**, at portions that are at the radial direction inner side of the steering wheel **10**. The fixing recesses **24** extend in the length direction of the rim portion **10**B. The length directions of the fixing recesses **24** run along the length direction of the rim portion **10**B, and the width directions of the fixing recesses **24** run along the peripheral direction of the rim portion **10**B.

[0044] Fixing holes **26**, which are rectangular and serve as engaged portions (fixed portions or latched portions), are formed in the bottom portions of the fixing recesses **24**, at the upper side portions and the lower end portions of the vertical direction intermediate portions thereof. The fixing holes **26** are disposed substantially parallel to the length direction of the rim portion **10**B, and open toward the vehicle rear side. Pairs of positioning holes **28** (refer to FIG. **4**B), which are rectangular and serve as engaged portions (latched portions), are formed in the bottom portions of the fixing recesses **24** at the upper side portions of the upper portions thereof, and the positioning holes **28** open toward the vehicle rear side. The positioning holes **28** are elongated in the vertical direction (are not orthogonal and are not parallel to the length direction of the rim portion **10**B). The pair of the positioning holes **28** are apart from one another in the vehicle left-right direction, and the vertical direction positions thereof are offset from one another.

[0045] Garnishes **30** (refer to FIG. **2**A, FIG. **2**B and FIG. **3**), which are substantially shaped as elongated plates and serve as decorative members, are disposed in the fixing recesses **24** of the main body member **22**, and the garnishes **30** are substantially formed of resin. The garnishes **30** are curved in the length directions and the width directions. The length directions of the garnishes **30** are disposed along the length directions of the fixing recesses **24**, and the width directions of the garnishes **30** are disposed along the width directions of the fixing recesses **24**. The garnishes **30** are substantially fit together with the fixing recesses **24**, and the garnishes **30** structure the rim portion **10**B, and are disposed at the steering wheel radial direction inner side (the steering shaft **14** side) and the vehicle rear side of the rim portion **10**B.

[0046] Plate-shaped projecting portions **30**A are formed integrally with the lower end portions of and vicinities of the upper portions of the garnishes **30**. The projecting portions **30**A project out toward the radial direction inner side of the steering wheel **10**, and are disposed at the vehicle rear sides of the projecting pillars **22**A of the main body member **22**.

[0047] The lower side portions of the upper portions of the garnishes **30** are made to be narrow portions **30**B, and the narrow portions **30**B are disposed at the deformation portions **10**D of the rim portion **10**B. The portions, which are further toward the upper sides and lower sides than the narrow portions **30**B, of the garnishes **30** are made to be upper wide portions **30**C and lower wide portions **30**D which respectively serve as wide portions. The width dimensions (the dimensions in the peripheral direction of the rim portion **10**B) of the narrow portions **30**B are made to be smaller than those of the upper wide portions **30**C and the lower wide portions **30**D. Further, the width dimensions of the portions, at which the projecting portions **30**A are disposed, of the lower wide portions **30**D are enlarged due to the projecting portions **30**A.

[0048] Fixing ribs **32** (refer to FIG. **4**A), which are substantially shaped as rectangular pillars and serve as engaging portions (fixing portions and latching portions), are formed integrally with the upper portions and the lower portions (the portions where the projecting portions **30**A are disposed) of the reverse side surfaces of the lower wide portions **30**D. The fixing ribs **32** are disposed at the width direction intermediate portions of the lower wide portions **30**D. The fixing ribs **32** project out toward the vehicle front side and make the height dimensions (the dimensions in the wall thickness direction) of the lower wide portions **30**D larger. The fixing ribs **32** are disposed substantially parallel to the length direction of the rim portion **10**B. Anchor portions **32**A shaped as trapezoidal pillars are formed integrally with the width direction both sides of the distal end portions of the fixing ribs **32**. The anchor portions **32**A project out toward the width direction outer sides of the fixing ribs **32**. The surfaces, which are at the fixing rib **32** proximal end sides, of the anchor portions **32**A are disposed orthogonal to the projecting directions of the fixing ribs **32**. The garnishes **30** are mounted to the main body member **22** due to the fixing ribs **32** being press-fit into the fixing holes **26** of the main body member **22** (the fixing recesses **24**), and the anchor portions **32**A anchoring on the inner surfaces of the fixing holes **26**, and the fixing ribs **32** being fixed in the fixing holes **26**. Displacement of the fixing ribs **32** in the steering wheel **10** radial direction is limited by the fixing holes **26**, and due thereto, displacement of the lower wide portions **30**D in the steering wheel **10** radial direction is limited.

[0049] Pairs of positioning ribs **34** (refer to FIG. **4**B), which are shaped as rectangular pillars and serve as engaging portions (latching portions), are formed integrally with the reverse side surfaces of the upper wide portions **30**C. The positioning ribs **34** project out toward the vehicle front side and make the height dimensions (the dimensions in the wall thickness directions) of the upper wide portions **30**C larger. The width directions of the positioning ribs **34** are the vertical direction (are not orthogonal to and not parallel to

the length direction of the rim portion **10**B). The pair of the positioning ribs **34** are apart from one another in the vehicle left-right direction, and the vertical direction positions thereof are offset from one another. The positioning ribs **34** are fit into the positioning holes **28** of the main body member **22** (the fixing recesses **24**). Displacement of the positioning ribs **34** in the steering wheel **10** radial direction is limited by the positioning holes **28**, and displacement of the upper wide portions **30**C in the steering wheel **10** radial direction is limited.

[0050] The obverse surfaces of the garnishes **30** (including the projecting portions **30**A) are structured by decorative layers **30**E serving as decorative portions. A wood-grain pattern for example is formed at the decorative layers **30**E, and the decorative layers **30**E decorate the steering wheel **10**.

[0051] Electrode layers (not illustrated) serving as detecting portions are formed at the garnishes **30** (including the projecting portions **30**A), at the reverse sides of the decorative layers **30**E. The electrode layers are made of metal or are made of a conductive resin, and are electrically conductive. The electrode layers detect the electrostatic capacity between the electrode layers and the hands of the passenger that contact the garnishes **30** (including the projecting portions **30**A), and can detect the contact of the hands of the passenger with the garnishes **30**) (including the projecting portions **30**A). Plate-shaped connecting portions **30**F (refer to FIG. **6**) are formed integrally with the lower ends of the garnishes **30**. The connecting portions **30**F are electrically connected to the electrode layers, are electrically connected to the control device **20**, and electrically connect the electrode layers to the control device **20**. On the basis of the fact that the electrostatic capacity between the hands of the passenger and the electrode layers is a predetermined electrostatic capacity or more, the control device **20** senses the grasping of the rim portion **10**B by the passenger.

[0052] Operation of the present embodiment is described next.

[0053] In the steering wheel **10** of the above-described structure, at the rim portion **10**B, the fixing ribs **32** of the lower wide portions **30**D of the garnishes **30** are press-fit in the fixing holes **26** of the fixing recesses **24** of the main body member **22**, and the positioning ribs **34** of the upper wide portions **30**C of the garnishes **30** are fit in the positioning holes **28** of the fixing recesses **24** of the main body member **22**. Therefore, even in cases in which the garnishes **30** deform in the radial direction of the steering wheel **10** due to post-molding shrinkage or the environment in which the steering wheel **10** is set, displacement of the garnishes **30** in the steering wheel **10** radial direction with respect to the main body member **22** can be limited by the fixing ribs **32** and the fixing holes **26** and by the positioning ribs **34** and the positioning holes **28**, and the formation of gaps between the garnishes **30** and the inner surfaces of the fixing recesses **24** can be suppressed.

[0054] Moreover, the fixing ribs **32** and the fixing holes **26**, and the positioning ribs **34** and the positioning holes **28**, are disposed so as to not be orthogonal to the length direction of the rim portion **10**B. Therefore, the fixing ribs **32** and the fixing holes **26**, and the positioning ribs **34** and the positioning holes **28**, can appropriately limit displacement of the garnishes **30** in the steering wheel **10** radial direction with respect to the main body member **22**.

[0055] Further, the fixing ribs **32** at the lower sides of the garnishes **30** are fixed to the fixing holes **26** at the lower side of the main body member **22**, and the connecting portions **30**F of the garnishes **30** are electrically connected to the control device **20**, and the connecting portions **30**F are disposed at the peripheries of these fixing ribs **32** and fixing holes **26**. Therefore, displacement of the connecting portions **30**F with respect to the main body member **22** can be suppressed by these fixing ribs **32** and fixing holes **26**, and cancelling of the electrical connection of the connecting portions **30**F with the control device **20** can be suppressed.

[0056] By the way, at the time of a collision of the vehicle, high-pressure gas is instantaneously supplied into the airbag of the airbag device **18** by control of the control device **20**, and the airbag is inflated. Due thereto, the airbag ruptures the pad **16** and is expanded at the entire vehicle rear side of the steering wheel **10**. Due thereto, even if the head of the passenger hits the airbag, the kinetic energy of the head of the passenger is absorbed by the airbag, and impact to the head of the passenger is mitigated.

[0057] Moreover, due to the head of the passenger hitting the airbag, the rim portion **10**B is bendingly deformed at the deformation portions **10**D, and the portion, which is further toward the upper side than the deformation portions **10**D, of the rim portion **10**B tilts. Due thereto, the kinetic energy of the head of the passenger is absorbed also by the bending deformation of the rim portion **10**B, and impact to the head of the passenger is effectively mitigated.

[0058] Here, the narrow portions **30**B of the garnishes **30** are disposed at the deformation portions **10**D of the rim portion **10**B. The width dimensions of the narrow portions **30**B are made to be small, and the section moduli (the strengths) of the narrow portions **30**B are made to be small. Therefore, at the time of a collision of the vehicle, even if the deformation portions **10**D are bendingly deformed, the narrow portions **30**B can deform following the bending deformation of the deformation portions **10**D.

[0059] Moreover, the fixing ribs **32** and the positioning ribs **34** are not provided at the narrow portions **30**B. Therefore, the section moduli of the narrow portions **30**B can still be made to be small, and the narrow portions **30**B can be deformed well following the bending deformation of the deformation portions **10**D.

[0060] Further, the positioning ribs **34** are provided at the upper wide portions **30**C of the garnishes **30**, and the positioning ribs **34** are not fixed to the positioning holes **28** of the main body member **22** and can move along the positioning holes **28**. Therefore, at the time when the deformation portions **10**D are bendingly deformed, even though the fixing ribs **32** of the lower wide portions **30**D of the garnishes **30** at the lower sides of the narrow portions **30**B are fixed to the fixing holes **26** of the main body member **22**, the section moduli of the upper wide portions **30**C can be made to be large by the positioning ribs **34**, and the positioning ribs **34** can move along the positioning holes **28**, and breakage of the upper wide portions **30**C can be suppressed.

[0061] Moreover, the fixing ribs **32** of the garnishes **30** are fixed to the fixing holes **26** of the main body member **22**. Therefore, at the time when the deformation portions **10**D are bendingly deformed, the garnishes **30** coming apart from the main body member **22** can be suppressed.

Second Embodiment

[0062] The rim portion **10**B of a steering wheel **50**, which serves as a steering wheel relating to a second embodiment of the present disclosure, is illustrated in FIG. **5** in a front view seen from the vehicle rear side.

[0063] The steering wheel **50** relating to the present embodiment is a structure that is substantially similar to the above-described first embodiment, but differs with regard to the following points.

[0064] As illustrated in FIG. **5**, at the rim portion **10**B of the steering wheel **50** relating to the present embodiment, instead of the positioning holes **28**, the fixing holes **26** are formed in the bottom portions of the fixing recesses **24** of the main body member **22** at the upper side portions of the upper portions thereof. The fixing holes **26** are disposed substantially parallel to the length direction of the rim portion **10**B and open toward the vehicle rear side. Further, the fixing holes **26** are not provided in the bottom portions of the fixing recesses **24** at the upper side portions of the vertical direction intermediate portions thereof.

[0065] Instead of the positioning ribs **34**, the fixing ribs **32** are formed integrally with the reverse side surfaces of the upper wide portions **30**C of the garnishes **30**. The fixing ribs **32** are disposed at the steering wheel **50** radial direction outer side end portions of the upper wide portions **30**C. The fixing ribs **32** project out toward the vehicle front side and make the height dimensions (the dimensions in the wall thickness directions) of the upper wide portions **30**C larger. The fixing ribs **32** are disposed substantially parallel to the length direction of the rim portion **10**B. The fixing ribs **32** are press-fit into the fixing holes **26** that are at the upper portions of the fixing recesses **24** of the main body member **22**. The anchor portions **32**A of the fixing ribs **32** anchor on the inner surfaces of the fixing holes **26**, and the fixing ribs **32** are fixed to the fixing holes **26**. Further, the fixing ribs **32** are not provided at the reverse side surfaces of the lower wide portions **30**D at the upper portions thereof.

[0066] Here, in the present embodiment as well, operation and effects that are similar to those of the above-described first embodiment can be exhibited.

[0067] In particular, at the rim portion **10**B, the fixing ribs **32** of the upper wide portions **30**C and the lower wide portions **30**D of the garnishes **30** are respectively press-fit into the fixing holes **26** of the fixing recesses **24** of the main body member **22**. Therefore, even in cases in which the garnishes **30** deform in the radial direction of the steering wheel **10** due to post-molding shrinkage or the environment in which the steering wheel **10** is set, displacement of the garnishes **30** in the steering wheel **10** radial direction with respect to the main body member **22** can be limited by the fixing ribs **32** and the fixing holes **26**, and the formation of gaps between the garnishes **30** and the inner surfaces of the fixing recesses **24** can be suppressed.

[0068] Moreover, the fixing ribs **32** and the fixing holes **26** are disposed so as to not be orthogonal to the length direction of the rim portion **10**B. Therefore, the fixing ribs **32** and the fixing holes **26** can appropriately limit displacement of the garnishes **30** in the steering wheel **10** radial direction with respect to the main body member **22**.

[0069] Further, the upper portions of the lower wide portions **30**D of the garnishes **30** are not fixed to the main body member **22**. Therefore, at the time of a collision of the vehicle, when the deformation portions **10**D of the rim portion **10**B are bendingly deformed, even though the fixing ribs **32** of the upper wide portions **30**C of the garnishes **30** at the upper sides of the narrow portions **30**B are fixed to the fixing holes **26** of the main body member **22**, the width dimensions of the upper portions of the lower wide portions **30**D can be made to be large, and the section moduli thereof can be made large, and the upper portions of the lower wide portions **30**D can move, and breakage of the upper portions of the lower wide portions **30**D can be suppressed.

Third Embodiment

[0070] The rim portion **10**B of a steering wheel **60**, which serves as a steering wheel relating to a third embodiment of the present disclosure, is illustrated in FIG. **6** in a front view seen from the vehicle rear side.

[0071] The steering wheel **60** relating to the present embodiment is a structure substantially similar to the above-described second embodiment, but differs with regard to the following points.

[0072] As illustrated in FIG. **6**, at the rim portion **10**B of the steering wheel **60** relating to the present embodiment, the fixing holes **26** are not provided in the bottom portions of the fixing recesses **24** of the main body member **22** at the upper side portions of the upper portions thereof. Urging holes **62** (refer to FIG. **4**C), which are trapezoidal in cross-section and serve as engaged portions, are formed in the bottom portions of the fixing recesses **24**. The urging holes **62** are disposed at the steering wheel **60** radial direction outer side end portions of the fixing recesses **24**. The urging holes **62** are disposed along the length direction of the rim portion **10**B over the entire length directions of the fixing recesses **24**, and the urging holes **62** open toward the vehicle rear side.

[0073] The fixing ribs **32** are not provided at the reverse side surfaces of the upper wide portions **30**C of the garnishes **30**. Urging ribs **64** (refer to FIG. **4**C), which are trapezoidal in cross-section and serve as engaging portions (latching portions), are formed integrally with the reverse side surfaces of the garnishes **30**. The urging ribs **64** are disposed at the steering wheel **60** radial direction outer side end portions of the garnishes **30**. The urging ribs **64** project out toward the vehicle front side and make the height dimensions (the dimensions in the wall thickness directions) of the garnishes **30** larger, and are disposed along the length direction of the rim portion **10**B over the entire length directions of the garnishes **30**. The amounts of projection of the urging ribs **64** at the positions of the narrow portions **30**B of the garnishes **30** are small as compared with at the positions of the upper wide portions **30**C and the lower wide portions **30**D of the garnishes **30**. The urging ribs **64** are fit together with the urging holes **62** of the main body member **22** (the fixing recesses **24**). Displacement of the urging ribs **64** in the steering wheel **10** radial direction is limited by the urging holes **62**, and displacement of the garnishes **30** in the steering wheel **10** radial direction is limited.

[0074] Here, in the present embodiment as well, operation and effects that are similar to those of the above-described first embodiment can be exhibited.

[0075] In particular, at the rim portion **10**B, the fixing ribs **32** of the lower wide portions **30**D of the garnishes **30** are press-fit into the fixing holes **26** of the fixing recesses **24** of the main body member **22**, and the urging ribs **64** of the garnishes **30** are fit in the urging holes **62** of the fixing recesses **24** of the main body member **22**. Therefore, even in cases in which the garnishes **30** deform in the radial direction of the steering wheel **10** due to post-molding shrinkage

or the environment in which the steering wheel **10** is set, displacement of the garnishes **30** in the steering wheel **10** radial direction with respect to the main body member **22** can be limited by the fixing ribs **32** and the fixing holes **26** and by the urging ribs **64** and the urging holes **62**, and the formation of gaps between the garnishes **30** and the inner surfaces of the fixing recesses **24** can be suppressed.

[0076] Moreover, the fixing ribs **32** and the fixing holes **26**, and the urging ribs **64** and the urging holes **62**. are disposed so as to not be orthogonal to the length direction of the rim portion **10**B. Therefore, the fixing ribs **32** and the fixing holes **26**, and the urging ribs **64** and the urging holes **62**, can appropriately limit displacement of the garnishes **30** in the steering wheel **10** radial direction with respect to the main body member **22**.

[0077] Further, the amounts of projection of the urging ribs **64** are made to be small at the positions of the narrow portions **30**B of the garnishes **30**. Therefore, the section moduli of the narrow portions **30**B becoming large can be suppressed, and, at the time of a collision of the vehicle, even if the deformation portions **10**D of the rim portion **10**B are bendingly deformed, the narrow portions **30**B can deform following the bending deformation of the deformation portions **10**D. Moreover, the urging ribs **64** are provided at the narrow portions **30**B, and the section moduli of the narrow portions **30**B are increased. Therefore, at the time when the deformation portions **10**D are bendingly deformed, breakage of the narrow portions **30**B can be suppressed.

[0078] Moreover, the urging ribs **64** are provided at the garnishes **30**, and the urging ribs **64** are not fixed to the urging holes **62** of the main body member **22** and can move with respect to the urging holes **62**. Therefore, at the time when the deformation portions **10**D are bendingly deformed, the section moduli of the garnishes **30** can be made larger by the urging ribs **64**, and the urging ribs **64** can move with respect to the urging holes **62**, and breakage of the garnishes **30** can be suppressed.

[0079] Note that, in the present embodiment, the amounts of projection of the urging ribs **64** are made to be smaller at the positions of the narrow portions **30**B of the garnishes **30**, as compared with at the positions of the upper wide portions **30**C and the lower wide portions **30**D of the garnishes **30**. However, the amounts of projection of the urging ribs **64** at the positions of the narrow portions **30**B of the garnishes **30** may be made to be the same as at the positions of the upper wide portions **30**C and the lower wide portions **30**D of the garnishes **30**. In this case, the garnish **30** width direction dimensions of the urging ribs **64** may be made to be smaller at the positions of the narrow portions **30**B of the garnishes **30** than at the positions of the upper wide portions **30**C and the lower wide portions **30**D of the garnishes **30**, and the section moduli of the urging ribs **64** may be made to be smaller at the positions of the narrow portions **30**B of the garnishes **30** than at the positions of the upper wide portions **30**C and the lower wide portions **30**D of the garnishes **30**. Further, the products of the garnish **30** width direction dimensions and the amounts of projection of the urging ribs **64** may be made to be smaller at the positions of the narrow portions **30**B of the garnishes **30** than at the positions of the upper wide portions **30**C and the lower wide portions **30**D of the garnishes **30**.

[0080] Moreover, the urging holes **62** and the urging ribs **64** in the present embodiment may be provided in the above-described first embodiment.

Fourth Embodiment

[0081] The rim portion **10**B of a steering wheel **70**, which serves as a steering wheel relating to a fourth embodiment of the present disclosure, is illustrated in FIG. **7** in a front view seen from the vehicle rear side.

[0082] The steering wheel **70** relating to the present embodiment is a structure that is substantially similar to the above-described third embodiment, but differs with regard to the following points.

[0083] As illustrated in FIG. **7**, at the rim portion **10**B of the steering wheel **70** relating to the present embodiment, the fixing holes **26** are formed in the bottom portions of the fixing recesses **24** of the main body member **22** at the upper side portions of the vertical direction intermediate portions thereof, in the same way as in the above-described first embodiment.

[0084] In the same way as in the above-described first embodiment, the fixing ribs **32** are formed integrally with the reverse side surfaces of the lower wide portions **30**D of the garnishes **30** at the upper portions thereof. The fixing ribs **32** are press-fit into the fixing holes **26** of the main body member **22** (the fixing recesses **24**), and the anchor portions **32**A of the fixing ribs **32** anchor on the inner surfaces of the fixing holes **26**, and the fixing ribs **32** are fixed to the fixing holes **26**. Further, the urging ribs **64** are not provided at the upper portions and the lower end portions of the narrow portions **30**B and the lower wide portions **30**D of the garnishes **30**.

[0085] Here, in the present embodiment as well, operation and effects that are similar to those of the above-described first embodiment can be exhibited.

[0086] In particular, at the rim portion **10**B, the fixing ribs **32** of the lower wide portions **30**D of the garnishes **30** are press-fit into the fixing holes **26** of the fixing recesses **24** of the main body member **22**, and the urging ribs **64** of the garnishes **30** are fit into the urging holes **62** of the fixing recesses **24** of the main body member **22**. Therefore, even in cases in which the garnishes **30** deform in the radial direction of the steering wheel **10** due to post-molding shrinkage or the environment in which the steering wheel **10** is set, displacement of the garnishes **30** in the steering wheel **10** radial direction with respect to the main body member **22** can be limited by the fixing ribs **32** and the fixing holes **26** and by the urging ribs **64** and the urging holes **62**, and the formation of gaps between the garnishes **30** and the inner surfaces of the fixing recesses **24** can be suppressed.

[0087] Moreover, the fixing ribs **32** and the fixing holes **26**, and the urging ribs **64** and the urging holes **62**, are disposed so as to not be orthogonal to the length direction of the rim portion **10**B. Therefore, the fixing ribs **32** and the fixing holes **26**, and the urging ribs **64** and the urging holes **62**, can appropriately limit displacement of the garnishes **30** in the steering wheel **10** radial direction with respect to the main body member **22**.

[0088] Further, the fixing ribs **32** and the urging ribs **64** are not provided at the narrow portions **30**B. Therefore, the section moduli of the narrow portions **30**B can be made to be small, and, at the time when the deformation portions **10**D are bendingly deformed, the narrow portions **30**B can deform well following the bending deformation of the deformation portions **10**D.

[0089] Moreover, the urging ribs **64** are provided at the upper wide portions **30**C of the garnishes **30**, and the urging ribs **64** are not fixed to the urging holes **62** of the main body

member **22** and can move with respect to the urging holes **62**. Therefore, at the time when the deformation portions **10**D are bendingly deformed, even though the fixing ribs **32** of the lower wide portions **30**D of the garnishes **30** at the lower sides of the narrow portions **30**B are fixed to the fixing holes **26** of the main body member **22**, the section moduli of the upper wide portions **30**C can be made to be large by the urging ribs **64**, and the urging ribs **64** can move with respect to the urging holes **62**, and breakage of the upper wide portions **30**C can be suppressed.

[0090] Note that, in the above-described first embodiment through fourth embodiment, the height dimensions of the garnishes **30** are made to be larger by the positioning ribs **34** and the urging ribs **64**. However, the wall thickness dimensions of the garnishes **30** may be made to be larger, and the height dimensions of the garnishes **30** may be made to be larger.

[0091] Further, in the above-described first embodiment through fourth embodiment, the garnishes **30**) are disposed at the steering wheel **10**, **50**, **60**, **70** radial direction inner side of the rim portion **10**B. However, together therewith, or in place thereof, the garnishes **30** may be disposed at the steering wheel **10**, **50**, **60**, **70** radial direction outer side of the rim portion **10**B.

[0092] Moreover, in the above-described first embodiment through fourth embodiment, the garnishes **30** are disposed at the vehicle rear side of the rim portion **10**B. However, together therewith, or in place thereof, the garnishes **30** may be disposed at the vehicle front side of the rim portion **10**B.

[0093] Further, in the above-described first embodiment through fourth embodiment, the rim portion **10**B of the steering wheel **10** is annular as seen in a front view. However, the rim portion **10**B of the steering wheel **10** may be a shape other than annular as seen in a front view. Moreover, the rim portion **10**B of the steering wheel **10** may be divided into a vehicle left side portion and a vehicle right side portion. In this case, the steering wheel **10** may be formed in, for example, an H-shape as seen in a front view, without providing the lower side spoke portion **10**C.

[0094] The disclosure of Japanese Patent Application No. 2022-068522 filed on Apr. 18, 2022 is, in its entirety, incorporated by reference into the present specification. All publications, patent applications, and technical standards mentioned in the present specification are incorporated by reference into the present specification to the same extent as if such individual publication, patent application, or technical standard was specifically and individually indicated to be incorporated by reference.

1. A steering wheel comprising:

a grasped portion configured to be grasped by a passenger;

a main body member provided at the grasped portion; and

decorative members mounted to the main body member and decorating the grasped portion, height dimensions, which are dimensions in wall thickness directions, of the decorative members varying, and the decorative members being provided with wide portions, at which width dimensions that are dimensions circling around a length direction of the grasped portion are larger than width dimensions of narrow portions.

2. The steering wheel of claim **1**, comprising engaging portions provided at the decorative members and engaged with the main body member.

3. The steering wheel of claim **2**, wherein the engaging portions are not provided at the narrow portions.

4. The steering wheel of claim **2**, wherein the engaging portions that are provided at the narrow portions have lower strength than the engaging portions that are provided at the wide portions.

5. The steering wheel of claim **2**, wherein the engaging portions are fixing portions, the fixing portions being fixed to the main body member.

6. The steering wheel of claim **5**, comprising connecting portions, the connecting portions being provided at the decorative members, the connecting portions being electrically connected to a vehicle body side, and the fixing portions being disposed at peripheries of the connecting portions.

7. The steering wheel of claim **2**, wherein the engaging portions are latching portions, the latching portions latching onto the main body member, and the latching portions limiting displacement of the decorative members with respect to the main body member.

8. The steering wheel of claim **2**, wherein the engaging portions are disposed so as to not be orthogonal to the length direction of the grasped portion.

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