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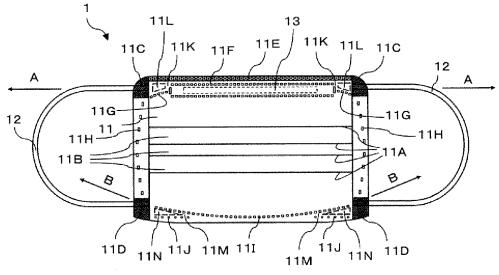
(54) MASK

(57) An object of the present invention is to provide a mask having an improved texture. The mask 1 includes: a mask body 11; a string part 12 that is connected with the mask body 11 by welding and holds the mask body 11 at a predetermined position on the face of a wearer by being hung on the wearer; and a bulge part 11L, 11N in which the mask body 11 is raised, the bulge part 11L, 11N being formed in an adjacent region 11K, 11M adjacent to a connection part 11C, 11D of the mask body 11 at which the string part 12 is connected with the mask body 11.

[Figure 1]



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Description

Technical Field

[0001] The present invention relates to a mask in which a string part is connected with a mask body and in particular relates to a mask having an improved texture.

Background Art

[0002] Masks are used for dust-proofing, virus-proofing, virus spread prevention, and the like. Patent Literature 1 discloses a mask that prevents its displacement from the initial position at the time of wearing, caused by the movement of the mouth and face of a wearer.

Citation List

Patent Literature

[0003] Patent Literature 1: Japanese Patent No. 5972092

Summary of Invention

Technical Problem

[0004] For a mask in which a string part to be hung on the wearer is welded and connected with a mask body to hold the mask body at a predetermined position on the wearer' face, a portion where the mask body and the string part are welded will harden. This may cause such a problem that when the wearer wears the mask, the hardened portion touches the wearer's skin and deteriorates a texture because the string part acts to pull the mask body toward the wearer from its attachment and detachment area. This problem has not been solved by the prior art such as Patent Literature 1.

[0005] An object of the present invention is to provide a mask having an improved texture by preventing a connection part connecting a mask body and a string part from coming into contact with the wearer's skin.

Solution to Problem

[0006] An aspect of the present invention provides a mask including: a mask body; a string part that is connected with the mask body by welding and holds the mask body at a predetermined position on the face of a wearer by being hung on the wearer; and a bulge part in which the mask body is raised, the bulge part being formed in an adjacent region adjacent to a connection part of the mask body at which the string part is connected with the mask body.

[0007] As just described, this mask includes, in the adjacent region, the bulge part in which the mask body is raised, the bulge part being formed corresponding to a distortion caused around the connection part and a welded part that surround the adjacent region. This bulge part is more raised towards the wearer's face than the other part of the mask body. Consequently, this bulge part acts to keep the connection part adjacent thereto away from the wearer's skin by being brought into contact with the wearer's skin when the mask is worn.

[0008] Further, this bulge part is more likely to come into contact with the wearer's skin than the other part of the mask body, and thus a pressing force for pressing the mask body against the wearer's skin is more used to bring this bulge part into contact with the wearer's skin in a state where the mask is worn. This reduces a force for pressing the connection part against the wearer's skin. Consequently, the degree of contact is further reduced even when the connection part comes into contact with the wearer's skin.

[0009] Thus, this bulge part can prevent the connection part from coming into contact with the wearer's skin. The connection part is a portion hardened by welding, and thus the higher the degree of contact of the connection part with the wearer's skin is, the more a texture deteriorates. Therefore, this mask can further prevent the connection part from coming into contact with the wearer's skin through this bulge part, thus reducing deterioration of a texture and further improving a texture.

[0010] Optionally, the mask according to the present invention has a preferable structure in which the adjacent region is surrounded by a welded part in which a part of the mask body is welded and the connection part adjacent thereto.

[0011] This results in that the bulge part formed in the adjacent region is formed corresponding to the distortion caused around the welded part and the connection part without a material for forming the bulge part added to the mask body from the outside. That is, this mask can improve a texture more easily without the need to add an additional material to the mask body.

[0012] Optionally, the mask according to the present invention has a preferable structure in which the adjacent region is located on an extension line in a direction in which the string part pulls the mask body through the connection part adjacent thereto when the mask is worn by the wearer.

[0013] It is preferable that the bulge part formed in the adjacent region is formed at the position on the extension line in the direction in which the string part pulls the mask body. A force to be transmitted from the string part to the mask body is transmitted along the direction in which the string part pulls the mask body. Consequently, the force to be transmitted from the string part to the mask body is more easily transmitted to this bulge part, as compared with a case where the bulge part is formed at another position. This results in that more force is used to press this bulge part against the wearer's skin, and the force of pressing the connection part against the wearer's skin is further reduced. This enables this mask to further prevent the connection part from coming into contact with the wearer's skin through this bulge part, and further im-

prove a mask texture.

[0014] Optionally, the mask according to the present invention has a preferable structure in which: the string part has one end connected with a first vicinity of an upper side end portion of the mask body and the other end connected with a second vicinity of a lower side end portion of the mask body, and holds the mask body at the predetermined position on the face of the wearer by being hung on the ears of the wearer; the bulge part is provided for both of the first adjacent region adjacent to the first connection part in the first vicinity of the upper side end portion of the mask body and the second adjacent region adjacent to the second connection part in the second vicinity of the lower side end portion of the mask body; the first adjacent region in a third vicinity of the upper side end portion of the mask body is located at a first position lateral to the first connection part adjacent thereto, the first position being on the extension line in the first direction in which the string part pulls the mask body through the first connection part adjacent thereto when the mask is worn by the wearer; and the second adjacent region in a fourth vicinity of the lower side end portion of the mask body is located at a second position obliquely below the second connection part adjacent thereto, the second position being on the extension line in the second direction in which the string part pulls the mask body through the second connection part adjacent thereto when the mask is worn by the wearer.

[0015] This results in that this mask has the string part that includes strings to be hung on the wearer' ears, and forms the bulge part at a more suitable position when both ends of each string are connected with the vicinity of the upper side end portion of the mask body and the vicinity of the lower side end portion of the mask body, thus enabling to further reduce deterioration of a texture and further improve a texture.

[0016] Optionally, the mask according to the present invention has a preferable structure in which the adjacent region has such a shape that becomes thinner as a distance from the connection part adjacent thereto increases.

[0017] This adjacent region is formed in such a shape that becomes thinner as the distance from the connection part adjacent thereto increases, thus providing the following effects, as compared with a case where the adjacent region is formed into another shape, for example, a shape that becomes wider as the distance from the connection part increases, or a shape having a certain width regardless of the distance from the connection part (such as, for example, a rectangle).

[0018] This adjacent region is made to have such a shape that becomes thinner as the distance from the connection part adjacent thereto increases, thus being narrowed as compared with the case where the adjacent region is made to have the other shape. That is, it is possible to reduce an area within the mask body that is to be raised to form the bulge part in this adjacent region.

[0019] The bulge part is formed in this adjacent region in accordance with a force exerted from the outer periphery. The narrower this adjacent region is, the smaller the amount of fibers to be raised becomes, and thus the fibers in this adjacent region become more likely to rise. Consequently, the bulge part that is raised higher is formed in this adjacent region.

[0020] The higher this bulge part is raised, the further away from the wearer's skin this bulge part acts to keep the connection part adjacent thereto, and this bulge part becomes more likely to come into contact with the wearer's skin. Consequently, this bulge part can further prevent the connection part from coming into contact with the wearer's ski n.

[0021] Further, forming this adjacent region as the region having such a shape that becomes thinner as the distance from the connection part adjacent thereto increases, results in that a wider area of this adjacent region is adjacent to the connection part adjacent thereto. Consequently, a wider area of the bulge part formed in this adjacent region is located in the vicinity of this connection part. As the bulge part is closer and closer to the connection part, the bulge part is brought into contact with the wearer's skin at a position closer to the connection part and acts to keep the connection part further away from the wearer's skin, thus enabling to further prevent the connection part from coming into contact with the wearer's skin.

[0022] By forming this adjacent region as the region having such a shape that becomes thinner as the distance from the connection adjacent to this adjacent region increases as described above, this mask can further prevent the connection part from coming into contact with wearer's skin, as compared with the case where this adjacent region is formed as a region having another shape. Therefore, this mask can further reduce deterioration of a texture and further improve a texture.

[0023] Optionally, the mask according to the present invention has a preferable structure in which the mask body is formed by stacking three or more layers; and a total thickness of at least one intermediate layer included in the three or more layers is larger than a thickness of individual outermost layers of the three or more layers.

[0024] There are cases where a harder non-woven fabric is used for the outermost layers of the mask body such that dust and makeup are less likely to adhere to such outermost layers. The harder the layers included in the mask body are, the less likely the bulge part is to be raised. By making the total of the intermediate layer(s) of the mask body thicker than any of the outermost layers, it is possible to further reduce the ratio of an area occupied by the harder non-woven fabric in the mask body, and thus further reduce the impact on a rise of the bulge part, thus further reducing a reduction in the rise. In addition, the total thickness of the intermediate layer(s) is preferably 0.3 mm or more.

[0025] Optionally, the mask according to the present invention has a preferable structure in which the mask body includes a layer having a thickness greater than or

equal to a predetermined threshold.

[0026] The mask body can achieve, by including the layer having the thickness greater than or equal to the predetermined threshold, the following effects as compared with a case of including a plurality of thinner layers to ensure the same thickness as this layer.

[0027] This layer is formed by entangled fibers. The fibers in this layer are constrained on a surface of this layer by the shape of the surface. That is, the fibers in such a layer are constrained by the surface shape in the vicinity of the surface.

[0028] When the layer having the thickness greater than or equal to the predetermined threshold is used instead of the plurality of thin layers, the number of the surfaces of the layers included in the mask body decreases. That is, the constraint imposed on the fibers within the mask body decreases. This results in that the constraint imposed on the fibers inside the mask body decreases and thus the bulge part is more likely to be raised. Therefore, this mask can further prevent the connection part from coming into contact with the wearer's skin through the bulge part thus formed, and further improve a texture.

Brief Description of Drawings

[0029]

FIG. 1 is a rear view of an exemplary mask according to a first embodiment;
FIG. 2A is a cross-sectional view of the exemplary mask according to the first embodiment;
FIG. 2B is another cross-sectional view of the exemplary mask according to the first embodiment;
FIG. 3 is a cross-sectional view of a part of the exemplary mask according to the first embodiment;
FIG. 4 is a view showing a situation where the exemplary mask according to the first embodiment is worn;
FIG. 5 is a rear view of an exemplary mask according to another embodiment; and
FIG. 6 is a rear view of an exemplary mask according to still another embodiment.

Description of Embodiments

[0030] Hereinafter, exemplary embodiments of the present invention will be described with reference to the drawings.

(First Embodiment of the Present Invention)

[0031] A mask 1 of this embodiment will be described with reference to FIGS. 1 to 3. FIG. 1 is a rear view of the mask 1 in a folded state. Here, the side on which the mask 1 comes into contact with the wearer's face when worn is referred to as a back side, and the opposite side is referred to as a front side. Further, the upside and downside of the mask 1 when worn are referred to as an upper side and a lower side, respectively.

[0032] In FIG. 1, the mask 1 includes: a rectangular mask body 11; a string part 12 that is connected with each corner of the mask body 11 by welding and holds the mask body 11 at a predetermined position on the wearer's face by being hung on the wearer; and bulge parts 11L and 11N in which the mask body 11 is raised, each bulge part being formed in an corresponding adjacent region 11K and 11M adjacent to a corresponding connection part 11C and 110, each connection part being a portion at which the string part 12 is connected with the mask body 11 in the vicinity of the corresponding corner of the mask body 11. Each adjacent region 11K and 11M is located on an extension of a direction in which the string part 12 pulls the mask body 11 through the adjacent corresponding connection part 11C and 11D when the mask 1 is worn by the wearer, and surrounded by a corresponding welded part(s) 11E, 11F, 11G, 11I, and 11J, at which a respective portion of the mask body 11 is welded, and the adjacent corresponding connection part 11C and 11D.

[0033] In this embodiment, a polygon (for example, a triangle, a quadrangle such as a rectangle or a trapezoid, or a hexagon) is assumed to include a substantial polygon in addition to a strict polygon. The substantial polygon has a shape that can be recognized as a polygon.

[0034] The substantial polygon includes, for example, a shape having one or more rounded corners and a shape having one or more sides with a curvature less than or equal to a predetermined threshold, as compared with the strict polygon. The substantial polygon also includes, for example, a shape having one or more sides with a cut. Further, with respect to such a polygon in which all internal angles are equal, which is, for example, a rectangle or a regular polygon), the substantial polygon includes a shape having one or more corners with an angle having an error less than or equal to a predetermined threshold, as compared with the strict polygon.

[0035] The substantial polygon also includes a shape having a plurality of features among the features of the shapes as exemplified above.

[0036] The mask 1 of this embodiment is a pleated mask.

[0037] The mask body 11 is a rectangular member that covers a predetermined area of the wearer's face, for example, an area including the wearer's nose and mouth. Here, when we say that the pleated mask body 11 has a rectangular shape, it means that the mask body 11 has a rectangular shape in a folded state.

[0038] The mask body 11 is made of a non-woven fabric with fibers entangled, and formed by stacking a plurality of layers of the non-woven fabric having a horizontally long rectangular shape. In this embodiment, the mask body 11 is formed by stacking three or more layers (four layers in this embodiment) including an outermost layer on the front side, an outermost layer on the back side, and one or more layers between them. However,

the mask body 11 may be formed by stacking the different number of layers of the non-woven fabric than four, for example, three, five, six, seven, eight, or the like.

[0039] The first layer from the front side in the mask body 11 is a spunbond type non-woven fabric layer, which has a thickness of 100 μm. The second layer from the front side in the mask body 11 is a layer of an air-through type non-woven fabric thicker than the other layers, and it has a thickness greater than or equal to a predetermined threshold. In this embodiment, the threshold is assumed to be 200 μm, but it may be, for example, 300 μm or 1 mm. The layer thicker than the other layers of the mask body 11 may have a thickness of another value, such as twice or more, three times or more, four times or more the thickness of the other layers. In this embodiment, the second layer from the front side in the mask body 11 is assumed to be a layer having a thickness of 500 μm, but it may be a layer having another thickness, such as 1 mm thick or 2 mm thick. Hereinafter, the second layer from the front side in the mask body 11 is assumed to be a thick layer.

[0040] The third layer from the front side in the mask body 11 is a layer formed of a melt blow type non-woven fabric, which has a thickness of 100 μm. The fourth layer from the front side (i.e., the first layer from the back side) in the mask body 11 is a layer formed of a spunbond type non-woven fabric, which has a thickness of 100 μm. Note that, the thickness of each layer was measured in accordance with the JIS standard (JIS L 1913: 2010: Test methods for nonwovens).

[0041] In this embodiment, the mask body 11 has the above-described layered structure of the non-woven fabric layers. However, the mask body 11 may have another layered structure of the non-woven fabric layers. For example, the mask body 11 may have an overall thickness of 0.5 mm or more, preferably 0.6 mm to 3 mm, more preferably 0.7 mm to 2 mm, and may be formed by stacking three or more layers. Further, in the mask body 11, a total thickness of the intermediate layers other than the outermost layer and the innermost layer (i.e., the outermost layer on the back side) of the mask body 11 is usually 0.3 mm or more, preferably 0.3 mm to 3 mm, more preferably 0.4 mm to 2 mm, and most preferably 0.5 mm to 1 mm.

[0042] The thickest layer among the intermediate layers other than the outermost layer and the innermost layer (i.e., the outermost layer on the back side) of the mask body 11 may be formed to have a thickness of 0.3 mm or more, preferably 0.3 mm to 3 mm, more preferably 0.4 mm to 2 mm, and most preferably 0.5 mm to 1 mm.

[0043] The intermediate layers of the mask body 11 may be formed to have a total thickness of twice or more, preferably three times or more, more preferably four times or more, and most preferably five times or more the thickness of the outermost layer or the innermost layer (i.e., the outermost layer on the back side). The intermediate layers of the mask body 11 may also be formed to have a total thickness of 2 to 30 times, preferably 3 to 25 times, more preferably 4 to 20 times, and most preferably 5 to 18 times the thickness of the outermost layer or the innermost layer (i.e., the outermost layer on the back side).

[0044] The mask body 11 includes: a plurality of pleats 11A that extend in a lateral direction; and divided regions 11B that are regions obtained by dividing the mask body 11 by the pleats 11A. The divided regions 11B are folded along the pleats 11A, and formed to have a three-dimensional shape that swells forward when unfolded along the pleats 11A.

[0045] Upper connection parts 11C, each connecting the mask body 11 and one end of the string part 12, are each formed in the vicinity of a corner of a corresponding upper portion of the mask body 11. The connection part is a portion where a part of the mask body 11 and one end of the string part 12 are compressed and welded together. The welding is to apply pressure and heat to target objects to melt at least a part of compressed portions by the application of pressure and then connect the compressed portions together. Welding includes technologies such as, for example, ultrasonic welding using an ultrasonic wave for heating and heat welding using an external heat source for heating. In this embodiment, compression processing and heating processing are used for processing the mask 1, and ultrasonic welding is further used. However, the mask 1 may be processed using another method of welding, such as heat welding. Each layer of the non-woven fabric included in the mask body 11 is a layer in which fibers are entangled. Consequently, the mask body 11 can be compressed, by the application of pressure, in such a manner as to crush pores in each layer (i.e., non-woven fabric layer).

[0046] Lower connection parts 11D, in which the mask body 11 and the other end of the string part 12 are welded to connect them, are each formed in the vicinity of a corner of a corresponding lower portion of the mask body 11.

[0047] The welding at the respective upper connection parts 11C and lower connection parts 11D is performed by applying the compression processing and the heating processing to the layered mask body 11 and the string part 12, and further applying the ultrasonic welding thereto. In this embodiment, the compression at the respective upper connection parts 11C and lower connection parts 11D in the welding is performed by applying pressure from the back side toward the front side of the mask body 11. Further, in this embodiment, the string part 12 is disposed on the back side of the mask body 11 at the respective upper connection parts 11C and lower connection parts 11D.

[0048] The respective upper connection parts 11C and lower connection parts 11D is hardened by the welding. Consequently, the higher the degree of contact of these connection parts with the wearer's skin when the wearer wears the mask 1, the more a texture of the mask 1 deteriorates.

[0049] An upper welded part 1 1E, which is a welded part provided in a horizontally long shape along the upper

edge portion of the mask body 11, is formed on the upper edge portion of the mask body 11. Here, the welded part is a portion where a part of the mask body 11 is compressed and welded. In this embodiment, the layers included in the compressed mask body 11 are connected together by welding at such a welded part.

[0050] A rectangular welded part 11F, which is a perforation-shaped welded part along the outer periphery of a horizontally long rectangular, is formed below the upper welded part 11E in the mask body 11. A nose grip 13, which is a horizontally long wire material that can be deformed along the wearer' nose and can maintain the deformed shape, is embedded in an area surrounded by the rectangular welded part 11F in the mask body 11. The nose grip 13 is formed of a material such as, for example, mild steel, aluminum, or resin.

[0051] Upper lateral welded parts 11G, each of which is a perforation-shaped welded part along a line segment extending obliquely downward from the corresponding side end portion of the rectangular welded portion 11F to the lower end of the side end portion of the corresponding upper connection part 11C, are formed in the mask body 11.

[0052] Lateral welded parts 11H, each of which is a perforation-shaped welded part along a vertical direction, are formed on the side edge portions of the mask body 11.

[0053] A lower welded part 11I, which is a perforation-shaped welded part provided above with a predetermined width from the lower end of the mask body 11 along the lower edge portion of the mask body 11, is formed in the mask body 11.

[0054] Lower lateral welded parts 1 1J, each of which is a perforation-shaped welded part along a line segment extending from a predetermined position on the lower welded part 111 to the lower end of the corresponding lower connection part 11D, is formed in the mask body 11.

[0055] The welding at the respective welded parts 11E to 11J is performed by applying the compression processing and the heating processing to the mask body 11, and further applying the ultrasonic welding thereto. In this embodiment, the compression at the respective welded parts 11E to 111 in the welding is performed by applying pressure from the back side toward the front side of the mask body 11.

[0056] In the mask body 11, regions that are each located adjacent to the corresponding upper connection part 11C and surrounded by the corresponding upper connection part 11C, the upper welded part 11E, the rectangular welded part 11F, and the corresponding upper lateral welded part 11G, are referred to as upper adjacent regions 11K. Each upper adjacent region 11K is a region having such a shape that becomes thinner as the distance from the corresponding upper connection part 11C increases. In this embodiment, each upper adjacent region 11K is a trapezoidal region as shown in FIG. 1. One base of each trapezoidal upper adjacent region 11K is longer than the other base, which is a base in contact with the corresponding side end portion of the rectangular welded part 11F, and is in contact with the end edge portion of the corresponding upper connection part 11C. Upper bulge parts 11L in which the mask body 11 is raised are each formed within the corresponding upper adjacent region 11K.

[0057] Here, the upper bulge parts 11L in the upper adjacent regions 11K will be described with reference to FIGS. 2 and 3.

[0058] FIG. 2A is a cross-sectional view when the mask 1 is cut in a horizontal virtual surface including the upper bulge parts 11L. FIG. 2B is a cross-sectional view when the mask 1 and the wearer in a state where the mask 1 is worn by the wearer are cut in the same virtual surface as in FIG. 2A.

[0059] As shown in FIG. 2A, the raised upper bulge parts 11L are formed on the back side of the mask body 11. In wearing of the mask 1, the upper bulge parts 11L come into contact with the wearer's skin in the vicinity of the upper connection parts 11C as shown in FIG. 2B.

[0060] FIG. 3 is an enlarged view around one of the upper bulge parts 11L in the cross-sectional view shown in FIG. 2A. As shown in FIG. 3, the mask body 11 is compressed from the back side to the front side at the respective welded parts and connection parts that surround the upper adjacent regions 11K, such as the upper connection parts 11C, the rectangular welded portion 11F, and the like. This causes distortion in each layer of the non-woven fabric of the mask body 11 around these respective welded parts and connection parts (see upward-sloping shaded area in FIG. 3). A restoring force corresponding to this distortion is generated at a portion where the distortion has caused. This restoring force acts to push the fibers in the mask body 11 within the upper adjacent regions 11K toward the inside of the upper adjacent regions 11K. Consequently, as shown in FIG. 3, the pushed fibers of each layer of the non-woven fabric in the mask body 11 rise up with respect to the surfaces of the mask body 11, thus forming bulge parts (see downward-sloping shaded area in FIG. 3) on the surfaces of the back side and the front side of the upper adjacent regions 11K. The bulge parts formed on the back side of the upper adjacent regions 11K are referred to as the upper bulge parts 11L.

[0061] The upper adjacent regions 11K and the upper bulge parts 11L are each disposed at a corresponding position on an extension line in a direction in which the string part 12 pulls the mask body 11 through the corresponding upper connection part 11C in a state where the mask 1 is worn.

[0062] Each upper connection part 11C is disposed laterally beside the upper part of the wearer' nose in the state where the mask 1 is worn. The string part 12 is hung on the wearer' ears in the state where the mask 1 is worn. For human body, the height of ears and the height of a nose are almost the same. Consequently, the string part 12 pulls the mask body 11 in a lateral direction (direction A in FIG. 1) through the upper connection parts 11C in the state where the mask 1 is worn. Thus, in this embod-

iment, the upper adjacent regions 11K and the upper bulge parts 11L are formed at such positions lateral to the upper connection parts 11C that are located on the extension line in the direction in which the string part 12 pulls the mask body 11 through the upper connection parts 11C in the state where the mask 1 is worn.

[0063] Further, in the mask body 11, regions that are each located adjacent to the corresponding lower connection part 1 1D and surrounded by the corresponding lower connection part 11D, the lower welded part 11I, and the corresponding lower lateral welded part 11J, are referred to as lower adjacent regions 11M. Here, the state where a certain region is surrounded by a welded part(s) and a connection part means that a part, having a predetermined ratio (for example, 60%, 70%, 80%, 85%, or the like) or more, of the outer periphery of that region is occupied by the welded part(s) and the connection part. The predetermined ratio is preferably 70%, more preferably 80%, but it may be another value.

[0064] Each lower adjacent region 11M is a region having such a shape that becomes thinner as the distance from the corresponding lower connection part 11D increases. In this embodiment, each lower adjacent region 11M is a triangular region in which one side thereof is in contact with the side end portion of the corresponding lower connection part 11D, as shown in FIG. 1. Lower bulge parts 11N are each formed in the corresponding lower adjacent region 1 1M, similarly to the upper bulge parts 11L in the upper adjacent regions 11K.

[0065] The lower adjacent regions 11M and the lower bulge parts 11N are each formed at a corresponding position on an extension line in a direction in which the string part 12 pulls the mask body 11 through the corresponding lower connection part 11D in a state where the mask 1 is worn.

[0066] Each lower connection part 11D is disposed laterally beside the wearer' jaw in the state where the mask 1 is worn. For human body, the height of a jaw is lower than the height of ears. Consequently, the string part 12 pulls the mask body 11 obliquely upward (the direction B in FIG. 1) through the lower connection parts 11D in the state where the mask 1 is worn. Thus, in this embodiment, the lower adjacent regions 11M and the lower bulge parts 11N are formed at such positions obliquely below the lower connection parts 11D that are located on the extension line in the direction in which the string part 12 pulls the mask body 11 through the lower connection parts 11D in the state where the mask 1 is worn.

[0067] However, there are cases where the direction in which the string part 12 pulls the mask body 11 through the lower connection parts 11D does not align with the positions obliquely below the lower connection parts 11D, depending on the resultant shape of the mask body 11 when the divided regions 11B are expanded through the pleats 11A. Thus, the lower adjacent regions 11M and the lower bulge parts 11N may be formed at different positions from the positions obliquely below the lower connection parts 11D, such as, for example, positions laterally beside the lower connection parts 11D.

[0068] The string part 12 includes two strings, for example, rubber strings, wide strings, or the like, that hold the mask body 11 at a predetermined position on the wearer's face by being hung on the wearer's ears. The ends of each string of the string part 12 are connected with the corresponding vicinities of the upper side end portion and the lower side end portion of the mask body 11, which are, in this embodiment, the vicinity of the upper corner and the vicinity of the lower corner.

[0069] Next, a situation where the mask 1 is worn will be described with reference to FIG. 4.

[0070] As shown in FIG. 4, the string part 12 is hung on the wearer's ears in a state where the mask 1 is worn. At this time, the mask body 11 whose posture is maintained by the string part 12 covers an area ranging from the wearer's nose to the jaw.

[0071] In this state, the string part 12 pulls the mask body 11 through the upper connection parts 11C and the lower connection parts 11D. At this time, a part of the force to be transmitted from the string part 12 to the mask body 11 acts to press the mask body 11 against the wearer's skin. Hereinafter, the force acting to press the mask body 11 against the wearer's skin when the string part 12 pulls the mask body 11, is referred to as a pressing force.

[0072] The raised upper bulge parts 11L and lower bulge parts 11N act to keep the corresponding upper connection parts 11C and lower connection parts 11D away from the wearer's skin by being brought into contact with the wearer's skin. When the pressing force acts to press the mask body 11 against the wearer's skin, the pressing force also acts to press the upper bulge parts 11L and the lower bulge parts 11N against the wearer's skin stronger than the other portions of the mask body 11. That is, the pressing force is more used to press the unhardened upper bulge parts 11L and lower bulge parts 11N against the wearer's skin. This reduces a force used to press the hardened upper connection parts 11C and lower connection parts 11D against the wearer's skin. Thus, the mask 1 can prevent the hardened upper connection parts 11C and lower connection parts 11D from coming into contact with the wearer's skin, through the upper bulge parts 11L and the lower bulge parts 11N, and reduce deterioration of a texture, thus improving a texture.

[0073] In this embodiment, the upper bulge parts 11L and the lower bulge parts 11N are each formed at the corresponding position on the extension line in the corresponding direction in which the string part 12 pulls the mask body 11.

[0074] The pressing force is transmitted along the direction in which the string part 12 pulls the mask body 11. Consequently, the pressing force is more easily transmitted to the upper bulge parts 11L and the lower bulge parts 11N, as compared with a case where the upper bulge parts 11L and the lower bulge parts 11N are each formed at another position different from the above-de-

scribed position. This results in that the pressing force is more used to press the upper bulge parts 11L and the lower bulge parts 11N against the wearer's skin, as compared with the case where the upper bulge parts 11L and the lower bulge parts 11N are each formed at the other position. Thus, the mask 1 can further reduce the force of pressing the upper connection parts 11C and the lower connection parts 11D against the wearer's skin, and further prevent the upper connection parts 11C and the lower connection parts 11D from coming into contact with the wearer's skin, thus further reducing deterioration of a texture and further improving a texture.

[0075] In particular, in this embodiment, the upper adjacent regions 11K and the upper bulge parts 11L are each formed at the position laterally beside the corresponding upper connection part 11C as the position on the extension line in the direction in which the string part 12 pulls the mask body 11. Further, the lower adjacent regions 11M and the lower bulge parts 11N are each formed at the position obliquely below the corresponding lower connection part 11D as the position on the extension line in the direction in which the string part 12 pulls the mask body 11. These enable the upper bulge parts 11L and the lower bulge parts 11N to further prevent the upper connection parts 11C and the lower connection parts from coming into contact with the wearer's skin in a case where the string part 12 to be hung on the ears is connected with the vicinities of the upper corners and the vicinities of the lower corners of the mask body 11, thus further reducing deterioration of a texture and further improving a texture.

[0076] Further, in this embodiment, each upper adjacent region 1 1K is the region having such a shape that becomes thinner as the distance from the corresponding upper connection part 11C increases. Forming each upper adjacent region 11K into such a shape provides the following effects, as compared with a case where each upper adjacent region 11K is formed into another shape, for example, a shape that becomes wider as the distance from the corresponding upper connection part 11C increases, or a shape having a certain width regardless of the distance from the corresponding upper connection part 11C (such as, for example, a rectangle).

[0077] Forming each upper adjacent region 11K into the shape that becomes thinner as the distance from the corresponding upper connection part 11C increases, enables the upper adjacent regions 11K to be narrowed, as compared with the case where each upper adjacent region 11K is formed into the other shape. That is, it is possible to reduce an area of the mask body 11 that is to be raised to form the upper bulge parts 11L.

[0078] The upper bulge parts 11L are formed in the corresponding upper adjacent regions 11K in accordance with a force from the outer periphery. The narrower the upper adjacent regions 11K are, the smaller the amount of fibers to be raised becomes, and thus the fibers in the upper adjacent regions 11K become more likely to rise. Consequently, the higher raised upper bulge parts 11L are formed in the upper adjacent regions 11K.

[0079] The higher the upper bulge parts 11L are raised with respect to the back surface of the mask body 11, the further away from the wearer's skin the upper bulge parts 11L act to keep the upper connection parts 11C, and the upper bulge parts 11L become more likely to come into contact with the wearer's skin. Consequently, the upper bulge parts 11L can further prevent the upper connection parts 11C from coming into contact with the wearer's skin.

[0080] In addition, forming each upper adjacent region 11K as the region having such a shape that becomes thinner as the distance from the corresponding upper connection part 11C increases, results in that a wider area of each upper adjacent region 11K is adjacent to the corresponding upper connection part 11C. Consequently, a wider area of each upper bulge part 11L formed in the corresponding upper adjacent region 1 1K is located in the vicinity of the corresponding upper connection part 11C. Each upper bulge part 11L acts to keep the corresponding upper connection part 11C further away from the wearer's skin as each upper bulge part 11L is closer and closer to the corresponding upper connection part 11L, thus enabling to further prevent the upper connection parts 11C from coming into contact with the wearer's skin.

[0081] By forming each upper adjacent region 11K as the region having such a shape that becomes thinner as the distance from the corresponding upper connection part 11C increases as described above, the mask 1 can further prevent the upper connection parts 11C from coming into contact with the wearer's skin, as compared with the case where each upper adjacent region 11K is formed as a region having another shape. Therefore, the mask 1 can further reduce deterioration of a texture and further improve a texture.

[0082] In this embodiment, each upper adjacent region 11K is formed as the trapezoidal region, but it may be formed as a region having another shape that becomes thinner as the distance from the corresponding upper connection part 11C increases, which is, for example, a triangular shape. Alternatively, each upper adjacent region 11K may be formed as a region having a different shape from the shape that becomes thinner as the distance from the corresponding upper connection part 11C increases, which is, for example, a rectangular shape. For example, each upper adjacent region 11K may be formed as a shape that becomes wider as the distance from the corresponding adjacent connection part increases, or a shape having a certain width.

[0083] Each lower adjacent region 11M is also the region having such a shape that becomes thinner as the distance from the corresponding lower connection part 11D increases, similarly to the upper adjacent regions 11K with respect to the upper connection parts 11C.

[0084] Consequently, by forming each lower adjacent region 11M as the region having such a shape that becomes thinner as the distance from the corresponding

lower connection part 11D increases, the mask 1 can further prevent the lower connection parts 11D from coming into contact with the wearer's skin, as compared with a case where each lower adjacent region 11M is formed as a region having another shape. Thus, the mask 1 can further reduce deterioration of a texture and further improve a texture.

[0085] In this embodiment, each lower adjacent region 11M is formed as the triangular region, but it may be formed as a region having another shape that becomes thinner as the distance from the corresponding lower connection part 11D increases, which is, for example, a trapezoidal shape. Alternatively, each lower adjacent region 11M may be formed as a region having a different shape from the shape that becomes thinner as the distance from the corresponding lower connection part 11D increases, which is, for example, a rectangular shape. For example, each lower adjacent region 11M may be formed as a shape that becomes wider as the distance from the corresponding adjacent connection part increases, or a shape having a certain width.

[0086] Further, in this embodiment, the upper connection parts 11C and the lower connection parts 11D are each formed by being compressed from the back side toward the front side of the mask body 11, heated, and ultrasonically welded. This results in that the upper connection parts 11C and the lower connection parts 11D are each formed with the back side surface of the mask body 11 recessed. That is, the upper bulge parts 11L and the lower bulge parts 11N are raised higher relatively to the upper connection parts 11C and the lower connection parts 11D, respectively. Consequently, the mask 1 can further prevent the upper connection parts 11C and the lower connection parts 11D from coming into contact with the wearer's skin through the corresponding upper bulge parts 11L and lower bulge parts 11N thus formed, thus further reducing deterioration of a texture and further improving a texture.

[0087] Further, in this embodiment, the mask body 11 includes the thick layer having the thickness greater than or equal to the predetermined threshold. The mask body 11 may include a plurality of thinner layers instead of the thick layer to ensure the same thickness. The mask 1 can achieve the following effects by including the thick layer instead of the plurality of layers.

[0088] For a layer in which fibers are entangled like a non-woven fabric, the entangled fibers form this layer. The fibers in this layer are constrained on a surface of this layer by the shape of the surface. That is, the fibers in each layer included in the mask body 11 are constrained by the corresponding surface shape in the vicinity of the corresponding surface.

[0089] When the thick layer is used instead of the plurality of layers, the number of surfaces of the layers included in the mask body 11 decreases. That is, when the thick layer is used instead of the plurality of layers, the constraint imposed on the fibers in the mask body 11 decreases. For the mask body 11 using the thick layer, the constraint imposed on the fibers inside decreases and thus the upper bulge parts 11L and the lower bulge parts 11N become more likely to be raised. Therefore, the mask body 11 can further prevent the upper connection parts 11C and the lower connection parts 11D from coming into contact with the wearer's skin through the corresponding upper bulge parts 11L and lower bulge parts 11N thus formed, and improve a texture.

[0090] Further, in this embodiment, the mask body 11 is formed by stacking the three or more layers including the outermost layer on the front side, the outermost layer on the back side, and the one or more layers between them. The total thickness of the intermediate layer(s) (i.e., the layer(s) excluding the outermost layers on the front side and the back side) of the mask body 11 is larger than the thickness of any of the outermost layers on the front side and the back side.

[0091] There are cases where a harder non-woven fabric is used for the outermost layers of the mask body 11 such that dust and makeup are less likely to adhere to such outermost layers. The harder the layers included in the mask body 11 are, the less likely the upper bulge parts 11L and the lower bulge parts 11N are to be raised. By making the total of the intermediate layer(s) of the mask body 11 thicker than any of the outermost layers, it is possible to further reduce the ratio of an area occupied by the harder non-woven fabric in the mask body 11, and thus further reduce the impact on a rise of the upper bulge parts 11L and the lower bulge parts 11N, thus further reducing a reduction in the rise.

[0092] Further, in this embodiment, the respective rectangular welded part 11F and upper lateral welded parts 11G that surround the upper adjacent regions 11K are the perforation-shaped welded parts. The welded parts are hardened and constrain the movement of the nearby fibers. Consequently, the fibers in the vicinity of the welded parts are less likely to rise as compared with other portions of the mask body 11. When the welded parts are perforation-shaped, the surrounding fibers are not constrained by the welded parts in between perforations of each perforation-shaped welded part. Consequently, the degree of constraint on the fibers around the welded portions decreases in the periphery of the perforation-shaped welded parts, as compared with the periphery of solid line-shaped welded parts.

[0093] Thus, by forming the respective rectangular welded part 11F and upper lateral welded parts 11G that surround the upper adjacent regions 11K as the perforation-shaped welded parts, the degree of constraint of the fiber movement within the upper adjacent regions 11K decreases, as compared with a case where those welded parts are formed as the solid line-shaped welded parts. This enables to form, within the upper adjacent regions 11K, the upper bulge parts 11L further raised.

[0094] However, the respective rectangular welded part 11F and upper lateral welded parts 11G that surround the upper adjacent regions 11K may be formed as the solid line-shaped welded parts.

[0095] Similarly, by forming the respective lower welded part 111 and lower lateral welded parts 11J that surround the lower adjacent regions 11M as the perforation-shaped welded parts, the degree of constraint of the fiber movement within the lower adjacent regions 11M decreases, as compared with a case where those welded parts are formed as the solid line-shaped welded parts. This enables to form, within the lower adjacent regions 11M, the lower bulge parts 11N that are further raised.

[0096] However, the respective lower welded part 111 and lower lateral welded parts 11J that surround the lower adjacent regions 11M may be formed as the solid line-shaped welded parts.

[0097] As described above, the mask 1 of this embodiment includes the mask body 11 in which the upper bulge parts 11L and the lower bulge parts 11N are formed.

[0098] When the upper bulge parts 11L, formed within the upper adjacent regions 11K adjacent to the upper connection parts 11C, and the lower bulge parts 11N, formed within the lower adjacent regions 11M adjacent to the lower connection parts 11D, come into contact with the wearer's skin, this prevents the connection parts from coming contact with the wearer's skin. This enables the mask 1 to further improve a mask texture.

[0099] Further, the upper bulge parts 11L and the lower bulge parts 11N are each formed at the corresponding position on the extension line in the corresponding direction in which the string part 12 pulls the mask body 11. Consequently, the force to be transmitted from the string part 12 to the mask body 11 is more used to press the upper bulge parts 11L and the lower bulge parts 11N against the wearer's skin, as compared with the case where the upper bulge parts 11L and the lower bulge parts 11N are formed at other positions. Consequently, the force of pressing the upper connection parts 11C and the lower connection parts 11D against the wearer's skin further decreases. This enables the mask 1 to prevent the connection parts from coming into contact with the wearer's skin and further improve a mask texture.

[0100] Further, the upper bulge parts 11L and the lower bulge parts 11N are formed corresponding to the distortion caused in the mask body 11 by the compression applied to the welded parts and the connection parts, without a material for forming a raised portion added to the mask body 11 from the outside. That is, the mask 1 can include the upper bulge parts 11L and the lower bulge parts 11N without the need to add an additional material to the mask body, and improve a texture more easily.

(Other Embodiments of the Present Invention)

[0101] In the first embodiment, the mask has the configuration as described with reference to FIGS. 1 to 3. However, the mask may have another configuration, for example, such a configuration as shown in FIG. 5.

[0102] A mask 2 shown in FIG. 5 includes a mask body 21, a string part 22, and a nose grip 23.

[0103] The mask body 21 is a rectangular member that covers a predetermined area of the wearer's face. The mask body 21 includes pleats 21A, divided regions 21B, upper connection parts 21C, lower connection parts 21D, an upper welded part 21E, a rectangular welded part 21F, upper lateral welded parts 21G, and lateral welded parts 21H. The mask body 21 also includes a lower welded part 211, lower lateral welded parts 211, upper adjacent regions 21K, upper bulge parts 21L, lower adjacent regions 21M, and lower bulge parts 21N.

[0104] The elements 21A to 211, 21K, and 21L of the mask body 21 are the same as the corresponding elements 11A to 111, 11K, and 11L of the mask body 11 of the mask 1 of the first embodiment.

[0105] The string part 22 and the nose grip 23 are the same as the string part 12 and the nose grip 13 of the mask 1 of the first embodiment, respectively.

[0106] The mask body 21 is different from the mask body 11 of the first embodiment in that the horizontally long rectangular non-woven fabric layer is formed by stacking five layers instead of four.

[0107] The first layer from the front side in the mask body 21 is a spunbond type non-woven fabric layer, which has a thickness of 100 μm. The second layer from the front side in the mask body 21 is a layer of an air-through type non-woven fabric thicker than the other layers, and this second layer has a thickness of 1500 μm. The third and fourth layers from the front side in the mask body 21 are layers each formed of a melt blow type non-woven fabric and having a thickness of 100 μm. The fifth layer from the front side (i.e., the first layer from the back side) in the mask body 21 is a layer formed of a spunbond type non-woven fabric, which has a thickness of 100 μm.

[0108] Further, the mask body 21 is different from the mask body 11 in that the position of the lower lateral welded parts 21J is different from the position of the lower lateral welded parts 11J in the mask body 11. Consequently, the shapes of the lower adjacent regions 21M and the lower bulge parts 21N are different from the shapes of the lower adjacent regions 11M and the lower bulge parts 11N in the mask body 11, respectively.

[0109] Each lower lateral welded part 21J is formed along the lower welded part 211 at a position near the side end portion of the mask body 21 and below the lower welded part 211 by a predetermined distance. Consequently, each lower adjacent region 21M is a horizontally long four-sided region. Further, each lower adjacent region 21M has no welded portion formed at its mask body 21 center-side end portion. The lower connection parts 21D, the lower welded part 211, and the lower lateral welded parts 21J are each formed in a corresponding portion, of the outer peripheral portion of the corresponding lower adjacent region 21M, excluding the mask body 21 center-side end portion of the corresponding lower adjacent region 21M. In each lower adjacent region 21M, 85% of its outer peripheral portion is occupied by the corresponding lower connection part 21D, the lower welded part 211, and the corresponding lower lateral welded part 21J.

[0110] Also in these lower adjacent regions 21M, the lower bulge parts 21N are formed by the distortion caused in the mask body 21 by the lower connection parts 11D, the lower welded part 211, and the lower lateral welded parts 211.

[0111] Therefore, the mask 2 can prevent the upper connection parts 21C and the lower connection parts 21D from coming into contact with the wearer's skin through the formed upper bulge parts 21L and lower bulge parts 21N, and improve a texture, similarly to the mask 1.

[0112] The mask may have such a configuration as shown in FIG. 6.

[0113] A mask 3 shown in FIG. 6 includes a mask body 31 and a string part 32.

[0114] The mask body 31 is a rectangular member that covers a predetermined area of the wearer's face. The mask body 31 is formed by stacking five layers of non-woven fabric, similarly to the mask body 21.

[0115] The mask body 31 includes pleats 31A, divided regions 31B, upper connection parts 31C, lower connection parts 31D, an upper welded part 3 1E, an upper lateral welded part 31G, and lateral welded parts 31H. The mask body 31 also includes a lower welded part 311, lower lateral welded parts 311, upper adjacent regions 31K, upper bulge parts 31L, lower adjacent regions 31M, and lower bulge parts 3 1N.

[0116] The elements 31A to 31E, 31H to 31J, 31N, and 31M of the mask body 31 are the same as the corresponding elements 21A to 21E, 21H to 21J, 21N, and 21M of the mask body 21.

[0117] The string part 32 is the same as the string part 22 of the mask 2.

[0118] The mask 3 is different from the mask 2 in that there are no elements corresponding to the nose grip 23 and the rectangular welded part 21F and that the upper welded part 31G has a different shape.

[0119] The upper welded part 31G is a perforation-shaped welded part extending from the lower end of one upper connection part 31C to the lower end of the other upper connection part 31C, and this upper welded part 31G is formed in an arch shape bulging upward. Consequently, the shapes of the upper adjacent regions 31K and the upper bulge parts 31L are different from the shapes of the upper adjacent regions 21K and the upper bulge parts 21L in the mask 2, respectively.

[0120] The upper adjacent regions 31K are triangular regions that are horizontally longer than the upper adjacent regions 21K. Further, each upper adjacent region 31K has no welded portion formed at its mask body 31 center-side end portion. The upper connection parts 31C, the upper welded part 3 1E, and the upper lateral welded part 31G are each formed in a corresponding portion, of the outer peripheral portion of the corresponding upper adjacent region 31K, excluding the mask body 31 center-side end portion of the corresponding upper adjacent region 31K. In each upper adjacent region 31K, 80% or more of its outer peripheral portion is occupied by the corresponding upper connection part 31C, the upper welded part 3 1E, and the upper lateral welded part 31G.

[0121] Also in these upper adjacent regions 31K, the upper bulge parts 31L are formed by the distortion caused in the mask body 31 by the upper connection parts 31C, the upper welded part 31E, and the upper lateral welded part 31G.

[0122] Therefore, the mask 3 can prevent the upper connection parts 31C and the lower connection parts 31D from coming into contact with the wearer's skin through the formed upper bulge parts 31L and lower bulge parts 31N, and improve a texture, similarly to the masks 1 and 2.

[0123] In the first embodiment, the mask body 11 is formed to stack the plurality of layers of the non-woven fabric. However, as another example, the mask body 11 may be formed to include only one layer. Further, the mask body 11 may be formed to include any layer different from the layer of the non-woven fabric if it is made of fibers that are three-dimensionally entangled, which is, for example, a layer of cotton-like fibers. Further, the mask body 11 may be formed to include a plurality of types of layers made of fibers that are three-dimensionally entangled.

[0124] Further, the mask body 11 may be formed to include another layer having breathability, which is, for example, a layer of cotton-like fibers, gauze, felt, or paper, in addition to the plurality of layers of the non-woven fabric.

[0125] Further, in the first embodiment, the string part 12 includes the strings that are to be hung on the wearer's ears and to hold the mask body 11 at a predetermined position on the wearer's face. However, the string part 12 may include strings that are to be hung on a part different from the wearer's ears and to hold the mask body 11. For example, the string part 12 may be such strings that are to be hung on the wearer's head and to hold the mask body 11 at a predetermined position on the wearer's face. In this case, the string part 12 includes two strings, for example. One of the two strings has both ends connected with the corresponding upper connection parts 11C. The other of the two strings has both ends connected with the corresponding lower connection parts 11D.

[0126] Further, in the first embodiment, the upper bulge parts 11L and the lower bulge parts 11N are each formed at the corresponding position on the extension line in the corresponding direction in which the string part 12 pulls the mask body 11. However, the upper bulge parts 11L and the lower bulge parts 11N may be each formed at a different corresponding position from the position on the extension line in the direction in which the string part 12 pulls the mask body 11.

[0127] Further, in the first embodiment, the mask 1 includes four bulge parts, which are two upper bulge parts 11L and two lower bulge parts 1 1N. However, the mask 1 may include three or less bulge parts, which are, for example, a part of the two upper bulge parts 11L and the two lower bulge parts 11N. For example, the mask 1 may

include only the two upper bulge parts 11L without any of the two lower bulge parts 11N.

[0128] Further, in the first embodiment, the string part 12 is connected with the back side of the mask body 11. However, the string part 12 may be connected with the front side of the mask body 11. Also in this case, the back side of the mask body 11 is hardened by the welding of the string part 12 with the mask body 11, and thus a texture might deteriorate if the connection parts connecting the string part 12 and the mask body 11 come into contact with the wearer's skin. Consequently, even in this case, this mask 1 can reduce deterioration of a texture and further improve a texture.

[0129] Further, in the first embodiment, the respective upper connection parts 11C, upper welded part 11E, rectangular welded part 11F, and upper lateral welded parts 11G that surround the upper adjacent regions 11K are compressed and welded from the back side toward the front side of the mask body 11. However, at least one or more of the upper connection parts 11C, upper welded part 11E, rectangular welded part 11F, and upper lateral welded parts 11G that surround the upper adjacent regions 11K may be compressed and welded from the front side toward the back side of the mask body 11.

[0130] Further, in the first embodiment, the respective lower connection parts 11D, lower welded part 111, and lower lateral welded parts 111 that surround the lower adjacent regions 11M are compressed and welded from the back side toward the front side of the mask body 11. However, at least one or more of the lower connection parts 11D, lower welded part 111, and lower lateral welded parts 11J that surround the lower adjacent regions 11M may be compressed and welded from the front side toward the back side of the mask body 11.

[0131] Further, in the first embodiment, the mask 1 is a pleated mask, but it may be any other type of mask, such as a flat mask.

[0132] Further, in the first embodiment, the mask body 11 has a rectangular shape, but it may have any other shape. For example, the mask body 11 may have a horizontally long or vertically long elliptical shape, a circular shape, or a polygonal shape such as a horizontally long or vertically long hexagonal shape.

[0133] Further, in the first embodiment, the connection parts 11C and 11D and the welded parts 11E to 1 1J are each formed by being welded on the mask body 11. However, a part of the connection parts 11C and 11D and the welded parts 11E to 11J may be formed by being welded only on the surface of the mask body 11.

[0134] Although the exemplary embodiments of the present invention have been described above in detail, the present invention is not limited to such specific embodiments. For example, any combination of the above-described embodiments may be used.

Reference Signs List

[0135]

1	Mask
11	Mask body
11A	Pleat
11B	Divided region
11C	Upper connection part
11D	Lower connection part
11E	Upper welded part
11F	Rectangular welded part
11G	Upper lateral welded part
11H	Lateral welding part
111	Lower welded part
11J	Lower lateral welded part
11K	Upper adjacent region
11L	Upper bulge part
11M	Lower adj acent region
11N	Lower bulge part
12	String part
13	Nose grip
2	Mask
21	Mask body
21A	Pleat
21B	Divided region
21C	Upper connection part
21D	Lower connection part
21E	Upper welded part
21F	Rectangular welded part
21G	Upper lateral welded part
21H	Lateral welded part
211	Lower welded part
21J	Lower lateral welded part
21K	Upper adjacent region
21L	Upper bulge part
21M	Lower adjacent region
21N	Lower bulge part
22	String part
23	Nose grip
3	Mask
31	Mask body
31A	Pleat
31B	Divided region
31C	Upper connection part
31D	Lower connection part
31E	Upper welded part
31G	Upper lateral welded part
31H	Lateral welded part
311	Lower welded part
> 1J	Lower lateral welded part
31K	Upper adjacent region
31L	Upper bulge part
31M	Lower bulge part
32	String part

Claims

1. A mask, comprising:

a mask body;

a string part that is connected with the mask body by welding and holds the mask body at a predetermined position on the face of a wearer by being hung on the wearer; and

a bulge part in which the mask body is raised, the bulge part being formed in an adjacent region adjacent to a connection part of the mask body at which the string part is connected with the mask body.

2. The mask according to claim 1, wherein the adjacent region is surrounded by a welded part in which a part of the mask body is welded and the connection part adjacent thereto.

3. The mask according to claim 1 or 2, wherein the adjacent region is located on an extension line in a direction in which the string part pulls the mask body through the connection part adjacent thereto when the mask is worn by the wearer.

4. The mask according to claim 3, wherein

the string part has one end connected with a first vicinity of an upper side end portion of the mask body and the other end connected with a second vicinity of a lower side end portion of the mask body, and holds the mask body at the predetermined position on the face of the wearer by being hung on the ears of the wearer,

the bulge part is provided for both of the first adjacent region adjacent to the first connection part in the first vicinity of the upper side end portion of the mask body and the second adjacent region adjacent to the second connection part in the second vicinity of the lower side end portion of the mask body,

the first adjacent region in a third vicinity of the upper side end portion of the mask body is located at a first position lateral to the first connection part adjacent thereto, the first position being on the extension line in the first direction in which the string part pulls the mask body through the first connection part adjacent thereto when the mask is worn by the wearer, and

the second adjacent region in a fourth vicinity of the lower side end portion of the mask body is located at a second position obliquely below the second connection part adjacent thereto, the second position being on the extension line in the second direction in which the string part pulls the mask body through the second connection part adjacent thereto when the mask is worn by the wearer.

5. The mask according to any one of claims 1 to 4, wherein the adjacent region has such a shape that becomes thinner as a distance from the connection part adjacent thereto increases.

6. The mask according to any one of claims 1 to 5, wherein

the mask body is formed by stacking three or more layers, and

a total thickness of at least one intermediate layer included in the three or more layers is larger than a thickness of individual outermost layers of the three or more layers.

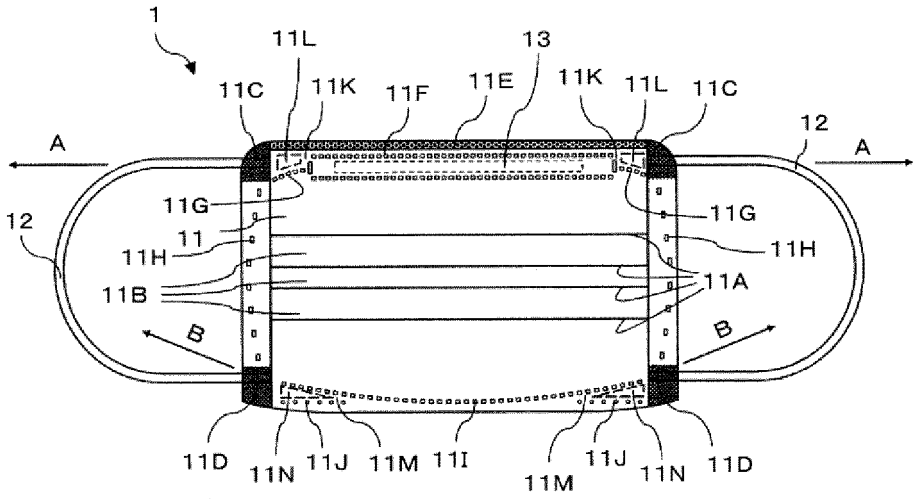
7. The mask according to any one of claims 1 to 6, wherein

the mask body is formed by stacking three or more layers, and

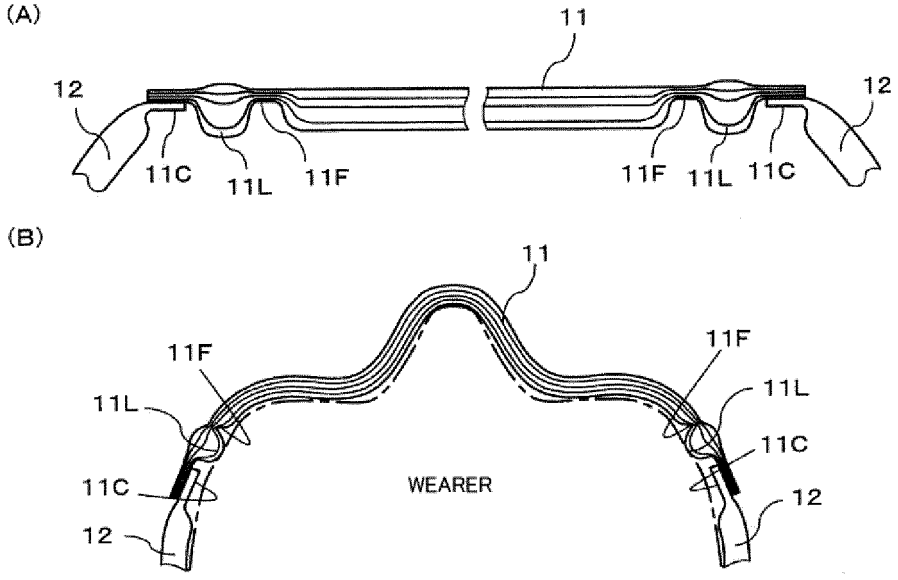
a total thickness of at least one intermediate layer included in the three or more layers is 0.3 mm or more.

8. The mask according to any one of claims 1 to 7, wherein the mask body includes a layer having a thickness greater than or equal to a predetermined threshold.

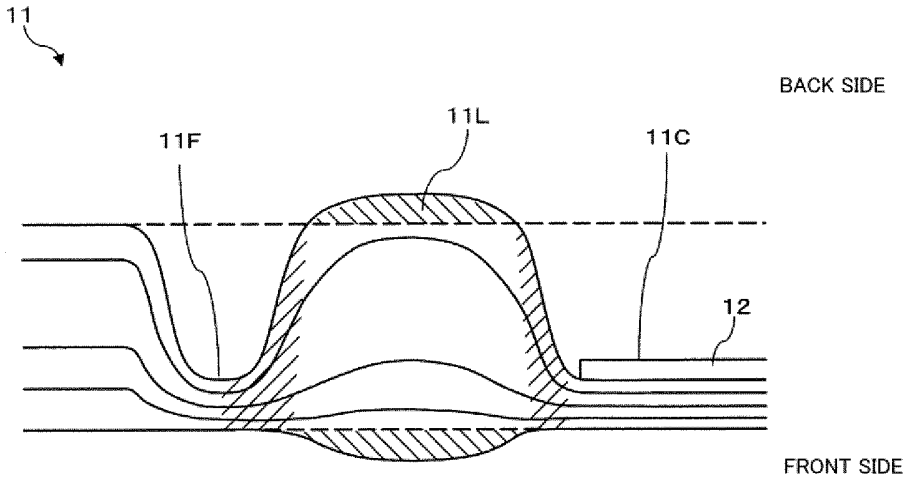
[Figure 1]



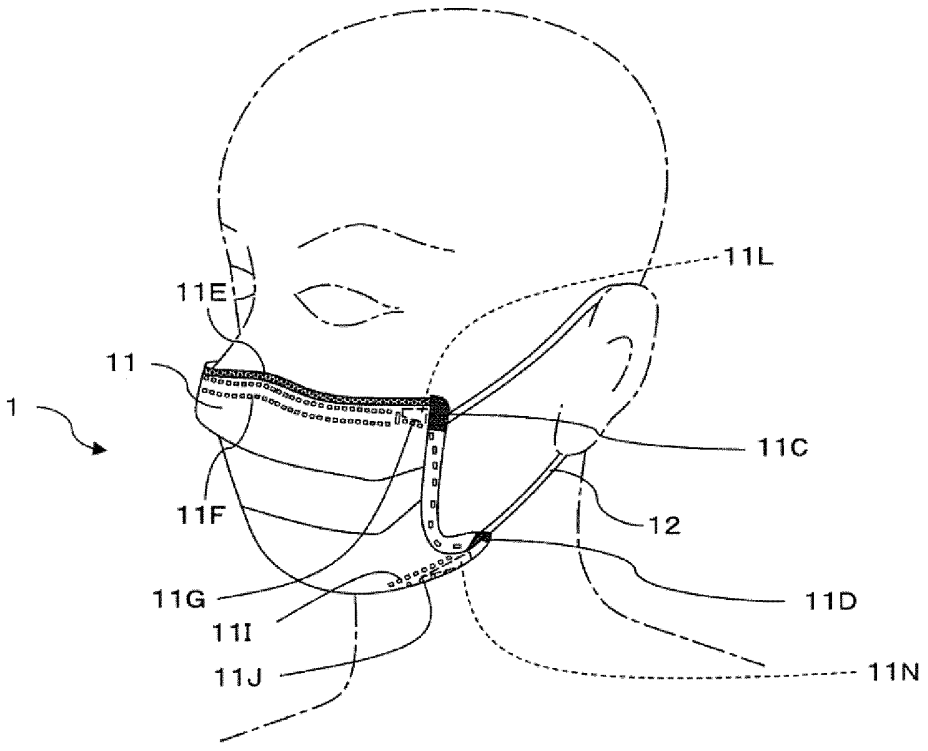
[Figure 2]



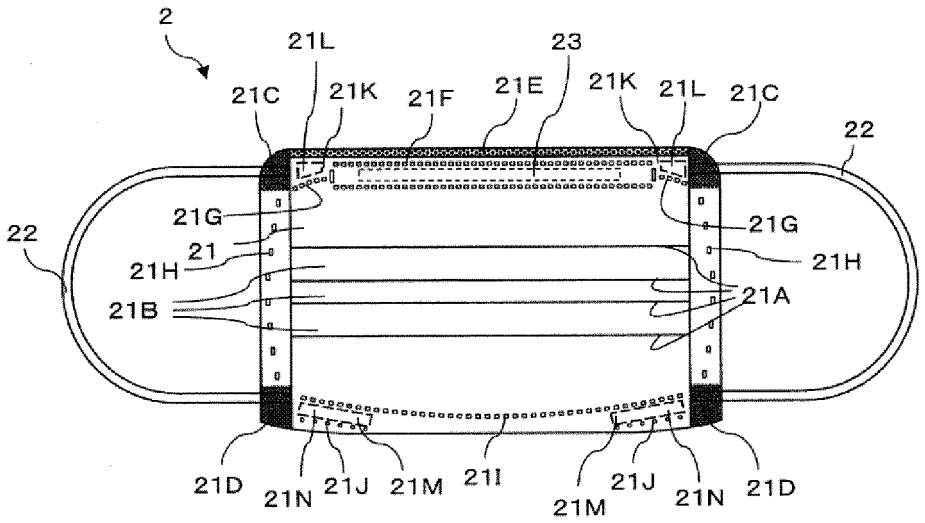
[Figure 3]



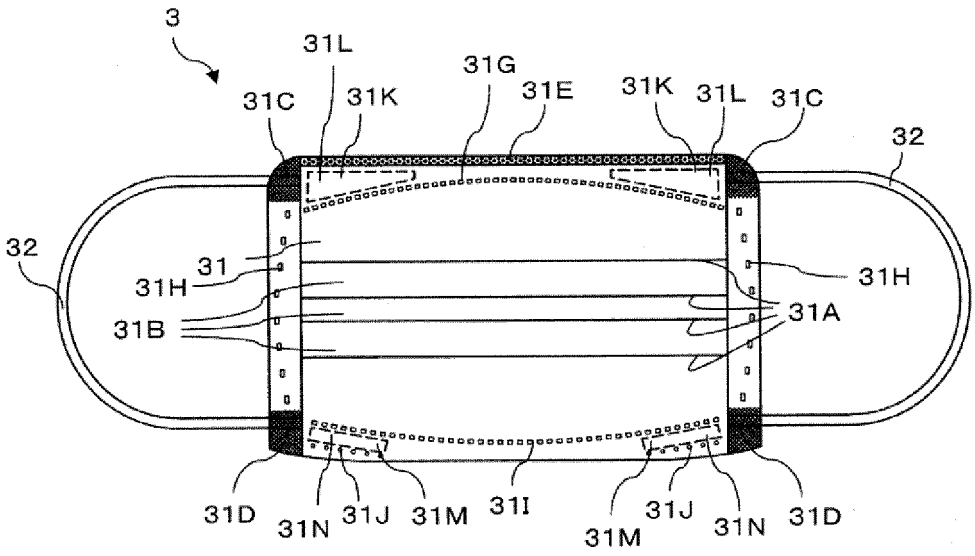
[Figure 4]



[Figure 5]



[Figure 6]



INTERNATIONAL SEARCH REPORT

International application No.
PCT/JP2021/009749

A. CLASSIFICATION OF SUBJECT MATTER
Int. Cl. A41D13/11(2006.01)i
FI: A41D13/11 Z, A41D13/11 A, A41D13/11 H

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)
Int. Cl. A41D13/11, A62B18/02

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

Published examined utility model applications of Japan	1922-1996
Published unexamined utility model applications of Japan	1971-2021
Registered utility model specifications of Japan	1996-2021
Published registered utility model applications of Japan	1994-2021

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.
Y A	JP 2008-55035 A (IRIS OHYAMA INC.) 13 March 2008, paragraphs [0027]-[0032], fig. 1, 2	1-3 4-8
Y A	JP 2017-197851 A (KADO, Hideyuki) 02 November 2017, paragraph [0014], fig. 1	4-8
Y	JP 3188156 U (MAKINO, Osami) 09 January 2014	1-8
Y	JP 2006-239382 A (BOX KK) 14 September 2006	1-8
Y	WO 2015/080228 A1 (KOWA CO., LTD.) 04 June 2015	1-8
Y	JP 2018-127757 A (IRIS OHYAMA INC.) 16 August 2018	1-8

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

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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
13.05.2021	25.05.2021
Name and mailing address of the ISA/ Japan Patent Office 3-4-3, Kasumigaseki, Chiyoda-ku, Tokyo 100-8915, Japan	Authorized officer Telephone No.

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/JP2021/009749

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	JP 2014-30654 A (SAN-M PACKAGE CO., LTD.) 20 February 2014	1-8

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INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/JP2021/009749

Patent Documents referred to in the Report	Publication Date	Patent Family	Publication Date
JP 2008-55035 A	13.03.2008	(Family: none)	
JP 2017-197851 A	02.11.2017	(Family: none)	
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JP 2006-239382 A	14.09.2006	(Family: none)	
WO 2015/080228 A1	04.06.2015	CN 105813696 A KR 10-2016-0091336 A	
JP 2018-127757 A	16.08.2018	(Family: none)	
JP 2014-30654 A	20.02.2014	US 2014/0034059 A1 EP 2695641 A2	

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Patent documents cited in the description

- JP 5972092 B **[0003]**