

PACKING IMPLEMENT FOR GOODS TRANSPORTATION

[Technical Field]

[0001]

The present invention relates to a packing implement for goods transportation for housing and transporting various goods such as notebook computers, smartphones, portable game machines, and mobile phones, more particularly, it relates to a packing implement for goods transportation suitable for home delivery services.

[Background Art]

[0002]

When shipping notebook computers and other electronics devices such as smartphones, portable game machines, and mobile phones from factories or when transporting repaired devices from the manufacturer side to users, a sufficient protection measure is necessary for the packing thereof. In particular, for handling the delivery of these goods as home delivery services, a certain quality is required for the packing and packing uniformity is required.

[0003]

A packing implement constituted by a combination of a baseboard and a flexible film is disclosed as a packing implement

for goods transportation in, for example, Patent Document 1. In the packing implement described in Patent Document 1, the board surface of a rectangular baseboard 21 is overlaid with a flexible film serving as a holding sheet 22 as shown in Fig. 9, and both edges are adhered to the ends of the baseboard 21. An article M to be stored is placed between the baseboard 21 and the holding sheet 22 as shown in Fig. 10, falling parts 24 of both side edges of the baseboard 21, to which the holding sheet 22 is adhered, are folded back to a back surface side opposite to a mounting surface of the article along lines for bending 23 marked on the board surface of the baseboard 21 of both sides of the article M as shown in Fig. 11, and further, rising parts 25 of both ends of the board surface of the baseboard 21 are erected upward and the packing implement is housed in an outer casing 26 for transportation as shown in Fig. 12.

[0004]

Meanwhile, in the case of a packing implement having such a structure as shown in Fig. 9, both side edges of the baseboard 21 are folded back to the back side so that the flexible film used as the holding sheet 22 is tensed, and the article M to be stored can be stably supported in the outer casing 26 in a state of being press-fitted to the flexible film and being pressed to the board surface of the baseboard 21, but as clearly

shown by Fig. 12, the article M is simply mounted on an upper surface of the baseboard 12 on a lower surface of which folded-back edges of the falling parts 24 of both side edges are overlaid by folding, and therefore, there remains a problem that impact force is directly applied to the article M through the baseboard 21 from the bottom of the outer casing 26 and which causes a high risk of damage to the article in such a case that the outer casing 26 in which the article is stored is erroneously dropped during transportation or during other handling.

[0005]

The invention described in Patent Document 2 solves the above-described problem, and can naturally form a buffer space below a baseboard by only bending parts of a baseboard, across which a holding sheet is stretched, along predetermined lines for bending in order, and consequently can effectively protect an article from damage due to an impact from the outside. According to the packing implement of Patent Document 2, as shown in Figs. 13a and 13b, a buffering space is formed by leg parts 39 and bottom parts 40 of falling parts 41 on a lower surface of the baseboard 36 by placing an article 31 between the baseboard 36 and the holding sheet 37, bending the leg parts 39 of both falling parts 41 and 41 squarely downward from both

side edges of the baseboard 36, then folding back the bottom parts 40 horizontally, and further bending back rising parts 42 upward from both end edges of the baseboard 36 and assembling in a fixed form.

[0006]

Meanwhile, when packing an article using a packing implement having such a structure as described above for which a baseboard and a holding sheet are combined, vertically stacked packing implement flat boards in developed shapes are taken out one by one in order, the falling parts of both sides of the baseboard are folded back to a back surface side opposite to a mounting surface of the article, and further the rising parts are erected upward and the article is placed between the baseboard and the holding sheet for assembly into a three-dimensional shaped packing implement, however, even though squeeze lines for bending are marked thereon, because the packing implement maintains a flat board state before being bent where it is yet free from folds and the holding sheet is closely fitted to the board surface of the baseboard, a gap necessary for placement of the article is necessary between the baseboard and the holding sheet, which therefore requires an operation such as picking up the holding sheet from the board surface or lifting up both side edges of the baseboard to bring

up the holding sheet from the board surface of the baseboard to secure the gap necessary for placement of the article between the holding sheet and the baseboard, and this operation brings trouble, and this has been a cause for a decline in working efficiency of packing work.

[0007]

Also, according to the above-described packing implement for which a baseboard and a holding sheet are combined, a repulsive force of the holding sheet that is produced when both falling parts of the baseboard are folded back in a direction opposite to the mounting surface of an article can be suppressed by erecting both rising parts to the article mounting surface side of the baseboard, but the assembled packing implement loses its shape all at once as a result of the falling parts losing support when hands are released from both rising parts before it is stored in an outer casing, the baseboard returns to an original flat board, and therefore, reassembly is necessary.

[Citation List]

[Patent Literature]

[0008]

[Patent Document 1] US 5,678,695

[Patent Document 2] US 7,918,339

[Summary of Invention]

[Technical Problem]

[0009]

The largest problem to be solved is the point that, according to a packing implement for which a baseboard and a holding sheet are combined, because the holding sheet is closely fitted to the board surface of the baseboard, for placing an article between the holding sheet and the baseboard, it has been necessary to take a measure for forming a gap necessary for placing the article such as bringing up the holding sheet from the board surface of the baseboard, however, in addition to this problem, the following point also remains a problem to be solved, that is, when an article is stored in a packing implement and this is then assembled into a fixed form with the article held by the holding sheet, unless the three-dimensionally assembled packing implement is supported by hand, the packing implement assembled with effort loses its shape to return to its original flat board and needs to be assembled again.

[Solution to Problem]

[0010]

The present invention is characterized mainly in that, in a flat board state of a baseboard of a packing implement being in a developed shape, a holding sheet is separated in

advance from the board surface of the baseboard to secure therebetween a gap necessary for at least insertion of fingers in order to place an article, and is characterized by, even if hands are released from both rising parts before a packing implement built up into a fixed shape is stored in an outer casing, enabling keeping the built-up shape.

[Advantageous Effects of Invention]

[0011]

Because the holding sheet stretched across the falling parts of both sides of the baseboard therebetween is tensed and both side edges of the baseboard receive the tension to be erected upward, a gap is secured between the baseboard and the holding sheet, and an article to be stored can be easily placed between the baseboard and the holding sheet by further widening the gap with fingers, and because an operation for separating the holding sheet closely fitted to the board surface of the baseboard from the baseboard as conventionally performed is not required, the working efficiency of packing work can be increased. Also, when the rising parts are erected upward along lines for bending in assembly of a packing implement, the rising parts are naturally supported by stoppers so as not to lose its shape.

[0012]

Accordingly, according to the present invention, a storing operation of an article into a packing implement can be easily performed by forming a gap in advance between the holding sheet and the board surface of the baseboard in a flat board state of the baseboard being in a developed shape. Further, applying stoppers to the packing implement makes management of an assembly work of the packing implement easy, securing a gap between the baseboard and the holding sheet and using a packing implement applied with stoppers makes it possible to perform work for packing an article and assembling the packing implement with efficiency and makes it possible to carry out a line for packing of an article and assembly and packing work for accommodating an assembled packing implement into an outer casing on separate lines.

[Brief Description of Drawings]

[0013]

[Fig. 1] Fig. 1a is a developed view showing a packing implement of Embodiment 1 of the present invention, Fig. 1b is a cross sectional view taken along line B-B in Fig. 1a, and Fig. 1c is a view showing a difference in length of the horizontal width between a baseboard and a holding sheet.

[Fig. 2] Fig. 2a is a view showing the shape of an opening opened at a junction point of lines for bending marked on the

baseboard in Embodiment 1, Fig. 2b is a plan view showing a movement of a stopper when a rising part is erected, and Fig. 1c is a cross sectional view taken along line C-C in Fig. 2b.

[Fig. 3] Figs. 3a, 3b and 3d are views showing procedures for packing an article with use of the packing implement of the present invention, and Fig. 3c is a cross sectional view taken along line D-D in Fig. 3b.

[Fig. 4] Fig. 4 is a view showing a procedure for housing the packing implement with the article packed in an outer casing.

[Fig. 5] Fig. 5 shows a projecting state of the packing implement in the outer casing, which is a view of the packing implement viewed in the arrow direction from line E-E in Fig. 3d.

[Fig. 6] Fig. 6 is a developed view of a packing implement of Embodiment 2.

[Fig. 7] Fig. 7 is a view showing the shape of an opening opened at a junction point of lines for bending marked on a baseboard in Embodiment 2.

[Fig. 8] Figs. 8a to 8c are views showing procedures for packing an article with use of the packing implement of Embodiment 2.

[Fig. 9] Fig. 9 is a developed view showing an example of conventional packing implements for goods transportation.

[Fig. 10] Fig. 10 is a view showing a state of storing the article in the packing implement shown in Fig. 9.

[Fig. 11] Fig. 11 is a view showing a state of bending a part of a baseboard and tensing a holding sheet.

[Fig. 12] Fig. 12 is a view showing a state of storing the packing implement holding the article in a transportation casing.

[Fig. 13] Fig. 13a is a perspective view of the packing implement described in Patent Document 2 previously proposed, and Fig. 13b is a longitudinal sectional view of Fig. 13a.

[Description of Embodiments]

[0014]

The present invention has realized an object of easily performing an operation for placing an article between a holding sheet and a baseboard by forming a gap in advance between the holding sheet and the baseboard by applying tension in advance to the holding sheet in a flat board state of the baseboard being in a developed shape to make both side edges of the baseboard stand up, and has further taken a measure for preventing an assembled packing implement from losing its shape by providing stoppers for a packing implement.

[Embodiment 1]

[0015]

Hereinafter, embodiments of the present invention will be described according to figures. In Figs. 1a and 1b, the baseboard of a packing implement 2 is a rectangular corrugated board that secures a rectangular article mounting surface 6a to support an article in a central region, has falling parts 11 and 11 at both left and right side edges of the board surface of a long side of the article mounting surface 6a, has rising parts 12 and 12 at both front and rear end edges of the board surface of a short side thereof, and has shape retaining parts 16 at four corners of the baseboard 6. The falling parts 11 are parts of both side edges beyond the article mounting surface 6a, and the rising parts 12 are parts of both end edges beyond the article mounting surface 6a.

[0016]

The falling part 11 is a part that is bent downward further than the article mounting surface 6a and constituted by a leg part 9 and a bottom part 10 of a front part thereof, the leg part 9 is a part to be made orthogonal to the board surface of the article mounting surface 6a, and the bottom part 10 is a part for which the front part of the leg part 9 is bent to be arranged parallel with the article mounting surface 6a. A central part of the leg part 9 has a constant width, both ends thereof are each converged to one point to be triangular, and

a tip of an acute angle of the triangle part 8 is continued to the rising part 12.

[0017]

In the figures, reference signs 14a and 14b denote lines for bending that demarcate the leg part 9 and the bottom part 10 of the falling part 11, respectively, and reference sign 14 denotes a line for bending extending from a junction point of both lines for bending 14a and 14b to an end edge of the rising part 12. The triangle parts 8 of both ends of the leg part 9 are respectively formed by junction of the lines for bending 14a and 14b, and down tilting parts 5 projected to both sides are formed at base portions of the rising parts 12, respectively.

[0018]

The down tilting parts 5 are parts demarcated by lines for bending 13a and 13b drawn inside and outside in parallel with a fixed interval therebetween at both end edges of the article mounting surface 6a, and the rising parts 12 are front parts from the outer line for bending 13a to be folded back upward from the down tilting parts 5 formed at both end edges of the article mounting surface 6a.

[0019]

The shape retaining parts 16 are four corner parts of

the baseboard left between both end edges of the rising parts 12 and both end edges of the falling parts 11, respectively, are continued to the rising parts 12 and the falling parts 11, respectively, are folded back parallel with the rising parts 12 by bending the end edges of the falling parts 11 to a lower surface side of the article mounting surface 6a, respectively, and are erected to hold the falling parts in a bent state by folding back the rising parts 12 upward, respectively. In this embodiment, an outer end of the shape retaining part 16 is obliquely cut off, however, the shape thereof may remain rectangular.

[0020]

The rising part 12 is a part that is bent upward further than the article mounting surface 6a, and the line for bending 13a to form the rising part 12 is a linear line which passes a junction point of the lines for bending 14a and 14b that demarcate the triangle parts 8 of both ends of the leg part 9 and joins the line for bending 14 extending from the junction point of both lines for bending 14a and 14b to the end edge of the rising part 12. The triangle parts 8 of both ends of the leg part 9 become parts projecting to both sides at a fixed angle when the falling part 11 is folded back downward from the article mounting surface 6a and the rising parts 12 are

erected upward. At the junction point where the respective lines for bending intersect, a polygonal opening 4 having its vertices at the positions of the respective lines for bending is formed as shown in Fig. 2a for eliminating pointed vertices of the triangle parts 8 of both ends of the leg part 9.

[0021]

The holding sheet 7 covers the front surface of an article mounted on the article mounting surface 6a of the baseboard 6, and presses the article to the baseboard 6 to hold the same at a fixed position, however, in the present invention, the holding sheet 7 erects both falling parts 11 and 11 upward to form a gap between the holding sheet 7 and the board surface of the baseboard 6 by tension in a direction to narrow the distance between both falling parts 11 and 11 being applied to the holding sheet 7 in a flat board state of the baseboard 6 of the packing implement being in a developed shape. The gap does not always need to have a height necessary for placement of an article. It suffices that the holding sheet 7 is slightly up from the board surface of the baseboard to an extent that it can be picked up with fingers.

[0022]

The holding sheet 7 is a synthetic resin film excellent in elasticity such as polyurethane. The material is not limited

to polyurethane, but a stretchable sheet is employed so that an impact or pressure such as flexibility or plasticity can be absorbed or avoided. A transparent film made of thermal plastic resin is desirable for the holding sheet in terms of consideration for environment, recycling, sanitation, design characteristics, or the like. When an article to be stored is thin and heavy, there is a possibility that the article to which the impact is applied overcomes the pressing force of the holding sheet 7 to slip on the baseboard 6 and collide with the board surface of the rising part 12 of a side portion. In order to avoid the above situation, the holding sheet 7 is required to have more than a certain strength and physical property.

[0023]

The holding sheet 7 has pressed and fixed an article onto the article mounting surface 6a, and it thus suffices to cross the baseboard 6 of the long side and have both ends thereof stuck to the board surface of the baseboard 6 over the article mounting surface 6a, and the position to stick the same is not always limited to that in the case of folding back to a back surface side of the baseboard 6 and fixing to the back surface thereof. The holding sheet 7 may be stuck to the board surface of the falling parts 11 of a front surface side of the baseboard

6 over the board surface thereof.

[0024]

When the holding sheet 7 is folded back to a back surface side of the baseboard 6 and stuck to the back surface thereof, it is necessary to turn over the baseboard 6 when sticking, however, the holding sheet 7 is stuck to both side edges of the front surface of the long side of the baseboard 6 to facilitate sticking work, so that the packing implement can be improved in productivity. In addition, when fixing the holding sheet 7, besides adhering and fixing to a paper surface of the baseboard 6 by thermal welding fixation or an adhesive, this may be attached by sticking fixation etc., such as use of double-stick tape.

[0025]

For applying, to the holding sheet 7, in a flat board state in which the baseboard 6 is in a developed shape, tension in a direction to narrow the distance between both falling parts 11 and 11 of the baseboard 6 to erect both falling parts 11 and 11 upward, it suffices, when the horizontal width of a sticking position to the holding sheet 7 set in the baseboard 6 of the long side is provided as d_1 , to the range of the horizontal width d_1 of the sticking position to the holding sheet 7, to stretch the holding sheet 7 having a horizontal width d_2 (provided that $d_1 > d_2$) to a width of d_1 or more than d_1 and stick

both ends thereof to the baseboard 6. In Fig. 1c, the holding sheet 7 having the horizontal width d2 is stretched to the width d1 shown by the broken lines to cover the front surface of the baseboard 6 and be folded back to a back surface side of the baseboard 6 and both ends thereof are stuck to sticking positions p and p of the back surface of the baseboard 6 corresponding to the width d1, respectively.

[0026]

The falling part 11 is formed by two parallel lines for bending 14a and 14b continuously from the triangle parts 8 of both ends of the leg part 9 of the baseboard 6. When having received a tensile force from the holding sheet 7, both falling parts 11 and 11 of the baseboard 6 are erected by the bottom part 10 being bent back upward along either or both lines for bending of the two lines for bending 14a and 14b that form the leg part 9 or the bottom part 10, usually, the line for bending 14b located outside, and a gap is formed between the holding sheet 7 and the board surface of the baseboard 6.

[0027]

In Fig. 1a, the direction of a line inside of a circle indicated by reference sign A shows a direction of a flute of the corrugated paper. The corrugated paper is set to be bent with a relatively small force in the direction along the flute,

but set to need a relatively large force in order to be bent in a direction orthogonal to the flute. The lines for bending including the two lines for bending 14a and 14b are, in a usual case, formed by pressing a knife edge to the board surface of the baseboard 6 and squeezing a part thereof linearly. A line for bending marked by pressing a knife edge to a front surface side is referred to as a "front squeeze line," and a line for bending marked on a back surface side is referred to as a "back squeeze line."

[0028]

Usually, the line for bending is formed by a "back squeeze line" across the rising part 12 in the direction of a flute, and for the falling part 11, crossing the direction of a flute, however, a tensile force of the holding sheet can be effectively made to act on the lines for bending 14b located outside in the falling parts 11 to erect both side edges of the baseboard when the lines for bending are formed by "front squeeze lines." In addition, the lines for bending are not limited to those formed by "back squeeze lines" or "front squeeze lines," and the lines for bending can also be formed by cuts made intermittently in the board surface, so called "lead squeeze lines" regardless of front/back.

[0029]

In Fig. 2a, the baseboard 6 has a stopper in the base portion of the rising part 12. The stopper is a combination of a dovetail-shaped support portion 17a for which a part of the board surface of the above-mentioned baseboard 6 is cut out and which is made to project from the end edge of the article mounting surface 6a toward the rising part 12 and a hollow trapezoidal latching groove 17b opened in the board surface of the rising part 12 in a manner communicating with an opening formed by cutting out the support portion 17a. In addition, the "dovetail-shaped support portion 17a" is a part that is made to project with a broader width from the end edge of the article mounting surface 6a toward the front, and the "hollow trapezoidal latching groove 17b" is an opening that communicates with an opening formed in the board surface of the baseboard 6 by cutting out the support portion 17a and is reduced in width toward its front.

[0030]

The support portion 17a sticks out as it is along an extension of a plane identical to the board surface of the baseboard 6 when the rising part 12 is folded back upward along the line for bending 13b in assembly of the packing implement, whereas when the rising part 12 is erected, it stands up on the basis of front end positions of the triangle parts 8 formed

at both side edges of the article mounting surface, and because the front end positions of the triangle parts 8 are lower than the board surface of the baseboard 6, the support portion 17a and the latching groove 17b are shifted in positional relationship therebetween, so that the support portion 17a is supported by the part of a hollow trapezoidal opening edge of the latching groove 17b with which the horizontal width of its dovetail coincides to hold the rising part 12 in an upward-facing posture. In the figures, reference sign 20 denotes a handle opened in the board surface of the rising part 12.

[0031]

Next, procedures for packing the article with use of the packing implement of the present invention will be explained. Usually, packing implements are carried into the packing work site in a state of packing implement flat boards being in their developed shapes stacked in a plurality of layers, and a worker takes out the flat boards in order from the top layer of the stack to perform packing work. Both falling parts 11 and 11 of the packing implement taken out in a flat board state of a developed shape are, as shown in Fig. 3a, erected upward by receiving tension of the holding sheet 7, and a gap is formed between the baseboard 6 and the holding sheet 7. The holding sheet 7 is lifted to a height necessary for placement of the

article with fingers to open the space between the baseboard 6 and the holding sheet 7 to reach the necessary height, and the article 1 is placed in the opened space between the baseboard 6 and the holding sheet 7 from a surface side of the rising part 12.

[0032]

Next, as shown in Fig. 3b, both falling parts 11 are bent downward along the lines for bending 14a and 14b connecting both openings 4 and 4 against the tension of the holding sheet 7. Thus, the leg part 9 and the bottom part 10 of the falling part 11 are squarely bent downward to the baseboard 6 as shown in Fig. 3c, the triangle parts 8 of both ends of the leg part 9 are projected to the sides, respectively, and further, the bottom part 10 is bent parallel with the baseboard 6, and the shape retaining part 16 is stacked on the back surface of the rising part 12. Because the openings 4 are opened at the tips of the triangle parts 8 of both ends of the leg part 9, the triangle parts 8 are absent at tip parts thereof, and projected to the sides in a flattened manner, respectively. The holding sheet 7 is pulled by the triangle parts 8 projected to both sides outward, respectively, and the falling part 11 to be tensed and squarely bent at the leg part 9.

[0033]

Next, in Fig. 3d, when a hand is inserted in the opening of a handle 20 of the rising part 12 to hold the board surface of the rising part 12 and the rising part 12 is erected upward from both end edges of the baseboard 6 along the line for bending 13a connecting both openings 4 and 4, the shape retaining part 16 is erected integrally with the rising part 12 while remaining in contact with the outer surface of the rising part 12, the erected posture of the shape retaining part 16 is kept as long as the rising part 12 is supported, and the leg part 9 of the falling part 11 is kept in a square state to the baseboard 6, and the bottom part 10 is kept parallel with the baseboard 6.

[0034]

The holding sheet 7 is bent at the down tilting part 5 of the base portion of the rising part 12, squarely bent at the leg part 9 of the falling part 11 side to be tensed, and press-fits the article 1 to the article mounting surface 6a of the baseboard 6 to hold the same at a fixed position. In addition, a repulsive force of the bent holding sheet 7 acts on both falling parts 11 and 11, and the repulsive force further acts on the rising parts 12 to attempt to return the same to horizontal postures, but because the support portions 17a of the stoppers are supported by both opening edges of the latching grooves 17b of the rising parts 12 even if hands are released

from both rising parts 12, both rising parts 12 and 12 do not return to horizontal postures, which thus does not open both falling parts 11 and 11 to cause shape loss. Lastly, both rising parts 12 and 12 of the packing implement 2 packing the article are supported in erected postures and accommodated into the outer casing 3 as shown in Fig. 4, the outer casing 3 is lidded and the packing is completed.

[0035]

The article 1 on the baseboard 6 is stably supported at the fixed position on the baseboard 6 by the pressing force of the holding sheet 7 being accommodated in the outer casing 3, and further, in the present invention, a buffer space corresponding to a rising height of the leg part 9 of the falling part 11 is formed at the lower surface of the baseboard 6, and the triangle parts 8 of both ends of both leg parts 9 and 9 are projected to the sides at the sides of the baseboard 6 respectively, however, the triangle parts 8 are absent at the front end parts thereof to have no tips as shown in Fig. 5 so that local stress never acts on an inner surface of the outer casing 3, and therefore, the outer casing 3 is not damaged.

[0036]

According to the present invention, the buffer spaces are also naturally formed above and below and at both sides

of the article mounting surface of the baseboard 6, on which the article is mounted, and these buffer spaces can absorb the impact applied to the outer casing 3 to effectively protect the article 1 from damage. Furthermore, when the holding sheet 7 ensures more than a certain strength, the article is stably held at the fixed position on the baseboard 6 without slipping and an influence of an impact from the outside can be eliminated even if the stored article is thin and heavy and receives the impact from the side of the outer casing 3.

[Embodiment 2]

[0037]

Fig. 6 shows an example where the shape retaining parts 16 in Embodiment 1 are used for casing bodies (or forms) of which upper surfaces are opened. In Fig. 6, lines for bending 14c and 14d are marked on the rising part 12 side, the lines for bending 14c and 14d extend from a junction point of lines for bending 14a and 14b, which demarcate the bottom part 10 and the leg part 9, respectively, to end edges of the rising part 12 and the shape retaining part 16 symmetrically to the lines for bending 14a and 14b, and the rising part 12 is further marked with, besides the above-mentioned two lines for bending 13a and 13b, a third line for bending 13c outside these lines. Accordingly, in this embodiment, the junction point of the lines

for bending 14a and 14b that demarcate triangle parts 8a of both ends of the above-mentioned leg part 9 is joined with the two lines for bending 14c and 14d extending from the opposite side as shown in Fig. 7 to form a triangle part 8b at a contrasting position to the above-mentioned triangle part 8a, and a polygonal opening 15 having its vertices at the lines for bending is further formed at that junction point. The opening 15 is therefore formed in this embodiment at a position where the four lines for bending 14a, 14b, 14c, and 14d join and the single line for bending 13a intersects, so that the opening shape is hexagonal.

[0038]

In this embodiment as well, the holding sheet 7 is stretched across the board surface of the long side of the baseboard with tension applied in the direction of both falling parts 11 and 11, and both falling parts 11 and 11 receive the tension of the holding sheet 7 to be erected upward to form a gap between the holding sheet 7 and the board surface of the baseboard 6, which is the same as the previous embodiment. Also, when packing an article, the article 1 is placed between the baseboard 6 and the holding sheet 7 by the same operation as in the previous embodiment as shown in Fig. 8a, and then, while the leg part 9 and the bottom part 10 are respectively formed by bending

along the lines for bending 14a and 14b, the rising part 12 and the shape retaining part 16 are respectively bent upward along the lines for bending 14c and 14d as shown in Fig. 8b, but in this embodiment, when a side wall 18 and an end surface 19 of the casing body are formed and the rising parts 12 are then erected, the casing bodies, of which each upper surface is opened, are formed at both ends of the packing implement, respectively, as shown in Fig. 8c.

[0039]

In addition, this embodiment also includes a stopper that is constructed by a combination of a dovetail-shaped support portion 17a for which a part of the board surface of the above-mentioned baseboard 6 is cut out and which is made to project from the end edge of the article mounting surface 6a toward the rising part 12 and a hollow trapezoidal latching groove 17b opened in the board surface of the rising part 12 in a manner communicating with an opening formed in the board surface of the baseboard 6 by cutting out the support portion 17a, and the support portion 17a that is a component of the stopper is supported by the latching groove 17b to hold the rising part 12 in an erected posture together with the shape retaining parts 16 when the rising part 12 and the shape retaining parts 16 are erected upward.

[0040]

Forexample, a wire cord or other components of the notebook computer can be stored in the casing body formed at the rising part 12. The casing body formed at the rising part 12 is not limited to storing components, and can also be used as a spacer to separate an upper packing implement when the packing implements of Embodiment 2 are stacked up more than two tiers and stored in the outer casing 3.

[0041]

In addition, in either embodiment, if the object is only to prevent an assembled packing implement from losing its shape, that object can be achieved by applying the above-mentioned stoppers to a packing implement for which the board surface of a baseboard is merely covered with a holding sheet, however, equipping a packing implement with a gap secured in advance between the baseboard and the holding sheet with stoppers allows meeting a demand of the home delivery business in which it is required to efficiently perform a series of work from packing an article and assembly of a packing implement after the packing to packing into an outer casing.

[Industrial Applicability]

[0042]

As a matter of course, the present invention is applicable

to not only a packing implement for transportation of electronics devices such as notebook computers but also a packing implement for transportation of fragile articles such as tableware. Additionally, a state of the packed article can be made see through from the outside with use of a transparent holding sheet. The packing implement for transportation of the present invention is extremely effective for transportation of goods, more particularly, as a packing implement for home delivery service.

[Reference Signs List]

[0043]

- 1 Goods
- 2 Packing implement
- 3 Outer casing
- 4 Polygonal opening
- 5 Down tilting part
- 6 Baseboard
- 6a Article mounting surface
- 7 Holding sheet
- 8, 8a, 8b Triangle part
- 9 Leg part
- 10 Bottom part
- 11 Falling part

- 12 Rising part
- 13a, 13b, 13c Line for bending
- 14, 14a, 14b, 14c, 14d Line for bending
- 15 Polygonal opening
- 16 Shape retaining part
- 17a Support portion
- 17b Latching groove
- 18 Side wall of casing body
- 19 End surface of casing body
- 20 Handle

[Document Title] Claims

[Claim 1]

A packing implement for goods transportation having a baseboard and a holding sheet, and storing an article to be housed in an outer casing, wherein:

the baseboard is a rectangular flat board, and has a rectangular article mounting surface secured in a center and rising parts and falling parts demarcated therearound;

the falling parts are parts that are folded back downward from both side edges of a long side of the article mounting surface;

the rising parts are parts that are erected upward from both end edges of a short side of the article mounting surface;

the holding sheet, by bending of the falling parts, covers a front surface of an article mounted on the article mounting surface of the baseboard and presses the article to the baseboard to hold it at a fixed position, and is stuck to a board surface of the baseboard with tension in a direction to narrow a distance between both side edges of the long side applied to the baseboard in a flat board state of the baseboard being in a developed shape; and

the falling parts at both sides of the long side applied with tension receive the tension of the holding sheet to be

erected upward, and form a gap between the holding sheet and the board surface of the baseboard.

[Claim 2]

The packing implement for goods transportation according to claim 1, wherein the holding sheet is stretched across and over a front surface of the baseboard of the long side with tension applied in a direction of both falling parts of the baseboard covering at least the article mounting surface and both falling parts of the baseboard, and

when a horizontal width of a sticking position of the holding sheet set in the baseboard of the long side is provided as d_1 , a holding sheet having a horizontal width d_2 (provided that $d_1 > d_2$) is stretched to the horizontal width d_1 or more than d_1 and stretched across the board surface of the baseboard.

[Claim 3]

The packing implement for goods transportation according to claim 1, wherein the falling part of the baseboard is constituted by a leg part and a bottom part of a front part thereof, the leg parts are parts that are respectively bent back downward from both side edges of the baseboard, and made orthogonal to the board surface of the baseboard,

the bottom part is a part that is bent parallel with the baseboard, a central part of the leg part has a broad width,

both ends are formed by junction of lines for bending to be triangular, and a sharp end of the triangle part is continued to the rising part,

the rising part is a part that is folded back upward from front ends of triangle parts formed at both side edges of the article mounting surface, and

both falling parts of the baseboard receive the tension of the holding sheet to be erected upward along a line for bending that forms the leg part or bottom part.

[Claim 4]

The packing implement for goods transportation according to claim 1, wherein the baseboard has a stopper in a base portion of the rising part, and

the stopper supports a part of the rising part to hold the same in an upwardly erected posture and hold the falling part in a downwardly folded-back posture when the rising part is folded back upward along a line for bending.

[Claim 5]

The packing implement for goods transportation according to claim 1, wherein the stopper is constituted by a dovetail-shaped support portion for which a part of a board surface of the article mounting surface is cut out and which is made to project from an end edge of the article mounting

surface toward the rising part and a hollow trapezoidal latching groove opened in a board surface of the rising part in a manner communicating with an opening formed by cutting out the support portion, and

the support portion keeps a posture of projecting from the end edge of the article mounting surface toward the rising part when the falling part is erected downward and the rising part is erected upward, and is latched at both side edges of the dovetail shape of the rising part folded back upward from front end positions of triangle parts formed at both side edges of the article mounting surface with an opening edge of the hollow trapezoidal latching groove to hold the rising part in an erected posture.

PACKING IMPLEMENT FOR GOODS TRANSPORTATION

Abstract

[Problem] To easily perform packing of an article to be stored.

[Solution] This is a combination of a baseboard 6 and a holding sheet 7. The baseboard 6 is a rectangular flat board, and has an article mounting surface 6a and rising parts 11 and falling parts 12 therearound. The falling parts 11 are parts that are folded back downward from both side edges of a long side of the article mounting surface, and the rising parts 12 are parts that are erected upward from both end edges of a short side of the article mounting surface. The holding sheet 7 covers the front surface of an article 1 mounted on the article mounting surface 6a of the baseboard 6 and presses the article 1 to the baseboard 6, and is stuck to a board surface of the baseboard 6 with tension in a direction to narrow the distance between both side edges of the long side applied to the baseboard 6, and the falling parts 11 at both sides of the long side applied with tension receive the tension of the holding sheet 7 to be erected upward, and form a gap between the holding sheet 7 and the board surface of the baseboard 6.

FIGURE 1

for goods transportation in, for example, Patent Document 1. In the packing implement described in Patent Document 1, the board surface of a rectangular baseboard 21 is overlaid with a flexible film serving as a holding sheet 22 as shown in Fig. 9, and both edges are adhered to the ends of the baseboard 21. An article M to be stored is placed between the baseboard 21 and the holding sheet 22 as shown in Fig. 10, falling parts 24 of both side edges of the baseboard 21, to which the holding sheet 22 is adhered, are folded back to a back surface side opposite to a mounting surface of the article along lines for bending 23 marked on the board surface of the baseboard 21 of both sides of the article M as shown in Fig. 11, and further, rising parts 25 of both ends of the board surface of the baseboard 21 are erected upward and the packing implement is housed in an outer casing 26 for transportation as shown in Fig. 12.

[0004]

Meanwhile, in the case of a packing implement having such a structure as shown in Fig. 9, both side edges of the baseboard 21 are folded back to the back side so that the flexible film used as the holding sheet 22 is tensed, and the article M to be stored can be stably supported in the outer casing 26 in a state of being press-fitted to the flexible film and being pressed to the board surface of the baseboard 21, but as clearly

shown by Fig. 12, the article M is simply mounted on an upper surface of the baseboard 12 on a lower surface of which folded-back edges of the falling parts 24 of both side edges are overlaid by folding, and therefore, there remains a problem that impact force is directly applied to the article M through the baseboard 21 from the bottom of the outer casing 26 and which causes a high risk of damage to the article in such a case that the outer casing 26 in which the article is stored is erroneously dropped during transportation or during other handling.

[0005]

The invention described in Patent Document 2 solves the above-described problem, and can naturally form a buffer space below a baseboard by only bending parts of a baseboard, across which a holding sheet is stretched, along predetermined lines for bending in order, and consequently can effectively protect an article from damage due to an impact from the outside. According to the packing implement of Patent Document 2, as shown in Figs. 13a and 13b, a buffering space is formed by leg parts 39 and bottom parts 40 of falling parts 41 on a lower surface of the baseboard 36 by placing an article 31 between the baseboard 36 and the holding sheet 37, bending the leg parts 39 of both falling parts 41 and 41 squarely downward from both

side edges of the baseboard 36, then folding back the bottom parts 40 horizontally, and further bending back rising parts 42 upward from both end edges of the baseboard 36 and assembling in a fixed form.

[0006]

Meanwhile, when packing an article using a packing implement having such a structure as described above for which a baseboard and a holding sheet are combined, vertically stacked packing implement flat boards in developed shapes are taken out one by one in order, the falling parts of both sides of the baseboard are folded back to a back surface side opposite to a mounting surface of the article, and further the rising parts are erected upward and the article is placed between the baseboard and the holding sheet for assembly into a three-dimensional shaped packing implement, however, even though squeeze lines for bending are marked thereon, because the packing implement maintains a flat board state before being bent where it is yet free from folds and the holding sheet is closely fitted to the board surface of the baseboard, a gap necessary for placement of the article is necessary between the baseboard and the holding sheet, which therefore requires an operation such as picking up the holding sheet from the board surface or lifting up both side edges of the baseboard to bring

up the holding sheet from the board surface of the baseboard to secure the gap necessary for placement of the article between the holding sheet and the baseboard, and this operation brings trouble, and this has been a cause for a decline in working efficiency of packing work.

[0007]

Also, according to the above-described packing implement for which a baseboard and a holding sheet are combined, a repulsive force of the holding sheet that is produced when both falling parts of the baseboard are folded back in a direction opposite to the mounting surface of an article can be suppressed by erecting both rising parts to the article mounting surface side of the baseboard, but the assembled packing implement loses its shape all at once as a result of the falling parts losing support when hands are released from both rising parts before it is stored in an outer casing, the baseboard returns to an original flat board, and therefore, reassembly is necessary.

[Citation List]

[Patent Literature]

[0008]

[Patent Document 1] US 5,678,695

[Patent Document 2] US 7,918,339

[Summary of Invention]

[Technical Problem]

[0009]

The largest problem to be solved is the point that, according to a packing implement for which a baseboard and a holding sheet are combined, because the holding sheet is closely fitted to the board surface of the baseboard, for placing an article between the holding sheet and the baseboard, it has been necessary to take a measure for forming a gap necessary for placing the article such as bringing up the holding sheet from the board surface of the baseboard, however, in addition to this problem, the following point also remains a problem to be solved, that is, when an article is stored in a packing implement and this is then assembled into a fixed form with the article held by the holding sheet, unless the three-dimensionally assembled packing implement is supported by hand, the packing implement assembled with effort loses its shape to return to its original flat board and needs to be assembled again.

[Solution to Problem]

[0010]

The present invention is characterized mainly in that, in a flat board state of a baseboard of a packing implement being in a developed shape, a holding sheet is separated in

advance from the board surface of the baseboard to secure therebetween a gap necessary for at least insertion of fingers in order to place an article, and is characterized by, even if hands are released from both rising parts before a packing implement built up into a fixed shape is stored in an outer casing, enabling keeping the built-up shape.

[Advantageous Effects of Invention]

[0011]

Because the holding sheet stretched across the falling parts of both sides of the baseboard therebetween is tensed and both side edges of the baseboard receive the tension to be erected upward, a gap is secured between the baseboard and the holding sheet, and an article to be stored can be easily placed between the baseboard and the holding sheet by further widening the gap with fingers, and because an operation for separating the holding sheet closely fitted to the board surface of the baseboard from the baseboard as conventionally performed is not required, the working efficiency of packing work can be increased. Also, when the rising parts are erected upward along lines for bending in assembly of a packing implement, the rising parts are naturally supported by stoppers so as not to lose its shape.

[0012]

Accordingly, according to the present invention, a storing operation of an article into a packing implement can be easily performed by forming a gap in advance between the holding sheet and the board surface of the baseboard in a flat board state of the baseboard being in a developed shape. Further, applying stoppers to the packing implement makes management of an assembly work of the packing implement easy, securing a gap between the baseboard and the holding sheet and using a packing implement applied with stoppers makes it possible to perform work for packing an article and assembling the packing implement with efficiency and makes it possible to carry out a line for packing of an article and assembly and packing work for accommodating an assembled packing implement into an outer casing on separate lines.

[Brief Description of Drawings]

[0013]

[Fig. 1] Fig. 1a is a developed view showing a packing implement of Embodiment 1 of the present invention, Fig. 1b is a cross sectional view taken along line B-B in Fig. 1a, and Fig. 1c is a view showing a difference in length of the horizontal width between a baseboard and a holding sheet.

[Fig. 2] Fig. 2a is a view showing the shape of an opening opened at a junction point of lines for bending marked on the

baseboard in Embodiment 1, Fig. 2b is a plan view showing a movement of a stopper when a rising part is erected, and Fig. 1c is a cross sectional view taken along line C-C in Fig. 2b.

[Fig. 3] Figs. 3a, 3b and 3d are views showing procedures for packing an article with use of the packing implement of the present invention, and Fig. 3c is a cross sectional view taken along line D-D in Fig. 3b.

[Fig. 4] Fig. 4 is a view showing a procedure for housing the packing implement with the article packed in an outer casing.

[Fig. 5] Fig. 5 shows a projecting state of the packing implement in the outer casing, which is a view of the packing implement viewed in the arrow direction from line E-E in Fig. 3d.

[Fig. 6] Fig. 6 is a developed view of a packing implement of Embodiment 2.

[Fig. 7] Fig. 7 is a view showing the shape of an opening opened at a junction point of lines for bending marked on a baseboard in Embodiment 2.

[Fig. 8] Figs. 8a to 8c are views showing procedures for packing an article with use of the packing implement of Embodiment 2.

[Fig. 9] Fig. 9 is a developed view showing an example of conventional packing implements for goods transportation.

[Fig. 10] Fig. 10 is a view showing a state of storing the article in the packing implement shown in Fig. 9.

[Fig. 11] Fig. 11 is a view showing a state of bending a part of a baseboard and tensing a holding sheet.

[Fig. 12] Fig. 12 is a view showing a state of storing the packing implement holding the article in a transportation casing.

[Fig. 13] Fig. 13a is a perspective view of the packing implement described in Patent Document 2 previously proposed, and Fig. 13b is a longitudinal sectional view of Fig. 13a.

[Description of Embodiments]

[0014]

The present invention has realized an object of easily performing an operation for placing an article between a holding sheet and a baseboard by forming a gap in advance between the holding sheet and the baseboard by applying tension in advance to the holding sheet in a flat board state of the baseboard being in a developed shape to make both side edges of the baseboard stand up, and has further taken a measure for preventing an assembled packing implement from losing its shape by providing stoppers for a packing implement.

[Embodiment 1]

[0015]

Hereinafter, embodiments of the present invention will be described according to figures. In Figs. 1a and 1b, the baseboard of a packing implement 2 is a rectangular corrugated board that secures a rectangular article mounting surface 6a to support an article in a central region, has falling parts 11 and 11 at both left and right side edges of the board surface of a long side of the article mounting surface 6a, has rising parts 12 and 12 at both front and rear end edges of the board surface of a short side thereof, and has shape retaining parts 16 at four corners of the baseboard 6. The falling parts 11 are parts of both side edges beyond the article mounting surface 6a, and the rising parts 12 are parts of both end edges beyond the article mounting surface 6a.

[0016]

The falling part 11 is a part that is bent downward further than the article mounting surface 6a and constituted by a leg part 9 and a bottom part 10 of a front part thereof, the leg part 9 is a part to be made orthogonal to the board surface of the article mounting surface 6a, and the bottom part 10 is a part for which the front part of the leg part 9 is bent to be arranged parallel with the article mounting surface 6a. A central part of the leg part 9 has a constant width, both ends thereof are each converged to one point to be triangular, and

a tip of an acute angle of the triangle part 8 is continued to the rising part 12.

[0017]

In the figures, reference signs 14a and 14b denote lines for bending that demarcate the leg part 9 and the bottom part 10 of the falling part 11, respectively, and reference sign 14 denotes a line for bending extending from a junction point of both lines for bending 14a and 14b to an end edge of the rising part 12. The triangle parts 8 of both ends of the leg part 9 are respectively formed by junction of the lines for bending 14a and 14b, and down tilting parts 5 projected to both sides are formed at base portions of the rising parts 12, respectively.

[0018]

The down tilting parts 5 are parts demarcated by lines for bending 13a and 13b drawn inside and outside in parallel with a fixed interval therebetween at both end edges of the article mounting surface 6a, and the rising parts 12 are front parts from the outer line for bending 13a to be folded back upward from the down tilting parts 5 formed at both end edges of the article mounting surface 6a.

[0019]

The shape retaining parts 16 are four corner parts of

the baseboard left between both end edges of the rising parts 12 and both end edges of the falling parts 11, respectively, are continued to the rising parts 12 and the falling parts 11, respectively, are folded back parallel with the rising parts 12 by bending the end edges of the falling parts 11 to a lower surface side of the article mounting surface 6a, respectively, and are erected to hold the falling parts in a bent state by folding back the rising parts 12 upward, respectively. In this embodiment, an outer end of the shape retaining part 16 is obliquely cut off, however, the shape thereof may remain rectangular.

[0020]

The rising part 12 is a part that is bent upward further than the article mounting surface 6a, and the line for bending 13a to form the rising part 12 is a linear line which passes a junction point of the lines for bending 14a and 14b that demarcate the triangle parts 8 of both ends of the leg part 9 and joins the line for bending 14 extending from the junction point of both lines for bending 14a and 14b to the end edge of the rising part 12. The triangle parts 8 of both ends of the leg part 9 become parts projecting to both sides at a fixed angle when the falling part 11 is folded back downward from the article mounting surface 6a and the rising parts 12 are

erected upward. At the junction point where the respective lines for bending intersect, a polygonal opening 4 having its vertices at the positions of the respective lines for bending is formed as shown in Fig. 2a for eliminating pointed vertices of the triangle parts 8 of both ends of the leg part 9.

[0021]

The holding sheet 7 covers the front surface of an article mounted on the article mounting surface 6a of the baseboard 6, and presses the article to the baseboard 6 to hold the same at a fixed position, however, in the present invention, the holding sheet 7 erects both falling parts 11 and 11 upward to form a gap between the holding sheet 7 and the board surface of the baseboard 6 by tension in a direction to narrow the distance between both falling parts 11 and 11 being applied to the holding sheet 7 in a flat board state of the baseboard 6 of the packing implement being in a developed shape. The gap does not always need to have a height necessary for placement of an article. It suffices that the holding sheet 7 is slightly up from the board surface of the baseboard to an extent that it can be picked up with fingers.

[0022]

The holding sheet 7 is a synthetic resin film excellent in elasticity such as polyurethane. The material is not limited

to polyurethane, but a stretchable sheet is employed so that an impact or pressure such as flexibility or plasticity can be absorbed or avoided. A transparent film made of thermal plastic resin is desirable for the holding sheet in terms of consideration for environment, recycling, sanitation, design characteristics, or the like. When an article to be stored is thin and heavy, there is a possibility that the article to which the impact is applied overcomes the pressing force of the holding sheet 7 to slip on the baseboard 6 and collide with the board surface of the rising part 12 of a side portion. In order to avoid the above situation, the holding sheet 7 is required to have more than a certain strength and physical property.

[0023]

The holding sheet 7 has pressed and fixed an article onto the article mounting surface 6a, and it thus suffices to cross the baseboard 6 of the long side and have both ends thereof stuck to the board surface of the baseboard 6 over the article mounting surface 6a, and the position to stick the same is not always limited to that in the case of folding back to a back surface side of the baseboard 6 and fixing to the back surface thereof. The holding sheet 7 may be stuck to the board surface of the falling parts 11 of a front surface side of the baseboard

6 over the board surface thereof.

[0024]

When the holding sheet 7 is folded back to a back surface side of the baseboard 6 and stuck to the back surface thereof, it is necessary to turn over the baseboard 6 when sticking, however, the holding sheet 7 is stuck to both side edges of the front surface of the long side of the baseboard 6 to facilitate sticking work, so that the packing implement can be improved in productivity. In addition, when fixing the holding sheet 7, besides adhering and fixing to a paper surface of the baseboard 6 by thermal welding fixation or an adhesive, this may be attached by sticking fixation etc., such as use of double-stick tape.

[0025]

For applying, to the holding sheet 7, in a flat board state in which the baseboard 6 is in a developed shape, tension in a direction to narrow the distance between both falling parts 11 and 11 of the baseboard 6 to erect both falling parts 11 and 11 upward, it suffices, when the horizontal width of a sticking position to the holding sheet 7 set in the baseboard 6 of the long side is provided as d_1 , to the range of the horizontal width d_1 of the sticking position to the holding sheet 7, to stretch the holding sheet 7 having a horizontal width d_2 (provided that $d_1 > d_2$) to a width of d_1 or more than d_1 and stick

both ends thereof to the baseboard 6. In Fig. 1c, the holding sheet 7 having the horizontal width d2 is stretched to the width d1 shown by the broken lines to cover the front surface of the baseboard 6 and be folded back to a back surface side of the baseboard 6 and both ends thereof are stuck to sticking positions p and p of the back surface of the baseboard 6 corresponding to the width d1, respectively.

[0026]

The falling part 11 is formed by two parallel lines for bending 14a and 14b continuously from the triangle parts 8 of both ends of the leg part 9 of the baseboard 6. When having received a tensile force from the holding sheet 7, both falling parts 11 and 11 of the baseboard 6 are erected by the bottom part 10 being bent back upward along either or both lines for bending of the two lines for bending 14a and 14b that form the leg part 9 or the bottom part 10, usually, the line for bending 14b located outside, and a gap is formed between the holding sheet 7 and the board surface of the baseboard 6.

[0027]

In Fig. 1a, the direction of a line inside of a circle indicated by reference sign A shows a direction of a flute of the corrugated paper. The corrugated paper is set to be bent with a relatively small force in the direction along the flute,

but set to need a relatively large force in order to be bent in a direction orthogonal to the flute. The lines for bending including the two lines for bending 14a and 14b are, in a usual case, formed by pressing a knife edge to the board surface of the baseboard 6 and squeezing a part thereof linearly. A line for bending marked by pressing a knife edge to a front surface side is referred to as a "front squeeze line," and a line for bending marked on a back surface side is referred to as a "back squeeze line."

[0028]

Usually, the line for bending is formed by a "back squeeze line" across the rising part 12 in the direction of a flute, and for the falling part 11, crossing the direction of a flute, however, a tensile force of the holding sheet can be effectively made to act on the lines for bending 14b located outside in the falling parts 11 to erect both side edges of the baseboard when the lines for bending are formed by "front squeeze lines." In addition, the lines for bending are not limited to those formed by "back squeeze lines" or "front squeeze lines," and the lines for bending can also be formed by cuts made intermittently in the board surface, so called "lead squeeze lines" regardless of front/back.

[0029]

In Fig. 2a, the baseboard 6 has a stopper in the base portion of the rising part 12. The stopper is a combination of a dovetail-shaped support portion 17a for which a part of the board surface of the above-mentioned baseboard 6 is cut out and which is made to project from the end edge of the article mounting surface 6a toward the rising part 12 and a hollow trapezoidal latching groove 17b opened in the board surface of the rising part 12 in a manner communicating with an opening formed by cutting out the support portion 17a. In addition, the "dovetail-shaped support portion 17a" is a part that is made to project with a broader width from the end edge of the article mounting surface 6a toward the front, and the "hollow trapezoidal latching groove 17b" is an opening that communicates with an opening formed in the board surface of the baseboard 6 by cutting out the support portion 17a and is reduced in width toward its front.

[0030]

The support portion 17a sticks out as it is along an extension of a plane identical to the board surface of the baseboard 6 when the rising part 12 is folded back upward along the line for bending 13b in assembly of the packing implement, whereas when the rising part 12 is erected, it stands up on the basis of front end positions of the triangle parts 8 formed

at both side edges of the article mounting surface, and because the front end positions of the triangle parts 8 are lower than the board surface of the baseboard 6, the support portion 17a and the latching groove 17b are shifted in positional relationship therebetween, so that the support portion 17a is supported by the part of a hollow trapezoidal opening edge of the latching groove 17b with which the horizontal width of its dovetail coincides to hold the rising part 12 in an upward-facing posture. In the figures, reference sign 20 denotes a handle opened in the board surface of the rising part 12.

[0031]

Next, procedures for packing the article with use of the packing implement of the present invention will be explained. Usually, packing implements are carried into the packing work site in a state of packing implement flat boards being in their developed shapes stacked in a plurality of layers, and a worker takes out the flat boards in order from the top layer of the stack to perform packing work. Both falling parts 11 and 11 of the packing implement taken out in a flat board state of a developed shape are, as shown in Fig. 3a, erected upward by receiving tension of the holding sheet 7, and a gap is formed between the baseboard 6 and the holding sheet 7. The holding sheet 7 is lifted to a height necessary for placement of the

article with fingers to open the space between the baseboard 6 and the holding sheet 7 to reach the necessary height, and the article 1 is placed in the opened space between the baseboard 6 and the holding sheet 7 from a surface side of the rising part 12.

[0032]

Next, as shown in Fig. 3b, both falling parts 11 are bent downward along the lines for bending 14a and 14b connecting both openings 4 and 4 against the tension of the holding sheet 7. Thus, the leg part 9 and the bottom part 10 of the falling part 11 are squarely bent downward to the baseboard 6 as shown in Fig. 3c, the triangle parts 8 of both ends of the leg part 9 are projected to the sides, respectively, and further, the bottom part 10 is bent parallel with the baseboard 6, and the shape retaining part 16 is stacked on the back surface of the rising part 12. Because the openings 4 are opened at the tips of the triangle parts 8 of both ends of the leg part 9, the triangle parts 8 are absent at tip parts thereof, and projected to the sides in a flattened manner, respectively. The holding sheet 7 is pulled by the triangle parts 8 projected to both sides outward, respectively, and the falling part 11 to be tensed and squarely bent at the leg part 9.

[0033]

Next, in Fig. 3d, when a hand is inserted in the opening of a handle 20 of the rising part 12 to hold the board surface of the rising part 12 and the rising part 12 is erected upward from both end edges of the baseboard 6 along the line for bending 13a connecting both openings 4 and 4, the shape retaining part 16 is erected integrally with the rising part 12 while remaining in contact with the outer surface of the rising part 12, the erected posture of the shape retaining part 16 is kept as long as the rising part 12 is supported, and the leg part 9 of the falling part 11 is kept in a square state to the baseboard 6, and the bottom part 10 is kept parallel with the baseboard 6.

[0034]

The holding sheet 7 is bent at the down tilting part 5 of the base portion of the rising part 12, squarely bent at the leg part 9 of the falling part 11 side to be tensed, and press-fits the article 1 to the article mounting surface 6a of the baseboard 6 to hold the same at a fixed position. In addition, a repulsive force of the bent holding sheet 7 acts on both falling parts 11 and 11, and the repulsive force further acts on the rising parts 12 to attempt to return the same to horizontal postures, but because the support portions 17a of the stoppers are supported by both opening edges of the latching grooves 17b of the rising parts 12 even if hands are released

from both rising parts 12, both rising parts 12 and 12 do not return to horizontal postures, which thus does not open both falling parts 11 and 11 to cause shape loss. Lastly, both rising parts 12 and 12 of the packing implement 2 packing the article are supported in erected postures and accommodated into the outer casing 3 as shown in Fig. 4, the outer casing 3 is lidded and the packing is completed.

[0035]

The article 1 on the baseboard 6 is stably supported at the fixed position on the baseboard 6 by the pressing force of the holding sheet 7 being accommodated in the outer casing 3, and further, in the present invention, a buffer space corresponding to a rising height of the leg part 9 of the falling part 11 is formed at the lower surface of the baseboard 6, and the triangle parts 8 of both ends of both leg parts 9 and 9 are projected to the sides at the sides of the baseboard 6 respectively, however, the triangle parts 8 are absent at the front end parts thereof to have no tips as shown in Fig. 5 so that local stress never acts on an inner surface of the outer casing 3, and therefore, the outer casing 3 is not damaged.

[0036]

According to the present invention, the buffer spaces are also naturally formed above and below and at both sides

of the article mounting surface of the baseboard 6, on which the article is mounted, and these buffer spaces can absorb the impact applied to the outer casing 3 to effectively protect the article 1 from damage. Furthermore, when the holding sheet 7 ensures more than a certain strength, the article is stably held at the fixed position on the baseboard 6 without slipping and an influence of an impact from the outside can be eliminated even if the stored article is thin and heavy and receives the impact from the side of the outer casing 3.

[Embodiment 2]

[0037]

Fig. 6 shows an example where the shape retaining parts 16 in Embodiment 1 are used for casing bodies (or forms) of which upper surfaces are opened. In Fig. 6, lines for bending 14c and 14d are marked on the rising part 12 side, the lines for bending 14c and 14d extend from a junction point of lines for bending 14a and 14b, which demarcate the bottom part 10 and the leg part 9, respectively, to end edges of the rising part 12 and the shape retaining part 16 symmetrically to the lines for bending 14a and 14b, and the rising part 12 is further marked with, besides the above-mentioned two lines for bending 13a and 13b, a third line for bending 13c outside these lines. Accordingly, in this embodiment, the junction point of the lines

for bending 14a and 14b that demarcate triangle parts 8a of both ends of the above-mentioned leg part 9 is joined with the two lines for bending 14c and 14d extending from the opposite side as shown in Fig. 7 to form a triangle part 8b at a contrasting position to the above-mentioned triangle part 8a, and a polygonal opening 15 having its vertices at the lines for bending is further formed at that junction point. The opening 15 is therefore formed in this embodiment at a position where the four lines for bending 14a, 14b, 14c, and 14d join and the single line for bending 13a intersects, so that the opening shape is hexagonal.

[0038]

In this embodiment as well, the holding sheet 7 is stretched across the board surface of the long side of the baseboard with tension applied in the direction of both falling parts 11 and 11, and both falling parts 11 and 11 receive the tension of the holding sheet 7 to be erected upward to form a gap between the holding sheet 7 and the board surface of the baseboard 6, which is the same as the previous embodiment. Also, when packing an article, the article 1 is placed between the baseboard 6 and the holding sheet 7 by the same operation as in the previous embodiment as shown in Fig. 8a, and then, while the leg part 9 and the bottom part 10 are respectively formed by bending

along the lines for bending 14a and 14b, the rising part 12 and the shape retaining part 16 are respectively bent upward along the lines for bending 14c and 14d as shown in Fig. 8b, but in this embodiment, when a side wall 18 and an end surface 19 of the casing body are formed and the rising parts 12 are then erected, the casing bodies, of which each upper surface is opened, are formed at both ends of the packing implement, respectively, as shown in Fig. 8c.

[0039]

In addition, this embodiment also includes a stopper that is constructed by a combination of a dovetail-shaped support portion 17a for which a part of the board surface of the above-mentioned baseboard 6 is cut out and which is made to project from the end edge of the article mounting surface 6a toward the rising part 12 and a hollow trapezoidal latching groove 17b opened in the board surface of the rising part 12 in a manner communicating with an opening formed in the board surface of the baseboard 6 by cutting out the support portion 17a, and the support portion 17a that is a component of the stopper is supported by the latching groove 17b to hold the rising part 12 in an erected posture together with the shape retaining parts 16 when the rising part 12 and the shape retaining parts 16 are erected upward.

[0040]

Forexample, a wire cord or other components of the notebook computer can be stored in the casing body formed at the rising part 12. The casing body formed at the rising part 12 is not limited to storing components, and can also be used as a spacer to separate an upper packing implement when the packing implements of Embodiment 2 are stacked up more than two tiers and stored in the outer casing 3.

[0041]

In addition, in either embodiment, if the object is only to prevent an assembled packing implement from losing its shape, that object can be achieved by applying the above-mentioned stoppers to a packing implement for which the board surface of a baseboard is merely covered with a holding sheet, however, equipping a packing implement with a gap secured in advance between the baseboard and the holding sheet with stoppers allows meeting a demand of the home delivery business in which it is required to efficiently perform a series of work from packing an article and assembly of a packing implement after the packing to packing into an outer casing.

[Industrial Applicability]

[0042]

As a matter of course, the present invention is applicable

to not only a packing implement for transportation of electronics devices such as notebook computers but also a packing implement for transportation of fragile articles such as tableware. Additionally, a state of the packed article can be made see through from the outside with use of a transparent holding sheet. The packing implement for transportation of the present invention is extremely effective for transportation of goods, more particularly, as a packing implement for home delivery service.

[Reference Signs List]

[0043]

- 1 Goods
- 2 Packing implement
- 3 Outer casing
- 4 Polygonal opening
- 5 Down tilting part
- 6 Baseboard
- 6a Article mounting surface
- 7 Holding sheet
- 8, 8a, 8b Triangle part
- 9 Leg part
- 10 Bottom part
- 11 Falling part

- 12 Rising part
- 13a, 13b, 13c Line for bending
- 14, 14a, 14b, 14c, 14d Line for bending
- 15 Polygonal opening
- 16 Shape retaining part
- 17a Support portion
- 17b Latching groove
- 18 Side wall of casing body
- 19 End surface of casing body
- 20 Handle

[Document Title] Claims

[Claim 1]

A packing implement for goods transportation having a baseboard and a holding sheet, and storing an article to be housed in an outer casing, wherein:

the baseboard is a rectangular flat board, and has a rectangular article mounting surface secured in a center and rising parts and falling parts demarcated therearound;

the falling parts are parts that are folded back downward from both side edges of a long side of the article mounting surface;

the rising parts are parts that are erected upward from both end edges of a short side of the article mounting surface;

the holding sheet, by bending of the falling parts, covers a front surface of an article mounted on the article mounting surface of the baseboard and presses the article to the baseboard to hold it at a fixed position, and is stuck to a board surface of the baseboard with tension in a direction to narrow a distance between both side edges of the long side applied to the baseboard in a flat board state of the baseboard being in a developed shape; and

the falling parts at both sides of the long side applied with tension receive the tension of the holding sheet to be

erected upward, and form a gap between the holding sheet and the board surface of the baseboard.

[Claim 2]

The packing implement for goods transportation according to claim 1, wherein the holding sheet is stretched across and over a front surface of the baseboard of the long side with tension applied in a direction of both falling parts of the baseboard covering at least the article mounting surface and both falling parts of the baseboard, and

when a horizontal width of a sticking position of the holding sheet set in the baseboard of the long side is provided as d_1 , a holding sheet having a horizontal width d_2 (provided that $d_1 > d_2$) is stretched to the horizontal width d_1 or more than d_1 and stretched across the board surface of the baseboard.

[Claim 3]

The packing implement for goods transportation according to claim 1, wherein the falling part of the baseboard is constituted by a leg part and a bottom part of a front part thereof, the leg parts are parts that are respectively bent back downward from both side edges of the baseboard, and made orthogonal to the board surface of the baseboard,

the bottom part is a part that is bent parallel with the baseboard, a central part of the leg part has a broad width,

both ends are formed by junction of lines for bending to be triangular, and a sharp end of the triangle part is continued to the rising part,

the rising part is a part that is folded back upward from front ends of triangle parts formed at both side edges of the article mounting surface, and

both falling parts of the baseboard receive the tension of the holding sheet to be erected upward along a line for bending that forms the leg part or bottom part.

[Claim 4]

The packing implement for goods transportation according to claim 1, wherein the baseboard has a stopper in a base portion of the rising part, and

the stopper supports a part of the rising part to hold the same in an upwardly erected posture and hold the falling part in a downwardly folded-back posture when the rising part is folded back upward along a line for bending.

[Claim 5]

The packing implement for goods transportation according to claim 1, wherein the stopper is constituted by a dovetail-shaped support portion for which a part of a board surface of the article mounting surface is cut out and which is made to project from an end edge of the article mounting

surface toward the rising part and a hollow trapezoidal latching groove opened in a board surface of the rising part in a manner communicating with an opening formed by cutting out the support portion, and

the support portion keeps a posture of projecting from the end edge of the article mounting surface toward the rising part when the falling part is erected downward and the rising part is erected upward, and is latched at both side edges of the dovetail shape of the rising part folded back upward from front end positions of triangle parts formed at both side edges of the article mounting surface with an opening edge of the hollow trapezoidal latching groove to hold the rising part in an erected posture.