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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
90/013,740	05/18/2016	8155012	31AE-226116	1868

27572 7590 11/28/2018
HARNES, DICKEY & PIERCE, P.L.C.
P.O. BOX 828
BLOOMFIELD HILLS, MI 48303
UNITED STATES OF AMERICA

EXAMINER

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ART UNIT	PAPER NUMBER
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3992

MAIL DATE	DELIVERY MODE
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11/28/2018

PAPER

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte CHRIMAR SYSTEMS, INC.
Appellant and Patent Owner

Appeal 2018-002298
Reexamination Control 90/013,740
Patent 8,155,012 B2
Technology Center 3900

Before KARL D. EASTHOM, STEPHEN C. SIU, and ERIC B. CHEN,
Administrative Patent Judges.

CHEN, *Administrative Patent Judge.*

DECISION ON APPEAL

Appeal 2018-002298
Reexamination Control 90/013,740
Patent 8,155,012 B2

This is an appeal under 35 U.S.C. §§ 134(b) and 306 from the final rejection of claims 1–104, 106, 108–145, and 147. We have jurisdiction under §§ 134(b) and 306.

An oral hearing was held on August 1, 2018. The record includes a written transcript of the oral hearing. (Tr.)

We affirm.

STATEMENT OF THE CASE

Reexamination Proceedings

A request for *ex parte* examination of U.S. Patent No. 8,155,012 B2 (the '012 patent) was filed on April 27, 2016, and assigned Reexamination Control No. 90/013,740.

The '012 patent, entitled “System and Method for Adapting a Piece of Terminal Equipment,” issued April 10, 2012, to John F. Austermann, III and Marshall B. Cummings, filed September 26, 2008.

The '012 patent is said to be assigned to ChriMar Systems, Inc., said to be the assignee and real party in interest. (App. Br. 6.)

Invention

Patent Owner’s invention relates to a communication system provided for generating and monitoring data over pre-existing conductors between associated pieces of networked computer equipment. (Spec., Abstract.)

Related Litigation

The '012 patent is or has been involved in numerous *inter partes* review proceedings and litigations. (App. Br. 6–10.)

The Claims

Claims 1, 31, and 108 are exemplary, with minor formatting and disputed limitations in italics:

1. A method for *adapting a piece of Ethernet data terminal equipment*, the piece of Ethernet data terminal equipment having an Ethernet connector, the method comprising:

selecting contacts of the Ethernet connector comprising a plurality of contacts, the selected contacts comprising at least one of the plurality of contacts of the Ethernet connector and at least another one of the plurality of contacts of the Ethernet connector;

coupling at least one path across the selected contacts of the Ethernet connector; and

associating *distinguishing information about the piece of Ethernet data terminal equipment to impedance within the at least one path*.

31. An *adapted piece of Ethernet data terminal equipment* comprising:

an Ethernet connector comprising a plurality of contacts; and at least one path coupled across selected contacts, the selected contacts comprising at least one of the plurality of contacts of the Ethernet connector and

at least another one of the plurality of contacts of the Ethernet connector, wherein *distinguishing information about the piece of Ethernet data terminal equipment is associated to impedance within the at least one path*.

108. An adapted piece of terminal equipment having an Ethernet connector, the piece of terminal equipment comprising:

at least one path coupled across specific contacts of the Ethernet connector, the at least one path permits use of the specific contacts for Ethernet communication,

the Ethernet connector comprising the contact 1 through the contact 8,

the specific contacts comprising at least one of the contacts of the Ethernet connector and at least another one of the contacts of the Ethernet connector,

impedance within the at least one path arranged to distinguish the piece of terminal equipment.

The Rejections

A. Claims 1–3, 5, 6, 10, 11, 13, 16, 18, 19, 22, 24–33, 35, 36, 40, 41, 43, 46, 48, 49, 52, 54–73, 76, 80–88, 91, 93–96, 98–104, and 106 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Cummings (US 5,406,260, issued Apr. 11, 1995) and Maman (US 5,034,723, issued July 23, 1991).

B. Claims 4, 7–9, 14, 15, 17, 34, 37–39, 44, 45, 47, 92, 108–114, 117, 121, 128, 129, 132–137, 139–145, and 147 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Cummings, Maman and PCnet (Advanced Micro Devices, Inc., *AM79C97 PCnet™-FAST Hardware User's Manual* (1996)).¹

C. Claims 12, 42, and 89 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Cummings, Maman, and Annunziata (US 4,551,671, issued Nov. 5, 1985).

¹ The Examiner has withdrawn the rejection of dependent claims 105, 107, 146 and 148. (Ans. 221.)

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D. Claims 20, 50, 77, and 78 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Cummings, Maman, and Johnson (US 5,524,184, issued June 4, 1996).

E. Claims 21, 23, 51, 53, 79, and 97 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Cummings, Maman, and Bloch (US 4,173,714, issued Nov. 6, 1979).

F. Claims 74, 75, 81–86, and 90 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Cummings, Maman, and Sutterlin (US 5,148,144, issued Sept. 15, 1992).

G. Claims 115, 116, and 122–127 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Cummings, Maman, PCnet, and Libby (US 3,803,423, issued Apr. 9, 1974).

H. Claims 118 and 119 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Cummings, Maman, PCnet, and Johnson.

I. Claims 120 and 138 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Cummings, Maman, PCnet, and Bloch.

J. Claim 130 stands rejected under 35 U.S.C. § 103(a) as unpatentable over Cummings, Maman, PCnet, and Annunziata.

K. Claim 131 stands rejected under 35 U.S.C. § 103(a) as unpatentable over Cummings, Maman, PCnet, and Sutterlin.

ANALYSIS

Claim Construction

“Adapting”

After the filing of Patent Owner’s Reply Brief on December 27, 2017, the Federal Circuit rendered an opinion, *ChiMar Holding Co., v. ALE USA*, Nos. 2017-1848 and 2017-1911, 2018 WL 2120618 (Fed. Cir. May 8, 2018), interpreting the preamble recitation of “[a]n *adapted* piece of Ethernet data terminal equipment” in independent claim 33 of the ’012 patent. In particular, in construing the term “adapted,” the court considered the following statements from the specification of the ’012 patent (*ChiMar* at *6):

[A] method for permanently identifying an asset by *attaching an external or internal device to the asset* and communicating with that device using existing network wiring or cabling is desirable.

(Col. 1, l. 67–col. 2, l. 2.)

In accordance with the teachings of the present invention, a communication system is provided for *generating and monitoring data over a pre-existing wiring or cables that connect pieces of networked computer equipment to a network*.

(Col. 3, ll. 18–22.)

The communication system 15 and 16 described herein is particularly adapted to be easily implemented in conjunction with an existing computer network 17 while realizing minimal interference to the computer network.

(Col. 4, ll. 56–60.) Thus, the court concluded, “[t]he specification is consistent with giving ‘adapted’ a meaning tied to existing equipment” because “[t]he specification describes the invention generally as designed to operate on a preexisting network connected to pieces of networked terminal

equipment.” *Id.* Accordingly, consistent with the Specification of the ’012 patent, the Federal Circuit construed “adapted” to mean “modified.” *Id.*

“Ethernet Data Terminal Equipment”

The Examiner interpreted the “term ‘Ethernet data terminal equipment,’ . . . [as encompassing] an external device that is implemented with a computer network employing twisted pair wiring such as Ethernet.” (Ans. 232.) Additionally, the Examiner found that “the ’012 Patent background teaches elements 15 and 16 which are separate from the PC 3a” and “it is noted further that dependent claims require that the Ethernet data terminal equipment be a PC.” (*Id.*) We agree with the Examiner’s interpretation of “Ethernet data terminal equipment.”

The ’012 patent discloses “a communication system (17) [that] is provided for generating and monitoring data over pre-existing conductors (2A-2D) between associated pieces of networked computer equipment (3A-3D).” (Spec., Abstract.) In one embodiment, the ’012 patent discloses that “[i]n general, the central module 15 monitors remote module circuitry 16 that may be permanently attached to remotely located electronic workstations such as personal computers 3A through 3D over the computer network 17.” (Col. 4, ll. 53–56.) For example, Figures 1 and 2 of the ’012 patent illustrate remote module 16 attached directly to personal computer 3A, such that remote module 16 connects to central module 15 and hub 1 via data communication link 2A. In a separate embodiment, Figure 3 of the ’012 patent illustrates computer network 17a, in which remote module 16a is connected to personal computers 3a via data communication link 2A.

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Similarly, Figure 4 of the '012 patent illustrates network 17a with remote module 16a connected to personal computers 3a via a data connection link (unlabeled).

Because the '012 patent discloses two separate embodiments: (i) one example in which personal computer 3A connects directly to remote module 16; and (ii) one example in which personal computer 3A connects to remote module 16 via data communication link 2A, the broadest reasonable interpretation of “a piece of Ethernet data terminal equipment,” consistent with the '012 patent, encompasses personal computer 3A, remote module 16, and data communication link 2A.

Moreover, independent claim 1 recites the limitation “piece of Ethernet data terminal equipment,” and dependent claim 2 further recites that “the piece of Ethernet data terminal equipment is a personal computer.” Accordingly, because independent claim 1 recites a “piece of Ethernet data terminal equipment” and dependent claim 2 further recites a “the piece of Ethernet data terminal equipment is a personal computer,” the doctrine of claim differentiation creates a presumption that the claimed “piece of Ethernet data terminal equipment” is broader in scope from the claimed “personal computer.” *See Free Motion Fitness, Inc. v. Cybex Int'l, Inc.*, 423 F.3d 1343, 1351 (Fed. Cir. 2005) (“The doctrine of claim differentiation creates a presumption that each claim in a patent has a different scope. The difference in meaning and scope between claims is presumed to be significant to the extent that the absence of such difference in meaning and scope would make a claim superfluous” (internal quotations and citation omitted)).

Patent Owner argues:

It is important to note that the term Ethernet data terminal equipment or terminal equipment having an Ethernet connector, when interpreted consistent with the specification and as commonly used by those having ordinary skill in the art, does not include other ancillary Ethernet system componentry, such as data communication lines (data communication links), central devices (hubs), and the like.

(App. Br. 27; *see also id.* at 29–30.) Contrary to Patent Owner’s arguments, as discussed previously, the broadest reasonable interpretation of “a piece of Ethernet data terminal equipment” consistent with the ’012 patent, would encompass personal computer 3A, remote module 16, and data communication link 2A.

Therefore, the Examiner’s interpretation of “a piece of Ethernet data terminal equipment” as encompassing an external device (e.g., PC 3a) including wiring for connection to computer network 17 is reasonable and consistent with the Specification of the ’012 patent.

“Distinguishing Information”

The Examiner interpreted “the term ‘distinguishing information’ [as] including[] distinguishing information about an attribute of the device that differentiates it from another device generally, and not that the another device is necessarily another piece of Ethernet data terminal equipment.” (Ans. 229 (emphasis omitted).) In addition, the Examiner found that “‘distinguishing information’ is not read as identifying the device in any way” and “that claims dependent on independent claims 1, 31, 67 and 108 further recite ‘identifying information.’” (*Id.* at 230.) We agree with the Examiner’s interpretation of “distinguishing information.”

The '012 patent discloses that “[t]he system includes a communication device (16) attached to the electronic equipment that transmits information to a central module (15) by impressing a low frequency signal on the pre-existing data lines of the remotely located equipment” and “[a] receiver (6) in the central module (15) monitors the low frequency data on the data lines to determine the transmitted information of the electronic equipment.” (Spec., Abstract.)

The '012 patent further discloses the following:

The system includes a communication device or remote module [16] attached to the electronic equipment [PCs 3a–d] that transmits information to a central module [15] by impressing a low frequency signal on the wires of the cable [2a–d]. A receiver in the central module [15] monitors the low frequency data to determine the transmitted information from the electronic equipment [PCs 3a–d].

(Col. 1, ll. 3, ll. 22–27.) In particular, Figure 8 of the '012 patent illustrates remote module 16a, which includes connector 101 for connection to central module 15 and connector 116 which connects to PC 3A. Moreover, the '012 patent discloses the following:

Referring to FIG. 8, the sourced power from central module 15a flows through resistor 112 and into zener diode 114 and capacitor 113 which provide a regulated voltage to the circuit. In this embodiment the status data transmitted from the central module 15a is not decoded. However, it is within the scope of the invention to receive the encoded data by monitoring various signals, such as the voltage amplitude of the data line relative to ground, the voltage across resistor 112, and the current through resistor 112.

(Col. 8, ll. 23–31.) Thus, in a generalized embodiment, the '012 patent discloses that remote module 16a gathers “information” from electronic equipment 3a–d by measuring impedance (e.g., resistance).

Moreover, in the “Background of the Invention” section, the '012 patent discloses that “[c]ontrolling TCO [total cost of ownership] includes not only the cost of the asset but also all costs associated with that asset, such as support costs, software costs, and *costs due to loss or theft*, including hardware, software, and most importantly, information.” (Col. 1, ll. 31–35 (emphasis added).) In one embodiment, the '012 patent discloses that “if the potential thief later *disconnects protected equipment* [PCs 3a–d] from the network [17], this action is also detected and an alarm can be generated.” (Col. 6, ll. 39–41.) The '012 patent discloses that “[*r*]elocation of the *electronic equipment* [PCs 3a–d] with the attached communication device [16] *to another location* on the network [17] is detected immediately and may be used to update a database.” (Col. 3, ll. 32–35.) Accordingly, in one embodiment, the '012 patent discloses that communication device 16 can detect information related to removal or disconnection of equipment 3a–d from network 17.

In other embodiments, the '012 patent discloses that “a first embodiment of a central module 15 and remote module 16 system is provided therein for achieving *identification of electronic computer equipment* [PCs 3a–d] associated with a computer network 17” (col. 4, ll. 44–47) and “the principles of the invention may be readily extended to include the communication of more *general information such as identification of the equipment processor type and the equipment hard drive*

capacity” (col. 4, ll. 49–53 (emphasis added)). Accordingly, in other embodiments, the ’012 patent discloses that communication device 16 can detect “information” related to either identification of equipment 3a–d or any general information for equipment 3a–d (e.g., processor type or hard drive capacity).

Accordingly, the broadest reasonable interpretation of “distinguishing information,” consistent with the ’012 patent, would include: (i) removal or disconnection of equipment 3a–d from network 17; (ii) identification of equipment 3a–d; or (iii) any general information for equipment 3a–d.

Additionally, independent claim 1 recites the limitation “associating *distinguishing information* about the piece of Ethernet data terminal equipment to impedance within the at least one path” and dependent claim 3 further recites that “wherein the associating *distinguishing information* about the piece of Ethernet data terminal equipment to impedance within the at least one path comprises *associating identifying information about the piece of Ethernet data terminal equipment.*” Accordingly, because independent claim 1 recites “distinguishing information” and dependent claim 3 further recites “distinguishing information . . . comprises associating identifying information about the piece of Ethernet data terminal equipment,” the doctrine of claim differentiation creates a presumption that the claimed “distinguishing information” is broader in scope from the claimed “identifying information about the piece of Ethernet data terminal equipment.” *See Free Motion Fitness*, 423 F.3d at 1351.

Patent Owner argues that the “claimed claim language and physical structure set forth in the specification requiring that the ‘distinguishing

information’ is associated/arranged to impedance within the path . . . and that the ‘path’ is always and only part of the Ethernet data terminal equipment” and “[t]o suggest that data communication lines connected to a piece of data terminal equipment can be part of the claimed path is in direct conflict with the specification of the ’012 Patent (see FIGS. 2, 14, and 15).” (App. Br. 36.) Similarly, Patent Owner argues that “the intrinsic evidence contained in the originally filed and issued specification of the ’012 Patent supports this interpretation that the distinguishing information is indeed arranged/associated to the impedance.” (*Id.* at 36–37.) Contrary to Patent Owner’s arguments, as discussed previously, the broadest reasonable interpretation of “a piece of Ethernet data terminal equipment” encompasses personal computer 3A, remote module 16, and data communication link 2A. Accordingly, such “distinguishing information” is associated the “path” of data communication link 2A.

Patent Owner also argues that “[i]t is unreasonable to broaden the plain meaning of the claim limitation to include simple binary connection-type information (i.e. connected/disconnected) about a connection status of an entire current loop.” (App. Br. 38.) Contrary to Patent Owner’s arguments, as discussed previously, the broadest reasonable interpretation of “distinguishing information” encompasses removal or disconnection of equipment 3a–d from network 17.

Therefore, the Examiner’s interpretation of “distinguishing information” as encompassing removal or disconnection of equipment 3a–d from network 17 is reasonable and consistent with the Specification of the ’012 patent.

§ 103 Rejection—Cummins and Maman

We are unpersuaded by Patent Owner’s arguments (App. Br. 43) that the combination of Cummins and Maman would not have rendered obvious independent claim 1, which includes preamble recitation of “adapting a piece of Ethernet data terminal equipment.”

The Examiner found that personal computers (PCs) 12a–12d, transmit wires 44a–44d, 46a–46d, data communication link 14, and network security system 24 of Cummins collectively correspond to the preamble recitation of “adapting a piece of Ethernet data terminal equipment.” (*See Ans. 5, 238.*) In particular, the Examiner found “that merely using a piece of legacy equipment such as a general PC [12a–12d of Cummings] in an Ethernet network that provides an additional signal . . . is sufficient to read on an ‘adapted’ piece of data terminal equipment.” (*Ans. 238.*) We agree with the Examiner’s findings.

Cummings relates to “a network security system for detecting the unauthorized removal of remotely located electronic equipment from a network.” (Col. 1, ll. 8–11.) In the “Background of the Invention” section, Cummings explains that “it is desirable to provide for a security network system which may be easily and inexpensively implemented in an existing network system.” (Col. 2, ll. 21–24.) Figure 1 of Cummings illustrates computer network 10 with network security system 24, such that “[t]he network security system 24 . . . is particularly adapted to be easily implemented in conjunction with an existing computer network 10 without the need for substantial modifications and while realizing minimal interference to the computer network 10.” (Col. 2, l. 68 to col. 3, l. 5.) As

discussed previously, the recitation of “adapted” has been constructed by the Federal Circuit as meaning “modified.” Because Cummings explains that existing computer network 10, having PCs 12a–12d, transmit wires 44a–44d, 46a–46d, and data communication link 14, are “modified” to include network security system 24, Cummings teaches the recitation of “adapting a piece of Ethernet data terminal equipment.”

Patent Owner argues that “Cummings does not teach adapting any Ethernet data terminal equipment” because “Cummings merely employs an existing field winding 53 of an isolation transformer 52 of the terminal equipment 12 to complete the current loop with transmit wires 44/46 of the data communication link.” (App. Br. 43.) Contrary to Patent Owner’s arguments, Cummings explains that existing computer network 10 is “modified” to include network security system 24. (Col. 2, l. 68 to col. 3, l. 5.)

Patent Owner further argues that “Cummings specifically teaches away from adapting any Ethernet data terminal equipment (‘These approaches [i.e. installing special electronic card], however, are generally undesirable since they require the incorporation of additional components into each machine.’)).” (App. Br. 43.) To the extent Cummings “teaches away,” Cummings explains that the installation of a special electronic card into each individual machine is “undesirable,” rather than teaching away from all modifications of existing computer network 10.

Thus, we agree with the Examiner that the combination of Cummins and Maman would have rendered obvious independent claim 1, which

includes the preamble recitation of “adapting a piece of Ethernet data terminal equipment.”

We are unpersuaded by Patent Owner’s arguments (App. Br. 44) that the combination of Cummins and Maman would not have rendered obvious independent claim 1, which includes the limitation “distinguishing information about the piece of Ethernet data terminal equipment to impedance within the at least one path.”

The Examiner found that the DC current signal of Cummins, which detects if PCs 12a–12d have been disconnected, corresponds to the limitation “distinguishing information about the piece of Ethernet data terminal equipment to impedance within the at least one path.” (Ans. 5–6.) We agree with the Examiner’s findings.

Cummins explains that “isolation power supply 26 supplies a continuous low current DC power signal to each of power supply lines 28a through 28d,” which also “flows through current loops 50a through 50d via pairs of transmit wires 44 and 46 and existing circuitry such as isolation transformers 52 within each of the remote personal computers 12a through 12d being monitored.” (Col. 6, ll. 1–8.) Moreover, Cummins explains that “[v]oltage to current converter 34 converts the voltage to a desired current level which in turn is applied to a logic NAND gate 38,” such that “[t]he logic NAND gate 38 detects discontinuities in the current loops 50a through 50d being monitored and provides an output indication to an alarm 40 which indicates removal of one or more of remote personal computers 12a through 12d from the computer network 10” and “detection of a current flow discontinuity further energizes the appropriate light emitting diodes 44a

through 44d associated with the disconnected personal computer 12. (Col. 6, ll. 13–23.) Because Cummins explains that current can be detected in current loops 50a, and thus, impedance (e.g., resistance) can be determined from current via Ohm’s law, Cummins teaches the limitation “distinguishing information about the piece of Ethernet data terminal equipment to impedance.” Moreover, because Cummins explains that current flows via transmit wires 44 and 46, Cummins teaches the limitation “within the at least one path.”

Additionally, in the “Background of the Invention” section, Cummins explains that “it is desirable to provide for such a security system which feasibly employs separate current loops provided through an existing data communication link to monitor the presence of *remotely located computer equipment*.” (Col. 2, ll. 17–21.) Cummins further explains that “any number of pieces of equipment may be monitored with the network security system 24 and any number of network security systems may be coupled to a given network or a plurality of networks to handle large numbers of remotely located pieces of equipment.” (Col. 6, ll. 30–35.) In other words, Cummins suggests that remote personal computers 12a–d are of differing distances relative to data communication link 14 and thus, power supply lines 44a–d and 46a–d are of differing lengths, each having different impedances. Because transmit wires 44a–d and 46a–d have differing impedances and are associated with personal computers 12a–d, a different impedance is associated with each of computers 12a–d, and accordingly, Cummins teaches the limitation “distinguishing information about the piece of Ethernet data terminal equipment to impedance.”

Appellants argue that “there is no way to ‘distinguish’ the piece of terminal equipment based on an indication of physical connection as the path in each terminal equipment is identical” because “the impedance for each of the terminal equipment of Cummings are identical” and “the impedance of each terminal equipment in Cummings is undetectable because it is substantially less than the impedance in the data lines that are used to connect the terminal equipment to the network.” (App. Br. 44.) However, Patent Owner’s arguments are not commensurate in scope with claim 1, because, as discussed previously, “distinguishing information” is broad enough to encompass removal or disconnection of any one of personal computers 12a–12d of Cummings. Moreover, Patent Owner has not provided sufficient evidence to support the statement that “the impedance of each terminal equipment in Cummings is undetectable because it is substantially less than the impedance in the data lines that are used to connect the terminal equipment to the network.” (*Id.*) Arguments of counsel cannot take the place of factually supported objective evidence. *See, e.g., In re Huang*, 100 F.3d 135, 139–40 (Fed. Cir. 1996).

In addition, to the extent the impedance in the data lines dominate the small inductor load in Cummings, as Patent Owner argues (App. Br. 44), this further demonstrates that the lines of different impedance based on different lengths as envisioned by Cummings create distinguishing information associated with each piece of Ethernet equipment that includes different lengths of connecting lines (i.e., larger resistances/impedances correspond to longer lengths of lines included in each piece of Ethernet equipment). *See* Tr. 15:1–16:4 (Patent Owner contending different line

lengths in Cummings and in the invention vary in resistance from about 1–40 ohms and the load coil in Cummings measures about 0.2 ohms).² *See* col. 1, ll. 26–38, col. 3, ll. 11–30 (disclosing computer networks distributed “throughout a large work area” and including “a number of remotely located work stations coupled via a data communication link to a central processing center”).³

In other words, the claims argued by Patent Owner embrace small loads like each load of the number of remote computers 12 of Cummings (about 0.2 ohms according to Patent Owner) and include at least the 1–40 ohm (*see* Tr. 15:10–16) variable lengths of connecting lines up to the module 24 (both of which serve to “adapt” computers 12 with at least connecting lines 14 to form adapted pieces of Ethernet terminal equipment).⁴

² During the trial in IPR2016-01389, Patent Owner argued resistor 112 in Figure 8 of the ’012 patent created distinguishing resistance/impedance information. *See* IPR2016-01389, Paper 69, 13, 13–23 (claim construction). In the oral hearing in that case, Patent Owner’s attorney also argued that the “path” embraced by claim 31 may be “a hundred meters long” and the claimed “contacts” could be “anywhere to the left of where [resistor] 112 connects” to the bus in Figure 8. *See id.* at 23. During the oral hearing in the instant case, Patent Owner’s attorney disputed the length of the claimed path as being up to 100 meters long but did not provide a limit on its length. *See* Tr. 9:4–10:7; 12:17–23. In any event, different path lengths create different resistances. *See infra* notes 3–4.

³ During the oral hearing, when questioned, an inventor, Mr. Austerman, stated “you can’t measure” the variable resistance in ohms associated with different “variable” lengths of lines, because the *disclosed* load in ohms of its associated piece of Ethernet equipment measures about “15K to 10K” (i.e., 15,000–10,000 ohms), so it dominates the 1–40 ohm resistance of the connecting lines so “[y]ou cannot see” the latter resistance. *See* Tr. 15:1–26.

⁴ After disconnecting lines from module 24 of Cummins, the varying resistances in lines 14 up to computers 12 still provide distinguishing

See Figs. 1 and 3, col. 1, ll. 13–37, col. 2, l. 65 to col. 3, l. 10 (describing network security monitors 24). Accordingly, different Ethernet computers 12A–12D envisioned in Cummings include varying resistance/impedance line lengths to provide distinguishing information for each piece of adapted Ethernet equipment. These remote computers 12A–12D of Cummings with 0.2 ohms (according to Patent Owner (Tr.15:1–3)) located at various distances with corresponding varying line resistances (1–40 ohms (Tr. 15:10–16)) at least up to module 24 (*see, e.g.*, Fig. 1, computers 12A–12D, col. 3, ll. 5–14) correspond to the '012 patent disclosure that includes computers 3 connected with different lines up to and perhaps including module 16 (Figs. 2, 4, 8 (showing PCs 3a connected to modules 16)).

Thus, for at least two different reasons, we agree with the Examiner that the combination of Cummins and Maman would have rendered obvious independent claim 1, which includes the limitation “distinguishing information about the piece of Ethernet data terminal equipment to impedance within the at least one path.”

We are not persuaded by Patent Owner’s arguments (App. Br. 45–46, 58–61; *see also* Reply Br. 43–48) that the Examiner improperly combined Cummins and Maman.

The Examiner found that “[b]ecause Cummings knows Ohm’s Law, the voltage across the path, and the current through the path, Cummings also knows the impedance and can associate distinguishing information about the

information about each Ethernet terminal equipment including resistances in lines 14 and computers 12—i.e., (i) each different resistances; and (ii) status of disconnection. *See* Figs. 1 and 3.

equipment to impedance within the path.” (Ans. 6.) Alternatively, the Examiner found, “[t]o the extent it is determined a person of ordinary skill in the art of electronics does not know Ohm’s Law, Cummings can be combined with Maman, which explicitly teaches associating distinguishing information about the data terminal equipment to impedance within a corresponding path.” (*Id.*) The Examiner concluded that “it would have been obvious to combine the references.” (Ans. 9.) We agree with the Examiner.

As discussed previously, Cummins explains that “isolation power supply 26 supplies a continuous low current DC power signal to each of power supply lines 28a through 28d,” which also “flows through current loops 50a through 50d via pairs of transmit wires 44 and 46 and existing circuitry such as isolation transformers 52 within each of the remote personal computers 12a through 12d being monitored.” (Col. 6, ll. 1–8.)

Maman relates to “[a] cable for supplying power to electrical equipment . . . adapted to also provide security for the equipment by being formed to have a first state when it is connected to the equipment and a second state when it is disconnected from the equipment.” (Abstract.)

Maman explains the following:

In the embodiment of the invention to be described hereinafter, the connecting cable comprises a first connector adapted to be removably connected to the electrical equipment, a second connector adapted to be removably connected to the power source through the detection and alarm device, power conductors connecting the first connector to the second connector, and first and second status conductors adapted to exhibit a first impedance value between the individual status conductors corresponding to the first state of the cable when the

electrical equipment is connected to the equipment and a second impedance value between the individual status conductors corresponding to the second state of the cable when the electrical equipment is disconnected from the cable.

(Col. 2 ll. 31–45.) Thus, Maman explains that one known method of determining the state of a cable is measuring impedance.

The combination of Cummings and Maman is nothing more than incorporating the known method of Maman for determining the state of a cable by measuring impedance, with the network security system of Cummings, to yield predictable results. *See KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 416 (2007) (“The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.”). In particular, the combination of Cummings and Maman would result in implementing the impedance measurement of Maman for transmit wires 44a–d and 46a–d of Cummings, which are associated with each of the remote personal computers 12a–d being monitored. Thus, we agree with the Examiner (Ans. 5–6) that modifying Cummings to include the impedance measurement of Maman would have been obvious.

Patent Owner argues as follows:

First, Maman does not disclose Ethernet (and cannot be combined with Ethernet).

Second, Maman, in contrast to Cummings, does not teach the use of existing BaseT wiring and/or a path through a piece of terminal equipment for any purpose. . . . Third, Maman, in contrast to the ’012 Patent, does not teach the use of existing contacts of an Ethernet connector for anything, much less to adapt a piece of terminal equipment as recited in the independent claims of the ’012 Patent. . . . Finally, the state of connection of

the modified AC power cable of Maman does not provide distinguishing information about “the adapted cable,” much less distinguishing information about a piece of electrical equipment of Maman.

(App. Br. 45–46.) However, the Examiner cited to Cummins, rather than Maman for teaching the limitations “the piece of Ethernet data terminal equipment having an Ethernet connector,” and “coupling at least one path across the selected contacts of the Ethernet connector,” “adapting a piece of Ethernet data terminal equipment,” and “associating distinguishing information about the piece of Ethernet data terminal equipment to impedance within the at least one path.” (Ans. 5–6.) The rejection of claim 1 is based on the combination of Cummins and Maman, and Patent Owner cannot show non-obviousness by attacking the references individually. *See In re Keller*, 642 F.2d 413, 426 (CCPA 1981).

Patent Owner also argues that “the cabling, connectors, and mating elements of Maman are incompatible with . . . Cummings . . . or Ethernet in general.” (App. Br. 46; *see also id.* at 58–59.) However, the Examiner cited to Maman for the general teaching that the state of a cable can be determined by measuring impedance, rather than the configurations of plugs 4 and 5, as illustrated in Figure 3 of Maman.

Patent Owner further argues that the combination of Cummings and Maman is improper for the following reasons: (i) “the combination of Cummings and Maman fails to provide a reasonable expectation of success and, in fact, would render Cummings unsatisfactory for its intended use and further change the principles of operation of Cummings and Maman” because “[m]odification of Cummings to employ an unnecessary bridging element (e.g. micro switch or shorting bar) from Maman would result in

shorting the Ethernet data communication lines of Cummings and, thus, destroy Ethernet communication in Cummings” (App. Br. 55; *see also id.* at 59–60, Reply Br. 42, 46–47); (ii) “there is no reasonable expectation of success when combining Cummings and Maman” because “Cummings teaches the use of existing BaseT wiring used to carry Ethernet communication signals and the use of an existing path” and “Maman does teach the use of any existing wiring (i.e., not existing BaseT and not existing AC power cables) and does teach the use of any path through a piece of equipment” (App. Br. 57; *see also* Reply Br. 42–43, 47–48); and (iii) “the proposed modification of Cummings and Maman would clearly change the principles of operation of Cummings and Maman” because the “implementation of the new mechanical interface of Maman on existing wiring within Maman or Cummings is fatal to the use of the existing lines in both Maman and Cummings” (App. Br. 61). Again, the Examiner cited to Maman for the general teaching that the state of a cable can be determined by measuring impedance, rather than the configurations of plugs 4 and 5, as illustrated in Figure 3 of Maman. Moreover, “[t]he test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference Rather, the test is what the combined teachings of those references would have suggested to those of ordinary skill in the art.” *In re Keller*, 642 F.2d 413, 425 (CCPA 1981).

Therefore, the Examiner has properly combined Cummins and Maman to reject independent claim 1 under 35 U.S.C. § 103(a).

Accordingly, we sustain the rejection of independent claim 1 under 35 U.S.C. § 103(a). Claims 2, 3, 5, 6, 10, 11, 13, 16, 18, 19, 22, and 24–30 depend from claim 1, and Patent Owner has not presented any additional substantive arguments with respect to these claims. Therefore, we sustain the rejection of claims 2, 3, 5, 6, 10, 11, 13, 16, 18, 19, 22, and 24–30 under 35 U.S.C. § 103(a), for the same reasons discussed with respect to independent claim 1.

Independent claims 31 and 67 recite limitations similar to those discussed with respect to independent claim 1, and Patent Owner has not presented any additional substantive arguments with respect to these claims. We sustain the rejection of claims 31 and 67, as well as dependent claims 24–33, 35, 36, 40, 41, 43, 46, 48, 49, 52, 54–73, 76, 80–88, 91, 93–96, 98–104, and 106, for the same reasons discussed with respect to claim 1.

§ 103 Rejection—Cummings, Maman, and PCnet

Claims 108–114, 117, 121, 128, 129, 132–137, 139–145, and 147

We are unpersuaded by Patent Owner’s arguments (App. Br. 43) that the combination of Cummings, Maman, and PCnet would not have rendered obvious independent claim 108, which includes the limitation “the Ethernet connector comprising the contact 1 through the contact 8.”

The Examiner found that the “8-Pin RJ-45 Jack,” as illustrated in Figure 3-1 of PCnet, corresponds to the limitation “the Ethernet connector comprising the contact 1 through the contact 8.” (Ans. 63.) Moreover, the Examiner concluded that “it would have been obvious to combine the references” (*id.* at 67) because “Cummings measures and detects

fluctuations in electrical conditions on a network path to determine connectivity state of data terminal equipment, explicitly in an Ethernet network” and “PCnet describes state-of-the-art Ethernet equipment” (*id.* at 65). We agree with the Examiner’s findings and conclusions.

PCnet relates to “an advanced PC network interface adapter card targeted for the Ethernet-PCI adapter card market.” (§ 1.1.) PCnet explains that “[a] Data Terminal Equipment (DTE) system with the installed PCnet-FAST board can connect to an Ethernet network using the on-board RJ-45 jack for either 10BASE-T or 100BASE-TX connection.” (§ 3.2.) Figure 3-1 of PCnet illustrates an “8-Pin RJ-45 Jack” connected to the DTE. Moreover, Figure 3-1 illustrates the DTE connected to a Network Hub via a Twisted-Pair Cable. Because the on-board RJ-45 jack of PCnet, having 8 pins, connects to a DTE system, PCnet teaches the limitation “the Ethernet connector comprising the contact 1 through the contact 8.”

Patent Owner argues that “‘PCnet’s ‘RJ-45 jack’ cannot be the ‘Ethernet connector’ of the claim because the claimed ‘Ethernet connector’ must be part of the ‘terminal equipment,’ not a jack separate and distinct from the terminal equipment.” (App. Br. 88 (emphasis omitted).) However, the Examiner also cited to personal computers (PCs) 12a–12d, transmit wires 44a–44d, 46a–46d, data communication link 14, and network security system 24 of Cummins collectively for teaching “Ethernet data terminal equipment.” (*See* Ans. 5, 238.) Moreover, Figure 3-1 of PCnet illustrates a Twisted-Pair Cable attached to the “8-Pin RJ-45 Jack.” Accordingly, based upon the combined teachings, one of ordinary skill in the art would have

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attached the “RJ-45 jack” of PCnet to the either PCs 12a–12d or transmit wires 44a–44d, 46a–46d of Cummings.

Patent Owner further argues that there is no explanation “‘how’ such a female RJ-45 jack would be combined with Cummings’ disclosure of using tapped wires in a cable” because “[t]hose of ordinary skill in the art know that a female RJ-45 jack is not a cable and has no wires.” (App. Br. 88.) Contrary to Patent Owner’s arguments, the Examiner also cited to Figure 3-1 illustrates a DTE connected to a Network Hub via a Twisted-Pair Cable having an “8-Pin RJ-45 Jack.”

Thus, we agree with the Examiner that the combination of Cummings, Maman, and PCnet would have rendered obvious independent claim 108, which includes the limitation “the Ethernet connector comprising the contact 1 through the contact 8.”

Accordingly, we sustain the rejection of independent claim 108 under 35 U.S.C. § 103(a). Claims 109–114, 117, 121, 128, 129, 132–137, 139–145, and 147 depend from claim 108, and Patent Owner has not presented any additional substantive arguments with respect to these claims. Therefore, we sustain the rejection of claims 109–114, 117, 121, 128, 129, 132–137, 139–145, and 147 under 35 U.S.C. § 103(a), for the same reasons discussed with respect to independent claim 108.

Claims 4, 7–9, 14, 15, 17, 34, 37-39, 44, 45, 47, and 92

Although Patent Owner nominally argue the rejection of dependent claims 4, 7–9, 14, 15, 17, 34, 37-39, 44, 45, 47, and 92 separately (*see* App. Br. 61, 90–110), the arguments presented do not point out with particularity

or explain why the limitations of these dependents claims are separately patentable. Instead, Patent Owner merely provides conclusory statements that PCnet does not teach the limitations of these dependent claims without a sufficient explanation as to why these dependent claims are patentable over PCnet. Accordingly, Patent Owner has not presented any substantive arguments with respect to these claims. *See In re Lovin*, 652 F.3d 1349, 1357 (Fed. Cir. 2011) (“[T]he Board reasonably interpreted Rule 41.37 to require more substantive arguments in an appeal brief than a mere recitation of the claim elements and a naked assertion that the corresponding elements were not found in the prior art.”). We are not persuaded by these arguments for the reasons discussed with respect to claims 1, 31, and 67, from which claims 4, 7–9, 14, 15, 17, 34, 37-39, 44, 45, 47, and 92 depend. Accordingly, we sustain this rejection.

§ 103 Rejection—Cummings, Maman, and Annunziata

Although Patent Owner nominally argue the rejection of dependent claims 12, 42, and 89 separately (App. Br. 110–113), the arguments presented do not point out with particularity or explain why the limitations of these dependents claims are separately patentable. Instead, Patent Owner argues:

Annunziata et al. fails to overcome the deficiencies of Cummins and Maman as specifically outlined herein, including, but not limited to, failing to teach or suggest that a piece of (Ethernet data) terminal equipment having an Ethernet connector having contacts is adapted to include a path coupled across selected or specific contacts of the Ethernet connector, and that “distinguishing information” about the piece of terminal equipment is associated to impedance within this path.

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(*Id.* at 111.) We are not persuaded by these arguments for the reasons discussed with respect to claims 1, 31, and 67, from which claims 12, 42, and 89 depend. Accordingly, we sustain this rejection.

§ 103 Rejection—Cummings, Maman, and Johnson

Although Patent Owner nominally argues the rejection of dependent claims 20, 50, 77, and 78 separately (App. Br. 113–114), the arguments presented do not point out with particularity or explain why the limitations of these dependents claims are separately patentable. Instead, Patent Owner argues:

Johnson fails to overcome the deficiencies of Cummins and Maman as specifically outlined herein, including, but not limited to, failing to teach or suggest that a piece of (Ethernet data) terminal equipment having an Ethernet connector having contacts is adapted to include a path coupled across selected or specific contacts of the Ethernet connector, and that “distinguishing information” about the piece of terminal equipment is associated to impedance within this path.

(*Id.* at 113.) We are not persuaded by these arguments for the reasons discussed with respect to claims 1, 31, and 67, from which claims 20, 50, 77, and 78 depend. Accordingly, we sustain this rejection.

§ 103 Rejection—Cummings, Maman, and Bloch

Although Patent Owner nominally argues the rejection of dependent claims 21, 23, 51, 53, 79, and 97 separately (App. Br. 115–116), the arguments presented do not point out with particularity or explain why the limitations of these dependents claims are separately patentable. Instead, Patent Owner argues:

Bloch fails to overcome the deficiencies of Cummins and Maman as specifically outlined herein, including, but not limited to, failing to teach or suggest that a piece of (Ethernet data) terminal equipment having an Ethernet connector having contacts is adapted to include a path coupled across selected or specific contacts of the Ethernet connector, and that “distinguishing information” about the piece of terminal equipment is associated to impedance within this path.

(*Id.* at 115.) We are not persuaded by these arguments for the reasons discussed with respect to claims 1, 31, and 67, from which claims 21, 23, 51, 53, 79, and 97 depend. Accordingly, we sustain this rejection.

§ 103 Rejection—Cummings, Maman, and Sutterlin

Although Patent Owner nominally argues the rejection of dependent claims 74, 75, 81–86, and 90 separately (App. Br. 116–118), the arguments presented do not point out with particularity or explain why the limitations of these dependents claims are separately patentable. Instead, Patent Owner argues:

Sutterlin fails to overcome the deficiencies of Cummins and Maman as specifically outlined herein, including, but not limited to, failing to teach or suggest that a piece of (Ethernet data) terminal equipment having an Ethernet connector having contacts is adapted to include a path coupled across selected or specific contacts of the Ethernet connector, and that “distinguishing information” about the piece of terminal equipment is associated to impedance within this path.

(*Id.* at 117.) We are not persuaded by these arguments for the reasons discussed with respect to claim 67, from which claims 74, 75, 81–86, and 90 depend. Accordingly, we sustain this rejection.

§ 103 Rejection— Cummings, Maman, PCnet, and Libby

Although Patent Owner nominally argues the rejection of dependent claims 115, 116, and 122–127 separately (App. Br. 118–120), the arguments presented do not point out with particularity or explain why the limitations of these dependents claims are separately patentable. Instead, Patent Owner argues:

PCnet and Libby each fails to overcome the deficiencies of Cummins and Maman as specifically outlined herein, including, but not limited to, failing to teach or suggest that a piece of (Ethernet data) terminal equipment having an Ethernet connector having contacts is adapted to include a path coupled across selected or specific contacts of the Ethernet connector, and that “distinguishing information” about the piece of terminal equipment is associated to impedance within this path.

(*Id.* at 119.) We are not persuaded by these arguments for the reasons discussed with respect to claim 108, from which claims 115, 116, and 122–127 depend. Accordingly, we sustain this rejection.

§ 103 Rejection—Cummings, Maman, PCnet, and Johnson

Although Patent Owner nominally argues the rejection of dependent claims 118 and 119 separately (App. Br. 120–121), the arguments presented do not point out with particularity or explain why the limitations of these dependents claims are separately patentable. Instead, Patent Owner argues:

PCnet and Johnson each fails to overcome the deficiencies of Cummins and Maman as specifically outlined herein, including, but not limited to, failing to teach or suggest that a piece of (Ethernet data) terminal equipment having an Ethernet connector having contacts is adapted to include a path coupled across selected or specific contacts of the Ethernet connector, and that

“distinguishing information” about the piece of terminal equipment is associated to impedance within this path.
(App. Br. 120.) We are not persuaded by these arguments for the reasons discussed with respect to claim 108, from which claims 118 and 119 depend. Accordingly, we sustain this rejection.

§ 103 Rejection—Cummings, Maman, PCnet, and Bloch

Although Patent Owner nominally argues the rejection of dependent claims 120 and 138 separately (App. Br. 122–123), the arguments presented do not point out with particularity or explain why the limitations of these dependents claims are separately patentable. Instead, Patent Owner argues:

PCnet and Bloch each fails to overcome the deficiencies of Cummins and Maman as specifically outlined herein, including, but not limited to, failing to teach or suggest that a piece of (Ethernet data) terminal equipment having an Ethernet connector having contacts is adapted to include a path coupled across selected or specific contacts of the Ethernet connector, and that “distinguishing information” about the piece of terminal equipment is associated to impedance within this path.

(App. Br. 122.) We are not persuaded by these arguments for the reasons discussed with respect to claim 108, from which claims 120 and 138 depend. Accordingly, we sustain this rejection.

§ 103 Rejection—Cummings, Maman, PCnet, and Annunziata

Although Patent Owner nominally argues the rejection of dependent claim 130 separately (App. Br. 123–126), the arguments presented do not point out with particularity or explain why the limitations of these dependents claims are separately patentable. Instead, Patent Owner argues:

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PCnet and Annunziata each fails to overcome the deficiencies of Cummins and Maman as specifically outlined herein, including, but not limited to, failing to teach or suggest that a piece of (Ethernet data) terminal equipment having an Ethernet connector having contacts is adapted to include a path coupled across selected or specific contacts of the Ethernet connector, and that “distinguishing information” about the piece of terminal equipment is associated to impedance within this path.

(App. Br. 124.) We are not persuaded by these arguments for the reasons discussed with respect to claim 108, from which claim 130 depends.

Accordingly, we sustain this rejection.

§ 103 Rejection—Cummings, Maman, PCnet, and Sutterlin

Although Patent Owner nominally argues the rejection of dependent claim 131 separately (App. Br. 126–128), the arguments presented do not point out with particularity or explain why the limitations of these dependents claims are separately patentable. Instead, Patent Owner argues:

PCnet and Sutterlin each fails to overcome the deficiencies of Cummins and Maman as specifically outlined herein, including, but not limited to, failing to teach or suggest that a piece of (Ethernet data) terminal equipment having an Ethernet connector having contacts is adapted to include a path coupled across selected or specific contacts of the Ethernet connector, and that “distinguishing information” about the piece of terminal equipment is associated to impedance within this path.

(App. Br. 126–27.) We are not persuaded by these arguments for the reasons discussed with respect to claim 108, from which claim 131 depends.

Accordingly, we sustain this rejection.

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Remaining § 103 Rejections

We do not reach the additional cumulative rejections of claims 1–104, 106, 108–145, and 147 under 35 U.S.C. § 103(a) as unpatentable over other various combinations of Cummings, Maman, PCnet, Annunziata, Johnson, Bloch, Libby, and Sutterlin. Affirmance of the obviousness rejection discussed previously renders it unnecessary to reach the remaining obviousness rejections, as claims 1–104, 106, 108–145, and 147 have been addressed and found unpatentable. *Cf. In re Gleave*, 560 F.3d at 1338.

DECISION

The Examiner’s decision rejecting claims 1, 4, 7–10, 12–18, 23, 24, 26–30, 32, 33, and 44–49 under 35 U.S.C. § 103 is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a). *See* 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED

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