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United States Patent Application Publication

20250261727

Kind Code

A1

Publication Date

August 21, 2025

Inventor(s)

Ozawa; Takanori

SLIDER AND SLIDE FASTENER

Abstract

A slider includes: a body; a pull tab; and a cover body. In a section orthogonal to a front-rear direction, at least a part of a gap between an abutting portion and a first abutted portion is smaller than a gap between a lower surface of an upper wall portion and a first facing wall upper surface portion, and at least a part of a gap between the abutting portion and a second abutted portion is smaller than a gap between the lower surface of the upper wall portion and a second facing wall upper surface portion.

Inventors: Ozawa; Takanori (Toyama-ken, JP)

Applicant: YKK Corporation (Tokyo, JP)

Family ID: 1000008603388

Appl. No.: 18/849971

Filed (or PCT Filed): March 31, 2022

PCT No.: PCT/JP2022/016704

Publication Classification

Int. Cl.: A44B19/26 (20060101); A44B19/30 (20060101)

U.S. Cl.:

CPC A44B19/262 (20130101); A44B19/30 (20130101);

Background/Summary

TECHNICAL FIELD

[0001] The present invention relates to a slider that opens and closes a pair of fastener stringers,

and a slide fastener.

BACKGROUND ART

[0002] In the related art, a slide fastener is usually used at an opening and closing portion of clothes, bags, and the like. The slide fastener includes a pair of fastener stringers and a slider. The pair of fastener stringers are opened and closed by the slider. The slider basically includes a slider body including upper and lower blades whose front end portions are coupled at a prescribed interval by a guide column, and a pull tab that pulls the slider body (see Patent Literature 1).

CITATION LIST

Patent Literature

[0003] Patent Literature 1: JP4152254B

SUMMARY OF INVENTION

Technical Problem

[0004] In recent years, there has been a slider equipped with a cover body that holds a pull tab such that the pull tab is movable and pivotable with respect to an upper surface of a slider body. In many of such sliders, the pull tab is attached to the slider body by utilizing deformation when the cover body is pressed. Since the deformation of the cover body is utilized, the cover body is hard to be deformed when a thickness thereof increases, resulting in poor assemblability. When the cover body is made thin to improve the assemblability, the cover body may be excessively deformed and broken when applied with an impact.

[0005] The present invention is made in view of the above problems, and an object of the present invention is to provide a slider and a slide fastener that can improve impact resistance and assemblability of a cover body.

Solution to Problem

[0006] A slider according to the present invention includes: a body; a pull tab; and a cover-body, in which [0007] a side of the slider on which the pull tab is present is referred to as an upper side and an opposite side thereof is referred to as a lower side, when the slider is installed to a fastener chain, a direction in which the slider is slid to mesh left and right continuous element rows is referred to as a front side and a direction in which the slider is slid to separate the left and right continuous element rows is referred to as a rear side, and when the slider is viewed from the upper side, a left side in a front-rear direction is referred to as a left side and an opposite side thereof is referred to as a right side, [0008] the body includes an upper blade, a lower blade installed at a prescribed interval on the lower side of the upper blade, a guide column coupling the upper blade and the lower blade on the front side, and a first column portion protruding toward the upper side from a front portion of an upper surface of the upper blade, and a second column portion protruding toward the upper side from a rear portion of the upper surface of the upper blade, [0009] the first column portion includes a pair of first facing walls facing each other in a left-right direction, [0010] the second column portion includes a pair of second facing walls facing each other in the left-right direction, [0011] the pull tab includes a pivot installed between the first column portion and the second column portion, [0012] the cover body includes: an upper wall portion covering the first column portion, the second column portion, and the pivot; curved portions respectively curved and extending from the upper wall portion toward the front side and the lower side, and toward the rear side and the lower side; support portions extending from the respective curved portions toward the lower side and supported by the first column portion and the second column portion; and extending portions extending toward the lower side from the upper wall portion, [0013] the extending portions each include two abutting portions extending toward the lower side respectively from the front side and the rear side of the upper wall portion, [0014] the pair of the first facing walls each include a first abutted portion facing the abutting portion and a first facing wall upper surface portion facing a lower surface of the upper wall portion, [0015] the pair of second facing walls each include a second abutted portion facing the abutting portion and a second facing wall upper surface portion facing the lower surface of the upper wall portion, [0016] in a section orthogonal to the

front-rear direction, [0017] at least a part of a gap between the abutting portion and the first abutted portion is smaller than a gap between the lower surface of the upper wall portion and the first facing wall upper surface portion, and [0018] at least a part of a gap between the abutting portion and the second abutted portion is smaller than a gap between the lower surface of the upper wall portion and the second facing wall upper surface portion.

Advantageous Effects of Invention

[0019] According to the slider and the slide fastener of the present invention, impact resistance and assemblability of a cover body can be improved.

Description

BRIEF DESCRIPTION OF DRAWINGS

[0020] FIG. 1 shows a perspective view of a slider according to an embodiment.

[0021] FIG. 2 shows a separated state of components constituting the slider of the present embodiment.

[0022] FIG. 3 shows a side view of the slider of the present embodiment.

[0023] FIG. 4 shows an enlarged sectional view taken along a line IV-IV in FIG. 3.

[0024] FIG. 5 shows an enlarged sectional view taken along a line V-V in FIG. 3.

[0025] FIG. 6 shows a side view of a slider according to another embodiment.

[0026] FIG. 7 shows a slide fastener using the slider of the present embodiment.

DESCRIPTION OF EMBODIMENTS

[0027] Hereinafter, preferred embodiments of the present invention will be specifically described with reference to the drawings.

[0028] FIG. 1 shows a perspective view of a slider according to an embodiment. FIG. 2 shows a separated state of components constituting the slider of the present embodiment. FIG. 3 shows a side view of the slider of the present embodiment. FIG. 4 shows an enlarged sectional view taken along a line IV-IV in FIG. 3. FIG. 5 shows an enlarged sectional view taken along a line V-V in FIG. 3.

[0029] Regarding directions in the following embodiments, a side of a slider **10** on which a pull tab **30** is present is referred to as an upper side U, and an opposite side thereof is referred to as a lower side D. Regarding other directions, a side on which a guide column **23** is present is referred to as a front side F, and an opposite side thereof is referred to as a rear side B. Regarding still other directions, when the slider **10** is viewed from the upper side U and the front side F is directed upward and the rear side B is directed downward, left is referred to as a left side L, and right is referred to as a right side R. The arrow U indicates the upper side, the arrow D indicates the lower side, the arrow F indicates the front side, the arrow B indicates the rear side, the arrow L indicates the left side, and the arrow R indicates the right side.

[0030] The slider **10** used in a slide fastener of the present embodiment includes four members, that is, a body **20**, the pull tab **30**, a cover body **40**, and a lock body **50**. The three members including the body **20**, the pull tab **30**, and the cover body **40** are each manufactured by injection molding using a thermoplastic resin such as polyamide, polypropylene, polyacetal, and poly butylene terephthalate, a thermoplastic resin material reinforced with a wear-resistant material, and the like. The three members including the body **20**, the pull tab **30**, and the cover body **40** can also be manufactured by die casting a metal material such as an aluminum alloy and a zinc alloy instead of a resin material.

[0031] The lock body **50** of the present embodiment is preferably made of a copper alloy, stainless steel, and the like. The lock body **50** may not be installed.

[0032] The body **20** includes an upper blade **21**, a lower blade **22**, and the guide column **23** coupling front portions of the upper and lower blades **21** and **22**. The upper blade **21** includes, at

each of left and right ends, a flange **21a** extending toward the lower side D from a rear end to a substantially central position. The lower blade **22** includes, at each of left and right ends, a flange **22a** extending toward the upper side U from a rear end to a substantially central position. The body **20** has a Y-shaped meshing element guide passage between the upper and lower blades **21** and **22**. [0033] On an upper surface of the upper blade **21** of the body **20**, a first column portion **24** is erected on the front side F and a second column portion **25** is erected on the rear side B. The first column portion **24** and the second column portion **25** may be formed integrally with the upper blade **21**. The first column portion **24** and the second column portion **25** define a space **60** for accommodating a pivot **31** of the pull tab therebetween. That is, the first column portion **24** and the second column portion **25** face each other before the pull tab **30** is placed on the upper surface of the upper blade **21**. The upper surface of the upper blade **21** of the body **20** is provided with nothing between the first column portion **24** and the second column portion **25** that prevents the first column portion **24** and the second column portion **25** from facing each other.

[0034] The first column portion **24** includes a pair of first facing walls **24a** that are arranged side by side and face each other in a left-right direction L-R. As shown in FIG. 3, when the first column portion **24** is viewed from a lateral side, each of the pair of first facing walls **24a** includes, from the front side F toward the rear side B, a rising portion **24a1** extending perpendicularly to the upper blade **21**, a convex curved portion **24a2** constituting a part of a curved shape convex toward the upper side U, a substantially horizontal first facing wall upper surface portion **24a3**, a first abutted portion **24a4** inclined toward the lower side D, and a concave curved portion **24a5** constituting a part of a curved shape concave toward the upper side U. The rising portion **24a1** may also be inclined with respect to the upper blade **21** as long as engagement and disengagement of the cover body **40** to be described later is not hindered. A degree of curvature of the concave curved portion **24a5** is not limited and the concave curved portion **24a5** may be linear as long as the space **60** can be defined to an extent of not interfering with accommodation of the pivot **31** of the pull tab.

[0035] As shown in FIG. 2, a linear first lock portion **24b**, which extends across facing surfaces of the pair of first facing walls **24a**, is integrally formed on a front surface of the first column portion **24**. The first lock portion **24b** includes a first inclined portion **24b1**, which protrudes forward of the rising portions **24a1** of the pair of first facing walls **24a** and whose front surface is smoothly inclined downward, and a first engagement portion **24b2** that is engaged with and disengaged from the cover body **40** at a lower end of the first inclined portion **24b1**.

[0036] The upper blade **21** is formed with a first concave groove **21b** from a front end in a center of the upper surface in the left-right direction L-R to a front end of the first column portion **24**. The first concave groove **21b** enlarges a space on the lower side D of the first engagement portion **24b2** of the first column portion **24**.

[0037] The second column portion **25** includes a pair of second facing walls **25a** that are arranged side by side and face each other in the left-right direction L-R. As shown in FIG. 3, when the second column portion **25** is viewed from the lateral side, each of the pair of second facing walls **25a** includes, from the rear side B toward the front side F, a rising portion **25a1** extending perpendicularly to the upper blade **21**, a convex curved portion **25a2** constituting a part of a curved shape that is convex toward the upper side U, a substantially horizontal second facing wall upper surface portion **25a3**, a second abutted portion **25a4** inclined toward the lower side D, and a concave curved portion **25a5** constituting a part of a curved shape that is concave toward the upper side U. The rising portion **25a1** may also be inclined with respect to the upper blade **21** as long as engagement and disengagement of the cover body **40** to be described later is not hindered. A degree of curvature of the concave curved portion **25a5** is not limited and the concave curved portion **25a5** may be linear as long as the space **60** can be defined to an extent of not interfering with accommodation of the pivot **31** of the pull tab.

[0038] A linear second lock portion **25b** (not shown), which extends across facing surfaces of the pair of second facing walls **25a**, is integrally formed on a rear surface of the second column portion

25. Although not shown, the second lock portion **25b** includes a second inclined portion **25b1**, which protrudes rearward of the rising portions **25a1** of the pair of second facing walls **25a** and whose rear surface is smoothly inclined downward, and a second engagement portion **25b2** that is engaged with and disengaged from the cover body **40** at a lower end of the second inclined portion **25b1**.

[0039] The upper blade **21** is formed with a second concave groove **21c** (not shown) from a rear end in a center of the upper surface in the left-right direction L-R to a rear end of the second column portion **25**. The second concave groove **21c** enlarges a space on the lower side D of the second engagement portion **25b2** of the second column portion **25**.

[0040] The cover body **40** includes an upper wall portion **41** constituting an upper surface, front and rear curved portions **42** curved toward the lower side D from the front side F and the rear side B of the upper wall portion **41**, support portions **43** extending from the curved portions **42** toward the lower side D, a bulging portion **44** covering a center of a lower surface **41a** of the upper wall portion **41** in the left-right direction L-R and extending toward the lower side D, and a pair of extending portions **45** extending toward the lower side D from left and right end portions covering a center of the upper wall portion **41** in a front-rear direction F-B.

[0041] An upper surface of the upper wall portion **41** of the present embodiment has a smooth curved surface that is convex toward the upper side U. With the smooth convex curved surface, an interval between the front and rear support portions **43** is easily increased when the cover body **40** is assembled to the first column portion **24** and the second column portion **25** and the upper surface is pressed. As a result, the cover body **40** can be quickly assembled to the first column portion **24** and the second column portion **25**. The upper surface may also be a flat surface or a concave curved surface.

[0042] The curved portions **42** of the present embodiment are smoothly curved toward the lower side D from the front side F and the rear side B of the upper wall portion **41**. The support portions **43** are formed on the lower side D of the curved portions **42** and are assembled to the **30**) first column portion **24** and the second column portion **25**. The curved portions **42** and the support portions **43** on the front side F and the rear side B of the present embodiment have the same shape, and can be quickly assembled to the first column portion **24** and the second column portion **25** without distinction between front and rear. The curved portions **42** and the support portions **43** on the front side F and the rear side B may have different shapes.

[0043] At lower ends of the support portions **43**, engagement pieces **43a**, which are elastically engaged with and disengaged from the first engagement portion **24b2** of the first lock portion **24b** and the second engagement portion **25b2** of the second lock portion **25b**, protrude inward. Lower surfaces of top ends of the engagement pieces **43a** are preferably inclined surfaces inclined upward toward inside of the cover body **40**.

[0044] By making the lower surfaces of the top ends of the engagement pieces **43a** inclined surfaces inclined upward, the engagement pieces **43a** are smoothly and stably guided to the first inclined portion **24b1** formed in the first lock portion **24b** of the first column portion **24** and the second inclined portion **25b1** formed in the second lock portion **25b** of the second column portion **25**, and can be easily and accurately engaged with the first engagement portion **24b2** and the second engagement portion **25b2**.

[0045] As shown in FIG. 4, the bulging portion **44** of the present embodiment covers a center of a back surface of the upper wall portion **41** in the left-right direction L-R and is formed toward the lower side D. The bulging portion **44** has a length in the left-right direction L-R smaller than a length of the upper wall portion **41** in the left-right direction L-R, and has a width set to be smaller than a width of the upper wall portion **41** by wall thicknesses of the pair of first facing walls **24a** and the pair of second facing walls **25a**.

[0046] A part of the bulging portion **44** is fitted into a gap between the pair of first facing walls **24a** of the first column portion **24** and a gap between the pair of second facing walls **25a** of the second

column portion **25**. In a section of this part orthogonal to the front-rear direction F-B, the cover body **40** is formed in a substantially T shape, and the lower surface **41a** of the upper wall portion **41** faces upper surfaces of the pair of first facing walls **24a** of the first column portion **24** and upper surfaces of the pair of second facing walls **25a** of the second column portion **25**.

[0047] In this manner, since a part of the bulging portion **44** is fitted and inserted between the pair of first facing walls **24a** of the first column portion **24** and between the pair of second facing walls **25a** of the second column portion **25**, the cover body **40** can be prevented from moving to right and left with respect to the first column portion **24** and the second column portion **25**.

[0048] As shown in FIG. 3, each of the pair of extending portions **45** of the present embodiment includes abutting portions **45a** extending obliquely toward the lower side D from front and rear of the upper wall portion **41**, and a central portion **45b** formed in a substantially horizontal shape at a central part in the front-rear direction F-B. Each of the pair of extending portions **45** protrudes toward the lower side D in a wall shape from a respective one of the left and right end portions. Since the abutting portions **45a** are inclined, a length of the extending portion **45** in the front-rear direction decreases downward. The central portion **45b** protrudes toward the space **60** defined between the first column portions **24** and the second column portions **25**. A part of the abutting portion **45a** on the front side F of the extending portion **45** faces a respective one of the first abutted portions **24a4** of the pair of first facing walls **24a** of the first column portion **24**, and a part of the abutting portion **45a** on the rear side B of the extending portion **45** faces a respective one of upper surfaces of the second abutted portions **25a4** of the pair of second facing walls **25a** of the second column portion **25**.

[0049] The abutting portion **45a** and the first abutted portion **24a4**, and the abutting portion **45a** and the second abutted portion **25a4** of the present embodiment are normally installed with a gap therebetween, and abut against each other when the upper wall portion **41** is pressed from, for example, above. The abutting portion **45a** and the first abutted portion **24a4**, and the abutting portion **45a** and the second abutted portion **25a4** may also be normally abutted against each other.

[0050] The first abutted portion **24a4** and the second abutted portion **25a4** of the present embodiment are inclined at 45 degrees or less with respect to the upper blade **21**. The abutting portions **45a** face the first abutted portion **24a4** and the second abutted portion **25a4** in a state in which the cover body **40** is attached to the first column portion **24** and the second column portion **25**.

[0051] Since the first abutted portion **24a4** and the second abutted portion **25a4** are inclined at 45 degrees or less with respect to the upper blade **21**, an abutment angle with the abutting portions **45a** is nearly horizontal, and the abutting portions **45a** can be stably held. When the cover body **40** is attached to the body **20**, an assembly worker can quickly and accurately insert the extending portion **45** between the first column portion **24** and the second column portion **25**.

[0052] The slider **10** of the present embodiment includes the lock body **50**. The lock body **50** includes a plate spring **51** made of an elastic plate material and a claw member **52** pressed by the plate spring **51**. The plate spring **51** has two ends supported by the first column portion **24** and the second column portion **25**. The claw member **52** is disposed on the lower side D of the plate spring **51**.

[0053] The claw member **52** includes a hook portion **52a** and a claw **52b**. The hook portion **52a** protrudes toward the lower side D from one end of the claw member **52**. The hook portion **52a** is hooked to a holding portion (not shown) formed in the first column portion **24**. The claw **52b** protrudes toward the lower side D from another end of the claw member **52**. The claw **52b** penetrates the upper blade **21** from a hole **25c** formed in the second column portion **25**.

[0054] The pull tab **30** includes a gripping portion **31** on one end side and an annular holding portion **32** on another end side. The gripping portion **31** is formed of an elongated strip-shaped plate member having a thickness around a periphery. The annular holding portion **32** has a substantially elliptical hole elongated in a longitudinal direction into which the first column portion

24 or the second column portion **25** can be fitted. The annular holding portion **33** has a tip end portion formed in a bridge shape as the pivot **32a** that is movably or pivotably in the space **60**) defined between the first column portion **24** and the second column portion **25**. The pivot **32a** is set to have a width larger than a width dimension of the pair of first facing walls **24a** and the pair of second facing walls **25a** in the left-right direction L-R. The pull tab **30** is not limited to this structure, and may have another structure.

[0055] Thereafter, assembly of the slider **10** will be described. First, an assembly worker inserts the annular holding portion **32** of the pull tab **30** across the second column portion **25** of the body **20**, and places the entire pull tab **30** in a substantially horizontal posture. Thereafter, the assembly worker installs the claw member **52** from the upper side U such that the claw member **52** straddles the pivot **32a** of the pull tab **30**. The hook portion **52a** of the claw member **52** is hooked to the holding portion, and the claw **52b** penetrates the hole **25c** on the lower side D. Thereafter, the assembly worker places the plate spring **51** on the upper side U of the claw member **52**. Two ends of the plate spring **51** may be meshed with the first column portion **24** and the second column portion **25**. In this state, the claw member **52** is urged toward the lower side D by the plate spring **51**.

[0056] Thereafter, the assembly worker fits the cover body **40** into the first column portion **24** and the second column portion **25** from the upper side U of the pull tab **30**. When the upper wall portion **41** of the cover body **40** is pressed toward the lower side D, the engagement pieces **43a** of the support portions **43** come into contact with the first inclined portion **24b1** and the second inclined portion **25b1**. When the upper wall portion **41** is further pressed, the support portions **43** slide on the first inclined portion **24b1** and the second inclined portion **25b1**, the upper wall portion **41** is elastically deformed, and the interval between the front and back support portions **43** is gradually enlarged. Thereafter, when the engagement pieces **43a** pass through the first inclined portion **24b1** and the second inclined portion **25b1**, the upper wall portion **41** elastically returns, and the engagement pieces **43a** of the support portions **43** are engaged with the first engagement portion **24b2** of the first column portion **24** and the second engagement portion **25b2** of the second column portion **25**. In this state, the assembly of the slider **10** is completed.

[0057] In a slider in the related art, when the upper wall portion **41** of the cover body **40** is pressed during assembly or use, small-thickness parts of the upper wall portion **41** come into contact with the pair of first facing walls **24a** and the pair of second facing walls **25a**. The small-thickness parts refers to end portions of the upper wall portion **41** in the left-right direction L-R in FIG. 4 that are located outward of the bulging portion **44** in the left-right direction. The small-thickness parts have a thickness in an upper-lower direction smaller than a thickness of the cover body **40** in the upper-lower direction in a position in which the bulging portion **44** is formed. When the small-thickness parts of the upper wall portion **41** are further pressed while being in contact with the pair of first facing walls **24a** and the pair of second facing walls **25a**, an excessive load is applied to the small-thickness parts of the upper wall portion **41** that has low strength, and the upper wall portion **41** may be broken.

[0058] To solve this problem, the slider **10** of the present embodiment is provided with the extending portions **45** on the cover body **40**. In a section of the slider **10** of the present embodiment that is orthogonal to the front-rear direction F-B, at least a part of a gap **t11** between the abutting portions **45a** of the extending portions **45** and the first abutted portions **24a4** of the pair of first facing walls **24a** shown in FIG. 5 is smaller than a gap **t12** between the lower surface **41a** of the upper wall portion **41** and the first facing wall upper surface portions **24a3** of the pair of first facing walls **24a** shown in FIG. 4. At least a part of a gap **t21** (not shown) between the abutting portions **45a** of the extending portions **45** and the second abutted portions **25a4** of the pair of second facing walls **25a** is smaller than a gap **t22** between the lower surface **41a** of the upper wall portion **41** and the second facing wall upper surface portions **25a3** of the pair of second facing walls **25a**.

[0059] Since the gaps **t11** and **t21** are smaller than the gaps **t12** and **t22**, when the upper wall

portion **41** is pressed, the abutting portions **45a** and the first abutted portions **24a4** or the abutting portions **45a** and the second abutted portions **25a4** abut against each other and receive a load before the lower surface **41a** of the upper wall portion **41** and the first facing wall upper surface portions **24a3** or the lower surface **41a** of the upper wall portion **41** and the second facing wall upper surface portions **25a3** do. Accordingly, large-thickness parts by the extending portions **44** receive a load before the small-thickness parts of the upper wall portion **41** do, and no excessive load is applied to the lower surface **41a** of the small-thickness parts of the upper wall portion **41**, and damage to the cover body **40** can be remarkably reduced.

[0060] The gap t11 between the abutting portions **45a** and the first abutted portions **24a4** of the pair of first facing walls **24a** may be the same as or different from the gap t21 between the abutting portions **45a** and the second abutted portions **25a4** of the pair of second facing walls **25a**. The gap t12 between the lower surface **41a** of the upper wall portion **41** and the first facing wall upper surface portions **24a3** of the pair of first facing walls **24a** may be the same as or different from the gap t22 between the lower surface **41a** of the upper wall portion **41** and the second facing wall upper surface portions **25a3** of the pair of second facing walls **25a**. Further, the abutting portions **45a** and the first abutted portions **24a4** of the pair of first facing walls **24a**, and the abutting portions **45a** and the second abutted portions **25a4** of the pair of second facing walls **25a** may be normally in contact with each other. In this case, the gap t11 between the abutting portions **45a** and the first abutted portions **24a4** of the pair of first facing walls **24a** and the gap t21 between the abutting portions **45a** and the second abutted portions **25a4** of the pair of second facing walls **25a** may be zero.

[0061] FIG. 6 shows a side view of a slider according to another embodiment.

[0062] The abutting portions **45a**, the first abutted portions **24a4**, and the second abutted portions **25a4** are not limited to these shapes, and may be formed in a curved surface shape or a stepped shape as shown in FIG. 6. The shape of the first abutted portions **24a4** may be different from the shape of the second abutted portions **25a4**. When the first abutted portions **24a4** and the second abutted portions **25a4** have different shapes, the abutting portions **45a** may have shapes corresponding to the shapes of the first abutted portions **24a4** and the second abutted portions **25a4**. The first abutted portions **24a4** may have different shapes within the pair of first facing walls **24a**. In this case, the abutting portions **45a** of each of the pair of extending portions **45** may have shapes corresponding to the shapes of the respective first abutted portions **24a4** of the pair of first facing walls **24a** that face the abutting portions **45a**. The same applies to the pair of second facing walls **25a**.

[0063] Since the shapes of the abutting portions **45a**, the first abutted portions **24a4**, and the second abutted portions **25a4** can be variously changed, design of the cover body **40** can be diversified. For example, a load can be uniformly received by forming the abutting portions **45a**, the first abutted portions **24a4**, and the second abutted portions **25a4** in inclined shapes, and the load can be received in a state close to a horizontal plane by forming the abutting portions **45a**, the first abutted portions **24a4**, and the second abutted portions **25a4** at 45 degrees or less with respect to the upper blade **21**. Further, a stronger load can be received in a horizontal plane by forming the abutting portions **45a**, the first abutted portions **24a4**, and the second abutted portions **25a4** in stepped shapes.

[0064] Also in a section of the slider **10** of the embodiment shown in FIG. 6 that is orthogonal to the front-rear direction F-B, at least a part of a gap t31 between the abutting portions **45a** of the extending portions **45** and the first abutted portions **24a4** of the pair of first facing walls **24a** is smaller than a gap t32 between the lower surface **41a** of the upper wall portion **41** and the first facing wall upper surface portions **24a3** of the pair of first facing walls **24a**. At least a part of a gap t41 between the abutting portions **45a** of the extending portions **45** and the second abutted portions **25a4** of the pair of second facing walls **25a** is smaller than a gap t42 between the lower surface **41a** of the upper wall portion **41** and the second facing wall upper surface portions **25a3** of the pair of

second facing walls **25a**.

[0065] Since the gaps **t31** and **t41** are smaller than the gaps **t32** and **t42**, when the upper wall portion **41** is pressed, the abutting portions **45a** and the first abutted portions **24a4** or the abutting portions **45a** and the second abutted portions **25a4** abut against each other and receive a load before the lower surface **41a** of the upper wall portion **41** and the first facing wall upper surface portions **24a3** or the lower surface **41a** of the upper wall portion **41** and the second facing wall upper surface portions **25a3** do. Accordingly, no excessive load is applied to the lower surface **41a** of the small-thickness parts of the upper wall portion **41**, and damage to the cover body **40** is remarkably reduced. In this manner, any shape may be adopted as long as the large-thickness parts by the extending portions **45** abut against the column portions before the small-thickness parts do.

[0066] FIG. 7 shows a slide fastener using the slider of the present embodiment.

[0067] A slide fastener **1** of the present embodiment includes a pair of right and left fastener chain **1ab** that includes a first fastener stringer **1a**, in which a first element row **3a** including a plurality of first elements **3a1** is fixed to a first fastener tape **2a**, and a second fastener stringer **1b**, in which a second element row **3b** including a plurality of second elements **3b1** is fixed to a second fastener tape **2b**, and the slider **10** that slides along the left and right continuous element rows **3a** and **3b** to mesh and separate the elements **3a1** and **3b1** of the continuous element rows **3a** and **3b**.

[0068] In the following description, a direction in which the continuous element rows are provided in a longitudinal direction of the fastener chain **1ab** is referred to as the front-rear direction F-B, a direction in which the slider **10** is slid to mesh the left and right continuous element rows **3a** and **3b** is referred to as the front side F, and a direction in which the slider **10** is slid to separate the left and right continuous element rows **3a** and **3b** is referred to as the rear side B. The left-right direction L-R is a direction horizontal to a surface of the fastener chain **1ab** and perpendicular to the front-rear direction. A direction perpendicular to a plane defined by the front-rear direction F-B and the left-right direction L-R is referred to as the upper-lower direction U-D, a side of the fastener chain **1ab** on which the pull tab **30** of the slider **10** is present is referred to as the upper side U, and an opposite side thereof is referred to as the lower side D. The upper-lower direction U-D may be referred to as a surface-back direction, the upper side U may be referred to as a surface side, and the lower side D may be referred to as a back side.

[0069] The fastener chain **1ab** includes the pair of fastener stringers **1a** and **1b**. The fastener stringers **1a** and **1b** include a pair of fastener tape **2ab** having an upper surface and a lower surface, and the element rows **3a** and **3b** including the plurality of elements **3a1** and **3b1** fixed to respective edge portions **2c** of the pair of fastener tapes **2ab** at a prescribed pitch. The elements row **3a** and **3b** face each other.

[0070] Upper stoppers **4** are fixed to respective upper ends of the continuous element rows **3a** and **3b**, and a lower stopper **5** is fixed to lower ends of the continuous element rows **3a** and **3b**. This prevents the slider **10** from coming off from the upper and lower ends of the continuous element rows **3a** and **3b**. In the present embodiment, it is also possible to fix an opener having a separable pin and a retainer pin instead of the lower stopper **5**.

[0071] As described above, a slider **10** of the present embodiment includes: a body **20**; a pull tab **30**; and a cover body **40**. A side of the slider **10** on which the pull tab **30** is present is referred to as an upper side U and an opposite side thereof is referred to as a lower side D, when the slider **10** is installed to a fastener chain **1ab**, a direction in which the slider **10** is slid to mesh left and right continuous element rows **3a**, **3b** is referred to as a front side F and a direction in which the slider **10** is slid to separate the left and right continuous element rows **3a**, **3b** is referred to as a rear side B, and when the slider **10** is viewed from the upper side U, a left side in a front-rear direction F-B is referred to as a left side L and an opposite side thereof is referred to as a right side R. The body **20** includes an upper blade **21**, a lower blade **22** installed at a prescribed interval on the lower side D of the upper blade **21**, a guide column **23** coupling the upper blade **21** and the lower blade **22** on the front side F, and a first column portion **24** protruding toward the upper side U from a front portion

of an upper surface of the upper blade **21**, and a second column portion **25** protruding toward the upper side U from a rear portion of the upper surface of the upper blade **21**. The first column portion **24** includes a pair of first facing walls **24a** arranged side by side in a left-right direction L-R. The second column portion **25** includes a pair of second facing walls **25a** arranged side by side in the left-right direction L-R. The pull tab **30** includes a pivot **32a** installed between the first column portion **24** and the second column portion **25**. The cover body **40** includes: an upper wall portion **41** covering the first column portion **24**, the second column portion **25**, and the pivot **32a**; curved portions **42** respectively curved and extending from the upper wall portion **41** toward the front side F and the lower side D, and toward the rear side B and the lower side D; support portions **43** extending from the respective curved portions **42** toward the lower side D and supported by the first column portion **24** and the second column portion **25**; and extending portions **45** extending toward the lower side D from the upper wall portion **41**. The extending portions **45** each include two abutting portions **45a** extending toward the lower side D respectively from the front side F and the rear side B of the upper wall portion **41**. The pair of the first facing walls **24a** each include a first abutted portion **24a4** facing the abutting portion **45a** and a first facing wall upper surface portion **24a3** facing a lower surface **41a** of the upper wall portion **41**. The pair of second facing walls **25a** each include a second abutted portion **25a4** facing the abutting portion **45a** and a second facing wall upper surface portion **25a3** facing the lower surface **41a** of the upper wall portion **41**. In a section orthogonal to the front-rear direction F-B, at least a part of a gap t11 between the abutting portion **45a** and the first abutted portion **24a4** is smaller than a gap t12 between the lower surface **41a** of the upper wall portion **41** and the first facing wall upper surface portion **24a3**, and at least a part of a gap t21 between the abutting portion **45a** and the second abutted portion **25a4** is smaller than a gap t22 between the lower surface **41a** of the upper wall portion **41** and the second facing wall upper surface portion **25a3**.

[0072] Accordingly, when the upper wall portion **41** is pressed, the abutting portions **45a** and the first abutted portions **24a4** or the abutting portions **45a** and the second abutted portions **25a4**, which have a smaller gap than a gap between the lower surface **41a** of the upper wall portion **41** and the first facing wall upper surface portions **24a3** or between the lower surface **41a** of the upper wall portion **41** and the second facing wall upper surface portions **25a3**, abut against each other and receive a load first. Accordingly, no excessive load is applied to the lower surface **41a** of the small-thickness parts of the upper wall portion **41**, damage to the cover body **40** can be remarkably reduced, impact resistance of the cover body **40** can be improved, and excellent assemblability can be achieved.

[0073] In the slider **10** of the present embodiment, when the abutting portion **45a** and the first abutted portion **24a4** abut against each other, the lower surface **41a** of the upper wall portion **41** and the first facing wall upper surface portion **24a3** have a gap therebetween, and when the abutting portion **45a** and the second abutted portion **25a4** abut against each other, the (30) lower surface **41a** of the upper wall portion **41** and the second facing wall upper surface portion **25a3** have a gap therebetween.

[0074] Since the abutting portions **45a** and the first abutted portions **24a4** or the abutting portions **45a** and the second abutted portions **25a4** abut against each other and receive the load, no excessive load is applied to the lower surface **41a** of small-thickness parts of the upper wall portion **41**, damage of the cover body **40** can be further remarkably reduced, and the impact resistance of the cover body **40** can be further improved.

[0075] In the slider **10** of the present embodiment, the cover body **40** includes a bulging portion **44** that covers a center of the lower surface **41a** of the upper wall portion **41** in the left-right direction L-R and that extends toward the lower side D, a part of the bulging portion **44** is disposed between the pair of first facing walls **24a** and between the pair of second facing walls **25a**, and the extending portions **45** extend toward the lower side D from left and right end portions of the lower surface **41a** of the upper wall portion **41**.

[0076] Accordingly, since a part of the bulging portion **44** is fitted and inserted between the pair of first facing walls **24a** of the first column portion **24** and between the pair of second facing walls **25a** of the second column portion **25**, the cover body **40** can be prevented from moving to right and left with respect to the first column portion **24** and the second column portion **25**.

[0077] In the slider **10** of the present embodiment, at least one of the abutting portion **45a**, the first abutted portion **24a4**, and the second abutted portion **25a4** has an inclined shape inclined with respect to the upper blade **21**. Accordingly, the load can be uniformly received by forming the abutting portions **45a**, the first abutted portions **24a4**, and the second abutted portions **25a4** in inclined shapes.

[0078] In the slider **10** of the present embodiment, an inclination angle of the inclined shape with respect to the upper blade **21** is 45 degrees or less. Accordingly, by making the inclination angle 45 degrees or less with respect to the upper blade **21**, the load can be received in a state close to a horizontal plane.

[0079] In the slider **10** of the present embodiment, at least one of the abutting portion **45a**, the first abutted portion **24a4**, and the second abutted portion **25a4** is formed in a stepped shape.

Accordingly, a stronger load can be received in a horizontal plane by forming the abutting portions **45a**, the first abutted portions **24a4**, and the second abutted portions **25a4** in stepped shapes.

[0080] A slide fastener **1** of the present embodiment includes: a pair of right and left fastener chain **1ab** that includes a first fastener stringer **1a** in which a first element row **3a** including a plurality of first elements **3a1** is fixed to a first fastener tape **2a**, and a second fastener stringer **1b** in which a second element row **3b** including a plurality of second elements **3b1** is fixed to a second fastener tape **2b**; and the slider **10** configured to slide along the left and right continuous element rows **3a** and **3b** to mesh and separate the elements **3a1** and **3b1** of the continuous element rows **3a** and **3b**.

[0081] Accordingly, when the upper wall portion **41** is pressed, the abutting portions **45a** and the first abutted portions **24a4** or the abutting portions **45a** and the second abutted portions **25a4**, which have a smaller gap than a gap between the lower surface **41a** of the upper wall portion **41** and the first facing wall upper surface portions **24a3** or between the lower surface **41a** of the upper wall portion **41** and the second facing wall upper surface portions **25a3**, abut against each other and receive a load first. Accordingly, no excessive load is applied to the lower surface **41a** of the small-thickness parts of the upper wall portion **41**, damage to the cover body **40** can be remarkably reduced, impact resistance of the slide fastener **1** can be improved, and excellent assemblability can be achieved.

REFERENCE SIGNS LIST

[0082] **1**: slide fastener [0083] **1ab**: fastener chain [0084] **1a**, **1b**: fastener stringer [0085] **2ab**: fastener tape [0086] **3a1**, **3b1**: element [0087] **3a**, **3b**: element row [0088] **10**: slider [0089] **20**: body [0090] **21**: upper blade [0091] **21a**, **22a**: flange [0092] **22**: lower blade [0093] **23**: guide column [0094] **24**: first column portion [0095] **24a**: first facing wall [0096] **24a3**: first facing wall upper surface portion [0097] **24a4**: first abutted portion [0098] **24b**: first lock portion [0099] **25**: second column portion [0100] **25a**: second facing wall [0101] **25a3**: second facing wall upper surface portion [0102] **25a4**: second abutted portion [0103] **25b**: second lock portion [0104] **30**: pull tab [0105] **31**: gripping portion [0106] **32**: annular holding portion [0107] **33**: pivot [0108] **40**: cover body [0109] **41**: upper wall portion [0110] **41a**: lower surface [0111] **42**: curved portion [0112] **43**: support portion [0113] **44**: bulging portion [0114] **45**: extending portion [0115] **45a**: abutting portion [0116] **50**: lock body [0117] **51**: plate spring [0118] **52**: claw member

Claims

1. A slider comprising: a body; a pull tab; and a cover body, wherein a side of the slider on which the pull tab is present is referred to as an upper side and an opposite side thereof is referred to as a lower side, when the slider is installed to a fastener chain, a direction in which the slider is slid to

mesh left and right continuous element rows is referred to as a front side and a direction in which the slider is slid to separate the left and right continuous element rows is referred to as a rear side, and when the slider is viewed from the upper side, a left side in a front-rear direction is referred to as a left side and an opposite side thereof is referred to as a right side, the body includes an upper blade, a lower blade installed at a prescribed interval on the lower side of the upper blade, a guide column coupling the upper blade and the lower blade on the front side, and a first column portion protruding toward the upper side from a front portion of an upper surface of the upper blade, and a second column portion protruding toward the upper side from a rear portion of the upper surface of the upper blade, the first column portion includes a pair of first facing walls arranged side by side in a left-right direction, the second column portion includes a pair of second facing walls arranged side by side in the left-right direction, the pull tab includes a pivot installed between the first column portion and the second column portion, the cover body includes: an upper wall portion covering the first column portion, the second column portion, and the pivot; curved portions respectively curved and extending from the upper wall portion toward the front side and the lower side, and toward the rear side and the lower side; support portions extending from the respective curved portions toward the lower side and supported by the first column portion and the second column portion; and extending portions extending toward the lower side from the upper wall portion, the extending portions each include two abutting portions extending toward the lower side respectively from the front side and the rear side of the upper wall portion, the pair of the first facing walls each include a first abutted portion facing the abutting portion and a first facing wall upper surface portion facing a lower surface of the upper wall portion, the pair of second facing walls each include a second abutted portion facing the abutting portion and a second facing wall upper surface portion facing the lower surface of the upper wall portion, in a section orthogonal to the front-rear direction, at least a part of a gap between the abutting portion and the first abutted portion is smaller than a gap between the lower surface of the upper wall portion and the first facing wall upper surface portion, and at least a part of a gap between the abutting portion and the second abutted portion is smaller than a gap between the lower surface of the upper wall portion and the second facing wall upper surface portion.

2. The slider according to claim 1, wherein when the abutting portion and the first abutted portion abut against each other, the lower surface of the upper wall portion and the first facing wall upper surface portion have a gap therebetween, and when the abutting portion and the second abutted portion abut against each other, the lower surface of the upper wall portion and the second facing wall upper surface portion have a gap therebetween.

3. The slider according to claim 1, wherein the cover body includes a bulging portion that covers a center of the lower surface of the upper wall portion in the left-right direction and that extends toward the lower side, a part of the bulging portion is disposed between the pair of first facing walls and between the pair of second facing walls, and the extending portions extend toward the lower side from left and right end portions of the lower surface of the upper wall portion.

4. The slider according to claim 1, wherein at least one of the abutting portion, the first abutted portion, and the second abutted portion has an inclined shape inclined with respect to the upper blade.

5. The slider according to claim 4, wherein an inclination angle of the inclined shape with respect to the upper blade is 45 degrees or less.

6. The slider according to claim 1, wherein at least one of the abutting portion, the first abutted portion, and the second abutted portion is formed in a stepped shape.

7. A slide fastener comprising: a pair of left and right fastener chain that includes a first fastener stringer in which a first element row including a plurality of first elements is fixed to a first fastener tape, and a second fastener stringer in which a second element row including a plurality of second elements is fixed to a second fastener tape; and the slider according to claim 1 configured to slide

along the left and right continuous element rows to mesh and separate the elements of the continuous element rows.
