

The opinion in support of the decision being entered today was *not* written for publication and is *not* binding precedent of the Board.

Paper No. 15

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte WILLIAM JAMES RICHARDS

Appeal No. 2000-1508
Application No. 08/810,442

ON BRIEF

Before BARRETT, DIXON, and BARRY, *Administrative Patent Judges*.
BARRY, *Administrative Patent Judge*.

DECISION ON APPEAL

The examiner rejected claims 1-3, 5, 8, and 10. The appellant appeals therefrom under 35 U.S.C. § 134(a). We affirm-in-part.

BACKGROUND

The appellant's invention facilitates encryption and decryption in a cable television ("CATV") system. Analog CATV systems scramble programs and transmits the scrambled programs to customers. The customers are equipped with "set-top boxes" for unscrambling the programs.

Digital signal transmission, which possesses characteristics different from those of analog signal transmission, is coming into widespread use. The invention presents modes of encryption and decryption suited to the unique capabilities of digital signal transmission. Specifically, multiple decryption keys are used to decrypt encrypted material transmitted to customers of a CATV system. For example, a CATV broadcaster encrypts the movie "The Bells of St. Mary's" using a segment key ("SK"). The broadcaster then encrypts the SK using a program key ("PK") and encrypts the PK using a customer code key. A customer's possession of his customer code allows him to decrypt the PK. Possession of the PK, in turn, allows the customer to decrypt the SK, which then allows him to decrypt "The Bells of St. Mary's."

A further understanding of the invention can be achieved by reading the following claim:

1. In a decrypting apparatus, usable by a subscriber to restricted-access television, and which decrypts digital television programs, the improvement comprising:

- a) first computation means for decrypting program content which is encrypted by a relatively weak first key(SK)
- b) second computation means, of substantially similar computational power as the first

computation means, for decrypting a relatively stronger second key, which encrypts said first key (SK); and

c) means for receiving all externally supplied input, including all program content and all keys, on a single input port, and delivering said input to the first and second computation means.

The prior art applied by the examiner in rejecting the claims follows:

Gammie et al. ("Gammie")	5,237,610	Aug. 17, 1993
Piosenka et al. ("Piosenka")	5,389,738	Feb. 14, 1995
Schneier, <i>Applied Cryptography</i> , 265-78 and 357-63 (2d ed. 1995).		

Claims 3 and 5 stand rejected under 35 U.S.C. § 112, ¶ 2, as indefinite. Claims 3 and 10 stand rejected under 35 U.S.C. § 112, ¶ 1, as non-enabled. Claim 10 stands rejected under § 112, ¶ 1, as lacking a written description. Claims 1, 5, 8, and 10 stand rejected under 35 U.S.C. § 102(b) as anticipated by Gammie. Claims 2 and 3 stand rejected under 35 U.S.C. § 103(a) as obvious over Gammie in view of Schneier. Claim 5 stands rejected under § 103(a) as obvious over Gammie in view of Piosenka.

OPINION

After considering the record, we are persuaded that the examiner did not err in rejecting claims 1 and 8 as anticipated, claim 2 as obvious, claim 3 as indefinite and non-enabled, and claim 10 as non-enabled and lacking a written description. He did err, however, in rejecting claim 3 as obvious; claim 5 as indefinite, anticipated, and obvious; and claim 10 as anticipated. Accordingly, we affirm-in-part. Our opinion addresses the following rejections:

- indefiniteness rejection of claims 3 and 5
- enablement rejection of claims 3 and 10
- written description rejection of claim 10
- anticipation and obviousness rejections of claims 1-3, 8, and 10
- anticipation and obviousness rejections of claim 5.

I. Indefiniteness Rejection of claims 3 and 5

Rather than reiterate the arguments of the examiner or appellant *in toto*, we address the two points of contention therebetween. First, the examiner asserts, "[w]ith respect to claim 3, the meaning '[key] of triple-DES type' is unclear." (Examiner's Answer at 6.) The appellant argues that three

sentences in "the specification, page 7," (Reply Br. at 12), clarify the meaning.

"The test for definiteness is whether one skilled in the art would understand the bounds of the claim when read in light of the specification. *Orthokinetics Inc., v. Safety Travel Chairs, Inc.*, 806 F.2d 1565, 1576, 1 USPQ2d 1081, 1088 (Fed. Cir. 1986). If the claims read in light of the specification reasonably apprise those skilled in the art of the scope of the invention, Section 112 demands no more. *Hybritech, Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 1385, 231 USPQ 81, 94 (Fed. Cir. 1986)." *Miles Labs., Inc. v. Shandon Inc.*, 997 F.2d 870, 875, 27 USPQ2d 1123, 1126 (Fed. Cir. 1993).

Here, claim 3 specifies in pertinent part the following limitations: "said second key is of triple-DES type." One skilled in the art would understand DES to be a type of encryption algorithm, however, rather than a type of key. See Schneier, 270 ("DES is a block cipher. . . . DES is a symmetric algorithm.") The sentences relied on by the appellant confirm such a distinction by referring to "single-DES encryption," (Spec. at 7), and "more complex triple-DES encryption. .

. ." (*Id.*) We agree with the examiner that "the phrase '[key] of triple-DES type' . . . is not defined." (Examiner's Answer at 12.) Although the sentences relied on by the appellant also disclose "using a 56-bit encryption key," (*id.*), and "a stronger 112-bit key," (*id.*), there is no mention of triple-DES type key. Therefore, we affirm the rejection of claim 3 as indefinite.

Second, the examiner asserts, "[w]ith respect to claims 5, the phrase 'said keys' recited in 5d lacks proper antecedent basis as it is unclear whether it refers to 'said first keys,' refers to 'said second keys,' or refers to 'both said first and second keys.'" (Examiner's Answer at 6.) The appellant argues that he "cannot see any reasonable interpretation of claim 5, wherein 'said keys' in paragraph (d) refers to anything other than all previously recited keys." (Reply Br. at 12.)

One skilled in the art would understand "said keys" to be a shorthand reference to all keys previously recited in claim 5, viz., to both the first and second keys. Therefore, we reverse the rejection of claim 5 as indefinite.

II. Enablement Rejection of Claims 3 and 10

We address the two points of contention between the examiner and appellant. First, the examiner asserts, "[t]he specification does not enable one of ordinary skill in the art to make and use the invention of claim 3. It is unknown how is one [sic] to make and use a *triple DES type* key." (Examiner's Answer at 7.) The appellant alleges, "[t]riple DES key" is a term-of-art. Such keys are well known." (Reply Br. at 6.)

"To be enabling under §112, a patent must contain a description that enables one skilled in the art to make and use the claimed invention." *Atlas Powder Co. v. E. I. Du Pont de Nemours & Co.*, 750 F.2d 1569, 1576, 224 USPQ 409, 413 (Fed. Cir. 1984) (citing *Raytheon Co. v. Roper Corp.*, 724 F.2d 951, 960, 220 USPQ 592, 599 (Fed. Cir. 1983)). "That some experimentation is necessary does not preclude enablement; the amount of experimentation, however, must not be unduly extensive." *Id.* at 1576, 224 USPQ at 413. "Argument in the brief does not take the place of evidence in the record." *In re Schulze*, 346 F.2d 600, 602, 145 USPQ 716, 718 (CCPA 1965) (citing *In re Cole*, 326 F.2d 769, 773, 140 USPQ 230, 233 (CCPA 1964)).

Here, as explained regarding the indefiniteness of claim 3, one skilled in the art would understand DES to be a type of encryption algorithm rather than a type of key. No evidence in the record, moreover, supports the appellant's argument that such keys are well known. Absent a definition of the claimed "key . . . of triple-DES type," we are not persuaded that one skilled in the art would be able to make and use the claimed invention without undue experimentation. Therefore, we affirm the rejection of claim 3 as non-enabled.

Second, the examiner asserts, "[t]he specification does not enable one of ordinary skill in the art to make and use the invention of claim 10. The specification does not address what makes the bus (or any means) require that the 'key must be entered onto said bus in encrypted form to be accepted by a computation means.'" (Examiner's Answer at 8.) The appellant argues, "the only ports of entry for keys PK and SK are busses 55 and 56 in Figure 8 of the Specification. However, these keys must be entered in encrypted form onto these busses. If a non-encrypted key is entered, then gibberish will be delivered by the computation means." (Appeal Br. at 24-25.)

"Analysis begins with a key legal question -- *what is the invention claimed?*" *Panduit Corp. v. Dennison Mfg. Co.*, 810 F.2d 1561, 1567, 1 USPQ2d 1593, 1597 (Fed. Cir. 1987). Here, claim 10 recites in pertinent part the following limitations: "key (SK) must be entered onto said bus in encrypted form to be accepted by a computation means." Accordingly, the limitations require checking a key on a bus to determine whether the key is encrypted before the key can be accepted.

The next question is whether the claimed invention is enabled. Figure 8, cited by the appellant, "illustrates the decryption process occurring at the customer's site." (Spec. at 20.) In describing the decryption process, the appellant's specification merely mentions that "[k]ey SK is encrypted using PK as a key, as indicated by phrase [sic] 56, and is decrypted in block 23, using actual PK, on bus 63, to produce actual SK, on bus 64." (Spec. at 21.) The specification fails to mention, let alone describe, checking a key on a bus to determine whether the key is encrypted before the key can be accepted. Therefore, we affirm the rejection of claim 10 as non-enabled.

III. Written Description Rejection of Claim 10

The examiner asserts, "[c]laim 10, moreover, deals with subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor, at the time the application was filed, had possession of the claimed invention." (Examiner's Answer at 8.) The appellant argues, "the only ports of entry for keys PK and SK are busses 55 and 56 in Figure 8 of the Specification. However, these keys must be entered in encrypted form onto these busses. If a non-encrypted key is entered, then gibberish will be delivered by the computation means." (Appeal Br. at 24-25.)

"Whether the description requirement is met is a question of fact. . . ." *Ralston Purina Co. v. Far-Mar-Co., Inc.* 772 F.2d 1570, 1575, 227 USPQ 177, 179 (Fed. Cir. 1985) (citing *In re Wilder*, 736 F.2d 1516, 1520, 222 USPQ 369, 372 (Fed. Cir. 1984). "Although [the applicant] does not have to describe exactly the subject matter claimed, . . . the description must clearly allow persons of ordinary skill in the art to recognize that [he or she] invented what is claimed.'" *Vas-Cath, Inc. v. Mahurkar*, 935 F.2d 1555, 1563, 19 USPQ2d 1111, 1116 (Fed. Cir. 1991) (quoting *In re Gosteli*, 872 F.2d 1008, 1012, 10 USPQ2d 1614, 1618 (Fed.

Cir. 1989)). "[T]he test for sufficiency of support . . . is whether the disclosure of the application relied upon 'reasonably conveys to the artisan that the inventor had possession at that time of the later claimed subject matter.'" *Ralston Purina Co.*, 772 F.2d at 1575, 227 USPQ at 179 (quoting *In re Kaslow*, 707 F.2d 1366, 1375, 217 USPQ 1089, 1096 (Fed. Cir. 1983)). "Application sufficiency under §112, first paragraph, must be judged as of the filing date [of the application]." *Vas-Cath*, 935 F.2d at 1566, 19 USPQ2d at 1119 (citing *United States Steel Corp. v. Phillips Petroleum Co.*, 865 F.2d 1247, 1251, 9 USPQ2d 1461, 1464 (Fed. Cir. 1989)).

Here, claim 10 is not an original claim. To the contrary, the appellant admits that "[c]laims 8-10 [were] added by . . . [a]mendment." (Paper No. 3 at 4.) Furthermore, he fails to show that the original specification, which included the original claims, disclosed the limitations we enumerated regarding the non-enablement of claim 10. In the amendment, the appellant alleged that support for the claim could be found on page 24 of his specification in the "paragraphs before 'Fourth Form of the Invention.'" (Paper No. 3 at 5.) These paragraphs, however, merely teach that "the only ports of entry for keys PK and SK are

busses 55 and 56. However, these keys must be entered in encrypted form onto these busses. Thus, even if an attacker learns the keys, that is insufficient." (Spec. at 24.) The paragraphs fail to mention, let alone describe, checking a key on a bus to determine whether the key is encrypted before the key can be accepted. Absent such a description, we find that the disclosure of the application fails to reasonably convey to the artisan that the appellant had possession at the time of the invention the later claimed subject matter. Therefore, we affirm the rejection of claim 10 as lacking an adequate written description.

IV. Anticipation and Obviousness Rejections
of Claims 1-3, 8 and 10

Claims that are not argued separately stand or fall together. *In re Kaslow*, 707 F.2d 1366, 1376, 217 USPQ 1089, 1096 (Fed. Cir. 1983) (citing *In re Burckel*, 592 F.2d 1175, 201 USPQ 67 (CCPA 1979)). When the patentability of a dependent claim is not argued separately, in particular, the claim stands or falls with the claim from which it depends. *In re King*, 801 F.2d 1324, 1325, 231 USPQ 136, 137 (Fed. Cir. 1986) (citing *In re Sernaker*,

702 F.2d 989, 991, 217 USPQ 1, 3 (Fed. Cir. 1983); *In re Burckel*, 592 F.2d 1175, 1178-79, 201 USPQ 67, 70 (CCPA 1979)).

Here, rather than arguing separately the patentability of claim 2, the appellant stipulates, "[c]laims 2 . . . depend[s] from claim 1. The discussion of claim 1 applies to claim 2." (Appeal Br. at 12.) Therefore, claim 2 stands or falls with representative claim 1.

The appellant then argues, "[c]laim 1 recites that *all external input* is received on a *single port*. Gammie provides input to DECODER 506 on (1) link 505 and (2) through module 514." (Appeal Br. at 8.) The examiner answers, "Gammie's element 514 which is part of the decryption apparatus (second computation means) receives its input over the same input port, satellite link 505, as the program descrambler 508 (first computation means)." (Examiner's Answer at 10.)

"[T]he Board must give claims their broadest reasonable construction. . . ." *In re Hyatt*, 211 F.3d 1367, 1372, 54 USPQ2d 1664, 1668 (Fed. Cir. 2000). "Moreover, limitations are not to be read into the claims from the specification." *In re Van*

Geuns, 988 F.2d 1181, 1184, 26 USPQ2d 1057, 1059 (Fed. Cir. 1993) (citing *In re Zletz*, 893 F.2d 319, 321, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989)).¹

Here, representative claim 1 specifies in pertinent part the following limitations: "means for receiving all externally supplied input, including all program content and all keys, on a single input port, and delivering said input to the first and second computation means." Giving the claim its broadest reasonable construction, the limitations merely require *inter alia* means for receiving all externally supplied input via a single port.

¹ "The PTO broadly interprets claims during examination of a patent application since the applicant may 'amend his claims to obtain protection commensurate with his actual contribution to the art.'" *In re Yamamoto*, 740 F.2d 1569, 1571, 222 USPQ 934, 936 (Fed. Cir. 1984) (quoting *In re Prater*, 415 F.2d 1393, 1404-05, 162 USPQ 541, 550 (CCPA 1969)). "This approach serves the public interest by reducing the possibility that claims, finally allowed, will be given broader scope than is justified. Applicants' interests are not impaired since they are not foreclosed from obtaining appropriate coverage for their invention with express claim language." *Id.* at 1571-72, 222 USPQ at 936 (citing *Prater*, 415 F.2d at 1405 n.31, 162 USPQ at 550 n.31).

For its part, dependent claim 8 specifies in pertinent part the following limitations: "the first and second computation means receive neither keys nor program content from a source apart from said single input." Giving the dependent claim its broadest reasonable interpretation, the limitations merely require *inter alia* receiving keys and program content only via the single port of claim 1.

"[H]aving ascertained exactly what subject matter is being claimed, the next inquiry must be into whether such subject matter is novel." *In re Wilder*, 429 F.2d 447, 450, 166 USPQ 545, 548 (CCPA 1970). "[A]nticipation is a question of fact." *Hyatt*, 211 F.3d at 1371, 54 USPQ2d at 1667 (citing *Bischoff v. Wethered*, 76 U.S. (9 Wall.) 812, 814-15 (1869); *In re Schreiber*, 128 F.3d 1473, 1477, 44 USPQ2d 1429, 1431 (Fed. Cir. 1997). "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros., Inc. v. Union Oil Co.*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987) (citing *Structural Rubber Prods. Co. v. Park Rubber Co.*, 749 F.2d 707, 715, 223 USPQ 1264, 1270 (Fed. Cir. 1984); *Connell v. Sears, Roebuck & Co.*, 722 F.2d 1542, 1548, 220 USPQ 193, 198 (Fed. Cir.

1983); *Kalman v. Kimberly-Clark Corp.*, 713 F.2d760, 771, 218 USPQ 781, 789 (Fed. Cir. 1983)).

Here, we find that Gammie's decoders also receive all externally supplied input via a single port, viz., a satellite link port; its keys and program content are received only via the single port. Specifically, "[t]he scrambled programs and the key are transmitted through satellite link 105, and received by conditional-access decoder 106." Col. 2, ll. 45-57. Although Figure 5 depicts two paths for programs and keys, the depiction is merely functional. The Figure also shows that the programs and keys are both transmitted via a single satellite link 505. Furthermore, "[e]very patent application and reference relies to some extent upon knowledge of persons skilled in the art to complement that [which is] disclosed. . . ." *In re Bode*, 550 F.2d 656, 660, 193 USPQ 12, 16 (CCPA 1977) (quoting *In re Wiggins*, 488 F.2d 538, 543, 179 USPQ 421, 424 (CCPA 1973)). Those persons "must be presumed to know something" about the art "apart from what the references disclose." *In re Jacoby*, 309 F.2d 513, 516, 135 USPQ 317, 319 (CCPA 1962). Here, based on the showing that the programs and keys are both transmitted via the single satellite link 505, we find that person skilled in the art

would have known that both paths enter the decoder 506 via a single, physical port. Therefore, we affirm the rejection of claim 1; of claim 2, which falls therewith; and of claim 8.

Turning to claims 3 and 10, we recall that a rejection based on prior art should not be grounded on "speculations and assumptions." *In re Steele*, 305 F.2d 859, 862, 134 USPQ 292, 295 (CCPA 1962). "All words in a claim must be considered in judging the patentability of that claim against the prior art. If no reasonably definite meaning can be ascribed to certain terms in the claim, . . . the claim becomes indefinite." *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970).

Here, for the reasons we explained in addressing the indefiniteness, enablement, and written description rejections, our analysis of claims 3 and 10 leave us in a quandary about what the claims specify. Speculations and assumptions would be required to decide the scope of the claims. Therefore, we reverse *pro forma* the rejection of claim 3 as obvious and of claim 10 as anticipated.²

²The reversal is based on procedure rather than on the merits of the prior art rejections. It is not to be construed as

V. Anticipation and Obviousness Rejections of Claim 5

The appellant argues, "[c]laim 5 recites that keys are never exposed to external view." (Appeal Br. at 8.) He adds, "Gammie is to the contrary. He states that keys are 'observable:'. . . ." (*Id.*) The examiner answers, "[a]pplicant has selected a phrase from the background description of the prior art which Gammie treats by his invention (see fir [sic] example, fig 7)." (Examiner's Answer at 10.) He adds, "the key is protected by encryption when outside the device and Piosenka is used to teach the protection inside the device as well so that the key is never unprotected." (*Id.* at 11.)

Claim 5 specifies in pertinent part the following limitations: "never exposing said keys to external view, outside an integrated circuit." Giving the claim its broadest reasonable interpretation, the limitations merely require *inter alia* that keys are never exposed outside an integrated circuit.

meaning that we consider the claims to be patentable as presently drawn.

"In rejecting claims under 35 U.S.C. Section 103, the examiner bears the initial burden of presenting a *prima facie* case of obviousness." *In re Rijckaert*, 9 F.3d 1531, 1532, 28 USPQ2d 1955, 1956 (Fed. Cir. 1993) (citing *In re Oetiker*, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992)). "'A *prima facie* case of obviousness is established when the teachings from the prior art itself would appear to have suggested the claimed subject matter to a person of ordinary skill in the art.'" *In re Bell*, 991 F.2d 781, 783, 26 USPQ2d 1529, 1531 (Fed. Cir. 1993) (quoting *In re Rinehart*, 531 F.2d 1048, 1051, 189 USPQ 143, 147 (CCPA 1976)).

Here, the decoder shown in Figure 7 of Gammie, on which the examiner relies, features "a replaceable external security element 714 which is mounted on the exterior of the decoder 706, for example, as a plug-in module." Col. 12, ll. 24-27.

"Although the replaceable security module has the advantages of providing a guarantee that network security is recoverable following a breach, it also has some disadvantages." Col. 6, ll. 54-57. One disadvantage is that a key signal is exposed outside the program descrambler/routing manager 708 of Figure 7. Specifically, "[t]he key signal which is generated by replaceable

security module . . . is observable at its transfer point. . . .”
Id. at 11. 59-61. We interpret such observableness as indicating that the key signal is outside an integrated circuit embodying the program descrambler/routing manager 708.

The examiner fails to show that Piosenka cures the defect of Gammie. We agree with the appellant that “Piosenka merely provides an approach to preventing detection of data, *once the data is stored within his IC.*” (Appeal Br. at 11.) We further agree with him that “the data still must be *transferred* into the IC. Plainly, that transfer is undertaken using the pins shown in his Figure 1. Those are visible from the outside.” (*Id.*) Therefore, we reverse the rejection of claim 5 as anticipated and as obvious.

CONCLUSION

In summary, the rejections of claims 1 and 8 under 35 U.S.C. § 102(b), claim 2 under 35 U.S.C. § 103(a), claim 3 under § 112, ¶ 1 and ¶ 2, and claim 10 under § 112, ¶ 1, are affirmed. In contrast, the rejection of claim 3 under § 103(a); claim 5 under § 112, ¶ 2, § 102(b), and § 103(a); and of claim 10 under § 102(b) are reversed. Our affirmances are based only on the

arguments made in the briefs. Arguments not made therein are neither before us nor at issue but are considered waived.

No time for taking any action connected with this appeal may be extended under 37 C.F.R. § 1.136(a).

AFFIRMED-IN-PART

LEE E. BARRETT)	
Administrative Patent Judge)	
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)	BOARD OF PATENT
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