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(54) **HEAT INSULATION CONTAINER**

(57) Provided is a heat insulation container which can be easily produced and assembled at a reduced cost, in which a heat insulation grip portion can be formed by a simple operation, in which a strip-shaped projection is maintained and a heat insulation effect can be reliably maintained even when the container is externally gripped, and which can be reliably gripped without being deformed. The heat insulation container (100) can be formed with the heat insulation grip portion by sliding a sleeve (120) on which a plurality of strips (121, 122) are formed by a plurality of slits (130), wherein at least one of the slits (130) comprises a bent portion (131) which defines a protrusion (127) and a depression (128) in each of the adjacent strips (121, 122).

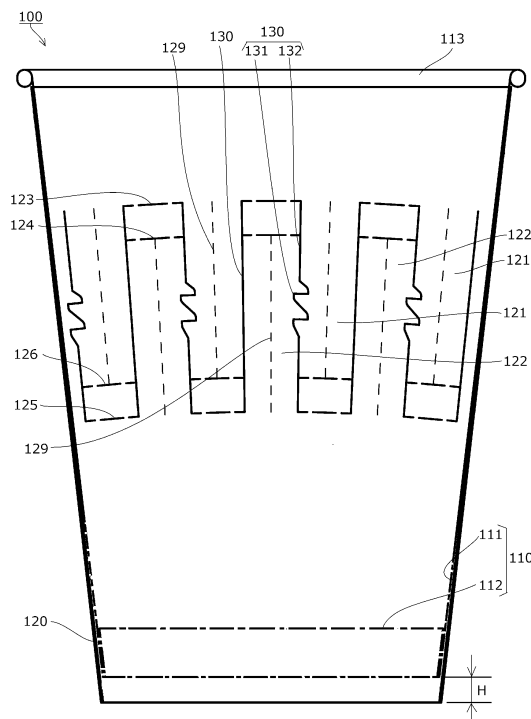


FIG. 1

Description

(entire text, all drawings)

TECHNICAL FIELD

[0001] The present invention relates to a heat insulating container suitable for a cup-shaped container, in particular, a cup-shaped container for packing instant food products that can be consumed after heating, in particular, instant food products that can be consumed after pouring boiling water or heating in a microwave oven.

BACKGROUND ART

[0002] The applicant of the present application has been granted Japanese Patent No. 4294579 (Patent Document 1) and Japanese Patent No. 4391908 (Patent Document 2) relating to a heat insulating container which has a container main body having a body wall and a bottom wall, and a sleeve fitted on the outer circumferential surface of the body wall of the container main body, and in which a plurality of slits defining a plurality of strips in an up-down direction in a fixed range in a height direction is provided in the sleeve, and the plurality of strips bend or curve, project at the outer circumferential portion and form a heat insulating grip portion when the portion of the sleeve that is above or below the strips is slid. In the heat insulating container of such a structure, which demonstrates the appropriate effect, the strips are deformed into the heat insulating grip portion by pushing the sleeve up or down by a human force.

[0003] The important feature of such a heat insulating container is that after the plurality of strips has bent or curved, projected at the outer circumferential portion, and formed the heat insulating grip portion, the protruding portions are separated from the container main body, thereby preventing heat from being transferred to the holding hand even when the protruding portions are gripped from the outside, and it is required that the plurality of strip does not return to the original shape.

[0004] Therefore, where the sliding state of the sleeve is maintained only by friction or gravity force, the plurality of strips can return to the original shape when gripped strongly, and the heat insulating effect can be reduced. Further, when the protruding portions of the strips are gripped, they can be deformed and thus can slip out of the hand.

[0005] For this reason, in well-known heat insulating containers such as described hereinabove, the above-mentioned problems are mitigated by forming the strips that are long in the height direction and irreversibly folding the strips during sliding, or by maintaining the protrusions as effectively as possible during gripping by using a complex fold pattern, or by adding a separate fixing member for maintaining the protrusions of the strips.

Patent Document 1: Japanese Patent No. 4294579
(entire text, all drawings)

Patent Document 2: Japanese Patent No. 4391908

[0006] However, a problem associated with such well-known heat insulating containers is that the heat insulating grip portion cannot be formed in a simple manner, for example, the scale of the operation of pushing the sleeve up or down is increased or an extra operation is required, because of the above-described structure and mechanism.

[0007] Another problem caused by the above-described structure and mechanism is that the production and assembling are time-consuming and costly.

DISCLOSURE OF THE INVENTION

[0008] Accordingly, it is an objective of the present invention to resolve the above-described problems inherent to the well-known heat insulating containers and to provide a heat insulating container which can be easily manufactured and assembled at a reduced cost, in which the heat insulating grip portion can be formed by a simple operation and the projection of the strips is maintained and the heat insulating effect is reliably maintained even when the strips are gripped from the outside, and which can be reliably gripped without being deformed.

[0009] The invention as in claim 1 resolves the above-mentioned problems by providing a heat insulating container that has a container main body having a body wall and a bottom wall, and also has a sleeve fitted on an outer circumferential surface of the body wall of the container main body, the sleeve being provided with a plurality of slits defining a plurality of strips in a vertical direction within a predetermined range in a height direction, and the plurality of strips bending or curving to project at an outer circumferential portion, thereby forming a heat insulating grip portion, as a result of sliding a portion of the sleeve that is above or below the strips, wherein the plurality of strips includes first strips each having an upper valley broken line at an upper end and an upper peak broken line close to an upper portion, and second strips each having a lower valley broken line at a lower end and a lower peak broken line close to a lower portion, the first strips and the second strips being arranged alternately and adjacently to each other, and at least one of the plurality of slits has a bent portion forming a protrusion and a depression in a portion between the upper peak broken line and the lower peak broken line of strips at both sides, and also has linear portions extending upward and downward from the bent portion.

[0010] The invention as in claim 2 resolves the above-mentioned problems by providing the heat insulating container according to claim 1, wherein the upper valley broken line and the lower valley broken line form an angle with respect to a horizontal line.

[0011] The invention as in claim 3 resolves the above-mentioned problems by providing the heat insulating container according to claim 1 or 2, wherein the linear portions of the plurality of slits have an angle with respect

to a vertical line.

[0012] The invention as in claim 4 resolves the above-mentioned problems by providing the heat insulating container according to claim 3, wherein the linear portions of the plurality of slits are bent at positions of the upper peak broken lines and the lower peak broken lines.

[0013] The invention as in claim 5 resolves the above-mentioned problems by providing the heat insulating container according to claim 1, wherein two or more of the protrusions of the strip are formed in succession in the vertical direction, and two or more of the depressions of the strip are formed in succession in the vertical direction.

[0014] The invention as in claim 6 resolves the above-mentioned problems by providing the heat insulating container according to claim 1, wherein the strip on at least one side of the slit having the bent portion has a notch extending in a horizontal direction from the depression.

[0015] The invention as in claim 7 resolves the above-mentioned problems by providing the heat insulating container according to claim 1, wherein the depression and the protrusion of the strip are formed in a sawtooth shape.

[0016] In the heat insulating container in accordance with the invention as in claim 1, at least one of the plurality of slits has a bent portion forming a protrusion and a depression in a portion between the upper peak broken line and the lower peak broken line of strips at both sides, and linear portions extending upward and downward from the bent portion. As a result, when the strips bend or curve, project at the outer circumferential portion, and form the heat insulating grip portion, the opposing protrusions of the strips at both sides slid in the up-down direction and are locked in a state of getting over each other. Therefore, the projected shape of the plurality of strips is maintained and the heat insulating effect is reliably maintained even when the strips are gripped from the outside, and the strips can be reliably gripped without being deformed.

[0017] Since the slit merely has a bent portion forming a protrusion and a depression in a portion between the upper peak broken line and the lower peak broken line of strips at both sides, the production and assembling are simple and the cost can be reduced.

[0018] Further, when the strips bend or curve, project at the outer circumferential portion, and form the heat insulating grip portion, the opposing protrusions of the strips at both sides slid in the up-down direction and are locked in a state of getting over each other, without a need for any other operation. Therefore, the heat insulating grip portion can be formed in a simple manner only by the operation of sliding a portion of the sleeve above or below the strips.

[0019] With the feature described in claim 2, the upper valley broken line and the lower valley broken line have an angle with respect to a horizontal line. As a result, when the strips bend or curve and project to the outside at the outer circumferential side, the strips project so that the height of the peak broken line differs in the width direction and the entire strip is inclined toward the adja-

cent strip. Therefore, with the settings ensuring the inclination at the side of the strip where the protrusion and depression are formed, the protrusions get close to each other, and because the strips are inclined, the opposing protrusions are locked at a larger angle.

[0020] In such a case, the locking force increases, the projection shape of the strips is maintained and the heat insulating effect is reliably maintained even when the sleeve thickness is small, and the strips can be reliably gripped without being deformed.

[0021] Further, since the sleeve thickness can be decreased, the cost can be further reduced, and the operation of sliding the sleeve, bending or curving the strips and projecting the strips at the outer circumferential side can be further facilitated.

[0022] With the feature described in claim 3, the linear portions of the plurality of slits have an angle with respect to a vertical line. As a result, the side surfaces of the adjacent strips get close to each other or separate from each other when the strips bend or curve and project at the outer circumferential side.

[0023] Therefore, as a result of arranging the slits that have a bent portion on the sides of the strips that are close to each other, the opposing protrusions get closer to each other and the locking force further increases.

[0024] Further, by also sliding in the rotation direction when sliding the portion of the sleeve above or below the strips, it is possible to disperse the deformation stresses caused by inclined projection of the strips through the entire body, without causing local concentration of the stresses. Therefore, the operation of sliding the sleeve is facilitated and the heat insulating grip portion can be formed in a simple manner.

[0025] In addition, as a result of dispersing the deformation stresses, it is possible to reduce the sleeve strength. This is one more reason why the operation of sliding the sleeve can be facilitated and the production cost can be further decreased.

[0026] With the feature described in claim 4, the linear portions of the plurality of slits are bent at positions of the upper peak broken lines and the lower peak broken lines. As a result, the amount of inclination when the strips project with inclination, or the degree to which the side surfaces of the adjacent strips get close to each other or separate from each other can be more finely adjusted by the bending angle. Therefore, the degree of freedom in designing the material or thickness of the sleeve and the shape of the strips according to the necessary form or application of the container is increased.

[0027] With the feature described in claim 5, two or more of the protrusions of the strip are formed in succession in the vertical direction, and two or more of the depressions of the strip are formed in succession in the up-down direction. As a result, when the opposing protrusions that should engage with each other gradually shift and reach the engagement position in a state of overlapping in the sleeve thickness direction from the start of projection of the strips, although the strips are inclined

or the side surfaces of the adjacent strips get close to each other, the overlapping is canceled or greatly reduced by the next depression (the opposing side is a protrusion). Therefore, the edges of the protrusions can be easily locked.

[0028] With the feature described in claim 6, the strip on at least one side of the slit having the bent portion has a notch extending in the horizontal direction from the depression. As a consequence, the strip can be easily deformed in the sleeve thickness direction above and below the notch. Therefore, as a result of the protrusions and depressions of the opposing strips deforming and shifting in the thickness direction, the strips can easily move in the up-down direction and the projection of the strips can be smoothly started.

[0029] Further, even though the protrusion of a strip still overlaps the depression of the opposing strip in the sleeve thickens direction when the side surfaces of the adjacent strips get close to each other and the sliding is completed, the protrusion can pass through the depression as a result of the deformation of the notch, and the opposing protrusions can be locked to each other.

[0030] Therefore, the degree of freedom in designing the angle of the valley broken lines, the angle of the slit with respect to the vertical direction and shape of the bent portion can be further increased and the position or angle at which the protrusions of the adjacent strips are locked can be optimized.

[0031] With the feature described in claim 7, the depression and the protrusion of the strip are formed in a sawtooth shape. Therefore, as a result of making horizontal edges on the locking sides of the strip protrusions and inclining the edges at the sides that move relative to each other when the projection is started, the projection of the strips is smoothly started and the locking force of the opposing protrusions when the projection is completed is increased.

BRIEF DESCRIPTION OF THE DRAWINGS

[0032]

FIG. 1 is a side view of the heat insulating container of the first embodiment of the present invention.

FIG. 2 is an expanded view of the sleeve shown in FIG. 1.

FIG. 3 is a partially enlarged view of the configuration shown in FIG. 2.

FIG. 4 is a side view taken during sliding of the heat insulating container shown in FIG. 1.

FIG. 5 is a partially enlarged view of the configuration shown in FIG. 4.

FIG. 6 is a side view taken when the sliding of the heat insulating container shown in FIG. 1 is ended.

FIG. 7 is a partially enlarged view of the configuration shown in FIG. 6.

FIG. 8 is a side view of the heat insulating container of the second embodiment of the present invention.

FIG. 9 is an expanded view of the sleeve shown in FIG. 8.

FIG. 10 is a partially enlarged view of the configuration shown in FIG. 9.

FIG. 11 is a side view taken during sliding of the heat insulating container shown in FIG. 6.

FIG. 12 is a partially enlarged view of the configuration shown in FIG. 11.

FIG. 13 is a side view taken when the sliding of the heat insulating container shown in FIG. 8 is ended.

FIG. 14 is a partially enlarged view of the configuration shown in FIG. 13.

FIG. 15 is a partially enlarged view of the sleeve of the heat insulating container of the third embodiment of the present invention.

EXPLANATION OF REFERENCE NUMERALS

[0033]

100, 200	heat insulating containers
110, 210	container main bodies
111, 211	body walls
113, 213	openings
112, 212	bottom walls
120, 220	sleeves
121, 221, 321	first strips
122, 222, 322	second strips
123, 223, 323	upper valley broken lines
124, 224, 324	upper peak broken lines
125, 225, 325	lower valley broken lines
126, 226, 326	lower peak broken lines
127, 227, 327	protrusions
128, 228, 328	depressions
129, 229, 329	central broken lines
130, 230, 330	slits
131, 231, 331	bent portions
132, 232, 332	linear portions
233, 333	notches
334	vertical portion

BEST MODE FOR CARRYING OUT THE INVENTION

(EMBODIMENT 1)

[0034] The configuration and operation of a heat insulating container 100 of the first embodiment of the present invention will be explained below with reference to the appended drawings.

[0035] FIG. 1 shows schematically the side view of the heat insulating container 100 of the first embodiment of the present invention prior to use. The heat insulating container has a container main body 110 having a body wall 111 and a bottom wall 112, and a sleeve 120 fitted on the outer circumferential surface of the body wall 111 of the container main body 110.

[0036] The sleeve 120 is fixed to the outer circumferential surface of the body wall 111 of the container main

body 110 only at the opening 113 side at the top of the container. The sleeve is provided with a plurality of slits 130 defining a plurality of strips 121, 122 in the up-down direction within a fixed range in the height direction.

[0037] The lowermost end of the sleeve 120 projects by a height H with respect to the lowermost end of the container main body 110 and is configured to be slidable upward through this height, while the strips 121, 122 are bent or curved.

[0038] FIG. 2 is an expanded view of the sleeve 120. FIG. 3 is a partially enlarged view of the strips 121, 122. As shown in those figures, a plurality of strips 121, 122 includes first strips 121 that have a lower valley broken line 125 at the lower end and a lower peak broken line 126 close to the lower portion, and second strips 122 that have an upper valley broken line 123 at the upper end and an upper peak broken line 124 close to the upper portion, the first strips and the second strips being disposed alternately and adjacently to each other.

[0039] Further, no broken lines are provided at the uppermost portion of the first strip 121 and the lowermost portion of the second strip 122, and a central broken line 129 is provided in the up-down direction above the lower peak broken line 126 of the first strip 121 and below the upper peak broken line 124 of the second strip 122 to increase the strength during bending.

[0040] In the plurality of slits 130, those having a bent portion 131 and linear portions 132 extending upward and downward from the bent portion 131 are arranged alternately with those having only a linear portion extending in the up-down direction.

[0041] The bent portion 131 of the slit 130 forms a protrusion 127 and a depression 128 in the intermediate portion of the upper peak broken line 124 and the lower peak broken line 126 of the strips 121, 122 at both sides.

[0042] In the present embodiment, the slit 130 sandwiched by the left side of the first strip 121 and the right side of the second strip 122, as viewed from the front surface of the formed container, is taken as the slit 130 having the bent portion 131.

[0043] The protrusion 127 and the depression 128 formed in the bent portion 131 are formed alternately, each being taken twice, in the up-down direction from the upper side of the second strip 122, as shown in FIG. 3, that is, in the order of the protrusion 127 (depression 128 of the first strip 121), the depression 128 (protrusion 127 of the first strip 121), the protrusion 127 (depression 128 of the first strip 121), and the depression 128 (protrusion 127 of the first strip 121).

[0044] In the two protrusions 127 and depressions 128, the size from the line connecting the linear portions 132 extending in the up-down direction of the slit 130 is set to the same height and depth, and the height T of the protrusion 127 of the second strip 122 (depth of the depression 128 of the first strip 121) is set to be about 1.5 times the depth S of the depression 128 of the second strip 122 (height of the protrusion 127 of the first strip 121).

[0045] The in-use operation of the heat insulating container 100 configured in the above-described manner is explained below.

[0046] FIGS. 4, 5, and 6 illustrate the state after the sleeve 120 has been slid upward from the state prior to use shown in FIG. 1. Thus, FIG. 4 illustrates a state after the sleeve has been slid through 1/3H, FIG. 5 is an enlarged view of part of FIG. 4, and FIG. 6 illustrates a state after the sleeve has been slid through almost the entire H.

[0047] In the actual sliding operation, the lower end of the sleeve 120 may be placed on a horizontal plane, and the sleeve 120 may be slid upward from the strips 121, 122, or the container main body 110 may be pushed down.

[0048] Where the sleeve 120 is slid upward from the initial state, in the first strip 121, the lower valley broken line 125 and the lower peak broken line 126 are bent and the upper end portion curves and slightly projects in the outer circumferential direction, as shown in FIGS. 4 and 5.

[0049] In the second strip 122, the upper valley broken line 123 and the upper peak broken line 124 are bent and the lower end portion curves and slightly projects in the outer circumferential direction.

[0050] In this case, the side of the second strip 122 below the upper peak broken line 124 projects in the outer circumferential direction while sliding upward together with the sleeve 120 that slides upward.

[0051] The side of the first strip 121 below the lower peak broken line 126 projects, without sliding, in the outer circumferential direction.

[0052] In this case, as shown in FIGS. 4 and 5, protrusions 127L1, 127L2 of the left portion of the first strip 121 and protrusions 127R1, 127R2 of the right portion of the second strip 122 shift in the sleeve thickness direction of the sleeve 120 and move relative to each other in the up-down direction, while overlapping the opposing strip.

[0053] The first strip 121, is provided with a first depression 128L1, the first protrusion 127L1, a second depression 128L2, and the second protrusion 127L2 in the order of description from above, and the second strip 122 is provided with the first protrusion 127R1, a first depression 128R1, the second protrusion 127R2, and a second depression 128R2 in the order of description from above.

[0054] Those protrusions and depression are formed by the bent portion 131 of one slit 130, and the first depression 128L1 and the first protrusion 127R1, the first protrusion 127L1 and the first depression 128R1, the second depression 128L2 and the second protrusion 127R2, and the second protrusion 127L2 and the second depression 128R2 have absolutely identical contours in the width direction.

[0055] As a result of the sleeve 120 sliding upward from the initial state, the first protrusion 127R1 of the second strip 122 and the upper linear portion 132 of the slit 130 of the first strip 121, the second protrusion 127R2 of the second strip 122 and the first protrusion 127L1 of the first strip 121, and the second protrusion 127L2 of the first

strip 121 and the lower linear portion 132 of the slit 130 of the second strip 122 move relative to each other in the thickness direction of the sleeve 120, while overlapping in the up-down direction.

[0056] Further, as shown in the figures, the protrusion 127 and depression 128 of the two strips 121, 122 are formed in a sawtooth shape such that the sliding and overlapping direction thereof is at an angle with respect to the horizontal line, whereas the reverse direction is substantially horizontal. Therefore, when the sliding is started, the protrusions 127 can move easily and slide smoothly.

[0057] In the figures, all of the constituent portions of the second strip 122 are shown to be at the top, but the location thereof is determined by various conditions such as the degree of force application and is not necessarily as depicted in the figures.

[0058] Where the sliding is substantially completed, as shown in FIGS. 6 and 7, the first protrusion 127L1 of the first strip 121 reaches the second depression 128R2 of the second strip 122, the second protrusion 127R2 of the second strip 122 reaches the first depression 128L1 of the first strip 121, the overlapping in the sleeve thickness direction is canceled, and the substantially horizontal end portions of the first protrusion 127L1 of the first strip 121 and the second protrusion 127R2 of the second strip 122 are locked.

[0059] At this time, since a certain gap appears between the adjacent portions of the first strip 121 and the second strip 122 projecting in the outer circumferential direction, the first protrusion 127L1 of the first strip 121 and the second protrusion 127R2 of the second strip 122 have a certain margin in the horizontal direction with the second depression 128R2 of the second strip 122 and the first depression 128L1 of the first strip 121, respectively, the overlapping thereof is canceled, and the first protrusion 127L1 of the first strip 121 and the second protrusion 127R2 of the second strip 122 are smoothly locked.

[0060] Further, in the present embodiment, since 12 first strips 121 and 12 second strips 122 are provided, the first protrusions 127L1 of the first strips 121 and the second protrusions 127R2 of the second strips 122 intersect at an angle of about 15°C and are reliably locked.

[0061] Since the first protrusion 127L1 of the first strip 121 and the second protrusion 127R2 of the second strip 122 are thus locked as shown in FIG. 6, it is possible to maintain the state in which the sleeve 120 has slid upward and the first strip 121 and the second strip 122 project outward, with the peak broken lines 124, 126 thereof serving as apexes.

[0062] Further, in the present embodiment, the slits 130 having the bent portion 131 are provided alternately in the circumferential direction, but fewer such slits may be provided, for example, every third slit may be provided with the bent portion, or all of the slits may be slits 130 having the bent portion 131, provided that the state in which the sleeve 120 has slid upward and the first strip

121 and the second strip 122 project outward can be maintained.

(EMBODIMENT 2)

[0063] The configuration and operation of a heat insulating container 200 of the second embodiment of the present invention is explained below with reference to the appended drawings.

[0064] FIGS. 8 to 14 correspond to FIGS. 1 to 7 relating to the first embodiment of the present invention, and the hundreds place in the reference numerals of components in the first embodiment is taken as two in the second embodiment.

[0065] Similarly to the first embodiment, as shown in FIG. 8, the heat insulating container 200 of the second embodiment of the present embodiment has a container main body 210 having a body wall 211 and a bottom wall 212, and a sleeve 220 fitted on the outer circumferential surface of the body wall 211 of the container main body 210.

[0066] The sleeve 220 is fixed to the outer circumferential surface of the body wall 211 of the container main body 210 only at the opening 213 side at the top of the container. The sleeve is provided with a plurality of slits 230 defining a plurality of strips 221, 222 in the up-down direction within a fixed range in the height direction.

[0067] The lowermost end of the sleeve 220 projects by a height H with respect to the lowermost end of the container main body 210 and is configured to be slidable upward through this height, while the strips 221, 222 are bent or curved.

[0068] As shown in FIGS. 9 and 10, a plurality of strips 221, 222 includes first strips 221 that have a lower valley broken line 225 at the lower end and a lower peak broken line 226 close to the lower portion, and second strips 222 that have an upper valley broken line 223 at the upper end and an upper peak broken line 224 close to the upper portion, the first strips and the second strips being disposed alternately and adjacently to each other.

[0069] Further, no broken lines are provided at the uppermost portion of the first strip 221 and the lowermost portion of the second strip 222, and a central broken line 229 is provided in the up-down direction above the lower peak broken line 226 of the first strip 221 and below the upper peak broken line 224 of the second strip 222 to increase the strength during bending.

[0070] The upper valley broken line 223, the upper peak broken line 224, the lower valley broken line 225, and the lower peak broken line 226 are inclined at an angle α° with respect to the horizontal line.

[0071] In the plurality of slits 230, those having a bent portion 231 and linear portions 232 extending upward and downward from the bent portion 231 are arranged alternately with those having only a linear portion extending in the up-down direction, and the slits are inclined such that the lower ends are shifted almost by a pitch P of the strips 221, 222 with respect to the upper ends.

[0072] The bent portion 231 of the slit 230 forms a protrusion 227 and a depression 228 in the intermediate portion of the upper peak broken line 224 and the lower peak broken line 226 of the strips 221, 222 at both sides.

[0073] In the present embodiment, the slit 230 sandwiched by the left side of the first strip 221 and the right side of the second strip 222, as viewed from the front surface of the formed container, is taken as the slit 230 having the bent portion 231.

[0074] Since the upper valley broken line 223, the upper peak broken line 224, the lower valley broken line 225, and the lower peak broken line 226 are inclined at the same angle α° with respect to the horizontal line, the alternate arrangement is such that the slits 230 having the bent portion 231 are short and those constituted only by the straight line are long.

[0075] The protrusion 227 and the depression 228 formed in the bent portion 231 are formed alternately, each being taken twice, in the up-down direction from the upper side of the second strip 222, as shown in FIG. 10, that is, in the order of the protrusion 227 (depression 228 of the first strip 221), the depression 228 (protrusion 227 of the first strip 221), the protrusion 227 (depression 228 of the first strip 221), and the depression 228 (protrusion 227 of the first strip 221).

[0076] In the two protrusions 227 and depressions 228 on the second strip 222 side, the size from the line connecting the linear portions 232 extending in the up-down direction of the slit 230 is set to the same height and depth T, and in the two protrusions 227 and depressions 228 on the first strip 221 side, the size from the line connecting the linear portions 232 extending in the up-down direction of the slit 230 is set to S on the upper side and to S2, which is larger than the S, on the lower side.

[0077] In the present embodiment, T and S are equal to each other, and S2 is set to 2.5 times the S.

[0078] Additionally provided is an L-shaped notch 233 that extends horizontally from the apex of the protrusion 227 (depression 228 of the first strip 221) on the upper side of the second strip 222 towards the first strip 221 side and then further extends upward from the distal end of the horizontal extension.

[0079] In the present embodiment, the notch 233 extends horizontally through a distance K from the line connecting the linear portions 232 of the slit 230 that extend in the up-down direction, and the K is set to be about twice the T.

[0080] The dimensional relationship of those T, S, S2, and K is set optimally, as appropriate, with consideration for the inclination of the upper valley broken line 223, the upper peak broken line 224, the lower valley broken line 225, and the lower peak broken line 226 with respect to the horizontal line, and the relative proximity of the first strip 221 and the second strip 222 determined by the inclination of the slit 230.

[0081] The in-use operation of the heat insulating container 200 configured in the above-described manner is explained below.

[0082] Where the sleeve 220 is slid upward from the initial state, in the first strip 221, the lower valley broken line 225 and the lower peak broken line 226 are bent and the upper end portion curves and slightly projects in the outer circumferential direction, as shown in FIGS. 11 and 12.

[0083] In the second strip 222, the upper valley broken line 223 and the upper peak broken line 224 are bent and the lower end portion curves and slightly projects in the outer circumferential direction.

[0084] In this case, the side of the second strip 222 below the upper peak broken line 224 projects in the outer circumferential direction while sliding upward together with the sleeve 220 that slides upward.

[0085] The side of the first strip 221 above the lower peak broken line 226 projects, without sliding, in the outer circumferential direction.

[0086] In this case, as shown in FIGS. 11 and 12, protrusions 227L1, 227L2 of the left portion of the first strip 221 and protrusions 227R1, 227R2 of the right portion of the second strip 222 shift in the sleeve thickness direction of the sleeve 220 and move relative to each other in the up-down direction, while overlapping the opposing strip.

[0087] Since the upper valley broken line 223, the upper peak broken line 224, the lower valley broken line 225, and the lower peak broken line 226 are inclined at the same angle α° with respect to the horizontal line, the bent portion 231 sides of the upper peak broken line 224 and the lower peak broken line 226 project higher and tilt in the direction of getting closer to each other.

[0088] Further, since the slits 230 are tilted such that the lower ends are shifted almost by a pitch P of the strips 221, 222 with respect to the upper ends, the sides of the first strip 221 and the second strip 222 where the protrusions and depressions are formed get closer to each other in the process of sliding.

[0089] The first strip 221, is provided with a first depression 228L1, the first protrusion 227L1, a second depression 228L2, and the second protrusion 227L2 in the order of description from above, and the second strip 222 is provided with the first protrusion 227R1, a first depression 228R1, the second protrusion 227R2, and a second depression 228R2 in the order of description from above.

[0090] Those protrusions and depressions are formed by the bent portion 231 of one slit 230, and the first depression 228L1 and the first protrusion 227R1, the first protrusion 227L1 and the first depression 228R1, the second depression 228L2 and the second protrusion 227R2, and the second protrusion 227L2 and the second depression 228R2 have absolutely identical contours in the width direction.

[0091] As a result of the sleeve 220 sliding upward from the initial state, the first protrusion 227R1 of the second strip 222, the second protrusion 227R2 of the second strip 222, and the second protrusion 227L2 of the first strip 221 move relative to each other in the thickness direction of the sleeve 220, while overlapping above the

upper linear portion 232 of the slit 230 of the first strip 221, below the first protrusion 227L1 of the first strip 221, and above the lower linear portion 232 of the slit 230 of the second strip 222, respectively.

[0092] Further, as shown in the figures, the protrusions 227 and depressions 228 of the two strips 221, 222 are formed in a sawtooth shape such that the sliding and overlapping direction thereof is at an angle with respect to the horizontal line, whereas the reverse direction is substantially horizontal. Therefore, when the sliding is started, the protrusions 227 can move easily and slide smoothly.

[0093] Where the sliding is substantially completed, as shown in FIGS. 13 and 14, the first protrusion 227L1 of the first strip 221 reaches the second depression 228R2 of the second strip 222, the second protrusion 227R2 of the second strip 222 reaches first depression 228L1 of the first strip 221, the overlapping in the thickness direction is canceled, and the substantially horizontal end portions of the first protrusion 227L1 of the first strip 221 and the second protrusion 227R2 of the second strip 222 are locked.

[0094] At this time, the adjacent portions of the first strip 221 and the second strip 222 projecting in the outer circumferential direction get closer to each other (can also overlap) due to the inclination of the upper peak broken line 224, the lower valley broken line 225, and the lower peak broken line 226 with respect to the horizontal direction, or the inclination of the slits 230. Therefore, it is possible that the overlapping of the first protrusion 227L1 of the first strip 221 and the second protrusion 227R2 of the second strip 222 on the second depression 228R2 of the second strip 222 and the first depression 228L1 of the first strip 221 will not be canceled.

[0095] However, the overlapping is smoothly canceled, and the first protrusion 227L1 of the first strip 221 and the second protrusion 227R2 of the second strip 222 are smoothly locked by setting, as appropriate, the size of the abovementioned S2 and the length K of the notch 233.

[0096] Further, in the present embodiment, since 12 first strips 221 and 12 second strips 222 are provided, the first protrusions 227L1 of the first strips 221 and the second protrusions 227R2 of the second strips 222 intersect at an angle of about 15° in a flat state, and the addition of the angle caused by the protrusion of the first strip 221 and the second strip 222 above the side where protrusion 227 and depression 228 are formed enables more reliable locking.

[0097] Since the first protrusion 227L1 of the first strip 221 and the second protrusion 227R2 of the second strip 222 are thus locked as shown in FIG. 13, it is possible to maintain the state in which the sleeve 220 has slid upward and the first strip 221 and the second strip 222 project outward, with the peak broken lines 224, 226 thereof serving as apexes.

[0098] Further, in the present embodiment, the slits 230 having the bent portion 231 are provided alternately

in the circumferential direction, but fewer such slits may be provided, for example, every third slit may have the bent portion, provided that the state in which the sleeve 220 has slid upward and the first strip 221 and the second strip 222 project outward can be maintained.

(EMBODIMENT 3)

[0099] The configuration of a heat insulating container 300 of the third embodiment of the present invention is explained below. FIG. 15 corresponds to FIG. 10 relating to the second embodiment of the present invention, and the hundreds place in the reference numerals of components corresponding to the second embodiment is taken as 3. The heat insulating container of the third embodiment of the present invention is the same as that of the second embodiment, except for the shape of a slit 330 shown in FIG.

[0100] 15. Therefore, only the features different from those of the second embodiment are explained below.

[0101] As shown in FIG. 15, a plurality of strips 321, 322 includes first strips 321 that have a lower valley broken line 325 at the lower end and a lower peak broken line 326 close to the lower portion, and second strips 322 that have an upper valley broken line 323 at the upper end and an upper peak broken line 324 close to the upper portion, the first strips and the second strips being disposed alternately and adjacently to each other.

[0102] Further, no broken lines are provided at the uppermost portion of the first strip 321 and the lowermost portion of the second strip 322, and a central broken line 329 is provided in the up-down direction above the lower peak broken line 326 of the first strip 321 and below the upper peak broken line 324 of the second strip 322 to increase the strength during bending.

[0103] The upper valley broken line 323, the upper peak broken line 324, the lower valley broken line 325, and the lower peak broken line 326 are inclined at an angle α° with respect to the horizontal line.

[0104] In the plurality of slits 330, those having a bent portion 331, linear portions 332 extending upward and downward from the bent portion 331 and inclined with respect to the vertical line, and vertical sections 334 extending upward from the upper peak broken line 324 and downward from the lower valley broken line 325 are arranged alternately with those in which the portion between the upper and lower vertical portions 334 is constituted only by an inclined straight line.

[0105] Thus, the difference between the slit 330 of the present embodiment and the slit 230 of the second embodiment is that the straight linear portion in the former slit is bent at the positions of the upper peak broken line 324 and the lower peak broken line 326.

[0106] Because of such bending, the amount of inclination when the strips 321, 322 project with inclination, or the degree to which the side surfaces of the adjacent strips 321, 322 get close to each other or separate from each other can be more finely adjusted by the bending

angle. Therefore, the degree of freedom in designing the material or thickness of the sleeve and the shape of the strips according to the necessary form or application of the container is increased.

INDUSTRIAL APPLICABILITY

[0107] The heat insulating container in accordance with the present invention can be easily manufactured and assembled at a low cost, the heat insulating grip portion can be formed by a simple operation, the projection of the strips is maintained and the heat insulating effect is reliably maintained even when the strips are gripped from the outside, and the strips can be reliably gripped without being deformed. Therefore, the container can be advantageously used as a cup-shaped container for packing instant food products that can be consumed after pouring boiling water or heating in a microwave oven. Further, since external appearance can be changed to that with decorative features by a simple operation, the invention is not limited only to heat-resistant applications and can be applied to a variety of cup-shaped container.

Claims

1. A heat insulating container that has a container main body having a body wall and a bottom wall, and also has a sleeve fitted on an outer circumferential surface of the body wall of the container main body, the sleeve being provided with a plurality of slits defining a plurality of strips in a vertical direction within a predetermined range in a height direction, and the plurality of strips bending or curving to project at an outer circumferential portion thereby forming a heat insulating grip portion, as a result of sliding a portion of the sleeve that is above or below the strips, wherein the plurality of strips includes first strips each having an upper valley broken line at an upper end and an upper peak broken line close to an upper portion, and second strips each having a lower valley broken line at a lower end and a lower peak broken line close to a lower portion, the first strips and the second strips being arranged alternately and adjacently to each other, and at least one of the plurality of slits has a bent portion forming a protrusion and a depression in a portion between the upper peak broken line and the lower peak broken line of strips at both sides, and also has linear portions extending upward and downward from the bent portion.
2. The heat insulating container according to claim 1, wherein the upper valley broken line and the lower valley broken line form an angle with respect to a horizontal line.

3. The heat insulating container according to claim 1 or 2, wherein the linear portions of the plurality of slits have an angle with respect to a vertical line.
4. The heat insulating container according to claim 3, wherein the linear portions of the plurality of slits are bent at positions of the upper peak broken lines and the lower peak broken lines.
5. The heat insulating container according to claim 1, wherein two or more of the protrusions of the strip are formed in succession in the vertical direction, and two or more of the depressions of the strip are formed in succession in the vertical direction.
6. The heat insulating container according to claim 1, wherein the strip on at least one side of the slit having the bent portion has a notch extending in a horizontal direction from the depression.
7. The heat insulating container according to claim 1, wherein the depression and the protrusion of the strip are formed in a sawtooth shape.

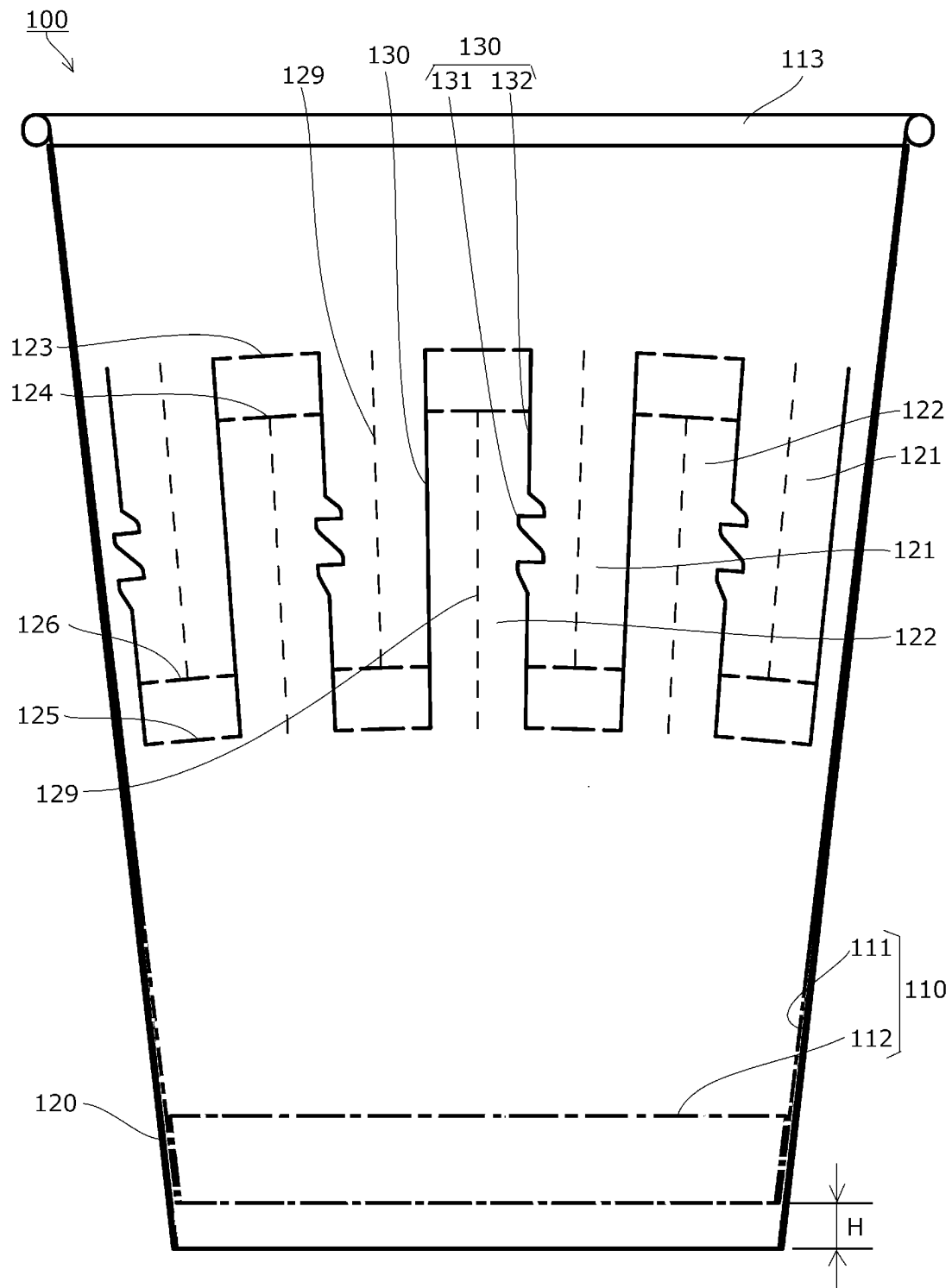


FIG. 1

FIG. 2

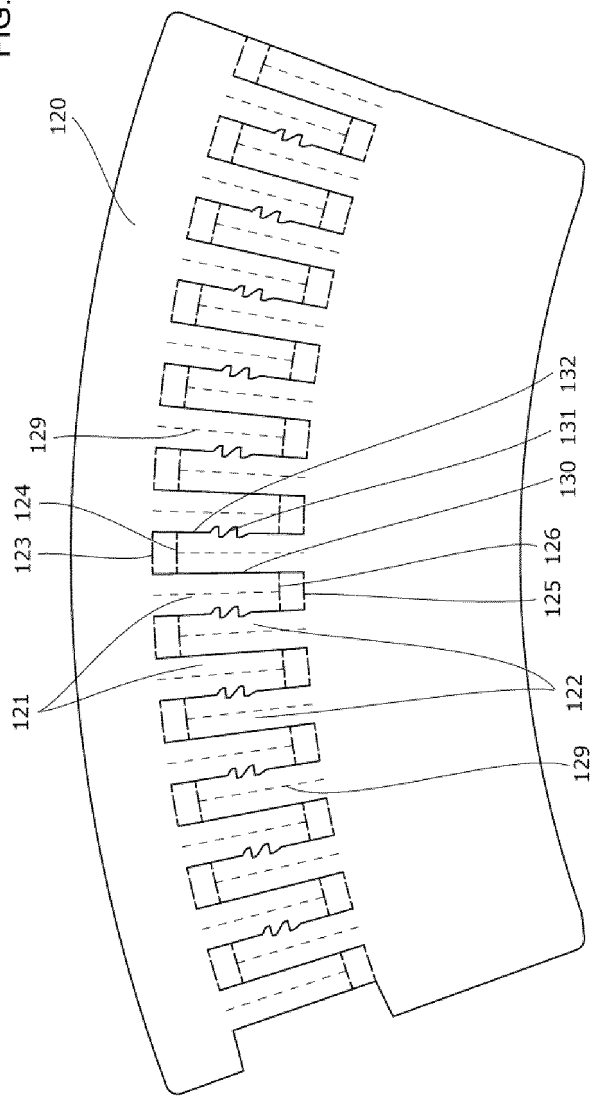


FIG. 3

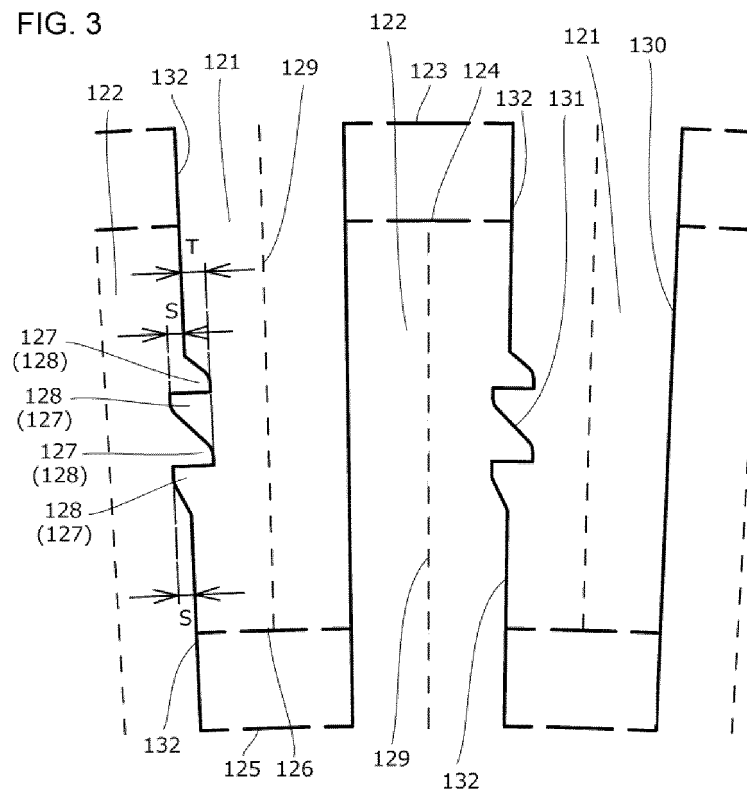


FIG. 4

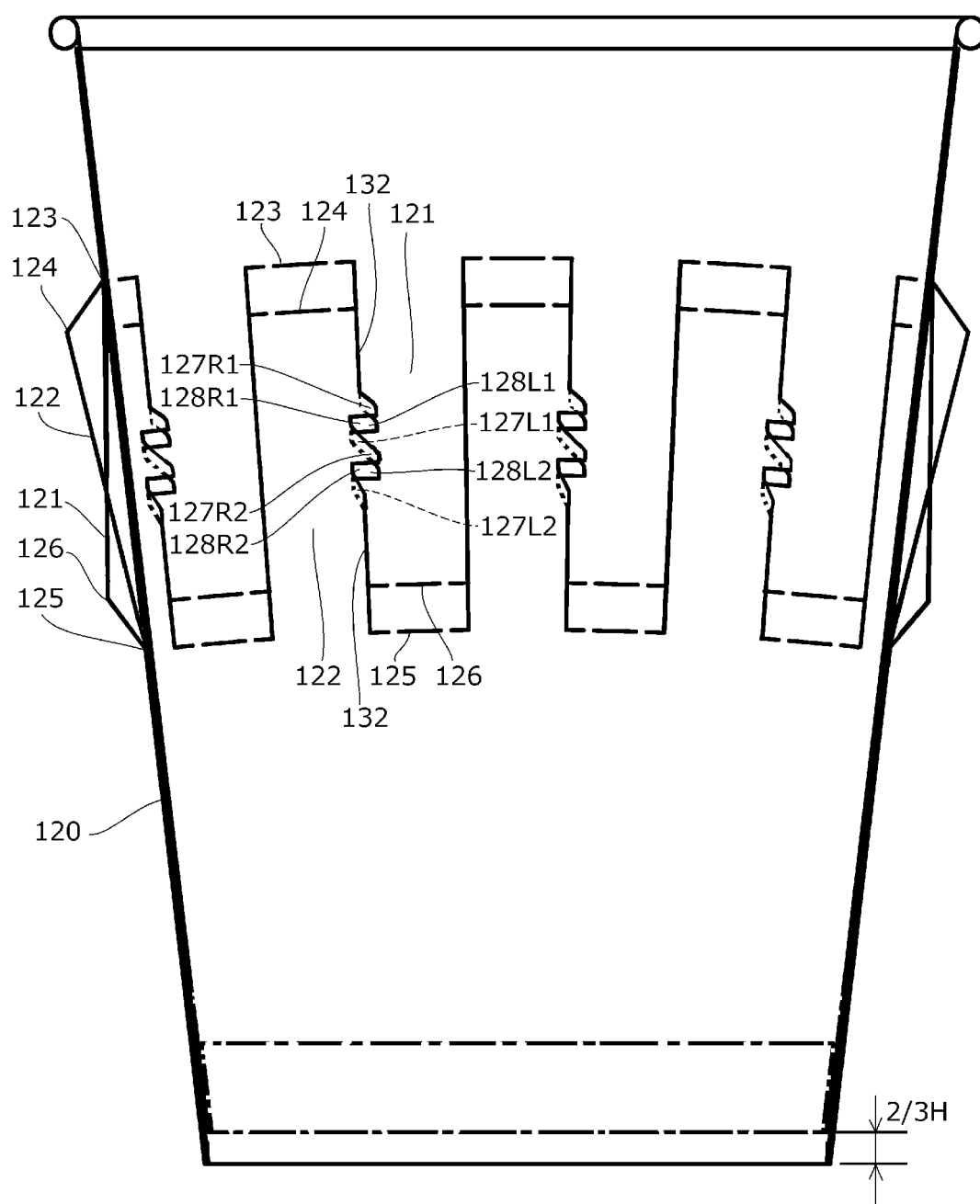


FIG. 5

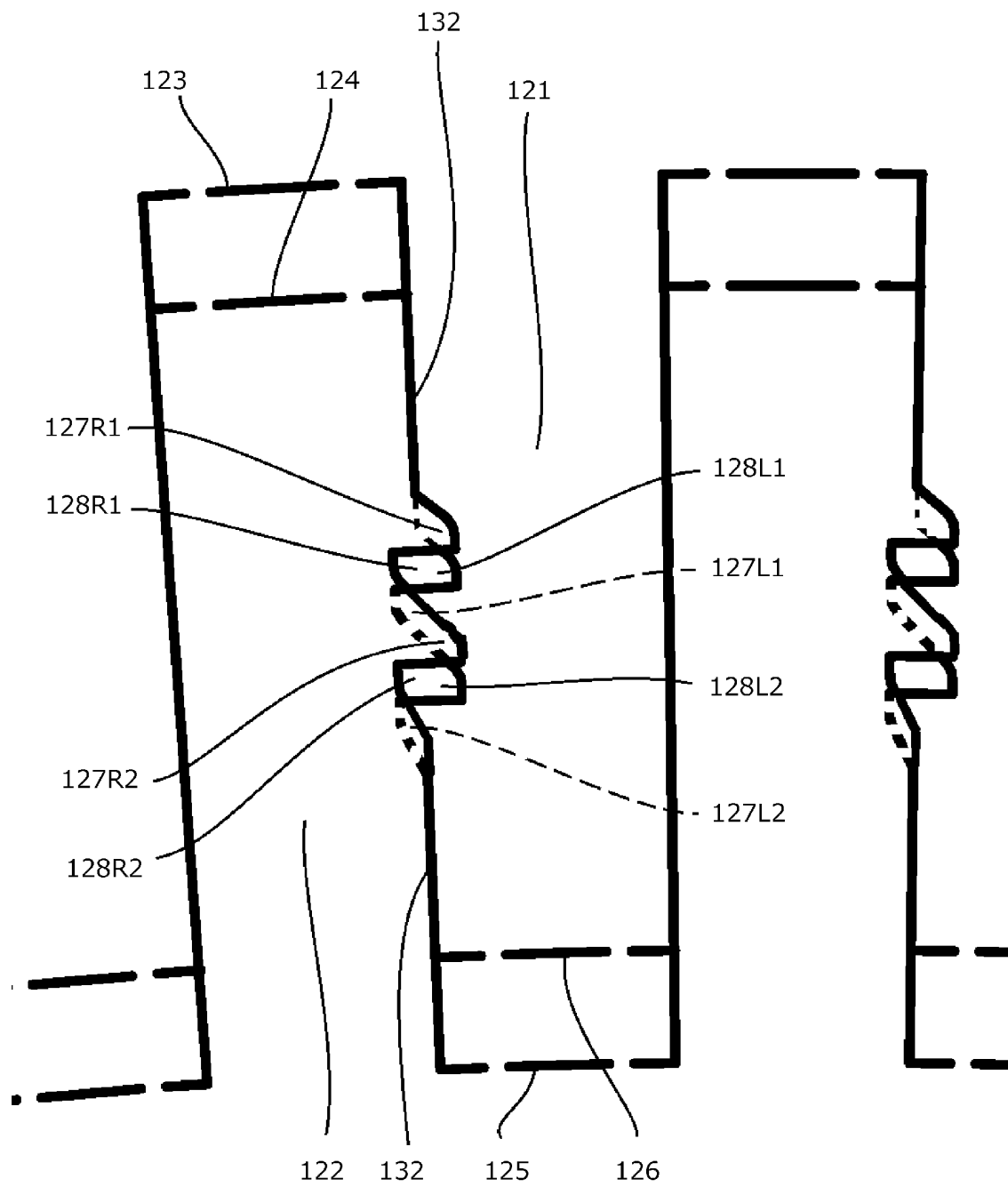


FIG. 6

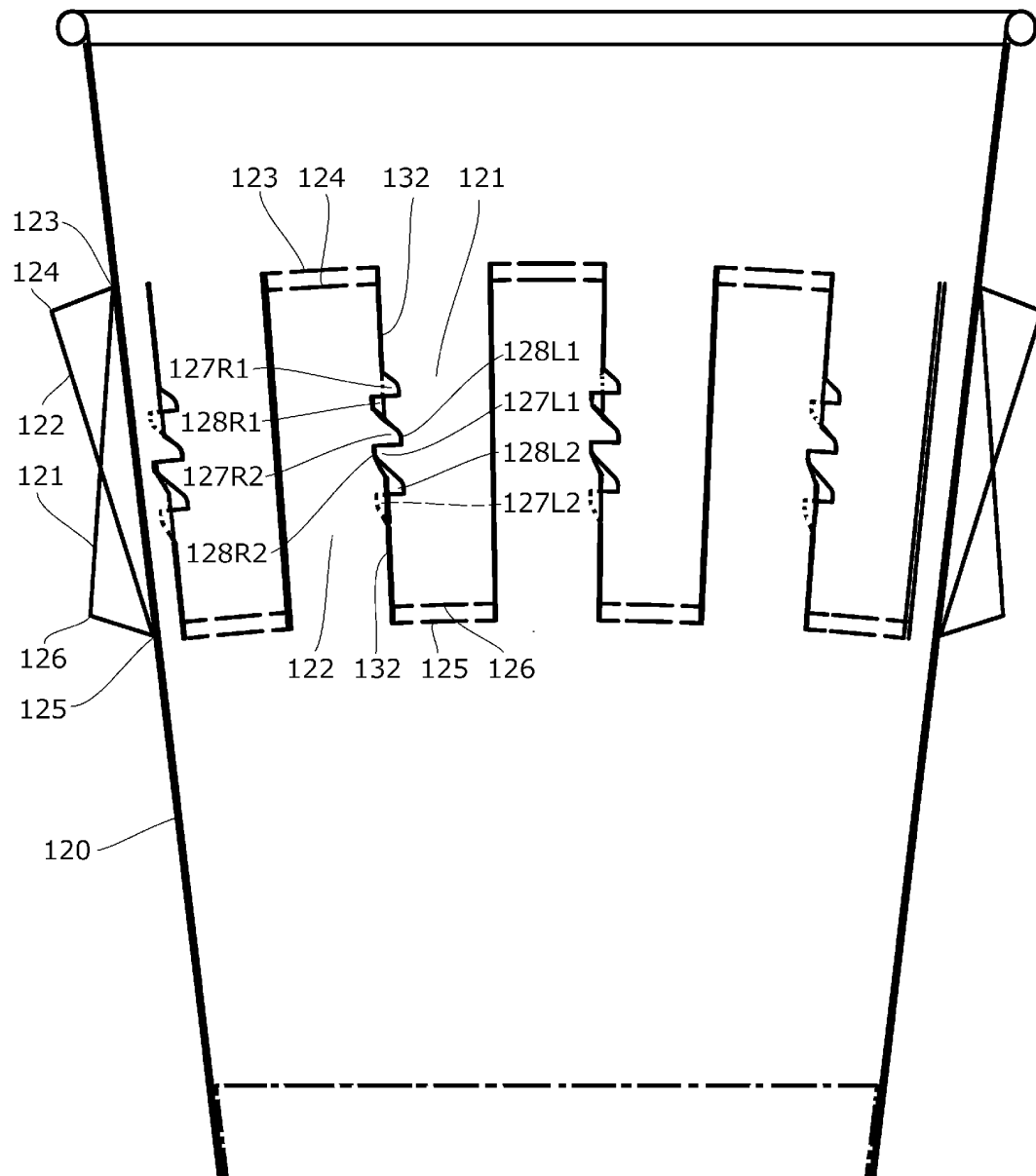
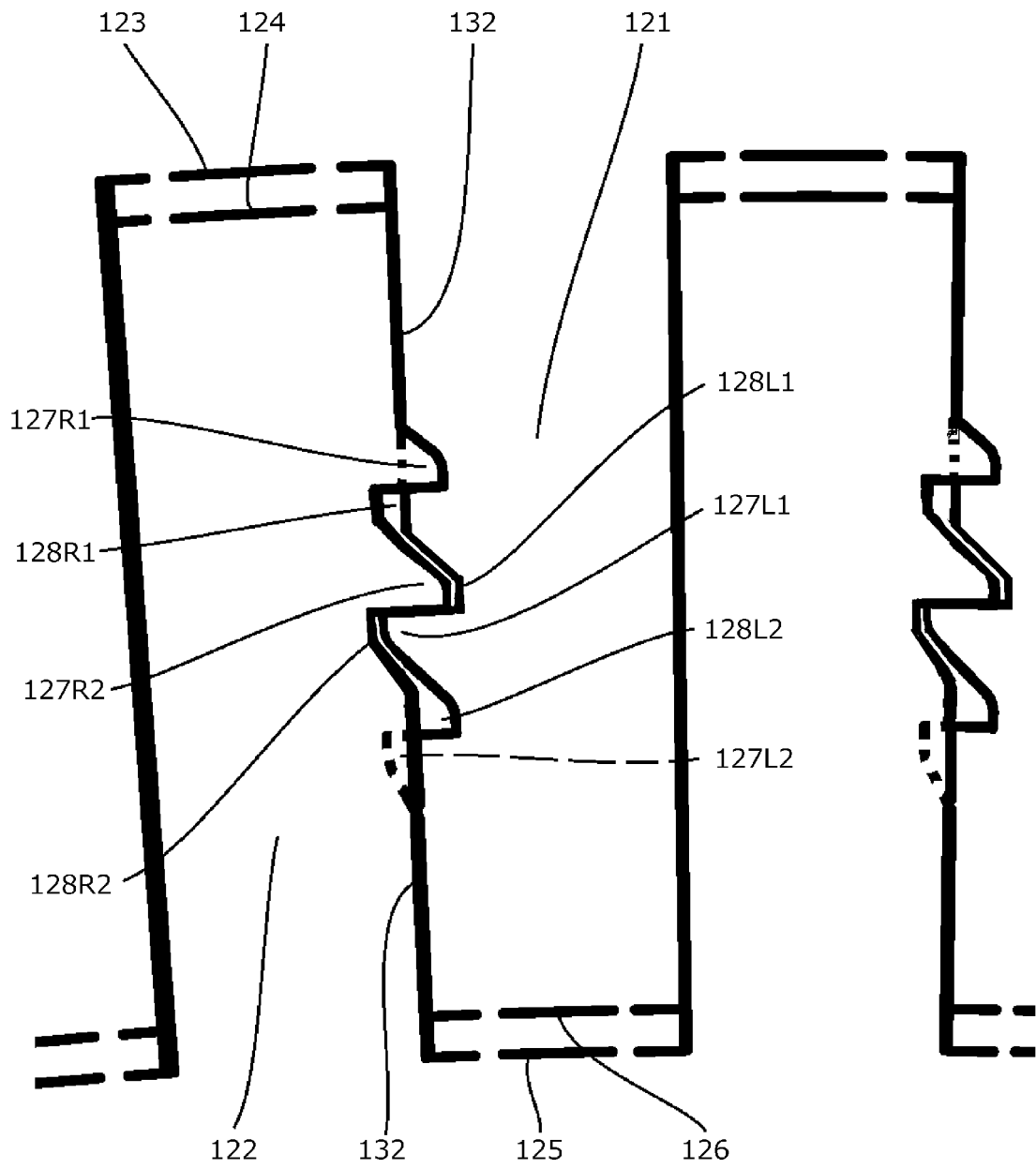


FIG. 7



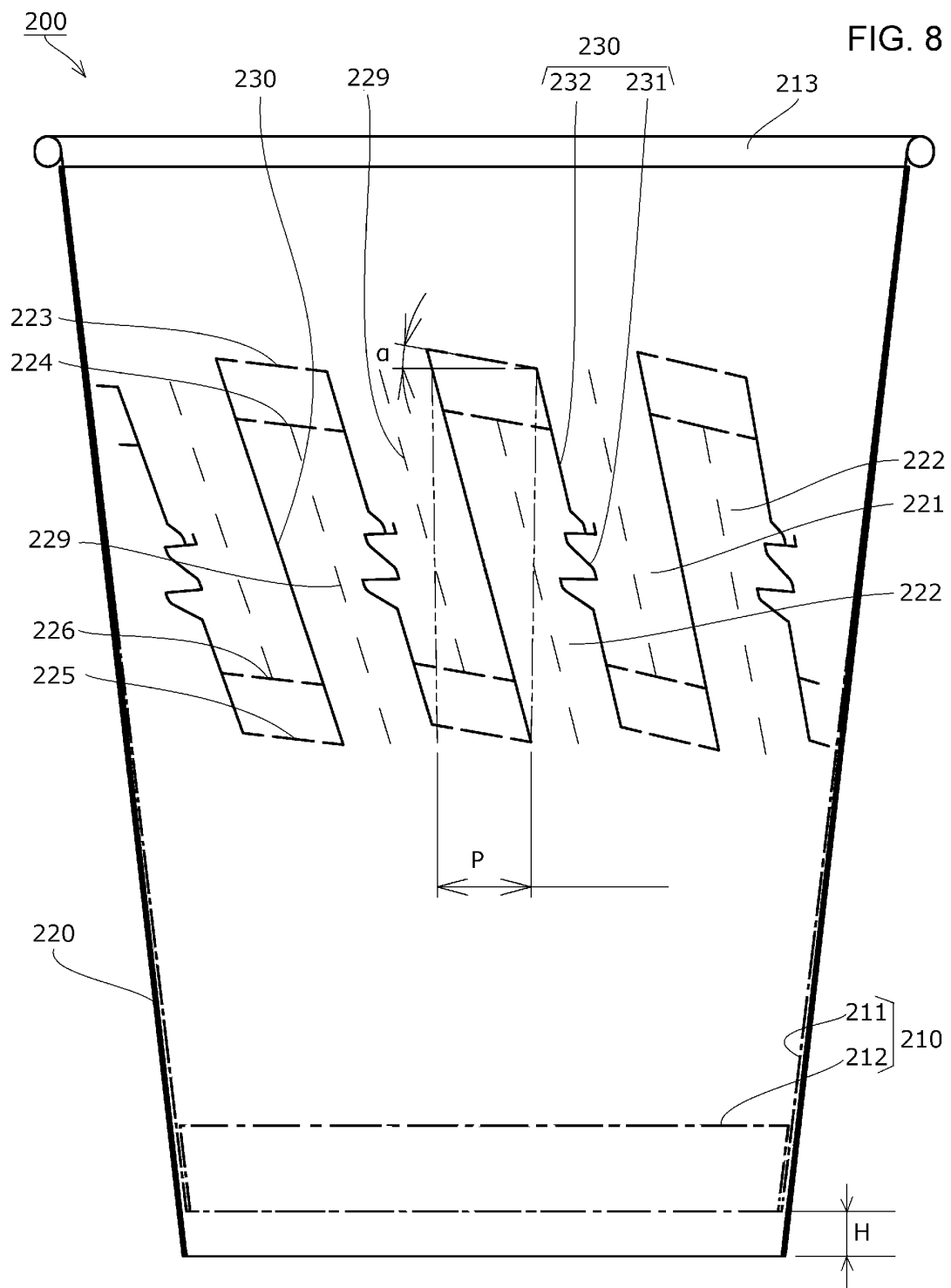
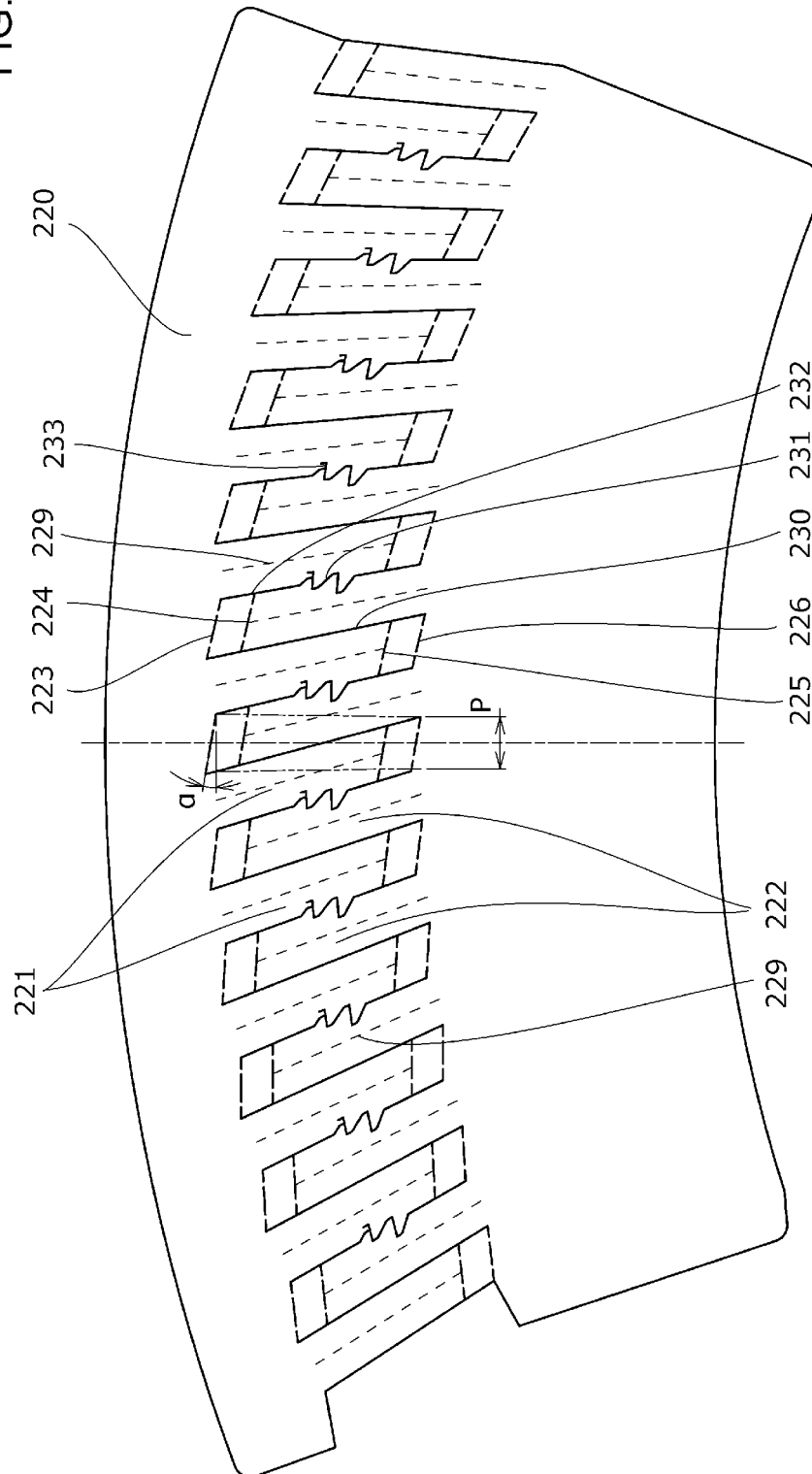


FIG. 9



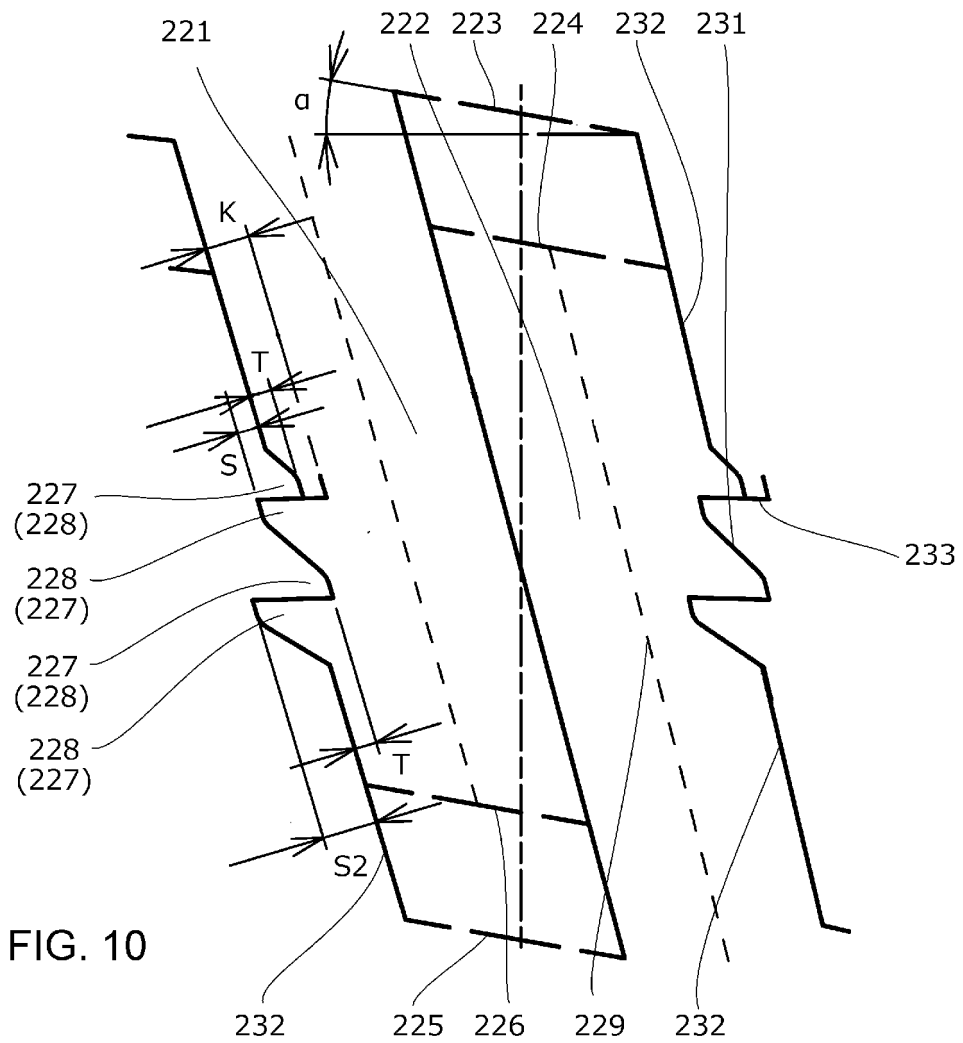


FIG. 10

FIG. 11

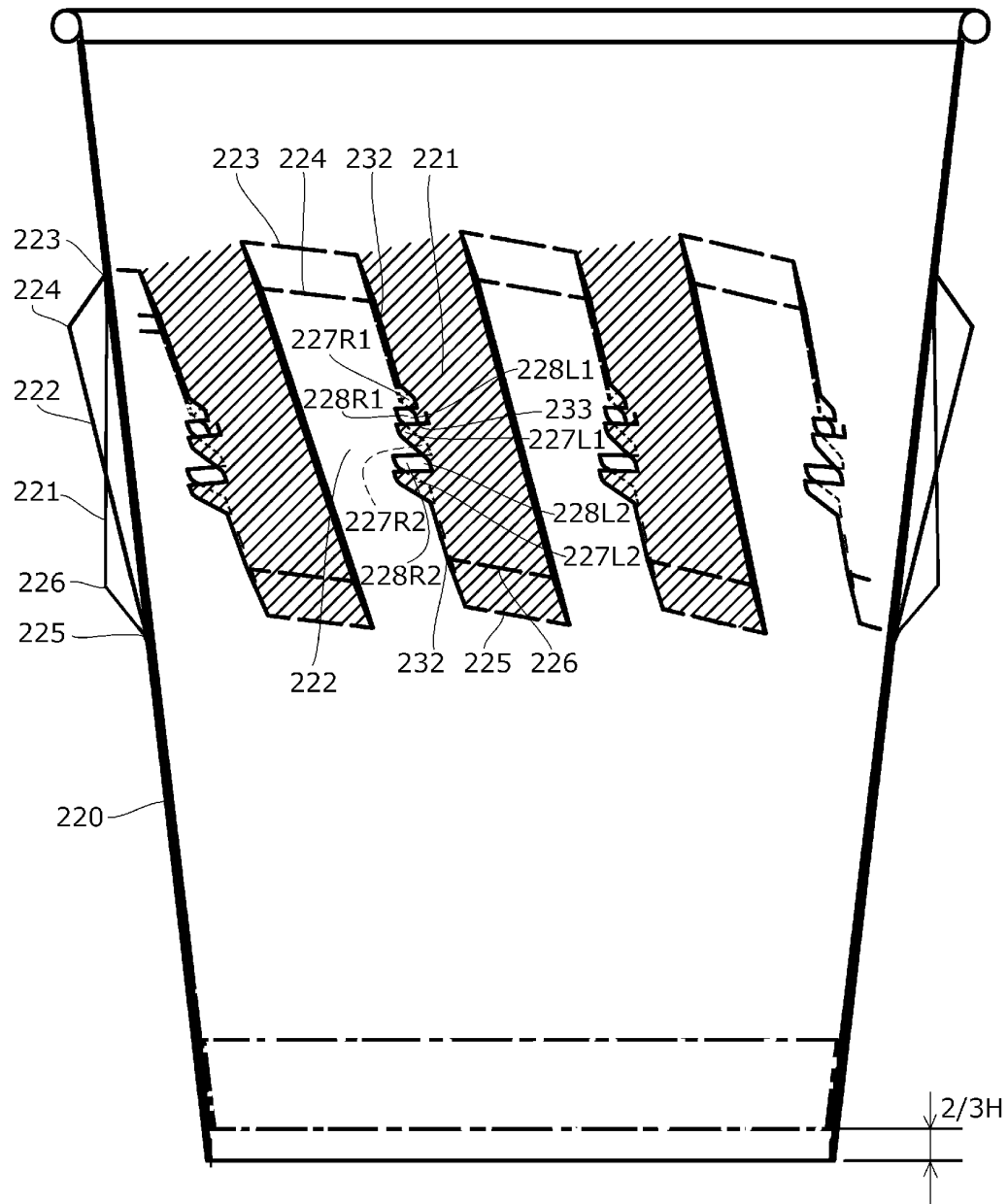


FIG. 12

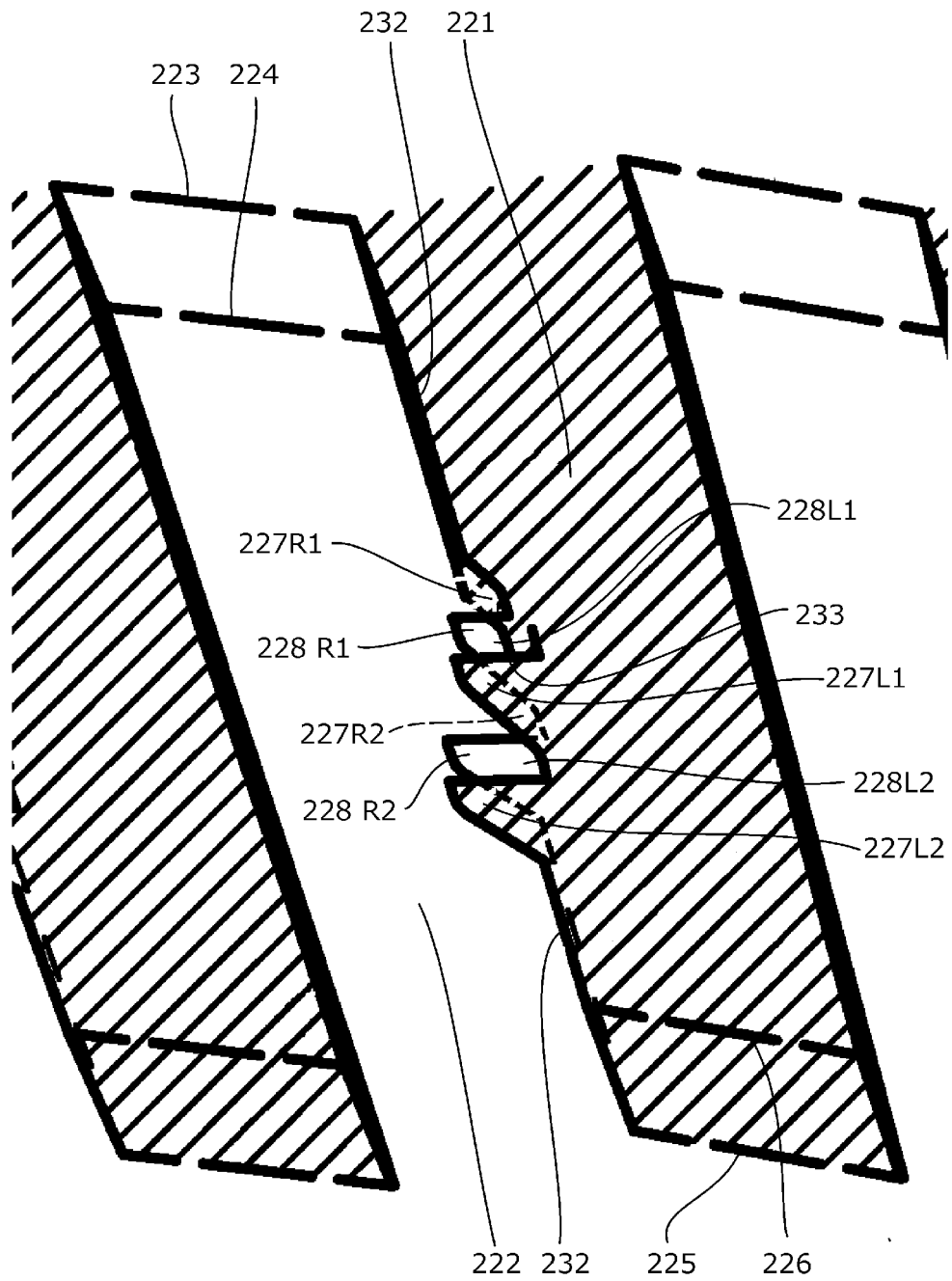


FIG. 13

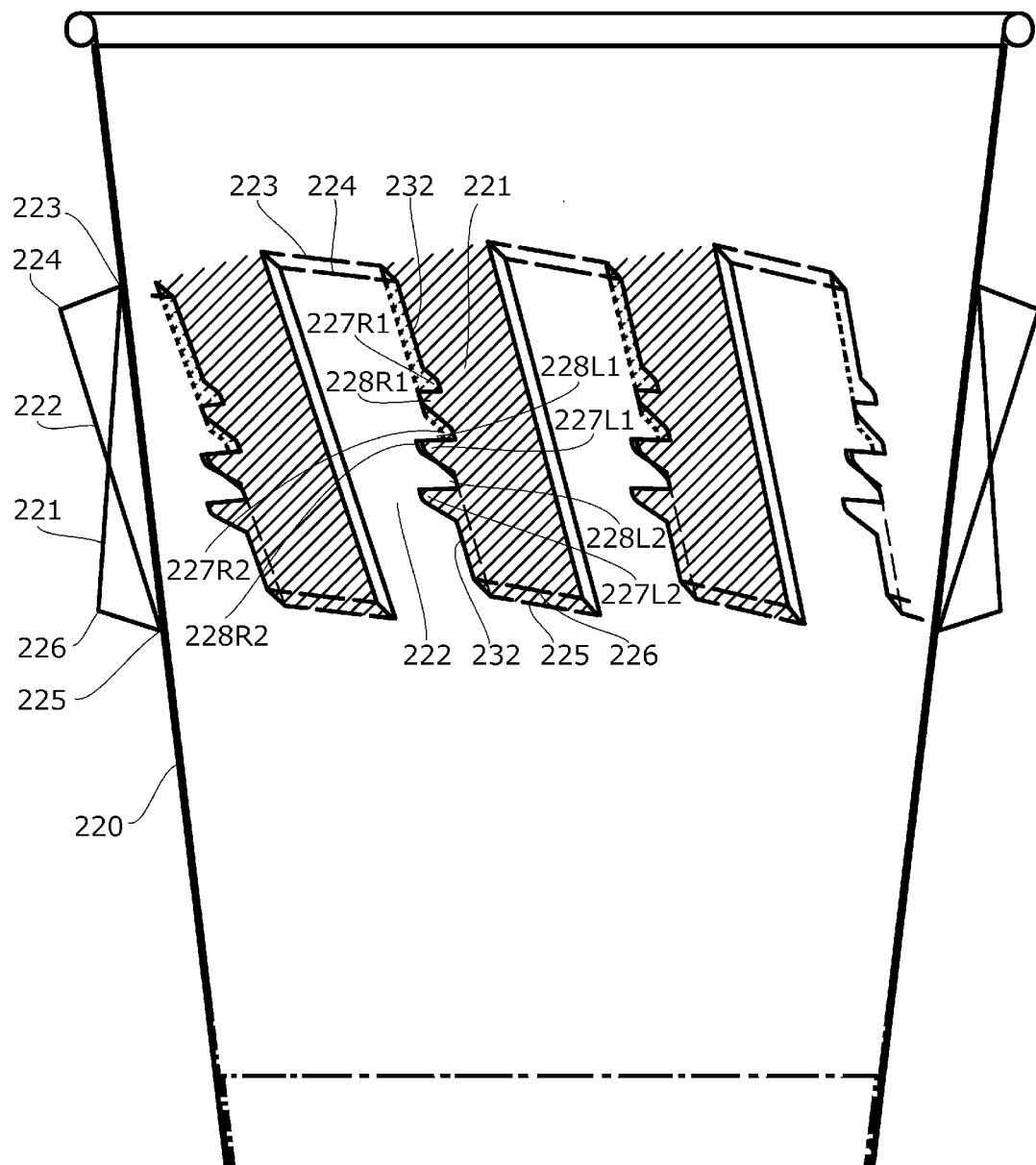
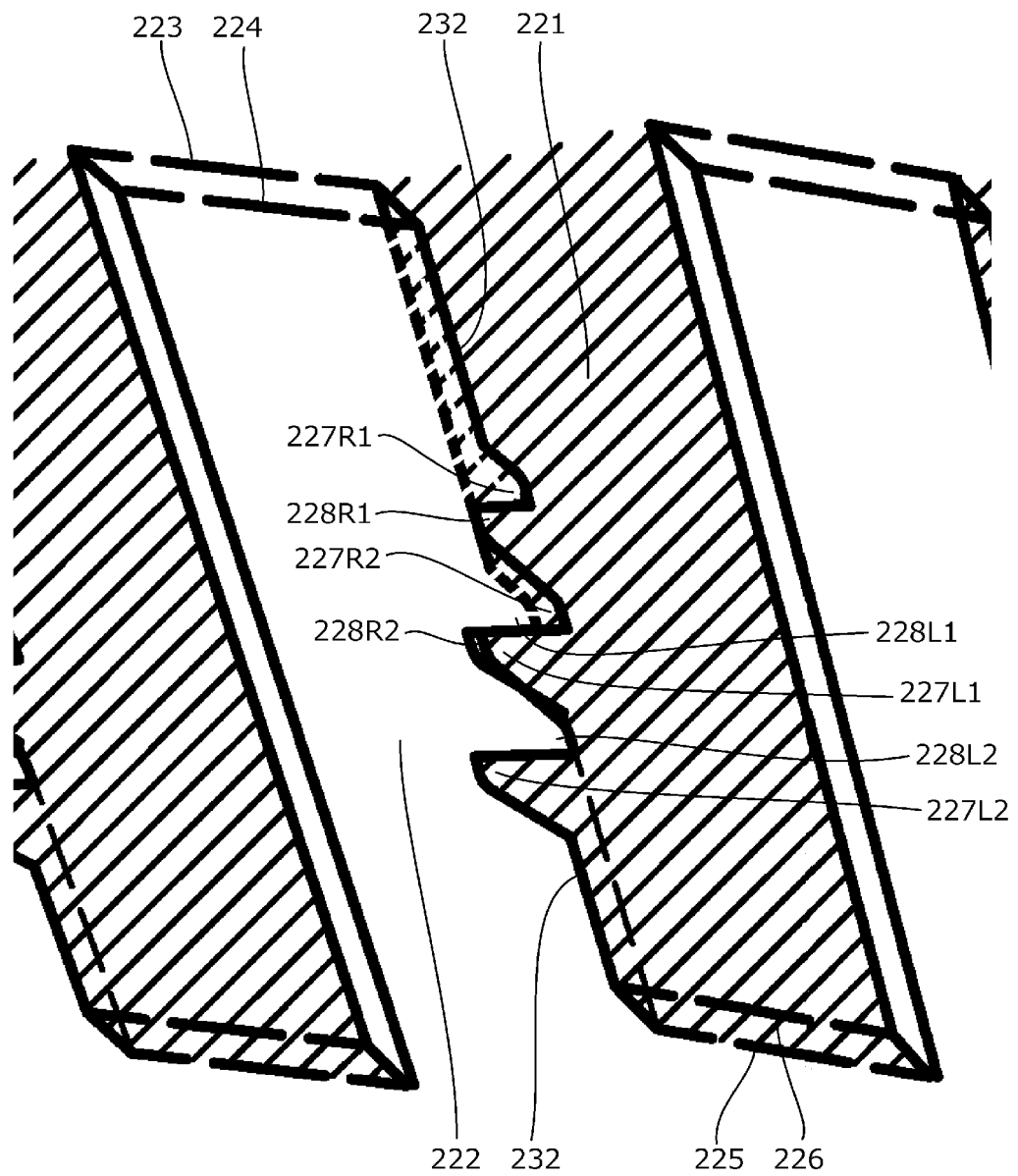


FIG. 14



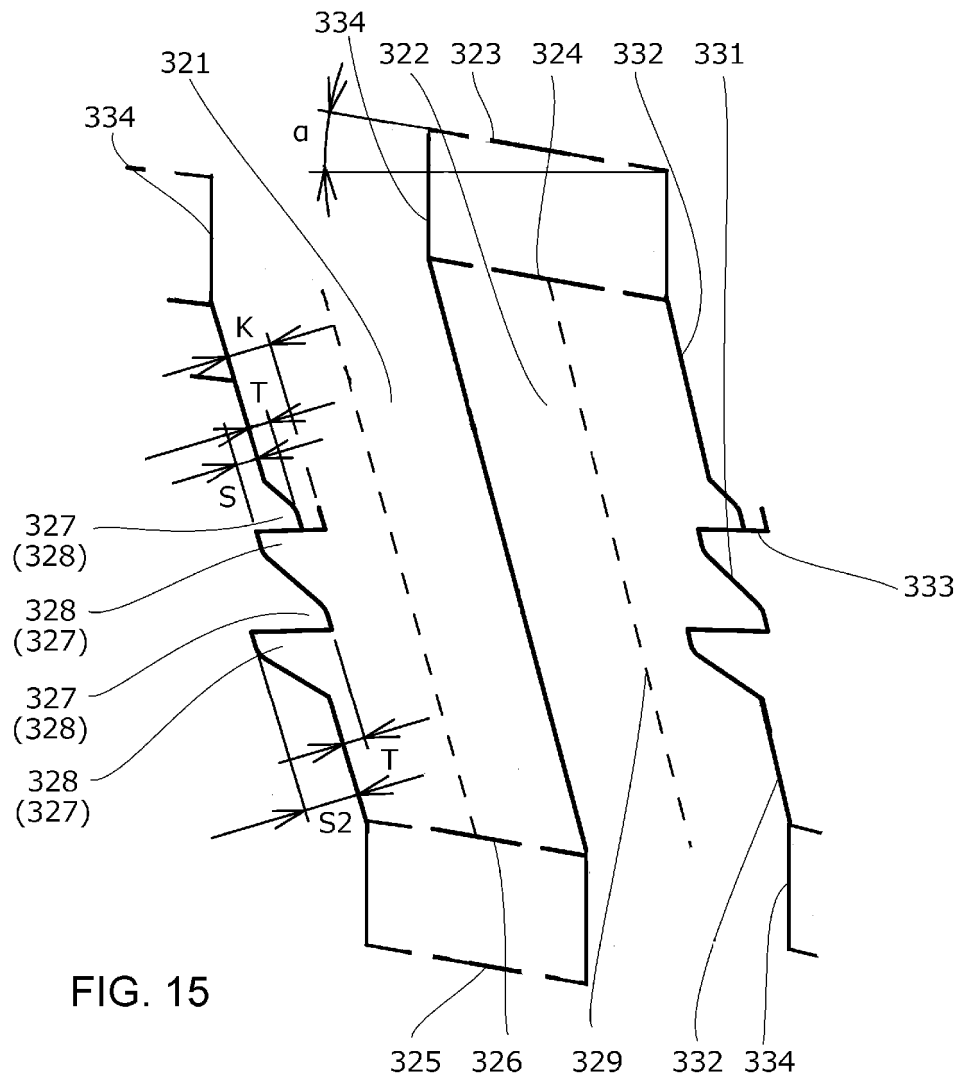


FIG. 15

INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2011/062022

A. CLASSIFICATION OF SUBJECT MATTER

B65D81/34(2006.01) i, B65D3/22(2006.01) i, B65D81/38(2006.01) i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

B65D81/34, B65D3/22, B65D81/38

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Jitsuyo Shinan Koho	1922-1996	Jitsuyo Shinan Toroku Koho	1996-2011
Kokai Jitsuyo Shinan Koho	1971-2011	Toroku Jitsuyo Shinan Koho	1994-2011

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	JP 2006-160346 A (Tokan Kogyo Co., Ltd.), 22 June 2006 (22.06.2006), entire text; all drawings (Family: none)	1-7
A	JP 2006-044723 A (Tokan Kogyo Co., Ltd.), 16 February 2006 (16.02.2006), entire text; all drawings (Family: none)	1-7
A	document 3:WO 2009/054110 A1 (Tokan Kogyo Co., Ltd.), 30 April 2009 (30.04.2009), entire text; all drawings & JP 4521839 B & US 2010/0224637 A1 & EP 2202178 A1 & CN 101932514 A & KR 10-2010-0054845 A	1-7

☒ Further documents are listed in the continuation of Box C.☐ See patent family annex.

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"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

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"&" document member of the same patent family

Date of the actual completion of the international search
18 August, 2011 (18.08.11)Date of mailing of the international search report
30 August, 2011 (30.08.11)Name and mailing address of the ISA/
Japanese Patent Office

Authorized officer

Facsimile No.

Telephone No.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2011/062022

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	document 4:JP 2003-181955 A (Shin Nihon Chemical Ornament MFG. Co., Ltd.), 03 July 2003 (03.07.2003), entire text; all drawings (Family: none)	1-7

Form PCT/ISA/210 (continuation of second sheet) (July 2009)

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- JP 4294579 B [0002] [0005]
- JP 4391908 B [0002] [0005]