Patent Right	Date	May 23, 2024	Court	Intellectual Property High Court, Third Division
	Case number	2024 (Gyo-Ke) 10002		
- A case in which, with regard to the patented invention titled "Non-woven fabric for civil engineering work and its manufacturing method," the court found that a person ordinarily skilled in the art could have easily made this invention based on the cited invention and common general technical knowledge, and rescinded the part of the JPO decision which partially maintained the patent.				

Case type: Rescission of Trial Decision to Maintain
Result: Granted
References: Article 29, paragraph (2) of the Patent Act
Related rights, etc.: Patent No. 6889970
Decision of the JPO: Invalidation Trial No. 2022-800065

Summary of the Judgment

1. The patent in question (the "Patent") is held by the Defendant for an invention titled "Non-woven fabric for civil engineering work and its manufacturing method." It has seven claims, of which Claims 1 and 2 are as described below.
[Claim 1]
A non-woven fabric for civil engineering work that is manufactured by the needle punch method and has a vertical and horizontal elongation rate of 150% or more, characterized in that:
the fiber materials of non-woven fabric consist of white fibers,
mixed with colored fibers made by coloring the same fibers as said white fibers with a pigment of a specific color;
said white fibers and colored fibers are chemical fibers;
said colored fibers exhibit a blackish color containing a carbon black pigment; and
the main body of the non-woven fabric has a grayish color given by the mixture of white fibers and colored fibers, and a mottled pattern is formed on the outer surface of the main body of the non-woven fabric.
[Claim 2]
A non-woven fabric for civil engineering work stated in Claim 1, characterized in that the mixed quantity of the abovementioned colored fibers is in the range of 10% to 90% by weight.
2. The Plaintiff filed a request for a trial for invalidation of the Patent, alleging violation

of the support requirement, violation of the clarity requirement, violation of the enablement requirement, lack of novelty, and lack of an inventive step (excluding Claims 2 and 6 for lack of novelty). The Japan Patent Office (JPO) rendered a decision (the "JPO Decision") to invalidate the Patent with regard to Claims 1, 3 to 5, and 7 on the grounds of lack of novelty and lack of an inventive step, while maintaining the Patent with regard to Claims 2 and 6.

The Plaintiff filed this lawsuit to seek rescission of only the parts of the JPO Decision which are related to Claims 2 and 6. In this lawsuit, the Plaintiff only alleged lack of an inventive step as grounds for rescission. The Defendant responded in the invalidation trial, but in this lawsuit, it did not submit a written answer or brief, nor did it appear at court on the date for proceedings.

3. In this judgment, as indicated below, the court determined that a person ordinarily skilled in the art could have easily made the invention according to Claims 2 and 6 based on the cited inventions and common general technical knowledge, upheld the grounds for rescission argued by the Plaintiff, and rescinded the parts of the JPO Decision relating to Claims 2 and 6.

(1) It is found that there is a substantial difference (Difference 2) between the invention according to Claim 2 (Invention 2) and the cited invention.

[Difference 2] In Invention 2, the "mixed quantity of the colored fibers is in the range of 10% to 90% by weight," whereas in the cited invention, "the ratio between white fibers and black fibers is 92.5% for white to 7.5% for black."

(2) According to the statements in the claims, description, and drawings, it is found that the significance of making non-woven fabric with the mixture of white fibers and black fibers in Invention 2 is that: the elongation rate of non-woven fabric can be identified by forming a mottled pattern on the surface of the non-woven fabric and measuring the distance between the specified mottles before and after stretching; and the reflection of light can be suppressed and weather resistance and abrasion resistance can be improved by using carbon black as a pigment of the colored fibers.

In addition, it can be said that: it was common general technical knowledge as of the date of the filing of the application regarding the Patent that dark gray or black products were also used in addition to white products and gray mottled products as a sand-proof sheet for civil engineering work; and a person ordinarily skilled in the art was aware of the fact that the mixing ratio of black fibers varies for non-woven fabrics for civil engineering work made of the mixture of white fibers and black fibers.

On the other hand, according to the statements in the description and the results of the working examples stated in the description, no special technical significance can be

found in the fact that the mixing ratio of black fibers was set in the range of 10% to 90% in Invention 2.

Accordingly, it is only a matter of design adopted by a person ordinarily skilled in the art to increase or decrease the ratio of black fibers colored using carbon black in the cited invention in order to improve weather resistance, abrasion resistance and light shielding, prevent operational obstacles to workers due to the reflection of light, and set the preferred level of clarity of the mottled pattern for measuring the elongation rate of the non-woven fabric.

Furthermore, it can be said that it was common general technical knowledge as of the date of the filing of the application regarding the Patent that increasing the ratio of black fibers would make the mottled pattern clearer and make it easy to measure the elongation rate of the non-woven fabric based on the measured distance between the mottles, and would also have effects such as improving weather resistance, abrasion resistance and light shielding and suppressing the reflection of light. Therefore, there was a motivation to increase the ratio of black fibers to a level beyond 7.5%.

According to the above, it should be said that a person ordinarily skilled in the art could have easily conceived of the structure involving Difference 2 by setting the mixing ratio of black fibers in the range of 10% to 90 %, instead of 7.5% as in the cited invention.

In the JPO Decision, the JPO determined that there was an obstructive factor for setting the ratio of black fibers at 10% or higher because the product based on the cited invention is manufactured while maintaining a certain level of quality and a person ordinarily skilled in the art would not usually make a design change in a manner to change the ratio between white fibers and black fibers. However, even if the compliance with the product specification is required in order to maintain the identity and quality of the product, a person ordinarily skilled in the art would naturally try to develop and manufacture a product of non-woven fabric for civil engineering work with a new specification by using the original product and changing part of its original specification. Therefore, the fact that the ratio of black fibers is set in a specific range as part of the product specification does not mean that there is an obstructive factor for changing the ratio.

(3) The invention according to Claim 6 (Invention 6) can be found to be an invention relating to the method of manufacturing non-woven fabric for civil engineering work of Invention 2. Between Invention 6 and the manufacturing method of the cited invention, there is the same difference as that between Invention 2 and the cited invention. However, it can be said that a person ordinarily skilled in the art also could

have easily conceived of the structure involving this difference.

Judgment rendered on May 23, 2024
2024 (Gyo-Ke) 10002 Case of seeking rescission of the JPO decision
Date of conclusion of oral argument: April 9, 2024

Judgment

Plaintiff: Tanaka Co., Ltd.

Defendant: Maedakosen Co., Ltd.

Main text

1. Of the decision rendered by the Japan Patent Office (JPO) on the case of Invalidation Trial No. 2022-800065 on November 28, 2023, the parts relating to Claims 2 and 6 of Patent No. 6889970 shall be rescinded.
2. The Defendant shall bear the court costs.

Facts and reasons

No. 1 Claims

Same as in the main text.

No. 2 Outline of the case

1. Background of the proceedings at the JPO, etc.

(1) The Defendant filed a patent application for an invention titled "Non-woven fabric for civil engineering work and its manufacturing method" on December 8. 2020 (hereinafter referred to as the "Filing Date"), and obtained registration of establishment of a patent right (Patent No. 6889970; the number of claims: seven; this patent is hereinafter referred to as the "Patent") on May 26, 2021. (Exhibits Ko 27 and 46)

(2) On July 8, 2022, the Plaintiff filed a request for a trial for patent invalidation regarding the Patent (the case of Invalidation Trial No. 2022-800065; hereinafter referred as the "Invalidation Trial"). On September 30, 2022, the Defendant submitted a written answer for the case under trial, and filed a request for a correction of the claims and the description relating to the Patent (hereinafter referred to as the "Correction"). (Exhibits Ko 28 through 30)

(3) On November 28, 2023, the JPO approved the Correction, and rendered a decision to the effect that "the patent for the inventions stated in Claims 1, 3 through 5, and 7 of Patent No. 6889970 shall be invalidated; and the request for the present trial regarding the inventions stated in Claims 2 and 6 of Patent No. 6889970 is groundless" (hereinafter referred to as the "JPO Decision"). A certified copy of the decision was served on the Plaintiff on December 15, 2023.

(4) On January 5, 2024, the Plaintiff filed the present action seeking rescission of the parts of the JPO Decision relating to Claims 2 and 6 of the Patent.

The Defendant did not submit a written opinion or brief, nor did it appear at court on the first date for preparatory proceedings or the first date for oral arguments.

2. Statements of the claims

Of the claims after the Correction, the statements of Claims 1, 2, 5, and 6 are as follows (the underlined parts are the parts corrected by the Correction; Claims 1 and 5 were invalidated by the JPO Decision, but as Claim 2 cites Claim 1 and Claim 6 cites Claim 5, Claims 1 and 5 are also stated below; hereinafter, the inventions stated in Claim 2 and Claim 6 after the Correction are respectively referred to as "Invention 2" and "Invention 6," and Invention 2 and Invention 6 are collectively referred to as the "Inventions"; in addition, the description (that after the Correction) and drawings relating to the Patent are collectively referred to as the "Description, etc.").

[Claim 1]

A non-woven fabric for civil engineering work that is manufactured by the needle punch method and has a vertical and horizontal elongation rate of 150% or more, characterized in that:
the fiber materials of the non-woven fabric consist of white fibers,
mixed with colored fibers made by coloring the same fibers as said white fibers with a pigment of a specific color;
said white fibers and colored fibers are chemical fibers;
said colored fibers exhibit a blackish color containing a carbon black pigment; and
the main body of the non-woven fabric has a grayish color given by the mixture of white fibers and colored fibers, and a mottled pattern is formed on the outer surface of the main body of the non-woven fabric.

[Claim 2]

A non-woven fabric for civil engineering work stated in Claim 1, characterized in that the mixed quantity of the abovementioned colored fibers is in the range of 10% to 90% by weight.

[Claim 5]

A manufacturing method of a non-woven fabric for civil engineering work that is manufactured by the needle punch method and has a vertical and horizontal elongation rate of 150% or more, characterized in that:
the fiber materials of the non-woven fabric use white fibers and
colored fibers made by coloring the same fibers as said white fibers with a pigment of a specific color;

said white fibers and colored fibers are chemical fibers;
said colored fibers exhibit a blackish color containing a carbon black pigment;
the main body of the non-woven fabric is manufactured by kneading said white fibers and colored fibers, and then entangling the fibers by using a needle punch; and
the main body of the non-woven fabric has a grayish color given by the mixture of white fibers and colored fibers, and a mottled pattern is formed on the outer surface of the main body of the non-woven fabric.

[Claim 6]

A manufacturing method of a non-woven fabric for civil engineering work stated in Claim 5, characterized in that the mixed quantity of the abovementioned colored fibers is in the range of 10% to 90% by weight.

3. Grounds for invalidation argued in the Invalidation Trial

In the Invalidation Trial, the Plaintiff argued the following grounds for invalidation.

(1) Grounds for Invalidation 1 (violation of the support requirement)

The inventions relating to Claims 1 through 7 of the Patent are not stated in the detailed explanation of the invention. Therefore, the statement of the claims of the Patent does not comply with Article 36, paragraph (6), item (i) of the Patent Act, and hence the Patent was granted for a patent application that had not satisfied the requirements prescribed in that paragraph.

(2) Grounds for Invalidation 2 (violation of the clarity requirement)

In the inventions relating to Claims 1 through 7 of the Patent, the extent of each of the words "grayish," "gray," and "mottled pattern" (Claims 1 and 5) is unclear or unspecifiable. Therefore, the statement of the claims of the Patent does not comply with Article 36, paragraph (6), item (ii) of the Patent Act, and hence the Patent was granted for a patent application that had not satisfied the requirements prescribed in that paragraph.

(3) Grounds for Invalidation 3 (violation of the enablement requirement)

The statement of the detailed explanation of the invention of the Patent is not clear and sufficient to enable a person ordinarily skilled in the art of the invention to work the invention in regard to how white fibers and black fibers should be mixed to form the "gray" color and the "mottled pattern" on the outer surface. Therefore, the statement of the detailed explanation of the invention of the Patent does not comply with Article 36, paragraph (4), item (i) of the Patent Act, and hence the Patent was granted for a patent application that had not satisfied the requirements prescribed in that paragraph.

(4) Grounds for Invalidation 4 (lack of novelty)

The inventions relating to Claims 1, 3 through 5, and 7 of the Patent are the synthetic

fiber non-woven fabric or its manufacturing method relating to Exhibits Ko 8 through 15. Therefore, they fall under Article 29, paragraph (1), item (i) or (ii) of the Patent Act and cannot be patented, and hence the patent for Claims 1, 3 through 5, and 7 was granted in violation of the provisions of that paragraph.

(5) Grounds for Invalidation 5 (lack of an inventive step)

The inventions relating to Claims 1 through 7 of the Patent could have been easily made by a person ordinarily skilled in the art prior to the filing of the application in question based on the synthetic fiber non-woven fabric or its manufacturing method relating to Exhibits Ko 8 through 15, and cannot be patented. Therefore, the patent for Claims 1 through 7 was granted in violation of the provisions of Article 29, paragraph (2) of the Patent Act.

4. Grounds for the JPO Decision, etc.

The grounds for the JPO Decision are as stated in Attachment 1 "Written Trial Decision (Copy)."

In the JPO Decision, the JPO determined that the arguments of the Plaintiff (petitioner) regarding Grounds for Invalidation 1 through 3 are groundless. Also, with regard to Grounds for Invalidation 4 and 5, the JPO determined that the patent for the inventions relating to Claims 1, 3 through 5 and 7 was granted in violation of the provisions of Article 29, paragraphs (1) and (2) of the Patent Act, and should be invalidated due to falling under Article 123, paragraph (1), item (ii) of that Act. The JPO further determined that the patent for Claims 2 and 6 (Inventions 2 and 6) is not found to fall under Article 29, paragraph (2) of that Act, and therefore it should be maintained.

The JPO's determinations against the Plaintiff's arguments regarding Grounds for Invalidation 5 (those concerning Inventions 2 and 6) are as outlined below.

(1) A. The Plaintiff's product, a synthetic fiber non-woven fabric, "Need Keeper NK-800Z" (hereinafter referred to as "Product 800Z"), is found to be as follows.

"A synthetic fiber non-woven fabric to be used in airport runway construction work,
wherein the vertical elongation rates of the synthetic fiber non-woven fabric are 231, 217, 230, and 216 N/5 cm,
wherein the horizontal elongation rates of the synthetic fiber non-woven fabric are 229, 206, 231, and 212 N/5 cm,
wherein the surface of the synthetic fiber non-woven fabric exhibits a gray color overall, with a mixture of shades of gray,
wherein the material is 100% polyester, and the ratio between white fibers and black fibers is 92.5% for white to 7.5% for black,

wherein, with regard to the black fibers collected from the synthetic fiber non-woven fabric, fine particles of 15 to 35 nm dispersed in the fibers are carbon black, and carbon black has been added to the fibers, and
wherein, on the face perpendicular to the surface of a piece of the synthetic fiber non-woven fabric, vertical lines appear in the direction perpendicular to the surface."
B. The manufacturing method of Product 800Z is found to be as follows.

"A manufacturing method of a synthetic fiber non-woven fabric to be used in airport runway expansion work,
wherein the vertical elongation rates of the synthetic fiber non-woven fabric are 231, 217, 230, and 216 N/5 cm,
wherein the horizontal elongation rates of the synthetic fiber non-woven fabric are 229, 206, 231, and 212 N/5 cm,
wherein the surface of the synthetic fiber non-woven fabric exhibits a gray color overall, with a mixture of shades of gray,
wherein the material is 100% polyester, and the ratio between white fibers and black fibers is 92.5% for white to 7.5% for black,
wherein, with regard to the black fibers collected from the synthetic fiber non-woven fabric, fine particles of 15 to 35 nm dispersed in the fibers are carbon black, and carbon black has been added to the fibers, and
wherein, on the face perpendicular to the surface of a piece of the synthetic fiber non-woven fabric, vertical lines appear in the direction perpendicular to the surface."
C. Product 800Z and the manufacturing method of Product 800Z are inventions that were public knowledge or publicly known to be worked prior to the filing of the patent application for the Patent.
(2) A. When Invention 2 and Product 800Z are compared, the following common features and differences are found.
[Common features]

"A non-woven fabric for civil engineering work that has a vertical and horizontal elongation rate of 150% or more,
wherein the fiber materials of the non-woven fabric consist of white fibers,
mixed with colored fibers made by coloring the same fibers as said white fibers with a pigment of a specific color,
wherein said white fibers and colored fibers are chemical fibers,
wherein said colored fibers exhibit a blackish color containing a carbon black pigment, and
wherein the main body of the non-woven fabric has a grayish color given by the mixture

of white fibers and colored fibers, and a mottled pattern is formed on the outer surface of the main body of the non-woven fabric."

[Difference 1] (hereinafter simply referred to as "Difference 1")

Invention 2 is manufactured by the needle punch method, whereas in the case of Product 800Z, although "on the face perpendicular to the surface of a piece of the synthetic fiber non-woven fabric, vertical lines appear in the direction perpendicular to the surface," it is unknown whether Product 800Z is manufactured by such method.

[Difference 2] (hereinafter simply referred to as "Difference 2")

In Invention 2, the "mixed quantity of the colored fibers is in the range of 10% to 90% by weight," whereas in Product 800Z, "the ratio between white fibers and black fibers is 92.5% for white to 7.5% for black."

B. With regard to Difference 1, Product 800Z, which is "a synthetic fiber non-woven fabric to be used in airport runway expansion work," is a civil engineering material, and because "on the face perpendicular to the surface of a piece of the synthetic fiber non-woven fabric, vertical lines appear in the direction perpendicular to the surface," there is a high probability that Product 800Z is manufactured by the needle punch method. Therefore, Difference 1 is not a substantial difference.

In addition, needle punching was well-known as a mechanical bonding method of webs used for civil engineering materials as thick products (Page 38, lines 6 to 9 of Exhibit Ko 21). Thus, a person ordinarily skilled in the art could have easily conceived of making the structure of Invention 2 relating to Difference 1 by using the well-known needle punching as the bonding method for Product 800Z.

C. With regard to Difference 2, Product 800Z is manufactured while maintaining a certain level of quality and a person ordinarily skilled in the art would not usually make a design change in a manner to change the ratio between white fibers and black fibers.

In addition, according to the statements in Exhibit Ko 22, the product specification of Product 800Z indicates that the "mixing ratio" of cotton with a "white" "cotton color" is "95"% and the "mixing ratio" of cotton with a "black" "cotton color" is "5"%. This means that, while the mixing ratio of cotton with a black cotton color is 5% in the specification, the measured value for the product relating to the abovementioned difference was "black: 7.5%," which is higher than the 5% set as the specification. Regarding this point, it was common general technical knowledge to measure higher and lower values centering around the 5% set as the product specification, but there was no motivation to further increase the mixing ratio of black fibers to a level beyond 7.5% in Product 800Z, and it can be said that there was an obstructive factor for changing the 5% set as the product specification to 10% or more, which is one digit different.

(D) Accordingly, a person ordinarily skilled in the art could not have easily made Invention 2 based on Product 800Z.
(3) The determination on Invention 6 is the same as that on Invention 2. Accordingly, a person ordinarily skilled in the art could not have easily made Invention 6 based on the manufacturing method of Product 800Z.
(4) Meanwhile, as mentioned in 2. above, Invention 6 (Claim 6) cites Claim 5, and the JPO found the common features and differences between the invention stated in Claim 5 (hereinafter referred to as "Invention 5") and the manufacturing method of Product 800Z to be as follows.
[Common features]

"A manufacturing method of a non-woven fabric for civil engineering work that has a vertical and horizontal elongation rate of 150% or more,
wherein the fiber materials of the non-woven fabric consist of white fibers,
mixed with colored fibers made by coloring the same fibers as said white fibers with a pigment of a specific color,
wherein said white fibers and colored fibers are chemical fibers,
wherein said colored fibers exhibit a blackish color containing a carbon black pigment, and
wherein the main body of the non-woven fabric has a grayish color given by the mixture of white fibers and colored fibers, and a mottled pattern is formed on the outer surface of the main body of the non-woven fabric."

[Difference 3] (hereinafter simply referred to as "Difference 3")

Invention 5 is manufactured by the needle punch method and the main body of the non-woven fabric is manufactured by kneading the abovementioned white fibers and colored fibers, and then entangling the fibers by using a needle punch, whereas it is unknown whether Product 800Z is manufactured in such manner.

5. Grounds for rescission argued by the Plaintiff

An error in the JPO's determination concerning inventive steps of the Inventions.

No. 4 Judgment of this court

1. Technical significance of the Inventions, etc.

(1) Claims

The statements of claims relating to the Inventions are as described in No. 2, 2. above.

(2) Statement of the Description, etc.

Of the Description, etc., the statements of the description are as described in

Attachment 2 and the statements of the drawings are as shown in Attachment 3.

(3) Technical significance of the Inventions

According to the statements of the claims referred to in (1) above and the Description, etc. referred to in (2) above, the technical significance of the Inventions is found to be as follows.

A. Technical field

The Inventions relate to a high-elongation non-woven fabric used as a material for civil engineering, such as a sand-proof sheet for preventing the outflow of reclamation earth and sand in revetment work, etc., and particularly relate to a non-woven fabric for civil engineering work that enables more accurate identification of the extent of elongation of the non-woven fabric and its manufacturing method. (Paragraph [0001])

B. Background art

Conventional non-woven fabrics for civil engineering work use whitish fibers as their materials, as there is no need to apply a special non-white color, and the manufactured non-woven fabrics not only have white outer surfaces, but their internal structures are also white. In addition, since conventional, general non-woven fabrics have elongation rates that are significantly inferior to those of woven fabrics, they have a poor ability to follow unevenness, such as bumps and hollows, on the surface on which they are laid. Therefore, in order to improve the ability to follow unevenness, non-woven fabrics having various stretching structures have been proposed. (Paragraphs [0002] and [0003])

C. Problem to be solved by the invention

Conventional non-woven fabrics for civil engineering work include the following problems: [i] since the non-woven fabrics are entirely white, they have problems in terms of weather resistance and abrasion resistance, and the glare from the light they reflect during construction is liable to obstruct the laying work; [ii] a non-woven fabric for civil engineering work is laid at the site while stretching it as a whole, but the actual amount of elongation of the non-woven fabric cannot be identified, and the amount of elongation varies, which makes it technically difficult to lay the non-woven fabric while stretching it at a uniform elongation rate; and [iii] if the surface on which a non-woven fabric is laid has a large undulation, the non-woven fabric is further stretched in order to adapt to the undulation, which makes the non-woven fabric liable to go beyond the elongation limit and be torn, and if the non-woven fabric is torn, it takes a lot of time and effort to repair the damaged part. (Paragraph [0005])

The Inventions have been made in view of the above points, and an object of the Inventions is to provide a non-woven fabric for civil engineering work that satisfies at

least one of the following and its manufacturing method.
<1> The extent of elongation of the non-woven fabric can be identified by a simple method.
<2> The non-woven fabric can be laid while properly managing its elongation.
<3> If the non-woven fabric is used as a sand-proof sheet, the warranty period of the sand-proof function can be extended.
(up to here, paragraph [0006])
(d) Means for solving problem

The non-woven fabric for civil engineering work stated in the Inventions is a high-elongation non-woven fabric for civil engineering work that is manufactured by the needle punch method and has a vertical and horizontal elongation rate of 150% or more, wherein the fiber materials of the non-woven fabric consist of white fibers, mixed with colored fibers made by coloring the same fibers as the white fibers with a pigment of a specific color, wherein the white fibers and colored fibers are chemical fibers, wherein the colored fibers exhibit a blackish color containing a carbon black pigment, wherein the main body of the non-woven fabric has a grayish color given by the mixture of white fibers and colored fibers, and wherein a mottled pattern is formed on the outer surface of the main body of the non-woven fabric. and where in some embodiments, the mixed quantity of the colored fibers may be in the range of 10% to 90% by weight, the white fibers and colored fibers may be polyester fibers, and the non-woven fabric may be a sand-proof sheet.

The manufacturing method of a non-woven fabric for civil engineering work stated in the Inventions is a manufacturing method of the abovementioned non-woven fabric for civil engineering work, which includes a method to manufacture the main body of the non-woven fabric by kneading the white fibers and colored fibers, and then entangling the fibers by using a needle punch.
(up to here, paragraph [0007])
E. Effects of the Inventions

The Inventions have at least one of the following effects.
<1> By using a raw material in which an appropriate amount of colored fibers are mixed with white fibers, a non-woven fabric of a mixing color having a mottled pattern can be produced.
<2> Since the entire non-woven fabric is colored, if there is a difference in the amount of elongation of the non-woven fabric, the difference appears as a shade of color, and therefore the extent of elongation of the non-woven fabric can be roughly identified by visual observation based on the shade of color of the non-woven fabric.

<3> Since the surface of the non-woven fabric exhibits a mottled pattern, the elongation rate of the non-woven fabric can be accurately identified by actually measuring the distance between multiple specified mottles before and after stretching.
<4> Since the elongation of the non-woven fabric can be identified, the non-woven fabric can be laid while properly managing its elongation.
<5> Since the elongation limit of the non-woven fabric can be identified, repairs can be easily performed when the non-woven fabric is damaged.
<6> If carbon black is used as the pigment of the colored fibers, the weather resistance and abrasion resistance of the non-woven fabric can be improved.

Therefore, if the non-woven fabric is used as a sand-proof sheet, not only the reflection of light can be suppressed to improve the workability, but also the sand-proof function of the sand-proof sheet can be warranted for a long period of time by avoiding ultraviolet deterioration and abrasion deterioration.
(up to here, paragraph [0008])
F. Mode for carrying out the invention
(A) Outline of the non-woven fabric for civil engineering work

The non-woven fabric relating to the Inventions has excellent elasticity, extensibility, and strength. It is used as a material for scouring measures and suction prevention in civil engineering work, such as a protective material for suction prevention work for reclamation revetments using sand-proof sheets, scouring countermeasure work, interlocking block work, suction prevention work such as masonry work, various filter works, or water-proof sheet work, for example. Due to its high elasticity and extensibility, the non-woven fabric can be laid to follow bumps and hollows, etc. on various laying surfaces. (Paragraph [0011])
(B) Fiber materials

The fiber materials of the non-woven fabric consist of white fibers and colored fibers. The white fibers and colored fibers are made of the same fiber material. If the non-woven fabric is manufactured by using only the colored fibers, the entire non-woven fabric becomes a single color and no mottled pattern occurs. In the Inventions, a combination of white fibers and colored fibers is adopted in order to form a mottled pattern on the non-woven fabric. (Paragraph [0017])

The colored fibers contain one or more kinds of pigments of a specific color. Practically, one kind of pigment is sufficient. In a working example in the Description, etc., a mode in which carbon black having an ultraviolet absorbing function is adopted as the pigment is described, but any color other than carbon black can be adopted as the pigment. If carbon black is used as the pigment, the effect of improving the weather

resistance, durability, and abrasion resistance of the non-woven fabric can be expected. The coloring range of the colored fibers may be uniform coloring over the entire length, or may be partial coloring. (Paragraph [0021])

The mixed quantity of the colored fibers with respect to the total fiber quantity of the non-woven fabric can be appropriately selected. In the Inventions, the mixed quantity of the colored fibers is in the range of 10% to 90%, practically preferably in the range of 20% to 80%, and functionally, the mixed quantity of 50% is the best. If the mixed quantity of the colored fibers is less than 20%, the overall color of the non-woven fabric becomes lighter, it becomes difficult for mottles to be formed, light is easily reflected, and there will be a problem in weather resistance. If the mixed quantity of the colored fibers exceeds 50%, the overall color of the non-woven fabric becomes dark and it becomes difficult to distinguish the mottles with the naked eye. By setting the mixed quantity of the colored fibers within the above range, it is possible to simultaneously satisfy a plurality of factors such as ensuring weather resistance, forming mottles that can be recognized with the naked eye, and suppressing reflection of light. (Paragraphs [0023] to [0025])

In the non-woven fabric, the entire non-woven fabric is not white, and the white fibers and the colored fibers are mixed to give the entire non-woven fabric a grayish color, and the colored fibers are densely concentrated in places to form a mottled pattern. (Paragraph [0030])

In the Inventions, the entire non-woven fabric is colored. Therefore, if there is a difference in the elongation amount of the non-woven fabric, the difference appears as a shade of color. Specifically, the color of the portion having a large amount of elongation is lighter than that of the other portion having a small amount of elongation. In this way, the extent of elongation of the non-woven fabric can be roughly identified by visual observation based on the shade of color of the non-woven fabric. When the non-woven fabric is laid along an uneven surface, the color of the stretched portion of the non-woven fabric looks light, so the uneven portion can be easily recognized after the laying of the non-woven fabric. Therefore, it is possible to avoid trouble in walking, such as tripping when the worker walks on the non-woven fabric. The elongation information of the non-woven fabric based on the color change can be reflected in the ongoing laying work of the non-woven fabric and utilized for adjusting the tension of the non-woven fabric. (Paragraphs [0033] to [0035])

Since the non-woven fabric exhibits a mottled pattern, a large number of mottles are formed like spots on the surface of the non-woven fabric. Therefore, for example, by selecting two mottles, A and B, and actually measuring the distance between mottles

A and B before elongation, L_1, and the distance between mottles A and B after elongation, L_2, the elongation rate of the non-woven fabric ($L_1 : L_2$) can be identified accurately. The number of measurement points is not limited to two, and may be two or more. It is also possible to find four or more mottles and measure the elongation rate of the non-woven fabric in the vertical and horizontal directions. The elongation information of the non-woven fabric obtained by actually measuring the displacement of multiple mottles can be reflected in the ongoing laying work of the non-woven fabric and utilized for adjusting the tension of the non-woven fabric, and if it is close to the limit of the elongation rate, it can be utilized in countermeasure work, such as in laying a separate non-woven fabric for repair. Further, when there is an uneven portion on the surface on which the non-woven fabric is laid, it is ideal to stretch the non-woven fabric and lay the non-woven fabric on the relevant surface without any gaps, and the extent of elongation of the non-woven fabric with respect to the uneven portion can be confirmed in real time by checking the interval between mottles of the non-woven fabric. (Paragraphs [0038] to [0041])

As the colored fibers contain carbon black, the non-woven fabric is superior in weather resistance and abrasion resistance as compared with conventional non-woven fabrics manufactured only of white fibers. At the actual site, the non-woven fabric may be exposed to sunlight for about two to three months. For conventional non-woven fabrics manufactured only of white fibers, no special measures against ultraviolet rays are taken, so if they are exposed to the outdoors even for a few months, the ultraviolet ray degradation progresses. Kneading titanium oxide is known as a means for improving the weather resistance of conventional non-woven fabrics manufactured only of white fibers. However, light becomes more easily reflected in proportion to the amount of titanium oxide kneaded, and not only the problem of glare during construction remains, but also the abrasion resistance tends to become a remarkable problem. (Paragraphs [0042] to [0044] and [0051])

Since the color of the non-woven fabric relating to the Inventions is gray, when the non-woven fabric is used as a sand-proof sheet (suction-prevention material) for marine works, the parts containing water and the parts not containing water can be identified by the change in color. The color of the parts containing water appears as a darker gray color as compared with the dry parts that do not contain water. Therefore, it is possible to identify the parts where the earth and sand are easily sucked out based on the shade of color of the non-woven fabric and utilize this information for taking a countermeasure. (Paragraph [0045])

As described above, the non-woven fabric relating to the Inventions not only

improves workability by suppressing the reflection of light, but if used as a sand-proof sheet, it also avoids ultraviolet deterioration and abrasion deterioration, and warranties the sand-proof function of the sand-proof sheet for a long period of time. (Paragraph [0052])

G. Working example

The Description, etc. states Working Examples 1 through 7 as working examples in which the mixing ratio of white fibers and black fibers is changed. In Working Examples 1 through 7, the ratios of black fibers are 50%, 80%, 20%, 60%, 40%, 90%, and 10%, respectively. Comparative Example 1 (all white fibers) and Comparative Example 2 (all black fibers) are used as comparative examples. Based on these Working Examples 1 through 7 and Comparative Examples 1 and 2, the intensity and elongation were measured, the colors and the status of occurrence of the mottled patterns on the non-woven fabric were observed, and a sensory test was conducted on the light reflection performance. (Paragraphs [0046] to [0050])

2. Regarding the grounds for rescission (an error in the JPO's determination concerning inventive steps of the Inventions)

(1) A. According to the evidence (Exhibits Ko 10-1 through 10-3 and Exhibits Ko 11 through 13 and 23), Product 800Z, which is a non-woven fabric for civil engineering work manufactured and sold by the Plaintiff, is generally found to be as described in No. 2, 4. (1) A. above found by the JPO.

However, according to the contents of Exhibits Ko 10-1 through 10-3 and Exhibit Ko 11, the statements "231, 217, 230, and 216 N/5 cm" and "229, 206, 231, and 212 N/5 cm" in the finding of Product 800Z and the manufacturing method of Product 800Z described in the JPO Decision are found to be erroneous and should instead be "231%, 217%, 230%, and 216%" and "229%, 206%, 231%, and 212%," respectively.

When the contents found with regard to Product 800Z and the manufacturing method of Product 800Z are described after correcting the abovementioned errors, they would be as follows.

(A) Product 800Z (hereinafter, sometimes referred to as "Cited Invention 1")

"A synthetic fiber non-woven fabric to be used in airport runway expansion work,

wherein the vertical elongation rates of the synthetic fiber non-woven fabric are 231%, 217%, 230%, and 216%,

wherein the horizontal elongation rates of the synthetic fiber non-woven fabric are 229%, 206%, 231%, and 212%,

wherein the surface of the synthetic fiber non-woven fabric exhibits a gray color overall, with a mixture of shades of gray,

wherein the material is 100% polyester, and the ratio between white fibers and black fibers is 92.5% for white to 7.5% for black,
wherein, with regard to the black fibers collected from the synthetic fiber non-woven fabric, fine particles of 15 to 35 nm dispersed in the fibers are carbon black, and carbon black has been added to the fibers, and
wherein, on the face perpendicular to the surface of a piece of the synthetic fiber non-woven fabric, vertical lines appear in the direction perpendicular to the surface."
(B) Manufacturing method of Product 800Z (hereinafter sometimes referred to as "Cited Invention 2")
"A manufacturing method of a synthetic fiber non-woven fabric to be used in airport runway expansion work,
wherein the vertical elongation rates of the synthetic fiber non-woven fabric are 231%, 217%, 230%, and 216%,
wherein the horizontal elongation rates of the synthetic fiber non-woven fabric are 229%, 206%, 231%, and 212%,
wherein the surface of the synthetic fiber non-woven fabric exhibits a gray color overall, with a mixture of shades of gray,
wherein the material is 100% polyester, and the ratio between white fibers and black fibers is 92.5% for white to 7.5% for black,
wherein, with regard to the black fibers collected from the synthetic fiber non-woven fabric, fine particles of 15 to 35 nm dispersed in the fibers are carbon black, and carbon black has been added to the fibers, and
wherein, on the face perpendicular to the surface of a piece of the synthetic fiber non-woven fabric, vertical lines appear in the direction perpendicular to the surface."
B. It is found that Product 800Z was used in the expansion work for Runway No. 2 in Naha Airport as of March 24, 2017 and August 30, 2018 (Exhibit Ko 11), and it is also found that a test result certificate dated March 13, 2017 (Exhibit Ko 10-1), a test result certificate dated July 6, 2017 (Exhibit Ko 10-2), and a test result certificate dated May 30, 2018 (Exhibit Ko 10-3), which show the measurement results of thickness (mm), mass (g/m^2), tensile strength (N/5 cm), elongation rate (%), and tear strength (N) of Product 800Z, were created, and that these test result certificates are required by the client of a construction work from the manufacturer, and their contents are not confidential (Exhibit Ko 39). According to these facts, Product 800Z and the manufacturing method of Product 800Z are found to be inventions that were publicly known to be worked as of the Filing Date.
C. When the common features and differences between Invention 2 and Cited Invention

1 are examined, it is found that the common features found in No. 2, 4. (2) A. above exist as common features and that Differences 1 and 2 found in No. 2, 4. (2) A. above exist as differences between them.

(2) Regarding Difference 1

According to the evidence (Exhibits Ko 8, 23, and 31), it is found that there are regular traces of fibers of the non-woven fabric being vertically entangled at a cross section of the non-woven fabric of Product 800Z. In addition, according to Exhibit Ko 21 (p. 38), it is found that the needle punch method (needle punching) is a mechanical bonding method of fibers (webs) used for civil engineering materials as thick products, which penetrates needles through the webs, and a non-woven fabric bound by needle punching is pierced in the direction perpendicular to the surface, with traces of the needle punching being left, and that this fact was common general technical knowledge. Thus, given that Product 800Z, which is a synthetic fiber non-woven fabric to be used in airport runway expansion work, has the abovementioned traces, Product 800Z is found to have been manufactured by using the needle punch method. This is also supported by the fact that the term "punch" is written in the "Process" section and the phrase "conduct a physical property check for tensile strength and elongation when setting the punch" is written in the "Production conditions (reference values)" section of the manufacturing standards document of the preliminary design documents for Product 800Z (Exhibit Ko 22).

Accordingly, it should be said that Difference 1 is not a substantial difference. The JPO made a determination to the same effect in the JPO Decision, and no unreasonable aspect is found in that determination.

(3) Regarding Difference 2

A. Regarding common general technical knowledge relating to Difference 2

It is found that Exhibit Ko 45-1 (Gazette of Unexamined Patent Application Publication No. 1997-165731), Exhibit Ko 45-2 (Gazette of Unexamined Patent Application Publication No. 1997-24565), and Exhibit Ko 45-3 (Gazette of Unexamined Patent Application Publication No. 1999-100821) contain the statements respectively described in Attachment 4 "Statements of Documents" 1. through 3.

According to the statements of the abovementioned documents, it is found to have been common general technical knowledge as of the Filing Date that, in a sand-proof sheet for reclamation made of a synthetic resin, a permeable civil engineering sheet that is a laminated sheet made by integrating a mesh structure sheet made of resin filaments and a fiber sheet, and a non-woven sheet for civil engineering that is made of a non-woven fabric and is used for laying in port construction work, etc., carbon black is

added to synthetic resin or fibers in an amount with which the sheet can exhibit the desired effect, for the purposes such as improving weather resistance, abrasion resistance, and light shielding, preventing operational obstacles to workers due to the reflection of light, and preventing spoilage of the scenery.

B. Regarding non-woven fabrics for civil engineering work that existed as of the Filing Date

According to the evidence (Exhibits Ko 3, 16, and 19), the following are found: a product with the item number "NK-500S" is published in a product catalog (that prepared in March 1995) of the Plaintiff's product, "Need Keeper," which is a synthetic fiber non-woven fabric developed for the purpose of preventing suction and scouring in civil construction work for port construction, reclamation, etc.; NK-500S is one of the products used in field experiments for determining the field characteristics and adaptability of sand-proof sheets in port construction work in the Okinawa area that was conducted by March 1996; and NK-500S has a gray color with a mottled pattern, and according to the results of the test conducted on January 18, 2022, the ratio between white fibers and black fibers of NK-500S (that measured by the microscopy specified in JIS L 1030-2) is 76.1% for white to 23.9% for black.

In the abovementioned measurement by the microscopy specified in JIS L 1030-2, white fibers and black fibers were distinguished by using a microscope, the numbers and diameters of the fibers were measured, and the mass ratio of the white fibers and the black fibers was calculated based on the number of fibers, the cross-section area of the fiber derived from its diameter, and the fiber density (Exhibit Ko 25 and 33). This ratio is found to be the same as the ratio "by weight" in Invention 2. Meanwhile, the test on the ratio between white fibers and black fibers of Product 800Z (the test result was 92.5% for white fibers to 7.5% for black fibers; Exhibit Ko 12) was also conducted by the microscopy specified in JIS L 1030-2.

In addition, according to the evidence (Exhibit Ko 16), in the abovementioned field experiments on sand-proof sheets in port construction work, the Plaintiff's product, "UN-300," made of a woven fabric (canvas) and the Plaintiff's product, "PX-500," made of a non-woven fabric were also used apart from NK-500S, and it is found that PX-500 was dark gray or black, darker than the color of NK-500S, and UN-300 was white.

According to the facts above, it is found to have been common general technical knowledge as of the Filing Date that the darkness of the colors of products used as sand-proof sheets for civil engineering work (non-woven fabrics or woven fabrics) is not uniform, and dark gray or black products were also used in addition to white products and gray mottled products.

C. Regarding the significance of the mixing ratio of black fibers in Invention 2

According to the technical significance of the Inventions referred to in 1. (3) above, it is found that the significance of making the non-woven fabric with the mixture of white fibers and black fibers in Invention 2 is that: the elongation rate of the non-woven fabric can be identified by forming a mottled pattern on the surface of the non-woven fabric and measuring the distance between the specified mottles before and after stretching; and the reflection of light on the non-woven fabric can be suppressed to improve workability and also weather resistance and abrasion resistance can be improved by using carbon black as a pigment of the colored fibers.

The Description, etc., while stating that the mixed quantity of the colored fibers with respect to the total fiber quantity of the non-woven fabric can be appropriately selected, indicates that the mixed quantity of the colored fibers is in the range of 10% to 90%, practically preferably in the range of 20% to 80%, and functionally, the mixed quantity of 50% is the best. The reasons therefor are explained as follows: if the mixed quantity of the colored fibers is less than 20%, the overall color of the non-woven fabric becomes lighter, it becomes difficult for mottles to be formed, light is easily reflected, and there will be a problem in weather resistance; if the mixed quantity of the colored fibers exceeds 50%, the overall color of the non-woven fabric becomes dark and it becomes difficult to distinguish the mottles with the naked eye; and by setting the mixed quantity of the colored fibers within the above range, it is possible to simultaneously satisfy a plurality of factors such as ensuring weather resistance, forming mottles that can be recognized with the naked eye, and suppressing reflection of light. (Paragraphs [0023] to [0025], 1. (3) F. (B) above).

According to the tests conducted in Working Examples 1 through 7 and Comparative Examples 1 and 2 by changing the mixing ratio of white fibers and black fibers as stated in the Description, etc., it can be said that there are no correlations between the mixing ratio and the vertical and horizontal intensities and elongations of the fibers (the test results in Paragraph [0048]). As for the reflectivity of light, the glare is less likely to be perceived as the mixing ratio of black fibers is increased (Paragraph [0050]). In the Description, etc., no comparison was made with a comparative example in which black fibers are mixed at a ratio of less than 10%, and Comparative Examples 1 and 2 are examples using all white fibers or all black fibers. Therefore, the difference in effects between the case of setting the mixing ratio of white fibers and black fibers in the range of 10% to 90% and the case of setting the mixing ratio at less than 10% is not clear from the tests conducted in the working examples and comparative examples stated in the Description, etc.

According to the above, it can be said that, if the mixing ratio of black fibers is increased in Invention 2, [i] mottles will be formed, and it becomes possible to identify the elongation rate of the non-woven fabric by using them, [ii] the reflection of light will be suppressed, and the glare becomes less likely to be perceived, and [iii] weather resistance and abrasion resistance will be enhanced, while on the other hand, if the mixing ratio of black fibers is set too high, the overall color becomes dark and it becomes difficult to distinguish the mottles. However, it cannot be found that there is special technical significance in setting the mixing ratio of black fibers in the range of 10% to 90% in Invention 2.

(D) As mentioned in A. and B. above, it is found to have been common general technical knowledge as of the Filing Date that carbon black is added to sheets for civil engineering work, including non-woven fabrics for civil engineering work, in an amount with which the sheet can exhibit the desired effect, for the purposes such as improving weather resistance, abrasion resistance, and light shielding, preventing operational obstacles to workers due to the reflection of light, and preventing spoilage of the scenery, and that the darkness of the colors of products used as sand-proof sheets for civil engineering work (non-woven fabrics or woven fabrics) is not uniform, and dark gray or black products were also used in addition to white products and gray mottled products; therefore, it can be said that a person ordinarily skilled in the art was aware of the fact that the mixing ratio of black fibers varies for non-woven fabrics for civil engineering work made of the mixture of white fibers and black fibers.

In addition, as mentioned in C. above, no special technical significance can be found in the fact that the mixing ratio of black fibers was set in the range of 10% to 90% also with regard to Invention 2.

Accordingly, it is only a matter of design adopted by a person ordinarily skilled in the art to increase or decrease the ratio of black fibers colored using carbon black in the non-woven fabric for civil engineering work stated in Cited Invention 1 in order to improve weather resistance, abrasion resistance and light shielding, prevent operational obstacles to workers due to the reflection of light, prevent spoilage of the scenery, and set the preferred level of clarity of the mottled pattern for measuring the elongation rate of the non-woven fabric.

Furthermore, it can be said, as mentioned above, that it was common general technical knowledge as of the Filing Date that increasing the ratio of black fibers in a non-woven fabric for civil engineering work made of the mixture of white fibers and black fibers colored using carbon black would make the mottled pattern clearer and make it easy to measure the elongation rate of the non-woven fabric based on the

measured distance between the mottles, and would also have effects such as improving weather resistance, abrasion resistance and light shielding and suppressing the reflection of light. Therefore, there was a motivation to increase the ratio of black fibers to a level beyond 7.5%.

According to the above, it should be said that a person ordinarily skilled in the art could have easily conceived of the structure involving Difference 2 by setting the mixing ratio of black fibers in the range of 10% to 90 %, instead of 7.5% as in Cited Invention 1.

E. In the JPO Decision, the JPO determined that there was an obstructive factor for changing the ratio of black fibers set at 5% as the product specification to 10% or more, which is one digit different, by pointing out that Product 800Z is manufactured while maintaining a certain level of quality and a person ordinarily skilled in the art would not usually make a design change in a manner to change the ratio between white fibers and black fibers, and that the product specification of Product 800Z (Exhibit Ko 22) states the mixing ratio of black cotton to be 5%.

However, even if the compliance with the product specification is required for Product 800Z in order to maintain the identity and quality of the product, a person ordinarily skilled in the art would naturally try to develop and manufacture a product of non-woven fabric for civil engineering work with a new specification by using the original product and changing part of its original specification. Therefore, the fact that the ratio of black fibers is set in a specific range as part of the specification of Product 800Z does not mean that there is an obstructive factor for changing the ratio. It also cannot be construed that, because the ratio of black fibers is set at 5%, a one-digit value, as part of the specification of Product 800Z, there is an obstructive factor for changing this ratio to 10%, a two-digit value.

In addition, as mentioned in C. and D. above, no special technical significance is found in setting the ratio of black fibers at a specific ratio or in a specific range, and it can be said that there was motivation to increase the ratio of black fibers colored using carbon black. In light of these findings, it is not found that there is an obstructive factor for changing the ratio of black fibers in Cited Invention 1 from the value stated in the abovementioned specification.

(4) Regarding Invention 6

In light of its contents, Invention 6 can be found to be an invention relating to the manufacturing method of the non-woven fabric for civil engineering work of Invention 2.

While Invention 6 cites Invention 5, the JPO found the common features and

difference between Invention 5 and Cited Invention 2 (Manufacturing method of Product 800Z) to be those described in No. 2, 4. (4) above. These common features and difference (Difference 3) are also found to be the common features and difference between Invention 6 and Cited Invention 2.

Further, according to the contents of the ruling mentioned in (2) above, it is found that Difference 3, as in the case of Difference 1, is not a substantial difference.

In addition, when Invention 6 and Cited Invention 2 (Manufacturing method of Product 800Z) are compared, besides Difference 3, the aspect that "Invention 6 is a manufacturing method of fibers in which 'the mixed quantity of the colored fibers is in the range of 10% to 90% by weight,' whereas the manufacturing method of Product 800Z is a manufacturing method of fibers in which 'the ratio between white fibers and black fibers is 92.5% for white to 7.5% for black'" is also found to be a difference, which is the same as Difference 2 between Invention 2 and Cited Invention 1.

Moreover, according to the contents of the ruling mentioned in (3) above, while the mixing ratio of black fibers is set at 7.5% in Cited Invention 2, it should be said that a person ordinarily skilled in the art also could have easily conceived of deriving the structure involving the abovementioned difference by setting a mixing ratio in the range of 10% to 90%.

(5) As mentioned in (3) and (4) above, it is reasonable to find that a person ordinarily skilled in the art could have easily made Invention 2, based on Cited Invention 1 and the common general technical knowledge stated in (3) A. and B. above, and Invention 6, based on Cited Invention 2 and the abovementioned common general technical knowledge, and that both Invention 2 and Invention 6 are inventions that cannot be patented pursuant to Article 29, paragraph (2) of the Patent Act.

Accordingly, the grounds for rescission are well-grounded.

3. Conclusion

Due to the above, grounds for rescission are well-grounded, and of the JPO Decision, the parts relating to Claims 2 and 6 of Patent No. 6889970 should be rescinded, and hence the Plaintiff's claim should be upheld.

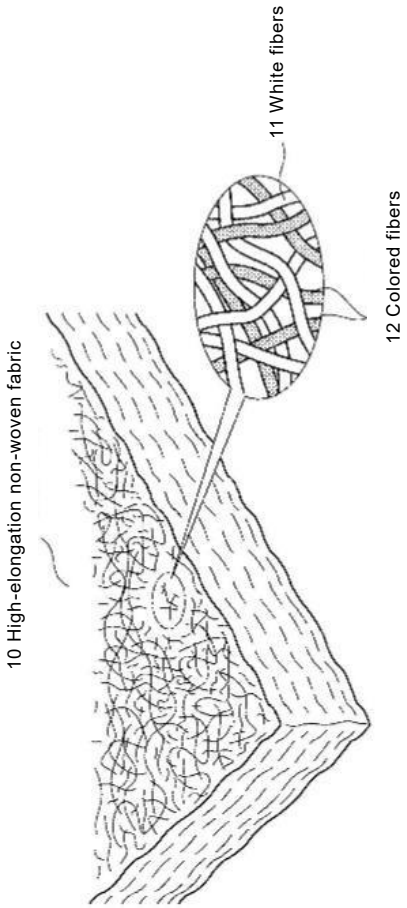
Accordingly, the judgment is rendered as indicated in the main text.

Intellectual Property High Court, Third Division
Presiding judge: SHOJI Tamotsu
Judge: IMAI Hiroaki
Judge: MIZUNO Masanori

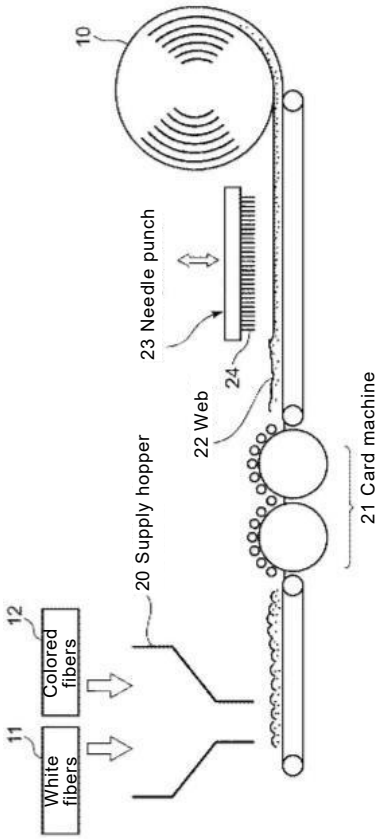
(Attachment 1 "Written Trial Decision (Copy)" and Attachment 2 "Description (Copy)" are omitted.)

Attachment 3

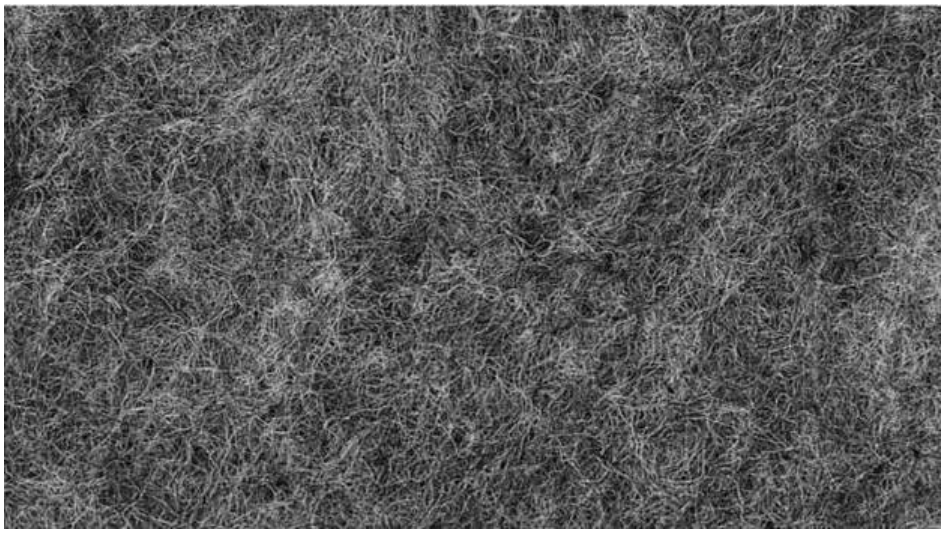
[Figure 1]



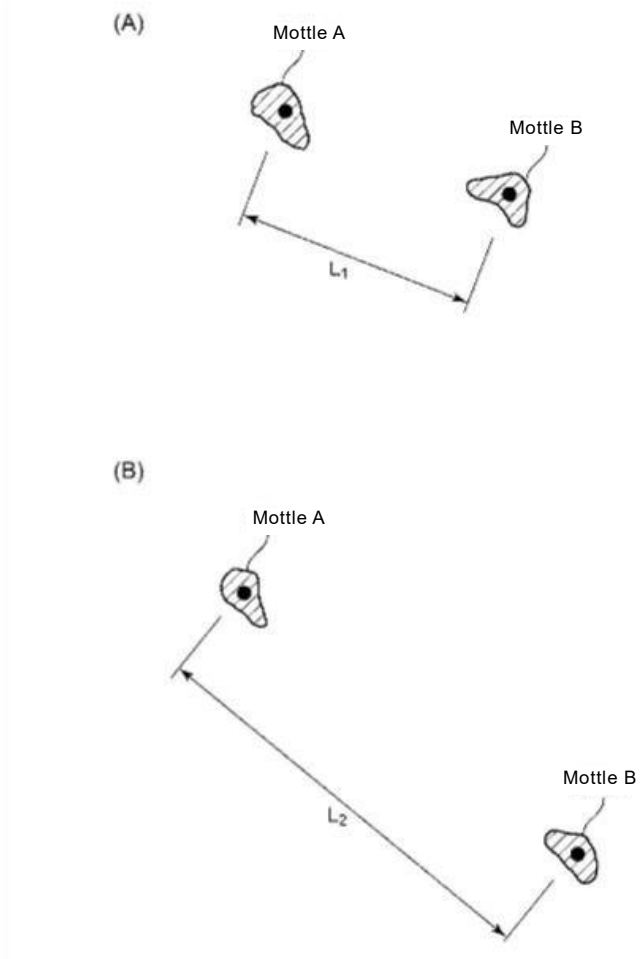
[Figure 2]



[Figure 3]



[Figure 4]



Attachment 4

Statements of Documents

1. Exhibit Ko 45-1 (Gazette of Unexamined Patent Application Publication No. 1997-165731)

"A sand-proof sheet for reclamation that is made of a synthetic resin fiber woven fabric that is laid on the slope of a backfill work of a reclamation revetment constructed prior to reclamation work and that prevents leakage of reclamation earth and sand, which is characterized in that said synthetic resin fiber woven fabric has a permeable synthetic resin coating formed on its surface at the onshore portion above the part immersed in seawater." ([Claim 1])

"A sand-proof sheet for reclamation according to Claim 1, characterized in that the abovementioned resin coating is a vinyl chloride resin coating mixed with carbon black." ([Claim 3])

"[Problem to be solved by the invention] Incidentally, it has been recognized that polyester fibers exhibit deterioration in quality over a long period of use as their general property. Accordingly, when a large area of deep water is to be reclaimed, the onshore portion of the sand-proof sheet is exposed in a state of being splashed with seawater over a period of three to four years. In such a long-term exposure state, the white woven fabric may turn yellow due to the influence of ultraviolet rays, which may cause deterioration in strength." (Detailed explanation of the invention, paragraph [0004])

"The purpose of the present invention is to provide a sand-proof sheet for reclamation that can solve the problems of the conventional techniques described above and can exhibit weather resistance that can maintain the quality even after long-term exposure." (Paragraph [0008])

"In addition, in the present embodiment, carbon black is mixed with the vinyl chloride resin paste. … By containing carbon black, the vinyl chloride resin paste becomes black, and the resin coating 21 portion of the sand-proof sheet also forms a black surface. As a secondary effect, the abrasion resistance of the coating surface can be improved by adding an appropriate amount of carbon black into the resin. The additive amount is set to 2 to 5 parts by weight of carbon black with respect to 100 parts by weight of the vinyl chloride resin. Depending on where the sand-proof sheet is laid, it may be necessary to consider the scenery. In such a case, it is possible to use a dark brown, gray, silver, or other pigment instead of the black resin so as to match the surrounding scenery." (Paragraph [0014])

"By thus forming the dark resin coating 21 on the onshore portion of the sand-proof

sheet, it can be expected to block ultraviolet rays due to sunlight and prevent the sand-proof sheet from degradation over time." (Paragraph [0015])

2. Exhibit Ko 45-2 (Gazette of Unexamined Patent Application Publication No. 1997-24565)

"A permeable civil engineering sheet that is a laminated sheet made by integrating a mesh structure sheet made of soft thermoplastic resin filaments and a fiber sheet, characterized by the fact that the permeability coefficient of the laminated sheet is 1×10^2 cm/sec or more." ([Claim 1])

"The permeable civil engineering sheet stated in Claim 1, wherein the fiber sheet contains carbon black." ([Claim 13])

"[Prior art] Conventionally, woven fabrics, non-woven fabrics, etc. have been used as sheets for preventing suction and scouring in underwater structures, breakwaters, river embankments, etc." (Paragraph [0002])

"However, these sheets had a problem that, for example, when a sheet is laid for a long period of time (one to 12 months) for coastal revetment work, it may be damaged by abrasion between the sheets and the cobblestones caused by waves, or when a typhoon passes or in winter when there are many waves, the sheet would be damaged in a short period of time, and the earth and sand inside the embankment would flow out from the damaged part of the sheet." (Paragraph [0003])

"… Furthermore, since it is used outdoors for a long period of time, for example, when a non-woven fabric made of polyester fibers is used, the weather resistance can be improved by including carbon black. Such carbon black is preferably contained in the range of 0.2% to 0.6% based on the weight per 1 m^2. The method of inclusion may be any of impregnation, coating, and spin-dyeing, but from the viewpoint of durability and the like, spin-dyeing is preferred. If the content of carbon black is less than 0.2%, an increase in weather resistance cannot be expected, and if it exceeds 0.6%, the needle resistance in the production process of the non-woven fabric tends to increase, and the productivity tends to deteriorate, which is not preferable." (Paragraph [0014])

3. Exhibit Ko 45-3 (Gazette of Unexamined Patent Application Publication No. 1999-100821)

"The present invention relates to a non-woven sheet for civil engineering that is excellent in workability such as strength and hydrophilicity (self-sedimentation in water), in particular, a non-woven sheet for civil engineering that is effective as a suction prevention sheet or a sand-proof sheet for reclamation earth and sand laid on a

breakwater or quay at a sea shore, a lake shore, or a river bank where water pollution is low." (Paragraph [0001])

"For these fibers, those containing carbon black in an amount of preferably 0.01% or more, more preferably 0.1% to 1%, and particularly preferably 0.2% to 0.5% are used. When the sheet is laid in port construction work, etc., if the sheet is white, the reflection of the light from the sheet due to sunlight causes a snow blindness phenomenon, which not only results in operational obstacles, especially obstacles to workers, but also tends to spoil the appearance after the laying of the sheet. If the content of carbon black in the fibers is less than 0.01%, the above disadvantages are likely to occur, which is not preferable. Further, by adding 0.01% or more of carbon black, when the sheet is laid at a port or a river embankment, the light shielding against sunlight is improved as compared with a white sheet, so not only the abovementioned drawbacks are solved, but also a weed prevention effect can be gained, and therefore, the addition of carbon black will have an enormous effect for a non-woven sheet for civil engineering." (Paragraph [0029])