Appeal decision

Appeal No. 2019-3070

Appellant Embr Labs, Inc.

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The case of appeal against the examiner's decision of refusal of Japanese Patent Application No. 2016-547981, entitled "METHODS AND APPARATUSES FOR MANIPULATING TEMPERATURE" [International Publication No. WO2015/054615 published on April 16, 2015, National Publication of International Patent Application No. 2016-538972 published on December 15, 2016] has resulted in the following appeal decision.

Conclusion

The appeal of the case was groundless.

Reason

No. 1 History of the procedures

The present application was filed on October 10, 2014 as an International Patent Application (priority claim under the Paris Convention: October 11, 2013, United States), reasons for refusal were issued on June 27, 2018, a written opinion and a written amendment were submitted on October 2, 2018, and an examiner's decision of refusal was issued on October 30, 2018. An appeal against the examiner's decision of refusal was made on March 5, 2019 and a written amendment was submitted at the same time.

Thereafter, reasons for refusal (hereinafter referred to as "Reasons for refusal by the body") were issued by the body on November 18, 2019, and a written opinion was submitted on February 18, 2020.

No. 2 The Invention

The inventions according to Claims 1 to 39 of the scope of claims of the application (hereinafter referred to as "Invention 1" to "Invention 39", respectively) are as specified by the matters recited in Claims 1 to 39 of the scope of claims amended by

the written amendment dated March 5, 2019.   Invention 1 is as follows.
"[Claim 1]

A device for manipulating a temperature of a surface, comprising

a thermal adjustment apparatus constructed and arranged to be disposed adjacent the surface, the thermal adjustment apparatus being configured to generate a plurality of thermal pulses at a region of the temperature adjustment apparatus adjacent the surface, the thermal pulses giving periodic change of the temperature of the region at least between a first temperature and a second temperature at an average rate of between about 0.1°C/sec and about 10.0°C/sec,

wherein each of the thermal pulses is generated over a time period of less than 30 seconds, and

a difference in magnitude between the first temperature and the second temperature is less than 10°C."

No. 3 Reasons for refusal

The Reasons for refusal by the body are summarized as follows.

Reason 1 (Inventive step) The inventions according to the following claims of the present application could be easily made by a person ordinarily skilled in the art of the invention before the priority date on the basis of inventions that were described in the following publication distributed in Japan or a foreign country, or inventions that were made publicly available through an electric telecommunication line, before the priority date. Thus, the Appellant should not be granted a patent for the invention under the provisions of Article 29(2) of the Patent Act.

. Claims 1 to 39
. Cited documents, etc. 1
<List of Cited Documents, etc.>
Cited Document 1: Japanese Unexamined Patent Application Publication No. 2012-79095

No. 4 Description in the Cited Documents and Cited Invention
1 Description in Cited Document 1

Cited Document 1 describes the following matters.

(1A) "[Claim 5]

An alarm device which receives an alarm signal distinguishable for every type of alarm and sends an alarm recognizable with a tactile sense to a user, comprising:

an alarm receiving unit which receives an alarm signal and outputs an operation start signal;

a heating control unit which outputs a heating control signal of a predetermined temperature change pattern on the basis of the operation start signal;

a heating driving unit which outputs a driving signal corresponding to the temperature change pattern; and

a heating element which is driven by the driving signal to generate heat and causes the user to perceive an alarm."

(1B) "[Example 1]

[0019]

FIG. 1 illustrates an example which uses <u>an alarm device according to the invention</u> in a bed. In FIG. 1, 10 is a bed, 12 is a user lying on the bed 10, 14 is a pillow, and 16 is an alarm device according to the invention. The alarm device 16 is, as shown in FIG. 2, stored in a mat-like storage case 18 with appropriate flexibility. In the storage case 18, a member, as shown in FIG. 3, which constitutes the alarm device 16 is held on a base plate (not shown) with appropriate flexibility.

[0020]

In FIG. 1 and FIG. 3, 20 is an alarm signal output unit serving as a master unit, and is arranged in a location, such as in a room where the bed 10 is arranged, to send an alarm signal by wire or wirelessly to the alarm device 16, which is a slave unit. An alarm which is output by an alarm generation unit, such as a fire alarm 22, a door phone unit 24, or a telephone unit 26, is input by wire or wirelessly to the alarm signal output unit 20, to transmit an alarm signal A for identifying the type of the alarm of the alarm generation unit, to the alarm device 16. In FIG. 3, 28 is a wireless transmitting antenna arranged in the alarm signal output unit 20, and 30 is a receiving antenna arranged on the alarm device 16.

[0021]

The alarm device 16 includes an alarm receiving unit 32, a heating control unit 34, a heating driving unit 36, a pair of heating elements 38, and a battery 40 serving as a power source thereof. In this example, a pair of vibration motors 42 are also included, which are driven when the heating elements operate. The alarm receiving unit 32 determines a type of an alarm on the basis of an alarm signal A received from the alarm signal output unit 20, which is a master unit, and outputs an operation start signal B, which differs depending on the type of the alarm.

[0022]

The heating control unit 34 outputs a heating control signal C indicating a heating change pattern corresponding to the type of the alarm, based on the operation start signal B, to the driving unit 36. The heating control unit 34 stores in advance heating change patterns corresponding to the types of alarm, and outputs a heating control signal C in accordance with a heating change pattern corresponding to a received operation start signal B.

[0023]

The driving unit 36 supplies a driving current D for driving the heating elements 38 with a predetermined heating change pattern based on the heating control signal C. This example includes a vibration motor 42. The vibration motor 42 is also driven by a driving current E output by the driving unit 36. The vibration motor 42 may be controlled to change a rotation speed in accordance with a heating change pattern, or may be driven at a fixed rotation speed when the heating elements 38 are in operation.

[0024]

The heating elements 38 include a temperature sensor 44 (FIG. 3) to control a driving current so that the temperature of the heating elements 38 may be coincident with the temperature change pattern by feeding back a detected temperature to the driving unit 36, preferably.

[0025]

The temperature change patterns stored in the heating control unit 34 are illustrated in FIG. 4. FIG. 4 (A) shows that a surface temperature (temperature of a surface in contact with or facing the body) rises to a predetermined temperature with a predetermined period with respect to a lapse of time (horizontal axis). The type of an alarm can be determined by changing the temperature and the period depending on the type of the alarm.

[0026]

FIG. 4 (B) shows a pattern with modified heating time, heating period, and heating temperature, and may create varieties of temperature change patterns by combining with the pattern of FIG. 4 (A).

[0027]

FIG. 4 (C) is a pattern for alternately changing the temperatures of a plurality of heating elements 38. When the heating elements are arranged close to each other and the temperatures thereof are changed alternately, a user will not get accustomed to the temperature change and can easily perceive it.

[0028]

FIG. 4 (D) is a pattern of combination of heat generation and heat absorption. If Peltier devices are used for the heating elements 38, heat generation and heat absorption can be modified by changing the polarity of a driving current. In this case, a temperature change pattern can be configured by modifying heat generation and heat absorption. FIG. 4 (E) is a pattern configured to increase a surface temperature of one of the heating elements arranged close to each other and decrease a surface temperature of the other one by using such devices. A user can easily perceive an alarm by the surface temperatures of the heating elements close to each other which alternately rise and decrease repeatedly.

[Example 2]

[0029]

FIG. 5 illustrates an example of a wristwatch 50 including the alarm device of the invention. On a display surface 54 of a case 52, a display part 56 for time, etc., and indicators 58 which change depending on the type of alarm are arranged. The display part 56 and the indicators 58 are formed by liquid crystal plates, for example.

[0030]

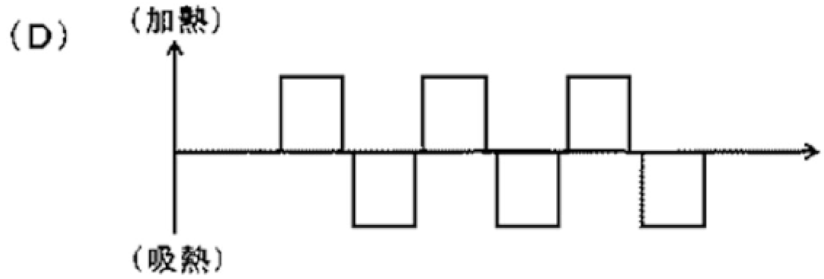
In the case 52 of the wristwatch, in addition to a mechanism for constituting the watch, a mechanism substantially the same as the alarm device (slave unit) 16 shown in FIG. 3 is included. Thus, in FIG. 6, the same symbols are assigned to the parts corresponding to those in FIG. 3 and the explanations thereof are not repeated. A point different from FIG. 3 is that the operation start signal B output by the alarm receiving unit 32 in accordance with the type of alarm is introduced to a light-emission control unit 60. The light-emission control unit 60 generates a state where one or a plurality of the indicators 58 can be selectively read (identified) in accordance with the type of alarm on the basis of the operation start signal B.

[0031]

The heating elements 38 are stored on the rear side of the case 50; i.e., the side of a surface in contact with skin of an arm of a user, and are configured so that the temperature change of the heating elements 38 can be easily perceived by a user. According to this example, a user perceives a temperature change pattern of the heating elements 38 with skin of an arm and recognizes an alarm. The user sees the display surface 52 of the watch 50, confirms display state of the indicators 58, and accurately recognizes the type of alarm."

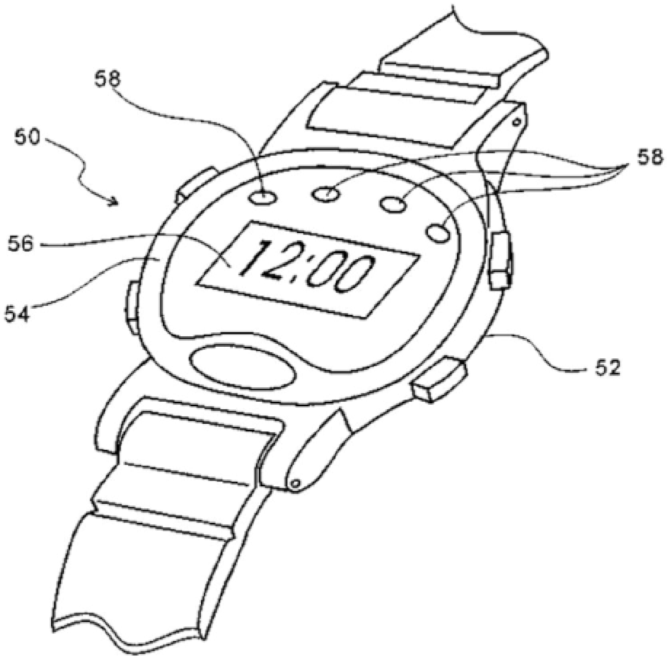
(1C) As FIG. 4 (D) and FIG. 5, the following drawings are shown.

FIG. 4 (D)



加熱　Heating
吸熱　Heat absorption

FIG. 5



2 Cited Invention

The "alarm device" in the Examples 1 and 2 described in (1B) relates to the "alarm device" recited in Claim 5 in (1A). Thus, the invention described in Cited Document 1 is as follows, as the alarm device recited in Claim 5.

"An alarm device which receives an alarm signal distinguishable for every type of alarm and sends an alarm recognizable with a tactile sense to a user, comprising:

an alarm receiving unit which receives an alarm signal and outputs an operation start signal;

a heating control unit which outputs a heating control signal of a predetermined temperature change pattern on the basis of the operation start signal;

a heating driving unit which outputs a driving signal corresponding to the temperature change pattern; and

a heating element which is driven by the driving signal to generate heat and causes the user to perceive an alarm." (hereinafter referred to as "Cited Invention")

No. 5 Comparison

1 The Invention 1 and the Cited Invention are compared below.

(1) Regarding the thermal adjustment apparatus

A The "temperature change pattern" in "a heating control unit which outputs a heating control signal of a predetermined temperature change pattern" in the Cited Invention is considered, according to the description in No. 4 1 (1B) and (1C) FIG. 4(D), to generate a plurality of thermal pulses for giving periodic change of the temperature of the region at least between a first temperature and a second temperature.

The "heating element which is driven by the driving signal to generate heat and causes the user to perceive an alarm" in the Cited Invention is, according to the description of [0031] in No. 4 1 (1B) "stored on the side of a surface in contact with skin of an arm of a user, and configured so that the temperature change of the heating elements 38 can be easily perceived by a user", considered to be located in a region close to the surface to change the temperature of the surface.

B The Cited Invention includes the following separate three parts for the operation from generating a heating signal to heating the heating element:

"a heating control unit which outputs a heating control signal of a predetermined temperature change pattern on the basis of the operation start signal;

a heating driving unit which outputs a driving signal corresponding to the temperature change pattern; and

a heating element which is driven by the driving signal to generate heat and causes the user to perceive an alarm".

Meanwhile, Invention 1, which is "constructed and arranged to be disposed adjacent the surface", is "configured to generate a plurality of thermal pulses at a region of the temperature adjustment apparatus adjacent the surface" and " give periodic change of the temperature of the region at least between a first temperature and a second temperature". Thus, the "thermal adjustment apparatus" executes the operation from generating a heating signal to heating the heating element.

C According to B, the "heating control unit", the "heating driving unit", and the "heating element" in the Cited Invention correspond to the "thermal adjustment apparatus" in Invention 1.

Therefore, according to A, a part including "a heating control unit which outputs a heating control signal of a predetermined temperature change pattern; a heating driving unit which outputs a driving signal corresponding to the temperature change pattern; and a heating element which is driven by the driving signal to generate heat and causes the user to sense an alarm" (hereinafter referred to as 'thermal adjustment part')", and

the "thermal adjustment apparatus" in Invention 1, "constructed and arranged to be disposed adjacent the surface", "the thermal adjustment apparatus being configured to generate a plurality of thermal pulses at a region of the temperature adjustment apparatus adjacent the surface, the thermal pulses giving periodic change of the temperature of the region at least between a first temperature and a second temperature at an average rate of between about 0.1°C/sec and about 10.0°C/sec, wherein each of the thermal pulses is generated over a time period of less than 30 seconds, and a difference in magnitude between the first temperature and the second temperature is less than 10°C",

are identical in a point of "thermal adjustment apparatus" which is "constructed and arranged to be disposed adjacent the surface", "configured to generate a plurality of thermal pulses at a region of the temperature adjustment apparatus adjacent the surface" and " give periodic change of the temperature of the region at least between a first temperature and a second temperature".

(2) Regarding the device

The "alarm device" including the "thermal adjustment part" in the Cited Invention, which is configured to manipulate the temperature of a surface by the "thermal adjustment part", corresponds to the "device for manipulating a temperature of a surface" in Invention 1.

(3) Therefore, Invention 1 and the Cited Invention are identical in the following corresponding feature, and different in the following different feature.

2 Corresponding Feature

"A device for manipulating a temperature of a surface, comprising

a thermal adjustment apparatus constructed and arranged to be disposed adjacent the surface, the thermal adjustment apparatus being configured to generate a plurality of thermal pulses at a region of the temperature adjustment apparatus adjacent the surface, and give periodic change of the temperature of the region at least between a first temperature and a second temperature."

3 Different Feature

In Invention 1, regarding a plurality of thermal pulses, the average rate is "between about 0.1°C/sec and about 10.0°C/sec", the generation period is "less than 30 seconds", and a difference in magnitude between the first temperature and the second temperature is "less than 10°C". The Cited Invention does not clearly specify the above matters.

No. 6 Judgment

1 Regarding the Different Feature

The thermal pulse in the Invention 1 includes thermal pulses in a wide range where the average rate is "between about 0.1°C/sec and about 10.0°C/sec", the generation period is "less than 30 seconds", and a difference in magnitude between the first temperature and the second temperature is "less than 10°C". For example, a thermal pulse included in the range, having an average rate of 10.0°C/sec, a generation period of one second, and a difference in magnitude between the first temperature and the second temperature of 10°C (referred to as "10°C", because "less than 10°C" includes a temperature extremely close to 10°C) is examined below.

The Cited Invention is, as described in [0031] in (1B), configured so that temperature change pattern (a plurality of thermal pulses) can be easily perceived by skin, and allows normal skin to recognize a temperature rise of 10°C in one sec and a temperature difference of 10°C as a temperature change.

Accordingly, a person skilled in the art could easily select thermal pulses included in the range of Invention 1, for example, having a temperature rise of 10°C in one sec and a temperature difference of 10°C, in order to sense the temperature change pattern (a plurality of thermal pulses) with skin, as the "temperature change pattern" in the Cited Invention (regarding this point, as described in Japanese Unexamined Patent Application Publication No. 2009-278575 (see [0048] and FIG. 7) which discloses a technology of notification by means of temperature change on skin, as with Cited Invention, it cannot be said that a plurality of thermal pulse patterns (temperature change patterns) of Invention 1 exceed an ordinary range for allowing the skin to perceive a temperature change.)

According to the specification of the application, only the following descriptions are included, regarding the "average rate",

"[0067]

As provided herein, <u>the magnitude of the average rate</u> may be determined by calculating the difference in magnitude between temperature limits (e.g., magnitude of the difference between the first initial temperature and the second pulsed temperature for the first adjustment, magnitude of the difference between the second pulsed temperature and the third return temperature for the second adjustment) and dividing this difference in magnitude between temperature limits by the time over which the temperature is adjusted. As an example, when applying a cooling pulse, if the duration of the first temperature adjustment upon initiation of the pulse is 5 seconds, where the first initial temperature is 28°C and the second pulsed temperature is 23°C, the magnitude of the average rate of temperature change for this portion of the pulse is 1°C/sec. For the same cooling pulse example, if the duration of the second temperature adjustment upon return of the pulse is 10 seconds, where the second pulsed temperature is 23°C and the third return temperature is 28°C, the magnitude of the average rate of temperature change for this portion of the pulse is 0.5°C/sec.

[0068]

<u>In various embodiments, the average rate of the first temperature adjustment, upon initiation of the thermal pulse, between the first initial temperature and the second pulsed temperature, may range between about 0.1°C/sec and about 10.0°C/sec.</u> In some embodiments, the average rate of temperature adjustment on initiation of the thermal pulse is greater than or equal to about 0.1°C/sec, greater than or equal to about 0.2°C/sec, greater than or equal to about 0.3°C/sec, greater than or equal to about 0.5°C/sec, greater than or equal to about 0.7°C/sec, greater than or equal to about 1.0°C/sec, greater than or equal to about 1.5°C/sec, greater than or equal to about 2.0°C/sec, greater than or equal to about 3.0°C/sec, greater than or equal to about 5.0°C/sec, or greater than or equal to about 7.0°C/sec. In certain embodiments, the average rate of the temperature adjustment on initiation of the thermal pulse is less than about 10.0°C/sec, less than about 7.0°C/sec, less than about 5.0°C/sec, less than about 3.0°C/sec, less than about 2.0°C/sec, less than about 1.5°C/sec, less than about 1.0°C/sec, less than about 0.7°C/sec, less than about 0.5°C/sec, less than about 0.3°C/sec, or less than about 0.2°C/sec. Combinations of the above-referenced ranges are possible (e.g., between about 0.1°C/sec and about 10.0°C/sec, between about 0.1°C/sec and about 5.0°C/sec, between about 0.3°C/sec and about 3.0°C/sec, between about 0.3°C/sec and about 1.0°C/sec, between about 0.3°C/sec

and about 0.8°C/sec, between about 0.5°C/sec and about 3.0°C/sec). Other ranges are also possible."

Regarding the "generation period", only the following descriptions are included,
"[0062]

In some embodiments, the thermal adjustment apparatus, or controller configured to apply an electrical signal to the thermoelectric material(s), may generate a thermal pulse over a time period of less than or equal to about 120 seconds. In certain embodiments, the time period of an entire thermal pulse from an initial temperature to another, pulsed temperature and substantially returning to the initial temperature (with negligible difference between the initial temperature and the final temperature of the pulse) is less than or equal to about 90 seconds, less than or equal to about 75 seconds, less than or equal to about 60 seconds, less than or equal to about 50 seconds, less than or equal to about 45 seconds, less than or equal to about 40 seconds, less than or equal to about 30 seconds, less than or equal to about 20 seconds, less than or equal to about 15 seconds, less than or equal to about 10 seconds, less than or equal to about 7 seconds, less than or equal to about 5 seconds, less than or equal to about 4 seconds, less than or equal to about 3 seconds, less than or equal to about 2 seconds, or less than or equal to about 1 second. In some embodiments, the time period of a thermal pulse is greater than about 2 seconds, greater than about 3 seconds, greater than about 4 seconds, greater than about 5 seconds, greater than about 6 seconds, greater than about 7 seconds, greater than about 10 seconds, greater than about 15 seconds, greater than about 20 seconds, greater than about 30 seconds, greater than about 40 seconds, greater than about 50 seconds, greater than about 60 seconds, greater than about 75 seconds, or greater than about 90 seconds. Combinations of the above-referenced ranges are also possible (e.g., between about 2 seconds and about 5 seconds, between about 3 seconds and about 10 seconds, between about 10 seconds and about 30 seconds, between about 10 seconds and about 60 seconds, or between about 15 seconds and about 90 seconds). Other ranges are also possible."

Regarding the "difference in magnitude between the first temperature and the second temperature", only the following descriptions are included,
"[0051]

In some embodiments, the difference in magnitude between the second (pulsed) temperature T2, or modified second (pulsed) temperature T2' (whichever is further from the first temperature T1), and the first (initial) temperature T1 is between about 1°C and about 10°C. As noted above, it can be appreciated that the modified second temperature T2' is not required to be reached at the end of the optional second regime II. That is, in some cases, the modified second temperature T2' may be characterized as a temperature within the profile that is furthest from the initial temperature T1. In certain embodiments, the difference in magnitude between whichever of the second temperatures T2, T2' that is greater in value and the first temperature T1 is greater than or equal to about 1°C, greater than or equal to about 1.2°C, greater than or equal to about 1.4°C, greater than or equal to about 1.5°C, greater than or equal to about 1.6°C, greater than or equal to about 1.8°C, greater than or equal to about 2°C, greater than or equal to about 2.5°C, greater than or equal to about 3°C, greater than or equal to about 4°C, greater than or equal to about 5°C, greater than or equal to about 6°C, greater than or equal to about 7°C, greater than or equal to about 8°C, or greater than or equal to about 9°C. In some embodiments, the difference in magnitude between whichever of the second temperatures T2, T2' that is greater in value and the first temperature T1 is <u>less than about 10°C</u>, less than about 9°C, less than about 8°C, less than about 7°C, less than about 6°C, less than about 5°C, less than about 4°C, less than about 3°C, less than about 2.5°C, less than about 2°C, less than about 1.8°C, less than about 1.6°C, less than about 1.5°C, less than about 1.4°C, or less than about 1.2°C. Combinations of the above referenced ranges are also possible (e.g., between about 1°C and about 10°C, between about 1°C and about 8°C, between about 2°C and about 8°C, between about 1°C and about 7°C, between about 1°C and about 6°C, or between about 1°C and about 3°C). <u>Other ranges are also possible</u>." There is no technical significance of critical range in the above values.

Therefore, Invention 1 can be easily conceived by a person skilled in the art based on the Cited Invention.

2 Regarding the effect

The specification of the application includes the following description, "[0018] The inventors <u>have discovered,</u> in particular, <u>that by generating thermal pulses at the surface of human skin having particular combinations of parameters, such as rates of temperature change, magnitudes of temperature change, pulse duration, etc., as described in more detail herein, the effects of adaptive desensitization are mitigated or otherwise reduced, and the perceived effects of cooling and/or heating are enhanced</u>. As compared to the desensitization that may occur in a cooled or heated room, the devices described herein may be able to continuously provide a user with an enhanced thermal experience, e.g., a pleasant feeling of cooling and/or heating, according to his/her preferences. As noted above, due to the manner in which the thermal pulse is generated, when the device is in operation, a user may experience, or feel a temperature sensation that is perceived to be greater in magnitude as compared to the actual magnitude in temperature change of the device at the surface of the skin." As described in 1, there is no technical significance of critical range in the combination of values, "particular combinations of parameters, such as rates of temperature change, magnitudes of temperature change, pulse duration, etc." According to the following descriptions (1B) in Cited Document 1: "When the heating elements are arranged close to each other and the temperatures thereof are changed alternately, a user will not get accustomed to the temperature change and can easily perceive it" ([0027]), and "A user can easily perceive an alarm by the surface temperatures of the heating elements close to each other which alternately rise and decrease repeatedly" ([0028]), the effect of Invention 1, "by generating thermal pulses at the surface of human skin, the effects of adaptive desensitization are mitigated or otherwise reduced, and the perceived effects of cooling and/or heating are enhanced", can be easily predicted by a person skilled in the art.

3 Appellant's allegation

(1) The written opinion dated February 18, 2020 includes the following descriptions: "The particular thermal profile described in the claim induces thermal perception of a desired amount to a person and has a specific advantage of higher electric efficiency compared with other systems. This shows a significant comparison with a device to which thermal profile can be applied, for a warning which only aims at a maximum saliency. Such device is aimed for temperature application, not at inducing comfortable thermal perception but at delivering a shock to a user for awareness or attention", and "Cited Document 1 relates to a tactile alarm system configured to support the deaf and hard of hearing to detect a fire alarm (e.g., during sleep). The device is configured to communicate with an alarm system and applies temperature change to a user using a thermoelectric device. Cited Document 1 does not include specific description other than the object of the device which aims not at inducing subjective heating or cooling feeling, but at awakening or warning someone, especially." The Appellant alleges that the device described in Cited Document 1 aims at "awakening or warning someone", while the device described in Invention 1 aims at "inducing comfortable thermal perception" and "inducing subjective heating or cooling feeling", and there is a difference between them.

However, Invention 1 is, as described in No. 5 1, specified only as a "device for manipulating a temperature of a surface" "including" "a thermal adjustment apparatus constructed and arranged to be disposed adjacent the surface", excluding thermal profile. It cannot be interpreted, from the specifying matters, that the device aims at "inducing comfortable thermal perception" and "inducing subjective heating or cooling feeling". As described in No. 5 1 (2), there is no difference from the Cited Invention as a device.

As indicated in 1, the thermal profile could be easily made by a person skilled in the art in the Cited Invention.

Accordingly, an inventive step is not recognized in the "device for manipulating a temperature of a surface" "including" the "thermal adjustment apparatus constructed and arranged to be disposed adjacent the surface", even though the Appellant alleges the different objectives between Invention 1 and Cited Invention.

Therefore, the allegation of the Applicant cannot be accepted.

No. 7 Closing

As above, the Appellant should not be granted a patent for Invention 1 under the provisions of Article 29(2) of the Patent act. The present application should be rejected without examining other inventions according to other claims of the application.

Therefore, the appeal decision shall be made as described in the conclusion.

March 16, 2020

Chief administrative judge: MISAKI, Hitoshi
Administrative judge: SHIDA, Masao
Administrative judge: MORI, Ryosuke