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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte DAVID RAYMOND DEMPSKI, JAMES JOSEPH SETTO JR.,
SANDRA LEE FLOWERS, CHERYL MATTHEWS RAKESTRAW,
SAMIR TAYEM, and FRASER G. BOWIE

Appeal 2017-002829
Application 13/688,958
Technology Center 3600

Before JOHN A. JEFFERY, JOHN P. PINKERTON, and JOHN D.
HAMANN, *Administrative Patent Judges*.

JEFFERY, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellants¹ appeal under 35 U.S.C. § 134(a) from the Examiner's decision to reject claims 1–4, 7–10, 19–21, and 23–28. We have jurisdiction under 35 U.S.C. § 6(b). We affirm.

STATEMENT OF THE CASE

Appellants' invention automatically links a Device Forum (DF) and a Quality Center (QC). Specifically, the invention improves efficiency of

¹ Appellants identify the real party in interest as Verizon Communications Inc. App. Br. 2.

device vendors reviewing and resolving support issues by capturing support issues in the DF and automatically importing the captured issues into the QC. *See generally* Abstract; Spec. ¶ 3. Claim 1 is representative:

1. A method comprising:
 - receiving, at a Data Forums (DF) server of a mobile communication network provider, data representative of a support issue provided by a user of a mobile device through an interactive support channel of the mobile communications network provider;
 - establishing, via a DF web service running on the DF server, a DF support case based on the support issue;
 - displaying a portal to facilitate management of a plurality of DF support cases including the DF support case;
 - determining whether the DF support case has been viewed more than a threshold number of times within a predetermined time period;
 - determining, at the DF server, that a criticality field of the DF support case is marked as a new product launch;
 - adjusting, at the DF server, the threshold number of times of views within the predetermined time period downwards to a lower threshold of view times upon determining that the criticality field of the DF support case is the new product launch;
 - forwarding the DF support case from the DF server to a Quality Center (QC) server of the mobile communication network provider upon determining that the criticality field of the DF support case is marked as the new product launch and the lower threshold of view times is exceeded by automatically transmitting an extensible markup language (XML) message to the QC server that instructs the QC server to handle the support issue, the XML message having a description of the DF support case along with replies associated therewith and a plurality of fields including a device manufacturer and a device model;

automatically creating, at the QC server, a QC support case in response to receiving the XML message from the DF server instructing the QC server to handle the support issue by accessing a field-mapping table through an application programming interface (API) that pairs the plurality of fields of the DF support case with the QC support case;

communicating from the QC server to a device vendor server via a network the QC support case for resolution; and

in response to the QC support server communicating the QC support case to the device vendor server for resolution, communicating from the QC server back to the DF server the resolution to the DF support case from the device vendor server.

THE REJECTIONS

The Examiner rejected claims 1–4, 7–10, 19–21, and 23–28 under 35 U.S.C. § 101 as directed to patent-ineligible subject matter. Ans. 24–29.^{2,3}

The Examiner rejected claims 1, 3, 4, 7–9,⁴ and 20 under 35 U.S.C. § 103 as unpatentable over Shroff (US 2008/0040427 A1; Feb. 14, 2008), Fan (US 2011/0072312 A1; Mar. 24, 2011), Boston (US 2008/0263077 A1;

² The Examiner withdrew an earlier § 101 rejection of claims 1–4, 7–10, 19–21, and 23–28, but entered a new ground of rejection under § 101 for those claims. *Compare* Ans. 20 *with* Ans. 24. *Accord* Reply Br. 2 (acknowledging this new ground of rejection). Therefore, only the new ground of rejection under § 101 is before us.

³ Throughout this opinion, we refer to (1) the Appeal Brief filed April 7, 2016 (“App. Br.”); (2) the Examiner’s Answer mailed November 4, 2016 (“Ans.”); and (3) the Reply Brief filed December 15, 2016 (“Reply Br.”).

⁴ Although the Examiner includes cancelled claim 6 in the statement of this rejection, we nonetheless omit that claim here for clarity, and treat the Examiner’s error in this regard as harmless.

Oct. 23, 2008), Hecox (US 2014/0068330 A1; Mar. 6, 2014), and Fisher (US 2008/0172574 A1; July 17, 2008). Ans. 2–11.

The Examiner rejected claim 2 under 35 U.S.C. § 103 as unpatentable over Shroff, Fan, Boston, Hecox, Fisher, and Hawes (US 2014/0052645 A1; Feb. 20, 2014). Ans. 11–12.

The Examiner rejected claims 10, 19, 23, and 24 under 35 U.S.C. § 103 as unpatentable over Shroff, Fan, Boston, Hecox, Fisher, and Bryan (US 2010/0325560 A1; Dec. 23, 2010). Ans. 12–15.

The Examiner rejected claim 21 under 35 U.S.C. § 103 as unpatentable over Shroff, Fan, Boston, Hecox, Fisher, and Hibbets (US 2009/0043882 A1; Feb. 12, 2009). Ans. 15–17.

The Examiner rejected claims 25–28 under 35 U.S.C. § 103 as unpatentable over Shroff, Fan, Boston, Hecox, Fisher, and Kennis (US 2006/0212486 A1; Sept. 21, 2006). Ans. 17–20.

THE INELIGIBILITY REJECTION

The Examiner finds that the claimed invention is directed to an abstract idea, namely resolving customer support issues, which is said to be a method of organizing human activity and an idea of itself. Ans. 24–27, 37. According to the Examiner, the claimed elements do not add significantly more to the abstract idea because, among other things, the claims recite generic computing functionality that implements the recited abstract idea. Ans. 27–29, 31–36. Based on these findings, the Examiner concludes that the claims are ineligible under § 101.

Appellants argue that the claimed invention is not directed to an abstract idea, but rather specific methods involving specific network

handshakes between a DF server, QC server, and a device vendor server based on XML message exchanges. App. Br. 6. According to Appellants, these network communications transmit specific XML message structures, and are not directed to a mathematical algorithm or fundamental economic or longstanding commercial practice. App. Br. 8–9.

Appellants also contend that even if the claims somehow implicate an abstract idea, when considered as an ordered combination, the recited limitations add significantly more to that idea by relying on specific technological operations of a DF server, a QC server, and a device vendor server using a specific XML message structure with the four recited parameters. App. Br. 8–10; Reply Br. 5–7. Appellants add that the claims do not preempt an entire field, nor does the recited XML message protocol merely gather data. App. Br. 10; Reply Br. 7.

ISSUE

Has the Examiner erred in rejecting claims 1–4, 7–10, 19–21, and 23–28 by concluding that they are directed to ineligible subject matter under § 101? This issue turns on whether the claimed invention is directed to an abstract idea and, if so, whether the claim’s elements—considered individually and as an ordered combination—transform the nature of the claim into a patent-eligible application of that abstract idea.

ANALYSIS

To determine whether claims are patent eligible under § 101, we apply the Supreme Court’s two-step test articulated in *Alice Corp. Proprietary Ltd. v. CLS Bank International*, 134 S. Ct. 2347 (2014). First, we determine

whether the claims are directed to a patent-ineligible concept: laws of nature, natural phenomena, and abstract ideas. *Id.* at 2354–55. If so, we then proceed to the second step and examine the claim’s elements—both individually and as an ordered combination—to determine whether the claim contains an “inventive concept” sufficient to transform the claimed abstract idea into a patent-eligible application. *Id.* at 2357.

Alice Step One

Applying *Alice* step one, we are not persuaded of error in the Examiner’s finding that the claimed invention is directed to an abstract idea, namely referring and resolving customer support issues, which not only is a fundamental business practice, but also fundamentally organizes human activity as the Examiner indicates. Ans. 25, 37.

Independent claim 1 recites, in pertinent part, that a DF server (1) receives data representing a support issue,⁵ (2) establishes a DF support case⁶ based on that issue, (3) determines that the DF support case’s “criticality field” is marked as a new product launch, and, if so, (4) lowers the threshold number of views within a predetermined time period, and (5) forwards the DF support case to a QC server if the lower threshold is exceeded. According to claim 1, this forwarding automatically transmits an

⁵ A “support issue” may represent and/or include any complaint, inquiry, request, comment, critique, concern, controversy, matter, problem, or other issue provided by a customer through an interactive channel of a mobile communication network provider. Spec. ¶ 21.

⁶ A “DF support case” may include compiled information related to a support issue upon which the support case is based and/or to a user who provides the support issue. Spec. ¶ 22.

XML message to the QC server instructing that server to handle the support issue, where the message has (1) a DF support case description, (2) associated replies, (3) a device manufacturer field, and (4) a device model field.

Claim 1 further recites that the QC server automatically creates a QC support case⁷ responsive to receiving the message from the DF server by accessing a field-mapping table through an API that pairs the DF support case fields with the QC support case. According to claim 1, the QC support case is then communicated from the QC server to a device vendor server via a network for resolution. The QC server⁸ then communicates the resolution from the device vendor server back to the DF server.

In essence, claim 1's method resolves a user's support issue through a series of referrals of an associated support case and its resolution between three servers. That is, the associated support case is referred (1) from the DF server to the QC server, and then (2) from the QC server to the vendor server. The resolution of that case is then referred (1) from the vendor server to the QC server, and then (2) from the QC server to the DF server.

Despite Appellants' arguments to the contrary (App. Br. 4–8; Reply Br. 2–5), we agree with the Examiner that claim 1 is directed to an abstract

⁷ A “QC support case” may include, among other things, information regarding the manufacturer and model number of the device associated with the QC support case and/or any additional information recommended or necessary for device vendors to address the QC support case or provided by the vendors responsive to the QC support case. Spec. ¶ 23.

⁸ Although claim 1's last clause refers to *the QC support* server, there is no antecedent basis for “the QC support server.” Nevertheless, given the term's context in the claim, we presume that the “QC support server” refers to the QC server.

idea, namely referring and resolving customer support issues, which not only is a fundamental business practice, but also fundamentally organizes human activity as the Examiner indicates. Ans. 25, 37. Such fundamental economic and business practices are often held to be abstract. *See, e.g., Alice*, 134 S. Ct. at 2356 (holding the concept of intermediated settlement is an abstract idea directed to a “fundamental economic practice long prevalent in our system of commerce”) (citation omitted); *see also buySAFE v. Google, Inc.*, 765 F.3d 1350, 1353–54 (Fed. Cir. 2014) (citing cases where contractual relations at issue constituted fundamental economic practices, and noting that forming or manipulating economic relations may involve an abstract idea); *Content Extraction & Transmission LLC v. Wells Fargo Bank, Nat. Ass’n*, 776 F.3d 1343, 1347 (Fed. Cir. 2014) (explaining that claims directed to “the mere formation and manipulation of economic relations” and “the performance of certain financial transactions” have been held to involve abstract ideas).

Furthermore, it is well settled that collecting information is within the realm of abstract ideas—even when the information is limited to particular content. *Elec. Power Grp., LLC v. Alstom S.A.*, 830 F.3d 1350, 1353 (Fed. Cir. 2016). It is also well settled that analyzing information by steps people go through in their minds, or by mathematical algorithms, without more, are essentially mental processes within the abstract idea category. *Id.* at 1354. And merely presenting the results of abstract processes of collecting and analyzing information, without more (such as identifying a particular tool for presentation), is abstract as an ancillary part of such collection and analysis. *Id.*

Similar to the claims at issue in *Electric Power*, the claimed invention here gathers, manipulates, analyzes, and presents information of a specified content, but does not use any particular inventive technology for performing those functions. *Cf. Easyweb Innovations, LLC v. Twitter, Inc.*, 689 F. App'x 969, 969–71 (Fed. Cir. 2017) (unpublished) (holding claims reciting message publishing system that (1) converted part of a received message to a different format, and (2) published the converted portion were directed to the abstract idea of receiving, authenticating, and publishing data).

In essence, the claimed invention is directed to referring and resolving customer support issues—a fundamental business practice that also fundamentally organizes human activity as the Examiner indicates. Ans. 25, 37. Notably, these issue referral and resolution functions are analogous to those performed by technical support staff at a conventional help desk. *See MICROSOFT COMPUTER DICTIONARY* 250 (5th ed. 2002) (defining “help desk” in pertinent part as “[t]echnical support staff who help solve users’ problems with hardware or software systems *or refer such problems to those who can solve them.*”) (emphasis added).

Appellants’ reliance on *McRO, Inc. v. Bandai Namco Games America, Inc.*, 837 F.3d 1299 (Fed. Cir. 2016) on pages 4 and 5 of the Reply Brief is misplaced. *McRo*’s claimed process used a combined order of specific rules that rendered information in a specific format that was applied to create a sequence of synchronized, animated characters. *McRO*, 837 F.3d at 1315. Notably, the recited process *automatically animated characters* using particular information and techniques—an improvement over manual three-dimensional animation techniques that was not directed to an abstract idea. *Id.* at 1316.

But unlike *McRo*, the claimed invention here resolves a user's support issue through a series of referrals of an associated support case and its resolution between three servers. Although referring and resolving support issues as claimed may be beneficial, a claim for a useful or beneficial abstract idea is still an abstract idea. *See Ariosa Diagnostics, Inc. v. Sequenom, Inc.*, 788 F.3d 1371, 1379–80 (Fed. Cir. 2015).

We, therefore, agree with the Examiner that claim 1 is directed to an abstract idea.

Alice Step Two

Nor do the recited elements—considered individually and as an ordered combination—transform the nature of claim 1 into a patent-eligible application of the abstract idea to ensure that the claim amounts to significantly more than that idea. *See Alice*, 134 S. Ct. at 2357.

That the method involves exchanging data between a DF server, a QC server, and a device vendor server under the recited conditions does not change our conclusion. As the Examiner finds, the claimed invention merely uses generic computing components to perform the recited abstract idea. Ans. 28–29, 33. Indeed, these generic computing components merely do that which can be performed mentally or with a pen and paper—exclusive functions ineligible for patent protection under § 101. *See CyberSource Corp. v. Retail Decisions, Inc.*, 654 F.3d 1366, 1372 (Fed. Cir. 2011).

Even assuming, without deciding, that the recited components add efficiency, any speed increase comes from the capabilities of the generic computer components—not the recited process itself. *See FairWarning IP*,

LLC v. Iatric Systems, Inc., 839 F.3d 1089, 1095 (Fed. Cir. 2016) (citing *Bancorp Services, LLC v. Sun Life Assurance Co.*, 687 F.3d 1266, 1278 (Fed. Cir. 2012) (“[T]he fact that the required calculations could be performed more efficiently via a computer does not materially alter the patent eligibility of the claimed subject matter.”)). Like the claims in *FairWarning*, the focus of claim 1 is not on an improvement in computer processors as tools, but on certain independently abstract ideas that use generic computing components as tools. *See FairWarning*, 839 F.3d at 1095 (citations and quotation marks omitted).

In short, merely reciting these generic computing components cannot transform a patent-ineligible abstract idea into a patent-eligible invention. *Id.* at 2358. In other words, merely reciting an abstract idea while adding the words “apply it with a computer” does not render an abstract idea non-abstract; there must be more. *See Alice*, 134 S. Ct. at 2359. Nor does the claimed invention improve the computer processor device’s functionality or efficiency, or otherwise change the way that device functions. *Cf. Enfish LLC v. Microsoft Corp.*, 822 F.3d 1327, 1335 (Fed. Cir. 2016).

That the claimed invention forwards data from one server to another via a network does not change our conclusion. *Cf. Dealertrack, Inc. v. Huber*, 674 F.3d 1315, 1332–34 (Fed. Cir. 2012) (holding ineligible computer-aided method that sent application data sequentially to plural remote funding source terminal devices); *see also Audatex North America, Inc. v. Mitchell Int’l, Inc.*, 703 F. App’x 986, 987–90 (Fed. Cir. 2017) (unpublished) (holding ineligible method for obtaining automobile insurance claim valuation report by transmitting the report from a valuation server to a web server before transmitting the report to the client computer). *See also*

buySAFE, 765 F.3d at 1355 (“That a computer receives and sends the information over a network—with no further specification—is not even arguably inventive.”).

Nor does the recited XML message structure with (1) a DF support case description, (2) associated replies, (3) a device manufacturer field, and (4) a device model field add significantly more to the abstract idea. *Cf. Intellectual Ventures I LLC v. Capital One Financial Corp.*, 850 F.3d 1332, 1340 (Fed. Cir. 2017) (noting that companies have frequently employed XML documents in routine business transactions, and that reciting XML documents specifically, at best, limits the invention to a technological environment for which to apply the underlying abstract concept). To the extent Appellants contend that the particular content of the XML message, namely the four recited data elements noted above, somehow adds significantly more to the abstract idea (*see* App. Br. 10; Reply Br. 7), we disagree.

Appellants’ reliance on *DDR Holdings, LLC v. Hotels.Com, L.P.*, 773 F.3d 1245 (Fed. Cir. 2014) on page 9 of the Appeal Brief is unavailing. There, instead of a computer network operating in its normal, expected manner by sending a website visitor to a third-party website apparently connected with a clicked advertisement, the claimed invention in *DDR* generated and directed the visitor to a hybrid page that presented (1) product information from the third party, and (2) visual “look and feel” elements from the host website. *DDR*, 773 F.3d at 1258–59. Given this particular Internet-based solution, the court held that the claimed invention did not merely use the Internet to perform a business practice known from the pre-

Internet world, but rather was necessarily rooted in computer technology to overcome a problem specifically arising in computer networks. *Id.* at 1257.

That is not the case here. As noted previously, Appellants' claimed invention resolves a user's support issue through a series of referrals of an associated support case and its resolution between three servers. In short, this functionality is directed to a fundamental business practice that also fundamentally organizes human activity—an abstract idea.

Lastly, we find unavailing Appellants' contention that the claims do not preempt an entire field. App. Br. 10. Where, as here, the claims cover a patent-ineligible concept, preemption concerns “are fully addressed and made moot” by an analysis under the *Alice* framework. *See Ariosa Diagnostics, Inc. v. Sequenom, Inc.*, 788 F.3d 1371, 1379 (Fed. Cir. 2015).

For the foregoing reasons, then, the recited elements—considered both individually and as an ordered combination—do not contain an “inventive concept” sufficient to transform the claimed abstract idea into a patent-eligible application. Therefore, we are not persuaded that the Examiner erred in rejecting claim 1, and claims 2–4, 7–10, 19–21, and 23–28 not argued separately with particularity.

THE OBVIOUSNESS REJECTION OVER SHROFF, FAN, BOSTON, HECOX, AND FISHER

Regarding independent claim 1, the Examiner finds that Shroff discloses, among other things, (1) receiving data representing a support issue at a DF server, namely a server operating a community forum module, and (2) establishing a “DF support case” at that server, namely by posting an issue to which results, feedback, and updates are attached as shown in

Shroff's Figure 6. Ans. 2–3. This “DF support case” is said to be forwarded to a “QC server,” namely recipients enlisted to respond to a given posting, by automatically transmitting an associated instructional message to those recipients based on the posting's priority. Ans. 3–4. According to the Examiner, a “QC support case” is not only created automatically at the QC server responsive to receiving this message, but is also communicated from this server to a device vendor server associated with a product manager for resolution. Ans. 4–5. Shroff's QC server is said to communicate this vendor-server resolution back to the DF server. Ans. 5.

Although the Examiner acknowledges that Shroff does not forward the DF support case to the QC server upon determining that (1) the DF support case's criticality field is marked as a new product launch, and (2) a lower threshold of view times is exceeded, the Examiner cites Hecox for teaching, among other things, notifying engineers of support issues for new products, and Boston for teaching classifying service tickets as including “critical” problems that need immediate attention. Ans. 7. The Examiner reasons that because these critical problems require immediate attention, they lack a threshold requirement and, therefore, Boston teaches the recited threshold adjustment. *Id.*

The Examiner also acknowledges that although Shroff's transmitted message includes a DF support case description and associated replies in Figure 9, the message is nevertheless not an XML message that also includes fields including the device's manufacturer and model. Ans. 4, 8. The Examiner, however, cites Fisher for teaching these fields, and further notes Shroff's system can use XML to exchange data over a network. *Id.* The Examiner also cites Fan for teaching that various recited elements, including

the QC server, are associated with a mobile communication network provider. Ans. 5–6.

In light of these collective teachings, the Examiner concludes that claim 1 would have been obvious. Ans. 2–8.

Appellants argue that the cited prior art does not teach or suggest forwarding the DF support case from the DF server to a QC server as claimed. App. Br. 11–16; Reply Br. 7–9. According to Appellants, the cited prior art does not automatically transmit the claimed XML message structure with the four recited parameters, let alone do so upon determining that (1) the DF support case’s criticality field is marked as a new product launch, and (2) the lower threshold of view times is exceeded as claimed. *Id.*

ISSUE

Under § 103, has the Examiner erred in rejecting claim 1 by finding that Shroff, Fan, Boston, Hecox, and Fisher collectively would have taught or suggested forwarding the DF support case from the DF server to a QC server upon determining that (1) the DF support case’s criticality field is marked as a new product launch, and (2) the lower threshold of view times is exceeded, where this forwarding automatically transmits the claimed XML message with the four recited data elements to the QC server?

ANALYSIS

As noted above, a key aspect of the claimed invention is that the DF support case is forwarded to a QC server by automatically transmitting an XML message with four data elements, namely (1) a DF support case

description, (2) associated replies, (3) a device manufacturer field, and (4) a device model field.

In the rejection, the Examiner maps the recited DF server to the server 202 that operates a community forum module in Shroff's Figure 2. *See* Ans. 3. The Examiner also maps the recited QC server to recipients enlisted to respond to a given posting in Shroff's paragraph 69. Ans. 4. We see no error in this mapping, for skilled artisans would understand that these recipients would be at least associated with a server to facilitate communication with the server 202 via a network, or that such a server would have been at least an obvious variation.

Despite Appellants' arguments to the contrary (App. Br. 11–13), we see no error in the Examiner's reliance on Shroff for at least suggesting transmitting a message from a DF server to a QC server, where the message has two of the four recited data elements, namely the DF support case description and its associated replies, particularly in light of this communicated information in Shroff's Figures 6, 8, and 9. As shown in step 508 of Shroff's Figure 5, alert-based messages are sent to certain recipients (whose servers correspond to the recited "QC server" under the Examiner's mapping) based on the associated postings' priority. *See* Shroff ¶ 69.

Even assuming, without deciding, that these messages are not XML messages, we nevertheless see no reason why they cannot be so formatted, particularly in light of Shroff's teaching that XML can be used to exchange data over a network in paragraph 27 as the Examiner indicates. Ans. 4. Indeed, the Federal Circuit has acknowledged the frequent and routine use of XML documents in electronic transmissions as noted previously. *See Intellectual Ventures I*, 850 F.3d at 1340. In short, such an enhancement

uses prior art elements predictably according to their established functions—an obvious improvement. *See KSR Int’l Co. v. Teleflex, Inc.*, 550 U.S. 398, 417 (2007).

Although Shroff’s messages contain only two of the four recited data elements, namely the DF support case description and its associated replies, we nevertheless see no error in the Examiner’s reliance on Fisher for at least suggesting that fields for a device’s manufacturer and model number could also be included in the transmitted message, particularly in light of Fisher’s teaching that a service ticket can include these fields in Figure 32. *See* Ans. 8 (citing Fisher ¶ 216). As the Examiner explains, including these fields in the transmitted message would provide more information to technicians and agents to assist them in troubleshooting an associated problem—a predictable result. *See* Ans. 8. Although Appellants contend that Fisher does not transmit these fields, but merely displays them (Reply Br. 8–9), this argument is not germane to the limited purpose for which Fisher was cited, namely merely to show that it is known to include such fields in a service ticket, and that providing such fields in addition to the DF support case description and associated replies in Shroff’s transmitted message would have been obvious to provide more information for troubleshooting as noted above. *See* Ans. 8, 42–43. In short, Appellants’ arguments regarding Fisher’s individual shortcomings in this regard do not show nonobviousness where, as here, the rejection is based on the cited references’ collective teachings. *See In re Merck & Co.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986).

Although the Examiner acknowledges that Shroff does not forward the DF support case to the QC server upon determining that the DF support case’s criticality field is marked as a new product launch and a lower

threshold of view times is exceeded, we nonetheless see no error in the Examiner's reliance on (1) Hecox for teaching, among other things, notifying engineers of support issues for new products, and (2) Boston for teaching classifying service tickets as including "critical" problems that need immediate attention. Ans. 7. The Examiner reasons that because these critical problems require immediate attention, they lack a threshold requirement and, therefore, Boston teaches the recited threshold adjustment. *Id.* On this record, we find that the Examiner's articulated basis for this combination is reasonable, and the proposed combination uses prior art elements predictably according to their established functions—an obvious improvement. *See KSR*, 550 U.S. at 417. Appellants' contentions regarding the alleged shortcomings of the cited references (App. Br. 11–16) are unavailing, for these arguments attack the references individually, and do not persuasively rebut the Examiner's obviousness rejection that is based on the cited references' collective teachings.

Therefore, we are not persuaded that the Examiner erred in rejecting claim 1, and claims 3, 4, 7–9, and 20 not argued separately with particularity.

THE OTHER OBVIOUSNESS REJECTIONS

We also sustain the Examiner's obviousness rejections of claims 2, 10, 19, 21, and 23–28. Ans. 11–20. Because these rejections are not argued separately with particularity, we are not persuaded of error in these rejections for the reasons previously discussed.

CONCLUSION

The Examiner did not err in rejecting claims 1–4, 7–10, 19–21, and 23–28 under §§ 101 and 103.

DECISION

We affirm the Examiner’s decision to reject claims 1–4, 7–10, 19–21, and 23–28.

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