

Appeal decision

Appeal No. 2017-12027

Tokyo, Japan
Appellant

Yazaki Corporation

Patent Attorney

MIYOSHI, Hidekazu

The case of appeal against the examiner's decision of refusal of Japanese Patent Application No. 2013-81979, entitled "WATER CUT-OFF STRUCTURE OF ELECTRIC WIRE WITH TERMINAL AND METHOD OF MANUFACTURING THE SAME", [the application published on Oct. 27, 2014, Japanese Unexamined Patent Application Publication No. 2014-203807] has resulted in the following appeal decision:

Conclusion

The appeal of the case was groundless.

Reason

No. 1 History of the procedures

The present application was filed on Apr. 10, 2013, reasons for refusal were notified as of Nov. 24, 2016 (drafting date), a written opinion and a written amendment were submitted on Jan. 11, 2017, a examiner's decision of refusal was made on Jun. 7 (drafting date) of the same year, and an appeal against the examiner's decision of refusal was made as of Aug. 10 of the same year. Then, in response to this, reasons for refusal were notified by the body as of Jul. 25, 2018 (drafting date), and a written opinion was submitted on Sep. 18 of the same year.

No. 2 The Invention

Among the inventions according to Claims 1-3 of the present application (hereinafter, referred to as "Invention 1"- "Invention 3"), Invention 1 is recognized as an invention described in Claim 1 of the scope of claims amended by the written amendment submitted on Jan. 11, 2017, as follows.

"[Claim 1]

A water cut-off structure of an electric wire with a terminal, comprising:
an electric wire having a conductor composed of a plurality of elemental wires and an insulated coating part coating the conductor; and

a terminal including an electric connection part and an electric wire connecting part, the electric wire connecting part including a coating fixing part for fixing the insulated coating part by swaging and a conductor fixing part for fixing the conductor exposed by peeling the coating of the insulated coating part by swaging, the water cut-off structure

performing water cut-off in the electric wire by filling a water cut-off agent in a gap in the insulated coating part, wherein

a water cut-off agent reservoir part is provided between the coating fixing part and the conductor fixing part, and, when a length of the insulated coating part exposed

to the water cut-off agent reservoir part is L1, and a length of the conductor exposed to the water cut-off agent reservoir part is L2, L2 is set to a length equal to or longer than L1, and wherein

a pair of side wall parts forming the water cut-off agent reservoir part is set to a height that provides a storage capacity corresponding to a required permeation length of the water cut-off agent within the insulated coating part."

No. 3 Reasons for refusal

The reasons for refusal notified by the body as of Jul. 25, 2018 (drafting date) state as follows.

Inventions 1-3 could have been invented with ease by a person having ordinary knowledge in the technical field of the Inventions before the application was filed based on the inventions described in the following publications distributed in Japan or abroad, or inventions available to public through electric communication lines before the application was filed, and, therefore, the appellant should not be granted a patent for these in accordance with the provisions of Article 29(2) of the Patent Act.

Note

Cited Document 1: Japanese Unexamined Patent Application Publication No. 2006-228709

Cited Document 2: Japanese Unexamined Patent Application Publication No. 2010-140740

Cited Document 3: Japanese Unexamined Patent Application Publication No. 2007-287634

No. 4 Described matters in the Cited Documents and Cited Invention

1 Described matters in Cited Document 1 and Cited Invention

(1) Described matters in Cited Document 1

In Cited Document 1, there are described the following matters together with drawings.

Note that the underlines were added by the body (the same applies hereafter).

A "[0022]

In a state that both barrels 22 and 24 of this grounding connection terminal 20 are open, an end of the electric wire 10 for grounding from which the covering material 14 is removed as mentioned before is set, and, after that, the conductor barrel 22 and the insulation barrel 24 are closed and fixed to the conductor 12 and the covering material 14 by pressure joining (swaging)."

B "[0026]

3) Pressure reduction step

After having dripped a water cut-off agent at the water cut-off agent supplying step to one of the ends (the end to which the grounding connection terminal 20 is fixed) of the electric wire 10 for grounding, a pressure reduction step to suck in inside air of the covering material 14 from the other end (the end on the side opposite the end to which the grounding connection terminal 20 is fixed) of the electric wire 10 for grounding is started. By this, the water cut-off agent in question is made to permeate forcibly inside the covering material 14."

C "[0042]

(Embodiment 2)

In the second embodiment of the present invention, a grounding connection terminal 120 as shown in FIG. 5-FIG. 7 is used. FIG. 5 (a) is a plan view indicating a state where the grounding connection terminal 120 is fixed by pressure joining to one of the ends of the electric wire 10 for grounding, and Fig. 5 (b) is a side view. FIG. 6 (a) is a sectional view indicating a cross-section taken along line I-I of FIG. 5 (a), and FIG. 6 (b) is a sectional view indicating a cross-section taken along line II-II of FIG. 5 (a). FIG. 7 is a plan view showing the grounding connection terminal 120 in a state before pressure joining of the terminal.

[0043]

As shown in FIG. 5 and FIG. 7, the grounding connection terminal 120 to be used in the second embodiment is constituted of a single metal plate, and includes the grounding connection part 121, the conductor barrel 122, and the insulation barrel 124, integrally. In this regard, however, the grounding connection terminal 120 integrally includes, unlike the first embodiment mentioned above, side wall parts 126 that form wall surfaces that surround both the left and right sides of the electric wire 10 for grounding between the conductor barrel 122 and the insulation barrel 124. As shown in FIG. 5 (a), the side wall parts 126 are formed in such a way that their inside surfaces are spaced apart by a predetermined distance from the side parts of the electric wire 10 for grounding (the conductor 12 and the covering material 14), and it is arranged such that a gap C is formed between the side wall parts 126 and the electric wire 10 for grounding. In addition, as shown in FIG. 5 (b), it is arranged such that, on the bottom face part of the grounding connection terminal 120, a lower convex part 128 protruding downwardly in a manner lower than the neighborhood is formed at a portion between the conductor barrel 122 and the insulation barrel 124, and a gap D is formed between the inner surface of the lower convex part 128 and the under surface part of the electric wire 10 for grounding.

[0044]

As shown in FIG. 5 (a) and FIG. 6 (a), the front part (the part on the side of the end of the electric wire) of the insulation barrel 124 is formed in a relatively wide manner, and thus it is arranged such that a certain degree of gap is formed between the inner peripheral surfaces of the front part and the side parts of the covering material 14. On the other hand, as shown in FIG. 5 (a) and FIG. 6 (b), it is arranged such that the rear side part (the part in the side opposite to the end) of the insulation barrel 124 is narrowed in such a way that the size of the width becomes smaller than that of the front part, and thus substantially no gap is formed between the inner peripheral surfaces of this rear side part and the covering material 14. Meanwhile, the conductor barrel 122 is narrowed uniformly so as to form substantially no gap between the conductor 12 and itself.

[0045]

In the second embodiment, the water cut-off agent supply step is performed in such a way that, as with the first embodiment, a water cut-off agent is dripped onto an area (the dripping area B shown in FIG. 5) between the conductor barrel 122 and the insulation barrel 124 of the grounding connection terminal 120 and stored therein. In this regard, however, in the second embodiment, since the side wall parts 126 are formed between the conductor barrel 122 and the insulation barrel 124 in a state surrounding the sides of the dripping area B, it is possible to store a water cut-off agent in the dripping area B in a more stabilized state while preventing, by the side wall parts

126, the water cut-off agent from spilling over to the sides. In addition, at this time, a space for storing a water cut-off agent is secured widely by the gaps C and D formed between the electric wire 10 for grounding and the side wall parts 126, or between the electric wire 10 for grounding and the lower convex part 128, and, therefore, a sufficient amount of a water cut-off agent can be reliably stored in the dripping area B. Furthermore, by making the rear part of the insulation barrel 124, whose front part is formed widely in order to secure the gap C, be narrowed, substantially no gap is formed between the insulation barrel 124 and the covering material 14 in this rear side part, and, therefore, it is possible to prevent the water cut-off agent from leaking out to outside through a gap between these two members, enabling storage of a water cut-off agent in a more stabilized state.

[0046]

Note that, in the above second embodiment, the lower convex part 128 provided in the bottom face part of the grounding connection terminal 120 may be omitted. Although, by doing so, the gap D formed in the down side of the electric wire 10 for grounding disappears, even in that case, it is possible to reliably store a water cut-off agent of a required amount in the gap C between the electric wire 10 for grounding and the side wall parts 126."

D According to the matters summed up in above B, a dripped water cut-off agent is an agent that "is made to permeate forcibly inside the covering material 14" by the pressure reduction step. Then, according to the matters summed up in the above C, there is described, regarding this water cut-off agent and in relation with the side wall parts 126 surrounding the sides of the dripping area B, as "to store a water cut-off agent in the dripping area B ... while preventing, by the side wall parts 126, the water cut-off agent from spilling over to the sides", and it is also described that, at that time, "a sufficient amount of a water cut-off agent can be reliably stored in the dripping area B". Note that the lower convex part 128 may be omitted, and "even in that case, it is possible to reliably store a water cut-off agent of a required amount in the gap C between the electric wire 10 for grounding and the side wall parts 126". If that is the case, in Cited Document 1, there is described a point that "a pair of side wall parts 126 forming the dripping area B are set to a height capable of storing a capacity for required permeation into the covering material 14".

(2) Cited Invention 1

From the described matters in the above-mentioned (1), it is recognized that there is described, in Cited Document 1, the following invention (hereinafter, referred to as "Cited Invention 1").

"A water cut-off structure of an electric wire with a terminal, comprising:

an electric wire 10 for grounding including a conductor 12 composed of a plurality of elemental wires and a covering material 14 covering the conductor 12; and

a grounding connection terminal 120 including a grounding connection part 121, and an insulation barrel 124 and a conductor barrel 122, the insulation barrel 124 and the conductor barrel 122 including the insulation barrel 124 for fixing the covering material 14 by swaging and the conductor barrel 122 for fixing the conductor 12 exposed by peeling the covering material 14 by swaging, the water cut-off structure

performing water cut-off in the electric wire 10 for grounding by filling a water cut-off agent in a gap in the covering material 14, wherein

a dripping area B for storing a water cut-off agent is provided between the insulation barrel 124 and the conductor barrel 122, and there exist a part of the covering material 14 exposed to the dripping area B and a part of the conductor 12 exposed to the dripping area B, and wherein

a pair of side wall parts 126 forming the dripping area B is set to a height capable of storing a capacity for required permeation into the covering material 14."

2 Described matters in Cited Document 2

In Cited Document 2, there are described the following matters together with drawings.

"The positioning part 26 is constituted of a pair of projecting pieces 26a and 26b protruding toward the inside from both sides of the substrate 21 formed by folding both sides 21c of the substrate 1 inward, and, by ends 26c and 26d of the projecting pieces 26a and 26b in the side of the insulation barrel part 24 in the length direction of the electric wire 10 coming into contact with the end face 14a of the covering material 14 in the boundary A, the position of this end face 14a and, eventually, the position of the boundary A are determined." (paragraph [0024])

"In the present embodiment, a distance L2 between the conductor barrel part 22 and the ends 26c and 26d of the projecting pieces 26a and 26b is set to be 1.5 times the width W (note by the body: "t" in FIG. 2) of the conductor barrel part 22. Note that, in the present embodiment, since the distance L1 between the barrel parts is set at 2.5 times the width W of the conductor barrel part 22, the distance L3 between the ends 26c and 26d of the projecting pieces 26a and 26b and the end of the insulation barrel part 24 in the side of the conductor barrel part 22 in the length direction of the electric wire 10 is identical with the width W (note by the body: "t" in FIG. 2) of the conductor barrel part 22." (paragraph [0025])

"In this step, as shown in FIG. 4 and FIG. 6, use of a dispenser not illustrated, and the water cut-off agent 18 is dripped between the conductor barrel part 22 and the insulation barrel part 24 from the upper side, mainly onto the conductor-exposed part arranged between these barrel parts." (paragraph [0032])

3 Described matters in Cited Document 3

In Cited Document 3, there are described the following matters together with drawings.

"The crimp terminal 20 illustrated in the figure is a terminal formed by bending a single metal plate, and integrally includes a substrate 21 extending in a length direction of an electric wire, a conductor barrel part 22 extending upward from the substrate 21 and crimped to the conductors 12 and 52 while bundling the conductors 12 and 52 of each of the electric wires 10 and 50, an insulation barrel part 24 crimped to the covering material 54 of the electric wire 50, and a receiving part 26 that is provided between the conductor barrel part 22 and the insulation barrel part 24, extends upward from the side part of the substrate 21, and has a shape that covers a boundary area (shaded area A in the figure) between an area in which the covering material 54 of the electric wire 50 has been removed and an area in which the covering material 54 of the electric wire 50 has not been removed from the lower side." (paragraph [0019])

"Onto the boundary part A, in the second electric wire 50, between the area in which the covering material 54 of the electric wire 50 has been removed and the area in which the

covering material 54 of the electric wire 50 has not been removed, the water cut-off agent 18 is dripped using a not-illustrated dispenser, and, by this, the water cut-off agent 18 is made a state sealing the gap between the conductor 52 and the covering material 54." (paragraph [0023])

"Here, below the portion A onto which the water cut-off agent 18 is dripped, the receiving part 26 of the crimp terminal 20 is arranged, and a wall surface part 26a is formed in the right and left of this water cut-off agent dripping portion A. Therefore, it is possible to store the water cut-off agent 18 in the water cut-off agent dripping portion A in a more stabilized state while preventing the water cut-off agent 18 from spilling over to the outside by the wall surface part 26a." ([paragraph 0024])

In addition, in FIG. 2 and FIG. 4, there is described a constitution in which, in an area located between the insulation barrel part 24 and the conductor barrel part 22 and provided with the receiving part 26, the length of the conductor 52 exposed to the area in question is made to be a length no smaller than the length of the covering material 54 exposed to the area.

No. 5 Comparison / Judgment

1 Comparison between Invention 1 and Cited Invention 1

Invention 1 and Cited Invention 1 will be compared.

Here, "the conductor 12" of the latter corresponds to "conductor" of the former, "the covering material 14" of the latter to "the coating of the insulated coating part" of the former, "the electric wire 10 for grounding" of the latter to "electric wire" of the former, "the grounding connection part 121" of the latter to "electric connection part" of the former, "the insulation barrel 124 and the conductor barrel 122" of the latter to "electric wire connecting part" of the former, "the insulation barrel 124" of the latter to "coating fixing part" of the former, "the conductor barrel 122" of the latter to "conductor fixing part" of the former, "the grounding connection terminal 120" of the latter to "terminal" of the former, "the dripping area B" of the latter to "water cut-off agent reservoir part" of the former, and "the side wall parts 126" of the latter to "side wall parts" of the former.

A point of "is set to a height that provides a storage capacity corresponding to a required permeation length of the water cut-off agent within the insulated coating part" of the former and a point of "is set to a height capable of storing a capacity for required permeation into the covering material 14" of the latter are common to the extent that "is set to a height capable of storing a capacity for required permeation into the insulated coating part".

As viewed from the above point, Invention 1 and Cited Invention 1 have the following Corresponding Features and Different Feature 1, as well as Different Feature 2, although not quite satisfactorily.

[Corresponding Features]

"A water cut-off structure of an electric wire with a terminal, comprising:

an electric wire having a conductor composed of a plurality of elemental wires and an insulated coating part coating the conductor; and

a terminal including an electric connection part and an electric wire connecting part, the electric wire connecting part including a coating fixing part for fixing the insulated coating part by swaging and a conductor fixing part for fixing the

conductor exposed by peeling the coating of the insulated coating part by swaging, the water cut-off structure

performing water cut-off in the electric wire by filling a water cut-off agent in a gap in the insulated coating part, wherein

a water cut-off agent reservoir part is provided between the coating fixing part and the conductor fixing part, wherein

a pair of side wall parts forming the water cut-off agent reservoir part is set to a height capable of storing a capacity for required permeation into the insulated coating part."

[Different Feature 1]

A point that, regarding "water cut-off agent reservoir part", "when a length of the insulated coating part exposed to the water cut-off agent reservoir part is L1, and a length of the conductor exposed to the water cut-off agent reservoir part is L2, L2 is set to a length equal to L1 or longer than L1" in Invention 1, whereas, in Cited Invention 1, although "a part of the covering material 14 exposed to the dripping area B and a part of the conductor 12 exposed to the dripping area B" exist, it is unclear whether or not the length of "a part of the conductor 12 exposed to the dripping area B" is set to a length equal to or longer than the length of "a part of the covering material 14 exposed to the dripping area B".

[Different Feature 2]

A point that, regarding "a pair of side wall parts forming the water cut-off agent reservoir part", these side wall parts are "set to a height that enables a storage capacity corresponding to a required permeation length of the water cut-off agent within the insulated coating part" in Invention 1, whereas, in Cited Invention 1, these are "set to a height capable of storing a capacity for required permeation into the covering material 14".

2 Judgment

Then, the above-mentioned Different Features 1 and 2 will be discussed below.

[Regarding Different Feature 1]

In the light of the described matters of Cited Documents 2 and 3 summed up in the above "No. 4" 2 and 3, it can be said that it is described in Cited Documents 2 and 3 that, in an area between a coating fixing part and a conductor fixing part to which a water cut-off agent is dripped, the length of a conductor exposed to that area is set to be equal to or longer than the length of an insulated coating part exposed to that area.

Then, as summed up in the above "No. 4" 1(1), it is described, in Cited Document 1, that, in the electric wire 10 for grounding, by a pressure reduction step to suck in air inside the covering material 14, a water cut-off agent having been dripped is made to permeate inside the covering material 14 forcibly, and, by the gap C formed between the electric wire 10 for grounding and the side wall parts 126 and the gap D formed between the electric wire 10 for grounding and the lower convex part 128, a space for storing a dripped water cut-off agent is secured widely, enabling storage of a sufficient amount of a water cut-off agent reliably in the dripping area B. In addition, it is obvious that the gap C that corresponds to a portion of the conductor 12 exposed to

the dripping area B is larger than the gap C that corresponds to a portion of the covering material 14 exposed to the dripping area B, since the outside diameter of the conductor 12 is naturally smaller than the outside diameter of the covering material 14, if the distance between both the side wall parts 126 is not changed.

From the above, it could have been conceived of by a person skilled in the art with ease to set, in Cited Invention 1, the length of the conductor 12 exposed to the dripping area B between the insulation barrel 124 and the conductor barrel 122 equal to or larger than the length of the covering material 14 exposed to the that area, in consideration of the matters described in the above-mentioned Cited Documents 2 and 3, in order to reliably store, in the dripping area B, a water cut-off agent of an amount sufficient for making it permeate inside the covering material 14 by securing a space for storing a dripped water cut-off agent largely by making the gap C large in the dripping area B.

[Regarding Different Feature 2]

Regarding "a pair of side wall parts forming the water cut-off agent reservoir part", although these side wall parts are "set to a height that provides a storage capacity corresponding to a required permeation length of the water cut-off agent within the insulated coating part" in Invention 1, regarding its "required permeation length", there is no definition or concrete specification in any of the claims of the present application including Claim 1 and the Detailed Description of the Invention. Rather, in paragraph [0026] of the Detailed Description of the Invention of the present application, it is described that "the required permeation length NL differs due to installation environments (specifications) and the like of the electric wire 3.", and thus it is suggested that it is indeterminate. Then, it has to be said that the above specification of "is set to a height that provides a storage capacity corresponding to a required permeation length of the water cut-off agent within the insulated coating part" in Invention 1 is nothing but a specification just specifying, substantially, that the height of the side wall part is set at a height capable of storing a capacity for permeation of a water cut-off agent into an insulated coating part required in the light of the water cut-off purpose.

If that is the case, the specification in question in Invention 1 is not substantially different from the point of "is set to a height capable of storing a capacity for required permeation into the covering material 14" regarding "a pair of side wall parts forming the water cut-off agent reservoir part" in Cited Invention 1.

Therefore, it cannot be said that Different Feature 2 is a substantive different feature.

Then, even if the effect exerted by Invention 1 is comprehensively examined, it is nothing but an effect within a range predicted from Cited Invention 1 and the technical matters described in Cited Documents 2 and 3, and thus it cannot be said that it is special.

3 Summary

As described above, Invention 1 could have been invented by a person skilled in the art with ease based on Cited Invention 1 and the technical matters described in Cited Documents 2 and 3, and thus the appellant should not be granted a patent for that

in accordance with the provisions of Article 29(2) of the Patent Act.

4 Appellant's allegation

The appellant has made allegation including the following matters in the written opinion submitted on Sep. 18, 2018.

"The water cut-off performance by a water cut-off agent includes various levels. For example, the inventions of Cited Documents 1 and 3 have a purpose to make a water cut-off agent be filled evenly and reliably within a gap of an electric wire (a gap between a conductor and a covering material outside thereof), and, therefore, a sufficient amount of a water cut-off agent is an amount, in the dripping area, to make a gap between a conductor and a covering material be in a state covering the entire perimeter (paragraph 0023).

In contrast to this, in the inventions of Claims 1 and 3 of the present application, it is necessary that, focusing on the matter that a required permeation length of a water cut-off agent that permeates within an insulated coating part varies by installation environments (specifications) and the like of an electric wire (paragraph 0026), a water cut-off agent reservoir part stores a capacity corresponding to a required permeation length of the water cut-off agent within an insulated coating part."

"In Cited Documents 1-3, there is no description at all regarding a permeation length of a water cut-off agent within an insulated coating part as a parameter for water cut-off performance, and thus such permeation length is not focused on."

However, as has been examined in the above "No. 4" 1(1)D, there is described in Cited Document 1 a point that "a pair of side wall parts 126 forming the dripping area B is set to a height capable of storing a capacity for required permeation into the covering material 14", and, on the other hand, as mentioned in the above 2 relating to Different Feature 2, it has to be understood that the specification of "is set to a height that provides a storage capacity corresponding to a required permeation length of the water cut-off agent within the insulated coating part" in Invention 1 is nothing but a specification just specifying, substantially, that the height of the side wall part is being set at a height capable of storing a capacity for permeation of a water cut-off agent into an insulated coating part required in the light of the water cut-off purpose.

Then, as described above, the appellant alleges that "in Cited Documents 1-3, there is no description at all regarding a permeation length of a water cut-off agent within an insulated coating part as a parameter for water cut-off performance". However, also in the present application, there is no definition or concrete specification at all not only in each claim including Claim 1 but also in the Detailed Description of the Invention regarding "permeation length" as "a parameter for water cut-off performance". Therefore, a substantive difference between Invention 1 and Cited Invention 1 cannot be acknowledged based on the relevant allegation.

Furthermore, the point of "a required permeation length of a water cut-off agent that permeates within an insulated coating part varies by installation environments (specifications) and the like of an electric wire" mentioned by the appellant rather suggests that "required permeation length" of Invention 1 is nothing but a variable amount that can be changed variously by "installation environments (specifications) and the like of an electric wire", and thus does not fall under matters specifying the invention to be a reason of a different feature between Cited Invention 1 and Invention 1.

Therefore, the allegation of the appellant cannot be adopted.

No. 6 Closing

As above, the appellant should not be granted a patent for Invention 1 in accordance with the provisions of Article 29(2) of the Patent Act, and, therefore, without examining the inventions according to the other claims, the present application should be rejected.

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

Feb. 7, 2019

Chief administrative judge:	HIRATA, Nobukatsu
Administrative judge:	OMACHI, Masayoshi
Administrative judge:	UCHIDA, Hiroyuki