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595042944
(71) Applicant Youth Kitaura Co., Ltd.
1-30-12 Machiya, Arakawa-ku, Tokyo-to
(71) Applicant 307042385
Misawa Homes Co., Ltd.
2-4-1 Nishi-Shinjuku, Shinjuku-ku, Tokyo-to
(74) Representative of Above Person 100076266
Omori Izumi, Patent Attorney
(72) Inventor Hideaki Kitaura
1-30-12 Machiya, Arakawa-ku, Tokyo-to
Youth Kitaura Co., Ltd.

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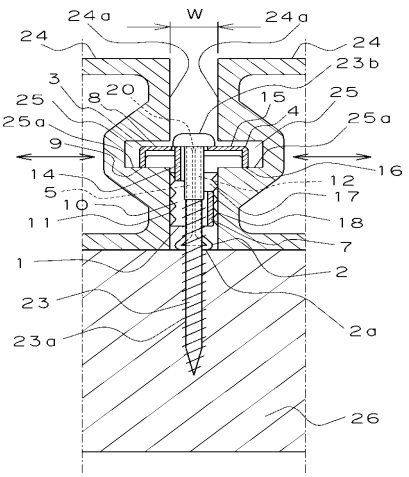
(54) [Title of Invention] DECK MATERIAL MOUNTING FITTING AND DECK MATERIAL MOUNTING STRUCTURE

57) [Abstract]

[Problem] To allow a deck material to move to a certain extent, absorb expansion and contraction of the deck material due to temperature changes, and prevent the deck material from moving without limit.

[Solution] A deck material mounting fitting 1 is configured by folding a single metal plate roughly in half, one part forming a first half 3 and the other part forming a second half 4, with a first opposing surface portion 5 of the first half 3 and a second opposing surface portion 12 of the second half 4 facing each other in a substantially parallel state. While a first locking portion 8 of the first half 3 is inserted into a mounting groove 25 of one deck material 24 and a second locking portion 15 of the second half 4 inserted into a mounting groove 25 of another deck material 24, a screw 23 inserted into the fitting 1 is screwed into a deck material support 26, whereby biting projections 9 and 16 provided on the first and second locking portions 8 and 15 bite into lower surfaces 25a of the mounting grooves 25 of the deck materials 24 on both sides, locking the deck material 24.

[Selected Drawing] FIG. 14



[Scope of Patent Claims]

[Claim 1]

A deck material mounting fitting for mounting a plurality of deck materials, each of which has a mounting groove

extending in the longitudinal direction on its side surface, on a deck material support while the deck materials are arranged in parallel to each other, wherein

a single metal plate is folded roughly in half, a folded portion forming the lower end of the deck material mounting fitting, and one portion forming a first half and the other portion forming a second half, with this folded portion as the boundary,

the first half has a pair of first opposing surface portions each rising in the vertical direction, a first open portion provided between these first opposing surface portions and from which the metal plate has been removed, a curved, band-shaped first screw support portion spanning between the pair of first opposing surface portions, a first locking portion bent from an upper end portion of the first opposing surface portion and protruding to the side opposite the second half, and a first locking portion biting projection provided on the first locking portion and protruding downward,

the second half has a pair of second opposing surface portions each rising in the vertical direction, a second open portion provided between these second opposing surface portions and from which the metal plate has been removed, a curved, band-shaped second screw support portion spanning between the pair of second opposing surface portions above or below the first screw support portion, a second locking portion bent from an upper end portion of the second opposing surface portion and protruding to the side opposite the first half, and a second locking portion biting projection provided on the second locking portion and protruding downward,

the first opposing surface portion and the second opposing surface portion are opposed to each other in a substantially parallel state,

the first screw support portion is curved in an arc shape with the axial direction being the vertical direction and convex when viewed from the second half, and protrudes into the second open portion,

the second screw support portion is curved in an arc shape with the axial direction being the vertical direction and convex when viewed from the first half, and protrudes into the first open portion, and

a screw is inserted between the first screw support portion and the second screw support portion, and when the screw is screwed into the deck material support and tightened with the first locking portion inserted into the mounting groove of one of the deck materials and the second locking portion inserted into the mounting groove of the other deck material, the first and second locking portion biting projections bite into the lower surfaces of the mounting grooves of the deck materials on both sides, thereby locking the deck material to the deck material support.

[Claim 2]

The deck material mounting fitting according to claim 1, wherein, in a free state where no external force is applied, the first opposing surface portion and the second opposing surface portion face each other across a gap 20.

[Claim 3]

The deck material mounting fitting according to claim 1 or 2, wherein a tip side of the first locking portion is bent downward, and the first locking portion biting projection is provided at a lower end of the bent portion, and

the tip side of the second locking portion is bent downward, and the second locking portion has a biting projection at the lower end of the bent portion.

[Claim 4]

The deck material mounting fitting according to claim 1, 2, or 3, further comprising a first deck material gap regulation piece bent obliquely from an outer side end portion of each of the first opposing surface portions toward a side opposite to the second opposing surface portions and

a second deck material gap regulation piece obliquely bent from an outer side end portion of each of the second opposing surface portions toward a side opposite to the first opposing surface portion, wherein

tips of the first and second deck material gap regulation pieces abut against the side surfaces of the deck material to regulate gap between adjacent deck materials.

[Claim 5]

The deck material mounting fitting according to claim 4, further comprising deck material gap regulation piece biting projections provided at tip portions of the first and second deck material gap regulation pieces, respectively.

[Claim 6]

The deck material mounting fitting according to any one of claims 1 to 5, wherein the portion through which the screw is inserted, including the first and second screw support portions, is configured such that when the screw is inserted without being rotated, a male threaded portion of the screw catches at a point in the portion and the tip of the screw does not reach the bottom of the deck material mounting fitting, whereas when the screw is rotated in a tightening

direction, the screw descends and passes through the deck material mounting fitting.

[Claim 7]

The deck material mounting fitting according to any one of claims 1 to 6, further comprising a recess provided at an end of the first locking portion on the second locking portion side and

a recess provided at an end of the second locking portion on the first locking portion side and into which the screw is inserted, wherein

an upper end of the second screw support portion is flush with an upper surface of the second locking portion, the recess of the first locking portion receives the upper end of the second screw support portion therein, and a seat surface of the head of the screw is supported by the upper surface of the second locking portion and the upper end of the second screw support portion.

[Claim 8]

A deck material mounting structure for mounting a plurality of deck materials, each of which has a mounting groove extending in the longitudinal direction on its side surface, on a deck material support while the deck materials are arranged in parallel to each other, via a deck material mounting fitting, wherein

in the deck material mounting fitting, a single metal plate is folded roughly in half, a folded portion forming the lower end of the deck material mounting fitting, and one portion forming a first half and the other portion forming a second half, with this folded portion as the boundary,

the first half has a pair of first opposing surface portions each rising in the vertical direction, a first open portion provided between these first opposing surface portions and from which the metal plate has been removed, a curved, band-shaped first screw support portion spanning between the pair of first opposing surface portions, a first locking portion bent from an upper end portion of the first opposing surface portion and protruding to the side opposite the second half, and a first locking portion biting projection provided on the first locking portion and protruding downward,

the second half has a pair of second opposing surface portions each rising in the vertical direction, a second open portion provided between these second opposing surface portions and from which the metal plate has been removed, a curved, band-shaped second screw support portion spanning between the pair of second opposing surface portions above or below the first screw support portion, a second locking portion bent from an upper end portion of the second opposing surface portion and protruding to the side opposite the first half, and a second locking portion biting projection provided on the second locking portion and protruding downward,

the first opposing surface portion and the second opposing surface portion are opposed to each other in a substantially parallel state,

the first screw support portion is curved in an arc shape with the axial direction being the vertical direction and convex when viewed from the second half, and protrudes into the second open portion,

the second screw support portion is curved in an arc shape with the axial direction being the vertical direction and convex when viewed from the first half, and protrudes into the first open portion, and

a screw is inserted between the first screw support portion and the second screw support portion of the deck material mounting fitting, and when the screw is screwed into the deck material support and tightened with the first locking portion inserted into the mounting groove of one of the deck materials and the second locking portion inserted into the mounting groove of the other deck material, the first and second locking portion biting projections bite into the lower surfaces of the mounting grooves of the deck materials on both sides, thereby locking the deck material to the deck material support.

[Detailed Description of Invention]

[Technical Field]

[0001]

The present invention relates to a deck material mounting fitting and deck material mounting structure for mounting deck materials that constitute deck floors on verandas, balconies, rooftops, parks, promenades, and the like to deck material supports such as joists and beams.

[Background Art]

[0002]

In this type of deck material mounting structure, because the deck material expands and contracts due to temperature changes, it is preferable to avoid completely fixing the deck material to the deck material support via deck material

mounting fittings.

[0003]

For this reason, conventional deck material mounting fittings are designed to attach the deck material to the deck material support via the locking portion provided on the fittings simply by pressing the deck material from above, and the deck material is able to move in the width and length directions by sliding against the locking portions of the deck material mounting fittings (for example, see Patent Document 1).

[Prior Art Literature]

[Patent Documents]

[0004]

[Patent Document 1] JP 2005-264663 A

[Summary of Invention]

[Problem to Be Solved by Invention]

[0005]

As a result, the deck material is essentially able to move unrestricted in both the width and length directions, which creates a problem in that the mounting position of the deck material can shift from its original position and, in extreme cases, the deck material may separate from the deck material mounting fittings.

[0006]

The present invention has been configured in consideration of such conventional circumstances, and one object of the present invention is to a provide a deck material mounting fitting and a deck material mounting structure which allow a certain degree of movement of the deck material in the width and length directions, absorb expansion and contraction of the deck material due to temperature changes, and prevent unrestricted movement of the deck material in the width and length directions.

[0007]

Further objects of the present invention will become apparent from the following description.

[Means for Solving Problem]

[0008]

The deck material mounting fitting according to the present invention is

a deck material mounting fitting for mounting a plurality of deck materials, each of which has a mounting groove extending in the longitudinal direction on its side surface, on a deck material support while the deck materials are arranged in parallel to each other, wherein

a single metal plate is folded roughly in half, a folded portion forming the lower end of the deck material mounting fitting, and one portion forming a first half and the other portion forming a second half, with this folded portion as the boundary,

the first half has a pair of first opposing surface portions each rising in the vertical direction, a first open portion provided between these first opposing surface portions and from which the metal plate has been removed, a curved, band-shaped first screw support portion spanning between the pair of first opposing surface portions, a first locking portion bent from an upper end portion of the first opposing surface portion and protruding to the side opposite the second half, and a first locking portion biting projection provided on the first locking portion and protruding downward,

the second half has a pair of second opposing surface portions each rising in the vertical direction, a second open portion provided between these second opposing surface portions and from which the metal plate has been removed, a curved, band-shaped second screw support portion spanning between the pair of second opposing surface portions above or below the first screw support portion, a second locking portion bent from an upper end portion of the second opposing surface portion and protruding to the side opposite the first half, and a second locking portion biting projection provided on the second locking portion and protruding downward,

the first opposing surface portion and the second opposing surface portion are opposed to each other in a substantially parallel state,

the first screw support portion is curved in an arc shape with the axial direction being the vertical direction and convex when viewed from the second half, and protrudes into the second open portion,

the second screw support portion is curved in an arc shape with the axial direction being the vertical direction and convex when viewed from the first half, and protrudes into the first open portion, and

a screw is inserted between the first screw support portion and the second screw support portion, and when the screw

is screwed into the deck material support and tightened with the first locking portion inserted into the mounting groove of one of the deck materials and the second locking portion inserted into the mounting groove of the other deck material, the first and second locking portion biting projections bite into the lower surfaces of the mounting grooves of the deck materials on both sides, thereby locking the deck material to the deck material support.

[0009]

Furthermore, the deck material mounting structure according to the present invention is:

A deck material mounting structure for mounting a plurality of deck materials, each of which has a mounting groove extending in the longitudinal direction on its side surface, on a deck material support while the deck materials are arranged in parallel to each other, via a deck material mounting fitting, wherein

in the deck material mounting fitting, a single metal plate is folded roughly in half, a folded portion forming the lower end of the deck material mounting fitting, and one portion forming a first half and the other portion forming a second half, with this folded portion as the boundary,

the first half has a pair of first opposing surface portions each rising in the vertical direction, a first open portion provided between these first opposing surface portions and from which the metal plate has been removed, a curved, band-shaped first screw support portion spanning between the pair of first opposing surface portions, a first locking portion bent from an upper end portion of the first opposing surface portion and protruding to the side opposite the second half, and a first locking portion biting projection provided on the first locking portion and protruding downward,

the second half has a pair of second opposing surface portions each rising in the vertical direction, a second open portion provided between these second opposing surface portions and from which the metal plate has been removed, a curved, band-shaped second screw support portion spanning between the pair of second opposing surface portions above or below the first screw support portion, a second locking portion bent from an upper end portion of the second opposing surface portion and protruding to the side opposite the first half, and a second locking portion biting projection provided on the second locking portion and protruding downward,

the first opposing surface portion and the second opposing surface portion are opposed to each other in a substantially parallel state,

the first screw support portion is curved in an arc shape with the axial direction being the vertical direction and convex when viewed from the second half, and protrudes into the second open portion,

the second screw support portion is curved in an arc shape with the axial direction being the vertical direction and convex when viewed from the first half, and protrudes into the first open portion, and

a screw is inserted between the first screw support portion and the second screw support portion of the deck material mounting fitting, and when the screw is screwed into the deck material support and tightened with the first locking portion inserted into the mounting groove of one of the deck materials and the second locking portion inserted into the mounting groove of the other deck material, the first and second locking portion biting projections bite into the lower surfaces of the mounting grooves of the deck materials on both sides, thereby locking the deck material to the deck material support.

[0010]

In the present invention, when the screws are tightened, the locking portion biting projections of the first and second locking portions bite into the lower surface of the mounting groove of the deck material and lock the deck material, thereby preventing unrestricted movement of the deck material in the width and length directions.

[0011]

Meanwhile, with regard to the width direction of the deck material, the deck material mounting fitting is made of a single metal plate folded roughly in half, and thus even when the deck material expands or contracts due to temperature changes, the deck material mounting fitting elastically deforms so that the size of the gap between the first opposing surface portion and the second opposing surface portion of the second half changes, thereby absorbing the expansion and contraction of the deck material.

[0012]

Furthermore, with regard to the length direction of the deck material, the inner diameter of the part of the deck material mounting fitting through which the screw is inserted is made sufficiently larger than the shaft diameter of the screw to provide play between the screw and the bracket, and the elastic deformation of the first and second shaft support portions allows relative movement between the screw and the deck material mounting fitting, thereby absorbing expansion and contraction of the deck material due to temperature changes.

[Effect of Invention]

[0013]

The deck material mounting fitting and the deck material mounting structure of the present invention can be configured to allow movement in the width direction and the length direction of the deck material to some extent to absorb expansion and contraction of the deck material due to temperature changes and to prevent the deck material from moving in the width direction and the length direction unrestricted.

[Brief Description of Drawings]

[0014]

[FIG. 1] A perspective view illustrating a deck material mounting fitting in one embodiment of the present invention.

[FIG. 2] A front view illustrating the deck material mounting fitting.

[FIG. 3] A rear view illustrating the deck material mounting fitting.

[FIG. 4] A side view illustrating the deck material mounting fitting.

[FIG. 5] A plan view illustrating the deck material mounting fitting.

[FIG. 6] A bottom view illustrating the deck material mounting fitting.

[FIG. 7] A cross-sectional view along line VII-VII in FIG. 2.

[FIG. 8] A cross-sectional view along line VIII-VIII in FIG. 2.

[FIG. 9] A cross-sectional view along line IX-IX in FIG. 2.

[FIG. 10] A side view illustrating the deck material mounting fitting while a screw is inserted therein.

[FIG. 11] A cross-sectional view illustrating a step of mounting the deck material in the embodiment above.

[FIG. 12] A cross-sectional view illustrating a next step of mounting the deck material in the embodiment above.

[FIG. 13] A cross-sectional view illustrating the deck material mounting structure after mounting work is completed in the embodiment above.

[FIG. 14] An enlarged cross-sectional view illustrating the vicinity of the deck material mounting fitting in FIG. 13.

[Embodiments of Invention]

[0015]

The present invention will now be described with reference to the embodiments illustrated in the Drawings.

[Embodiment 1]

[0016]

FIGS. 1 to 14 illustrate one embodiment of the present invention. Of these, FIGS. 1 to 9 illustrate the deck material mounting fitting 1 in this embodiment. This deck material mounting fitting 1 is made by pressing a single metal plate of steel, stainless steel, brass, or the like, and largely speaking, is configured such that a single metal plate that is folded roughly in half, a folded portion 2 forming the lower end of the deck material mounting fitting 1, and one portion forming a first half 3 and the other portion forming a second half 4, with this folded portion 2 as the boundary.

[0017]

As illustrated in FIGS. 4, 7, and 8, the folded portion 2 gradually widens in the downward direction, and a bottom portion 2a thereof is flat.

[0018]

The first half 3 has a pair of first opposing surface portions 5, a first open portion 6, a first screw support portion 7, a first locking portion 8, a first locking portion biting projection 9, a pair of first deck material gap regulation pieces 10, and a first deck material gap regulation piece biting projection 11.

[0019]

The pair of first opposing surface portions 5 are on the same plane, each having a rectangular shape and rising in the vertical direction. The first open portion 6 is a portion from which the metal plate has been removed, and is provided in a rectangular shape on each of the upper side and the lower side between the pair of first opposing surface portions 5. The first screw support portion 7 has a curved band shape and spans across the pair of first opposing surface portions 5 between the upper and lower first open portions 6. The first locking portion 8 is bent at a right angle from the upper end of the first opposing surface portion 5 to protrude to the opposite side to the second half 4, and has an overall rectangular shape. A tip side of the first locking portion 8 is bent downward, and the first locking portion biting projection 9 is provided at a lower end of the bent portion in the shape of contiguous triangular teeth. The pair of first deck material gap regulation pieces 10 are each bent diagonally from the outer side end portion of each first opposing surface portion 5 toward the opposite side to the second half 4, and each of the first deck material gap regulation pieces 10 has provided at its tip the first deck material gap regulation piece biting projection 11 formed in the shape of contiguous triangular teeth.

[0020]

The second half 4 has a pair of second opposed surface portions 12, a second open portion 13, a second screw support portion 14, a second locking portion 15, a second locking portion biting projection 16, a pair of second deck material gap regulation pieces 17, and a second deck material gap regulation piece biting projection 18.

[0021]

The pair of second opposing surface portions 12 are on the same plane, each having a rectangular shape and rising in the vertical direction. The second open portion 13 is a portion from which the metal plate has been removed, and is provided in a rectangular shape on and the lower side between the pair of second opposing surface portions 12. The second screw support portion 14 has a curved band shape and spans across the pair of second opposing surface portions 12 above the second open portion 13 and the first screw support portion 7. The second locking portion 15 is bent at a right angle from the upper end of the second opposing surface portion 12 to protrude to the opposite side to the first half 3, and has an overall rectangular shape. A tip side of the second locking portion 15 is bent downward, and the second locking portion biting projection 16 is provided at a lower end of the bent portion in the shape of contiguous triangular teeth. The pair of second deck material gap regulation pieces 17 are each bent diagonally from the outer side end portion of each second opposing surface portion 12 toward the opposite side to the first half 3, and each of the second deck material gap regulation pieces 17 has provided at its tip the second deck material gap regulation piece biting projection 18 formed in the shape of contiguous triangular teeth.

[0022]

In a free state where no external force is applied to the deck material mounting fitting, the first opposing surface portion 5 and the second opposing surface portion 12 face each other across a gap 20 while parallel to each other. The first screw support portion 7 is curved in an arc shape with the axial direction being the vertical direction and convex when viewed from the second half 4, and protrudes into the second open portion 13. The second screw support portion 14 is curved in an arc shape with the axial direction being the vertical direction and convex when viewed from the first half 3, and protrudes into the first open portion 6. An upper end 14a of the second screw support portion 14 is flush with the upper surfaces of the first and second locking portions 8 and 15.

[0023]

As clearly illustrated in FIGS. 1, 5, and 6, a semicircular recess 21 is provided in the center of the end of the first locking portion 8 on the second locking portion 15 side, and this recess 21 receives the upper end 14a of the second screw support portion 14 therein, thereby preventing interference between the first locking portion 8 and the second screw support portion 14. A semicircular recess 22 is provided in the center of the end of the second locking portion 15 on the first locking portion 8 side so as to be located directly above the first screw support portion 7.

[0024]

A screw 23 is inserted between the second screw support portion 14 and the recess 22 and between such and the first screw support portion 7. When the screw 23 is inserted without the screw 23 being rotated, a male threaded portion 23a of the screw 23 catches on somewhere in the portion, and as illustrated in FIG. 10, the tip of the screw 23 does not reach the bottom of the deck material mounting fitting (bottom 2a of the folded portion 2), whereas when the screw 23 is rotated in the tightening direction, the screw 23 descends and passes through the deck material mounting fitting 1. More specifically, the position of the inner circumference and the size of the inner diameter of the recess 22 and the first and second screw support portions 7 and 14 are determined so that when the screw 23 is inserted between the second screw support portion 14 and the recess 22 without being rotated, the male threaded part 23a of the screw 23 is caught in one or more of the second screw support portion 14, the recess 22, and the first screw support portion 7, and the tip of the screw 23 does not reach the bottom 2a of the deck material mounting fitting 1, whereas when the screw 23 is rotated in the tightening direction, the screw 23 descends and passes through the bottom 2a of the deck material mounting fitting 1.

[0025]

Next, the deck material mounting structure 24 mounting process and the deck material attachment structure in this embodiment will be described with reference to FIGS. 11 to 14. The deck material 24 is made of artificial wood formed by mixing wood powder and resin, is hollow overall and has a vertically elongated shape that extends perpendicular to the plane of the drawings, and

both side surfaces 24a are provided with mounting grooves 25 which extend in the longitudinal direction and have a rectangular cross section. Note that in the present invention, the material of the deck material 24 is not limited to artificial wood made by mixing wood powder and resin as in this embodiment, but may be other materials such as wood, resin, or metal.

[0026]

FIGS. 11 to 14 illustrate the process of mounting the deck material 24 in this embodiment. First, the screw 23 is inserted between the second screw support portion 14 and the recess 22 without rotating, and as illustrated in FIG. 10,

the male threaded portion 23a of the screw 23 is caught in one or more of the second screw support portion 14, the recess 22 and the first screw support portion 7, and the tip of the screw 23 is attached to the deck material mounting fitting 1 without reaching the bottom of the deck material mounting fitting 1 (the bottom 2a of the folded portion 2).

[0027]

Next, while the screw 23 still thus attached, the first locking portion 8 of the deck material mounting fitting 1 is inserted into the mounting groove 25 of the preceding deck material 24 and the preceding deck material 24 is placed in a predetermined position on a deck material support 26 such as a joist or floor joist, as illustrated in FIG. 11 (the deck material support 26 is made of wood, artificial wood, or a metal such as steel, or the like). At this time, assuming that the deck material mounting fitting 1 is not provided with the first locking portion biting projection 9, the first locking portion 8 would slide over the lower surface 25a of the mounting groove 25 of the deck material 24, and the deck material mounting fitting 1 would easily fall off from the mounting groove 25 of the deck material 24, but because this deck material mounting fitting 1 is provided with first and second locking portion biting projections 9 and 16 and the locking portion biting projection 9 catches on the lower surface 25a of the mounting groove 25, the risk of the deck material mounting fitting 1 falling off from the mounting groove 25 of the deck material 24 can be prevented.

[0028]

Next, as illustrated in FIG. 12, the subsequent deck material 24 is placed next to the preceding deck material 24, the first deck material gap regulation piece biting projection 11 abuts against the side surface 24a of the preceding deck material 24, and the second deck material gap regulation piece biting projection 18 abuts against the side surface 24a of the subsequent deck material 24, while the second locking portion 15 is inserted into the mounting groove 25 of the subsequent deck material 24, such that the first locking portion biting projection 9 abuts against the lower surface 25a of the mounting groove 25 of the preceding deck material 24, and the second locking portion biting projection 16 abuts against the lower surface 25a of the mounting groove 25 of the subsequent deck material 24.

[0029]

At this time, when necessary, the worker can adjust the position of the deck material mounting fitting 1 by pinching a head 23b of the screw 23 with they fingers and moving the deck material mounting fitting 1 together with the screw 23.

[0030]

Furthermore, in the state illustrated in FIG. 12, the bottom portion of the deck material mounting fitting 1 (the bottom portion 2a of the folded-back portion 2) is suspended a small distance above the upper surface of the deck material support 26.

[0031]

Next, when the screw 23 is rotated in the tightening direction, the screw 23 descends, penetrates the bottom 2a of the deck material mounting fitting 1 and penetrates into the deck material support 26, so that the preceding and following deck materials 24 can be tightened via the deck material mounting fitting 1. As a result, the first and second locking portion biting projections 9 and 16 respectively bite into the lower surfaces 25a of the mounting grooves 25 of the deck materials 24 on both sides, the adjacent deck materials 24 are locked to the deck material support 26, and the bottom 2a of the deck material mounting fitting 1 abuts against the upper surface of the deck material support 26. FIG. 13 is a cross-sectional view illustrating the deck material mounting structure after mounting work in this embodiment has been completed, and FIG. 14 is an enlarged cross-sectional view illustrating the vicinity of the deck material mounting fitting in FIG. 13. In this way, adjacent deck materials 24 are mounted on the deck material support 26 in parallel, having a gap (joint width) W between them regulated by the first and second deck material gap regulation piece 17.

[0032]

In the same manner, the deck materials 24 can be attached one after another to the deck material support 26 while they are arranged parallel to one another.

[0033]

In this deck material mounting fitting 1 and deck material mounting structure, the locking portion biting projections 9 and 16 of the first and second locking portions 8 and 15 bite into the lower surface 25a of the mounting groove 25 of the deck material 24 and lock the deck material 24, thereby preventing unrestricted movement of the deck material 24 in the width and length directions.

[0034]

Meanwhile, with respect to the width direction of the deck material 24 (left and right direction in FIGS. 13 and 14),

the deck material mounting fitting 1 is made of a single metal plate largely folded in two and a gap 20 is provided between the first opposing surface portion 5 of the first half 3 and the second opposing surface portion 12 of the second half 4, and thus even when the deck material 24 expands and contracts due to temperature change, the expansion and contraction of the deck material 24 can be absorbed by elastic deformation of the deck material mounting fitting 1 so that the size of the gap 20 changes as illustrated by the arrows in FIGS. 13 and 14.

[0035]

Furthermore, with regard to the length direction of the deck material 24 (the direction perpendicular to the paper in FIGS. 13 and 14), due to the inner diameter in that direction of the parts through which the screw 23 is inserted, that is, the recess 22 and the first and second screw support portions 7 and 14, being made sufficiently larger than the shaft diameter of the screw 23 to allow play with the screw 23, and due to elastic deformation of the first and second screw support portions 7 and 14, relative movement between the screw 23 and the deck material mounting fitting 1 is possible, and therefore expansion and contraction of the deck material 24 due to temperature changes can be absorbed.

[0036]

Furthermore, with regard to the width direction of the deck material 24, even when the inner diameter in that direction of the part through which the screw 23 is inserted is made sufficiently larger than the shank diameter of the screw 23 to allow play between the screw 23, it is substantially impossible to absorb the expansion and contraction of the deck material 24 due to temperature changes. With regard to this direction, this is because the deck material mounting fitting 1 is subjected to forces in opposite directions from the deck material 24 on both sides due to expansion and contraction of the deck material 24 caused by temperature changes. Meanwhile, with regard to the length direction of the deck material 24, the deck material mounting fitting 1 is subjected to forces in the same direction from both sides of the deck material 24 due to expansion and contraction of the deck material 24 caused by temperature changes, and thus by making the inner diameter in that direction of the parts through which the screw 23 is inserted sufficiently larger than the shank diameter of the screw 23 and allowing play with the screw 23, as described above, it is possible to absorb the expansion and contraction of the deck material 24 due to temperature changes.

[0037]

Furthermore, in this embodiment, a first deck material gap regulation piece 10 is provided which is bent diagonally from the outer side end of each first opposing surface portion 5 toward the opposite side to the second opposing surface portion 12, and a second deck material gap regulation piece 17 is provided which is bent diagonally from the outer side end of each second opposing surface portion 12 toward the opposite side to the first opposing surface portion 5, and thus by ensuring that the tips of the first and second deck material gap regulation pieces 10 and 17 abut against the side surface 24a of adjacent deck materials 24, the gap W between adjacent deck materials 24 can be easily regulated to a predetermined size.

[0038]

Furthermore, as necessary, during manufacture, defined values of the gap W between adjacent deck materials 24 can be changed in various ways using the same metal fitting 1 simply by adjusting the bending angle of the first and second deck material gap regulation pieces 10 and 17 relative to the first and second opposing surface portions 5 and 12.

[0039]

Furthermore, in this embodiment, the deck material gap regulation piece biting projections 11 and 18 are provided at the tip ends of the first and second deck material gap regulation pieces 10 and 17 respectively, and these biting projections 11 and 18 bite into the side surface 24a of the deck material 24, thereby locking the deck material 24 to the deck material mounting fitting 1 and more reliably preventing unrestricted movement of the deck material 24 in the width and length directions.

[0040]

Furthermore, in this embodiment, as described above, the portion of the deck material mounting fitting 1 through which the screw 23 is inserted is configured so that when the screw 23 is inserted without being rotated, the male threaded portion 23a of the screw 23 catches on somewhere in that portion and the tip of the screw 23 does not reach the bottom of the deck material mounting fitting (bottom 2a of the folded-back portion 2), and thus, before tightening the screw 23 as described above, the tip of the screw 23 does not catch on the upper surface of the deck material support 26, and the deck material mounting fitting 1 can be slid over the deck material support 26 while the screw 23 is inserted, enabling easy adjustment of the position of the deck material mounting fitting 1.

[0041]

In addition, the gap W between adjacent deck materials 24 needs to be small for reasons such as preventing the heels of high heels worn by female pedestrians from becoming stuck between the deck materials 24. Therefore, the diameters of the head 23b of the screw 23 must be reduced accordingly. Therefore, when the upper end 14a of the second screw support portion 14 were positioned below the upper surface of the second locking portion 15, there is a risk that the head 23b of the screw 23 would pass through the recesses 21 and 22 and bite into the gap between the first and second opposing surface portions 5 and 12, widening the gap between the first and second opposing surface portions 5 and 12, but in this embodiment, the upper end 14a of the second screw support portion 14 is made flush with the upper surface of the second locking portion 15, and thus the seating surfaces of the head 23b of the screw 23 are all supported by the upper surface of the second locking portion 15 in the second half 4 and the upper end 14a of the second screw support portion 14, thereby reliably preventing the risk of occurrence of the inconvenience described above.

[0042]

Note that in the embodiment above, the first half 3 is located on the side of the preceding deck material 24 and the second half 4 is located on the side of the subsequent deck material 24, but in the present invention, it is of course also possible to position the second half 4 on the side of the preceding deck material 24 and the first half 3 on the side of the subsequent deck material 24.

[0043]

In addition, in the present invention, the first and second locking portion biting projections and the first and second deck material gap regulation piece biting projections need not necessarily be in the shape of contiguous triangular teeth as in this embodiment, but may be projections of other shapes.

[0044]

Furthermore, in the above embodiment, when the deck material mounting fitting 1 is in a free state, a gap 20 is provided between the first opposing surface portion 5 and the second opposing surface portion 12, but in the present invention, in some cases, it is acceptable for no gap to be formed between the first opposing surface portion and the second opposing surface portion when the deck material mounting fitting is in a free state where no external force is being applied. In this case, when there is no gap between the first opposing surface portion and the second opposing surface portion and the deck material on both sides attempts to expand due to a change in temperature, the deck material mounting fittings will not be able to absorb that expansion, but in this case, the mounting position of the deck material is not shifted from its original position, and the deck material is not oriented in a way that would separate from the deck material mounting fitting, and thus it may not be necessary to absorb expansion. However, as in the present embodiment, it is preferable to provide a gap between the first opposing surface portion and the second opposing surface portion while the deck material mounting fitting is in a free state, as this allows the deck material mounting fitting to absorb both the expansion and contraction of the deck material.

[Industrial Applicability]

[0045]

The deck material mounting fitting and deck material mounting structure of the present invention described are useful as a deck material mounting fitting and deck material mounting structure for mounting deck materials that constitute deck floors on verandas, balconies, rooftops, parks, promenades, and the like to deck material supports such as joists and beams.

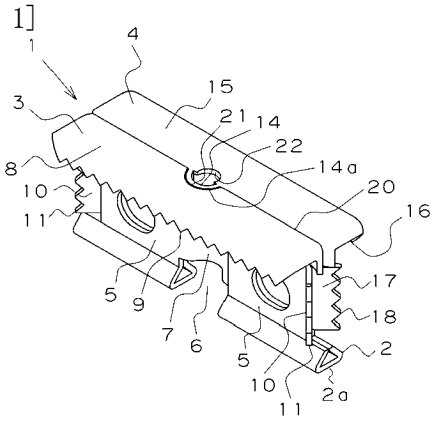
[Description of Reference Numerals]

[0046]

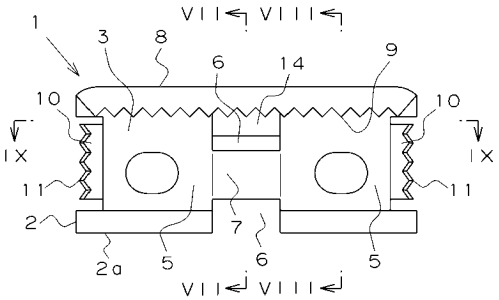
1	Deck material mounting fitting
2	Folded portion
2a	Bottom of folded portion (bottom of deck material mounting fitting)
3	First half
4	Second half
5	First opposing surface portion
6	First open portion
7	First screw support portion

8 First locking portion
9 First locking portion biting projection
10 First deck material gap regulation piece
11 First deck material gap regulation piece biting projection
12 Second opposing surface portion
13 Second open portion
14 Second screw support portion
14 a Upper end of second screw support portion
15 Second locking portion
16 Second locking portion biting projection
17 Second deck material gap regulation piece
18 Second deck material gap regulation piece biting projection
20 Gap
21, 22 Recess
23 Screw
23 a Screw male threaded portion
23 b Screw head
24 Deck material
24 a Side surface of deck material
25 Mounting groove
25 a Bottom surface of mounting groove
26 Deck material support

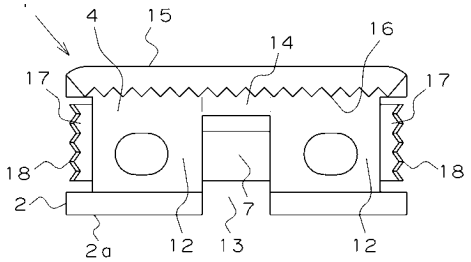
[FIG. 1]



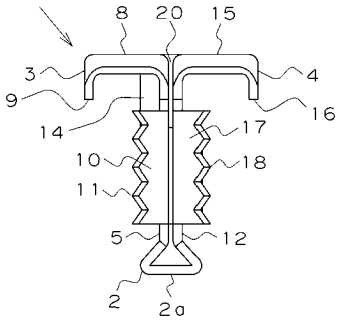
[FIG. 2]



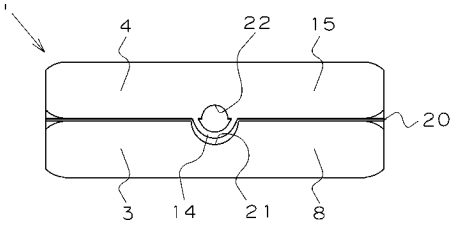
[FIG. 3]



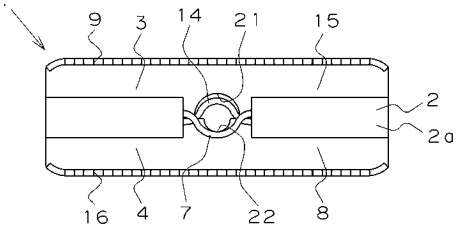
[FIG. 4]



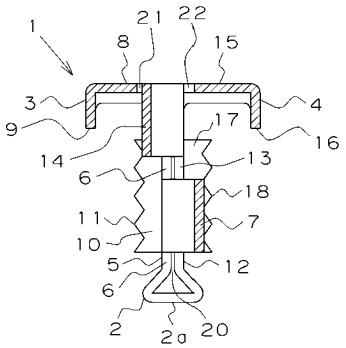
[FIG. 5]



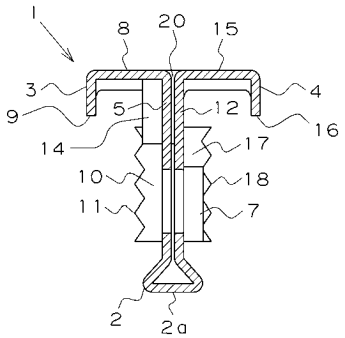
[FIG. 6]



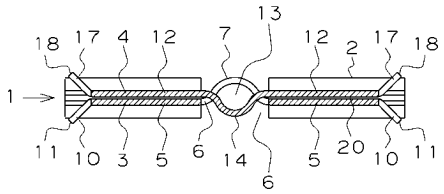
[FIG. 7]



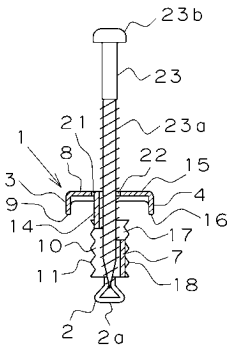
[FIG. 8]



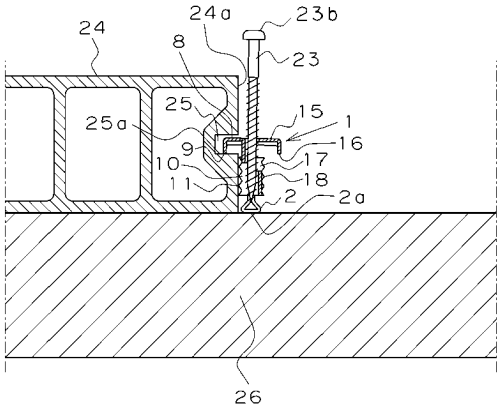
[FIG. 9]



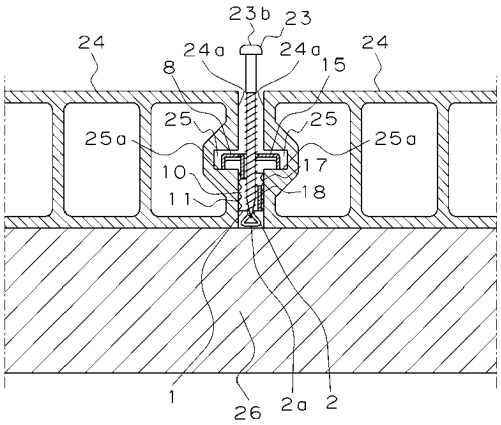
[FIG. 10]



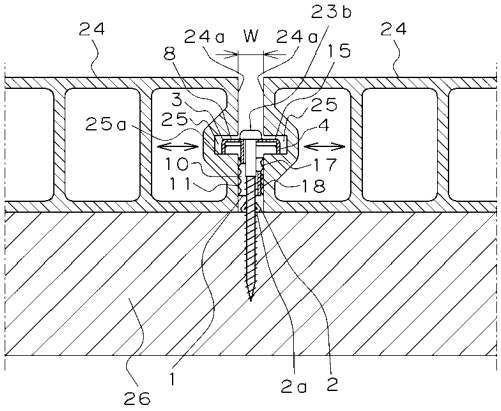
[FIG. 11]



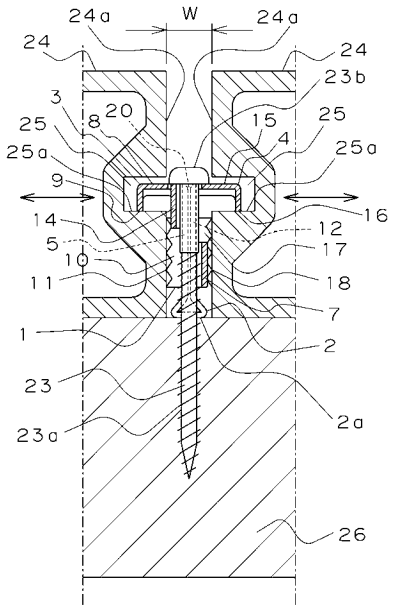
[FIG. 12]



[FIG. 13]



[FIG. 14]


24a
W
24a
24
24
23b
3
8
20
15
25
25
25a
4
25a
9
16
14
12
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18
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2
23
2a
23a
26

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(71)出願人　595042944
有限会社ユース北浦
東京都荒川区町屋１丁目３０番１２号
(71)出願人　307042385
ミサワホーム株式会社
東京都新宿区西新宿二丁目４番１号
(74)上記1名の代理人　100076266
弁理士　大森　泉
(72)発明者　北浦　秀明
東京都荒川区町屋１丁目３０番１２号　有限会社ユース北浦内

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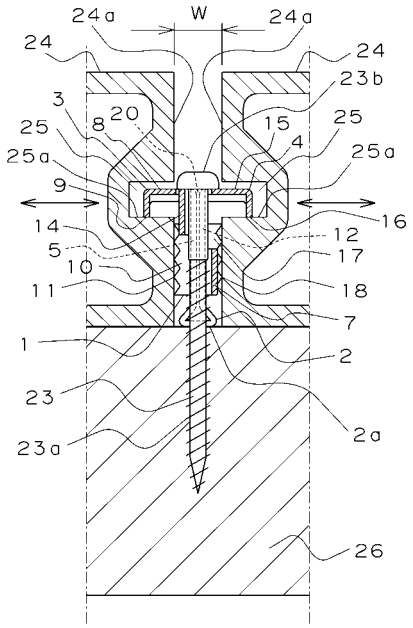
(54)【発明の名称】デッキ材取付金具およびデッキ材取付構造

(57)【要約】
【課題】デッキ材の動きをある程度許容して、温度変化によるデッキ材の伸縮を吸収し、なおかつデッキ材が無制限には動くことができないようにする。
【解決手段】デッキ材取付金具１を、一枚の金属板を大略２つ折りにし、片方の部分が第一半部３、他の片方の部分が第二半部４を形成し、第一半部３の第一の対向面部５と第二半部４の第二の対向面部１２とが互いにほぼ平行な状態で対向される構成のものとする。第一半部３の第一の係止部８が一方のデッキ材２４の取付溝２５、第二半部４の第二の係止部１５が他方のデッキ材２４の取付溝２５にそれぞれ挿入された状態で、金具１に挿通されたビス２３がデッキ材支持材２６にねじ込まれることにより、第一および第二の係止部８，１５に設けられた食い込み突起９，１６が両側のデッキ材２４の取付溝２５の下面２５ａに食い込み、デッキ材２４を係止する。
【選択図】図１４



【特許請求の範囲】
【請求項１】
それぞれ側面に長手方向に延びる取付溝を設けられた複数のデッキ材を互いに平行に並んだ状態でデッキ材支持材上に取り付けるデッキ材取付金具において、
一枚の金属板を大略２つ折りにして、折り返し部が当該デッキ材取付金具の下端部を構成し、この折り返し部を境界として片方の部分が第一半部、他の片方の部分が第二半部を構成するようにしてなり、
前記第一半部は、それぞれ上下方向に立ち上がる一対の第一の対向面部と、これらの第一の対向面部間に設けられた、前記金属板が除去されている第一の開放部と、前記一対の第一の対向面部間に掛け渡された湾曲した帯状の第一のビス支持部と、前記第一の対向面部の上端部から折り曲げられて前記第二半部と反対側に突出する第一の係止部と、前記第一の係止部に設けられた下方に突出する第一の係止部食い込み突起とを有し、
前記第二半部は、それぞれ上下方向に立ち上がる一対の第二の対向面部と、これらの第二の対向面部間に設けられた、前記金属板が除去されている第二の開放部と、前記第一のビス支持部より上方または下方において前記一対の第二の対向面部間に掛け渡された湾曲した帯状の第二のビス支持部と、前記第二の対向面部の上端部から折り曲げられて前記第一半部と反対側に突出する第二の係止部と、前記第二の係止部に設けられた下方に突出する第二の係止部食い込み突起とを有し、
前記第一の対向面部と前記第二の対向面部とは互いにほぼ平行な状態で対向されており、
前記第一のビス支持部は、軸方向を上下方向とする円弧状かつ前記第二半部側から見て凸となるように湾曲して、前記第二の開放部へ突出しており、
前記第二のビス支持部は、軸方向を上下方向とする円弧状かつ前記第一半部側から見て凸となるように湾曲して、前記第一の開放部へ突出しており、
前記第一のビス支持部と前記第二のビス支持部との間にビスが挿通されるようになっており、前記第一の係止部が一方の前記デッキ材の前記取付溝、前記第二の係止部が他方の前記デッキ材の前記取付溝にそれぞれ挿入された状態で前記ビスが前記デッキ材支持材にねじ込まれて締め付けられることにより、前記第一および第二の係止部食い込み突起が両側の前記デッキ材の前記取付溝の下面に食い込み、前記デッキ材を前記デッキ材支持材係止するようになっているデッキ材取付金具。
【請求項２】
外力を作用されておらず、自由な状態では、前記第一の対向面部と前記第二の対向面部とは間隙２０を介して対向されている請求項１に記載のデッキ材取付金具。
【請求項３】
前記第一の係止部の先端側は下方に折り曲げられていて、この折り曲げ部分の下端部に前記第一の係止部食い込み突起が設けられており、
前記第二の係止部の先端側は下方に折り曲げられていて、この折り曲げ部分の下端部に前記第二の係止部食い込み突起が設けられている請求項１または２に記載のデッキ材取付金具。
【請求項４】
各前記第一の対向面部の外側の側端部から前記第二の対向面部と反対側に斜めに折り曲げられた第一のデッキ材間隔規定片と、
各前記第二の対向面部の外側の側端部から前記第一の対向面部と反対側に斜めに折り曲げられた第二のデッキ材間隔規定片とをさらに有し、
前記第一および第二のデッキ材間隔規定片の先端が前記デッキ材の側面に当接されて、隣り合う前記デッキ材間の間隔を規定するようになっている請求項１，２または３に記載のデッキ材取付金具。
【請求項５】
前記第一および第二のデッキ材間隔規定片の先端部にそれぞれ設けられたデッキ材間隔規定片食い込み突起をさらに有している請求項４記載のデッキ材取付金具。

【請求項６】
前記第一および第二のビス支持部を含む、前記ビスを挿通される部分は、前記ビスが回転されることなく挿入されたときは、前記ビスの雄ねじ部が該部分のいずれかの箇所に引っ掛かり、前記ビスの先端が当該デッキ材取付金具の底部に届かない一方、前記ビスが締め付け方向に回転されると、該ビスは下降して行き、当該デッキ材取付金具を突き抜けるように構成されている請求項１乃至５のいずれか１項に記載のデッキ材取付金具。
【請求項７】
前記第一の係止部の第二の係止部側の端部に設けられ凹部と、
前記第二の係止部の前記第一の係止部側の端部に設けられており、前記ビスが挿通される凹部とをさらに有し、
前記第二のビス支持部の上端が第二の係止部の上面と面一とされるとともに、前記第一の係止部の前記凹部は前記第二のビス支持部の上端を内部に受け入れており、前記ビスの頭部の座面が前記第二の係止部の上面と前記第二のビス支持部の上端とで受けられるようになっている請求項１乃至６のいずれか１項に記載のデッキ材取付金具。
【請求項８】
それぞれ側面に長手方向に延びる取付溝を設けられた複数のデッキ材を互いに平行に並んだ状態でデッキ材取付金具によりデッキ材支持材上に取り付けるデッキ材取付構造において、
前記デッキ材取付金具は、一枚の金属板を大略２つ折りにして、折り返し部が当該デッキ材取付金具の下端部を構成し、この折り返し部を境界として片方の部分が第一半部、他の片方の部分が第二半部を構成するようにしてなり、
前記第一半部は、それぞれ上下方向に立ち上がる一対の第一の対向面部と、これらの第一の対向面部間に設けられた、前記金属板が除去されている第一の開放部と、前記一対の第一の対向面部間に掛け渡された湾曲した帯状の第一のビス支持部と、前記第一の対向面部の上端部から折り曲げられて前記第二半部と反対側に突出する第一の係止部と、前記第一の係止部に設けられた下方に突出する第一の係止部食い込み突起とを有し、
前記第二半部は、それぞれ上下方向に立ち上がる一対の第二の対向面部と、これらの第二の対向面部間に設けられた、前記金属板が除去されている第二の開放部と、前記第一のビス支持部より上方または下方において前記一対の第二の対向面部間に掛け渡された湾曲した帯状の第二のビス支持部と、前記第二の対向面部の上端部から折り曲げられて前記第一半部と反対側に突出する第二の係止部と、前記第二の係止部に設けられた下方に突出する第二の係止部食い込み突起とを有し、
前記第一の対向面部と前記第二の対向面部とは互いにほぼ平行な状態で対向されており、
前記第一のビス支持部は、軸方向を上下方向とする円弧状かつ前記第二半部側から見て凸となるように湾曲して、前記第二の開放部へ突出しており、
前記第二のビス支持部は、軸方向を上下方向とする円弧状かつ前記第一半部側から見て凸となるように湾曲して、前記第一の開放部へ突出しており、
前記デッキ材取付金具の前記第一のビス支持部と前記第二のビス支持部との間にビスが挿通され、前記第一の係止部が一方の前記デッキ材の前記取付溝、前記第二の係止部が他方の前記デッキ材の前記取付溝にそれぞれ挿入された状態で前記ビスが前記デッキ材支持材にねじ込まれて締め付けられることにより、前記第一および第二の係止部食い込み突起が両側の前記デッキ材の前記取付溝の下面に食い込み、前記デッキ材を前記デッキ材支持材に係止されるデッキ材取付構造。

【発明の詳細な説明】
【技術分野】
【０００１】
本発明は、ベランダ、バルコニー、屋上、公園、遊歩道等においてデッキ床を構成するデッキ材を大引、根太等のデッキ材支持材に取り付けるためのデッキ材取付金具およびデ

ッキ材取付構造に関する。
【背景技術】
【０００２】
この種のデッキ材取付構造においては、温度変化によりデッキ材が伸縮するため、デッキ材取付金具でデッキ材をデッキ材支持材に完全に固定することは避けることが好ましい。
【０００３】
このため、従来のデッキ材取付金具は、該金具に設けられた係止部でデッキ材を単に上から押さえるだけで、デッキ材をデッキ材支持材に取り付けるようになっており、デッキ材は、デッキ材取付金具の係止部に対し滑ることにより、幅方向および長さ方向に動くことができるようになっていた（例えば、特許文献１参照）。
【先行技術文献】
【特許文献】
【０００４】
【特許文献１】特開２００５－２６４６６３号公報
【発明の概要】
【発明が解決しようとする課題】
【０００５】
したがって、デッキ材は幅方向および長さ方向に基本的に無制限に動き得るようになっていたので、デッキ材の取付位置が本来の位置からずれてしまったり、極端な場合には、デッキ材取付金具からデッキ材が外れてしまう虞があるという問題があった。
【０００６】
本発明は、このような従来の事情に鑑みてなされたもので、本発明の目的の一つは、デッキ材の幅方向および長さ方向の動きをある程度許容して、温度変化によるデッキ材の伸縮を吸収し、なおかつデッキ材が幅方向および長さ方向に無制限には動くことができないようにするデッキ材取付金具およびデッキ材取付構造を提供することにある。
【０００７】
本発明のさらに他の目的は、以下の説明から明らかになろう。
【課題を解決するための手段】
【０００８】
本発明によるデッキ材取付金具は、
それぞれ側面に長手方向に延びる取付溝を設けられた複数のデッキ材を互いに平行に並んだ状態でデッキ材支持材上に取り付けるデッキ材取付金具において、
一枚の金属板を大略２つ折りにして、折り返し部が当該デッキ材取付金具の下端部を構成し、この折り返し部を境界として片方の部分が第一半部、他の片方の部分が第二半部を構成するようにしてなり、
前記第一半部は、それぞれ上下方向に立ち上がる一対の第一の対向面部と、これらの第一の対向面部間に設けられた、前記金属板が除去されている第一の開放部と、前記一対の第一の対向面部間に掛け渡された湾曲した帯状の第一のビス支持部と、前記第一の対向面部の上端部から折り曲げられて前記第二半部と反対側に突出する第一の係止部と、前記第一の係止部に設けられた下方に突出する第一の係止部食い込み突起とを有し、
前記第二半部は、それぞれ上下方向に立ち上がる一対の第二の対向面部と、これらの第二の対向面部間に設けられた、前記金属板が除去されている第二の開放部と、前記第一のビス支持部より上方または下方において前記一対の第二の対向面部間に掛け渡された湾曲した帯状の第二のビス支持部と、前記第二の対向面部の上端部から折り曲げられて前記第一半部と反対側に突出する第二の係止部と、前記第二の係止部に設けられた下方に突出する第二の係止部食い込み突起とを有し、
前記第一の対向面部と前記第二の対向面部とは互いにほぼ平行な状態で対向されており、
前記第一のビス支持部は、軸方向を上下方向とする円弧状かつ前記第二半部側から見て

凸となるように湾曲して、前記第二の開放部へ突出しており、
前記第二のビス支持部は、軸方向を上下方向とする円弧状かつ前記第一半部側から見て凸となるように湾曲して、前記第一の開放部へ突出しており、
前記第一のビス支持部と前記第二のビス支持部との間にビスが挿通されるようになっており、前記第一の係止部が一方の前記デッキ材の前記取付溝、前記第二の係止部が他方の前記デッキ材の前記取付溝にそれぞれ挿入された状態で前記ビスが前記デッキ材支持材にねじ込まれて締め付けられることにより、前記第一および第二の係止部食い込み突起が両側の前記デッキ材の前記取付溝の下面に食い込み、前記デッキ材を前記デッキ材支持材係止するようになっているものである。

【０００９】

また、本発明によるデッキ材取付構造は、
それぞれ側面に長手方向に延びる取付溝を設けられた複数のデッキ材を互いに平行に並んだ状態でデッキ材取付金具によりデッキ材支持材上に取り付けるデッキ材取付構造において、
前記デッキ材取付金具は、一枚の金属板を大略２つ折りにして、折り返し部が当該デッキ材取付金具の下端部を構成し、この折り返し部を境界として片方の部分が第一半部、他の片方の部分が第二半部を構成するようにしてなり、
前記第一半部は、それぞれ上下方向に立ち上がる一対の第一の対向面部と、これらの第一の対向面部間に設けられた、前記金属板が除去されている第一の開放部と、前記一対の第一の対向面部間に掛け渡された湾曲した帯状の第一のビス支持部と、前記第一の対向面部の上端部から折り曲げられて前記第二半部と反対側に突出する第一の係止部と、前記第一の係止部に設けられた下方に突出する第一の係止部食い込み突起とを有し、
前記第二半部は、それぞれ上下方向に立ち上がる一対の第二の対向面部と、これらの第二の対向面部間に設けられた、前記金属板が除去されている第二の開放部と、前記第一のビス支持部より上方または下方において前記一対の第二の対向面部間に掛け渡された湾曲した帯状の第二のビス支持部と、前記第二の対向面部の上端部から折り曲げられて前記第一半部と反対側に突出する第二の係止部と、前記第二の係止部に設けられた下方に突出する第二の係止部食い込み突起とを有し、
前記第一の対向面部と前記第二の対向面部とは互いにほぼ平行な状態で対向されており、
前記第一のビス支持部は、軸方向を上下方向とする円弧状かつ前記第二半部側から見て凸となるように湾曲して、前記第二の開放部へ突出しており、
前記第二のビス支持部は、軸方向を上下方向とする円弧状かつ前記第一半部側から見て凸となるように湾曲して、前記第一の開放部へ突出しており、
前記デッキ材取付金具の前記第一のビス支持部と前記第二のビス支持部との間にビスが挿通され、前記第一の係止部が一方の前記デッキ材の前記取付溝、前記第二の係止部が他方の前記デッキ材の前記取付溝にそれぞれ挿入された状態で前記ビスが前記デッキ材支持材にねじ込まれて締め付けられることにより、前記第一および第二の係止部食い込み突起が両側の前記デッキ材の前記取付溝の下面に食い込み、前記デッキ材を前記デッキ材支持材に係止されるものである。

【００１０】

本発明においては、ビスを締め付けると、第一および第二の係止部の係止部食い込み突起がデッキ材の取付溝の下面に食い込み、デッキ材を係止するので、デッキ材が幅方向および長さ方向に無制限には動くことができないようにすることができる。

【００１１】

その一方、デッキ材の幅方向に関しては、デッキ材取付金具が一枚の金属板を大略２つ折りにしてなるので、温度変化によってデッキ材が伸縮しても、第一の対向面部と第二半部の第二の対向面部との間の間隙の大きさが変化するようにデッキ材取付金具が弾性変形することにより、前記デッキ材の伸縮を吸収することができる。

【００１２】

また、デッキ材の長さ方向に関しては、デッキ材取付金具のビスを挿通される部分の該方向の内径をビスの軸径より十分大きくしてビスとの間に遊びを持たせることにより、また第一および第二の軸支持部の弾性変形により、ビスとデッキ材取付金具との間に相対的な動きが可能になるので、温度変化によるデッキ材の伸縮を吸収することができる。

【発明の効果】

【００１３】

本発明のデッキ材取付金具およびデッキ材取付構造は、デッキ材の幅方向および長さ方向の動きをある程度許容して、温度変化によるデッキ材の伸縮を吸収し、なおかつデッキ材が幅方向および長さ方向に無制限には動くことができないようにすることができる。

【図面の簡単な説明】

【００１４】

【図１】本発明の一実施例におけるデッキ材取付金具を示す斜視図である。
【図２】前記デッキ材取付金具を示す正面図である。
【図３】前記デッキ材取付金具を示す背面図である。
【図４】前記デッキ材取付金具を示す側面図である。
【図５】前記デッキ材取付金具を示す平面図である。
【図６】前記デッキ材取付金具を示す底面図である。
【図７】図２のＶＩＩ－ＶＩＩ線における断面図である。
【図８】図２のＶＩＩＩ－ＶＩＩＩ線における断面図である。
【図９】図２のＩＸ－ＩＸ線における断面図である。
【図１０】前記デッキ材取付金具にビスを挿入した状態を示す側面図である。
【図１１】前記実施例におけるデッキ材の取り付け工程を示す断面図である。
【図１２】前記実施例におけるデッキ材の次の取り付け工程を示す断面図である。
【図１３】前記実施例における取付作業完了後のデッキ材取付構造を示す断面図である。
【図１４】図１３のデッキ材取付金具付近を示す拡大断面図である。

【発明を実施するための形態】

【００１５】

以下、本発明を図面に示す実施例に基づいて説明する。

【実施例１】

【００１６】

図１～１４は本発明の一実施例を示している。このうち図１～９は本実施例におけるデッキ材取付金具１を示している。このデッキ材取付金具１は、一枚の鋼鉄、ステンレス鋼、真鍮等の金属板をプレス加工してなり、大づかみに言うと、一枚の金属板を大略２つ折りにして、折り返し部２がデッキ材取付金具１の下端部を構成し、この折り返し部２を境界として片方の部分が第一半部３、他の片方の部分が第二半部４を構成するようにしている。

【００１７】

前記折り返し部２は、図４，７，８によく示されるように、下方に行くほど幅が広くなっており、その底部２ａは平面状をなしている。

【００１８】

前記第一半部３は、一対の第一の対向面部５と、第一の開放部６と、第一のビス支持部７と、第一の係止部８と、第一の係止部食い込み突起９と、一対の第一のデッキ材間隔規定片１０と、第一のデッキ材間隔規定片食い込み突起１１とを有している。

【００１９】

前記一対の第一の対向面部５は、同一平面上にあって、それぞれ矩形状をなすとともに上下方向に立ち上がっている。前記第一の開放部６は、前記金属板が除去されている部分であって、前記一対の第一の対向面部５間の上側および下側にそれぞれ矩形状に設けられている。前記第一のビス支持部７は、湾曲した帯状をなしており、上側および下側の第一の開放部６の間において前記一対の第一の対向面部５間に掛け渡されている。前記第一の係止部８は、第一の対向面部５の上端部から直角に折り曲げられて第二半部４と反対側に

突出されており、全体として矩形状をなしている。前記第一の係止部８の先端側は下方に折り曲げられており、この折り曲げ部分の下端部に、連続する三角歯状の前記第一の係止部食い込み突起９が設けられている。前記一対の第一のデッキ材間隔規定片１０は、それぞれ各第一の対向面部５の外側の側端部から第二半部４と反対側に斜めに折り曲げられて設けられており、これらの第一のデッキ材間隔規定片１０の先端部に、連続する三角歯状の前記第一のデッキ材間隔規定片食い込み突起１１がそれぞれ設けられている。

【００２０】

前記第二半部４は、一対の第二の対向面部１２と、第二の開放部１３と、第二のビス支持部１４と、第二の係止部１５と、第二の係止部食い込み突起１６と、一対の第二のデッキ材間隔規定片１７と、第二のデッキ材間隔規定片食い込み突起１８を有している。

【００２１】

前記一対の第二の対向面部１２は、同一平面上にあって、それぞれ矩形状をなすとともに上下方向に立ち上がっている。前記第二の開放部１３は、前記金属板が除去されている部分であって、前記一対の第二の対向面部１２間の下側に矩形状に設けられている。前記第二のビス支持部１４は、湾曲した帯状をなしており、第二の開放部１３および第一のビス支持部７より上方において前記一対の第二の対向面部１２間に掛け渡されている。前記第二の係止部１５は、第二の対向面部１２の上端部から直角に折り曲げられて第一半部３と反対側に突出されており、全体として矩形状をなしている。前記第二の係止部１５の先端側は下方に折り曲げられており、この折り曲げ部分の下端部に、連続する三角歯状の前記第二の係止部食い込み突起１６が設けられている。前記一対の第二のデッキ材間隔規定片１７は、それぞれ各第二の対向面部１２の外側の側端部から第一半部３と反対側に斜めに折り曲げられて設けられており、これらの第二のデッキ材間隔規定片１７の先端部に、連続する三角歯状の前記第二のデッキ材間隔規定片食い込み突起１８がそれぞれ設けられている。

【００２２】

デッキ材取付金具１が外力を作用されておらず、自由な状態では、前記第一の対向面部５と前記第二の対向面部１２とは互いに平行な状態で間隙２０を介して対向されている。前記第一のビス支持部７は、軸方向を上下方向とする円弧状かつ前記第二半部４側から見て凸となるように湾曲されて、前記第二の開放部１３へ突出している。前記第二のビス支持部１４は、軸方向を上下方向とする円弧状かつ前記第一半部３側から見て凸となるように湾曲されて、前記第一の開放部６へ突出している。この第二のビス支持部１４の上端１４ａは第一および第二の係止部８，１５の上面と面一とされている。

【００２３】

図１，５，６によく示されるように、前記第一の係止部８の第二の係止部１５側の端部の中央部には半円状の凹部２１が設けられており、この凹部２１は第二のビス支持部１４の上端１４ａを内部に受け入れて、第一の係止部８と第二のビス支持部１４とが干渉しないようにしている。前記第二の係止部１５の第一の係止部８側の端部の中央部には、第一のビス支持部７の直上に位置するようにして、半円状の凹部２２が設けられている。

【００２４】

前記第二のビス支持部１４と凹部２２および第一のビス支持部７との間には、ビス２３が挿通されるようになっている。このビス２３を挿通される部分は、ビス２３が回転されることなく挿入されたときは、ビス２３の雄ねじ部２３ａが該部分のいずれかの箇所に引っ掛かり、図１０に示されるように、ビス２３の先端が当該デッキ材取付金具の底部（折り返し部２の底部２ａ）に届かない状態となる一方、ビス２３が締め付け方向に回転されると、該ビス２３は下降して行き、デッキ材取付金具１を突き抜けるように構成されている。より詳しく言うと、前記凹部２２並びに第一および第二のビス支持部７，１４の内周の位置および内径の大きさは、第二のビス支持部１４と凹部２２との間にビス２３が回転されることなく挿入されたときは、ビス２３の雄ねじ部２３ａが第二のビス支持部１４、凹部２２および第一のビス支持部７のいずれか１箇所以上に引っ掛かり、ビス２３の先端がデッキ材取付金具１の底部２ａまで届いていない状態となる一方、ビス２３が締め付け

方向に回転されると、該ビス２３は下降して行き、デッキ材取付金具１の底部２ａを突き抜けるように定められている。

【００２５】

次に、図１１～１４を用いて、本実施例におけるデッキ材２４の取り付け工程およびデッキ材取付構造を説明する。デッキ材２４は、木粉と樹脂を混合してなる人工木材からなり、全体に中空状で、図における紙面に垂直な方向に長く延びる縦長の形状をなしており、両側面２４ａに長手方向に延びる断面矩形状の取付溝２５を設けられている。なお、本発明において、デッキ材２４の材質は、本実施例のような木粉と樹脂を混合してなる人工木材に限定されることはなく、木材、樹脂、金属等の他の材質であってもよい。

【００２６】

図１１～１４は、本実施例におけるデッキ材２４の取り付け工程を示している。まず、第二のビス支持部１４と凹部２２との間にビス２３を回転させることなく挿入し、図１０に示されるように、ビス２３の雄ねじ部２３ａが第二のビス支持部１４、凹部２２および第一のビス支持部７のいずれか１箇所以上に引っ掛かり、ビス２３の先端がデッキ材取付金具１の底部（折り返し部２の底部２ａ）まで届いていない状態でデッキ材取付金具１にくっついている状態とする。

【００２７】

次に、このようにビス２３が付いている状態のまま、デッキ材取付金具１の第一の係止部８を先行のデッキ材２４の取付溝２５に挿入するとともに、図１１のように該先行のデッキ材２４を大引、根太等のデッキ材支持材２６上の所定の位置に載置する（なお、デッキ材支持材２６は木材、人工木材または鋼鉄等の金属等からなる）。この際、もしデッキ材取付金具１に第一の係止部食い込み突起９が設けられていないとすると、第一の係止部８がデッキ材２４の取付溝２５の下面２５ａ上を滑って、デッキ材取付金具１がデッキ材２４の取付溝２５から脱落してしまい易いが、このデッキ材取付金具１では、第一および第二係止部食い込み突起９，１６が設けられており、係止部食い込み突起９が取付溝２５の下面２５ａに引っ掛かかるため、デッキ材取付金具１がデッキ材２４の取付溝２５から脱落してしまう虞を防止できる。

【００２８】

続いて、図１２に示されるように、後続のデッキ材２４を、前記先行のデッキ材２４の隣に載置し、第一のデッキ材間隔規定片食い込み突起１１が先行のデッキ材２４の側面２４ａに、第二のデッキ材間隔規定片食い込み突起１８が後続のデッキ材２４の側面２４ａにそれぞれ当接されるとともに、第二の係止部１５が後続のデッキ材２４の取付溝２５に挿入され、第一の係止部食い込み突起９が先行のデッキ材２４の取付溝２５の下面２５ａ、第二の係止部食い込み突起１６が後続のデッキ材２４の取付溝２５の下面２５ａにそれぞれ当接されるようにする。

【００２９】

なお、このとき、必要であれば、作業者はビス２３の頭部２３ｂを指でつまんで、ビス２３とともにデッキ材取付金具１を動かして、デッキ材取付金具１の位置を調整することができる。

【００３０】

また、図１２の状態においては、デッキ材取付金具１の底部（折り返し部２の底部２ａ）はデッキ材支持材２６の上面からわずかな距離だけ浮いた状態となっている。

【００３１】

次に、ビス２３を締め付け方向に回転すると、ビス２３は下降して行き、デッキ材取付金具１の底部２ａを突き抜け、デッキ材支持材２６に侵入して行くので、デッキ材取付金具１を介して先行および後続のデッキ材２４を締め付けることができる。これにより、第一および第二の係止部食い込み突起９，１６が両側のデッキ材２４の取付溝２５の下面２５ａにそれぞれ食い込み、隣り合うデッキ材２４がデッキ材支持材２６に係止され、デッキ材取付金具１の底部２ａはデッキ材支持材２６の上面に当接される。図１３は本実施例における取付作業完了後のデッキ材取付構造を示す断面図、図１４は図１３のデッキ材取

付金具付近を示す拡大断面図である。このようにして、隣り合うデッキ材２４が、互いの間の間隔（目地幅）Ｗを第一および第二のデッキ材間隔規定片１７で規定されて、互いに平行に並んだ状態でデッキ材支持材２６上に取り付けられる。

【００３２】

以下同様にして、次々とデッキ材２４を互いに平行に並んだ状態でデッキ材支持材２６上に取り付けることができる。

【００３３】

このデッキ材取付金具１およびデッキ材取付構造においては、第一および第二の係止部８，１５の係止部食い込み突起９，１６がデッキ材２４の取付溝２５の下面２５ａに食い込み、デッキ材２４を係止するので、デッキ材２４が幅方向および長さ方向に無制限には動くことができないようにすることができる。

【００３４】

その一方、デッキ材２４の幅方向（図１３，１４における左右方向）に関しては、デッキ材取付金具１が一枚の金属板を大略２つ折りにしてなり、第一半部３の第一の対向面部５と第二半部４の第二の対向面部１２との間に間隙２０が設けられているので、温度変化によってデッキ材２４が伸縮しても、図１３，１４の矢印で示すように間隙２０の大きさが変化するようにデッキ材取付金具１が弾性変形することにより、前記デッキ材２４の伸縮を吸収することができる。

【００３５】

また、デッキ材２４の長さ方向（図１３，１４における紙面に垂直な方向）に関しては、ビス２３を挿通される部分、すなわち凹部２２並びに第一および第二のビス支持部７，１４の該方向の内径をビス２３の軸径より十分大きくしてビス２３との間に遊びを持たせることにより、また第一および第二のビス支持部７，１４の弾性変形により、ビス２３とデッキ材取付金具１との間に相対的な動きが可能になるので、温度変化によるデッキ材２４の伸縮を吸収することができる。

【００３６】

なお、デッキ材２４の幅方向に関しては、ビス２３を挿通される部分の該方向の内径をビス２３の軸径より十分大きくしてビス２３との間に遊びを持たせても、温度変化によるデッキ材２４の伸縮を基本的には吸収することができない。この方向に関しては、デッキ材取付金具１は温度変化に基づくデッキ材２４の伸縮により両側のデッキ材２４から互いに反対向きの力を作用されるからである。他方、デッキ材２４の長さ方向に関しては、デッキ材取付金具１は温度変化に基づくデッキ材２４の伸縮により両側のデッキ材２４から同じ向きの力を作用されるので、前述のようにビス２３を挿通される部分の該方向の内径をビス２３の軸径より十分大きくしてビス２３との間に遊びを持たせることにより、温度変化によるデッキ材２４の伸縮を吸収することができるのである。

【００３７】

また、本実施例においては、各第一の対向面部５の外側の側端部から第二の対向面部１２と反対側に斜めに折り曲げられた第一のデッキ材間隔規定片１０と、各第二の対向面部１２の外側の側端部から第一の対向面部５と反対側に斜めに折り曲げられた第二のデッキ材間隔規定片１７とが設けられているので、第一および第二のデッキ材間隔規定片１０，１７の先端が隣り合うデッキ材２４の側面２４ａに当接されるようにすることにより、隣り合うデッキ材２４間の間隔Ｗを容易に所定の大きさに規定することができる。

【００３８】

また、必要に応じて、製造時、第一および第二の対向面部５，１２に対する第一および第二のデッキ材間隔規定片１０，１７の曲げ角度を調整するだけで、同一の金具１により、隣り合うデッキ材２４間の間隔Ｗの規定値を種々に変えることができる。

【００３９】

また、本実施例においては、第一および第二のデッキ材間隔規定片１０，１７の先端部にそれぞれデッキ材間隔規定片食い込み突起１１，１８が設けられているので、これらの食い込み突起１１，１８がデッキ材２４の側面２４ａに食い込むことによっても、デッキ

材取付金具１によりデッキ材２４を係止し、より確実にデッキ材２４が幅方向および長さ方向に無制限には動くことができないようにすることができる。

【００４０】

また、本実施例においては、前述のようにデッキ材取付金具１のうちのビス２３を挿通される部分は、ビス２３が回転されることなく挿入されたときは、ビス２３の雄ねじ部２３ａが該部分のいずれかの箇所に引っ掛かり、ビス２３の先端が当該デッキ材取付金具の底部（折り返し部２の底部２ａ）に届かないように構成されているので、前述のようにビス２３を締め付ける前に、ビス２３の先端がデッキ材支持材２６の上面に引っ掛かることなく、ビス２３を挿入した状態のままデッキ材取付金具１をデッキ材支持材２６上を滑らせて、デッキ材取付金具１の位置を容易に調整できる。

【００４１】

また、隣り合うデッキ材２４間の間隔Ｗは、女性歩行者のハイヒールの踵がデッキ材２４間にはまり込んでしまうのを防止する等の理由により、小さくする必要がある。このため、それに伴ってビス２３の頭部２３ｂの径も小さくする必要がある。したがって、もし仮に第二のビス支持部１４の上端１４ａが第二の係止部１５の上面より下方に位置するようにすると、ビス２３の頭部２３ｂが凹部２１および２２の間を突き抜けて第一および第二の対向面部５，１２間に食い込んで、第一および第二の対向面部５，１２間を広げてしまう虞があるが、本実施例では、第二のビス支持部１４の上端１４ａが第二の係止部１５の上面と面一とされているので、ビス２３の頭部２３ｂの座面がいずれも第二半部４に属する第二の係止部１５の上面と第二のビス支持部１４の上端１４ａとで受けられるため、上述のような不都合が生じる虞を確実に防止できる。

【００４２】

なお、前記実施例においては、第一半部３が先行のデッキ材２４側、第二半部４が後続のデッキ材２４側に位置するようにしているが、本発明においては、勿論、逆に第二半部４が先行のデッキ材２４側、第一半部３が後続のデッキ材２４側に位置するようにしてしてもよい。

【００４３】

また、本発明においては、第一および第二の係止部食い込み突起並びに第一および第二のデッキ材間隔規定片食い込み突起は、必ずしも本実施例のように連続する三角歯状ではなく、他の形状の突起としてもよい。

【００４４】

また、前記実施例においては、デッキ材取付金具１が自由な状態では、第一の対向面部５と第二の対向面部１２との間に間隙２０が設けられるようにしているが、本発明においては、場合によっては、デッキ材取付金具が外力を作用されていない自由な状態では第一の対向面部と第二の対向面部との間に間隙が生じないようにしてもよい。この場合、第一の対向面部と第二の対向面部との間に間隙が存在しない状態において両側のデッキ材が温度変化により膨張しようとした場合、デッキ材取付金具はその膨張を吸収できないが、この場合はデッキ材の取付位置が本来の位置からずれてしまったり、デッキ材取付金具からデッキ材が外れてしまう向きではないので、膨張を吸収しなくてもよい場合もあるからである。ただし、本実施例の場合のように、デッキ材取付金具が自由な状態では第一の対向面部と第二の対向面部との間に間隙が設けられるようにしておけば、デッキ材の膨張および収縮の両方をデッキ材取付金具に吸収させることができるので、好ましい。

【産業上の利用可能性】

【００４５】

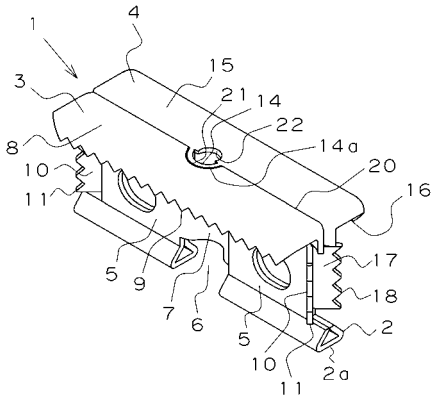
以上のように本発明によるデッキ材取付金具およびデッキ材取付構造は、ベランダ、バルコニー、屋上、公園、遊歩道等においてデッキ床を構成するデッキ材を大引、根太等のデッキ材支持材に取り付けるためのデッキ材取付金具およびデッキ材取付構造として有用である。

【符号の説明】

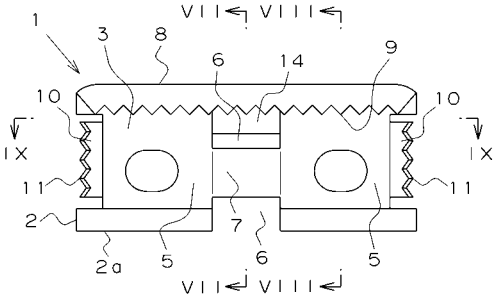
【００４６】

１　デッキ材取付金具
２　折り返し部
２ａ　折り返し部の底部（デッキ材取付金具の底部）
３　第一半部
４　第二半部
５　第一の対向面部
６　第一の開放部
７　第一のビス支持部
８　第一の係止部
９　第一の係止部食い込み突起
１０　第一のデッキ材間隔規定片
１１　第一のデッキ材間隔規定片食い込み突起
１２　第二の対向面部
１３　第二の開放部
１４　第二のビス支持部
１４ａ　第二のビス支持部の上端
１５　第二の係止部
１６　第二の係止部食い込み突起
１７　第二のデッキ材間隔規定片
１８　第二のデッキ材間隔規定片食い込み突起
２０　間隙
２１，２２　凹部
２３　ビス
２３ａ　ビスの雄ねじ部
２３ｂ　ビスの頭部
２４　デッキ材
２４ａ　デッキ材の側面
２５　取付溝
２５ａ　取付溝の下面
２６　デッキ材支持材

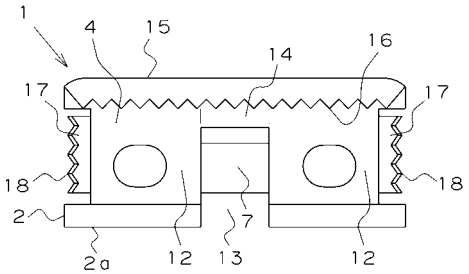
【図１】



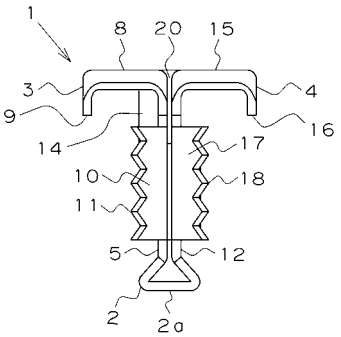
【図２】



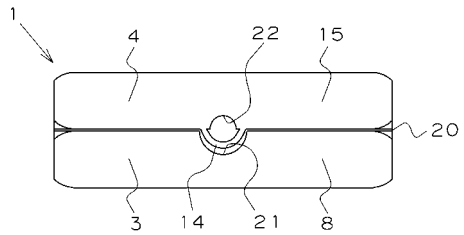
【図３】



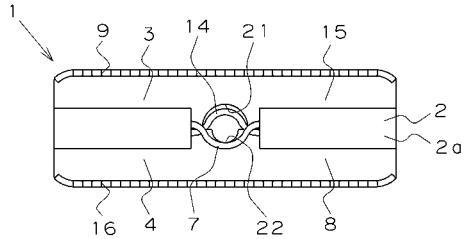
【図４】



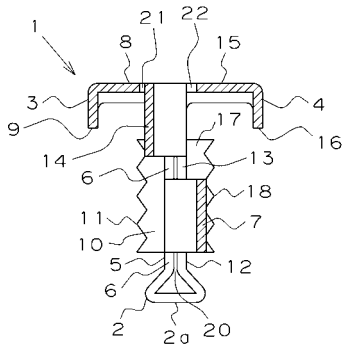
【図５】



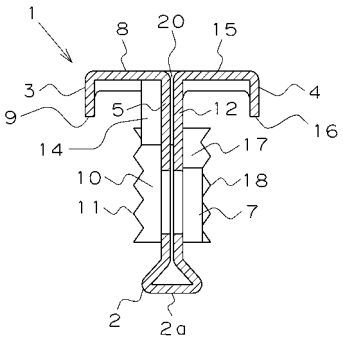
【図６】



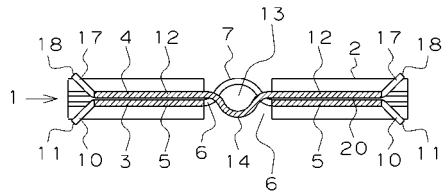
【図７】



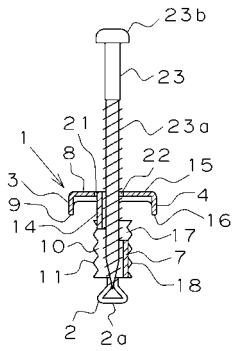
【図８】



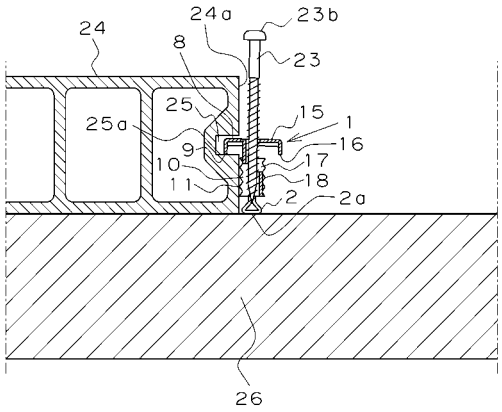
【図９】



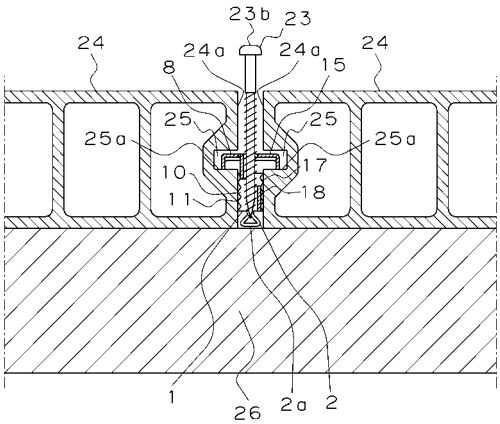
【図１０】



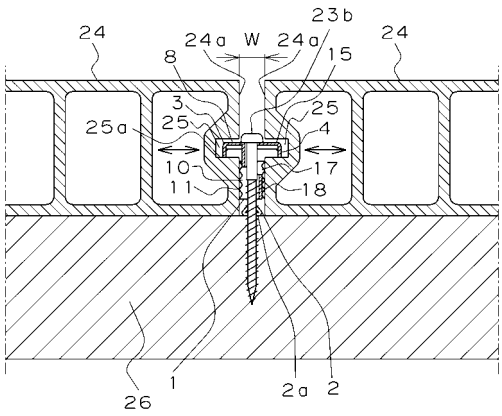
【図１１】



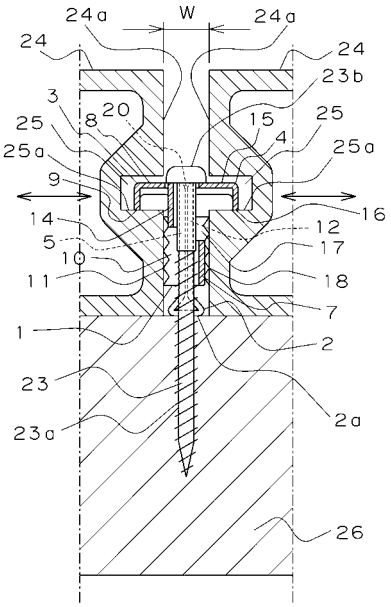
【図１２】



【図１３】



【図１４】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June 20, 2024

Certification

Welocalize Translations

TRANSLATOR'S DECLARATION:

I, Eric Vance, hereby declare:

That I possess advanced knowledge of the English and Japanese languages. The attached Japanese into English translation has been translated by me and to the best of my knowledge and belief, it is a true and accurate translation of: JP2011236601A

Eric Vance

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15 W. 37th Street 4th Floor
New York, NY 10018
212.581.8870