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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/480,584	04/06/2017	Satoshi TANAKA	MURATA-57129	1228
116	7590	08/21/2020	EXAMINER	
PEARNE & GORDON LLP 1801 EAST 9TH STREET SUITE 1200 CLEVELAND, OH 44114-3108			NGUYEN, LONG T	
			ART UNIT	PAPER NUMBER
			2842	
			NOTIFICATION DATE	DELIVERY MODE
			08/21/2020	ELECTRONIC

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte SATOSHI TANAKA, TETSUAKI ADACHI,
KAZUO WATANABE, MASAHIITO NUMANAMI, and
YASUHISA YAMAMOTO

Appeal 2019-004994
Application 15/480,584
Technology Center 2800

Before KAREN M. HASTINGS, BRIAN D. RANGE, and
MERRELL C. CASHION, JR., *Administrative Patent Judges*.

HASTINGS, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Appellant¹ appeals under 35 U.S.C. § 134(a) from the Examiner's rejections under 35 U.S.C. § 103 of claims 1, 2, and 17 as unpatentable over Kryshptopin (US 9,490,753 B1, Nov. 8, 2016) with Sinitsky (US 8,704,605 B1, Apr. 22, 2014) and of claims 1, 2, 5, 6, 9, 10, 13, 14, and 17–20 as

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

unpatentable over Ni (US 2015/0171797 A1, June 18, 2015), Okuma (US 7,839,217 B2, Nov. 23, 2010), and Sinitsky.

We have jurisdiction over the appeal under 35 U.S.C. § 6(b).

We AFFIRM.

CLAIMED SUBJECT MATTER

Claim 1 is representative of the subject matter claimed and is reproduced below (emphasis added to highlight key disputed limitation):

1. A bias circuit that supplies a first bias current or voltage to an amplifier that amplifies a radio frequency signal, the bias circuit comprising:

a field-effect transistor (FET), wherein a power supply voltage is supplied to a drain of the FET and a source of the FET outputs the first bias current or voltage;

a first bipolar transistor, wherein a collector of the first bipolar transistor is connected to a gate of the FET, a base of the first bipolar transistor is connected to the source of the FET, the first bipolar transistor has a common emitter, and a constant current is supplied to the collector of the first bipolar transistor; and

a first capacitor, wherein a first end of the first capacitor is connected to the collector of the first bipolar transistor and the first capacitor suppresses variations in a collector voltage of the first bipolar transistor, wherein

a capacitance value of the first capacitor is larger than a value of a parasitic capacitance between the gate of the FET and the source of the FET, and

the capacitance value of the first capacitor is between 2pF and 6pF.

OPINION

Upon consideration of the evidence relied upon and each of Appellant's contentions as set forth in the Appeal Brief, as well as the Reply

Brief, we determine that Appellant has not demonstrated reversible error in the Examiner's rejections (*e.g.*, *generally* Ans.). *In re Jung*, 637 F.3d 1356, 1365–66 (Fed. Cir. 2011) (explaining the Board's long-held practice of requiring Appellant to identify the alleged error in the Examiner's rejection). We sustain the rejections for the reasons expressed by the Examiner in the Final Office Action and the Answer.

We add the following primarily for emphasis.

It has been established that “the [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 Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007); *see also In re Fritch*, 972 F.2d 1260, 1264–65 (Fed. Cir. 1992) (a reference stands for all of the specific teachings thereof as well as the inferences one of ordinary skill in the art would have reasonably been expected to draw therefrom).

At the outset, it is noted that Appellant's arguments focus on the failure of Sinitsky to teach or suggest the limitations reciting a capacitance value being between 2pF and 6pF for each rejection (Appeal Br. 5–7). Accordingly, both rejections stand or fall together and the dependent claims all stand or fall with the independent claim.

Furthermore, while Appellant alleges that the Examiner fails to appreciate fundamental differences between Kryshtopin and Sinitsky such that there is no reason “to think that the rationale for setting capacitor C1 of Sinitsky to be greater than the parasitic capacitance of the transistor would also apply to capacitor 144 of Kryshtopin” (Appeal Br. 4), Appellant makes no specific arguments regarding the circuit of Ni/Okuma (Appeal Br. 7).

Appellant argues that, even though the Examiner found Sinitsky “teaches that a capacitor could have a value greater than a parasitic capacitance of a connected transistor,” the Examiner relied upon impermissible hindsight in combining the references because there is “no reason to think that the rationale for setting capacitor C1 of Sinitsky . . . would also apply to capacitor 144 of Kryshtopin” (Appeal Br. 4) and further that “the desired signal levels . . . are different” in these references (Reply Br. 4).

Appellant also states that “even if it is determined [that] one of ordinary skill in the art would have been motivated” to combine the references, the “claimed range of 2pF-6pF is critical and thus the conclusion of obviousness is still improper” (Appeal Br. 6).

These arguments fail to show reversible error in the Examiner’s rejections for reasons explained by the Examiner (Ans. 10–20). Appellant’s arguments are also not persuasive of error as they fail to consider the applied prior art as a whole and the inferences that one of ordinary skill would have made. Under the flexible inquiry set forth by the Supreme Court, the PTO must take account of the “inferences and creative steps,” or even routine steps, that an ordinary artisan would employ. *Ball Aerosol and Specialty Container, Inc. v. Limited Brands, Inc.*, 555 F.3d 984, 993 (Fed. Cir. 2009) (citation omitted). As the Examiner explains (Final Act. 9–10; Ans. 19–20) setting capacitance values for a specific circuit’s parameters to, e.g., between 2pF and 6pF, would have been within the skill and creativity of one of ordinary skill in the art to provide for a specific circuit’s parameters.

Appellant contends that the claimed values of 2pF to 6pF represent critical capacitance values based on the discussion on paragraphs 25–27 of

the Specification. Appeal Br. 6. However, this discussion only points to these values as an example without identifying any criticality. See Spec ¶ 27 (“For example, the capacitance value of the capacitor . . . be a capacitance value of such a size that the transistor 220 suitably operates (for example, around 2 pF to 6 pF”). Moreover, claim 1 recites an apparatus (bias circuit) and it is well established that claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function, *see, e.g., In re Schreiber*, 128 F.3d 1473, 1477–78 (Fed. Cir. 1997).

On this record, Appellant has not sufficiently explained why the claimed subject matter is “more than the predictable use of prior art elements [or steps] according to their established functions.” *KSR*, 550 U.S. at 417.

As discussed, above, it is also well established that when there is a reason to conclude that the structure of the prior art is capable of performing the claimed function, the burden shifts to the applicant to show that the claimed function patentably distinguishes the claimed structure from the prior art structure. *In re Schreiber*, 128 F.3d at 1478. Appellant’s contention that the Examiner’s position is based on improper use of design choice appears misdirected, since the Examiner’s position was premised on the circuit of the applied prior art combination(s) being capable of being designed for (or operating at) the recited capacitance values in accordance with the ultimate use of the circuit (Ans. 17–20).

In any event, the law is replete with cases in which the difference between the claimed invention and the prior art is the claimed range or other variable within the claims. These cases have consistently held that the Appellant must show that the particular range is critical, generally by showing that the claimed range achieves unexpected results relative to the

prior art range. *In re Woodruff*, 919 F.2d 1575, 1578 (Fed. Cir. 1990). Moreover, as pointed out by the Examiner (Ans. 19), it is well settled that it would have been obvious for an artisan with ordinary skill to develop workable or even optimum ranges for result-effective parameters. *In re Woodruff*, 919 F.2d at 1577; *In re Boesch*, 617 F.2d 272, 276 (CCPA 1980); *In re Aller*, 220 F.2d 454, 456 (CCPA 1955).

Furthermore, “[a] recognition in the prior art that a property is affected by the variable is sufficient to find the variable result-effective.” *In re Applied Materials, Inc.*, 692 F.3d 1289, 1297 (Fed. Cir. 2012) (“The Board primarily rested its finding that the dimensions were result-effective variables on Applied’s admission The Board did not err in relying on Applied’s admission because the admission indicates that the prior art taught that the dimensions could be modified and that modification would affect pad performance, which was sufficient to find the dimensions to be result-effective variables. While Applied also stated that the prior art ‘is *silent* as to the impact of the groove pitch and width on performance,’ the prior art did not need to disclose the result with any greater specificity than it already did. . . . [T]he prior art need not provide the exact method of optimization for the variable to be result-effective.”). Here, it is apparent to one of ordinary skill in the art that the capacitance range of the capacitor affects the operation of final circuit (*e.g.*, Ans. 18, 19). Further, Appellant does not explain adequately how the capacitance values distinguish the structure of the claimed bias circuit from the structure of the bias circuit from the combined teachings of the cited art.

Accordingly, substantial evidence supports the Examiner’s obviousness determination of the capacitance range recited in claim 1.

In light of these circumstances, we affirm the Examiner's § 103 rejections of the appealed claims.

CONCLUSION

In summary:

Claims Rejected	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed
1, 2, 17	103	Kryshtopin, Sinitsky	1, 2, 17	
1, 2, 5, 6, 9, 10, 13, 14, 17-20	103	Ni, Okuma, Sinitsky	1, 2, 5, 6, 9, 10, 13, 14, 17-20	
Overall Outcome			1, 2, 5, 6, 9, 10, 13, 14, 17-20	

TIME PERIOD FOR RESPONSE

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