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CERTIFICATION

This is to certify that the attached translation is to the best of my knowledge and belief a true and accurate translation from Japanese into English of the attached patent application JPH0520204Y2.

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Subscribed to and sworn before me this 22nd day of July, 2021,
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(54) Title of Invention: Expandable and Bendable Chair or Sofa

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(57) **Scope of Utility Model Registration Claims**

An expandable and bendable chair or sofa that provides a honeycomb structure across which a large number of tube bodies made of an appropriate, bendable material is disposed so as to be expandable; orients both ends of an opening portion of each tube body of this honeycomb structure in a vertical manner; provides a main body having a backrest portion in a rear portion and a seat portion in a front portion, these being flanked on both sides by both ends in an expanding and contracting direction; provides, on both lateral faces of this main body, an L-shaped plate body of an L-shaped cross section having a vertical plate portion of substantially the same shape as a shape of both of these lateral faces; and brings together and joins each vertical plate portion to both lateral faces of the main body by abutting a horizontal plate portion of each of these L-shaped plate bodies to a lower face on both sides of the main body.

Detailed Description of Invention

(Field of Industrial Applicability)

This invention relates to an expandable and bendable chair or sofa.

(Background Art)

Many conventional chairs or tables have a fixed shape, and very few are expandable. Even among these expandable chairs or tables, in expanding or contracting such, some are pulled open or spread to a certain width by removing or installing a member.

(Problem to Be Solved by Invention)

However, even among these expandable chairs and tables, an expanding and contracting operation is

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time-consuming, and expansion and contraction are only to a certain shape or size. Therefore, individual articles must be prepared to fit individual spaces.

As such, an object of this invention is to provide a chair or sofa that can be changed into any shape by being expanded and contracted or bent to fit a size and shape of a location where it is to be used and undergoes this change very easily.

(Means for Solving Problem)

This invention is an expandable and bendable chair or sofa that provides a honeycomb structure wherein a large number of tube bodies made of an appropriate, bendable material is arranged side by side; orients both ends of an opening portion of each tube body of this honeycomb structure in a vertical manner; provides a main body having a backrest portion in a rear portion and a seat portion in a front portion, these being flanked on both sides by both ends in an expanding and contracting direction; provides, on both lateral faces of this main body, an L-shaped plate body of an L-shaped cross section having a vertical plate portion of substantially the same shape as a shape of both of these lateral faces; and brings together and joins each vertical plate portion to both lateral faces of the main body by abutting a horizontal plate portion of each of these L-shaped plate bodies to a lower face on both sides of the main body. The honeycomb structure uses an appropriate, bendable material such as paper, plastic, or aluminum.

(Actions)

When the L-shaped plate body on one end or both ends of this chair or sofa is pulled, a width of a hole of each tube body of the honeycomb structure slightly

contracts in a direction orthogonal to a pulling direction and greatly expands in the pulling direction. Therefore, the chair or sofa overall can be expanded. Moreover, it is also possible to expand only one side of this chair or sofa to bend the chair or sofa overall in a longitudinal direction into an L shape or a circle. Moreover, for storage or transport, the one end or both ends can be pushed to cause contraction in the longitudinal direction.

(Example)

An example of this invention is described below using the drawings.

A large number of tube bodies of a hexagonal cross section made of cardboard is arranged side by side to provide a honeycomb structure 1 of a shape wherein lateral faces are brought together. An opening portion 1a of each tube body of this honeycomb structure 1 is positioned facing a vertical direction. Cutting is performed into a shape of a sofa 2 that has a backrest portion 2a in a rear portion and has a seat portion 2b in a front portion, these being flanked on both sides by both ends in an expanding and contracting direction of this honeycomb structure 1. A vertical plate portion 3a of each L-shaped plate body 3, wherein a horizontal plate portion 3b protrudes from one side of a lower face of the vertical plate portion 3a, which has substantially the same shape as both lateral faces of this sofa 2, is brought together with and joined to both of these lateral faces. The horizontal plate portion 3b of each L-shaped plate body 3 is abutted to a lower face on both sides of the sofa 2.

Then, in a state wherein this sofa 2 is maximally expanded by pulling both sides of the sofa 2, an outer periphery excluding a bottom face of this sofa 2 is covered by a cloth-like cover 4.

In this example, at a time of not using the sofa 2, a time of storing such, or the like, the L-shaped plate bodies 3, 3 on both sides are brought close together to, as illustrated in FIG. 3, contract the sofa 2 to its minimum size. At this time, because the cover 4 is a cloth, it forms bellows-like wrinkles and becomes smaller together with the sofa 2. Then, when necessary, the sofa 2 is expanded by pulling apart the L-shaped plate bodies 3, 3. This expands each tube body of the honeycomb structure 1 in the pulling direction, and the sofa 2 overall expands to be approximately five times larger than when it is contracted. Then, this sofa 2 comes to rest in a state of being expanded to any extent. Moreover, when pulling open the sofa 2, the sofa 2 can also be bent into an L shape as illustrated in FIG. 4, made to curve as illustrated in FIG. 5, and made into a circular sofa centered around the backrest portion 2a as illustrated in FIG. 6.

Moreover, although an upper face of the seat

portion 2b of the sofa 2 is mesh-shaped, as long as a diameter of each opening portion of this mesh shape is small, at 1 to several cm, sitting thereon is not particularly uncomfortable. When this is made larger, comfort is increased by covering the sofa by a cloth cover 4 as in the above example or sitting on a cushion placed on the upper face.

(Effects of Invention)

Because this invention is configured as above and has a honeycomb structure made of an appropriate, bendable material, each tube body constituting the honeycomb structure expands and contracts such that the chair or sofa is expandable and bendable. It can be made into any shape to match a usage location or a space, and its shape can be easily changed. Moreover, at a time of storage and a time of transport, it can also be contracted and made compact. Furthermore, due to the honeycomb structure, it is lightweight, which is very useful for transport and handling. Moreover, because this honeycomb structure is a structure across which a large number of vertical tube bodies is disposed, it has a level of strength that can sufficiently withstand an object being placed thereon or a person sitting thereon, and it is sturdy. Moreover, because this invention has a main body having a backrest portion in a rear portion and a seat portion in a front portion, these being flanked on both sides by both ends in an expanding and contracting direction of the honeycomb structure, and an L-shaped plate body is had on both sides of this main body, stability is favorable whether the chair or sofa of this invention is expanded or contracted, and this prevents the chair or sofa from falling over. Moreover, this L-shaped plate body functions as a weight, maintaining the expanded or contracted honeycomb structure in the same state. Moreover, because the backrest portion also has a honeycomb structure, a horizontal load can also be withstood, and appropriate cushioning properties are had. Moreover, when both sides of the chair or sofa of this invention are expanded, each honeycomb structure widens horizontally, but a depth of the chair or sofa decreases, and dimensions for a child can also be provided.

Brief Description of Drawings

The diagrams illustrate an example of this invention: FIG. 1 is a perspective view of a sofa of this invention, FIG. 2 is an enlarged plan view of portion K indicated in FIG. 1, FIG. 3 is a perspective view of when the sofa of this invention is contracted, and FIG. 4 to FIG. 6 are each a perspective view illustrating an example of when this invention is deformed into an appropriate shape.

Note that in the diagrams, 1 is a honeycomb structure, 2 is a sofa, 2a is a backrest portion, and 2b is a seat portion.

FIG. 1

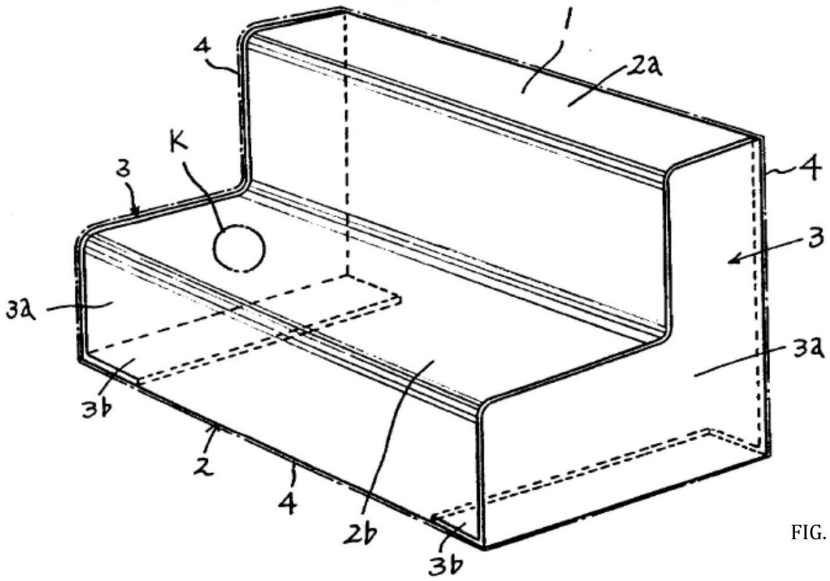


FIG. 2

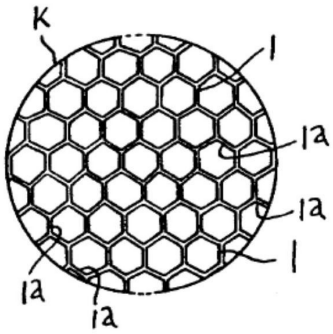


FIG. 3

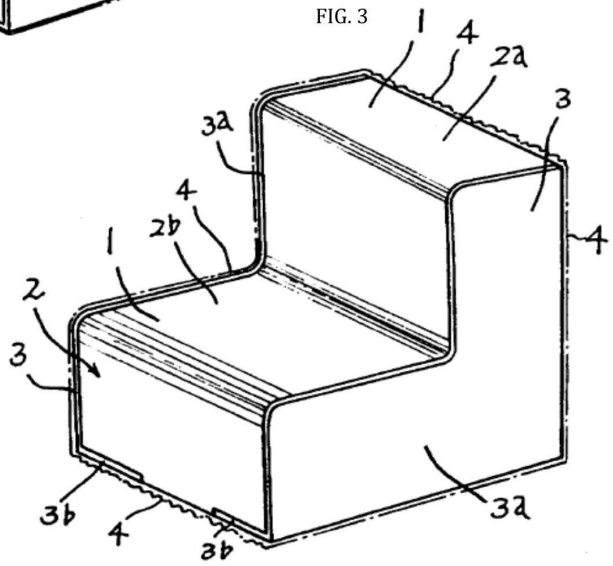


FIG. 4

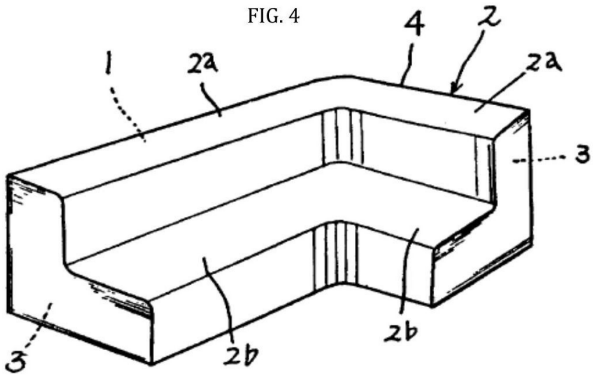


FIG. 6

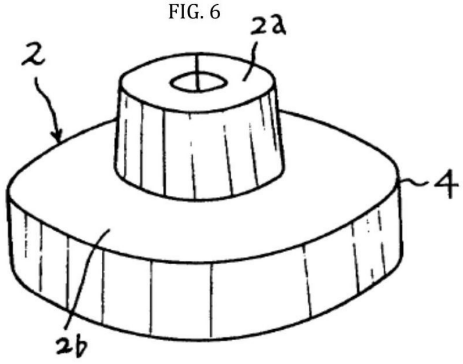
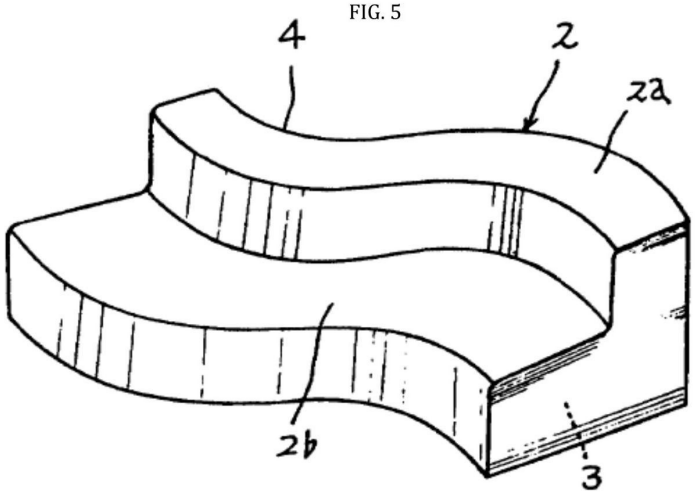


FIG. 5



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