

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

FUNAI ELECTRIC CO., LTD., and SAMSUNG DISPLAY CO., LTD.,
Petitioner,

v.

GOLD CHARM LTD.,
Patent Owner.

Case IPR2015-01448
Patent 5,995,176

Before KARL D. EASTHOM, BRYAN F. MOORE, and
CHARLES J. BOUDREAU, *Administrative Patent Judges*.

MOORE, *Administrative Patent Judge*.

DECISION
Denying Institution of *Inter Partes* Review
37 C.F.R. § 42.108

I. INTRODUCTION

Samsung Display Co., Ltd. and Funai Electric Co., Ltd. (collectively, “Petitioner”) filed a Petition requesting an *inter partes* review of claims 1, 3–6 of U.S. Patent No. 5,995,176 (Ex. 1001, “the ’176 patent”). Paper 1 (“Pet.”). In response, Gold Charm Limited (“Patent Owner”) filed a Preliminary Response. Paper 9 (“Prelim. Resp.”). We have jurisdiction under 35 U.S.C. § 314, which provides that an *inter partes* review may not be instituted “unless . . . the information presented in the petition . . . shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.”

For the reasons set forth below, we do not institute an *inter partes* review of claims 1 and 3–6 of the ’176 patent.

A. Related Matter

The ’176 patent is involved in the following lawsuit: *MiiCs & Partners, America, Inc. v. Funai Electric Co.*, No. 1:14-cv-00804-RGA (D. Del.). Pet. 1–2; Paper 5, 2–3.

B. Real Parties In Interest

In its Petition, Petitioner certifies that the following parties are the real parties in interest in this proceeding: (1) Samsung Display Co., Ltd.; (2) Funai Electric Co., Ltd.; (3) Funai Corporation, Inc.; and (4) P&F USA, Inc. Pet. 2. In response, Patent Owner contends that the Petition should be denied for failing to name all real parties in interest, as required by 35 U.S.C. § 312(a)(2). Prelim. Resp. 4–14. We then authorized Petitioner to file a Reply that addresses Patent Owner’s arguments regarding whether the Petition identifies all real parties in interest. Paper 10, 2–3. We also

authorized Petitioner to file a Sur-reply limited to addressing the issues raised in Petitioner's Reply. *Id.* Petitioner timely filed its Reply (Paper 11) and Patent Owner timely filed its Sur-reply (Paper 12).

The current situation does not require us to assess the merits of the real parties in interest issue because, as we explain below, the dispositive issue in this proceeding is whether Petitioner has shown a reasonable likelihood of success on the merits of the grounds presented in the Petition. Consequently, we need not reach and, therefore, do not address whether Petitioner identifies all real parties in interest in its Petition, as required by § 312(a)(2).

C. The '176 Patent

The '176 patent relates to an active matrix-type liquid crystal display (LCD) apparatus, and more particularly, to a twisted nematic (TN)-mode LCD apparatus having pixels of different orientation of liquid crystal. Ex. 1001, 1:10–14. The specification states that the invention provides smaller openings in the pixel electrodes at the region of discontinuity of liquid crystal orientation than provided by the prior art because the invention provides conductive light shield layers aligned with the openings and to which a bias voltage is applied allows the discontinuity region location to be more effectively stabilized. *Id.* at 4:63–5:15, Figs. 7A–7B, 8A–8B.

D. Illustrative Claim

Of the challenged claims, claim 1 is the only independent claim. Claims 3–6 depend directly from claim 1.

Claim 1, reproduced below, is illustrative.

1. A liquid crystal display apparatus comprising

first and second substrates having a liquid crystal layer therebetween;

said liquid crystal layer being divided into a plurality of regions having different orientation of liquid crystal for one of said pixel electrodes, openings being provided in said pixel electrodes in alignment with discontinuity of orientation of liquid crystal formed by said different orientation of liquid crystal;

a plurality of conductive light shield layers each provided in alignment with one of said openings, a bias voltage being applied to said conductive light shield layers; and

a counter electrode formed on said second substrate.

Ex. 1001, 5:41–55.

E. Prior Art Relied Upon

Petitioner relies upon the following prior art references:

Koike	US 5,473,455	Dec. 18, 1995	(Ex. 1002)
Akiyama	JP H05-281545	Oct. 29, 1993	(Ex. 1003 ¹)
Yamamoto	JP H07-318944	Aug. 12, 1995	(Ex. 1005 ²)

F. Asserted Grounds of Unpatentability

Petitioner asserts the following grounds of unpatentability:

Challenged Claims	Basis	Reference(s)
1, 3–6	§ 102	Koike
1, 3–6	§ 102	Akiyama
1, 3–6	§ 103	Koike and Yamamoto

¹ Ex. 1004 is a certified translation of Akiyama.

² Ex. 1006 is a certified translation of Yamamoto.

II. ANALYSIS

A. Claim Construction

In an *inter partes* review, claim terms in an unexpired patent are given their broadest reasonable construction in light of the specification of the patent in which they appear. 37 C.F.R. § 42.100(b); *see also In re Cuozzo Speed Techs., LLC*, 778 F.3d 1271, 1281–1282 (Fed. Cir. 2015) (“Congress implicitly adopted the broadest reasonable interpretation standard in enacting the AIA,” and “the standard was properly adopted by PTO regulation.”). Under the broadest reasonable interpretation standard, claim terms are given their ordinary and customary meaning as would be understood by one of ordinary skill in the art in the context of the entire disclosure. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007).

For the purposes of this Decision, and on this record, none of the claim terms require an express construction. *See Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999) (only those terms which are in controversy need to be construed and only to the extent necessary to resolve the controversy).

B. Principles of Law

Anticipation requires the disclosure in a single prior art reference of each and every element of the claimed invention, arranged as in the claim. *Lindemann Maschinenfabrik GmbH v. American Hoist & Derrick Co.*, 730 F.2d 1452, 1458 (Fed. Cir. 1984).

A patent claim is unpatentable under 35 U.S.C. § 103(a) if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of four underlying factual determinations: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) objective evidence of nonobviousness. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

In that regard, an obviousness analysis “need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.” *KSR*, 550 U.S. at 418; *see also Translogic*, 504 F.3d at 1259. A prima facie case of obviousness is established when the prior art itself would appear to have suggested the claimed subject matter to a person of ordinary skill in the art. *In re Rinehart*, 531 F.2d 1048, 1051 (CCPA 1976).

The level of ordinary skill in the art is reflected by the prior art of record. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001); *In re GPAC Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995); *In re Oelrich*, 579 F.2d 86, 91 (CCPA 1978). We have analyzed the asserted grounds of unpatentability with these principles in mind.

C. Anticipation of Claims by Koike

Petitioner asserts that claims 1 and 3–6 are unpatentable under 35 U.S.C. § 102(b) as anticipated by Koike. Pet. 15. To support its contentions, Petitioner provides explanations as to how Koike meets each claim limitation. *Id.* at 15–25. Petitioner also relies upon a Declaration of Mr. Thomas L. Credelle, who has been retained as a declarant by Petitioner for the instant proceeding. Ex. 1008.

Koike is directed to liquid crystal display devices “having different liquid crystal aligning domains in each of a plurality of [pixel] regions.” Ex. 1002, 1:10–12. Koike describes an “eighth embodiment ... which strives to solve the disclination.” *Id.* at 18:12–40. Referring to Figures 35 and 36 of Koike, there is described an LCD device having a pixel electrode 24 with orientation region A and orientation region B. *Id.* at 18:12–40, Figs. 35, 36. Overlying the declination line where region A meets region B is shading layer 40. *Id.* Koike discloses that shading layer 40 may be a storage capacitance electrode 28. *Id.* at 18:27–28.

Koike also describes an LCD device having two sub-pixel electrodes spaced apart by a predetermined gap. *Id.* at 20:65–21:16. Referring to Figures 52–54, Koike describes an “eleventh embodiment” wherein one pixel region is defined by two sub-pixel electrodes, each indicated as 24a, which form liquid crystal aligning regions A and B. *Id.*

Claim 1 recites openings being provided in the pixel electrodes in alignment with discontinuity of orientation of liquid crystal and a plurality of conductive light shield layers each provided in alignment with one of said openings. Petitioner relies on the storage capacitance electrode 28/shading

layer 40 in the embodiment of Figure 36 to show the plurality of conductive light shield layers recited in claim 1. Pet. 17–18. Petitioner also relies on the gap 46 between sub-pixel electrodes 24 in the embodiment of Figure 52 to show the openings recited in claim 1. *Id.* at 18. Patent Owner accuses Petitioner of “picking and choosing from separate and distinct embodiments described in Koike as referenced in Figs. 36 and 52.” Prelim. Resp. 35. We agree. Figure 36 of Koike, is reproduced below.

Fig. 36

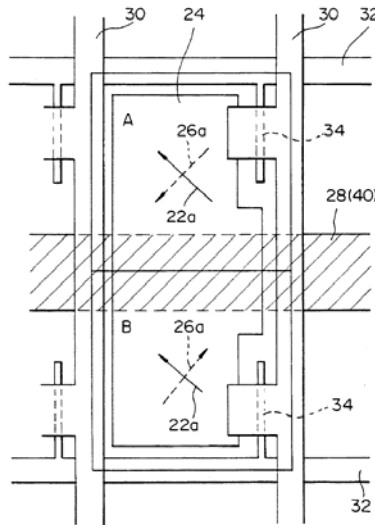


Figure 36, above, shows an embodiment described in the specification as single unitary pixel electrode 24 with orientation region A and orientation region B and, overlying the disclination line where region A meets region B, a shading layer 40. *Id.* at 18:12–40, Figs. 35, 36. There is no opening in this pixel electrode, however, as required by claim 1.

Figure 52 of Koike, is reproduced below.

Fig. 52

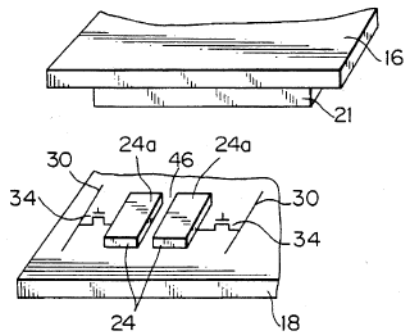


Figure 52, above, shows an embodiment described in the Specification as an LCD device having two sub-pixel electrodes, each indicated as 24a and spaced apart by a predetermined gap, which form liquid crystal aligning regions A and B. *Id.* at 20:65–21:16. There is no description of storage capacitance electrode 28 or shading layer 40 in association with Figure 52. Additionally, Petitioner does not cite to any evidence or testimony that these two embodiments are compatible or that one of ordinary skill in the art at the time of the invention would understand these embodiments were intended to be combined.

As our reviewing court’s predecessor stated, for anticipation, the prior art reference “must clearly and unequivocally disclose the claimed compound or direct those skilled in the art to the compound without any need for picking, choosing, and combining various disclosures not directly related to each other by the teachings of the cited reference.” *In re Arkley*, 455 F.2d 586, 587 (CCPA 1972); *see also Net MoneyIN, Inc. v. VeriSign, Inc.*, 545 F.3d 1359, 1371 (Fed. Cir. 2008) (holding that “unless a reference discloses within the four corners of the document not only all of the

limitations claimed but also all of the limitations arranged or combined in the same way as recited in the claim, it cannot be said to prove prior invention of the thing claimed and, thus, cannot anticipate under 35 U.S.C. § 102”). We determine that Petitioner has not shown sufficiently that all the limitations of claim 1 are arranged or combined in Koike in the same way as in claim 1.

We have reviewed the proposed ground of anticipation by Koike against claims 1 and 3–6, and we are not persuaded that Petitioner has established a reasonable likelihood that it would prevail in its challenge to claims 1 and 3–6 on this ground.

D. Anticipation of Claims by Akiyama

Petitioner asserts that claims 1 and 3–6 are unpatentable under 35 U.S.C. § 102(b) as anticipated by Akiyama. Pet. 17. To support its contentions, Petitioner provides explanations as to how Akiyama meets each claim limitation. *Id.* at 17–27. Petitioner also relies upon Mr. Credelle’s Declaration. Ex. 1008.

Akiyama states

a case where the orientation of the liquid crystal is scattered at the boundary part of the two regions that are different in the orientation azimuth of the liquid crystal in the one pixel and a so-called disclination is generated, [and] such a boundary part may be covered by disposing a coating material having a high light blocking characteristic.

Ex. 1004 ¶ 18. Akiyama also discloses that the coating material may be a black mask used in a color filter, or may be a storage capacitor electrode made of metal. *Id.* Referring to Fig. 6, Akiyama states that a gap can be

provided in a pixel electrode to prevent display defects resulting from a disclination line. Ex. 1004 ¶ 52. Additionally, Akiyama notes that the storage capacitor 19 may be aligned with the gap. *Id.* Akiyama also notes that a line of electric force from the storage capacitor can “spread in the liquid crystal 21.” *Id.*

Claim 1 recites that a bias voltage is applied to the conductive light shield layers. Petitioner relies on Akiyama’s statement that there is “a line of electric force from metal electrode 1 of storage capacitor 19 [the alleged light shield layer]” to meet the limitation of applying a bias voltage. Pet. 29 (citing Ex. 1004 ¶ 52).³ Petitioner also asserts “[t]hose of skill in the art would recognize that in order to create a line of electric force, a voltage must be applied to the conductive light shield layer 1 that is different from nearby electrodes such as the common electrode 15.” Pet. 29–30 (citing Ex. 1008 ¶ 72.). Thus, Petitioner essentially argues that it is inherent that there is a bias voltage applied to electrode 1. Patent Owner asserts “Akiyama does not disclose . . . a conductive light shield layer is disposed in alignment with the opening, and a bias voltage is applied thereto,” as recited in claim 1. Prelim. Resp. 38.

“Inherency . . . may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of

³ We note that Petitioner states that “[a] bias voltage is not a precise term of the art; in the context of the ‘176 Patent, it can be interpreted as a voltage different from any other voltage in the active matrix circuit.” Pet. 41. We do not adopt this definition. According to the arguments by the parties as discussed in the instant section, a bias voltage at least must be an applied voltage—i.e., not merely a stray induced voltage.

circumstances is not sufficient.” *In re Robertson*, 169 F.3d 743, 745 (Fed. Cir. 1999) (citations and internal quotation marks omitted). Patent Owner asserts “it is NOT necessary to apply a voltage to the metal electrode 1 of the storage capacitor 19 in order to create a line of electric force between the capacitor electrode and a counter electrode [because] a storage capacitor may be a floating electrode which does not receive any applied voltage.” Prelim. Resp. 39 (citing Ex. 2020 at 3:38–4:40, Fig. 3 (element 7), and Fig. 4 (element 207)). Thus, Patent Owner argues that it is not necessarily true in all cases that a bias voltage must be applied to the metal electrode 1. To emphasize this point, Patent Owner relies on a reference (Ex. 2020) which shows a parasitic capacitance associated with a light shield layer in a liquid crystal display. *Id.* We agree that Petitioner has not asserted or explained sufficiently that metal electrode 1 receives an applied voltage. In other words, Petitioner has not shown sufficiently that it is inherent in Akiyama that the “line of force” is caused by a bias voltage applied to metal electrode 1.⁴

We have reviewed the proposed ground of anticipation by Akiyama against claims 1 and 3–6, and we are not persuaded that Petitioner has established a reasonable likelihood that it would prevail in its challenge to claims 1 and 3–6 on this ground.

⁴ Akiyama is not clear as to the structure of element 19. The only depiction of it is in relation to Figure 9, which depicts 19 as near or associated with gate electrode 2, not metal electrode 1. Element 19 is described on page 34 of Akiyama as a “polarizing plate of TFT substrate side,” but as a “storage capacitor” at paragraphs 52, 59, and 60. *See* Ex. 1003, Fig. 9; Ex. 1004 ¶¶ 52, 59–60, p. 34.

E. Obviousness of Claims over Koike and Yamamoto

Petitioner asserts that claims 1 and 3–6 are unpatentable under 35 U.S.C. § 103 as obvious over the combination of Koike and Yamamoto. Pet. 36. To support its contentions, Petitioner provides explanations as to how this proffered combination allegedly meets each claim limitation. *Id.* at 36–43. Petitioner also relies upon Mr. Credelle’s Declaration. Ex. 1008.

Yamamoto is directed to liquid crystal display devices in which each pixel region has two regions wherein the orientation of liquid crystal molecules is different. Ex. 1006, Abstract. Yamamoto discloses an orientation dividing electrode 7 formed of a metal which does not transmit light. *Id.* ¶ 14, Figs. 1(a), 1(b).

Claim 1 recites openings being provided *in said pixel electrodes* in alignment with discontinuity of orientation of liquid crystal formed by said different orientation of liquid crystal and a plurality of conductive light shield layers each provided in alignment with one of the openings. Patent Owner argues that Yamamoto does not disclose such openings. The ’176 patent discloses opening 81 in the pixel electrode in Figure 8A reproduced below.

Fig. 8A

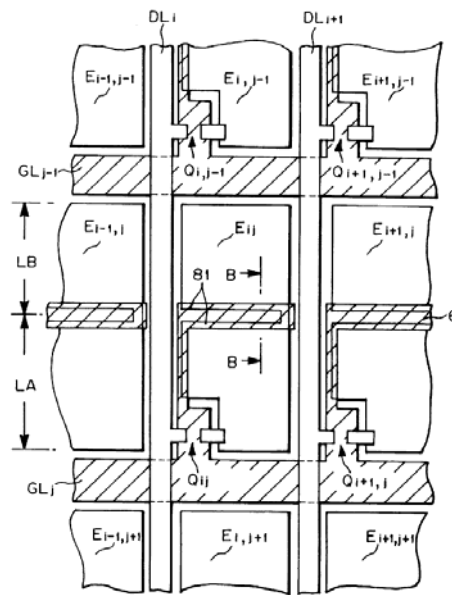


Figure 8A, above, shows opening 81 which is in the pixel electrode E_{ij} below light shield area 6. Ex. 1001, Fig. 8A. The opening appears as the space between the ends of the two lines extending from the reference number 81.

Petitioner relies on an annotated version Fig. 1(b) of Yamamoto, which is reproduced below, to show the claimed opening.

[Drawing 1(b)]

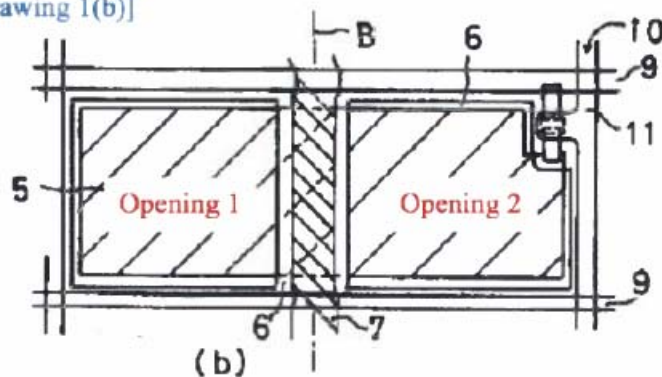


Figure 1(b), above, shows a plan view of an LCD device, as annotated by Petitioner, according to Yamamoto. Pet. 40; Ex. 1006, Fig. 1(b). Petitioner's added annotations in the pixel electrode 5 read "Opening 1" and "Opening 2." Nonetheless, as Patent Owner points out, the hash lines representing the pixel electrode continue *throughout* the pixel electrode 5 in Fig 8A, suggesting that there is no gap or opening in the pixel electrode. See Prelim. Resp. 27. In fact, neither Petitioner, nor its declarant, points to any disclosure outside of its annotated version of Fig. 1(b) that describes the alleged openings. See Pet. 40; Ex. 1008 ¶ 101.

Patent Owner states correctly that "the only 'openings' described in Yamamoto are formed in an insulating layer made of silicon nitride [insulating layer 6], not in the pixel electrode 5." Prelim Resp. 28. The openings required by claim 1 are explicitly recited as openings in the pixel electrode, consistent with Figure 8A of the '176 Specification discussed above. Thus, Petitioner has not shown sufficiently that Yamamoto teaches openings in the pixel electrode, as required by claim 1.

Petitioner states, in the alternative,

"[t]o the extent that the openings described in Yamamoto are not consistent with the interpretation of the '176 patent, it would have been obvious to one skilled in the art to configure the opening in Yamamoto in the fashion described by Koike, that is, by configuring the opening under and in alignment with the light shielding layer, in order to block light as taught by Koike."

Pet. 40. We determine that because there is no opening in the pixel electrode of Yamamoto, logic dictates there can be no motivation to modify such an opening in the pixel electrode as suggested by Petitioner.

Even if we assume that Petitioner intended to say that the openings in the insulating layer could be combined with the teachings of Koike, Petitioner does not provide any specific rationale for such a modification to Yamamoto. Petitioner, citing its declarant, states that

one of ordinary skill in the art would recognize . . . would recognize that Yamamoto is directed to the exact same art as Koike, the art of liquid crystal display design. A person of ordinary skill in the art would have been motivated (in early 1996) to combine the teachings of Yamamoto and Koike given the numerous similarities between the two references, the common problems addressed, and the fact that Yamamoto references Koike in the patent application. For example, both references seek to improve the viewing angle of active matrix LCDs by utilizing dual domain twisted nematic technology combined with light shielding electrodes to minimize discontinuities from affecting display quality. Both disclose that the light shield layer be located between the two domains and that two domains are within each pixel. Both teach to apply a voltage bias to the light shield layer to improve the performance of the LCD. Further both references teach the use of rubbing technology to achieve the two twisted nematic domains. Given the extensive similarities between the two references, it would have been obvious to consider the two disclosures together.

Pet. 36–37 (citing Ex. 1008, ¶94.)

At best, Petitioner relies on impermissible hindsight with respect to combining the respective teachings of Yamamoto with Koike. *Cheese Sys., Inc. v. Tetra Pak Cheese & Powder Sys., Inc.*, 725 F.3d 1341, 1352 (Fed. Cir. 2013) (“Obviousness ‘cannot be based on the hindsight combination of components selectively culled from the prior art to fit the parameters of the patented invention.’”). Petitioner does not explain why one of ordinary skill

in the art would have had a sufficient reason or would have been motivated to move the opening in the insulating layer of Yamamoto into the pixel electrode of Yamamoto other than the hindsight motivation provided by the '176 patent Specification itself.

As to the similarities between the references listed by Petitioner in the quotation above, the fact references are similar or even “extensively” similar is not the test to determine whether references can be combined for the purpose of obviousness. The fact that the references relied upon all relate to similar subject matter does not amount to the reasoning or rationale required to support the legal conclusion of obviousness. Such statements do not provide a rationale for *why* such references should be combined to render the claims obvious. The mere recitation of elements being prior art is not necessarily sufficient to show obviousness. “[A] patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art.” *KSR*, 550 U.S. at 418.

We have reviewed the proposed ground of obviousness over Koike and Yamamoto against claims 1 and 3–6, and we are not persuaded that Petitioner has established a reasonable likelihood that it would prevail in its challenge to claims 1 and 3–6 on this ground.

III. CONCLUSION

The information presented does not show that there is a reasonable likelihood that Petitioner would prevail at trial with respect to at least one

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claim of the '176 patent, based on any grounds presented in the Petition. On this record, we deny the petition for *inter partes* review of claims 1 and 3–6.

IV. ORDER

Accordingly, it is
ORDERED that the Petition is *denied* as to all challenged claims, and no trial is instituted.

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