

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* FAIZ FEISAL SHERMAN, VLADIMIR GARTSTEIN, KENDAL WILLIAM KERR, HERMAN WILLIAM MEYER, and JIM ALLEN MCCURDY

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Appeal 2007-2756  
Application 11/031,443  
Technology Center 2800

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Decided: November 26, 2007

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Before JOSEPH F. RUGGIERO, ANITA PELLMAN GROSS, and ROBERT E. NAPPI, *Administrative Patent Judges*.

NAPPI, *Administrative Patent Judge*.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 6(b) (2002) of the final rejection of claims 9 through 16, 19 through 28, 31, and 32.

We affirm the Examiner's rejections of these claims.

## INVENTION

The invention is directed to a measuring system to determine the moisture content of a material such as hair. See page 1 of Appellants' Specification. Claim 9 is representative of the invention and reproduced below:

9. A sensor for measuring health of hair, comprising:
  - a directional coupler having a pair of generally parallel first and second strips defining a coupling gap therebetween; and
  - a high frequency signal generator electrically coupled to said first strip and operable to couple power to said second strip with the hair placed across said coupling gap to thereby generate a coupled power signal in said second strip having an amplitude related to health of the hair.

## REFERENCES

Downey	US 4,877,042	Oct. 31, 1989
Kretschmer	DE 3,938,391 A1	Jul. 5, 1990
Sainomoto <sup>1</sup>	JP 04-038463	Feb. 7, 1992

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<sup>1</sup> We note the Examiner has provided two documents from inventor Sainomoto, a translated abstract of Japanese Patent Application JP 04-038463, and an English translation of the full disclosure of Japanese Patent Application JP 04-58903. Both references teach a hair brush with a moisture sensor. However, as the rejection refers to the JP 04-038463 application, we rely on the reference for only what is disclosed in the abstract. As Appellants have not presented arguments directed to the teachings of Sainomoto, we have not provided a translation of the full disclosure of JP 04-038463. Nonetheless, should there be further prosecution of this application, the Examiner should provide a translation of the full disclosure of JP 04-038463.

## REJECTIONS AT ISSUE

Claims 9 through 15, 19, and 20 stand rejected under 35 U.S.C. § 102(b) as being unpatentable over Kretschmer.

Claims 9 through 15, 19 through 27, 31, and 32 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Sainomoto in view of Kretschmer.

Claims 16 and 28 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Sainomoto in view of Kretschmer and Downey.

Throughout the opinion, we make reference to the Brief (received September 25, 2006) and the Answer (mailed October 6, 2006) for the respective details thereof.

## ISSUES

Appellants contend that the Examiner's rejection of claims 9 through 15, 19, and 20 under 35 U.S.C. § 102(b) is in error. Appellants argue that Kretschmer teaches using two strips and that the reflection of a signal is used to determine the moisture content. Appellants contrast this with claim 9 which measures impedance based upon power coupled from the first strip to the second strip across the coupling gap. (Br. 3, 4.) Thus, Appellants conclude that "Kretschmer does not teach or suggest the capability of generating a coupled signal from the first strip to the second strip having amplitude related to the health of hair. Rather, the device taught by Kretschmer is limited to measuring moisture in terms of reflected signal strength." (Br. 4.)

The Examiner responds in the Answer, stating:

Kretschmer discloses a signal transmitted through transmission line  $l_{2.1}$  towards a gap 3 separating  $l_{2.1}$  from transformation line  $l_{2.2}$ . See

Appeal Brief, page 4, first full paragraph; Kretschmer translation, page 3, second full paragraph. Contrary to appellees' reading, Kretschmer states that it is the signal received from the transformation line  $l_{2.2}$  that is passed to the evaluation unit for moisture measurement:

At the end of the transformation line  $l_{2.2}$  is the output-coupling transistor, which serves to couple out and rectify the HF energy and to reinforce the obtained direct voltage. The direct voltage signal is taken at resistor 5.5 and fed to an evaluation unit (not illustrated).

Kretschmer translation, page 3, second full paragraph. The evaluation unit therefore is receiving a signal from the transformation line  $l_{2.2}$ . The signal at  $l_{2.2}$  is that which is transmitted through the measured material; "[t]he non-reflected portion is distributed to the slotted aerial 3 and the transformation line  $l_{2.2}$ ." Kretschmer translation, page 3, last paragraph. The evaluation unit therefore is receiving the signal transmitted from  $l_{2.1}$  across gap 3 to parallel strip  $l_{2.2}$ .

Further evidence for the utilization of the transmitted signal for measurement is found in the description of the operation of the device. Kretschmer describes the difference in signal transmission strength between dry (paragraph spanning pages 3 and 4) and moist (page 4, first and second full paragraphs) material.

For dry material, the material couples very little energy across the gap 3 to the transformation line  $l_{2.2}$ , thereby resulting in a weak signal at the output coupling transistor 2 which is sent to the evaluation unit; "very little is coupled to the transformation line  $l_{2.2}$ . This means that the output coupling is largely decoupled by the oscillator transistor 1 and no signal or a very weak signal is present." Kretschmer translation, paragraph spanning pages 3 and 4.

(Answer, 6, 7.)

Appellants contend that the Examiner's rejections of claims 9 through 15, 16, 19 through 28, 31, and 32 under 35 U.S.C. § 103(a) is in error. On pages 4 through 6 of the Brief, Appellants' arguments raise the same issues directed to the teachings of Kretschmer as raised with respect to the rejection under 35 U.S.C. § 102(b).

Thus, the contentions of the Appellants present us with the issue of whether the Examiner erred in finding that Kretschmer teaches a signal generator electrically coupled to a first strip and operable to couple power to a second strip with the hair placed across the coupling gap to generate a coupled power signal in the second strip having an amplitude related to health of the hair. Appellants' contentions raise this issue for each of the rejections; thus, one issue applies to each of the rejections. Appellants have not separately argued the claims covered by each of the rejections; thus for each rejection we group all of the rejected claims together. See 35 C.F.R. § 41.37(c)(1)(vii).

#### FINDINGS OF FACT

1. Appellants' Specification, on page 8, ll. 11-15, identifies that the "health of hair" is related to the water absorption (moisture content) of the hair.
2. Kretschmer teaches a sensor for measuring moisture content of material. Page 1 of the translation.
3. Kretschmer's sensor includes two strips  $l_{2.1}$  and  $l_{2.2}$ . These strips are separated by slotted aerial, item 3, which serves as a series discontinuity (i.e. a gap between the strips). See figure 1 and first paragraph on page 3 of the translation.
4. Strip  $l_{2.1}$  is connected to an oscillator transistor, item 1, and together they form a microwave oscillator. Figure 1 and first paragraph on page 3 of the translation.
5. Strip  $l_{2.2}$  is connected to an output coupling transistor "which serves to couple out and rectify the HF energy." This energy is

used to feed an evaluation unit. Second paragraph on page 3 of the translation.

6. The impedance of the slotted aerial causes the high frequency energy in strip  $l_{2.1}$  to be reflected back and very little energy is coupled to strip  $l_{2.2}$ . Third paragraph on page 3 of the translation.
7. In the presence of an object whose moisture content is to be measured, the impedance of the slotted aerial changes, resulting in less reflection of energy back into strip  $l_{2.1}$  and more energy being coupled into strip  $l_{2.2}$ . Thus, strips  $l_{2.1}$  and  $l_{2.2}$  are coupled more strongly. Second and third paragraphs on page 4 of the translation.
8. Sainomoto (JP 04-038463) teaches a hair brush with a sensor to measure moisture content of hair. (Abstract).

## ANALYSIS

Rejection of claims 9 through 15, 19, and 20 under 35 U.S.C. § 102(b).

Appellants' arguments have not persuaded us that the Examiner erred in finding that Kretschmer teaches a signal generator electrically coupled to a first strip and operable to couple power to a second strip with the hair placed across the coupling gap to generate a coupled power signal in the second strip having an amplitude related to health of the hair, as claimed. As discussed above, Appellants' arguments do not separately address the claims of the rejection under 35 U.S.C. § 102(b); thus, we select claim 9 as a representative claim. Claim 9 recites that there is a high frequency generator coupled to one strip and that power is coupled to a second strip with hair across the gap and the amplitude of the coupled power is representative to the health of the hair. Appellants' Specification defines health of hair as

being related to the moisture content of the hair; thus, a signal identifying moisture content is representative of hair health. (Fact 1). Further, we note that contrary to Appellants' assertions, claim 9 does not recite measuring the impedance based upon power coupled from one strip to another. Thus, we consider the scope of claim 9 as including a sensor with two strips and that when hair is placed across the strips, power will be coupled from one strip to another and provide a signal indicating the moisture of the hair.

Kretschmer teaches a moisture sensor with two strips separated by a gap. (Facts 2 and 3). The gap is provided by aerial item 3, which serves as a discontinuity for the strips. (Fact 3). The presence of an object to have moisture content measured (hair) in proximity to the gap formed by the aerial changes the characteristic impedance of the aerial, and power is coupled from a first strip to the second strip. (Fact 7). The power coupled to the second strip is then measured at an evaluation unit. (Fact 5). While the principle of operation of Kretschmer's device includes reflections of power in the first strip, Kretschmer teaches that it is the power coupled into the second strip that is representative of the moisture in the material (hair). (Facts 5 through 7). Thus, Appellants' arguments have not persuaded us of error in the Examiner's finding that Kretschmer teaches a signal generator electrically coupled to a first strip and operable to couple power to a second strip with the hair placed across the coupling gap to generate a coupled power signal in the second strip having an amplitude related to health of the hair, as claimed. Accordingly, we affirm the Examiner's rejection of claims 9 through 15, 19, and 20 under 35 U.S.C. § 102(b) as being unpatentable over Kretschmer.

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Rejection of claims 9 through 15, 19 through 27, 31, and 32 under 35 U.S.C. § 103(a).

Appellants' arguments, on pages 4 and 5 of the Brief, raise the same issue as discussed above, that Kretschmer teaches measuring moisture by measuring reflected energy, not coupled energy as claimed. Further, Appellants assert that Sainomoto similarly does not teach measuring moisture using a sensor with such coupling of power. As discussed above with respect to the rejection based upon 35 U.S.C. § 102(b), Appellants' arguments have not persuaded us that the Examiner erred in finding that Kretschmer's sensor reads on Appellants' sensor of claim 9. Further, we note that Sainomoto teaches that it is known in the art to employ a moisture sensor in a hair brush to measure moisture in hair. Thus, Appellants' arguments have not persuaded us of error in the Examiner's rejection of claims 9 through 15, 19 through 27, 31, and 32 under 35 U.S.C. § 103(a), and we affirm the Examiner's rejection of these claims.

Rejection of claims 16 and 28 under 35 U.S.C. § 103(a).

Appellants' arguments, on pages 5 and 6 of the Brief, raise the same issue as discussed above, that Kretschmer teaches measuring moisture by measuring reflected energy, not coupled energy as claimed. Further, Appellants assert that Sainomoto and Downey similarly do not teach measuring moisture using a sensor with such coupling of power. As discussed above with respect to the rejection based upon 35 U.S.C. § 102(b), Appellants' arguments have not persuaded us that the Examiner erred in finding that Kretschmer's sensor reads on Appellants' claimed sensor. Thus, Appellants' arguments have not persuaded us of error in the

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Examiner's rejection of claims 16 and 28 under 35 U.S.C. § 103(a), and we affirm the Examiner's rejection of these claims.

Appellants' arguments have not persuaded us of error in the Examiner's rejections of claims 9 through 16, 19 through 28, 31, and 32. Accordingly we affirm the Examiner's rejections of claims 9 through 16, 19 through 28, 31, and 32.

## ORDER

The decision of the Examiner is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED

tdl/gvw

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