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BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte SHINICHI NAKANO, TEPPEI MIURA, and NOBORU KATO

Appeal 2019-001099
Application 15/050,539
Technology Center 2600

Before JASON V. MORGAN, MICHAEL J. STRAUSS, and JEREMY J. CURCURI, Administrative Patent Judges.

CURCURI, *Administrative Patent Judge.*

DECISION ON APPEAL

STATEMENT OF THE CASE

Pursuant to 35 U.S.C. § 134(a), Appellant[1] appeals from the Examiner's decision to reject claims 2–6. We have jurisdiction under 35 U.S.C. § 6(b).

We REVERSE.

[1] We use the word Appellant to refer to "applicant" as defined in 37 C.F.R. § 1.42(a). Appellant identifies the real party in interest as Murata Manufacturing Co., Ltd. Appeal Br. 2.

CLAIMED SUBJECT MATTER

The claims are directed to "an information terminal apparatus that performs near field communication with an external apparatus." Spec. ¶ 1. Claim 2, reproduced below, is illustrative of the claimed subject matter:

> 2. An information terminal apparatus comprising:
>
> a display;
>
> a conductive housing including a first principal surface, a second principal surface opposite to the first principal surface, a slit, a first aperture provided in the second principal surface, and a second aperture provided in the first principal surface; and
>
> a coil; wherein
>
> a front surface of a screen of the display is exposed to the first aperture;
>
> the slit extends from the first aperture to the second aperture;
>
> the coil is magnetically coupled to the conductive housing; and
>
> a width of the slit is smaller than a width of the first aperture.

REFERENCES

The prior art relied upon by the Examiner is:

Name	Reference	Date
Bungo	US 2014/0015724 A1	Jan. 16, 2014
Vakil	US 2012/0274800 A1	Nov. 1, 2012
Rappoport	US 2013/0094126 A1	Apr. 18, 2013
Casden	US 2010/0148968 A1	June 17, 2010

REJECTIONS

Claims 2–6 are rejected under pre-AIA 35 U.S.C. § 103(a) as obvious over Bungo, Vakil, Rappoport, and Casden. Final Act. 2–5.

OPINION

The Obviousness Rejection of Claims 2–6 over Bungo, Vakil, Rappoport, and Casden

The Examiner finds Bungo, Vakil, Rappoport, and Casden teach all limitations of claim 2. Final Act. 2–4. The Examiner finds Bungo teaches most limitations of claim 2 but does not teach "a first aperture provided in the second principal surface"; "a front surface of a screen of the display is exposed to the first aperture"; and "the slit extends from the first aperture to the second aperture." Final Act. 2–3. The Examiner notes that Bungo teaches "a camera lens is fitted in said aperture . . . parallel to said coil." Final Act. 3.

The Examiner finds Vakil teaches a tablet with a front-facing camera and a back-facing camera, and reasons that one skilled in the art would have modified the apparatus of Bungo "for dual camera capability whereas a first aperture for front camera provided in the second principal surface and exposed to the front surface of a screen of the display." Final Act. 3.

The Examiner finds Rappoport teaches "a tablet having NFC [(near field communication)] with external device via openings," and reasons that one skilled in the art would have further modified the apparatus of Bungo "in order to accommodate both a front-facing camera and a back-facing camera while NFC communications is in place." Final Act. 3–4.

The Examiner finds Casden teaches "a RFID device having a mechanically rugged metallic housing slotted to define a radio frequency

antenna . . . wherein respective end points of the slit are considered as apertures." Final Act. 4 (citing Casden Figs. 2–3, ¶¶ 11–14, 23–26, 31). The Examiner reasons that one skilled in that art would have further modified Bungo "into having a slit connected to both first aperture and second aperture on surface of said conductive housing, in order to effectuate said conductive housing as an RF antenna by design preference." Final Act. 4.

Among other arguments, Appellant presents the following principal arguments:

"[T]he metal housing 20 of Casden is **not** magnetically coupled to a coil as required by Appellant's Claim 2, because Casden clearly teaches that the metal housing 20 **itself** acts as a single turn spiral antenna that is connected to an RFID IC 32." Appeal Br. 8 (citing Casden Figs. 1–3, ¶¶ 16, 17, 23, 24).

> Because the antenna apparatus 100 of Bungo and the antenna 28 of Casden each have a structure, arrangement, configuration, and functionality that are completely different from one another, the Examiner's alleged modification to Bungo of incorporating the teaching of Casden so as to include 'a slit connected to both first aperture and second aperture on surface of said conductive housing,' which is not taught or suggested by the teachings of Casden or any other evidence of record for the reasons explained above, would have had an unpredictable effect on the operation of the antenna apparatus 100 of Bungo including the resonance tuning component 130 and the conductor layer 110.

Appeal Br. 15.

In response to these arguments, the Examiner explains

> Thus, corresponding to [the] structural teaching of Bungo (1190-1210 of Fig. l0B), it would have been obvious to one of ordinary skill in the art before the invention was made to incorporate [the] teaching of Casden (e.g., slits on both surface being connected)

> and modify the improved apparatus of Bungo, Vakil and Rappoport [to] have a slit on the front surface (where [the] display resides) connected to the front-facing camera aperture and [] another slit [that] extends from the back camera aperture on the rear surface, in order to improve [an] NFC communications field on the front surface [to be] as good as on the back surface. And obviously, said slit on the front surface would have a width that is smaller than a width of the front-facing camera aperture.

Ans. 8–9.

In reply, Appellant further argues

> The purpose and function of the slit (60) of Casden is to define a half turn radio frequency antenna 36 so that the tag housing 40 also becomes the antenna 36 for the RFID transponder 32 contained in the housing, and the tag housing 40 thus serves the dual function of mechanically containing and protecting the RFID transponder 32 and of receiving and radiating RFID radio frequency signals between RFID transponder 32 and a suitable RFID tag reader unit (see paragraphs [0031]–[0032] of Casden). However, neither Casden nor any other evidence of record teaches, suggests, or even hints that modifying the terminal device in Figs. 10A–10D of Bungo to include a slit on the front surface where the display resides would have "[improved] NFC communications field on the front surface as good as on the back surface" as alleged by the Examiner.

Reply Br. 10–11

Appellant's arguments persuade us that, on the record before us, the Examiner's reasons to further modify Bungo, after modification in light of Vakil and Rappoport, lack a rational underpinning. Thus, Appellant's arguments persuade us that, on the record before us, the Examiner erred in making the rejection.

Claim 2 is directed to performing near field communication, and requires "the coil is magnetically coupled to the conductive housing." Claim 2. Current is induced in the surfaces of the housing, and due to the claimed arrangement of the slit and apertures, near field communication is performed with radiating magnetic field waves. *See* Spec. ¶ 59.

Bungo is also directed to performing near field communication. *See* Bungo ¶ 11. In a technique having some similarity to that recited in claim 2, Bungo discloses "an aperture and a slit that adjoins the aperture." Bungo ¶ 3.

In making the rejection, the Examiner modifies the terminal device of Bungo, in view of Vakil, further modifies the terminal device of Bungo in view of Rappoport, and even further modifies the terminal device of Bungo in view of Casden. *See* Final Act. 2–4. Our decision hinges on the modification in view of Casden.

Casden discloses the following:

> FIG. 2 of the accompanying drawings illustrates another embodiment of the invention where a metal housing 20 having both a metal front 22 and metal sides 24 is cut with a slit 26 to define a single turn radio frequency antenna 28 integral with the housing 20. *Appropriate points of the integrated housing/antenna 20, 28, such as the opposite ends 30 of the single turn antenna, are electrically connected to the radio frequency output of the reader/writer circuits for injecting the antenna with RF power*.

Casden ¶ 24 (emphasis added).

Thus, Casden operates according to a different principal than the information terminal apparatus of claim 2, which requires that "the coil is magnetically coupled to the conductive housing." Claim 2.

Accordingly, the Examiner's reasons for further modifying the already modified terminal device of Bungo lack a rational underpinning on

the record. *See* Appeal Br. 15; *see also* Reply Br. 10–11. In particular, it is not apparent how the single turn antenna formed by Casden's housing is readily-applicable to an information terminal apparatus as claimed where "the coil is magnetically coupled to the conductive housing." Claim 2.

The Examiner's finding that the proposed further modification to Bungo in light of Casden is "by design preference" (Final Act. 4) is insufficient because we do not readily see the applicability of Casden's teachings to Bungo. Design choice applies when old elements in the prior art perform the same function as the now claimed structures. *See In re Kuhle*, 526 F.2d 553, 555 (CCPA 1975) (use of claimed feature solves no stated problem and presents no unexpected result and "would be an obvious matter of design choice within the skill of the art"). However, when the claimed structure performs differently from the prior art a finding of obvious design choice is precluded. *In re Gal*, 980 F.2d 717, 719 (Fed. Cir. 1992) (finding of obvious design choice precluded when claimed structure and the function it performs are different from the prior art). *See In re Chu*, 66 F.3d 292, 298-99 (Fed. Cir. 1995) ("design choice" is appropriate where the applicant fails to set forth any reasons why the differences between the claimed invention and the prior art would result in a different function).

Further, the Examiner's finding that the proposed further modification to Bungo in light of Casden is "to improve NFC communications field" (Ans. 9) is also insufficient because we do not see how Casden's teachings would improve Bungo, and the Examiner has not otherwise provided supporting evidence on the record for such a modification to Bungo.

We, therefore, do not sustain the Examiner's rejection of claim 2.

We also do not sustain the Examiner's rejection of claims 3–6, which depend from claim 2.

CONCLUSION

The Examiner's rejection is reversed.

DECISION SUMMARY

In summary:

Claims Rejected	35 U.S.C. §	References	Affirmed	Reversed
2–6	103(a)	Bungo, Vakil, Rappoport, Casden		2–6

REVERSED