

The opinion in support of the decision being entered today was **not** written for publication and is **not** binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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Ex parte SUMITOMO ELECTRIC INDUSTRIES, LTD<sup>1</sup>

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Appeal No. 2006-0737  
Reexamination Control Number 90/005,944  
Reexamination of United States Patent 4,847,448

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ON BRIEF

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Before MARTIN, LEE, and MOORE, *Administrative Patent Judges*.

MOORE, *Administrative Patent Judge*.

DECISION ON APPEAL

This is an appeal under 35 U.S.C. § 134(b) from the final rejection of claims 1-9 of the claims under reexamination.

THE CLAIMS ON APPEAL

The Appellant has indicated (Brief, page 3) that, for the purposes of this appeal, claims 1-6 will stand or fall together as a group, and claims 7-9 will stand or fall together as a group. Accordingly, we select claim 1, the broadest independent claim as representative of the first group, and claim 7, as representative of the second group, of the claims on appeal. See Bd. R. 37(c) (1) (vii).

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<sup>1</sup> Reexamination Requested by third-party requester Alfred A. Stadnicki.

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These two claims are reproduced below.

1. A coaxial cable having a central conductor, comprising:  
an insulation layer wound around said conductor;  
a laterally wound shielding layer formed of a plurality of  
wires wound at a predetermined pitch around said insulation layer;  
and  
a metal tape wound over said shielding layer, said tape  
including a plastic tape and a metal layer which is deposited on  
said plastic tape, said metal layer being in contact with said  
shielding layer.

7. A coaxial cable as claimed in claim 1, wherein said  
insulation layer is formed on said conductor.

It is noted that claim 1 above is as it appears in U.S.  
4,847,448, the patent under reexamination. Claim 7 is a claim  
that was added during the reexamination proceeding.

#### THE REFERENCES

In rejecting the claims under 35 U.S.C. § 103(a), the  
Examiner relies upon the following references:

JP59-170321 (JP '321)	Nov. 14, 1984
JP55-41622 (JP '622)	Mar. 24, 1980
AU 216,883 Leef (Leef)	Aug. 01, 1957

Furukawa Denko, Jiho, Vol. 76, "The Cable for Ultrasonic Medical  
Equipment", pp. 151-155, August, 1985 ("FDJ")

The following reference is applied in a new ground of  
rejection:

Townsend (Townsend)	4,197,348	Apr. 08, 1980
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THE REJECTIONS

Claims 1 and 7 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over JP '321 in view of JP '622.

Claims 2-4, 6 and 9 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over JP '321 in view of JP '622, further in view of Leef.

Claims 5 and 8 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over JP '321 in view of JP '622, further in view of FDJ.

THE INVENTION

The invention relates to a shielded coaxial cable. The shielding is formed from a tape which includes metal "deposited" thereon. This deposition is said to give a more flexible tape which allows the cable to bend without breaking (Appeal Brief, page 2).

DISPOSITION

On consideration of the record, we affirm-in part the examiner's prior art rejections, and we also enter a new ground of rejection pursuant to 37 CFR §41.50(b).

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I(A). The Rejection of Claims 1 and 7 Under 35 U.S.C. § 103(a)

Claims 1 and 7 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over JP '321 in view of JP '622.

The examiner has found that JP '321 describes a coaxial cable having a central conductor, an insulation layer formed on the conductor, a laterally wound shielding layer formed of a plurality of wires wound at a predetermined pitch around the insulation layer, and a metal tape wound over the shielding layer, the tape including a plastic tape and a metal layer disposed on the tape, the metal layer being in contact with the shielding layer.

The examiner has also found that JP '622 describes a coaxial cable with an insulating layer which can be formed by an extrusion process or by an insulating tape that is laterally, i.e. spirally, wound around the periphery of the central conductor.

The examiner thus concludes that it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the insulation layer of JP '321 by using an insulation tape and laterally winding the insulation tape around the central conductor to improve the flexibility of the cable. The examiner has additionally found that forming an insulating layer around a conductor by winding a tape around the conductor is a known way of insulating a conductor. (Examiner's Answer, pages

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4-5; Rejection, March 26, 2002, pages 2-3).

The Appellant does not challenge any of the above findings. Rather, the sole issue argued on appeal is the examiner's interpretation of the term "deposited." The appellant urges that the term "depositing" allows for thinner thicknesses to be applied and therefore greater cable flexibility to be obtained. The appellant urges that the examiner has misconstrued the term to include a metal-tape laminate which the appellant's invention was meant to replace. (Appeal Brief, pages 4-6).

If a metal-tape laminate or composite is excluded, JP '321 would, it is urged by the Appellant, not render the claimed invention obvious. (Reply Brief, page 8).

It is well established that claims undergoing re-examination are given their broadest reasonable construction consistent with the specification. In re Yamamoto, 740 F.2d 1569, 1571, 222 USPQ, 934, 936 (Fed. Cir. 1984). In this instance, the inquiry is informed by the context of the entire patent under reexamination, including the specification and the other claims. See Phillips v. AWH Corp., 415 F.3d 1303, 1311-19 (Fed. Cir. 2005) (en banc).

We start with the plain language of the claims. The term "deposited" appears only once in claim 1. Its contextual use in the claims sheds no light on its meaning - ". . . a metal layer

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which is deposited on said plastic tape. . ." At this initial, literal level, we see nothing which would exclude a composite tape. A metal layer can be "deposited" on a plastic layer using a variety of means, including an adhesive layer between the two.

We turn next to the specification for instances of use of the term.

In the issued patent, column 1, lines 35-46, the following discussion is found in the "Background of the Invention":

In order to overcome the above-mentioned drawbacks [too large diameter, lack of flexibility, poor shielding], it is conceivable to design a coaxial cable in which the laterally wound shielding layer is wound with an aluminum foil tape or with a composite tape in which the aluminum foil is adhered on the plastic tape. However, the latter type of coaxial cable is not sufficiently flexible; therefore, the aluminum foil may be broken and the shielding characteristic may be degraded over time. Such problems are compounded if the cable is used in a diagnostic device which requires a severe bending condition of the cable.

The specification indicates that a coaxial cable of the laminated plastic-aluminum foil type may be inflexible, encounter breakage, and lose shielding.

The specification goes on to suggest that an object of the invention is to overcome the problems of the prior art in that the invention:

. . . has a metal deposited tape wound over the laterally wound shielding layer which is formed over an insulating layer, the metal deposited tape including a plastic tape and a metal deposition layer deposited on the plastic tape . . .

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(Column 1, lines 56-60).

The specification does not specifically define "deposited."

The Appellant urges that depositing means "for example, a chemical vapor deposition process" (Appeal Brief, page 4, last line). This type of deposition, it is alleged, gives a thinner thickness allowing for greater bending. (Id., page 5, lines 1-3.) Again, the specification is silent on this point.

The specification does state that:

Over the laterally wound shielding layer 3 is wound a metal depositing tape 4 in which a deposition layer 42 of electrically conductive metal such as copper or tin is deposited onto a plastic tape 41 such as polyester tape, and the deposition layer 42 is positioned radially inwardly. . . (column 2, lines 21-26) (emphasis added)

Further:

The thickness of the metal deposition layer 42 of the metal depositing tape 4 must be at least 0.2  $\mu\text{m}$  in order to obtain a sufficient shielding characteristic. More particularly, if the metal deposition layer 42 has a thickness of about 1  $\mu\text{m}$ , a greatly improved shielding characteristic is attainable. (Column 2, lines 39-43) (emphasis added)

Finally:

. . . the metal deposition layer of the present invention may be sufficiently bonded to the plastic tape by deposition so that the shielding characteristic may be maintained even under a severe bending condition of the cable . . . (Column 3, lines 15-20) (emphasis added)

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The specification states that the metal deposition layer is bonded to the tape by deposition. Although nowhere in the specification is any particular method of deposition described, one of ordinary skill in the art would have been aware of metal deposition techniques such as chemical vapor deposition or electrophoretic coating, which are used to form such shielding layers (See, e.g. Leef, page 4, last 5 lines).

Accordingly, we agree with the Appellant that the term "deposited" as used in these claims must be limited to a metal-deposition method such as, e.g. chemical vapor deposition methods, electrical deposition methods, sputtering, and the like.

Giving the term its broadest reasonable interpretation, we also therefore find that we agree with the Appellant that the laminate tape of JP '321 would not be within the scope of the term "deposited" as used in claims 1 and 7. Therefore, the combination of references as cited by the Examiner cannot be said to describe the subject matter of claims 1 and 7.

Consequently, we reverse this rejection. However, we exercise our discretion to enter a new ground of rejection as follows.

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I(B). New Ground of Rejection of Claims 1 and 7

Under 35 U.S.C. § 103(a)

Claims 1 and 7 are newly rejected under 35 U.S.C. § 103(a) as being unpatentable over JP '321 in view of JP '622, Townsend, and Leef.

As to claims 1 and 7, JP '321 describes a shielded coaxial cable (Translation, page 2, line 11-12) having a central conductor 1, an insulation layer 2 formed on the conductor, a laterally wound shielding layer 5 formed of a plurality of wires wound at a predetermined pitch around the insulation layer, and a laminated metal tape wound or wrapped over the shielding layer, the tape including a plastic tape and a metal layer in contact with the shielding layer (Translation, page 2, lines 11-17) (See also Figures 1 and 2).

JP '622 describes a coaxial cable with an insulating layer which can be formed by an insulating tape that is laterally, i.e. spirally, wound around the periphery of the central conductor. (Page 2, lines 10-11). Townsend notes that conductors spirally wrapped with tape material are "commonly used" in electrical equipment. (Column 1, lines 24-25). Townsend's spiral wrappings are to ". . . wrap a conductor with an insulative spiral wrapping that is flexible and will not break or expose the conductor when

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the conductor is bent. . ." (Column 2, lines 39-42).

Leef describes metal tapes for use in coaxial cables. Those tapes may be obtained in several described ways including deposition by evaporative techniques, chemical vapor deposition, and electrophoretic coating. (Leef, page 4, last 5 lines).

It would have been obvious to spirally wrap the conductive core of JP '321 with an insulator because spirally wrapped insulators were commonly known in electric equipment and provided additional flexibility as taught by Townsend. It would also have been obvious to utilize metallized tapes formed by deposition as described by Leef in place of the laminated tape of JP 321 in order to obtain a desired thickness and uniformity and "highly adherent thin metallic" coatings capable of mass production (Leef, page 4, lines 10-12 and 32-36).

As to claim 7, we observe that it depends from claim 1, which recites ". . . an insulation layer wound around said conductor . . . ." Claim 7 (a newly added claim), on the other hand, recites that ". . . said insulation layer is formed on said conductor."

JP '622 describes prior art wrapped insulators in direct contact with the conductor and the problems with them. See the English language translation of record, page 2, lines 8-12, as follows:

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Specifically, the porous insulating material covering layer 2 having necessary thickness is formed around the periphery of the inner conductor 1, for example, by such means as (a) a tape-shaped porous insulating material such as foamed plastic is wound spirally around the periphery of the inner conductor 1 along its lengthwise . . . .

A reference is available for all that it discloses and suggests, even unpreferred embodiments. See *In re Lamberti*, 545 F.2d 747, 750, 192 USPQ 278, 280 (CCPA 1976); and *In re Mills*, 470 F.2d 649, 651, 176 USPQ 196, 198 (CCPA 1972). It would have been obvious to one of ordinary skill in the art at the time the invention was made to wind the insulator about the conductor such that it was in contact with the conductor. Additionally, JP '321, the primary reference, makes no use of an adhesive resin.

Accordingly, we conclude that claim 7 would have been obvious to one of ordinary skill in the art at the time the invention was made.

II. The Rejection of Claims 2-4, 6, and 9 Under 35 U.S.C. § 103(a)

Claims 2-4, 6 and 9 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over JP '321 in view of JP '622, further in view of Leef.

Claim 2 reads as follows:

2. A coaxial cable as claimed in claim 1, wherein said metal layer has a thickness of at least 0.2  $\mu\text{m}$ .

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The Examiner has found that Leef describes a coaxial cable comprising a metal tape including a metal layer which has a thickness of approximately 1  $\mu\text{m}$  formed from copper. (Examiner's Answer, page 5, lines 14-16.)

The examiner concluded that it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the copper layer of Leef as copper is a good conductor. Further, the examiner concludes that it would have been obvious to adjust the thickness of the layer as it was known in the art that a thicker layer would provide better shielding, while a thinner layer would provide better flexibility. Finally, the examiner notes that optimization of these properties involves only routine skill in the art. (Examiner's answer, paragraph spanning pages 5 and 6.)

The appellant has not contested either the findings of fact or the conclusions of law made by the examiner in this rejection. Rather, the appellant states that he incorporates his previous arguments made with respect to claim 1 relating to a deposited metal layer. (Appeal Brief, page 10, last two paragraphs.)

As these rejections also include the Leef reference, we observe that the rationale in reversing the rejections of claims 1 and 7 no longer applies. It is well established that the Board

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can consider anything in a reference. See *In re Azorlosa*, 44 CCPA 826, 241 F.2d 939, 941, 113 USPQ 156, 158 (1957), which holds, in pertinent part, that it is proper for the court and necessarily, the board, to consider everything that a reference discloses. See also *In re Fritch*, 972 F.2d 1260, 1264, 23 USPQ2d 1780, 1782 (Fed. Cir. 1992) which states that a prior art reference is relevant for all that it teaches to those of ordinary skill in the art. Leef provides ample motivation to make the combination claimed in claims 1 and 7, from which these rejected claims depend.

Leef describes flexible coaxial cables (page 1, line 4) Leef describes wrapping a metallized tape about the insulating structure of the core. (Page 3, lines 4-5.) That tape is a metallized tape of a polymeric base material. (Page 3, lines 9-10.) The polymeric material may be a polyester resin base film such as Mylar ® (Page 4, lines 5-6) or polytetrafluoroethylene film (Page 4, lines 39-40). Silver, copper, aluminum, and other good conductors may be used. (Page 3, lines 21-23.)

Various methods are described for obtaining the metallized films on the plastic material, including evaporative techniques, chemical deposition, and electrophoretic coating. (Page 4, last 5 lines.) These tapes are said to be "particularly suitable" and have "highly adherent" coatings (Page 4, lines 35 and 37). Leef,

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therefore, makes up for any deficiency of the principal reference JP '321 as regards the layer being "deposited."

Accordingly, as the Appellant has provided no separate argument for reversing the rejection of claims 2-4, 6 and 9 beyond the lack of a description of the layer being "deposited," we shall sustain the rejection of claims 2-4, 6, and 9.

III(A). The Rejection of Claims 5 and 8 Under 35 U.S.C. § 103(a)

Claims 5 and 8 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over JP '321 in view of JP '622, further in view of FDJ.

The examiner has found that FDJ describes a composite coaxial cable including a plurality of coaxial cables spirally wound about each other. (Examiner's Answer, page 6, last paragraph). The examiner concludes that it would have been obvious to one of ordinary skill in the art at the time the invention was made to form a composite cable as described by FDJ for multiple transmission purposes. Id.

The appellant states that he incorporates his previous arguments made with respect to claim 1 relating to a deposited metal layer and claim 7 relating to the insulation on the conductor. (Appeal Brief, page 11, last two full paragraphs).

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Accordingly, as we have reversed the examiner's rejection of claims 1 and 7, we shall similarly reverse the rejection of claims 5 and 8. However, we again exercise our discretion to enter new grounds of rejection as follows.

III(B). New Ground of Rejection of Claims 5 and 8

Under 35 U.S.C. § 103(a)

Claims 5 and 8 are newly rejected under 35 U.S.C. § 103(a) as being unpatentable over JP '321 in view of JP '622, Townsend, and Leef, further in view of FDJ.

Claim 5 reads as follows:<sup>2</sup>

5. A composite coaxial cable comprising:

a plurality of coaxial cables having a central conductor, said coaxial cables being spirally wound about each other, each of said coaxial cables comprising an insulation layer wound about said conductor, a laterally wound shielding layer formed of a plurality of wires wound at a predetermined pitch around said insulation layer, and a tape wound over said shielding layer, said tape including a plastic tape and a metal layer which is deposited on said plastic tape, said metal layer being in contact with said shielding layer; and

an outer cover layer formed over said spirally wound coaxial cables.

Claim 8 reads as follows:

8. A coaxial cable as claimed in claim 5, wherein said insulation layer is formed on said conductor.

JP '321, JP '622, Townsend, and Leef are as discussed above

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for claims 1 and 7. FDJ describes a composite coaxial cable including a plurality of coaxial cables. (Figure 1, and Translation, page 3, lines 7 and 16). The cables are spirally wound about each other for flexibility (Page 5, lines 8-13). The cables are wrapped in an outer sheath (Fig. 1).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to form a composite cable with multiple coaxial cables helically twisted as claimed in claims 5 and 8 to increase data capacity (higher resolution) and remain flexible.

#### DISPOSITION

The rejection of claims 1 and 7 under 35 U.S.C. § 103(a) as being unpatentable over JP '321 in view of JP '622 is REVERSED.

A new ground of rejection is entered against claims 1 and 7 under 35 U.S.C. § 103(a) as being unpatentable over JP '321 in view of JP '622, Townsend, and Leef.

The rejection of claims 2-4, 6 and 9 under 35 U.S.C. § 103(a) as being unpatentable over JP '321 in view of JP '622, further in view of Leef is SUSTAINED.

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<sup>2</sup> The copy of claim in the appendix to the brief is incorrect.

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The rejection of claims 5 and 8 under 35 U.S.C. § 103(a) as being unpatentable over JP '321 in view of JP '622, further in view of FDJ is REVERSED.

A new ground of rejection is entered against claims 5 and 8 under 35 U.S.C. § 103(a) as being unpatentable over JP '321 in view of JP '622, Townsend, and Leef, further in view of FDJ.

NOTICE

This decision contains a new ground of rejection pursuant to 37 CFR § 41.50(b), which provides that, "A new ground of rejection pursuant to this paragraph shall not be considered final for purposes of judicial review."

37 CFR § 41.50(b) also provides that the appellant, WITHIN TWO MONTHS FROM THE DATE OF THE DECISION, must exercise one of the following two options with respect to the new ground of rejection to avoid termination of proceedings as to the rejected claims:

(1) Submit an appropriate amendment of the claims so rejected or a showing of facts relating to the claims so rejected, or both, and have the matter reconsidered by the examiner, in which event the application will be remanded to the examiner. . . .

(2) Request that the application be reheard under § 41.52 by the Board of Patent Appeals and Interferences upon the same record. . . .

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No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

**AFFIRMED-IN-PART**

**37 CFR 41.50(b)**

JOHN C. MARTIN	)	
Administrative Patent Judge	)	
	)	
	)	
	)	BOARD OF PATENT
JAMESON LEE	)	
Administrative Patent Judge	)	APPEALS AND
	)	
	)	INTERFERENCES
	)	
JAMES T. MOORE	)	
Administrative Patent Judge	)	

JTM/lp

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