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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte BROCK R. GARDNER and MICHAEL P. CZAMARA¹

Appeal 2018-008201
Application 13/171,235
Technology Center 2100

Before ROBERT E. NAPPI, ELENI MANTIS MERCADER, and
MICHAEL T. CYGAN, *Administrative Patent Judges*.

NAPPI, *Administrative Patent Judge*.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134(a) of the Examiner's Final Rejection of claims 1 through 7, 9 through 11, 13 through 15, 18 through 20, 25, and 26. Dependent claims 16, and 21 through 23 have been indicated as containing allowable subject matter and claims 27 through 29 have been allowed. We have jurisdiction over the pending claims under 35 U.S.C. § 6(b).

We affirm-in-part.

¹ According to Appellant, the real party in interest is Amazon Technologies, Inc. App. Br. 2.

INVENTION

The invention is directed to a data storage module which includes an array of solid state storage devices. The module including a fault detecting system and an ejector system where when a fault is detected in a solid state storage device it is automatically ejected. *See* Abstract, paragraphs 87 through 89 and Figure 7 of Appellant's Invention.

Claim 1 is illustrative of the invention and reproduced below:

1. A data storage module, comprising:
 - a chassis enclosing and supporting a plurality of carrier circuit board assemblies and a power supply, wherein the chassis is configured to mount in a rack;
 - a plurality of groups of removable solid state data storage devices wherein each group comprises a separate plurality of sets of removable solid state data storage devices, and wherein respective groups of removable solid state data storage devices are coupled to respective separate carrier circuit board assemblies of the plurality of carrier circuit board assemblies, wherein the plurality of circuit board assemblies with respective groups of coupled removable solid state data storage devices are vertically arranged in a plurality of tiers, one above another, in the chassis;
 - wherein the power supply is coupled to, and configurable to supply power to, each of the plurality of groups of removable solid state data storage devices coupled to the plurality of carrier circuit board assemblies included in the chassis;
 - a data storage controller coupled to each of the plurality of groups of removable solid state data storage devices coupled to the plurality of carrier circuit board assemblies included in the chassis, wherein the data storage controller is configured to stripe data across at least two separate sets of the removable solid state data storage devices in at least two tiers of the plurality of tiers; and

a fault detection system configured to detect a fault in at least one particular removable solid state storage device of the removable solid state data storage devices;

wherein at least one of the carrier circuit board assemblies comprises at least one ejection mechanism configured to automatically eject the at least one particular removable solid state data storage device in response to the fault detection system detecting a fault in the at least one particular removable solid state storage device, wherein to automatically eject the at least one particular removable solid state storage device the at least one ejection mechanism is configured to push at least a portion of the at least one particular removable solid state storage device away from an upper surface of the at least one carrier circuit board assembly.

REJECTIONS AT ISSUE

The Examiner has rejected claims 1, 3, 4, and 20 under 35 U.S.C. § 103 as unpatentable over Fitzgerald (US 2011/0035540 A1), Tsai (US 2006/0063400 A1), Rothman (US 2005/0015430 A1), Flynn (US 2008/0140724 A1), Gange (US 7,458,842 B1), and Poguntke (US 2009/0308930 A1). Answer 3–9.²

The Examiner has rejected claim 2 under 35 U.S.C. § 103 as unpatentable over Fitzgerald, Tsai, Rothman, Flynn, Gange, Poguntke, and Hughes (US 2010/0027220 A1). Answer 9–10.

² Throughout this opinion we refer to the Appeal Brief, filed January 29, 2018 (“App. Br.”); Final Action, mailed August 28, 2017 (“Final Act.”); and the Examiner’s Answer, mailed June 13, 2018 (“Answer”).

The Examiner has rejected claim 5 under 35 U.S.C. § 103 as unpatentable over Fitzgerald, Tsai, Rothman, Flynn, Gange, Poguntke, and Singer (US 2009/0257185). Answer 10–11.

The Examiner has rejected claim 25 under 35 U.S.C. § 103 as unpatentable over Fitzgerald, Tsai, Rothman, Flynn, Gange, Poguntke, and Velez-McCaskey (US 6,089,128). Answer 11–12.

The Examiner has rejected claim 26 under 35 U.S.C. § 103 as unpatentable over Fitzgerald, Tsai, Rothman, Flynn, Gange, Poguntke, and Leech (US 2006/0168462 A1). Answer 12.

The Examiner has rejected claims 6, 9, 15, and 18 under 35 U.S.C. § 103 as unpatentable over Aswadhati (US 9,250,687 B1) Flynn, Singer, Gange, and Poguntke, and Hughes. Answer 12–18.

The Examiner has rejected claim 7 under 35 U.S.C. § 103 as unpatentable over Aswadhati, Flynn, Singer, Gange, Poguntke, and Hughes. Answer 19.

The Examiner has rejected claims 10, 11, and 19 under 35 U.S.C. § 103 as unpatentable over Aswadhati, Flynn, Singer, Gange, and Poguntke, and Rothman. Answer 19–20.

The Examiner has rejected claim 13 under 35 U.S.C. § 103 as unpatentable over Aswadhati, Flynn, Singer, Gange, Poguntke and Choy (US 2005/0015430). Answer 21.

The Examiner has rejected claim 14 under 35 U.S.C. § 103 as unpatentable over Aswadhati, Flynn, Singer, Gange, and Poguntke, and Ku (US 2004/0058577 A1). Answer 22.

ANALYSIS

We have reviewed Appellant's arguments in the Briefs, the Examiner's rejection, and the Examiner's response to the Appellant's arguments. Appellant's arguments have not persuaded us of error in the Examiner's rejections of claims 1 through 5, 20, 25, and 26 under 35 U.S.C. § 103 as modified to include Velez-McCaskey. However, Appellants' arguments have persuaded us of error in the Examiner's rejection of claims 6, 7, 9 through 11, 13 through 15, 18, and 19.

ISSUES

Independent claim 1

Appellant argues that the Examiner's rejection of independent claim 1 is in error as the combination of the references do not teach a fault detection system and ejection mechanism configured to automatically eject a removable solid state data storage device as claimed and Examiner's rationale to combine the teachings of Fitzgerald and Poguntke is flawed. App Br. 8–16. Specifically, Appellant asserts that Poguntke, which the Examiner relies upon for teaching automatically ejecting the solid state drive does not teach automatically ejecting the drive, and that the Examiner has misconstrued the term automatically. App. Br. 8–13. Further, Appellant argues that the Examiner's rationale to combine the references is using hindsight reasoning and that the ejection mechanism of Poguntke would not work with Fitzgerald's flash blade and would counter the intended purpose of Fitzgerald, to reduce areal density of flash chips. App. Br. 16.

The Examiner finds that Poguntke teaches the claimed automatically ejecting a memory. Answer 5. Further the Examiner states:

It is noted that the term “automatically” recited in the claim reads on the automatic of the reference because the claims do not specifically define that the automation process is entirely independent of external physical impact from the time the solid state storage device is detected faulty. The claim only recites that the ejection mechanism ejects the removable solid state storage device automatically.

Id. (emphasis omitted.) Additionally, in response to Appellant’s arguments that the claims recite automatically ejecting the memory in response to detecting a fault, the Examiner states that “the phrase ‘in response to’ in the limitation can be a delayed response that may require additional interaction prior to the automation step.” Answer 7 (citing paragraphs 82, 89 and 98 of Appellant’s Specification to show that the determination of a fault is a separate function from ejection). Finally, in response to Appellant’s arguments concerning the rationale to combine Gange and Poguntke, the Examiner states:

In this case, Gange et al. provide a method of removing a memory module requiring all manual operation. Poguntke adds an automated operation in ejecting a memory device. It is common knowledge that performing an operation automatically is useful and mostly time saving compared to fully manual. Therefore, the motivation to combine the two teachings is to utilize the usefulness of push-push type socket so that the flash memory can be quickly and easily removed. The Examiner's reason to combine is supported by the understanding that providing an automatic means to replace a manual activity which accomplished the same result is not sufficient to distinguished over the prior art.

Answer 9.

We have reviewed Appellant’s Specification and the teachings of Poguntke cited by the Examiner and disagree the Examiner’s interpretation of the term directed to an ejection mechanism to automatically eject a

storage device in response to detecting a fault in the storage device as recited in independent claims 1 and similarly recited in independent claim 20.

Independent claim 1 recites “ejection mechanism configured to automatically eject the at least one particular removable solid state data storage device in response to the fault detection system detecting a fault in the at least one particular removable solid state storage device.” Appellant’s Specification does not specifically define the term “automatically eject,” but does contrast automatic ejection with manual ejection, where automatic ejection is based upon the sensed fault and manual ejection is initiated by the user. See paras. 82, 89 and 98). Thus, when interpreted in light of the specification, the limitation directed to “automatically eject a storage device in response to the fault detection system detecting fault” is properly interpreted as not having an intermediate manual step.

The teaching of Poguntke cited by the Examiner states that a second push, by a person, will result in an automatic ejection, this automatic ejection, this not in response to a detection circuit but rather in response to a user input. As such, we disagree with the Examiner’s finding that Poguntke teaches this limitation. We do however, note that Velez-McCaskey, relied upon by the Examiner to reject claim 25, does teach this feature. Velez-McCaskey states “[t]he chassis... includes an automatic disk eject feature which facilitates identification and replacement of failed disks. ... When the storage system detects a failed disk in the array ... the system controller actuates the solenoid associated with the location of that disk and releases the disk for ejection.” Col. 10. ll. 21–32. We find that this teaching of ejecting disks coupled with the other references in the Examiner’s rejection of representative claim 1, teaches and suggests the disputed feature of

automatically ejecting a storage device in response to the fault detection system detecting fault. Accordingly, we amend the Examiner's rejections to include Velez-McCaskey as evidence of this disputed feature and designate this rejection as a new rejection. We consider that the skilled artisan would combine the automatic ejection as it facilitates identification and replacement of the failed storage device, i.e. the combination is using a known technique for its known purpose.

With regard to Appellant's arguments directed to the Examiner's rationale to combine the references, we are not persuaded of error. Appellant's argument that the push in SIM card ejecting mechanism is unrelated to would and not function with Fitzgerald's' flash blade is merely attorney argument and Appellant has not cited to evidence to support the assertion that it is unrelated or would not work. It is well settled that mere attorney arguments and conclusory statements, which are unsupported by factual evidence, are entitled to little probative value. *In re Geisler*, 116 F.3d 1465, 1470 (Fed. Cir. 1997). Similarly, Appellant's arguments that modifying Fitzgerald to include the ejection mechanism would reduce the density of flash chips, which is contrary to Fitzgerald's teaching of increasing density, is also unpersuasive of error as it is unsupported by evidence that it would increase the density. Further, even if it did result in a decrease in chip density, this is offset by the facilitation of identifying faulty chips. According, we are not persuaded of error by Appellant's arguments.

In summary, we modify the Examiner's obviousness rejections of independent claims 1, 20, and dependent claims 2 through 5, 25, and 26 to include Velez-McCaskey and adopt the Examiner's findings regarding the un-argued limitations of these claims.

Independent claim 6

Appellant's arguments directed to independent claim 6 present the same issues discussed above with respect to Poguntke not teaching a fault detection system and ejection mechanism configured to automatically eject a removable solid state data storage device. App. Br. 18- 21. Further, Appellant argues that the Examiner has not provided an adequate rationale to combine Aswadhati and Poguntke. App Br. 20–21.

Similar to our discussion above we do not find that Poguntke teaches or suggests fault detection system and ejection mechanism configured to automatically eject a removable solid state data storage device.³ We are also persuaded of error by Appellant's arguments that the Examiner has provided insufficient rationale to combine the references. The Examiner states:

It would have been obvious to one having an ordinary skill in the art at the time of the Applicant's invention to modify the removable flash memories of Fitzgerald et al. and the fault detection system of Gange et al. and to further include the ejection mechanism of Poguntke in order to arrive at the current invention. The motivation of doing so to utilize the usefulness of push-push type socket so that the flash memory can be automatically ejected by the spring mechanism for easy memory removal.

Final Act. 17–18.

We consider this rationale to be insufficient as it addresses Fitzgerald, which is not relied upon to reject claim 6 and does not address Aswadhati which is

³ While as noted above we find that Velez-McCaskey does teach the disputed limitation. We decline exercising our discretion and enter a new rejection amending the Examiner's rejection as done above, as we are persuaded the Examiner's rejection is in error for additional reasons.

relied upon to reject independent claim 6. Thus, we do not sustain the Examiner's rejection of independent claim 6 and the claims which depend thereupon, claims 7, 9 through 11, 13 through 15, 18, and 19.

DECISION

We modify and affirm the Examiner's obviousness rejections of claims independent claims 1, 20, and dependent claims 2 through 5, 25, and 26 to include Velez-McCaskey. As such we designate the rejections of these claims under 35 U.S.C. § 103, as a new ground of rejection.

We reverse the Examiner's obviousness rejections of independent claims 6 and dependent claims, 7, 9 through 11, 13 through 15, 18, and 19.

This Decision contains a new ground of rejection pursuant to 37 C.F.R. § 41.50(b). This section provides that "[a] new ground of rejection . . . shall not be considered final for judicial review."

37 C.F.R. § 41.50(b) also provides that the Appellant, WITHIN TWO MONTHS FROM THE DATE OF THE DECISION, must exercise one of the following two options with respect to the new ground of rejection to avoid termination of the appeal as to the rejected claims:

(1) Reopen prosecution. Submit an appropriate amendment of the claims so rejected or new evidence relating to the claims so rejected, or both, and have the matter reconsidered by the examiner, in which event the prosecution will be remanded to the examiner. . . .

(2) Request rehearing. Request that the proceeding be reheard under § 41.52 by the Board upon the same record. . . .

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-IN-PART; 37 C.F.R. 41.50(b)