UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

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Ex parte BRIAN E. AUFDERHEIDE, JOSEPH C. SPANG,
JONATHAN P. MAAG and SAMUEL F. PELLICORI

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Appeal No. 2005-2666
Application 09/496,634[1]

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HEARD: November 15, 2005

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Before KIMLIN, PAK, and WARREN, Administrative Patent Judges.

PAK, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on an appeal under 35 U.S.C. § 134 from the examiner's refusal to allow claims 1 through 8, 10, 11, 13 through 15, 21 and 24 through 50, which are all of the claims pending in the present application.

[1] Application for patent filed February 2, 2000.

APPEALED SUBJECT MATTER

According to the appellants (Brief, page 2):

Claims 1-8, 10, 11, 13-15, 21 and 24-40, 47, 49 and 50 stand or fall together.
Claims 41-46 and 48 stand or fall together.

Therefore, for purposes of this appeal, we select claims 10 and 44 as representative of all of the claims on appeal and decide the propriety of the examiner's rejection set forth in the Answer based on these claims alone consistent with 37 CFR § 1.192(c)(7) (2003) and 37 CFR § 42.37(C)(1)(vii)(2004). Claims 10 and 44 are reproduced below:

> 10. A touch screen having a user interface configured for receiving a touch input from a user, comprising:
> a film, wherein the touch screen is configured to provide visual indicia through the film, the film having an exterior side closer to the touch input and an interior said farther from the touch input; and
> an anti-reflective coating including a first layer adjacent the interior side, a second layer adjacent the first layer, and a third layer adjacent the second layer so that the second layer is between the first layer and third layer, wherein the third layer has a sheet resistivity of at least about 200 ohms per square and is configured to sense a positions of the touch input.
>
> 44. The touch screen of Claim 10 wherein the anti-reflective coating means is configured to provide a reflection of less than about 4 percent at an air interface associated with the touch screen.

Contrary to the appellants' allegation in the amended Brief and

Reply Brief, the "DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS" section of the specification defines the preferred touch screens encompassed by the claims on appeal as follows (page 5, lines 18-21):

> With reference to Figures 1 and 2, a touch screen 10 is embodied as Dynaclear™ 4-wire analog resistive touch panel. Alternatively, screen 10 can be a matrix touch screen, **or other type of apparatus for sensing touches.** Touch screen 10 includes a flex layer 20, a spacer 30, and a stable layer 40. (Emphasis added.)

PRIOR ART

The prior art references relied upon by the examiner are:

Kuhlman	4,786,767	Nov. 22, 1988
Olson et al. (Olson)	6,261,700 B1	Jul. 17, 2001 (Filed May 27, 1999)

REJECTION

Claims 1 through 8, 10, 11, 13 through 15, 21 and 24 through 50 stand rejected under 35 U.S.C. § 103(a) as unpatentable over the combined disclosures of Kuhlman and Olson.

OPINION

We have carefully reviewed the claims, specification and applied prior art, including all of the arguments advanced by the examiner and the appellants in support of their respective

positions. This review has led us to conclude that the examiner's Section 103 rejection is well founded. Accordingly, we affirm the examiner's Section 103 rejection. Our reasons for this determination follow.

Under Section 103, the obviousness of an invention cannot be established by combining the teachings of the prior art references absent some teaching, suggestion or incentive supporting the combination. ACS Hospital Systems, Inc. v. Montefiore Hospital, 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984). This does not mean that the cited prior art references must specifically suggest making the combination. B.F. Goodrich Co. V. Aircraft Braking Systems Corp., 72 F.3d 1577, 1582, 37 USPQ2d 1314, 1318 (Fed. Cir. 1996); In re Nilssen, 851 F.2d 1401, 1403, 7 USPQ2d 1500, 1502 (Fed. Cir. 1988)). Rather, the test for obviousness is what the combined teachings of the prior art references would have suggested to those of ordinary skill in the art. In re Young, 927 F.2d 588, 591, 18 USPQ2d 1089, 1091 (Fed. Cir. 1991); In re Keller, 642 F.2d 413, 425, 208 USPQ 871, 881 (CCPA 1981). This test requires us to take into account not only the specific teachings of the prior art references, but also any inferences which one skilled in the art would reasonably be expected to draw therefrom. In re Preda,

401 F.2d 825, 826, 159 USPQ 342, 344 (CCPA 1968).

With the above precedents in mind, we turn to the examiner's Section 103 rejection. As is apparent from the Answer and the amended Brief, there is no dispute that Kuhlman teaches a "transparent touch panel membrane switch" corresponding to the claimed touch screen, except for the claimed anti-reflective coating layer. See also Kuhlman's Figures 5 and 6 showing a touch panel having a flexible film 11 having visual indicia, an anti-reflective coating layer 20, spacers 14 and a base layer 12. With respect to claim 10, the appellants only argue that Kuhlman does not teach an anti-reflective coating having high, low and high refractive index layers, with the high refractive index third layer having a sheet resistance of at least **about** 200 ohms per square. See the Brief, pages 3-7.

We are not persuaded by this argument. We initially note that claim 10 does not require an anti-reflective coating to have high, low and high refractive index layers as argued by the appellants. In re Self, 671 F.2d, 1344, 1348, 213 USPQ 1, 5 (CCPA 1982)(The appellants' argument fail from the outset because they are not based on limitations appearing in the claim). The claimed anti-reflective coating has three layers, with the third layer having a sheet resistance of "at least about 200 ohms per

square." See claim 10. We find that Kuhlman teaches and/or would have suggested such features. See column 4, lines 19-57.

Specifically, Kuhlman teaches (column 4, lines 19-29):

> The inner surface of outer sheet 11 carries a transparent, electrically conductive, antireflection layer 20. Layer 20 can be a monolithic construction or it can itself be made up of more than one layer as is shown in FIG. 2. In FIG. 2, 17 is the plastic substrate and layer 20 is itself a three layer stack which includes a transparent metal oxide layer 21, a metal layer 22 and a second transparent oxide layer 24. Layer 20 can also be a transparent antireflective electrically conductive coating of conductive metal oxide.

Kuhlman goes onto state (column 4, lines 37-57):

> Typical examples of monolithic layer 20 include a single indium-tin oxide layer . . . and the like. Examples of the multilayer high index-low index layer of 500 A to 2000A thickness including transparent dielectric-metal-dielectric stacks wherein 21 and 24 are the dielectric layers and 22 is the metal layer . . . . .
> This layer 20, whether presented as a monolith or as a multilayer stack, should have substantial electrical conductance, i.e., less than 200 ohms per square . . .

As correctly found by the examiner (the Answer, page 7):

> The appellant admits that the measured sheet resistance of the outer layer is the same as the measure sheet resistance of the stack (see page 6 of [the] Appeal Brief). Therefore, when Kuhlman discloses that the stack may have a conductance (resistivity) of less than 200 ohms per square (column 4, lines 53-57), Kuhlman is disclosing that the resistivity of the outer layer [third layer] may be less than 200 ohms per square.

It follows that Kuhlman teaches, inter alia, an anti-reflective

coating defined by a three layer stack, with an outer third layer having a sheet resistivity of less than 200 ohms per square. As properly determined by the examiner (the Answer, page 6), the phrase "a sheet resistivity of at least about 200 ohms per square" recited in claim 10 embraces "a sheet resistivity of less than 200 ohms per square" in Kulhman, e.g., a sheet resistivity of 199.9999 ohms per square, since the term "about" as used by the appellants permit some tolerance. See In re Pappas, 214 F.2d 172, 176-77, 102 USPQ 298, 301 (CCPA 1954); In re De Vaney, 185 F.2d 679, 683, 88 USPQ 97, 101 (CCPA 1950); In re Ayers, 154 F.2d 182, 185, 69 USPQ 109, 112 (CCPA 1946).

In any event, from our perspective, one of ordinary skill in the art would have been led to employ, inter alia, the claimed sheet resistivity due to its closeness to Kuhlman's sheet resistivity, with a reasonable expectation of successfully obtaining the same or similar utilities. In re Peterson, 315 F.3d 1325, 1329, 65 USPQ2d 1379, 1382 (Fed. Cir. 2003), citing Titanium Metals Corp. v. Banner, 778 F.2d 775, 783, 227 USPQ 773, 779 (Fed. Cir. 1985)("We have also held that a prima facie case of obviousness exists when the claimed range and the prior art range do not overlap but are close enough such that one skill in the art would have expected them to have the same properties.").

To the extent that the claims require their anti-reflective coating to have high, low and high refractive index layers, we concur with the examiner that the combined teachings of Kuhlman and Olson would have led one of ordinary skill in the art to employ such a feature. As indicated supra, Kuhlman teaches a touch screen comprising an anti-reflective coating having a single indium-tin oxide (ITO) layer or multi-layers. See also column 4, lines 37-57 and column 5, lines 5-18. In reference to forming an anti-reflective coating on the plastic substrate of the type discussed in Kuhlman, Olson teaches (column 21, line 45 to column 22, line 5):

> One of the reasons for the versatility or metal oxides in optically functional coatings is that unlike other materials, they may be used to deposit both reflective or antireflective coatings depending on the configuration of the oxide coating and its chemical composition. Thus, as discussed in International Publication Document WO 96/31343 (Bright), when a single thin layer of metal oxide, such as ITO, having a thickness of about 50 Angstroms to about 3000 Angstroms is deposited over a transparent plastic film, such as polyester or polycarbonate, the amount of light reflected by the polyester or polycarbonate increase substantially. In this case the ITO film acts as "reflective" coating. On the other hand, when alternating layers of ITO and SiO_2 or ITO and SiO_2 with a combined thickness of about 50 Angstroms to about and 3000 Angstroms are deposited over the polyester or polycarbonate

> substance, the amount light reflected by the polyester or polycarbonate decreases substantially. In this case the alternating ITO/SiO_x stack acts as an "antireflective" coating.
>
> Another reason for the versatility of metal oxide coatings, particularly ITO, is that they can be made electrically conductive by doping with a conductive element, such as tin, aluminum, barium, boron, or antimony. When made conductive, the metal oxides also help reduce static charge and electromagnetic emissions.
>
> Whether an optically functional coating is "reflective" or "antireflective" depends on its overall refractive index relative to the refractive index of the underlying substrate.

There is no dispute that the alternating layers of ITO and SiO_2 suggested by Olson produce high, low, and high refractive index layers. See the amended Brief, page 6 and the specification, page 7. Moreover, for the reasons indicated supra, we determine that one of ordinary skill in the art would have been led to dope the high index oxide (dielectric) layers taught by Olson to have the claimed sheet resistivity (desired conductivity) as suggested by Kuhlman.

With respect to claim 44, the appellants only argue that the applied prior art references would not have suggested the claimed anti-reflective property, i.e., "a reflection of less than about 4 percent . . ." See, e.g., the amended Brief, page 8. We do not agree.

As found by the examiner (the Answer, page 9), the appellants state at page 8 of the specification that:

> Conventional touch screens 10 which do not include coatings 62 and 64 generally reflect approximately 8% of the light from each ITO to air interface. Although conventional reflective coatings can reduce this reflection to 4 to 6%, anti-reflective coatings 62 and 64 can further reduce this reflection to 1.5 to 2.5%.

While Olson does not specify the specific reflection percentage recited in claim 44, it, like the appellants, teach that alternating layers corresponding to 62 (ITO) and 64 (Silicon oxide) layers can substantially improve the anti-reflective property compared to the ITO layer alone. Compare Olson, columns 21 and 22 with the specification, page 8. Thus, it is reasonable to infer from the teachings of Olson that the suggested alternating layers would have provided a low reflection percentage, including that claimed. At least, the claimed reflection percentage (antireflective property) would have naturally followed from the suggestion of the applied prior art references. Compare also Ex parte Obiaya, 227 USPQ 58 (Bd. Pat. App. & Int. 1985), aff'd. mem., 795 f.2d 1017 (Fed. Cir. 1986)("The fact that appellant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the

difference would otherwise have been obvious").

CONCLUSION

In view of the foregoing, we determine that the evidence of obviousness, on balance, outweighs the evidence of unobviousness proffered by the appellants. Accordingly, we affirm the examiner's decision rejecting the claims on appeal under Section 103.[2]

[2] In the event of further prosecution, the examiner is advised to consider whether the appellants' admission at pages 1 through 3 of the specification alone, or together with the teachings of Olson discussed supra, affect the patentability of the claimed subject matter. The appellants appear to acknowledge that the claimed touch screen structure, except for using high, low, high refractive index layers as an anti-reflective coating, is well known. See the specification, pages 1-2. Conventionally, analog resistive touch screens use alternating layers of transparent materials having low and high or high and low refractive index layers as an anti-reflective coating, with an outer layer or the entire layers having the claimed sheet resistivity. See the specification, pages 2-3.

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

AFFIRMED

EDWARD C. KIMLIN Administrative Patent Judge	)	
CHUNG K. PAK Administrative Patent Judge	)	BOARD OF PATENT APPEALS AND INTERFERENCES
CHARLES F. WARREN Administrative Patent Judge	)	

CKP:sld

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