

DESCRIPTION

TITLE OF THE INVENTION: NASAL CONGESTION RELIEVER

TECHNICAL FIELD

[0001]

The present invention relates to a nasal congestion reliever to be mounted to the nose to relieve nasal congestion.

BACKGROUND ART

[0002]

For example, cold, hay fever, and the like may cause a stuffy nose. A person with such stuffy nose has hard time sleeping because their nasal breathing is hindered.

[0003]

Patent Document 1 discloses a nasal pack as an example of a solution for improving the symptoms of rhinitis including stuffy nose. The nasal pack of Patent Document 1 is mounted to the face in an attempt to improve the symptoms of rhinitis by heating the nasal cavities or paranasal sinuses with its heating element.

PRIOR ART DOCUMENT

PATENT DOCUMENT

[0004]

Patent Document 1: Japanese Unexamined Patent Publication No. 11-347059

SUMMARY OF THE INVENTION

PROBLEMS TO BE SOLVED BY THE INVENTION

[0005]

In Patent Document 1, an exothermic composition used in what is known as a disposable body warmer (chemical body warmer) is mentioned as the composition of the heating element. Unfortunately, in general, it takes some time for the chemical

body warmer to be sufficiently warm after coming into contact with the outside air. Therefore, it takes some time until the stuffy nose is relieved after the nasal pack of Patent Document 1 is mounted, meaning that the nasal pack does not help the person falling asleep.

[0006]

In view of the above, a technical subject of the present invention is to swiftly relieve the stuffy nose for enabling the person to fall asleep more easily.

MEANS FOR SOLVING THE PROBLEM

[0007]

A nasal congestion reliever according to the present invention devised to solve the problem described above is a nasal congestion reliever that is to be mounted to a nose in order to relieve nasal congestion, the nasal congestion reliever comprising: a pair of storage parts in which a chemical exothermic composition is stored; and a connection part that connects the pair of storage parts, wherein the storage parts each have an aeration part for bringing the chemical exothermic composition into contact with air, and moisture permeability of the aeration part is $600 \text{ g}/(\text{m}^2 \cdot 24\text{h})$ to $20,000 \text{ g}/(\text{m}^2 \cdot 24\text{h})$. The definition of moisture permeability (water vapor permeability) conforms to JIS K 7129 (the same applies in the following description).

[0008]

With this configuration, the moisture permeability of the aeration part is $600 \text{ g}/(\text{m}^2 \cdot 24\text{h})$ to $20,000 \text{ g}/(\text{m}^2 \cdot 24\text{h})$, so that the chemical exothermic composition can swiftly come into contact with air. Therefore, the temperature of the chemical exothermic composition can swiftly rise. Thus, after the mounting, the stuffy nose can be swiftly relieved, to help the person fall asleep better.

[0009]

In the configuration described above, the connect may be provided with an elastic member that extends side walls of the nose when mounted.

[0010]

With this configuration, the nasal cavities can be expanded by the elastic member, so that the effect of relieving the stuffy nose can be enhanced.

[0011]

In the above configuration, a distance between centers of the pair of storage parts may be 55 mm to 90 mm.

[0012]

With this configuration, the storage parts can be placed on acupuncture points known as “nasal passages”, stimulation of which is known to be effective against a stuffy nose. Thus, it is possible to warm the “nasal passages” to thereby enhance the effect of relieving the stuffy nose. When the elastic member is provided to the connection part, the elastic member can be arranged at a position optimum for extending the side walls of the nose outward, with the storage parts positioned on the “nasal passages”.

ADVANTAGES OF THE INVENTION

[0013]

With the present invention, the stuffy nose can be swiftly relieved to help the person easily fall asleep.

BRIEF DESCRIPTION OF THE DRAWINGS

[0014]

Fig. 1 is a schematic view illustrating a nasal congestion reliever according to an embodiment of the present invention, in which (A) is a schematic plan view, and (B) is a schematic cross-sectional view taken along line X-X in (A).

Fig. 2 is a schematic view illustrating a state in which a nasal congestion reliever is mounted.

Fig. 3 is a schematic cross-sectional view corresponding to Fig. 1(B) illustrating a modified example of the nasal congestion reliever.

Fig. 4 is a schematic view illustrating a sample according to an embodiment of the present invention, in which (A) is a schematic plan view, and (B) is a schematic cross-sectional view taken along line Y-Y in (A).

Fig. 5 illustrates data on exothermic characteristics.

Fig. 6 is a graph illustrating exothermic temperature with respect to time.

Fig. 7 is a graph illustrating how much a stuffy nose is relieved by breathing through both nostrils.

Fig. 8 is a graph illustrating how much a stuffy nose is relieved by breathing only through a nostril that is more stuffed.

Fig. 9 is a graph illustrating how much a stuffy nose is relieved by breathing only through a nostril that is less stuffed.

EMBODIMENTS OF THE INVENTION

[0015]

Hereinafter, an embodiment of the present invention will be described with reference to the drawings.

[0016]

Fig. 1 is a schematic view illustrating a nasal congestion reliever according to an embodiment of the present invention, in which (A) is a schematic plan view, and (B) is a schematic cross-sectional view taken along line X-X in (A). A nasal congestion reliever 1 according to the present embodiment is to be mounted to the nose in order to relieve nasal congestion, and includes a pair of storage parts 2 and a connection part 3

that connects the pair of storage parts 2. Each of the pair of storage parts 2 stores a chemical exothermic composition 4. An elastic member 5 that extends the side walls of the nose outward when mounted is provided to the connection part 3.

[0017]

The nasal congestion reliever 1 includes a front side sheet member 6, a back side sheet member 7, an adhesive layer 8, and a peeling member 9.

[0018]

The front side sheet member 6 has both end sides in the longitudinal direction provided with respective protruding parts 6a protruding to the front side, and the storage parts 2 are formed by the protruding parts 6a and the back side sheet member 7. Further, the elastic member 5 is arranged between the front side sheet member 6 and the back side sheet member 7. The front side sheet member 6 and the back side sheet member 7 bonded to each other using, for example, an adhesive (not illustrated).

[0019]

The protruding parts 6a each have a circular shape in plan view, and the internal space of the storage parts 2 has a substantially cylindrical shape with a low height. The overall shape of the front side sheet member 6, the back side sheet member 7, the adhesive layer 8, and the peeling member 9 in plan view has a width gradually increasing from the central position in the longitudinal direction toward the center positions of the storage parts 2 in the longitudinal direction, and is a circular shape at portions more on the end portion side than the center positions of the storage parts 2 in the longitudinal direction.

[0020]

The adhesive layer 8 is formed on the back surface of the back side sheet member 7. The peeling member 9 is attached to the back surface of the adhesive layer

8 while being capable of being peeled off from the adhesive layer 8. In the present embodiment, the adhesive layer 8 is formed on the entire back surface of the back side sheet member 7, but may be formed only in a partial region.

[0021]

The chemical exothermic composition 4 is an exothermic composition used in what is known as disposable body warmers (chemical body warmers). This chemical exothermic composition 4 utilizes the heat of oxidation of a metal, and generally contains metal powder such as iron powder, a metal halide such as salt, water, activated carbon powder, a water retention material, and the like. The chemical exothermic composition 4 may further contain a temperature control agent for controlling the maximum exothermic temperature (see, for example, Japanese Patent No. 6273481) and the like.

[0022]

In the present embodiment, the chemical exothermic composition 4 is a tableted product that is made by tableting a raw material. The tableting is about pressing a raw material using a tablet press into a form of a tablet. The shape of the tableted product is a substantially cylindrical shape (circular shape in plan view) having a low height that matches the shape of the internal space of the storage parts 2. However, the shape of the tableted product is not limited to this, and may be, for example, a prismatic shape or the like. Further, the chemical exothermic composition 4 is not limited to the tableted product, and may be in the form of powder or the like.

[0023]

The area of the chemical exothermic composition 4 in plan view is, for example, 200 mm² to 500 mm², more preferably 250 mm² to 450 mm², and most preferably 300 mm² to 400 mm². If the area of the chemical exothermic composition 4

in plan view is smaller than 200 mm^2 , the effect of relieving a stuffy nose may not be sufficiently obtained. If the area of the chemical exothermic composition 4 in plan view exceeds 500 mm^2 , a large amount of the chemical exothermic composition 4 is required, and thus may result in a high manufacturing cost.

[0024]

The front side sheet member 6 and the back side sheet member 7 are breathable materials, and are made of, for example, a non-woven fabric using polyethylene, polypropylene, or the like. In the present embodiment, the front side sheet member 6 and the back side sheet member 7 are made of the same material, but may be made of different materials.

[0025]

The moisture permeability of the front side sheet member 6 and the back side sheet member 7 is $600\text{ g}/(\text{m}^2\cdot 24\text{h})$ to $20,000\text{ g}/(\text{m}^2\cdot 24\text{h})$, more preferably $1,000\text{ g}/(\text{m}^2\cdot 24\text{h})$ to $10,000\text{ g}/(\text{m}^2\cdot 24\text{h})$, and most preferably $2,000\text{ g}/(\text{m}^2\cdot 24\text{h})$ to $8,000\text{ g}/(\text{m}^2\cdot 24\text{h})$. If the moisture permeability is less than $600\text{ g}/(\text{m}^2\cdot 24\text{h})$, the temperature of the chemical exothermic composition 4 may not rise quickly, and the stuffy nose may not be swiftly relieved. If the moisture permeability exceeds $20,000\text{ g}/(\text{m}^2\cdot 24\text{h})$, the exothermic reaction of the chemical exothermic composition 4 may proceed too much and the exothermic time might be short.

[0026]

Characteristics related to exothermic temperature (temperature on the skin side) include rise time (time required for the temperature to rise from 31.5°C to 39.9°C in this embodiment), maximum temperature, and duration (during which the temperature is 40°C or higher in the present embodiment). Here, the method of measuring the exothermic temperature conforms to the “ordinary method” of JIS S 4100 (the same

applies to the following description).

[0027]

The rise time is preferably, for example, 60 seconds or less, more preferably 50 seconds or less, and most preferably 40 seconds or less. If the rise time exceeds 60 seconds, it may be difficult to swiftly relieve the stuffy nose after the nasal congestion reliever 1 is mounted.

[0028]

The maximum temperature is, for example, preferably 43°C to 65°C, more preferably 43°C to 60°C, and most preferably 43°C to 55°C. If the maximum temperature is lower than 43°C, the temperature fails to reach approximately 43°C required to improve blood flow. If the maximum temperature exceeds 65°C, there is a risk of low temperature burns and the exothermic time might be short.

[0029]

The duration is preferably, for example, 10 minutes to 3 hours, more preferably 10 minutes to 2 hours, and most preferably 10 minutes to 1 hour. If the duration is shorter than 10 minutes, the stuffy nose relieving effect may fail to be sufficiently obtained. If the duration exceeds three hours, there is a risk of low temperature burns, and a large amount of the chemical exothermic composition 4 is required, which may result in a high manufacturing cost.

[0030]

In the present embodiment, the chemical exothermic composition 4 comes into contact with air via the protruding parts 6a of the front side sheet member 6 of the storage parts 2, and thus the protruding parts 6a serve as aeration parts that bring the chemical exothermic composition 4 into contact with air.

[0031]

The shape and material of the elastic member 5 are not particularly limited as long as the side walls of the nose can be pulled outward when mounted. In the illustrated example of Fig. 1, the shape of the elastic member 5 is a long plate shape and a rectangular shape in plan view. As the material of the elastic member 5, for example, synthetic resin such as polyester can be used.

[0032]

A distance d between the centers of the pair of storage parts 2 (chemical exothermic composition 4) in plan view is, for example, 55 mm to 90 mm, more preferably 60 mm to 85 mm, and most preferably 65 mm to 80 mm. When the distance d is less than 55 mm or more than 90 mm, the storage parts might be difficult to place on acupuncture points called “nasal passages”, which are known to be effective against a stuffy nose when stimulated.

[0033]

Before use, the nasal congestion reliever 1 is put inside a bag made of a non-breathable material (not illustrated), and is airtightly stored. When the nasal congestion reliever 1 is used, the nasal congestion reliever 1 is taken out from this bag, and is mounted with the peeling member 9 on the back side peeled and the adhesive layer 8 attached to the nose as illustrated in Fig. 2. In the illustrated example, the centers of the pair of storage parts 2 (chemical exothermic composition 4) are arranged on the acupuncture points known as “nasal passages”.

[0034]

In the nasal congestion reliever 1 of the present embodiment configured as described above, the moisture permeability of the front side sheet member 6 is 600 g/(m²·24h) to 20,000 g/(m²·24h), so that the chemical exothermic composition 4 can swiftly come into contact with air. Therefore, the temperature of the chemical

exothermic composition 4 can swiftly rise. Thus, after the mounting, the stuffy nose can be swiftly relieved, to help the person fall asleep better.

[0035]

The present invention is not limited to the above embodiment, and various modifications can be made within the scope of its technical idea. For example, in the above embodiment, the chemical exothermic composition 4 is stored between the protruding parts 6a of the front side sheet member 6 and the back side sheet member 7, but as illustrated in Fig. 3(A), a breathable bag member 10 storing the chemical exothermic composition 4 in advance may be stored between the protruding parts 6a of the front side sheet member 6 and the back side sheet member 7. In this case, the bag member 10, the protruding parts 6a, and the back side sheet member 7 serve as a storage part storing the chemical exothermic composition 4, and the bag member 10 and the protruding parts 6a serve as aeration parts that bring the chemical exothermic composition 4 into contact with air.

[0036]

Further, as illustrated in Fig. 3(B), the breathable bag member 10 storing the chemical exothermic composition 4 in advance may be attached and fixed to the front side sheet member 6 by means of an adhesive layer 11 on the back side. In this case, the bag member 10 serves as a storage part storing the chemical exothermic composition 4, and the bag member 10 serves as an aeration part that brings the chemical exothermic composition 4 into contact with air. In this case, the front side sheet member 6 and the back side sheet member 7 may be made of non-breathable materials.

[0037]

Furthermore, in this case, before using the nasal congestion reliever 1, a

peeling member (not illustrated) is attached to the adhesive layer 11 of the bag member 10, and the bag member 10 is airtightly stored in a bag (not illustrated) made of a non-breathable material. When the nasal congestion reliever 1 is used, the bag member 10 is taken out from the bag, and may be attached and fixed on the front side sheet member 6 with the peeling member peeled.

EXAMPLE 1

[0038]

The inventor of the present application evaluated the exothermic temperature of the chemical exothermic composition 4 in relation to the nasal congestion reliever 1 according to the present invention.

[0039]

A sample S used for the evaluation is different from the above embodiment (see Fig. 1), as illustrated in Fig. 4, in that it includes one storage part 2 storing the chemical exothermic composition 4, and does not include the connection part 3 and the elastic member 5. The other points are the same as those in the above embodiment. Thus, the same components are denoted by the same reference numerals, and detailed description thereof will be omitted. The evaluation was performed with the peeling member 9 peeled off and the sample S placed in the measuring device using the adhesive layer 8.

[0040]

As the chemical exothermic composition 4, a tableted product of a cylindrical shape was used. The tableted product had a weight of 1 g, a diameter of 15 mm, and a height of 5 mm. The components of the chemical exothermic composition 4 included 30 to 40% by weight of iron powder, 1 to 5% by weight of salt, 20 to 30% by weight of water, 1 to 5% by weight of activated carbon powder, 10 to 20% by weight of a water

retention material, and 10 to 20% by weight of a temperature control agent.

[0041]

The moisture permeability of the front side sheet member 6 and the back side sheet member 7 was $8,000 \text{ g}/(\text{m}^2 \cdot 24\text{h})$.

[0042]

Using the temperature measurement sensor ST-22E-005-TS3-WT4 (manufactured by Adachi Keiki Co., Ltd.) and the graphic recorder KR2S2P-NOA (manufactured by Chino Corporation), the exothermic temperatures (temperature on the skin side) of 10 samples S were measured. As the exothermic characteristics, the rise time (time required for the temperature to rise from 31.5°C to 39.9°C in this example), maximum temperature, and duration (during which the temperature is 40°C or higher) were measured. The results are illustrated in Fig. 5. Fig. 6 illustrates the exothermic temperature relative to time indicated by an average value of the 10 samples S.

[0043]

As can be seen in Fig. 5, the rise time of each sample S is within 40 seconds. Furthermore, as can be seen in Fig. 6, the time required to reach the maximum temperature is within 5 minutes. These times are much shorter than those with general chemical body warmers. This result is considered to be obtained because of a swift temperature rise of the chemical exothermic composition swiftly coming into contact with air, due to a large value ($8,000 \text{ g}/(\text{m}^2 \cdot 24\text{h})$) of the moisture permeability of the nonwoven fabric forming the bag.

EXAMPLE 2

[0044]

The inventor of the present application further performed a sensory test in relation to the nasal congestion reliever 1 according to the present invention.

[0045]

For this sensory test, the same type of samples S as that used in Example 1 was used. The subjects were those who had a symptom of stuffy noses at bedtime, and 15 subjects participated in the test.

[0046]

The test was performed as follows. The sample S was mounted to each subject's face "nasal passages", and a commercially available product ("Breathe Right" (registered trademark/GlaxoSmithKline Consumer Healthcare Japan Co., Ltd.) was attached to the subject's nose. Thus, the sample S and the commercially available product correspond to the product of the present invention. For comparison, a test was also performed with the commercially available product mounted on the subject's nose, without mounting the sample S.

[0047]

The severity of stuffy noses was quantified by the subjects using "Visual Analog Scale (VAS)", with 0.00 indicating a state where the nose was not stuffed at all, and 1.00 indicating a state where the nose was completely stuffed.

[0048]

The severity of the stuffy nose immediately before the mounting, and 5 and 10 minutes after the mounting was quantified in each of a case where breathing was performed using both nostrils, a case where breathing was performed using the left nostril only, and a case where breathing was performed using the right nostril only. For the cases where the breathing is performed using one nostril only, the respective nostrils on both sides were distinguished from each other, not as left and right nostrils, but as a more stuffed nostril and a less stuffed nostril.

[0049]

The test results were processed as follows. As a value indicating how much the stuffy nose was relieved, a value was calculated by subtracting the value immediately before mounting from the value after 5 minutes/10 minutes. When a negative value is obtained as the calculated value, a larger absolute value thereof indicates that the stuffy nose is more improved. Figs. 7 to 9 illustrate graphs of the average values of the calculated value. Fig. 7 illustrates the case of breathing through both nostrils, Fig. 8 illustrates the case of breathing through only one nostril that is more stuffed, and Fig. 9 illustrates the case of breathing through only one nostril that is less stuffed. In each of the figures, a solid line indicates a case where the sample S and the commercially available product are both used, and a dotted line indicates a case where only the commercially available product is used.

[0050]

As can be seen in Figs. 7 to 9, when the sample S and the commercially available product are both used, the stuffy nose is relieved in any of the cases of breathing through both nostrils, the case of breathing through only one nostril that is more stuffed, the case of breathing through only one nostril that is less stuffed. As can be seen in Fig. 8, the stuffy nose is particularly relieved in the case of breathing through only one nostril that is more stuffed, compared with the case where only the commercially available product is used.

DESCRIPTION OF REFERENCE SIGNS

[0051]

- 1: Nasal congestion reliever
- 2: Storage part
- 3: Connection part
- 4: Chemical exothermic composition

5: Elastic member

6: Front side sheet member

6a: Protruding part

7: Back side sheet member

d: Distance between centers of pair of storage parts

CLAIMS

1. A nasal congestion reliever that is to be mounted to a nose in order to relieve nasal congestion, the nasal congestion reliever comprising:
 - a pair of storage parts in which a chemical exothermic composition is stored;
 - and
 - a connection part that connects the pair of storage parts,wherein
 - the storage parts each have an aeration part for bringing the chemical exothermic composition into contact with air, and
 - moisture permeability of the aeration part is $600 \text{ g}/(\text{m}^2 \cdot 24\text{h})$ to $20,000 \text{ g}/(\text{m}^2 \cdot 24\text{h})$.
2. The nasal congestion reliever according to claim 1, wherein the connection part is provided with an elastic member that extends side walls of the nose outward when mounted.
3. The nasal congestion reliever according to claim 1 or 2, wherein a distance between centers of the pair of storage parts is 55 mm to 90 mm.