Advisory Opinion

Advisory Opinion No. 2015-600014

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The advisory opinion on the technical scope of a patent invention for Japanese Patent No. 5088917 is stated and concluded as follows:

Conclusion

The "low-voltage lead-in cable" indicated in the photographs of Article (A) does not belong to the technical scope of the invention in Patent No. 5088917.

Reason

No. 1. Object of the request

The object of the request for the advisory opinion regarding the subject case is to seek an advisory opinion that the "low-voltage lead-in cable" (hereinafter, referred to as "Article A") indicated in the photographs of Article A belongs to the technical scope of the invention described in claim 1 of the scope of claims (hereinafter, referred to as "the patent invention") in Patent No. 5088917 (hereinafter, referred to as "the patent").

No. 2 The patent invention

(1) Description of the scope of claims of the patent

According to the description of the scope of claims, the patent invention is as

follows.
(Note by the body: the constituent components are separately described to which symbols A to G have been added by the body. Hereinafter, they are referred to as "constituent component A," etc.)
"A. A low-voltage lead-in cable that is constituted by twisting a plurality of insulation wires together,
B. wherein all of the insulation wires or the remaining insulation wires other than one that includes only a black or gray colored material insulator around a conductor, each includes a double-layer insulator of inner and outer layers each composed of a predetermined material around the conductor;
C. the outer layer insulator is constituted such that one or a plurality of color zone parts for wire core distinction having a different color and/or arrangement form for each of the insulation wires are continuously arranged at parts of its surface in a longitudinal direction in a thickness less than that of the outer layer while the remaining part is composed of a weather resistant material part;
D. both of the color zone parts and weather resistant material part are made of materials excellent in tracking resistance and the weather resistant material part is one having a black or gray color different from the color zone parts and having an excellent weather resistance;
E. the thickness of the weather resistant material part at parts located inside the color zone parts in a state of overlapping with the color zone parts is such that the weather resistance required for outdoor use can be ensured even when an outdoor use period after which the color zone parts deteriorate has passed;
F. and the inner layer insulator has a color that is at least different from the part other than the color zone parts in the outer layer insulator and that is a predetermined color mutually different from the colors of the inner layer insulators of the other insulation wires,
G. so as to constitute the low-voltage lead-in cable."

(2) Description of specifications of the patent

The detailed description of the invention in the patent specification of the case includes the following description relating to the significance of the expressions "(excellent) tracking resistance" and "(excellent) weather resistance" described in the problem to be solved, solution therefor, and claim 1 of the patent invention: (Note by the body: the underlines have been added by the body. The same shall apply hereinafter.)

"[0002]

As a low-voltage lead-in cable for outdoor use that is used by being installed or laid between a low voltage distribution line and a building of consumers, out of the wires and cables used for power supply, a DV wire of a two or more wire twisted-type or each-line-parallel-arrangement flat-type is used. It generally uses vinyl chloride resin as an insulator.

[0003]

Conventionally, for each of the twisted insulation wires of such a low-voltage lead-in wire, a resin having a different color from the others was used as an insulator covering a conductor so that each of them can be distinguished. If a resin other than a black-colored one, that is, a resin not containing carbon was used for the insulator, such an insulator had a smaller ultraviolet cut-off effect in comparison to a black colored insulator containing carbon, and thus oxide deterioration was likely to occur and a crack due to deterioration in sunlight was likely to be generated. When a crack or flaw generated on the insulator progressed, it resulted in partial exposure of the conductor.

[0004]

On the other hand, there were times in such an insulation wire when: if the surface of the insulator was damped or contaminated, a leak current flowed along the surface of the insulator, the surface was locally dried with evaporation of moisture due to a generated Joule heat, and part having a high electrical resistance was generated; and as a result, a non-uniform electric field was generated, a minute discharge with a minute light emitting called scintillation was locally generated, and part of an insulation material was decomposed by heat due to this discharge to generate a carbide, that is, a tracking phenomenon was generated. This phenomenon is more likely to occur if dust containing salinity is accumulated on the surface of the wire."

...

[0007]

To solve such a problem as deterioration of the low-voltage lead-in cable, Japanese Unexamined Patent Application Publication No. 2002-324443 discloses an example of the low-voltage lead-in cable that prevents deterioration of the insulator by arranging a black resin insulation layer containing carbon at the outside of the insulator of a predetermined color that covers a conductor and also enables distinction of a wire by the color of the insulation layer at a cut surface.

...

[0010]

A conventional cable was constituted as described above, and as for the conventional former low-voltage lead-in cable indicated by the patent literature 1, although it was resistant to deterioration by ultraviolet light, there were times when flaws and cracks were generated on the insulator due to various reasons other than the ultraviolet light, and further with the progress of them, the conductor was partially exposed. ...

[0011]

A polyvinyl chloride insulator used for the conventional former low-voltage lead-in cable had a problem to be solved, in which although it was excellent in workability of a tapping job, etc., it had a property of being easily flawed and worn and in addition, it was significantly inferior in tracking resistance, and therefore, if conductor-exposed parts were generated due to flaws on part where the twisted wires were close to one another, deterioration of the insulator further progressed due to a tracking phenomenon generated in a wet condition and an arc discharge occurred between the conductor-exposed parts, significantly increasing the rate of causing disconnection.

In addition, the conventional former low-voltage lead-in cable also had a problem to be solved, in which since any of the most outer layers of the twisted wires are of the same color insulator having weather resistance, each of the wires is difficult to distinguish by appearance.

...

[0013]

This invention was made to solve the above problem, aiming to provide a low-voltage lead-in cable capable of preventing an ignition or disconnection accident due to a discharge phenomenon between insulation wires by improving tracking resistance, and allowing each of the insulation wires to be easily distinguished by visual recognition of their colors, etc.

[Means for solving the problem]

[0014]

A low-voltage lead-in cable according to the invention is constituted such that: in the low-voltage lead-in cable constituted by twisting a plurality of insulation wires together, all of the insulation wires or the remaining insulation wires other than one that includes only a black or gray colored material insulator around a conductor, each includes a double-layer insulator of inner and outer layers each composed of a predetermined material around the conductor; the outer layer insulator is excellent in

tracking resistance; one or a plurality of color zone parts for wire core distinction having a different color and/or arrangement form for each of the insulation wires are continuously arranged at parts of its surface in a longitudinal direction in a thickness less than that of the outer layer, while the remaining part is made of a material that has a black or gray color different from the color zone parts and has excellent weather resistance and tracking resistance; and the inner layer insulator has a color that is at least different from the part other than the color zone parts in the outer layer insulator and that is a predetermined color mutually different from the colors of the inner layer insulators of the other insulation wires."

(3) From the above (2), it can be recognized as follows:
AA. Regarding the problem to be solved by the patent invention
(AA) In the insulation wire, a tracking phenomenon was generated in which a discharge phenomenon occurred due to a leak current flowing on the damped or contaminated surface of the insulator, while a polyvinyl chloride insulator used as a low-voltage lead-in cable was significantly inferior in tracking resistance.

(BB) An insulator that used a resin other than a black-colored one, that is, a resin not containing carbon, had a smaller ultraviolet cut-off effect in comparison to a black colored insulator containing carbon and thus, oxide deterioration was likely to occur and a crack due to deterioration in sunlight was likely to be generated. Therefore, the conventional low-voltage lead-in wire prevented deterioration of the insulator by arranging a black resin insulation layer containing carbon at the outside of the insulator of a predetermined color that covers a conductor; however, insulators became an identical color and it was difficult to distinguish each of the insulators by appearance.

BB. Regarding the solution for the problem in the patent invention
(AA) To solve the above problem in the prior art, a low-voltage lead-in cable constituted by twisting a plurality of insulation wires is provided in which a double-layer insulator of inner and outer layers each composed of a predetermined material around a conductor is included and the outer layer insulator is excellent in tracking resistance.

(BB) In each of the insulation wires, one or a plurality of color zone parts for wire core distinction are continuously arranged at parts of its surface in a longitudinal

direction in a thickness less than that of the outer layer while the remaining part is made of a material that has a black or gray color different from the color zone parts and has excellent weather resistance and tracking resistance.

CC. Regarding the significance of "excellent in tracking resistance" in the patent invention

The "tracking resistance" indicates the resistance to the occurrence of a tracking phenomenon in an insulation wire, that is, the resistance to the occurrence of a discharge phenomenon caused by a leak current flowing on the damped or contaminated surface of the insulator of the insulation wire. Whereas it is reasonable to understand that "excellent in tracking resistance" indicates it is more excellent than the "tracking resistance" in a polyvinyl chloride insulator that has conventionally been used as a low-voltage lead-in cable, in the light of the problem to be solved by the patent invention.

DD. Regarding the significance of "excellent weather resistance" in the patent invention

The "weather resistance" indicates a high ultraviolet cut-off effect, the resistance to the occurrence of oxide deterioration, and the resistance to the generation of a crack due to deterioration in sunlight. Whereas it is reasonable to understand that "excellent weather resistance" indicates it is at the same degree as the "weather resistance" in the black resin containing carbon used at the outside of the insulator covering a conductor in the conventional low-voltage lead-in cable, in the light of the problem to be solved by the patent invention.

No. 3 Regarding Article A

(1) The body specifies and recognizes Article A as the following:

(Note by the body: Article A is separately described so as to correspond to the patent invention, and symbols a to d, f, and g have been added to respective separate descriptions. They are referred to as "configuration a," for example.)

"a. A low-voltage lead-in cable (1) that is constituted by twisting three insulation wires (11, 12, and 13) together,

b. wherein the remaining insulation wires (12, 13) other than one (11) that includes only a black colored material insulator (15) around a conductor (14) of the insulation wire (11) include a double-layer insulator of an inner layer insulator (18, 19) and an

outer layer insulator (16, 17) each composed of a predetermined material around the conductor (14);
c. the outer layer insulator (16, 17) is constituted such that two color zone parts for wire core distinction (16a, 17a) having a different color for each of the insulation wires (12, 13) are continuously arranged at parts of its surface in a longitudinal direction in a thickness less than that of the outer layer insulator (16, 17);
d. the part (16b, 17b) other than the color zone parts (16a, 17a) in the outer layer insulator (16, 17) has a black color which is different from the color zone parts (16a, 17a);
f. and the inner layer insulator (18) has a color that is at least different from the part (16b) other than the color zone parts (16a) in the outer layer insulator (16) and that is a predetermined color (green) mutually different from the color of the inner layer insulator (19) of the other insulation wire (13);
g. so as to constitute the low-voltage lead-in cable (1)."

(2) Regarding the demandant's allegation related to specifying Article A
AA. The demandant referred to reference numerals 16a, 17a as "color zone parts," and reference numerals 16b, 17b as "weather resistant material parts" in Evidence A No. 2-1 (a photograph of the low-voltage lead-in cable of Article A), Evidence A No. 2-2 (a photograph of a cross section of the low-voltage lead-in cable of Article A), Evidence A No. 3-1 (a photograph of a cross section of the insulation wire (11) of the low-voltage lead-in cable of Article A), Evidence A No. 3-2 (a photograph of a cross section of the insulation wire (12) of the low-voltage lead-in cable of Article A), and Evidence A No. 3-3 (a photograph of a cross section of the insulation wire (13) of the low-voltage lead-in cable of Article A), (Hereinafter, the respective items of Evidence A are collectively referred to as "photographs of Article A"), which are attached to the written request for advisory opinion; and alleged as follows:
(AA) The low-voltage lead-in cable of Article A is adopted so as to comply with the standards of Japanese electric power companies and is laid within the supply areas of those electric companies, and thus it is reasonable to understand from generally accepted perspective that both the color zone part (16a, 17a) and weather resistant material part (16b, 17b) are made of materials excellent in tracking resistance unless there exist special grounds that both of them are not excellent in tracking resistance;
(BB) the weather resistant material part (16b, 17b) is of black colored insulator containing carbon and therefore, has a greater ultraviolet cut-off effect in comparison to insulators not containing carbon other than the black colored insulator, and thus it

is reasonable to understand from generally accepted perspective that the part is one having an excellent weather resistance unless there exist special grounds that it is not excellent in weather resistance;
(CC) and the low-voltage lead-in cable of Article A is adopted so as to comply with the standards of Japanese electric power companies and is laid within the supply areas of those electric companies, and thus it is reasonable to understand from generally accepted perspective that the thickness of the weather resistant material part (16b, 17b) at parts located inside the color zone parts in a state of overlapping with the color zone parts (16a, 17a) is such that the weather resistance required for outdoor use can be ensured even when an outdoor use period after which the color zone parts deteriorate has passed.
And thus, the demandant alleged that Article A was as follows:
"a. A low-voltage lead-in cable (1) that is constituted by twisting three insulation wires (11, 12, 13) together,
b. wherein the remaining insulation wires (12, 13) other than one (11) that includes only a black colored material insulator (15) around a conductor (14) of the insulation wire (11) include a double-layer insulator of an inner layer (18, 19) and an outer layer (16, 17) each composed of a predetermined material around the conductor (14);
c. the outer layer insulator (16, 17) is constituted such that two color zone parts for wire core distinction (16a, 17a) having a different color for each of the insulation wires (12, 13) are continuously arranged at parts of its surface in a longitudinal direction in a thickness less than that of the outer layer (16, 17), while the remaining part is composed of a weather resistant material part (16b, 17b);
d. both of the color zone parts(16a, 17a) and weather resistant material part (16b, 17b) are made of materials excellent in tracking resistance, and
e. the weather resistant material part (16b, 17b) is one having a black color different from the color zone parts (16a, 17a) and having an excellent weather resistance;
f. the thickness of the weather resistant material part (16b, 17b) at parts located inside the color zone parts in a state of overlapping with the color zone parts (16a, 17a) is such that the weather resistance required for outdoor use can be ensured even when an outdoor use period after which the color zone parts deteriorate has passed;
g. and the inner layer insulator (18) has a color that is at least different from the part (16b) other than the color zone parts (16a) in the outer layer insulator (16) and that is a predetermined color (green) mutually different from the color of the inner layer insulator (19) of the other insulation wire (13)."

BB. However, as the demandee alleged, for the components 16a, 16b and 17a, 17b of the outer layers (16, 17) of Article A, concrete assertion and proof sufficient to specify "excellent in tracking resistance" or "one ... having an excellent weather resistance" in the patent invention were not made, as described in No. 2 (3). Furthermore, it cannot be specified only from the photographs of Article A that the thickness of the parts other than the "color zone parts" in the "outer layer insulator" is "such that the weather resistance required for outdoor use can be ensured even when an outdoor use period after which the color zone parts deteriorate has passed;" and apart from that, assertion and proof required to specify and recognize the thickness of them were not made

Therefore, Article A shall be recognized as described in (1), and any of the demandant's allegation cannot be accepted in the range incompatible with it.

No. 4 Regarding whether or not each of the constituent components of the patent invention is satisfied

(1) Regarding the constituent components A, F, and G

It can be recognized that the configurations a, f, and g of Article A satisfy the constituent components A, F, and G of the patent invention.

(2) Regarding the constituent component B

It can be said that the "one (11) that includes only a black colored material insulator (15) around a conductor (14) of the insulation wire (11)" in the configuration b of Article A corresponds to the "one that includes only a black or gray colored material insulator around a conductor" "of the insulation wires" in the patent invention. In addition, it can be said that "the remaining insulation wires (12, 13)" "that include a double-layer insulator of an inner layer (18, 19) and an outer layer (16, 17) each composed of a predetermined material around the conductor (14)" in the configuration b of Article A correspond to "the remaining insulation wires" that "each includes a double-layer insulator of inner and outer layers each composed of a predetermined material around the conductor" in the patent invention.

Therefore, it can be recognized that the configuration b in Article A satisfies the constituent component B of the patent invention.

(3) Regarding the constituent component C

AA. It can be said that "the outer layer insulator (16, 17) is constituted such that two color zone parts for wire core distinction (16a, 17a) having a different color for each

of the insulation wires (12, 13) are continuously arranged at parts of its surface in a longitudinal direction in a thickness less than that of the outer layer insulator (16, 17)" in the configuration c of Article A corresponds to "the outer layer insulator is constituted such that one or a plurality of color zone parts for wire core distinction having a different color and/or arrangement form for each of the insulation wires are continuously arranged at parts of its surface in a longitudinal direction in a thickness less than that of the outer layer."

In addition, it can be said that "the remaining part (16b, 17b)" other than the parts in which "two color zone parts for wire core distinction (16a, 17a) having a different color for each of the insulation wires (12, 13) are continuously arranged at parts of its surface in a longitudinal direction in a thickness less than that of the outer layer insulator (16, 17)" in "the outer layer insulator (16, 17)" of Article A correspond to "the remaining part" of the parts in which " one or a plurality of color zone parts for wire core distinction having a different color and/or arrangement form for each of the insulation wires are continuously arranged at parts of its surface in a longitudinal direction in a thickness less than that of the outer layer" in "the outer layer insulator" of the patent invention.

BB. Then, whether or not the remaining part (16b, 17b) in Article A corresponds to "the weather resistant material part" in the constituent component C of the patent invention is examined.

As described in the above 2 (3), the term "weather resistance" in the patent invention is understood to indicate a high ultraviolet cut-off effect, the resistance to the occurrence of oxide deterioration, and the resistance to the generation of a crack due to deterioration in sunlight.

In addition, it can be said to be a technical common sense in the art that the low-voltage lead-in cable is supposed to be used outdoor and is required to have the resistance on the outer layer part to the occurrence of deterioration due to sunlight, etc., that is, "weather resistance" in the patent invention. Therefore, in the light of the technical common sense, it can be recognized that the remaining part (16b, 17b) constituting the "outer layer insulator (16, 17)" in Article A is composed of a material having weather resistance required for outdoor use. Furthermore, since the demandee also made an assertion on the assumption that the remaining part has weather resistance in Article A, this point is not to be actively disputed.

Thus, it can be said that the remaining part in Article A corresponds to "the weather resistant material part" in the constituent component C of the patent

invention.

CC. Therefore, it can be recognized that the configuration c in Article A satisfies the constituent component C of the patent invention.

(4) Regarding the constituent component D
AA. The expression "excellent weather resistance" in the patent invention is understood to be at the same degree as "weather resistance" in the resin containing carbon which is used at the outside of the insulator covering a conductor in the conventional low-voltage lead-in cable as described in the above No. 2 (3).

Similarly, the term "tracking resistance" in the patent invention is understood to indicate the resistance to the occurrence of a tracking phenomenon in an insulation wire, that is, the resistance to the occurrence of a discharge phenomenon caused by a leak current flowing on the damped or contaminated surface of the insulator of the insulation wire. Furthermore, the expression "excellent in tracking resistance" in the patent invention is understood to be more excellent than the "tracking resistance" in a polyvinyl chloride insulator that has conventionally been used as a low-voltage lead-in cable.

BB. On the other hand, "the part (16b, 17b) other than the color zone parts (16a, 17a) in the outer layer insulator (16, 17)" in the configuration d of Article A, which can be recognized from the above (3) to correspond to the "weather resistant material part" in the constituent component C of the patent invention, "has a black color which is different from the color zone parts (16a, 17a)." Using a resin containing carbon as a black colored insulator is a technical common sense in the art, and therefore it can be recognized to have the weather resistance at the same degree as that of the resin containing carbon.

Accordingly, it can be said from the photographs of Article A that "the part (16b, 17b) other than the color zone parts (16a, 17a) in the outer layer insulator (16, 17)" in the configuration d of Article A correspond to "one ... having an excellent weather resistance" in the constituent component D of the patent invention.

However, it cannot be recognized that the configuration of Article A, in which both "the color zone parts (16a, 17a)" in "the outer layer insulator (16, 17)" and "the part (16b, 17b) other than the color zone parts (16a, 17a) in the outer layer insulator (16, 17)" are composed of a material having "tracking resistance" that is more excellent than that in a polyvinyl chloride insulator, is indicated by the photographs of

Article A. Therefore, it cannot be said that Article A has the above configuration.

Therefore, it cannot be recognized that both "the color zone parts (16a, 17a)" in "the outer layer insulator (16, 17)" and "the part (16b, 17b) other than the color zone parts (16a, 17a) in the outer layer insulator (16, 17)" are the one "having an excellent weather resistance" in the constituent component D of the patent invention.

CC. Therefore, it cannot be recognized that Article A satisfies the constituent component D of the patent invention.

(5) Regarding the constituent component E

AA. From the configurations c and d of Article A which can be recognized from the photographs of Article A, that is, from the configurations in which "the outer layer insulator (16, 17) is constituted such that two color zone parts for wire core distinction (16a, 17a) having a different color for each of the insulation wires (12, 13) are continuously arranged at parts of its surface in a longitudinal direction in a thickness less than that of the outer layer insulator (16, 17)" and "the part (16b, 17b) other than the color zone parts (16a, 17a) in the outer layer insulator (16, 17) has a black color which is different from the color zone parts (16a, 17a)," it can be recognized that parts of "the part (16b, 17b) other than the color zone parts (16a, 17a) in the outer layer insulator (16, 17)" in Article A are located inside "the color zone parts (16a, 17a)" in a state of overlapping with "the color zone parts (16a, 17a)" in "the outer layer insulator (16, 17)" and have a certain thickness.

However, it cannot be recognized from the photographs of Article A that the thickness of the parts located inside "the color zone parts (16a, 17a)" in "the part (16b, 17b) other than the color zone parts (16a, 17a) in the outer layer insulator (16, 17)" of Article A is such that the weather resistance required for outdoor use after an outdoor use period after which the "color zone parts (16a, 17a)" deteriorate has passed can be ensured.

Therefore, it cannot be said that Article A has a configuration corresponding to the constituent component E of the patent invention.

BB. Therefore, it cannot be recognized that Article A satisfies the constituent component E of the patent invention.

No. 5 Concluding Remarks

As described above, Article A does not satisfy the constituent components D and

E of the patent invention and therefore does not belong to the technical scope of the patent invention.

Therefore, the advisory opinion shall be made as described in the conclusion.

July 10, 2015

Chief administrative judge:	KAWAGUCHI, Masahide
Administrative judge:	ONODA, Makoto
Administrative judge:	KATO, Koichi

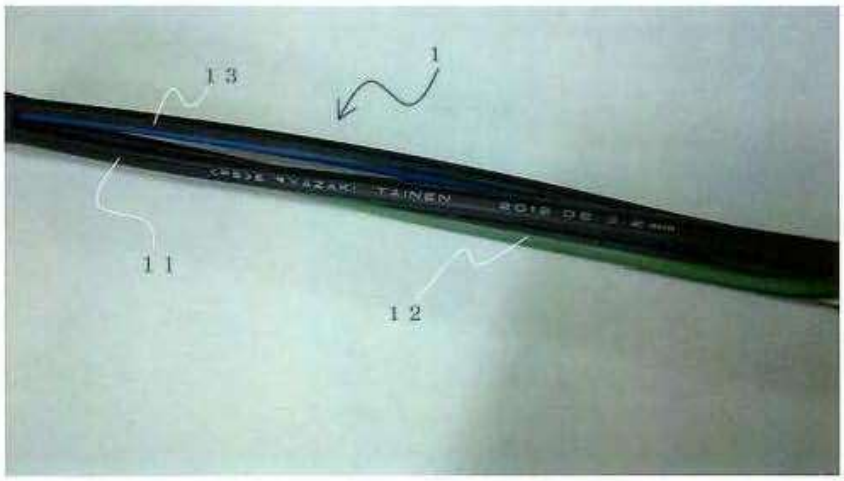
(Photographs of Article A)

#1

甲第２号証

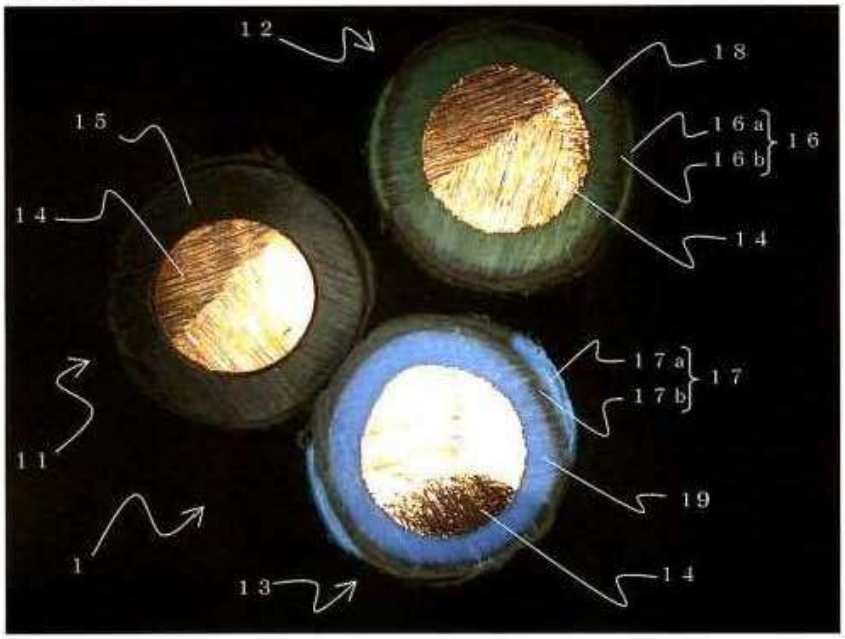
#2

甲第２号証の１



#3

甲第２号証の２

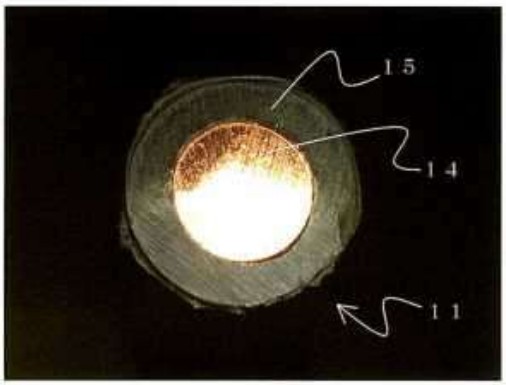


#4

甲第３号証

#5

甲第３号証の１



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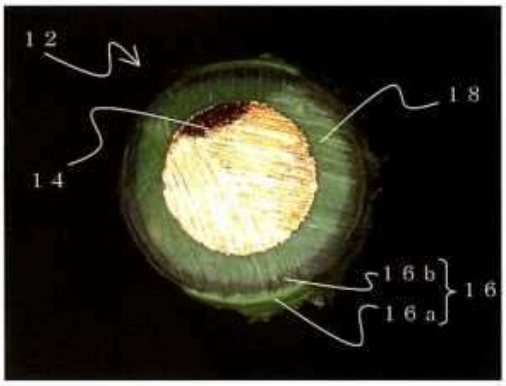
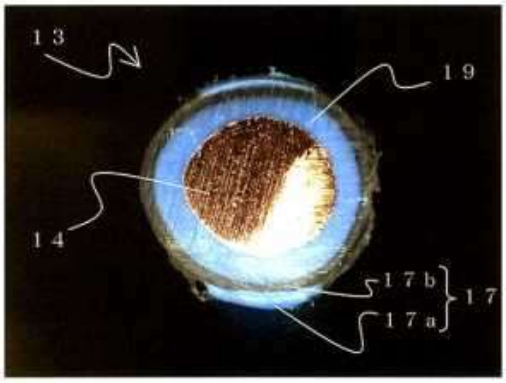
甲第３号証の２



#7

甲第３号証の３



1

#1 Evidence A No. 2
#2 Evidence A No. 2-1
#3 Evidence A No. 2-2
#4 Evidence A No. 3
#5 Evidence A No. 3-1
#6 Evidence A No. 3-2
#7 Evidence A No. 3-3