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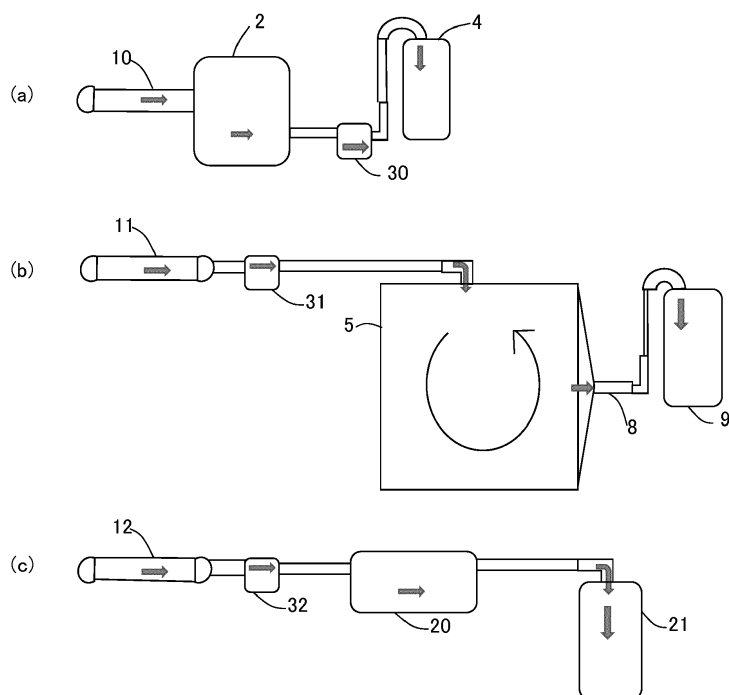
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BLENDDED PADDING

(57) There is disclosed a blended padding which includes a main fiber, and a functional fiber having any of functions including an antibacterial function, a deodorizing function, an antistatic function, a hygroscopic function, a moisture permeation function, a heat insulation function, and an exothermic function, wherein a blending ratio variation, which is calculated by the formula: maximum blending ratio - minimum blending ratio, between the above-mentioned fibers is 10% by mass or less.

Fig. 1



Description

BACKGROUND OF THE INVENTION

5 1. Field of the Invention

[0001] The present invention relates to a blended padding which can be used as a padding material such as a down jacket, a down coat, a quilt, a pillow, or the like.

10 2. Description of Related Art

[0002] Down is light in weight and has an outstanding heat retaining property, and thus down is widely used as a padding material for a cold weather protection clothing such as a down jacket or a down coat, and for a cold weather protection bedding such as a down quilt. However, since down is a natural product obtained from plumose of a goose, mass production of down has limitations. In addition, from the viewpoint of animal welfare, down is getting harder to obtain in recent years.

[0003] On the other hand, as a substitute for down, a fiber ball (fiberball), which is made from a synthetic fiber and has down-like feel, has been developed (Japanese Patent Application Laid-open No. H8-505908, Japanese Patent Application Laid-open No. H8-2655). In addition, a quilt using such a fiber ball has been proposed (Japanese Patent Application Laid-open No. 2016-144559). As a raw fiber, a polyester fiber is predominantly used.

[0004] However, since the conventional fiber ball includes a single-type fiber, it has been difficult to impart various functions including an antibacterial function, a deodorizing function, an antistatic function, an exothermic function, or the like, to the fiber ball.

[0005] Further, in addition to a fiber ball, although a nonwoven fabric sheet such as a chemical bonded sheet and a needle punched sheet, and a web-type sheet (teared wadding) are also used for clothes or a quilt, since the sheets are composed of a single-type fiber similarly to the above-described fiber balls, it has been difficult to impart various functions to the sheets.

SUMMARY OF THE INVENTION

[0006] An object of the present invention is to provide a homogeneous blended padding including two or more types of fibers.

[0007] The inventors, after pursuing extensive studies to solve the problems mentioned above, have found a solution including the following constitution, and thus accomplished the present invention.

(1) A blended padding including two or more types of fibers, characterized in that a blending ratio variation, which is calculated by the formula: maximum blending ratio - minimum blending ratio, between the above-mentioned two or more types of fibers is 10% by mass or less.

(2) The blended padding according to (1), wherein the above-mentioned two or more types of fibers include a main fiber including a polyethylene terephthalate fiber or a polytrimethylene terephthalate fiber, and a functional fiber.

(3) The blended padding according to (1) or (2), wherein the above-mentioned functional fiber is one type or two or more types of fibers having any of functions including an antibacterial function, a deodorizing function, an antistatic function, a hygroscopic function, a moisture permeation function, a heat insulation function, and an exothermic function.

(4) The blended padding according to (2), wherein the above-mentioned main fiber is a polyester fiber.

(5) The blended padding according to any of (1) to (4), wherein the blended padding has a form selected from a fiber ball, a nonwoven fabric sheet, and a web-type sheet.

(6) A padding material for clothing or bedding including a blended padding according to any of above-mentioned (1) to (5).

(7) A clothing whose interior is filled with a blended padding according to any of above-mentioned (1) to (5) .

(8) A bedding whose interior is filled with a blended padding according to any of above-mentioned (1) to (5).

[0008] A blended padding of the present invention is suitable for a padding material for clothing or bedding, because two or more types of fibers are mixed in each of the fiber balls without almost no variation, and thus can impart a uniform performance.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009]

FIGS. 1 (a) to (c) are explanatory views showing a method for manufacturing a fiber ball of blended wadding according to one embodiment of the present invention;
 FIGS. 2 (a) to (c) are explanatory views showing a method for manufacturing a nonwoven fabric sheet according to other embodiment of the present invention;
 FIG. 3 is a schematic representation showing a method for manufacturing a nonwoven fabric sheet of Comparative Example 2;
 FIG. 4 is an enlarged photographic image of a blended padding obtained in Example 1; and
 FIG. 5 is an enlarged photographic image of a blended padding obtained in Comparative Example 1.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

[0010] A blended padding according to one embodiment of the present invention is a fiber ball, a nonwoven fabric sheet, or a web-type sheet including a main fiber and a functional fiber.

[0011] Examples of a main fiber include a polyester fiber, a polyolefin fiber, a rayon fiber, a polyamide fiber, and an acrylonitrile fiber, and among them, a polyester fiber, which is highly elastic and has down-like softness, is preferably used, and specifically a polyethylene terephthalate fiber, a polytrimethylene terephthalate fiber, or the like is preferably used.

[0012] The main fiber preferably has a fiber diameter of 2 to 10 dtex, and a fiber length of 15 to 60 mm.

[0013] As a functional fiber, without specific limitation, a variety of commercially available functional fibers can be used, and examples of a functional fiber include a synthetic fiber having a function including an antibacterial function, a deodorizing function, an antistatic function, a hygroscopic function, a moisture permeation function, a heat insulation function, an exothermic function, a heat storage function, a light exothermic function, a heat-retaining function, or the like. One type of the functional fiber can be used, or two or more types of the functional fibers can be blended and then the resultant blend can be used. Further, a functional fiber can be a fiber having two or more functions, such as a hygroscopic exothermic fiber.

[0014] Examples of an exothermic fiber which can be used include exothermic fibers such as, as an acrylate fiber of a hygroscopic exothermic wadding, "[eks] (registered trademark)" manufactured by TOYOBO CO., LTD., and "SUN-BURNER (registered trademark)" manufactured by TEIJIN LIMITED, and, as other synthetic fibers, "Topthermo(registered trademark)" (Bemberg(trademark) /polyester mixed-fiber) manufactured by Asahi Kasei Corp., Lyocell such as "TENCEL (registered trademark)", and "Modal (registered trademark)" manufactured by LENZING AG.

[0015] Examples of a fiber having moisture absorbing/releasing properties, moisture control properties, antimicrobial properties, or antimold properties include "MOIS FINE (registered trademark)" and "CELFINE S (registered trademark)" (both acrylate-type) manufactured by TOYOBO CO., LTD., or the like.

[0016] Examples of a deodorizing fiber include "CELFINE N (registered trademark)" (acrylate-type) manufactured by TOYOBO CO., LTD., or the like. Examples of a fiber having antimicrobial properties and deodorant properties include "AIRCLEAR(registered trademark)" manufactured by TOYOBO CO., LTD., or the like.

[0017] Examples of an exothermic and thermal storage fiber include "Solar Touch (registered trademark)" (rayon-type) manufactured by Omikenshi Co., Ltd.

[0018] Examples of a fiber having germicidal properties, deodorant properties, or antistatic properties include "SIL-BERN ZAG (registered trademark)" (silver ion fiber) manufactured by Nippon Shinsozai Corporation, or the like.

[0019] Examples of a fiber having heat-retaining properties include "CERAM (registered trademark)" (infrared radiating acrylic fiber) manufactured by Japan Exlan Co., Ltd., and "WARMAL (registered trademark)" (ceramic blended wadding) manufactured by TEIJIN LIMITED, or the like.

[0020] Examples of a fiber having antimicrobial and deodorant properties include "ECOPURE (registered trademark)" (slightly acidic polyester material) manufactured by TEIJIN LIMITED, "Feelfresh (registered trademark)" (acrylate-type) manufactured by TOYOBO CO., LTD., or the like.

[0021] A heat insulation includes "AERO (registered trademark)" manufactured by TEIJIN FRONTIER CO., LTD., or the like.

[0022] A functional fiber to be used preferably has a fiber diameter of 1.1 to 11 dtex (1 to 10 d), and a fiber length of 10 to 60 mm.

[0023] A main fiber and a functional fiber preferably have substantially the same specific gravity, and a specific gravity of the functional fiber is preferably within a range between minus 10% and plus 10% ($\pm 10\%$) to a specific gravity of the main fiber. In addition, the main fiber and the functional fiber preferably have substantially the same fiber diameter and fiber length, and a fiber diameter and a fiber length of the functional fiber are preferably within a range between minus

10% and plus 10% ($\pm 10\%$) to a fiber diameter and a fiber length of the main fiber. Consequently, the two fibers can be homogeneously mixed to provide a fiber blended padding having a narrow range of variation in a blending ratio.

[0024] In addition, although a main fiber and a functional fiber can be the same type of fibers, or can be different types of fibers, the main fiber and the functional fiber are preferably the same type of fibers. The same type of fibers refers to, for example, a case where both of the fibers are polyester fibers, or the like.

[0025] With respect to a blending ratio of a main fiber and a functional fiber, i.e., a blending ratio (blend ratio), a suitable blending ratio of the main fiber is 50% by mass or more, preferably 60% by mass or more, and is 95% by mass or less. Thus, a suitable blending ratio of the functional fiber is 50% by mass or less, preferably 40% by mass or less, and is 5% by mass or more.

[0026] Each of a main fiber and a functional fiber is not limited to only one type of fiber, and two or more types of fibers can be used within the above-mentioned blending ratio of the main fiber and the functional fiber. For example, as a functional fiber, an antibacterial fiber and a hygroscopic exothermic fiber can be used in combination, and furthermore, an antistatic fiber can also be combined with the above-mentioned combination. Consequently, in accordance with an application, it is possible to impart a variety of functions to the blended padding, such as a fiber ball

[0027] A form of a blended padding according to the present invention includes a fiber ball, a nonwoven fabric sheet, or a web-type sheet (teared wadding). Examples of a nonwoven fabric sheet include a chemical-bonded sheet obtained by a chemical bonding method in which fibers are linked to each other with a resin; a thermal-bonded sheet in which low melting point fibers are mixed and melted by heat and bonded; and a needle punched sheet obtained by a needle punching method in which fibers are entangled with each other by a needle, or the like. A nonwoven fabric sheet obtained by a spun lacing method in which fibers are entangled with each other by a stream of water instead of a needle also falls under the category of a needle punched sheet.

[0028] Then, an example of a method for manufacturing a fiber ball of blended wadding according to one embodiment of a blended padding of the present invention is shown in FIGS. 1 (a) to (c). FIGS. 1 (a) to (c) represent steps for manufacturing the fiber ball of blended wadding. Each of the steps is described one by one below.

(i) Step for opening (FIG. 1 (a))

[0029] Raw fibers are transferred to a carding machine 2 through a feed lattice 10, and then the raw fibers are opened to arrange fibers in parallel to each other to produce a web (a fiber layer having a length and a width). The web is stored in an opened fiber storage chamber 4 by a wadding transfer means 30 (a blower, or the like). This step is carried out separately for each of a main fiber and a functional fiber.

(ii) Step for fiber blending (FIG. 1 (b))

[0030] First, preliminary opened and weighed predetermined amounts of a main fiber and a functional fiber are each transferred from a feed lattice 11 to a wadding storage room 5 by a wadding transfer means 31 (e.g., a blower). In the wadding storage room 5, the main fiber and the functional fiber are agitated and mixed by an air blower (not shown). In this way, a blended wadding in which the main fiber and the functional fiber are homogeneously mixed is obtained, and thus a blending ratio variation is reduced. The blended wadding is discharged by suction from the wadding storage room 5 in a horizontal direction. That is, a suction port 8 is provided at a side of the wadding storage room 5, and the suction port 8 has an aperture which is getting wider from the bottom of the wadding storage room 5 toward the upper side. Thus, the fiber wadding can be sucked uniformly from the side of the wadding storage room 5.

[0031] The wadding sucked from the wadding storage room 5 is transferred to a blended wadding storage chamber 9 by wadding transfer means (not shown), and is stored temporarily.

(iii) Step for producing fiber ball (FIG. 1 (c))

[0032] Wadding took out from a blended wadding storage chamber 9 is spread on a feed lattice 12, and is transferred to a balling machine 20 by a wadding transfer means 32 (a blower, or the like), and then a fiber ball is produced using the balling machine 20, and the obtained fiber ball is transferred to a storage chamber 21 to be accommodated. Examples of the balling machine 20 used include, but are not limited to, a balling machine manufactured by HAI JIN MACHINERY CO. LTD. or Changsh HITEC Machinery Co. Ltd., and any balling machine can be used as long as it is suitable for producing a fiber ball.

[0033] Further, without providing a blended wadding storage chamber 9, wadding sucked from a wadding storage room 5 can be supplied directly to a balling machine 20.

[0034] The obtained blended fiber ball suitably has a diameter of the order of 1 to 10 mm, preferably of the order of 5 to 8 mm. In addition, a blending ratio (mixture ratio) variation between the main fiber and the functional fiber constituting the blended fiber ball is 10% by mass or less, preferably 5% by mass or less. The blending ratio variation can be calculated

by the formula: maximum blending ratio - minimum blending ratio.

[0035] On the other hand, when the blending ratio variation between the main fiber and the functional fiber exceeds 10% by mass, the functional fiber cannot exert its function sufficiently. Further, since most functional fibers are expensive, to achieve sufficient effects with a small blending ratio, a uniform blending ratio with a small variation is preferred.

[0036] The maximum blending ratio and the minimum blending ratio can be determined by calculating blending ratios of randomly sampled multiple blended paddings, and finding the maximum value and the minimum value of the calculated blending ratios.

[0037] In this connection, a blending ratio can be obtained by a raveling method or a dissolving method (JIS L 1030) as described in the following Example.

[0038] The reason why a blending ratio variation is within a range of 10% by mass or less is mainly resulted from the steps for manufacturing mentioned above. On the contrary, a fiber ball having a uniform blending ratio cannot be obtained by simply mixing opened fibers including several types of fibers to form blended wadding, and processing the obtained blended wadding into a fiber ball.

[0039] Further, when raw fibers are not two types but three or more types of fibers are used, in a similar manner, a maximum blending ratio and a minimum blending ratio of each fiber in the obtained blended padding can be obtained, and a blending ratio variation can be determined from the difference between them.

[0040] Then, examples of a method for manufacturing a nonwoven fabric sheet according to other embodiment of a blended padding of the present invention are shown in FIGS. 2 (a) to (c). FIG. 2 (a) shows a process for manufacturing a blended padding by a chemical bonding method. FIG. 2 (b) shows a method for stacking an opened web. FIG. 2 (c) shows a part of a process for manufacturing a blended padding by a needle punching method. A description is provided below.

[0041] As shown in FIG. 2 (a), a main fiber and a functional fiber opened by an opening machine (not shown) are each transferred to a weighing machine 40 and weighed to obtain a predetermined amount, and then transferred to a wadding storage room 51. The wadding storage room 51 has almost the same structure and function as those of the above-described wadding storage room 5, and the separately transferred main fiber and functional fiber are homogeneously agitated and mixed by an air blowing means (not shown).

[0042] Then, the resultant wadding is transferred from the wadding storage room 51 to a fiber transferring blower 41 through a suction port 18. A predetermined amount of blended wadding is supplied to each of the three roller card machines 42, 43 and 44 from the fiber transferring blower 41. In the roller card machines 42, 43, and 44, the blended waddings are opened to arrange fibers in parallel to each other to produce webs W1, W2, and W3. Each of the webs W1, W2, and W3 is stacked on a feed lattice 45.

[0043] FIG. 2 (b) is a lateral view of the stacked structure of webs W1, W2, and W3. As shown in the figure, the web W2 in the middle is transferred to a width direction of the feed lattice 45 (i.e., in a direction perpendicular to the web discharge direction), folded at lateral ends of the lattice 45 and partially overlapped. Thus, fibers of the web W2 are evenly directed toward the width direction. As a result, strength of the sheet is strengthened in a width direction of the sheet. On the other hand, webs W1 and W3 are evenly directed toward a longitudinal direction of the sheet (i.e., a transfer direction of the lattice 45).

[0044] The webs W1, W2, and W3 may be stacked in the same direction (e.g., in a longitudinal direction) as required.

[0045] As described above, the blended wadding stacked on the feed lattice 45 in a sheet form is continuously transferred to a resin sprayer 46, and a resin is sprayed from a sprayer 46, and then the resultant is dried in a dryer 47, and wound to obtain a chemical-bonded nonwoven fabric sheet 48.

[0046] As Examples of a resin used, urethane resin-based adhesive can be used mainly. Amount of the resin sprayed is 0.1 to 2.0 parts by mass, preferably 0.1 to 1.0 parts by mass relative to 100 parts by mass of the blended wadding.

[0047] In a process for manufacturing a blended padding by a needle punching method, a step for stacking the webs W1, W2, and W3 in a sheet form is substantially the same as the process for manufacturing the blended padding by the chemical bonding method as shown in FIGS. 2 (a) and (b), and thus the detailed explanation is omitted. As shown in FIG. 2 (c), a blended wadding stacked on the feed lattice 45 in a sheet form is continuously transferred to a needle punching machine 49, and fibers are entangled by a needle which moves up-and-down so as to penetrate the sheet to obtain a nonwoven fabric sheet 48'.

[0048] A variation of a blending ratio between a main fiber and a functional fiber composing the nonwoven fabric sheets 45 and 48' is within the range of 10% by mass or less, preferably 5% by mass or less. The blending ratio can be calculated in a similar manner to the above-described fiber ball. Samples for calculating the blending ratio can be obtained from within one sheet, and also can be obtained from two or more sheets.

[0049] On the other hand, as shown in FIG. 3, when a nonwoven fabric sheet 50 is produced by, instead of a method shown in FIGS. 2 (a) to (c), supplying a main fiber and a functional fiber separately to roller card machines 42, 43, and 44, and stacking the obtained webs W1', W2', and W3' on a feed lattice 45, and using a needle punching machine 49, it is difficult to achieve a variation of a blending ratio between a main fiber and a functional fiber composing the obtained nonwoven fabric sheet 50 within the range of 10% by mass or less. The same applies to a chemical bonding method in

addition to the needle punching method.

[0050] Further, a blended padding of the present invention can be in a form of a web-type sheet in addition to a fiber ball and a nonwoven fabric sheet. The web-type sheet can be obtained by, in FIG. 2 (a), stacking webs W1, W2, and W3, which are produced by opening a main fiber and a functional fiber, which are homogeneously agitated and mixed in a wadding storage room 51, by using roller card machines 42, 43, and 44, on a feed lattice 45. The webs W1, W2, and W3 can be stacked, without limitation, in a structure shown in FIG. 2 (b). Further, the number of the roller card machines are not limited to 3, but can be a plural number of two or more.

[0051] A blended padding obtained in embodiments of the present invention has a uniform performance, and thus is suitable, as a substitute for down, for a padding material for clothing such as a cold weather protection jacket or a coat, for bedding such as a quilt or a pillow, and furthermore for a padding material for a floor cushion or a cushion.

[0052] In this connection, since the blended padding contains a functional fiber in addition to a main fiber, functions such as an antibacterial function, a deodorizing function, an antistatic function, a hygroscopic function, a moisture permeation function, a heat insulation function, an exothermic function, a heat storage function, a light exothermic function, or a heat-retaining function can be imparted, and thus a padding material can be provided in accordance with a various applications or objects.

EXAMPLES

[0053] Although the present invention is specifically described below with reference to following Examples and Comparative Examples, the present invention is not limited to the following Examples.

[Example 1]

[0054] As a main fiber, a polyester fiber (a polyethylene terephthalate fiber) having a fiber diameter of 2.2 dtex and a fiber length of 32 mm was used. On the other hand, as a secondary fiber, a black dyed polyester fiber (a polyethylene terephthalate fiber) having a fiber diameter of 2.2 dtex and a fiber length of 32 mm was used. The secondary fiber was used as a substitute for the functional fiber mentioned above. Each of the fibers was passed through a carding machine (DK-903 manufactured by Truetzschler) separately to open the fibers. In this connection, the reason why a black dyed polyester fiber was used is that a state of mixed polyester fibers can be easily recognized visually.

[0055] On a feed lattice, 250 g of the opened polyester fiber was spread uniformly. Then, 250 g of the opened black dyed polyester fiber was placed on the layer of the above-mentioned polyester fiber. Then, the resultant was put into a wadding storage room 5 (internal volume: 5 m³) as shown in FIG. 1 (b) from the top using a blower. Further, the above-described operations were repeated to accommodate the fibers, which were blended wadding of the polyester fiber and the black dyed polyester fiber, in the wadding storage room 5, and the fibers were agitated and mixed.

[0056] Then, the fibers were sucked from the wadding storage room 5 in a horizontal direction to obtain blended wadding including 50% by mass of the polyester fiber and 50% by mass of the opened black dyed polyester fiber. The blended wadding was supplied to a balling machine 20 to obtain a fiber ball of blended wadding having a diameter of 5 mm.

[0057] Then, 2 g of the fiber ball of blended wadding was randomly sampled from each of 6 places (n = 6) to determine a blending ratio by a raveling method (JIS L 1030). Consequently, since a maximum blending ratio was 50.5% and a minimum blending ratio was 49.5%, a blending ratio variation was within a range of 1% in either direction. In addition, an enlarged photographic image of the obtained fiber ball of blended wadding is shown in FIG. 4.

[Comparative Example 1]

[0058] A fiber ball of blended wadding was obtained in the same manner as Example 1 except that 50% by mass of the polyester fiber and 50% by mass of the black dyed polyester fiber were mixed to obtain blended wadding without opening and without using the wadding storage room 5. A blending ratio variation was determined, in the same manner as Example 1, to be 60%. An enlarged photographic image of the obtained fiber ball of blended wadding is shown in FIG. 5.

[0059] As shown in FIG. 5, it is understood that the fiber ball of blended wadding obtained in Comparative Example 1 have lumps of black dyed polyester fibers scattered throughout the fiber ball, that is, the fiber ball of blended wadding is inferior in homogeneity, and, on the contrary, in the fiber ball of blended wadding shown in FIG. 4 and obtained in Example 1, black dyed polyester fibers are homogeneously blended with polyester fibers as main fibers.

[Example 2]

[0060] A fiber ball of blended wadding, which has a diameter of 5 mm, including 85% by mass of a polyester fiber and 15% by mass of a hygroscopic exothermic fiber was obtained in the same manner as Example 1 except that 425 g of an opened polyester fiber was spread on a feed lattice uniformly, and then 75 g of an opened hygroscopic exothermic

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fiber (acrylic fiber) was divided equally into 9 or more parts, and the resultant divided portions were placed on the layer of the above-mentioned polyester fiber at evenly spaced intervals, and the resultant was put into a wadding storage room 5 (internal volume: 5 m³) from the top using a blower. In this connection, the reason why 75 g of the hygroscopic exothermic fiber was divided equally into 9 or more parts is to prevent uneven distribution of the fiber.

[0061] With respect to a blending ratio variation, 2 g of the fiber ball was randomly sampled from each of 6 places (n = 6) to determine a blending ratio in the same manner as Example 1. Results are shown in Table 1.

[Table 1]

n	Blending ratio (% by mass)	
	Polyester fiber	Hygroscopic exothermic fiber
1	85.4	14.6
2	86.3	13.7
3	86.4	13.6
4	86.0	14.0
5	85.8	14.2
6	86.1	13.9

[0062] As shown in table 1, a blending ratio variation of the blended padding obtained in Example 2 was within 1% in either direction.

[Example 3]

[0063] By using a process of manufacture as shown in FIG. 2 (c), a blended padding comprising a needle punched nonwoven fabric sheet was produced.

[0064] As a main fiber, a polyester fiber (a polyethylene terephthalate fiber) having a fiber diameter of 2.2 dtex, and a fiber length of 32 mm was used. On the other hand, as a functional fiber, "TENCEL" (manufactured by LENZING AG) having a fiber diameter of 2.2 dtex, and a fiber length of 32 mm was used.

[0065] First, an opened main fiber and an opened functional fiber are weighed to fulfil the following conditions: a main fiber: a functional fiber = 80:20 (mass ratio), and a fabric weight of a sheet is 60 g/m². Then, the weighed fibers were charged into a wadding storage room 51 (internal volume: 5 m³), and agitated and mixed. The resultant was opened by using three roller card machines 42, 43, and 44 to obtain webs W1, W2, and W3, and the webs were stacked as shown in FIG. 2 (b) and continuously transferred to a needle punching machine 49 to obtain a nonwoven fabric sheet 48' having a width of 1.5 m.

[Comparative Example 2]

[0066] As shown in FIG. 3, a nonwoven fabric sheet 50 was produced by using a needle punching machine 49 in a similar manner to Example 3, except that a main fiber and a secondary fiber were separately supplied to roller card machines 42, 43, and 44, and the obtained webs W1', W2', and W3' were stacked on a feed lattice 45.

[0067] Blending ratios were measured with respect to blended paddings of nonwoven fabric sheets obtained in Example 3 and Comparative Example 2. That is, in two portions which were 1 m apart from each other in a longitudinal direction of the nonwoven fabric sheet, samples were collected from three different points aligned in a width direction in each of the portions (i.e., 10 cm apart from each of the lateral ends, and the center), that is, total 6 samples were obtained from the nonwoven fabric sheet, and blending ratios were measured in a similar manner to Example 1. The results are shown in Table 2.

[Table 2]

Blending ratio (% by mass) in a sheet of 60 g/m ² of fiber weight (Polyester (80 %)/ TENCEL (20 %))				
	Example 3		Comparative Example 2	
Sampling portion	Polyester	TENCEL	Polyester	TENCEL
1	81.0	19.0	80.0	20.0

(continued)

Blending ratio (% by mass) in a sheet of 60 g/m ² of fiber weight (Polyester (80 %)/ TENCEL (20 %))				
	Example 3		Comparative Example 2	
2	79.0	21.0	80.9	19.1
3	80.3	19.7	85.4	14.6
4	79.4	20.6	78.8	21.2
5	81.8	18.2	75.3	24.7
6	81.2	18.8	79.7	20.3
Mean	80.5	19.5	80.0	20.0
Maximum	81.8	21.0	85.4	24.7
Minimum	79.0	18.2	75.3	16.6
Difference	2.8	2.8	10.1	10.1

[0068] The present invention is not limited to the above-described embodiments, and various modifications and improvements can be made within the scope of the claims. For example, in the above-described embodiments, although a blended padding of a main fiber (a polyester fiber, or the like) and a functional fiber are described, the present invention is not limited to a combination of the main fiber and the functional fiber, but it can be a blended padding of a combination of hetero-fibers. Examples thereof include a combination of fibers which are not classified in a functional fiber, or a combination of functional fibers. As a result, a blended padding having functions which are included in each of the fibers is obtained. In addition, the combination is not limited to that of two types, and the combination can be that of three types or more. Furthermore, types of fibers to be used are not specifically limited.

Claims

1. A blended padding comprising two or more types of fibers,
characterized in that a blending ratio variation, which is calculated by the formula: maximum blending ratio - minimum blending ratio, between said two or more types of fibers is 10% by mass or less.
2. The blended padding according to claim 1, wherein said two or more types of fibers comprise a main fiber and a functional fiber.
3. The blended padding according to claim 2, wherein said functional fiber is one type or two or more types of fibers having any of functions including an antibacterial function, a deodorizing function, an antistatic function, a hygroscopic function, a moisture permeation function, a heat insulation function, an exothermic function, a heat storage function, a light exothermic function, and a heat-retaining function.
4. The blended padding according to any of claims 1 to 3, wherein said main fiber is a polyester fiber.
5. The blended padding according to any of claims 1 to 4, wherein the blended padding has a form selected from a fiber ball, a nonwoven fabric sheet, and a web-type sheet.
6. A padding material for clothing or bedding comprising a blended padding according to any of claims 1 to 5.
7. A clothing whose interior is filled with a blended padding according to any of claims 1 to 5.
8. A bedding whose interior is filled with a blended padding according to any of claims 1 to 5.

Fig. 1

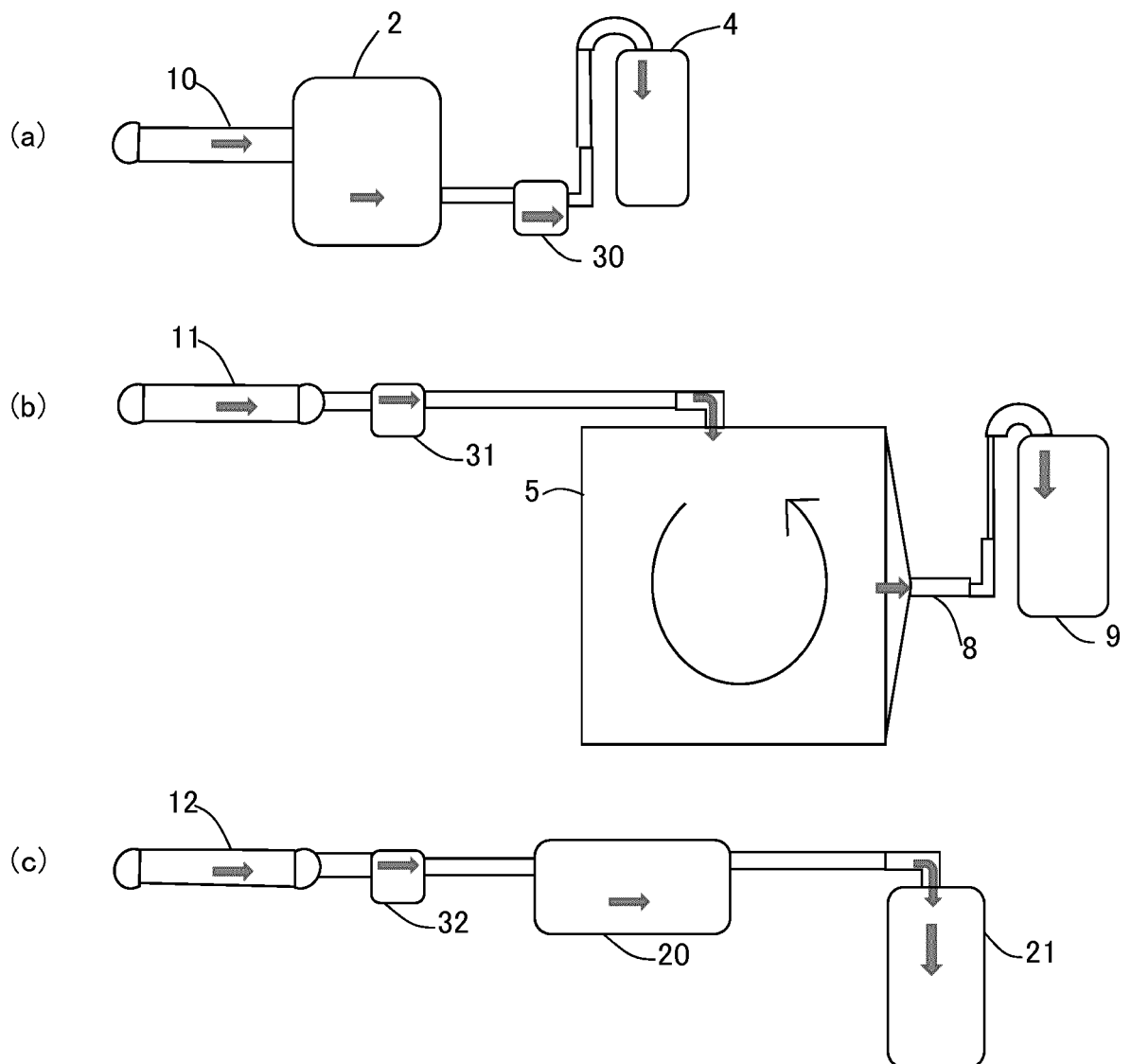


Fig. 2

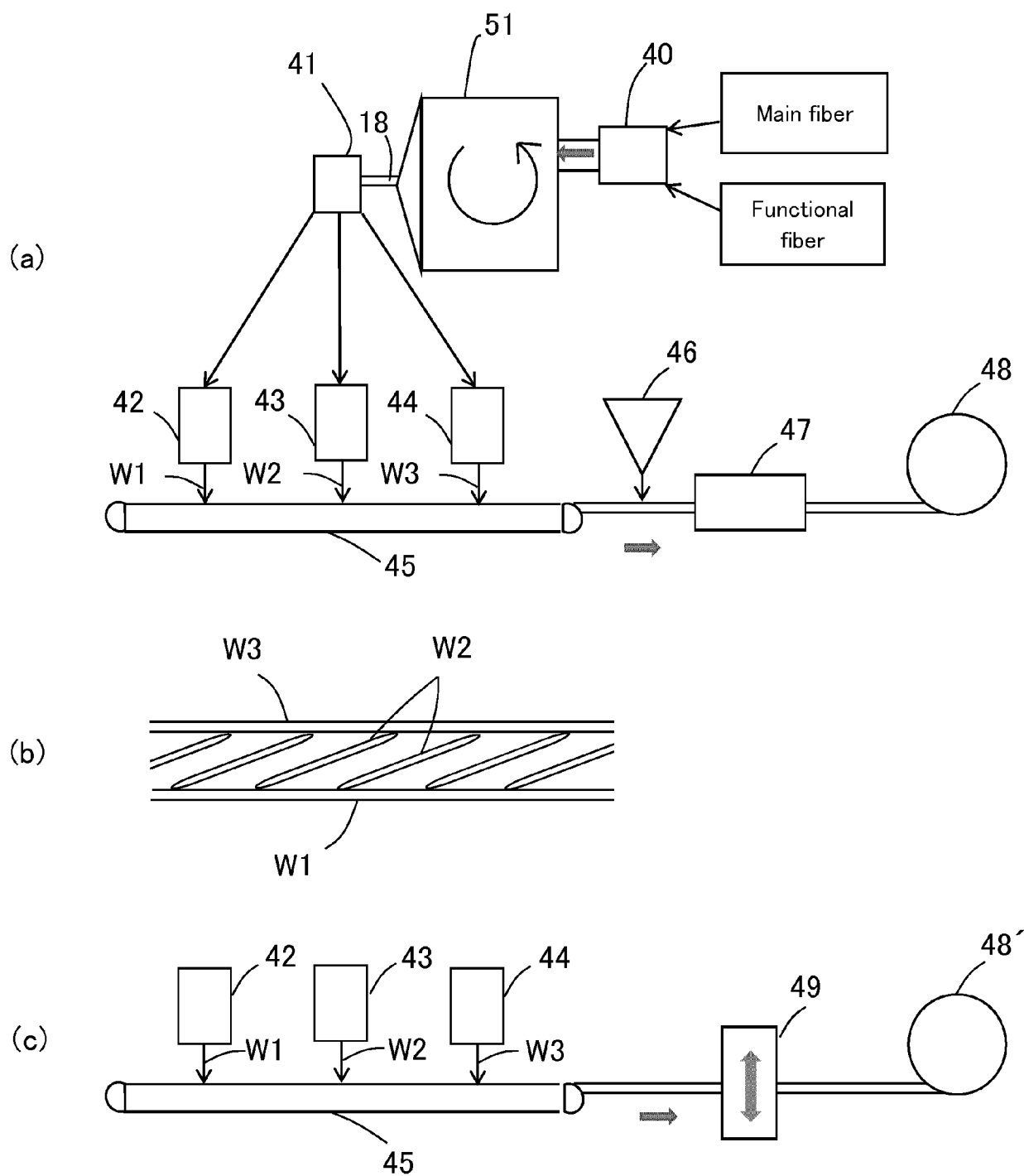


Fig. 3

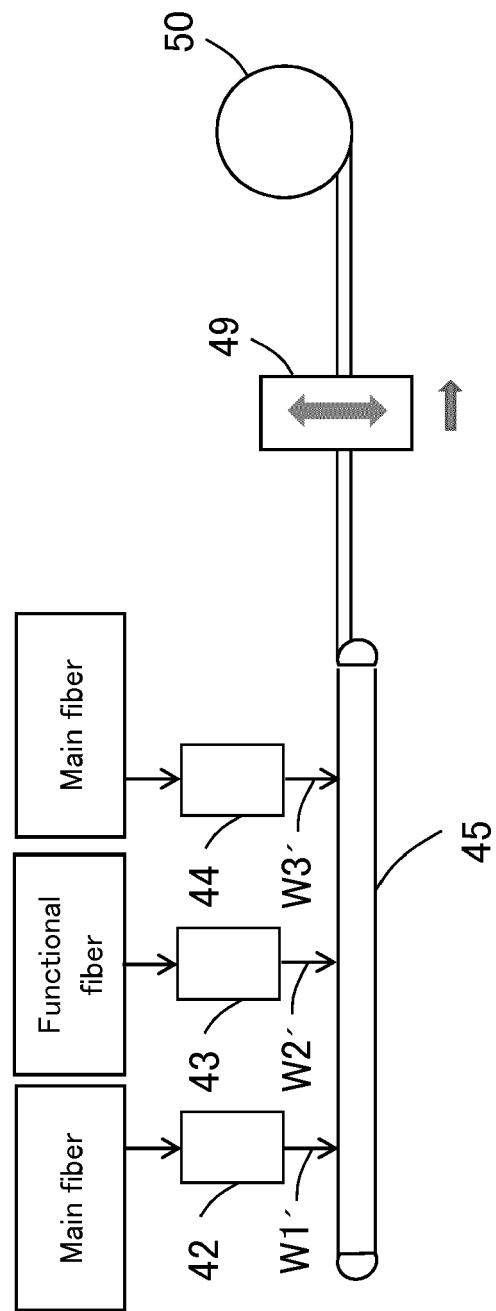


Fig. 4

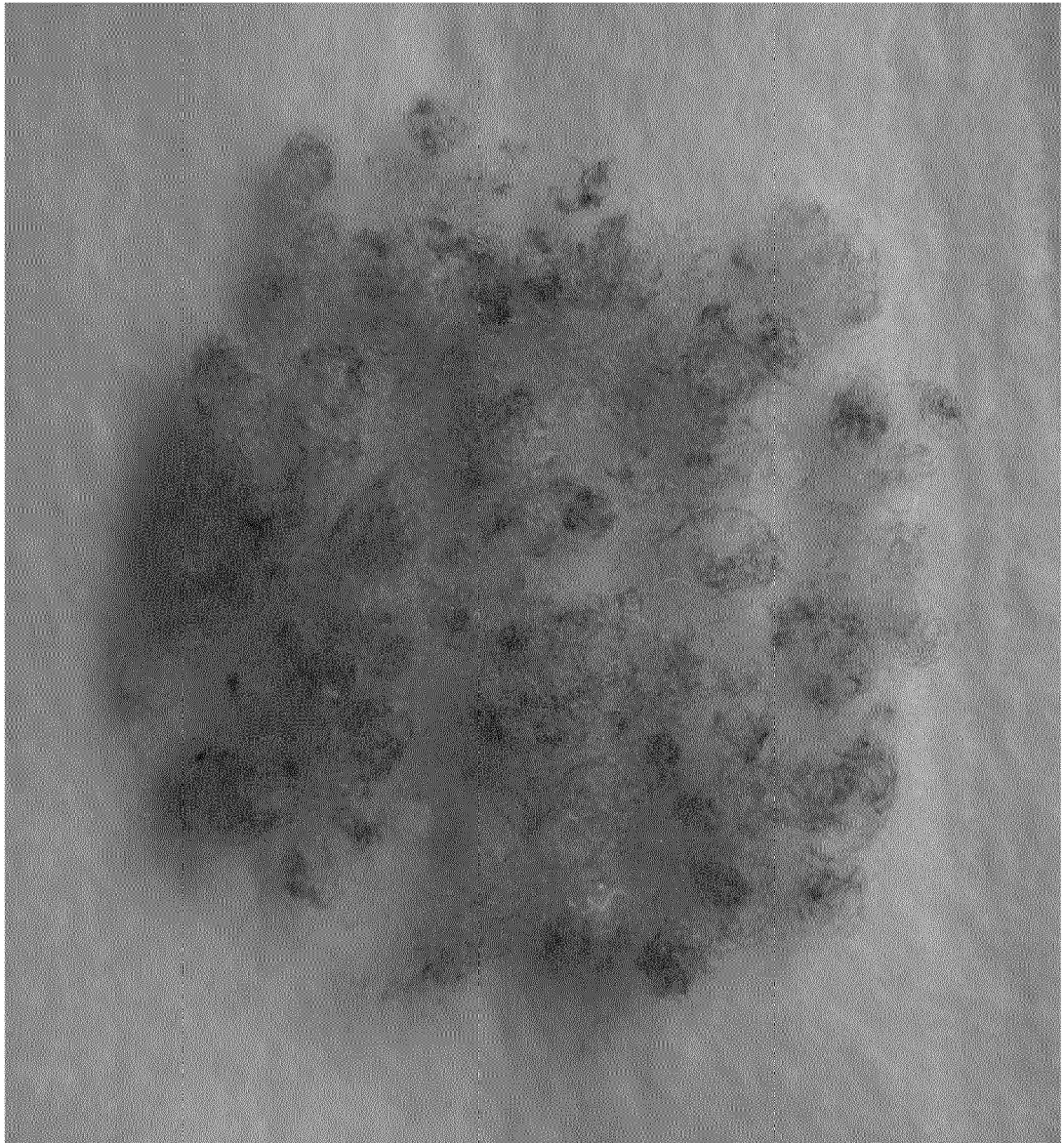
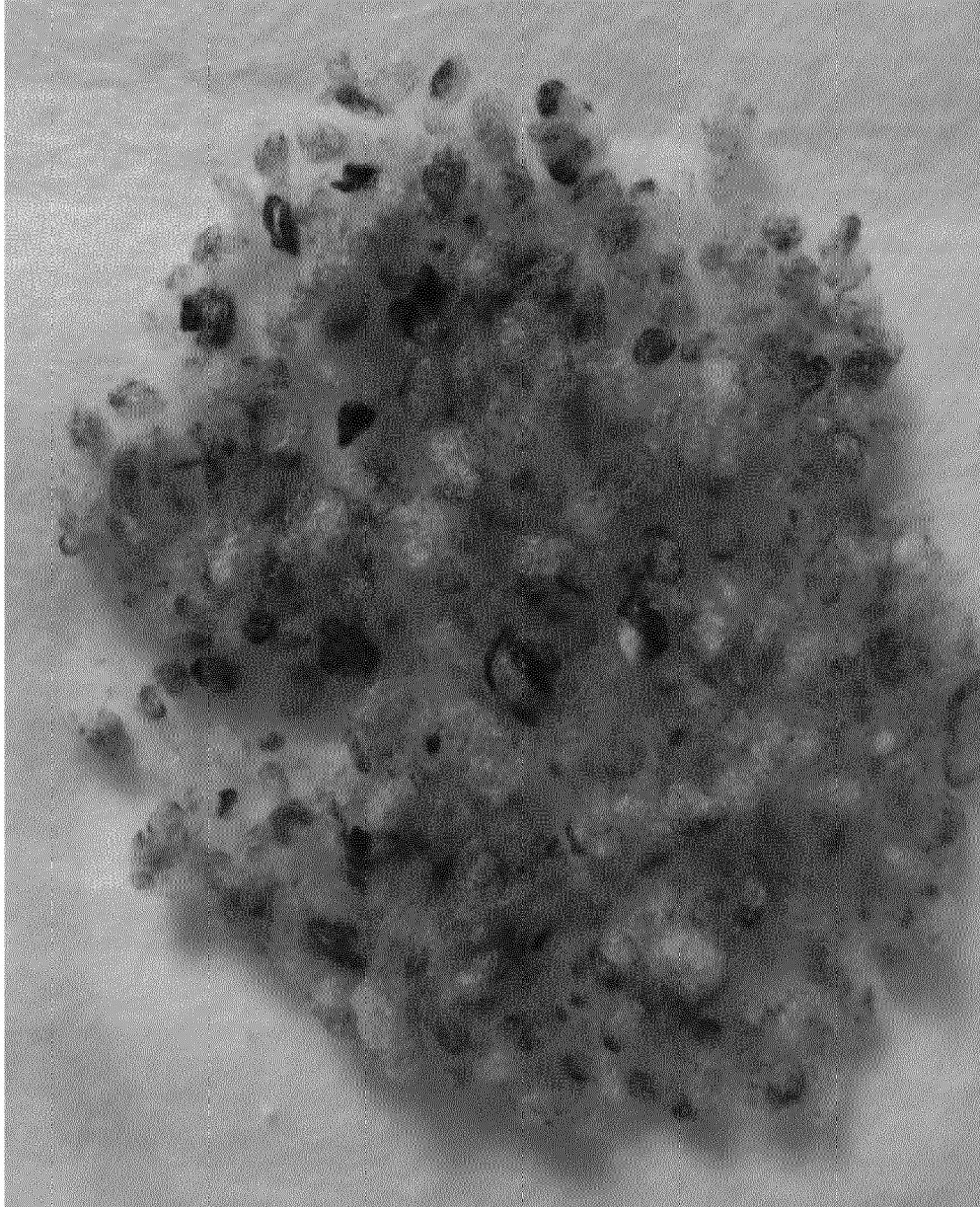


Fig. 5





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