

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GOOGLE LLC,
Petitioner,

v.

ACCUSEARCH TECHNOLOGIES LLC,
Patent Owner.

Case No. IPR2026-00289
Patent No. 11,971,937

**PETITION FOR *INTER PARTES* REVIEW
UNDER 35 U.S.C. §§ 311-319 AND 37 C.F.R. § 42.1 et seq**

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1001	U.S. Patent No. 11,971,937
1002	Prosecution History of U.S. Patent No. 11,971,937
1003	Declaration of Benjamin B. Bederson, Ph.D. (“Bederson-Decl.”)
1004	Curriculum Vitae of Benjamin B. Bederson, Ph.D.
1005	U.S. Patent Application Publication No. 20100145923A1 (“Wang”)
1006	U.S. Patent No. 8,880,547 (“Mills”)
1007	U.S. Patent Application Publication No. 20070168344A1 (“Brinson”)
1008	U.S. Patent Application Publication No. 20090248511A1 (“Mehta”)
1009	U.S. Patent Application Publication No. 20060059126A1 (“Naick”)
1010	U.S. Patent Application Publication No. 20020174118A1 (“Bates”)
1011	U.S. Patent No. 9,098,569 (“Bhagat”)
1012	U.S. Patent Application Publication No. 20090287676A1
1013	U.S. Patent Application Publication No. 20080091834A1 (“Norton”)
1014	U.S. Patent Application Publication No. 20160012050A1 (“Bursey”)
1015	U.S. Patent Application Publication No. 20120191531A1
1016	U.S. Patent Application Publication No. 20090292595A1
1017	U.S. Patent Application Publication No. 20110054998A1
1018	U.S. Patent No. 8,473,492
1019	U.S. Patent Application Publication No. 20070273708A1
1020	U.S. Patent Application Publication No. 20100138293A1
1021	U.S. Patent Application Publication No. 20080150901A1
1022	U.S. Patent Application Publication No. 20110246921A1
1023	U.S. Patent Application Publication No. 20080147638A1
1024	U.S. Patent Application Publication No. 20020057298A1
1025	U.S. Patent No. 7,152,064
1026	U.S. Patent No. 8,095,876
1027	U.S. Patent Application Publication No. 20080071738A1
1028	U.S. Patent No. 5,826,260
1029	U.S. Patent No. 7,200,820
1030	U.S. Patent No. 8,407,217
1031	U.S. Patent Application Publication No. 20080208819A1
1032	U.S. Patent Application Publication No. 20060253431A1
1033	U.S. Patent Application Publication No. 20030105744A1
1034	U.S. Patent No. 7,296,021
1035	U.S. Patent Application Publication No. 20030055810A1
1036	U.S. Patent Application Publication No. 20040162814A1

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1037	U.S. Patent No. 7,555,476
1038	U.S. Patent No. 7,693,833
1039	U.S. Patent No. 8,402,032
1040	U.S. Patent No. 8,938,463
1041	U.S. Patent No. 6,718,363
1042	International Application Publication No. WO2011035426A1
1043	U.S. Patent No. 6,012,053
1044	U.S. Patent Application Publication No. 20070112761A1
1045	U.S. Patent Application Publication No. 20080071739A1
1046	U.S. Patent Application Publication No. 20040177064A1
1047	U.S. Patent Application Publication No. 20090187554A1
1048	U.S. Patent No. 5,946,678
1049	U.S. Patent Application Publication No. 20060004734A1
1050	U.S. Patent Application Publication No. 20090276418A1
1051	U.S. Patent Application Publication No. 20080155411A1
1052	U.S. Patent Application Publication No. 20050021512A1
1053	U.S. Patent Application Publication No. 20050120016A1
1054	U.S. Patent Application Publication No. 20080010269A1
1055	U.S. Patent Application Publication No. 20070239662A1
1056	U.S. Patent Application Publication No. 20050177555A1
1057	U.S. Patent Application Publication No. 20080140712A1
1058	U.S. Patent Application Publication No. 20060136400A1
1059	U.S. Patent Application Publication No. 20080208835A1
1060	U.S. Patent Application Publication No. 20080155399A1
1061	U.S. Patent Application Publication No. 20170060856A1
1062	U.S. Patent Application Publication No. 20100262568A1
1063	U.S. Patent No. 5,659,732
1064	Plaintiff's Disclosure of Initial Infringement Contentions, in AccuSearch Techs. LLC v. Google LLC, 25-514-GBW (D. Del. Dec. 17, 2025)
1065	U.S. Patent Application Publication No. 2007/0100804A1
1066	Shneiderman, Designing the User Interface: Strategies for Effective Human-Computer Interaction (3d ed. 1998)
1067	U.S. Patent Application Publication No. 20080221887A1
1068	U.S. Patent Application Publication No. 20040111467A1
1069	U.S. Patent Application Publication No. 20040162814A1
1070	Declaration of Robert Osann, Jr., in AccuSearch Techs. LLC v. Google LLC, 25-514-GBW (D. Del. July 11, 2025)
1071	U.S. Patent Application Publication No. 20020156917A1

Exhibit	Description
1072	U.S. Patent Application Publication No. 20110119243A1
1073	U.S. Patent Application Publication No. 20100198821A1
1074	U.S. Patent No. 8,515,731
1075	U.S. Patent Application Publication No. 20090210404A1
1076	U.S. Patent Application Publication No. 20110035401A1
1077	U.S. Patent No. 8,165,972
1078	U.S. Patent No. 8,055,669
1079	U.S. Patent No. 6,999,959
1080	Chang, et al., “Search Engines’ Help Systems,” Fifth International Conference on Information Technology: New Generations (IEEE 2008)
1081	U.S. Patent Application Publication No. 20020194166A1 (“Fowler”)
1082	U.S. Patent Application Publication No. 20070239676A1 (“Stonehocker”)
1083	Chi, Ed H., et al. “Using information scent to model user information needs and actions and the Web,” Proceedings of the SIGCHI conference on Human factors in computing systems (2001)

MANDATORY NOTICES

A. Real Party-In-Interest

Petitioner Google LLC (“Google”) is the real party-in-interest.¹

B. Related Matters

1. United States Patent & Trademark Office

The application from which U.S. Patent No. 11,971,937 (“the ’937 patent”) issued (U.S. Patent Application No. 18/195,882) is a Continuation of U.S. Patent Application No. 17/395,078 filed August 5, 2021, which is a Continuation of U.S. Patent Application No. 17/114,305 (U.S. Patent No. 11,100,184) filed December 7, 2020, which is a Continuation of U.S. Patent Application No. 16/790,057 (U.S. Patent No. 10,867,001) filed February 13, 2020, which is a Continuation of U.S. Patent Application No. 16/553,900 (U.S. Patent No. 10,585,959) filed August 28, 2019, which is a Continuation of U.S. Patent Application No. 16/199,192 (U.S. Patent No. 10,437,900) filed November 25, 2018, which is a Continuation of U.S. Patent Application No. 15/383,907 (U.S. Patent No. 10,140,374) filed December 19, 2016, which is a Continuation of U.S. Patent Application No. 14/820,433 (U.S.

¹ Google LLC is a subsidiary of XXVI Holdings Inc., which is a subsidiary of Alphabet Inc. XXVI Holdings Inc. and Alphabet Inc. are not real parties-in-interest to this proceeding.

Patent No. 9,529,920) filed August 6, 2015, which is a Continuation of U.S. Patent Application No. 13/163,614 (U.S. Patent No. 9,104,765) filed June 17, 2011.

The following applications are Continuations of U.S. Patent Application No. 18/195,882 (U.S. Patent No. 11,971,937):

- U.S. Patent Application No. 18/600,949 (U.S. Patent No. 12,292,942) filed March 11, 2024;
- U.S. Patent Application No. 19/054,481 filed February 14, 2025 (*pending*).

2. United States Patent Trial and Appeal Board

Petitioner previously filed a petition for *inter partes* review of U.S. Patent Nos. 10,585,959, which is related the '937 patent. That proceeding is IPR2026-00286.

With this filing, Petitioner is contemporaneously filing petitions for *inter partes* review of U.S. Patent Nos. 10,867,001 and 11,100,184, each of which is also related the '937 patent. Those proceedings are IPR2026-00287 and -00288.

3. U.S. District Court for the District of Delaware

The '937 patent is currently asserted in *AccuSearch Technologies LLC v. Google LLC*, Civil Action No. 1:25-cv-00514 (D. Del.).

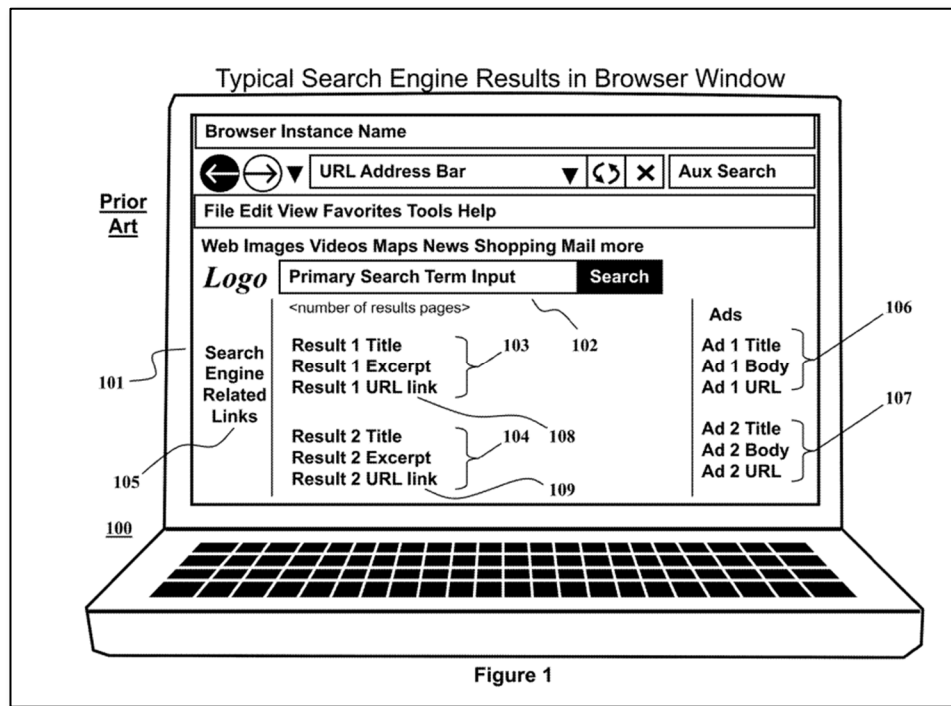
C. Counsel and Service Information - §42.8(b)(3) and (4)

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A power of attorney is submitted with the Petition. Counsel for Petitioner consents to service of all documents via electronic mail.

I. INTRODUCTION

The '937 patent concerns annotating search-engine results. Figure 1 (below) depicts a user interface for a prior-art search-engine webpage, which includes a search bar for entering search terms. Executing a search identifies webpages related to the search terms.



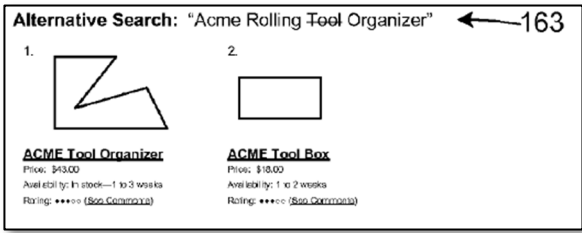
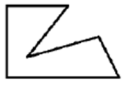
The '937 patent purports to improve this prior-art interface by annotating search results to indicate whether a webpage includes each search term. That is, if the three-word search query is, *e.g.*, “MANHATTAN CLAM CHOWDER,” each returned search result is annotated to indicate whether, *e.g.*, the word “MANHATTAN” is missing or included in that webpage.

Annotating search-result listings to indicate the presence or absence of search terms was known before 2011, the earliest alleged priority date. For example, Internet search providers have long **bolded** search terms present in a search-result listing, *e.g.*, in a result’s URL or summary. *See* EX1003 (“Bederson-Decl.”), ¶¶38-42 (citing, *e.g.*, EX1025-EX1026). It was also known to annotate search-result listings to indicate an ***absent*** term, *e.g.*, to warn the user that the term was not found in a search-result’s referenced webpage. Bederson-Decl., ¶¶43-47. For example, the prior-art Bates reference displays color-coded bars to indicate the presence or absence of search terms in each search result. *See infra* §VI.A. Other prior-art references disclose similar annotations used for the same purpose. *See, e.g.*, EX1027-EX1028, EX1048-EX1049.

The only plausible distinction between the annotation system recited in the ’937 patent’s claims and those disclosed years earlier in Bates (and others) is the limitation reciting that the *warning* (*i.e.*, annotation) of *missing* search term “*comprises a text representing the [missing] search term element.*”² Put simply, the claims require the warning/annotation to include the missing search term’s text itself, whereas Bates’s example uses color-coded bars, without text, to indicate missing (and present) search terms. Bederson-Decl., ¶48.

² Claim language italicized and bold-italics emphasis added throughout.

But ordinary artisans had already used search-term text to indicate which search terms were missing (and present) in search results. For example, the prior-art Mills and Bhagat references both warn the user that a search term is missing from search results by displaying the term’s text with a strikethrough (*e.g.*, “~~Tool~~” (below left); “~~adventures~~” or “ ~~racing~~” (below right)):

 Alternative Search: “Acme Rolling ~~Tool~~ Organizer” ←163 1.  ACME Tool Organizer Price: \$43.00 Availability: In stock—1 to 3 weeks Rating: ★★★★★ (See Comments) 2.  ACME Tool Box Price: \$10.00 Availability: 1 to 2 weeks Rating: ★★★★★ (See Comments)	fast racing ~~adventures~~ (See all 1,443 results) fast racing game \$54.95 fast racing 3D \$64.95 fast racing t-shirt \$14.95 fast <del> racing</del> adventures (See all 180 results) fast adventures DVD \$14.95 fast adventures survival kit \$130.95 fast adventures tent \$87.95
Mills (EX1006), FIG. 2 (excerpt)	Bhagat (EX1011), FIG. 2 (excerpt)

Other text-based annotation systems were known too. Bederson-Decl., ¶¶49-51 (citing, *e.g.*, EX1012, EX1045). The challenged claims are thus merely a predictable combination of known types and uses of text-based warnings to indicate the presence or absence of a search term (*e.g.*, as in Bhagat and Mills) with known interface configurations for displaying search results (*e.g.*, as in Bates and Wang).

II. CERTIFICATION

Google certifies that the ’937 patent is available for, and Google is not barred or estopped from requesting, inter partes review. 37 C.F.R. §42.104(a).

III. GROUNDS FOR UNPATENTABILITY

Google requests cancellation of claims 1-39 as follows:

Ground	References	Claims	Basis
1A	Bates-Bhagat-Brinson	1, 15, 29, 39	§103
1B	Bates-Bhagat-Brinson-Mehta	2-8, 13-14, 16-22, 27-28, 30-38	
1C	Bates-Bhagat-Brinson-Mehta-Naick	9-12, 23-26	
2A	Wang-Mills-Brinson	1, 15, 29, 39	
2B	Wang-Mills-Brinson-Mehta	2-8, 13-14, 16-22, 27-28, 30-38	
2C	Wang-Mills-Brinson-Mehta-Naick	9-12, 23-26	

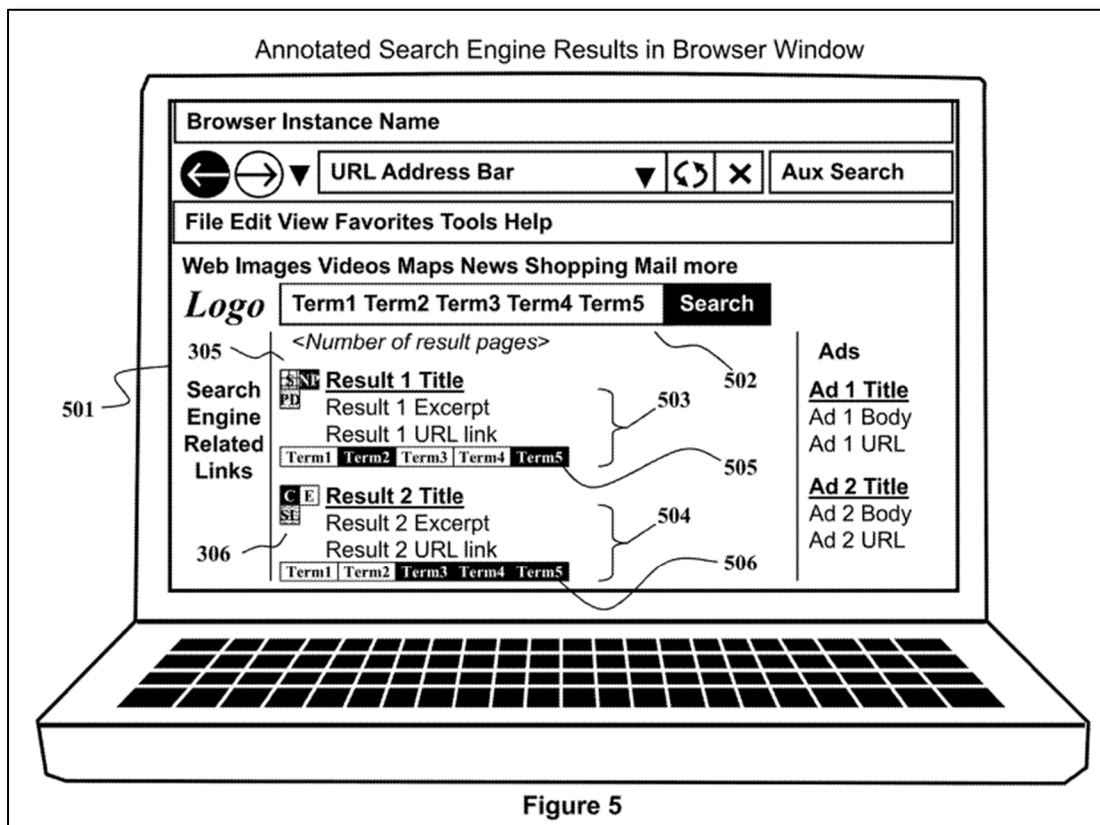
Bates, Wang, Naick, Brinson, and Mehta are prior art under pre-AIA §102(b). Mills and Bhagat are prior art under pre-AIA §102(e). None were cited during prosecution.

IV. THE '937 PATENT

A. Overview

The '937 patent claims priority to June 2011. The patent alleges then-existing search engines could waste a user's time by returning webpages missing "search terms that [the user] had specified." EX1001, 2:20-23. The patent says it would be beneficial if users knew "in advance which [search-result] webpages contain which search term elements." EX1001, 2:50-53. "This foreknowledge...could prevent the user from wasting their time reviewing pages that are not relevant to their search." EX1001, 3:9-11.

To provide that “foreknowledge,” the patent annotates each search-result grouping “to indicate which search term elements are present in the webpage referenced by the search result.” EX1001, 4:52-59.



Above, each search-result grouping includes “annotations 505 and 506,” which “indicat[e]...which search term elements actually appear” on the respective search-result webpages. EX1001, 10:30-34. In Figure 5’s “exemplary” implementation, “search term elements which are present [are] shown as black text on a white background,” and missing terms “are shown with white text on a black background.” EX1001, 10:34-37. Bederson-Decl., ¶¶52-58.

B. Challenged Claims

Section XIII reproduces the challenged claims. Independent claim 1 recites a process largely aligned with Figure 5's embodiment. Independent claims 15 (system) and 29 (process) largely mirror claim 1. Each independent claim requires, *inter alia*, a search result with a “warning” comprising “a text representing” a “search term element” that is “missing.” The specification does not use the term “warning” by itself, but does describe the use of “annotations” to “warn” users that a search result is missing a search term. EX1001, Abstract. The independent claims also recite other prior-art functionality, like filtering search results by search term. Bederson-Decl., ¶59.

Certain dependent claims (*e.g.*, claim 9) require considering the absence of a search term in “a descendant webpage.” That is, the system identifies whether another webpage—one *linked directly one level from the referenced webpage*—includes the search term. Bederson-Decl., ¶60 (identifying www.uspto.gov/patents as an example *descendant webpage directly linked one level from* www.uspto.gov); EX1001, 4:52-59, 10:48-67; FIG. 6. Searching descendant webpages for search terms was known before 2011. Bederson-Decl., ¶¶61-64 (citing EX1009, EX1041-EX1042 as examples).

The remaining dependent claims recite other common, prior-art functionality, like advertisements related to search terms (*e.g.*, claim 2). These dependent claims are also unpatentable. Bederson-Decl., ¶65.

C. Person of Ordinary Skill in the Art (POSA)

POSAs would have had a bachelor's degree in computer science or a related field, plus at least two years of industry or graduate-level experience with designing user interfaces for Internet search engines. Bederson-Decl., ¶¶33-37.

D. Prosecution History

The as-filed claims were rejected for non-statutory double-patenting, which was traversed via terminal disclaimer, resulting in allowance. EX1002, 124-130, 207-214.

V. CLAIM INTERPRETATION

Claim terms are given their ordinary meaning in light of the specification and prosecution history. 37 C.F.R. §42.100(b).

VI. GROUND 1A: BATES IN COMBINATION WITH BRINSON, OR WITH BHAGAT AND BRINSON, RENDERS OBVIOUS CLAIMS 1, 15, 29, 39

A. Bates (EX1010)³

Bates discloses an annotated search-engine interface that uses color to indicate the “occurrence of each keyword” (*i.e.*, search term) in each displayed search result.

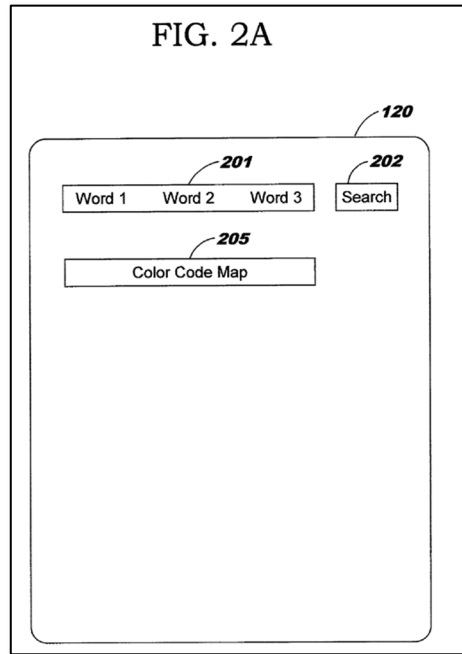
³ §VI.A's cites are to Bates unless indicated otherwise.

Abstract. Bates teaches that “color coding search results” allows users to conveniently “interpret[] search output.” [0001].

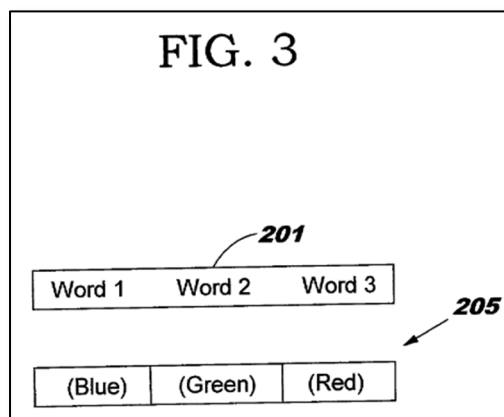
Bates explains that keyword-based searches are “often interpret[ed]” by search engines “as requests to find web pages that contain any one or more of the keywords,” which may “return[] an unusably large number of sources.” [0004]; Bederson-Decl., ¶¶70-72 (discussing Boolean “OR” operator). “For example, a searcher might enter three keywords,” but the “search engine would” “find sources that include” just one keyword “in isolation,” or two keywords, or “all three keywords.” [0006]. The user, however, may only “judge[]” a source as “relevant” if it matches “at least two of the [three] keywords.” [0006].

Bates therefore identifies “a need for...presenting the results of a search so that the searcher may form an effective picture of the relevance of the sources found by the search engine” without having to “examine sources that lack relevant information” but are nevertheless displayed “in the list of sources.” [0009]. Bates addresses this need by collecting “occurrence data that report, for example, whether each keyword is present *or absent in each web page*,” and providing that information in “a correlation indicator” displayed within each search result. [0011]-[0012].

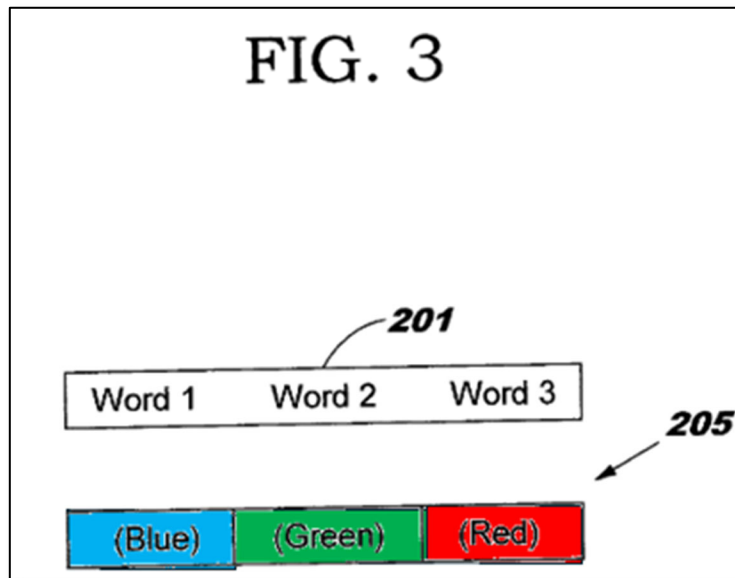
Bates's Figure 2A (below) depicts an interface that includes "input line 201, wherein keywords may appear as they are entered [by a searcher]." [0018], [0026]. In Figure 2A, three keywords are shown: "word1, word2, and word3." [0026].



A "color code map 205" beneath the input line "provide[s] the searcher with a visual association between colors and keywords." [0026]. Bates's Figure 3 (below) "shows an exemplary configuration of the color code map" below the input line. [0029].



The color-code map “visually associate[s] colors with the keywords that appear on the input line 201. For example, keywords word1, word2, and word3 might appear on the input line 201 as shown in FIG. 3, and be associated with the colors blue, green, and red, respectively.” [0029]. This is seen in the colored version of Figure 3 below:



In one embodiment, Bates does not use a separate color-code map (like color bar 205 above) but instead changes the font color of each search term as it is typed into input line 201. For example, “word1 might appear in blue characters in the input line 201, word2 might appear in green characters, and word3 in red.” [0031].

Bates calls this as an “implicit” color code map ([0031]), an example of which is illustrated below. Bederson-Decl., ¶¶72-77.

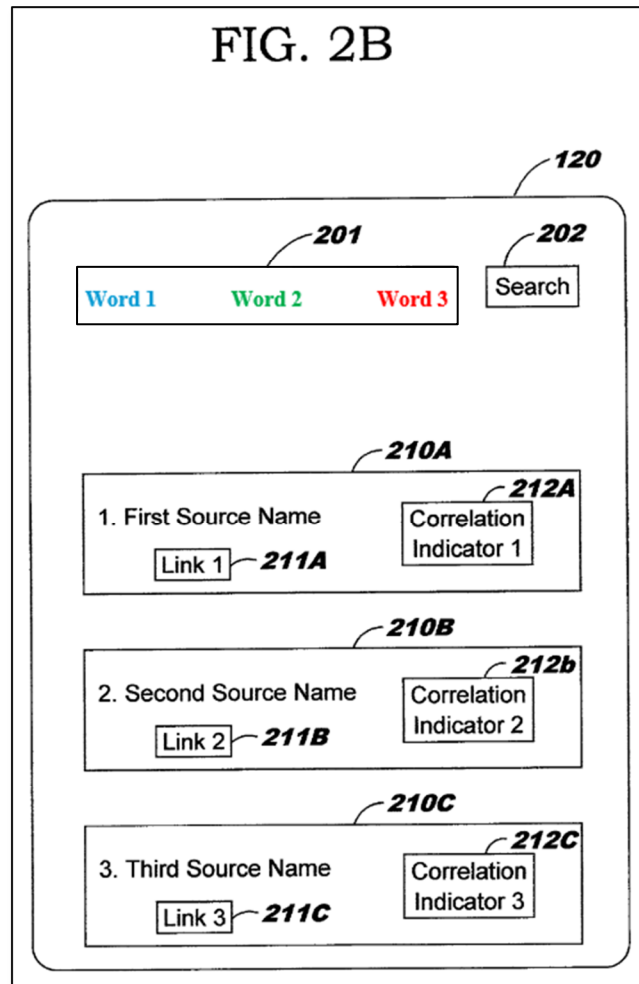
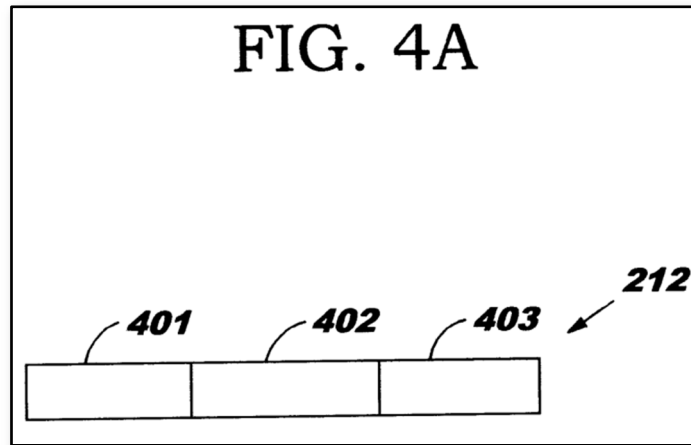


Figure 2B (above) depicts Bates’s interface with an “exemplary presentation of search results,” which includes information about webpages 210A-210C that were “found by the search.” [0027], [0018].

Each search result 210 includes a correlation indicator 212 in “the form of a horizontal bar as shown in FIG. 2B, divided into...segments according to the number of keywords on the display line 201. For example, if there are three keywords, the

horizontal bar correlation indicator may have three segments 401, 402, and 403 as shown in FIG. 4A [below], associated respectively with the keywords and their colors.” [0033].



Using FIG. 4A’s example, Bates says if keyword word1 is present in a webpage, then segment 401 is colored blue; if keyword word2 is present, then segment 402 is colored green; etc. [0033]. But when a keyword is *not* present, then its segment is “left uncolored, or colored according to a background color not associated with any keyword by the color code map.” [0033].

The demonstrative below illustrates an example where 210B’s webpage contains all three keywords, but 210A is missing word1 and 210C is missing word1 and word3 as indicated by the gray-shaded segments (a “background color not associated with any keyword”—[0033]). Bederson-Decl., ¶¶78-81. “Thus, by glancing at the colors of the correlation indicator 212, the searcher 100 may readily grasp the relevance of the URL to the search.” [0033].

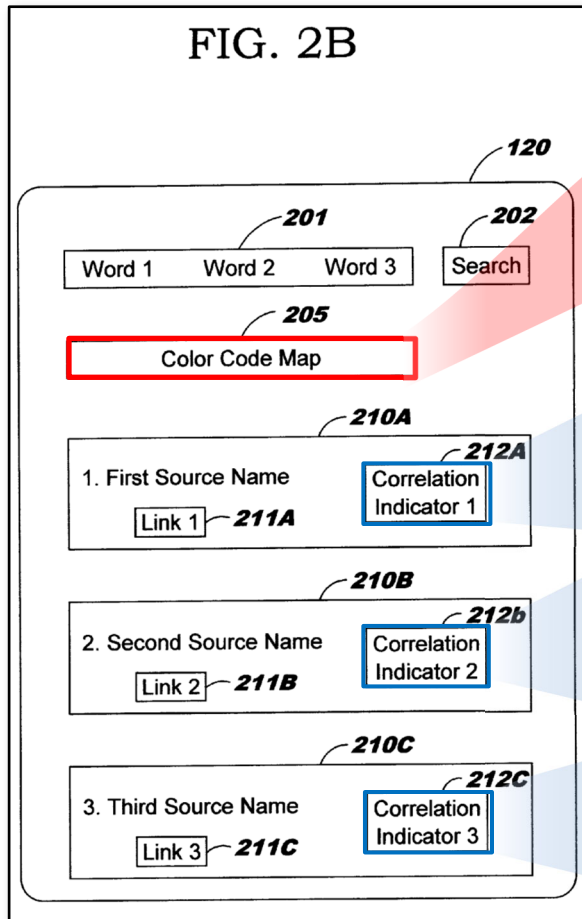
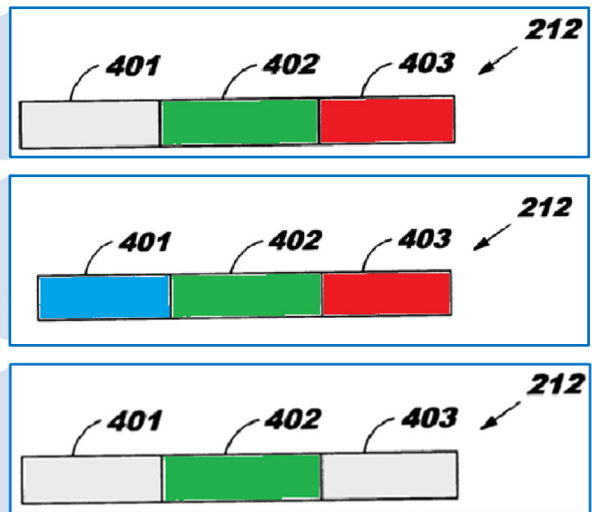


FIG. 3 (colorized excerpt)



FIG. 4A (colorized)



Rather than segmented horizontal bars of colors ([0033]), Bates says the correlation indicator “may be *any* visual presentation that uses a color code to convey the presence or absence...of keywords” ([0036]). Bates thus encourages POSAs to consider alternative designs for its correlation indicators. Bederson-Decl., ¶¶82-83. One obvious alternative implementation is based on Bates’s “implicit”-color-code embodiment. *See infra* §VI.D.1.a.

B. Bhagat (EX1011)

While Bates describes a color-based approach to indicating the presence or absence of search terms, POSAs would recognize other ways to visually indicate such information. Bederson-Decl., ¶¶84-85. Bhagat provides one example.

Like Bates, Bhagat discloses a user interface for a search engine that is based on, *e.g.*, “keyword matching.” Bhagat, 1:6-10; FIGS. 2-4. Bhagat discusses examples for “locat[ing] products in an electronic commerce system,” but Bhagat’s techniques also apply to “a general purpose search engine.” Bhagat, 1:54-58, 2:50-67, 4:6-25.

Bhagat says some “search queries...may yield few and/or no search results.” Bhagat, 1:58-62. Rather than display few or no search results, Bhagat says it is beneficial to generate “suggested queries.” Bhagat, 1:62-2:4; Bederson-Decl., ¶¶86-87. Suggested queries can be generated “by removing one or more search term[s] from [a] search query” to determine if a revised query matches a “historical search query” that Bhagat’s system knows yielded relevant results. Bhagat, 6:4-22; *see also* Bhagat, 6:23-37.

In Figure 2’s example (below), the three-word query “fast racing adventures” “yields no search results.” Bhagat, 8:16-22. In response, Bhagat’s system identifies

two, related historical queries by “remov[ing] a search term” from the initial query. Bhagat, 8:29-34.

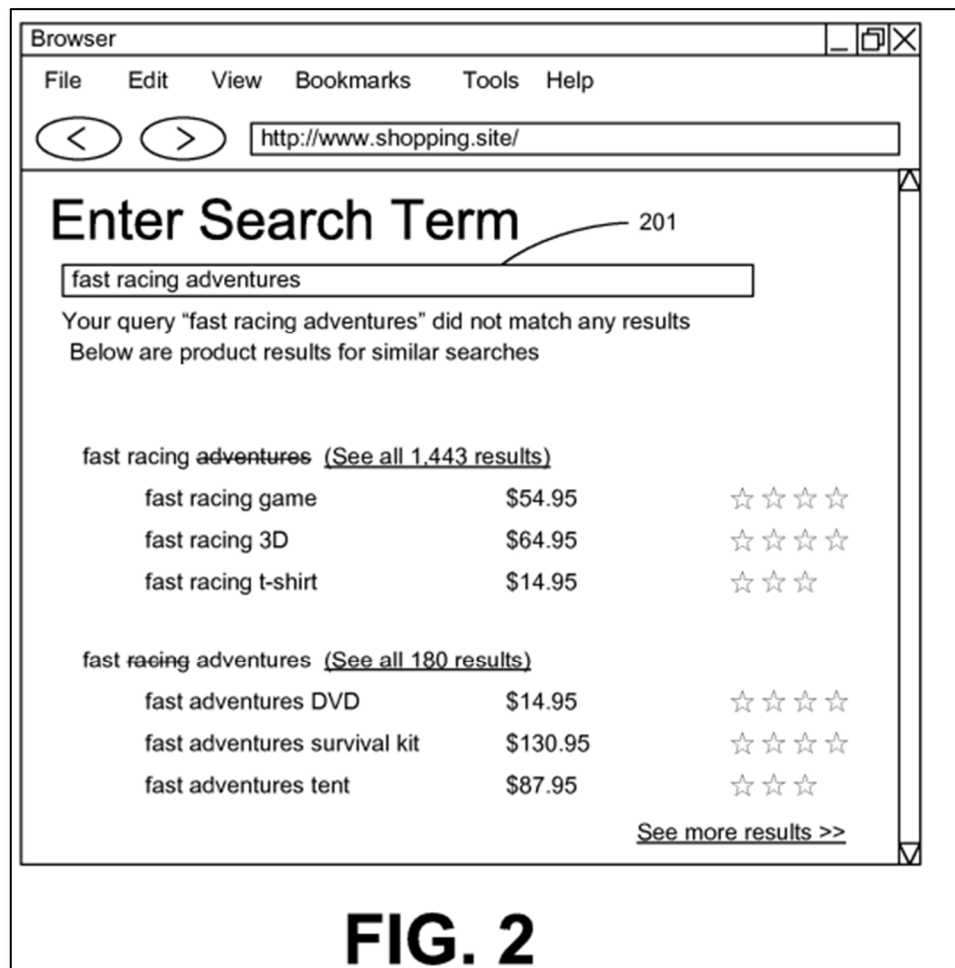


FIG. 2

POSAs understood the strikethrough text “~~adventures~~” and “~~racing~~” above indicates that the corresponding search results are missing the stricken term, but include the other search term(s) that are not stricken. Bederson-Decl., ¶¶87-89. Thus, Bhagat taught POSAs that one way to visually warn a user that a search term is missing in a search result is to display the search term adjacent the search result in strikethrough text. Bederson-Decl., ¶90.

C. Brinson (EX1007)

Brinson discloses a graphical user interface (GUI) for search engines that allows users to designate a search term's "weight" to indicate its "significance" to a search. Brinson, [0044]. If a term's "weight value" is designated "required," then "any data product [e.g., webpage] included in the results **must** include this term." Brinson, [0045]; [0030] ("data products...includ[e]...web page[s]").

In Figure 16's example (highlighted below), search terms entered into "query text box 352" (blue) are also displayed in "list box 360" (green). Brinson, [0069]-[0071]. "[D]isplay area 366" provides a list of data products (webpages) relevant to the search. Brinson, [0072]. The user can subsequently designate one of the initial search terms as a required term by selecting it from list box 360, which sends the term to "text box 356" (red) where the term's weight can be designated, e.g., as a required term. Brinson, [0071]; *see also id.*, claims 7, 24; Bederson-Decl., ¶¶91-94.

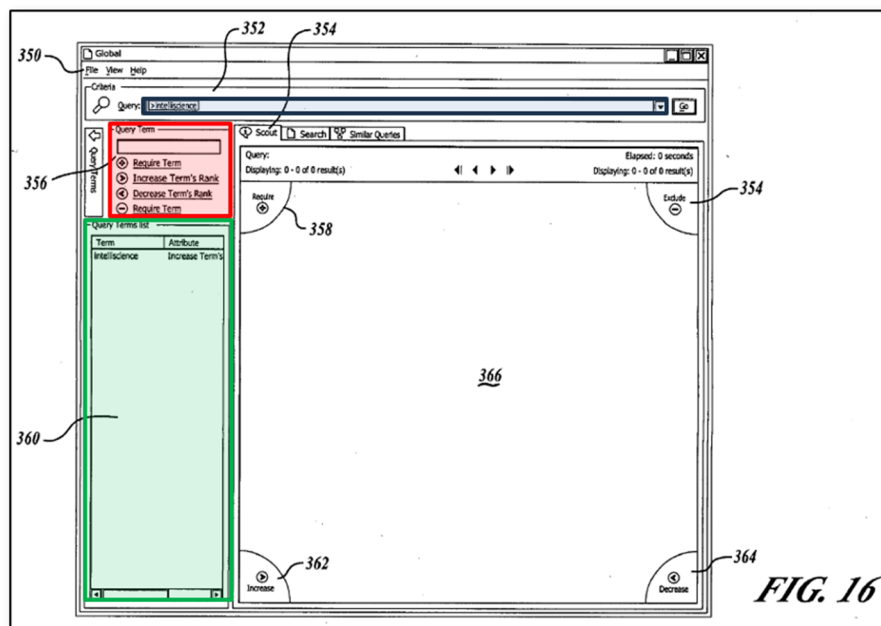


Figure 18 (below) is similar. Certain terms that appear in each data product (website) are listed below each data product and each term can be selected to designate its weight, *e.g.*, as a required term. Brinson, [0073] (“The terms shown under a data product in list 380 can be selected by the user to refine the present search....”); Bederson-Decl., ¶95.

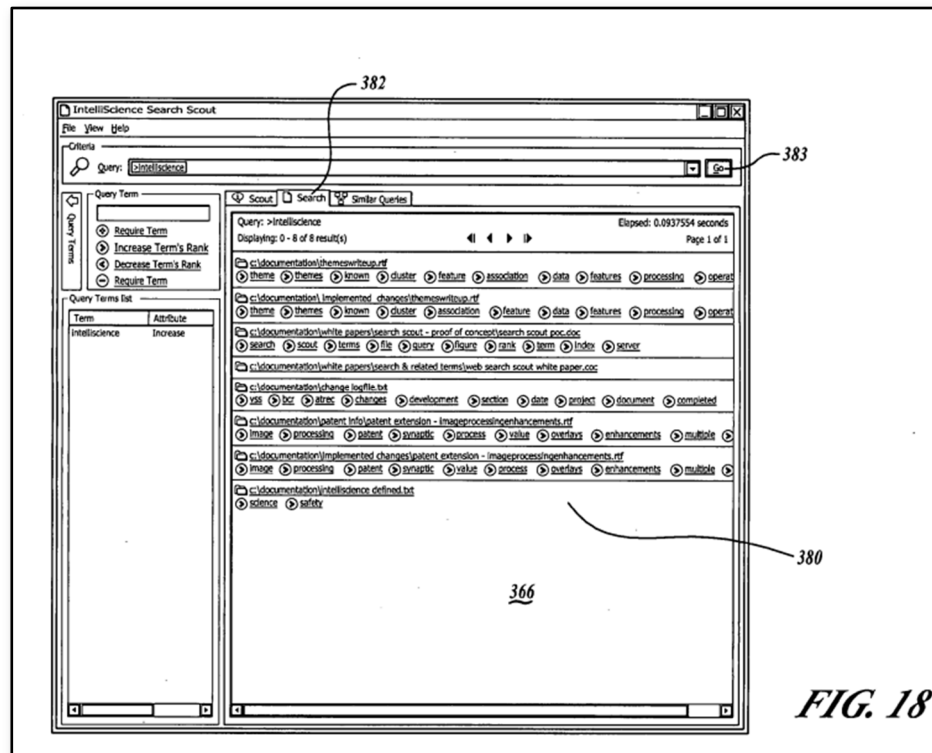


FIG. 18

D. Bates-Brinson and Bates-Bhagat-Brinson Combinations

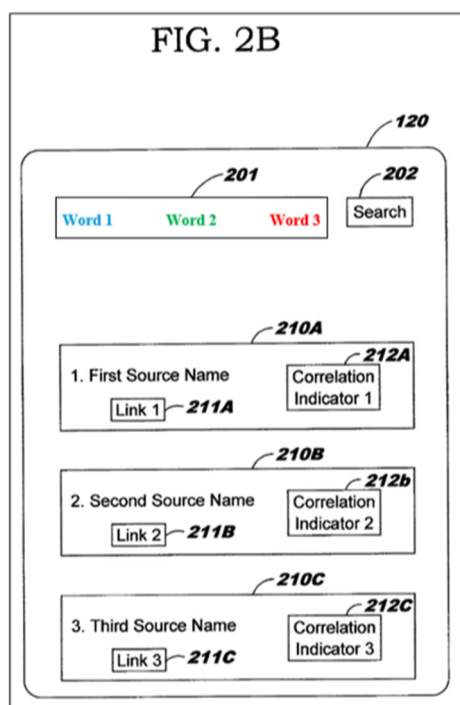
1. Adding search-term text to Bates’s correlation indicators

In Bates’s examples, each correlation indicator uses a segmented horizontal bar of colors to indicate the presence or absence of search terms. Bates, [0033]. However, Bates says its indicator “may be *any visual presentation* that uses a color code to convey the presence or absence...of keywords.” Bates, [0036]. Bates thus

encourages POSAs to consider alternative techniques for visually indicating that search terms are present or absent in search results. Bates itself suggests one alternative technique (font color), and Bhagat discloses another alternative technique (stricken text). Implementing Bates’s system using either technique was obvious. Bederson-Decl., ¶¶96.

a. Color-coded text based on Bates

As discussed in §VI.A and illustrated below, Bates discloses an embodiment in which its color-code map 205 is not displayed, but rather each search term is displayed using different colored text, which provides an “implicit” color-code map. Bates, [0031]. For example, “word1 might appear in blue characters in the input line 201, word2 might appear in green characters, and word3 in red.” *Id.*; FIG. 2B; Bederson-Decl., ¶¶97-99.



While each correlation indicator corresponding to a search result above *could* still comprise segmented horizontal bars of color, another obvious implementation would have simply used the color-coded search terms themselves as correlation indicators. Bederson-Decl., ¶100. Indeed, Bates’s Figures 3 and 4 depict an exemplary correlation indicator that uses essentially the same format as an explicit color-code map, and therefore when an “implicit” color-code map is used it would have made sense to POSAs to use the format of that implicit mapping—*i.e.*, different colored fonts—as correlation indicators. *Id.* Beyond being a logical implementation of Bates’s explicit teachings, POSAs would recognize several additional reasons for this implementation.

First, remembering what search term corresponds to each color in Bates’s horizontal bar could be unnecessarily cumbersome, and this added mental burden would be beneficially avoided by simply displaying the colored search terms themselves as the correlation indicators. For example, while users *could* memorize the color-code map, that could be challenging for long queries and/or when users are rapidly revising search terms. Bederson-Decl., ¶101. Alternatively, while a user *could* repeatedly look up at (or scroll to) the top of Bates’s search-results webpage to re-review the color-code map, that could be time-consuming, needlessly annoying, and/or potentially cause users to lose their place in the search results. *Id.* POSAs would have recognized that using the text of the search terms directly as

correlation indicators would convey the same information but beneficially avoid the need to memorize or repeatedly reference the color-code map. Bederson-Decl., ¶102. POSAs knew that in user-interface design there are benefits to reducing users' mental-processing load, including by eliminating even small mental tasks elicited by the interface design. Bederson-Decl., ¶¶102-103 (citing EX1066, 73-75, 80).

Second, using color-coded font rather than merely color-coded horizontal bars would have beneficially conveyed the presence or absence of search terms using two compatible forms of visual information: text and color. POSAs knew that “using *multiple visual features to represent the same data attribute*” beneficially “provides redundant coding and results in an increase in the ease, speed, and accuracy in which the users are able to perceive and interpret the information.” EX1023, [0063]; Bederson-Decl., ¶104. That Bates's “implicit”-color-code embodiment already combines text and color (*i.e.*, different font colors for the text of different search terms) would have further encouraged POSAs to use both forms of visual communication as correlation indicators too. Bederson-Decl., ¶104.

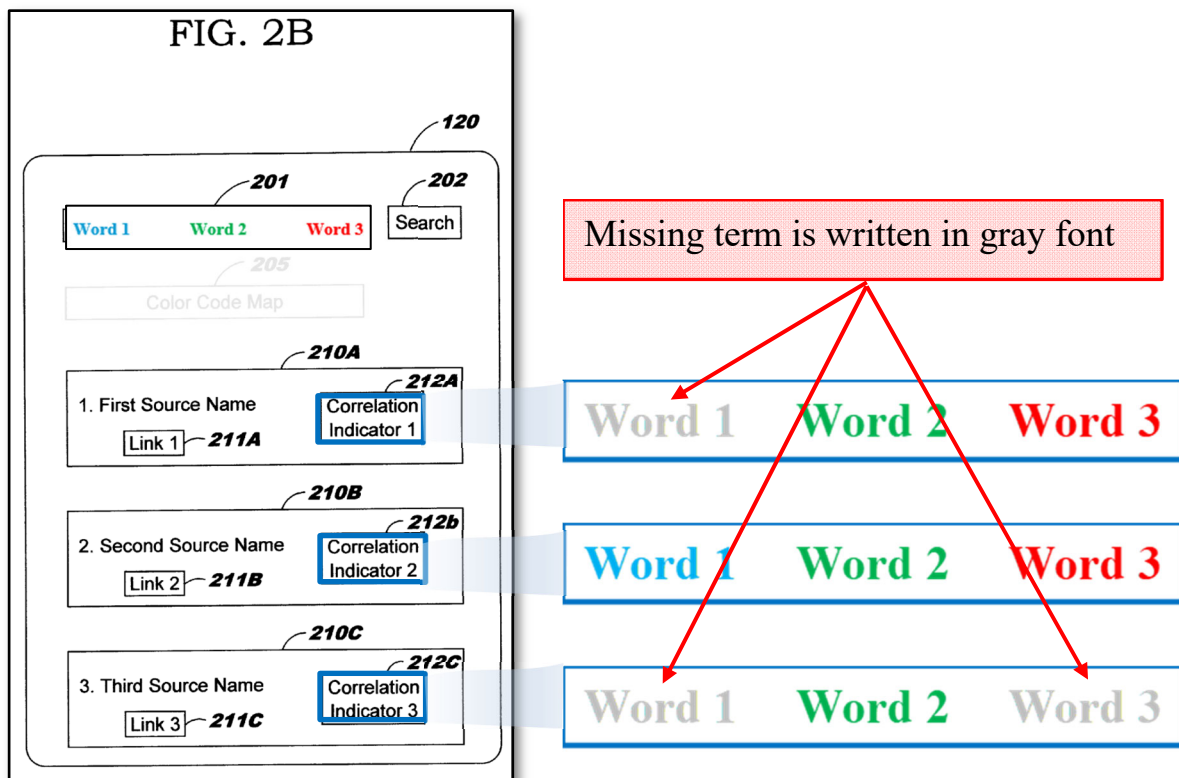
Third, using color-coded text as Bates's correlation indicator would have been an obvious combination of prior-art search-result annotations (color- and text-based annotations) with Bates's known annotation method to yield the predictable result of using color-coding *and* search-term text to indicate the presence/absence of

search terms in search results. *KSR Int’l. Co. v. Teleflex Inc.*, 550 U.S. 398, 416 (2007); Bederson-Decl., ¶105.

POSAs would have recognized that a straightforward implementation of Bates’s “implicit”-color-code embodiment would change Bates’s correlation indicators from color-coded horizontal bars to color-coded text of the search terms themselves, making the format of each correlation indicator match the format Bates expressly describes for the search input field (analogous to how the original color-bar correlation indicator 212 matched the color-bar map 205 in the explicit-color-code embodiment).⁴ Bederson-Decl., ¶106. Similar to Bates’s horizontal bar, each search term’s text would be displayed using its assigned color when the term is present, and using an un-assigned color (*e.g.*, muted-gray) when the term is not present. Bates, [0028]. Bederson-Decl., ¶¶106-110 (citing EX1024, [0005]; EX1046, [0047], FIG. 6).

⁴ Another obvious implementation would have maintained Bates’s bars of color, but written the search terms within those bars, *e.g.*, in white or black font. Bederson-Decl., ¶111.

The following demonstrative depicts this obvious implementation:



b. Text with or without strikethrough based on Bhagat

In view of Bhagat, an alternative obvious implementation of Bates would have changed Bates's correlation indicators from bars of colors to text-based indicators of whether search terms are present or missing. For example, POSAs would have used the text of the search terms as correlation indicators, with missing terms formatted with a strikethrough as Bhagat teaches. *Bederson-Decl.*, ¶112. POSAs had several reasons to make this change.

First, as explained above (§VI.D.1.a; citing corroboration), text-based annotation was more user-friendly because a user would not need to memorize a

color-code map or scroll up to remind themselves what color corresponds to what search term. Bederson-Decl., ¶113.

Second, colorblind users could have difficulty interpreting Bates's color coding because as the number of search terms increased it would become harder to display easy-to-distinguish colors. Bederson-Decl., ¶114; EX1019, [0002]-[0005], [0010]. Therefore, using search-term text would have made the correlation indicators easier to understand for colorblind users. Bederson-Decl., ¶¶114-117 (corroborating with EX1022, [0012]; EX1051, [0026]-[0028]).

Third, some devices had black-and-white-only displays, which made differentiating between multiple colors difficult. Bederson-Decl., ¶118 (corroborating with EX1020, [0044], [0048]; EX1021, [0030], [0042]). For black-and-white-only displays, using search-term text would have made the correlation indicators easier to understand. Bederson-Decl., ¶119.

Fourth, using text rather than color to convey information regarding a search result would have been the simple substitution of one known element for another to obtain predictable results. *KSR*, 550 U.S. at 417. Using text to convey information about the contents of a search result was known. Bederson-Decl., ¶¶120-123 (citing examples, including EX1030, EX1045). Using text rather than color to convey information would have been a routine design choice for POSAs as both options

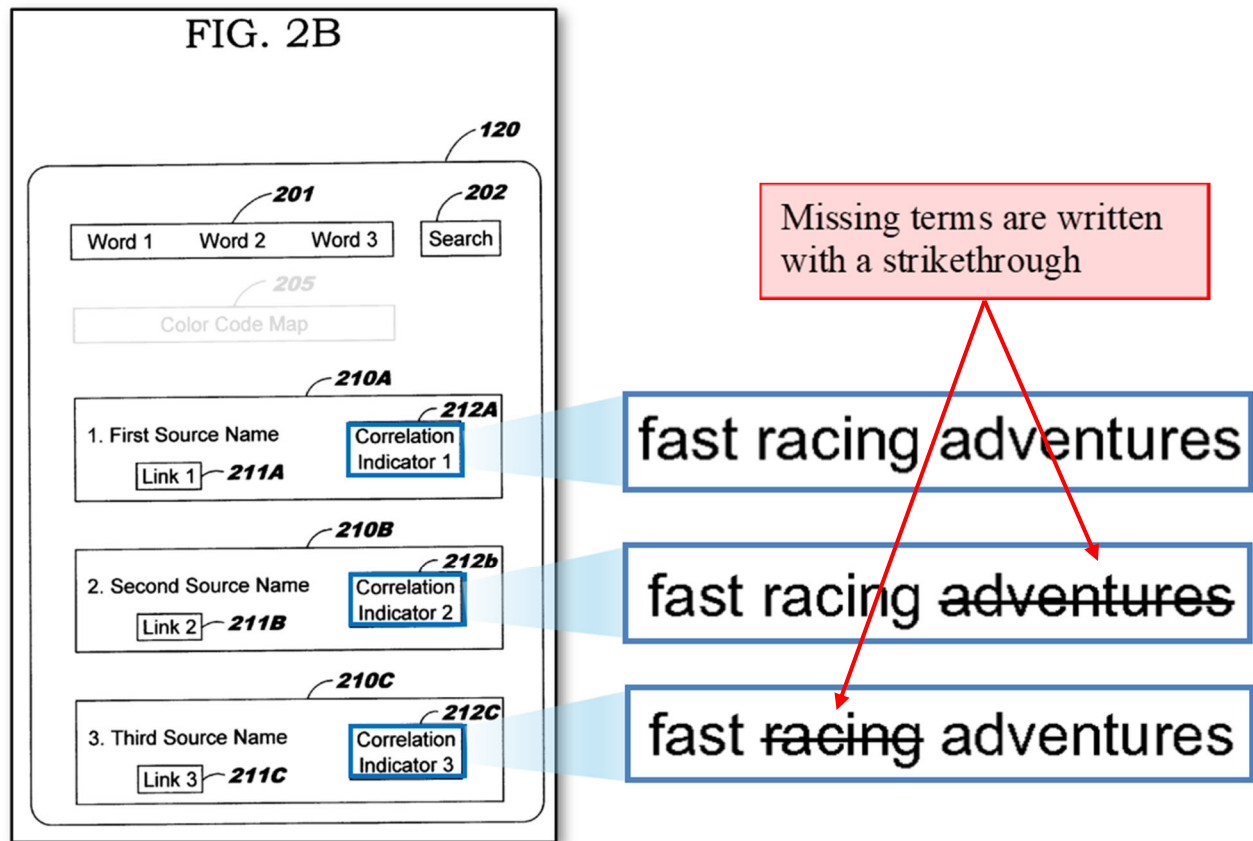
accomplish the same predictable result: visually conveying information regarding the presence/absence of search terms to users. Bederson-Decl., ¶124.

Finally, given the numerous benefits text-based correlation indicators offer, POSAs would not have been discouraged from using such indicators simply because Bates ([0036]) expresses a general preference for color. Bederson-Decl., ¶125 (highlighting similarities between indicating a missing term using white/gray color (Bates) and using strikethrough text (Bhagat)); *UCB, Inc. v. Actavis Lab’ys UT, Inc.*, 65 F.4th 679, 692 (Fed. Cir. 2023). Indeed, POSAs would have also known that Bhagat’s text annotations could easily be implemented using color font (as Bates, [0031] suggests) with added strikethroughs rather than black font with added strikethroughs, further confirming that Bates’s preference for color would not have discouraged POSAs from pursuing the proposed combination. Bederson-Decl., ¶¶125-126.

Using Bates’s Figure 2B (annotated below left) as an example based on the search query and annotations illustrated in Bhagat’s Figure 2 (excerpted below right), the correlation indicators in this implementation would display the user’s search terms (in black or colored font), using strikethrough format for a term missing from a search result. For example, in response to searching for “fast racing adventures,” the second and third correlation indicators below indicate that

“adventures” is missing from result 210B and “racing” is missing from result 210C.

Bederson-Decl., ¶127.



2. Adding GUI elements for search-term filtering based on Brinson

As discussed above (§VI.A), Bates’s search engine may return search results missing search terms. However, POSAs knew users sometimes only wanted results that included a particular term, and therefore it was conventional for “search engines” to “support[] ‘include’ and ‘exclude’ Boolean operators,” which required search results to include (or exclude) a search term(s). EX1035, [0009]; *see also* EX1036, [0024]. Bederson-Decl., ¶128.

Brinson discloses a search-engine GUI that includes a user-friendly way—*i.e.*, user-selectable GUI elements—to indicate that a search term is ““required”” so that “the results must include this term.” Brinson, [0045]; *see also* FIGS. 16 & 18 [0069]-[0071]; Bederson-Decl., ¶129.

In view of Brinson, POSAs had reason to augment the two Bates-based search-engine interfaces discussed above (§§VI.D.1.a-b) to include user-selectable GUI elements to allow the user to select a search term as a “Require[d] Term.” Brinson, [0069]-[0070]. Bederson-Decl., ¶130. Doing so would have also been applying aspects of Brinson’s (or other) known GUI elements for making a search term mandatory, to known search engines ready for the improvement of making a term mandatory, to yield the predictable result of Bates’s interface allowing users to make a search term mandatory. *KSR*, 550 U.S. at 417. Adding Brinson’s functionality to Bates would have also furthered Bates’ goal of providing an interface that allows a user to “form an effective picture of the sources found by the search engine” (Bates, [0009]), by allowing users to refine their searches to eliminate irrelevant results. Bederson-Decl., ¶130.

One obvious way to apply Brinson’s teachings to Bates-alone and Bates-Bhagat would have made the individual search terms presented next to each search result selectable so that an individual term’s weight could be designated. Bederson-Decl., ¶131, ¶141. This implementation would have been similar to how Brinson’s

Figure 18 example allows individual terms presented next to individual search results to be selected and designated as “required.” Brinson, [0073]; Bederson-Decl., ¶¶131-137 (citing additional examples).

A known technique for implementing what Brinson describes would have applied the “required”-term designation to already-identified search results (rather than execute an entirely new search), thereby causing the system to display an updated set of search results by removing, from the already-identified search results, references to webpages that are missing one or more terms from the user’s query. Bederson-Decl., ¶138. For example, Fowler (EX1081) corroborates POSAs’ knowledge of a “sifting operation” for a search engine in which—after conducting an initial search—a user can designate keywords as “include” (*i.e.*, required) and the sifting operation will exclude results that are missing the term, without running a new search. Fowler, FIGS. 1-2, [0022], [0038]-[0041]. Stonehocker (EX1082) similarly corroborates the known technique of providing an option to exclude results that are missing a required term from already-identified search results. Stonehocker, FIG. 6, [0005], [0041]-[0043]. Bederson-Decl., ¶¶139-140. Beyond being a routine, known design choice, this implementation would have beneficially avoided the need to re-run an entire search, which would require additional time and server computations. Bederson-Decl., ¶138.

3. Expectation of Success

POSAs would have reasonably expected success because it required only POSAs' ordinary programming skill to implement the Bates-Brinson and Bates-Bhagat-Brinson combinations discussed above. It required only ordinary programming skill to adapt the term-requiring aspects of Brinson's (or other) conventional user-selectable GUI elements (like clickable text) for Bates's search engine. *Bederson-Decl.*, ¶142. And implementing Bates's correlation indicators as text rather than colored bars would likewise have required only routine programming skills as reflected by the fact that Bates and Bhagat both already display text in their user interfaces. That Bates and Bhagat are in the same field (search-result interfaces) and address the same problem (how to provide users with helpful information regarding their searches) further underscores the references' compatibility. *Id.*

E. Mapping to Claims

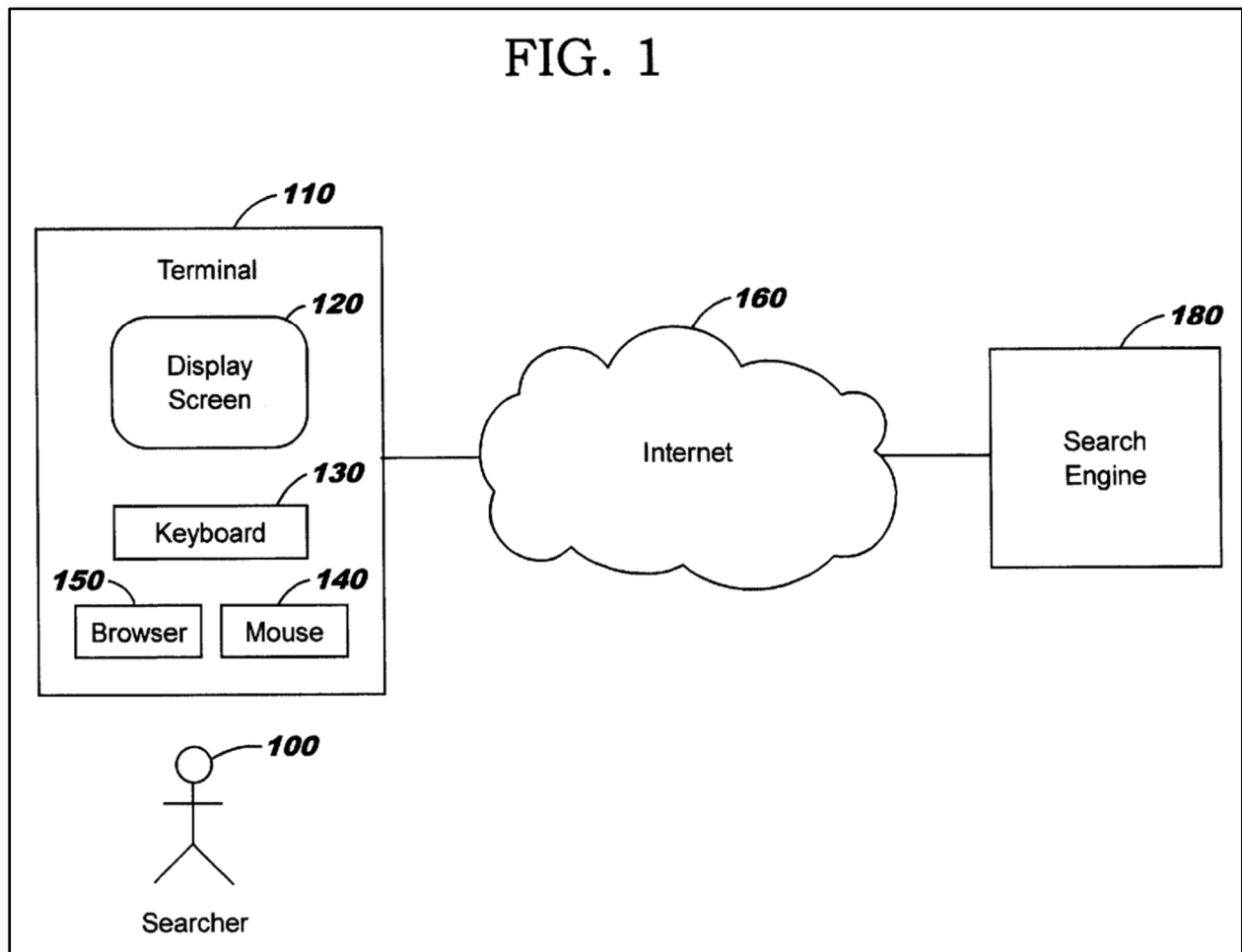
1. Claim 1

- a. **[1PRE] (process for Internet search, annotation, and filtering for providing a GUI that enables a user to automatically remove search results missing a desired search term element)**

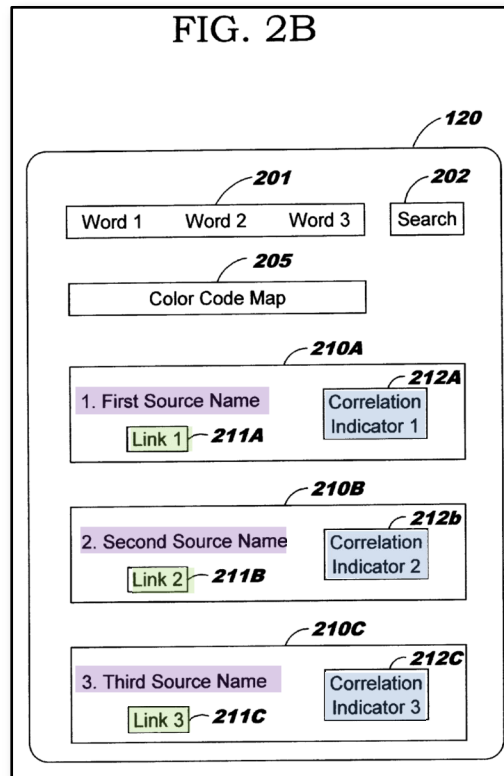
Bates discloses “a method [*i.e., process*]...for...coding search results” when “Internet users conduct searches to find pages on the Word World Web.” Bates, [0001]-[0002]. As discussed above (§§VI.D.1.a-b) and further below, the processes in Bates-Brinson and Bates-Bhagat-Brinson include *annotation* (Bates's correlation

indicators) and *filtering* (Brinson’s required-term designation), which *provide an enhanced interactive graphical user interface* (GUI). Bederson-Decl., ¶143.

As illustrated in Bates’s FIG. 1, “a searcher [*user*] employs a terminal 110” (Bates, [0023]), which “displays...links to the sources [*webpages*]” identified by “search engine 180” (Bates, [0039]). *See also* Bates, [0011] (“The search engine executes a search...that identif[ies] web pages....”); Bederson-Decl., ¶144.



In Figure 2B (highlighted below), each *search result references a webpage* (via a Source Name (purple) and Link 211 (green)) and includes a correlation indicator 212 (blue). Bates, [0026]-[0027].



Each correlation indicator (*annotation*) allows “the searcher” to “readily grasp the relevance of the URL to the search.” Bates, [0033], [0015], [0009]. For example, when “the web page that is identified by the URL...does not contain keyword word1, then the first segment 401 of the horizontal bar may be left uncolored, or colored according to a background color not associated with any keyword by the color code map.” Bates, [0033]. Thus, Bates’s correlation indicator indicates *webpages* that

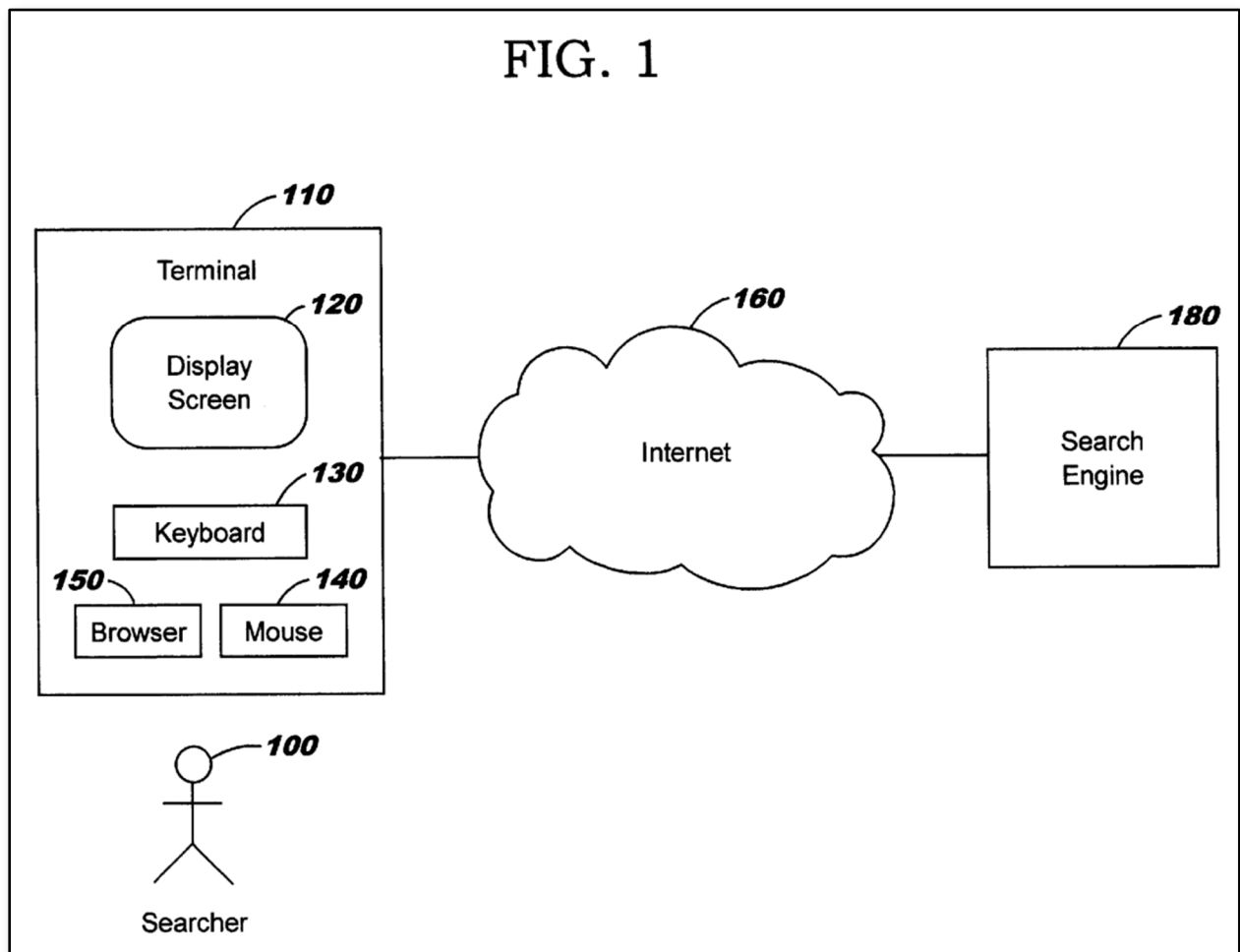
do[] not contain a desired search term element. See also §VI.E.1.e, [1D] (discussing specific annotation formats); Bederson-Decl., ¶¶145-146.

As discussed above (§VI.D.2), Bates-Brinson and Bates-Bhagat-Brinson include user-selectable GUI elements (*e.g.*, clickable search-term text) that allow users to designate a search term as “required” (*i.e.*, mandatory), based on Brinson. That selection provides *filtering* so the *GUI enables a search engine user to automatically remove search results that each reference a webpage that does not contain a desired search term element (i.e., a term the user designated as mandatory)* because those webpages are missing the now-mandatory term. Bederson-Decl., ¶147.

Thus, Bates-Brinson and Bates-Bhagat-Brinson *enable[] a faster operation of Internet search for the search engine user by enabling the search engine user to avoid spending time visiting a webpage that is missing the desired search term element* because the correlation indicators (*annotations*) allow the user to “readily grasp” (Bates, [0033]), and the mandatory-term filtering allows the user to remove from being displayed, search results that are missing a search term element, thereby avoiding visiting the webpages of those search results. Bederson-Decl., ¶148.

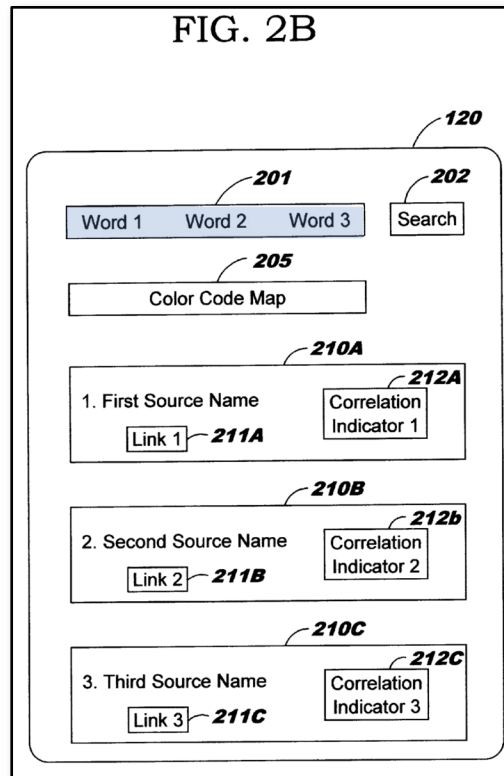
b. [1A] (receiving from a user a search request comprising search term elements)

In Bates's FIG. 1 (below), "a searcher [*user*] employs a terminal 110" (*a personal computing device*) having a "display screen 120" and "browser 150" (Bates, [0023]-[0024]), which "displays on the display 120 links to the sources" returned by "*search engine 180*" (Bates, [0039]). Bederson-Decl., ¶149.



"To conduct a search, the searcher [*user*] 100 may enter keywords into the browser," which are "sen[t]...over the Internet 160 to the search engine." Bates, [0024], FIG. 1. Bates's Figure 2B example (highlighted below) shows three

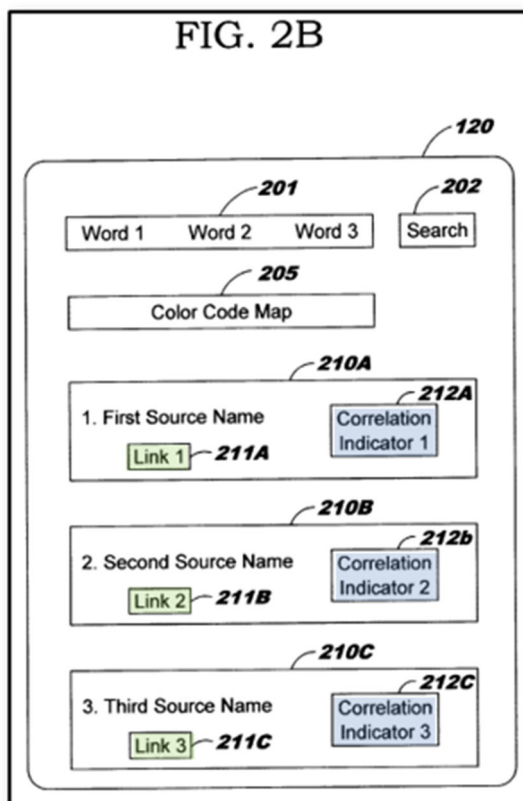
“keywords word1, word2, and word3” (blue)—*i.e.*, three *search term elements* received in a search request from a search engine user on a personal computing device. Bates, [0026]-[0027]. Bederson-Decl., ¶150.



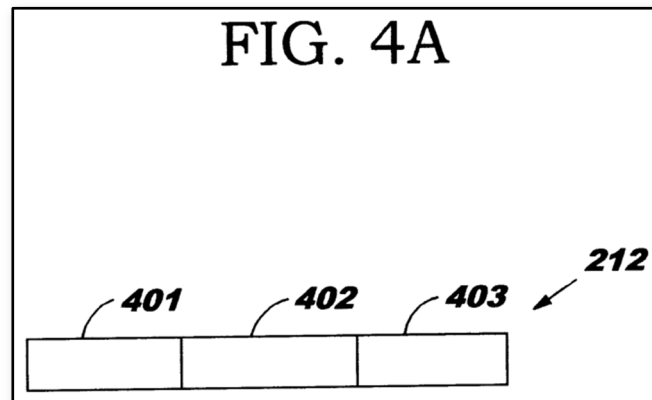
- c. [1B] generating...a first Internet search result that references a first webpage that is missing a first search term element and a second Internet search result that references a second webpage;

In response to receiving the search request, Bates's "search engine executes [the] search, and sends to the browser a set of uniform resource locators (URLs) that identify web pages purportedly relevant to the search, along with occurrence data that report...whether each keyword is present or absent in each web page." Bates, [0011]; FIG. 1. Bederson-Decl., ¶151.

As shown in FIG. 2B (highlighted below), "[f]or each URL," a *search result* 210 is *generated* with "a correlation indicator" (blue) and "links to the URLs [green]" that each *reference a webpage*. Bates, [0012]. Bederson-Decl., ¶152.



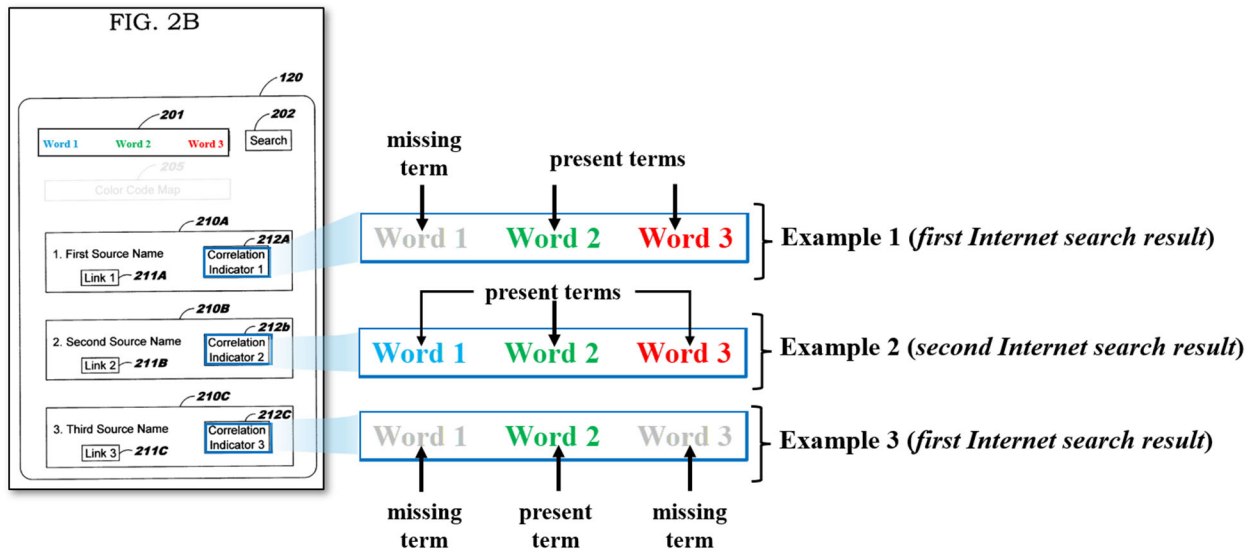
“For example, if there are three keywords the horizontal bar correlation indicator [blue above] may have three segments 401, 402, and 403 as shown in FIG. 4A [below], associated respectively with the keywords and their colors.” Bates, [0033].



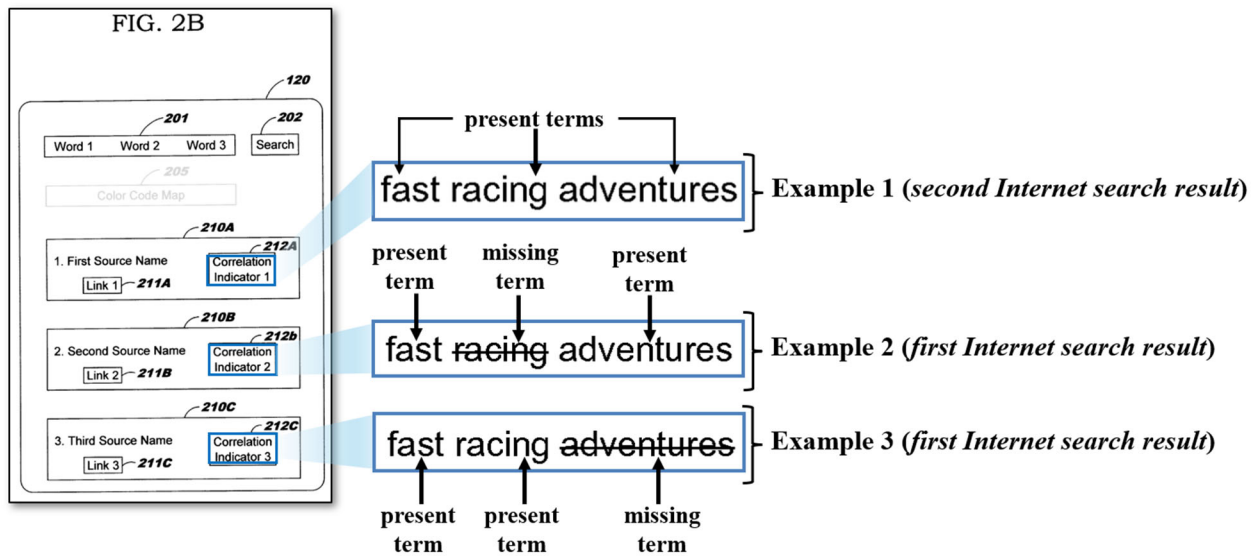
When a search-result webpage “contains keyword word1, for example, the first segment 401 of the horizontal bar correlation indicator may be colored blue,” but when the webpage “does not contain keyword word1, then the first segment 401 of the horizontal bar may be left uncolored, or colored according to a background color not associated with any keyword by the color code map 205.” Bates, [0033]. Bederson-Decl., ¶¶153-154.

As discussed above (§§VI.D.1.a-b), the correlation indicators in Bates-Brinson and Bates-Bhagat-Brinson include the text of each *search term element*.

In the illustration of Bates-Brinson below, three different annotations are shown. Here, either the first or third search result (Example 1 or 3) meets *a first Internet search result that references a first webpage* (at links 211A and 211C, respectively) *that is missing a first search term element* (terms in grayed-out font) and the second search result (Example 2) meets *a second Internet search result that references a second webpage* (at link 211B). Bederson-Decl., ¶¶154-155.

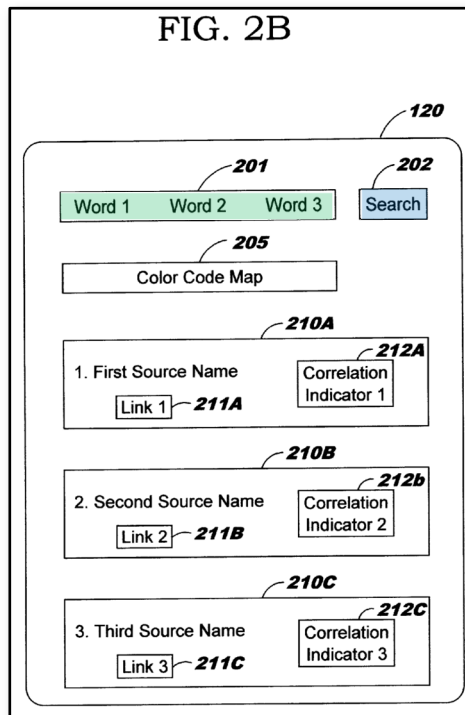


Likewise, in the illustration of Bates-Bhagat-Brinson below, three different annotations are shown. Here, the second or third search results (Example 2 or 3) meet a *first Internet search result that references a first webpage that is missing a first search term element* (terms with strikethrough) and the first search result (Example 1) meets a *second Internet search result that references a second webpage*. Bederson-Decl., ¶156.



d. [1C] generating and providing...an Internet search user interface;

Bates's "terminal 110" (*the personal computing device*) includes a "browser 150," which *generates and provides for display* on the terminal's "display screen 120" (Bates, [0024]) the "exemplary search environment" illustrated in Bates's Figure 2B (highlighted below). The search environment includes an "input line 201" (green) for entering keywords (search terms) and a "search button 202" (blue) for sending keywords to the search engine. Bates, [0026]-[0027]. "The search engine" "conducts an Internet search to locate web pages that contain the keywords...." Bates, [0024]. Thus, the browser provides *an Internet search user interface*. Bederson-Decl., ¶¶157-158. EX1001, 5:28-30 ("user interface...appears...in a browser window").

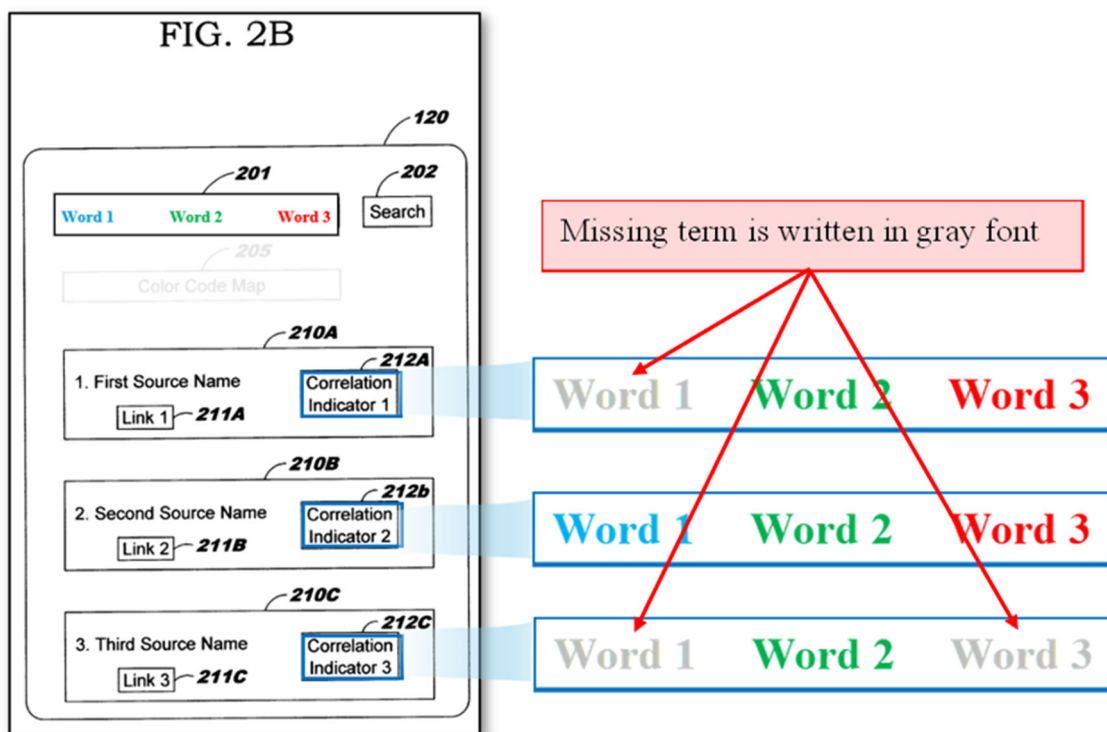


- e. **[1D] ...a first warning...that the first webpage is missing the first search term element, wherein the first warning comprises a text representing the first search term element;**

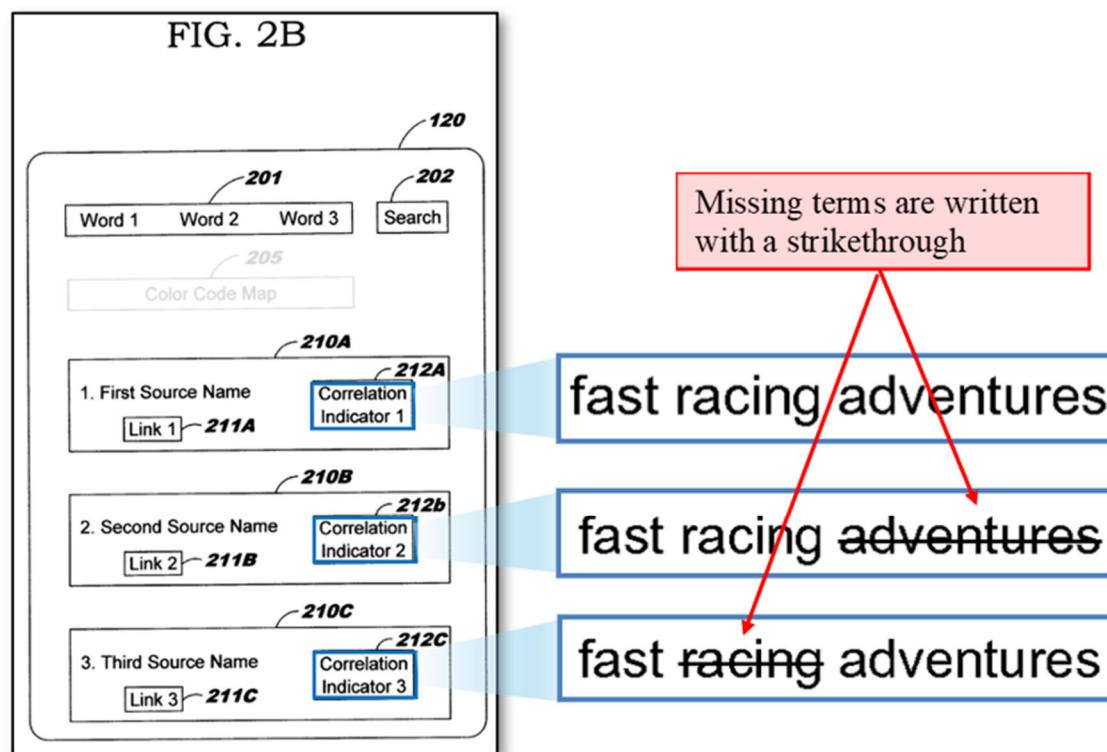
As discussed above (§VI.E.1.c, [1B]), Bates's *Internet search user interface* comprises the first Internet search result alongside a correlation indicator that provides a warning to the search engine user that the first webpage is missing the first search term element. Bates, [0033], [0015], [0009].

As discussed above (§§VI.D.1.a-b) and depicted below, the *warning* for missing terms in Bates-Brinson and Bates-Bhagat-Brinson comprises a text representing the first (missing) search term element in a grayed-out font (Bates-Brinson) or strikethrough format (Bates-Bhagat-Brinson). Bederson-Decl., ¶¶159-160.

Bates-Brinson

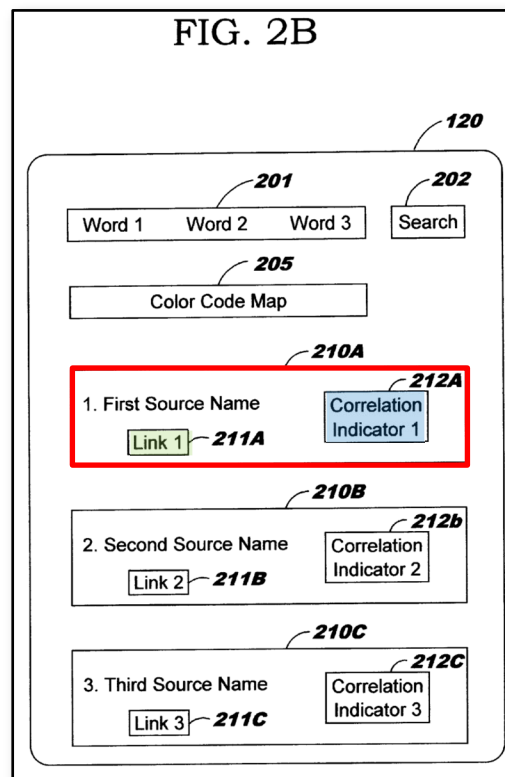


Bates-Bhagat-Brinson



- f. [1E] ...first Internet search result is organized...as a first search result grouping comprising a first excerpt.....Internet link..., and...warning;

Bates's FIG. 2B (highlighted below) shows “an image...on the display screen” for the search-results webpage. Bates, [0027]. For each *first Internet search result* discussed above (§VI.E.1.c, [1B]), “[t]he exemplary presentation includes information about” each “web page,” which is *organized* as a *search result grouping* (e.g., red-boxed below) *comprising* an Internet “link to a” “URL 211[] that identifies the” “web page” (green) and a correlation indicator (blue), which, for *the first Internet search result* is *the first warning* discussed *supra* §VI.E.1.e ([1D]). Bates, [0027]-[0028]. Bederson-Decl., ¶161.



POSAs had reason and would have found it obvious also to include an *excerpt for each webpage*, because that was “information about” webpages (Bates, [0028]) conventionally included in a search result and which beneficially provided “some context information without clicking on each result” (EX1045, [0004]); Bederson-Decl., ¶¶162-167 (citing also EX1012, [0002]-[0003]; EX1030, 18:16-43; EX1055, [0006]-[0007] further corroborating POSAs’ background knowledge). EX1001, FIG. 1, 2:54-61 (admitting excerpts were “typical”).

- g. **[1F] ...the second Internet search result...organized for display as a second search result grouping that comprises a second excerpt...and...Internet link...but does not comprise any warning that any...search term element[] is missing...;**

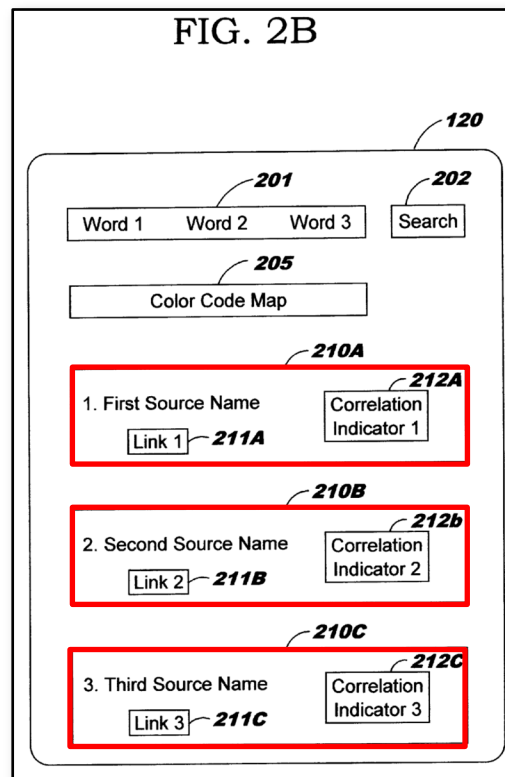
The *Internet search user interface comprises the second Internet search result* as discussed above (§VI.E.1.c, [1B], Bates-Brinson Example 2, Bates-Bhagat-Brinson Example 1). Every displayed search result would have been *organized for display as a search result grouping* like that discussed above for the *first Internet search result* (§VI.E.1.f, [1E]). Thus, *the second Internet search result* is also *organized for display as a second search result grouping that comprises a second Internet link for the second webpage* and would *comprise a second excerpt from the second webpage*. Bates, FIG. 2B, [0027]-[0028]; Bederson-Decl., ¶168.

As discussed above (§VI.E.1.c, [1B]), each example *second Internet search result* is **not** missing any search term and, thus, its search result grouping will **not**

comprise any warning that any of the search term elements is missing from the second webpage—rather, its correlation indicator will display each search term element in its assigned-color font (Bates-Brinson) and/or without strikethrough (Bates-Bhagat-Brinson); Bederson-Decl., ¶169.

h. [1G] ...first and second search result groupings are... displayed separately...;

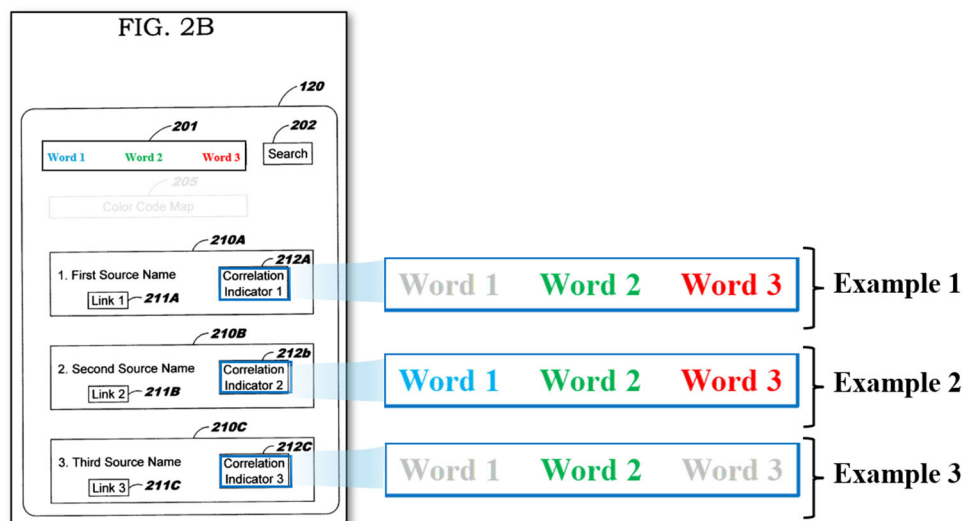
As illustrated in Bates's FIG. 2B (highlighted below), the *search result groupings* (red) – including *the first and second search result groupings* discussed in [1E]-[1F] – *are each a unique search grouping displayed separately from each other*. Bates, [0027]; Bederson-Decl., ¶170.



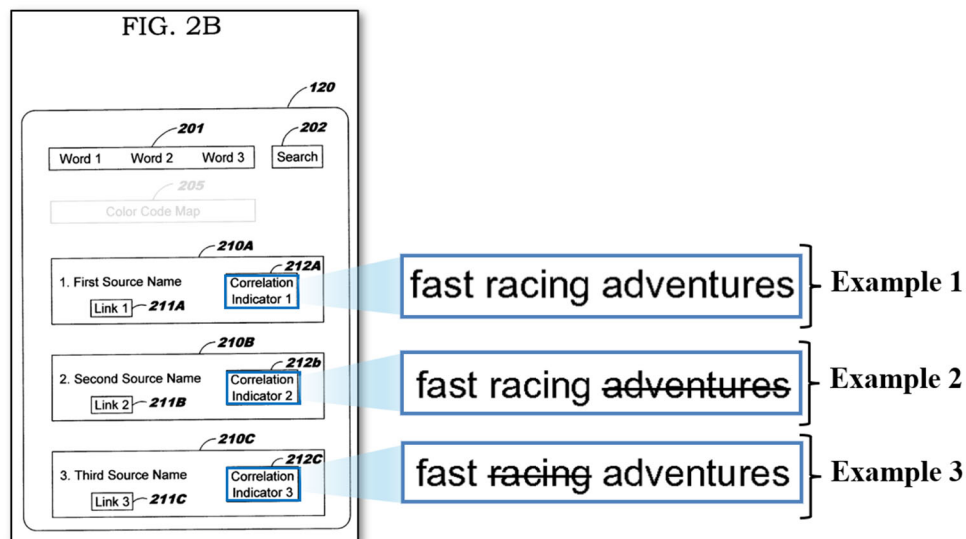
- i. [1H] ...a filtering option...causes an updated Internet search user interface to be generated...[that] does not display the first Internet search result; and

As discussed above (§VI.D.2), Bates-Brinson and Bates-Bhagat-Brinson include user-selectable GUI elements (*e.g.*, clickable search-term text) that allow users to designate a search term as “required” (*i.e.*, mandatory), based on Brinson. *See also supra* §VI.E.1.a ([1PRE]); Bederson-Decl., ¶171. That designation provides a filtering option that, when the user selects it, causes an updated Internet search user interface to be generated and provided for display on the terminal (*personal computing device*) because all search-result webpages missing the now-mandatory term will no longer be displayed. Bederson-Decl., ¶172.

In the Bates-Brinson example below, *the updated user interface* will *not* display the first Internet search result (Example 1 or 3 below) if the user selects “Word 1” as mandatory because those results are missing that term. Bederson-Decl., ¶173.



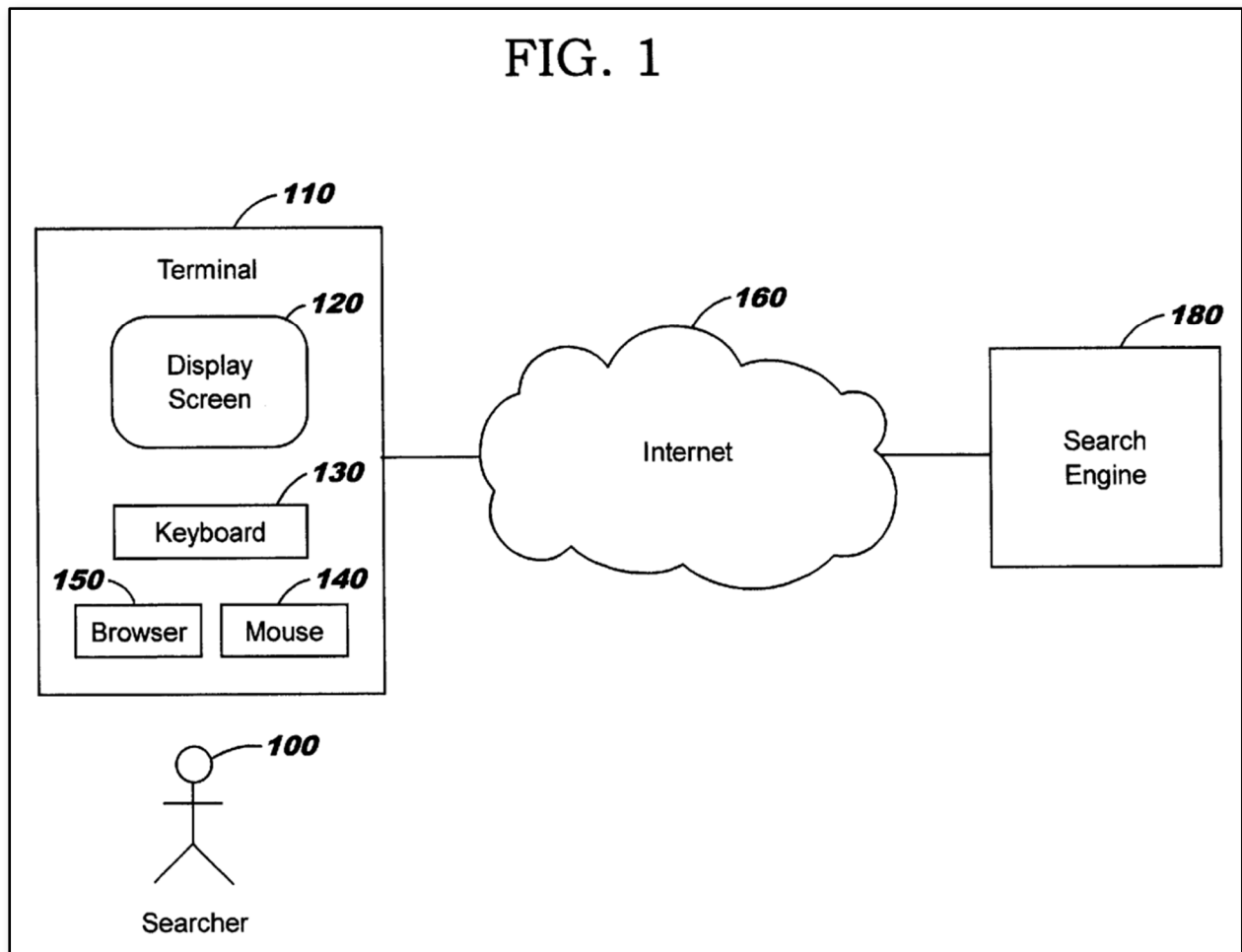
Likewise, in the Bates-Bhagat-Brinson example, *the updated user interface will not display the first Internet search result* (Example 2 below) if the user selects “adventures” as mandatory or will not display *the first Internet search result* (Example 3) if the user selects “racing” as mandatory. Bederson-Decl., ¶174.



If claim 1 requires updating in response to a single click, that would have been obvious as a simple, convenient design option, *e.g.*, not requiring users to select multiple filter buttons before updating search results. Bederson-Decl., ¶¶175-182 (citing Bhagat, FIG. 2, 9:1-16; Mills, FIG. 2, 6:6:53-58; EX1031, [0042]; EX1068, [0196])).

- j. [1I] ...process is performed on...servers located remotely....

As Bates's FIG. 1 (below) shows, the search engine is *located remotely from the terminal (personal computing device)* because they connect via "the Internet." Bates, [0024]. Because Bates's search engine processes search terms received over the Internet to "execute[] a search" (Bates, [0011]), it would have been conventional, beneficial, and obvious to implement the search engine as *one or more servers*. Bederson-Decl., ¶¶183-184 (citing EX1032, [0067]; EX1037, 6:32-40).



2. Claim 15

Independent claim 15 recites a system whose actions largely mirror the process recited in independent claim 1. Bates-Brinson and Bates-Bhagat-Brinson meet the following limitations of claim 15 for the reasons discussed in the corresponding sections above. Bederson-Decl., ¶185.

Limitation	Addressed in Section:
[15PRE]	§VI.E.1.a ([1PRE]; Bates, FIG. 1 (illustrating system))
[15A]	§VI.E.1.b ([1A]; <i>personal computing device</i>); §VI.E.1.j ([1I]; <i>servers</i>)
[15B]	§VI.E.1.b ([1A]; <i>search request</i>)
[15C]	§VI.E.1.c ([1B])
[15D]	§VI.E.1.d ([1C])
[15E]	§VI.E.1.e ([1D])
[15F]	§VI.E.1.f ([1E])
[15G]	§VI.E.1.g ([1F])
[15H]	§VI.E.1.h ([1G])
[15I]	§VI.E.1.i ([1H])

If [15D]-[15E] require that the *first warning* (correlation indicator) itself must be within the page (*e.g.*, html code) transmitted to the computing device (as opposed to being generated by the browser based on the transmitted occurrence data), that would have been an obvious alternative implementation of Bates-Brinson and Bates-Bhagat-Brinson as a matter of design choice. Bates itself says its system “elements may be combined in various combinations and may either be external or internal to the terminal.” Bates, [0025]. Moreover, prior art annotations were commonly generated by a search-engine server, which beneficially reduced processing load on user devices. Bederson-Decl., ¶¶186-189 (citing EX1012, [0029]; EX1034, FIGS. 1 & 3-4, 6:52-7:21; EX1049, FIGS. 1, 3-4, [0031], [0040]).

3. Claim 29

Independent claim 29 recites a process that largely mirrors the process recited in independent claim 1, but claim 29 requires two results (*first* and *second*) both having respective missing-term warnings and filtering options. Bates-Brinson and Bates-Bhagat-Brinson meet the following limitations of claim 29 for the reasons discussed in the corresponding sections above. Bederson-Decl., ¶190.

Limitation	Addressed in Section:
[29PRE]	§VI.E.1.a ([1PRE])
[29A]	§VI.E.1.b ([1A])

[29B]	§VI.E.1.c ([1B]; <u>Bates-Brinson</u>: Example 1 meets <i>a first Internet search result...missing a first search term element</i> (“Word 1”); Example 3 meets <i>a second Internet search result...missing a second search term element</i> (“Word 1” or “Word 3”); <i>see also infra</i> claim 39 (<i>first and second search term elements can be the same</i>); <u>Bates-Bhagat-Brinson</u>: Example 2 meets <i>a first Internet search result...missing a first search term element</i> (“racing”); Example 3 meets <i>a second Internet search result...missing a second search term element</i> (“adventures”))
[29C]	§VI.E.1.d ([1C])
[29D]	§VI.E.1.e ([1D])
[29E]	§VI.E.1.f ([1E])
[29F]	§VI.E.1.g ([1F]; <u>Bates-Brinson</u>: Example 3’s correlation indicator provides <i>a second warning</i>;

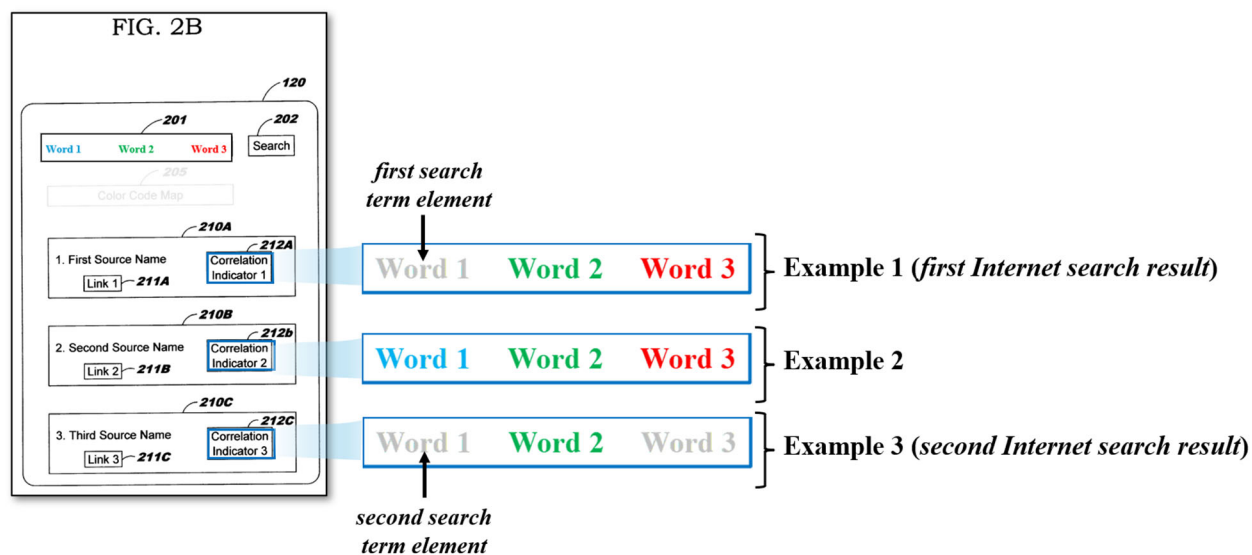
	<u>Bates-Bhagat-Brinson</u> : Example 3’s correlation indicator provides <i>a second warning</i>)
[29G]	§VI.E.1.f ([1E])
[29H]	§VI.E.1.h ([1G])
[29I]	§VI.E.1.i ([1H]; where, as discussed <i>supra</i> §VI.D.2, a search term in a correlation indicator could be designated mandatory by, <i>e.g.</i>, clicking the term and selecting its weight) <u>Bates-Brinson</u>: designating “Word 1” as mandatory meets <i>a first filtering option that causes a first updated Internet search user interface to not display</i> Example 1 or Example 3; designating “Word 3” as mandatory meets <i>a second filtering option that causes a second updated Internet search user interface to not display</i> Example 3; <u>Bates-Bhagat-Brinson</u>: designating “racing” as mandatory meets <i>a first filtering option that causes a first updated Internet search user interface to not display</i> Example 2; designating “adventures” as mandatory meets <i>a second filtering</i>

	<i>option that causes a second updated Internet search user interface to not display Example 3)</i>
[29J]	§VI.E.1.j ([1I])

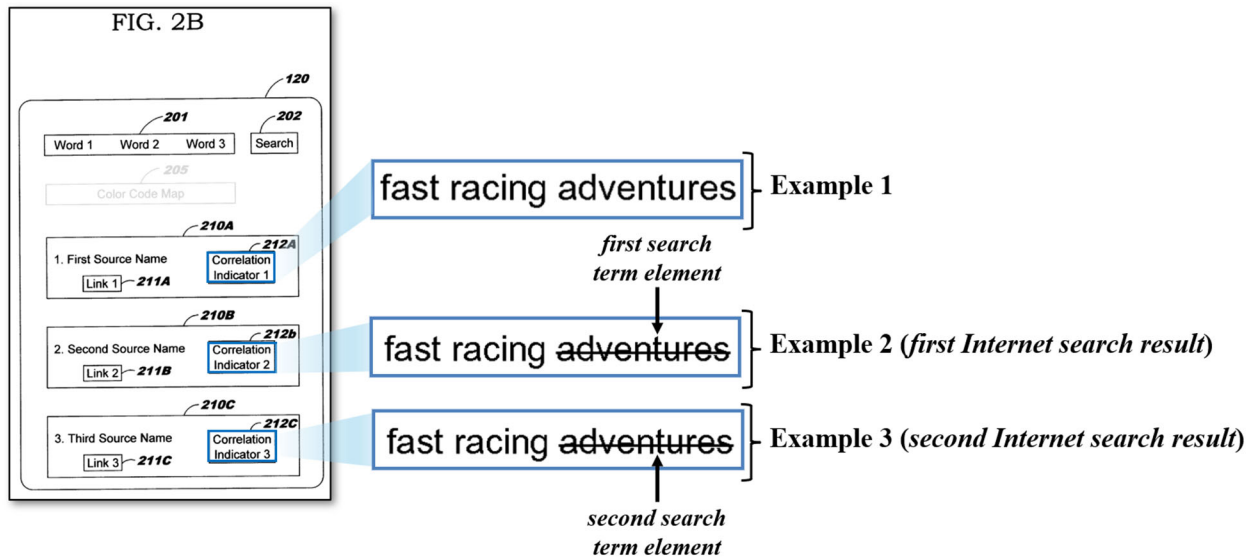
4. Claim 39

- a. [39A] [C]laim 29, wherein the first...and the second search term element[s] are a same search term element, wherein the first text and the second text are identical,

Starting with Bates-Brinson (below), *the first search term element and the second search term element* in Examples 1 and 3 are the *same search term element* (“Word 1”) and their warning text (“Word 1” in gray font) *are identical*. Bederson-Decl., ¶191.



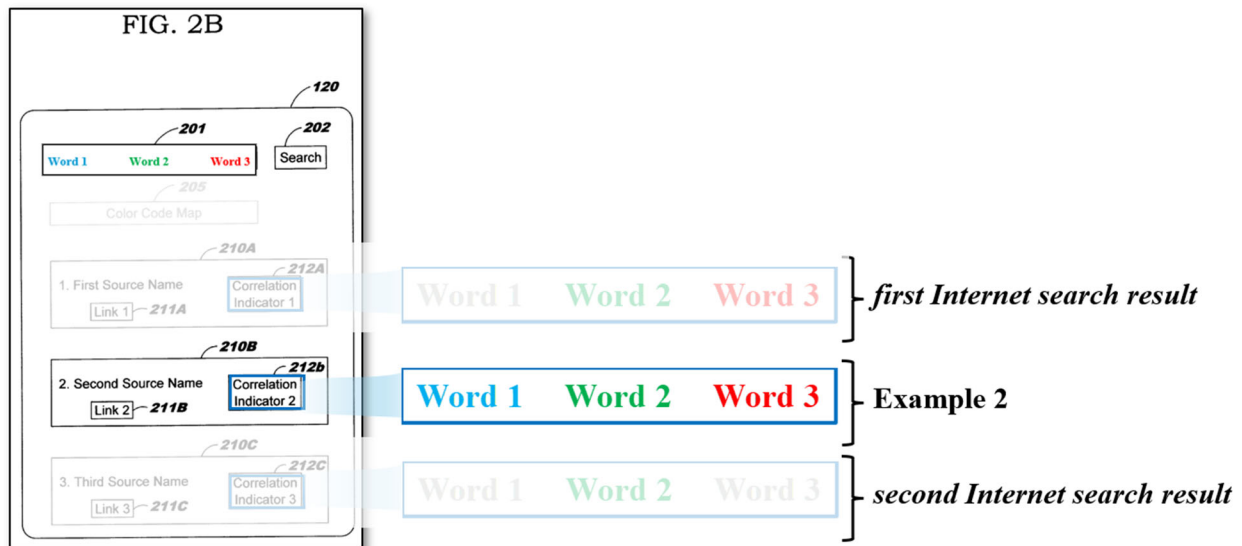
In Bates-Bhagat-Brinson, though [1D]’s example illustrated different *first* and *second search term elements*, POSAs understood it would have been obvious for *the same search term element* (with *identical warning text*) to be missing in two results (e.g., “adventures” with strikethrough warning in Examples 2 and 3 of the new demonstrative below). Bederson-Decl., ¶¶192-193; Bhagat, FIG. 2 (example with multiple results missing “adventures”).



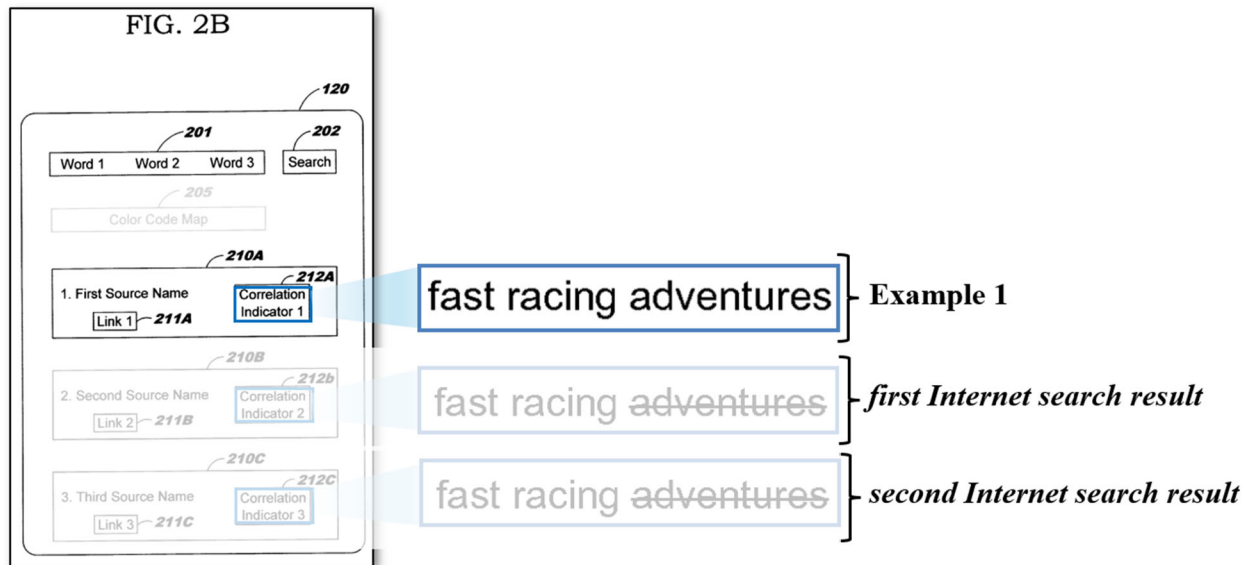
- b. [39B] ...first and second updated...interfaces do[] not display the first and second Internet search results.

As discussed above (§VI.E.1.i, [1H]), *the updated Internet search user interface removes from display search result(s) missing the first search term element because the filtering designates that term as mandatory. Thus, in [39A]’s examples the first **and** second Internet search results would **not** be displayed in the first and second updated user interfaces.* Bederson-Decl., ¶194.

Bates-Brinson



Bates-Bhagat-Brinson



VII. GROUND 1B: THE GROUND 1A COMBINATIONS IN VIEW OF MEHTA RENDER OBVIOUS CLAIMS 2-8, 13-14, 16-22, 27-28, 30-38

Ground 1B challenges dependent claims 2, 16, and 30 (and their dependent claims 3-5, 6-8, 13-14, 17-19, 27-28, and 30-38), which require *a selectable advertisement that is related to...at least one search term element* (hereinafter “the *selectable-advertisement* limitation”). Bederson-Decl., ¶¶195-196.

A. Mehta (EX1008)

Mehta explains that “advertisers define their advertisements based on one or more keywords that they believe will be used by consumers searching for products/services.” Mehta, [0005]. “The search engine” “searches an ad inventory to determine if the [consumer’s] keywords match keywords that define an advertisement” and “the relevant advertisement[s] will...appear next to or above the search results webpage.” *Id.*

Mehta's Figure 3 (highlighted below) depicts a search-result webpage with “sponsored advertisements [red] that match the search parameters” “rendered along with search results.” Mehta, [0033], [0006] (ad is selectable by “clicking” its “link”). Bederson-Decl., ¶¶197-200.

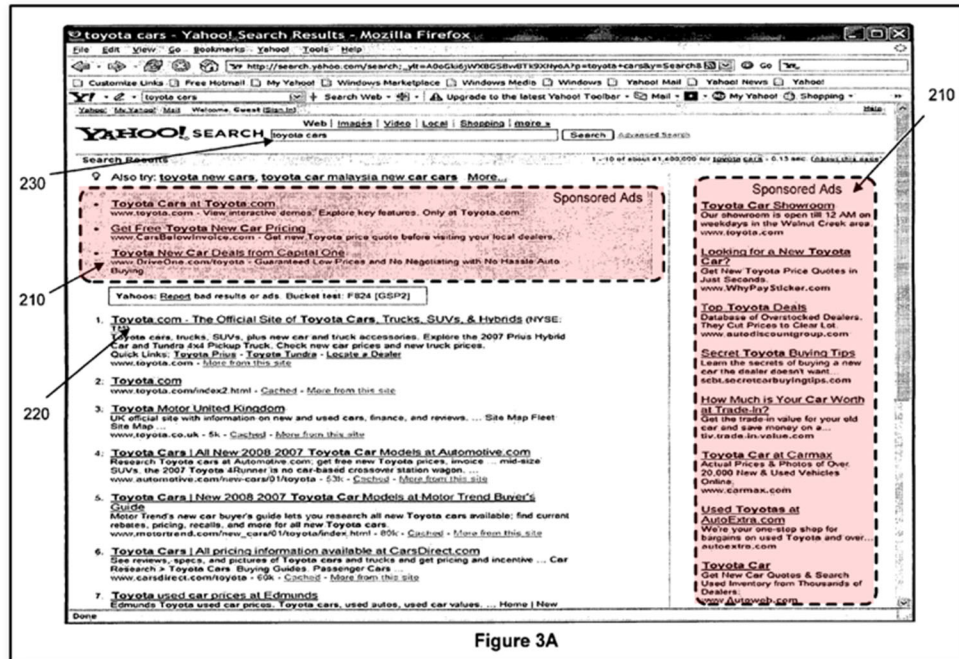


Figure 3A

B. Bates-Brinson-Mehta and Bates-Bhagat-Brinson-Mehta Combinations

Mehta demonstrates that displaying “relevant advertisement[s]” alongside search results was known. Mehta, [0005]. The '937 patent recognizes this fact too. EX1001, 2:66-3:3, FIG. 1. And POSAs knew that search-engine providers displayed ads to generate revenue. Bederson-Decl., ¶201 (citing EX1015, [0004]-[0005]; EX1016, [0006]). Thus, POSAs had motivation—*i.e.*, to generate revenue—to implement Ground 1A’s combinations (Bates-Brinson and Bates-Bhagat-Brinson)

to display *selectable advertisements* “relevant to [the user’s] search criteria.” Mehta, [0005]-[0006]; Bederson-Decl., ¶202.

These implementations would have been using a known technique (*i.e.*, search-term-based advertisements) to improve similar systems (*i.e.*, search engines) in the same way (*i.e.*, allowing for the search-engine provider to generate revenue). Bederson-Decl., ¶203. POSAs would have expected success because it would have required only ordinary programming skill to include Mehta’s conventional functionality in Bates’s user interface. *Id.*

C. Mapping to Claims

1. Claim 2

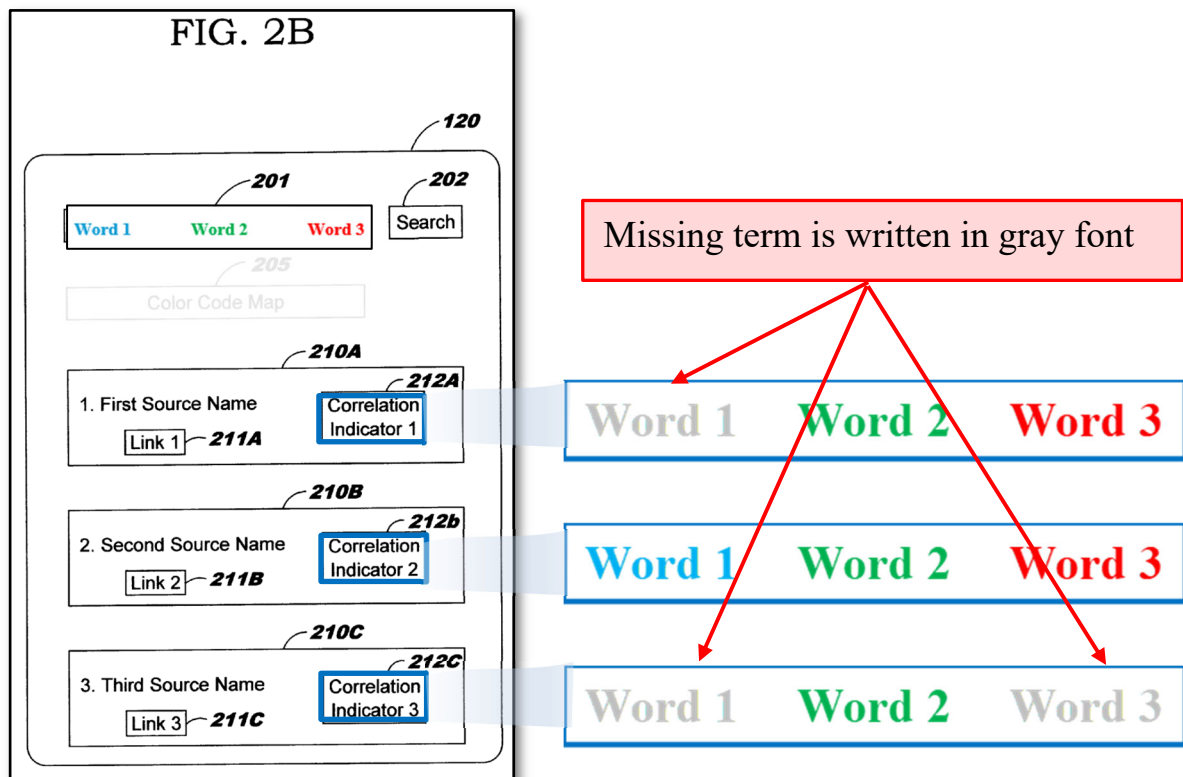
Ground 1B’s combinations build on Ground 1A’s combinations and meet independent claim 1 for the reasons Ground 1A’s combinations do. *Supra* Ground 1A; Bederson-Decl., ¶204.

Dependent claim 2 adds the *selectable-advertisement* limitation. As discussed above, Mehta provides POSAs motivation to augment Ground 1A’s combinations to display “*advertisements*” *related to at least one search term* with *selectable* links that, when “click[ed],” open an advertised webpage. Mehta, [0005]-[0006]. Bederson-Decl., ¶205. Once augmented in this manner, the combinations meet the *selectable-advertisement* limitation. *Id.*

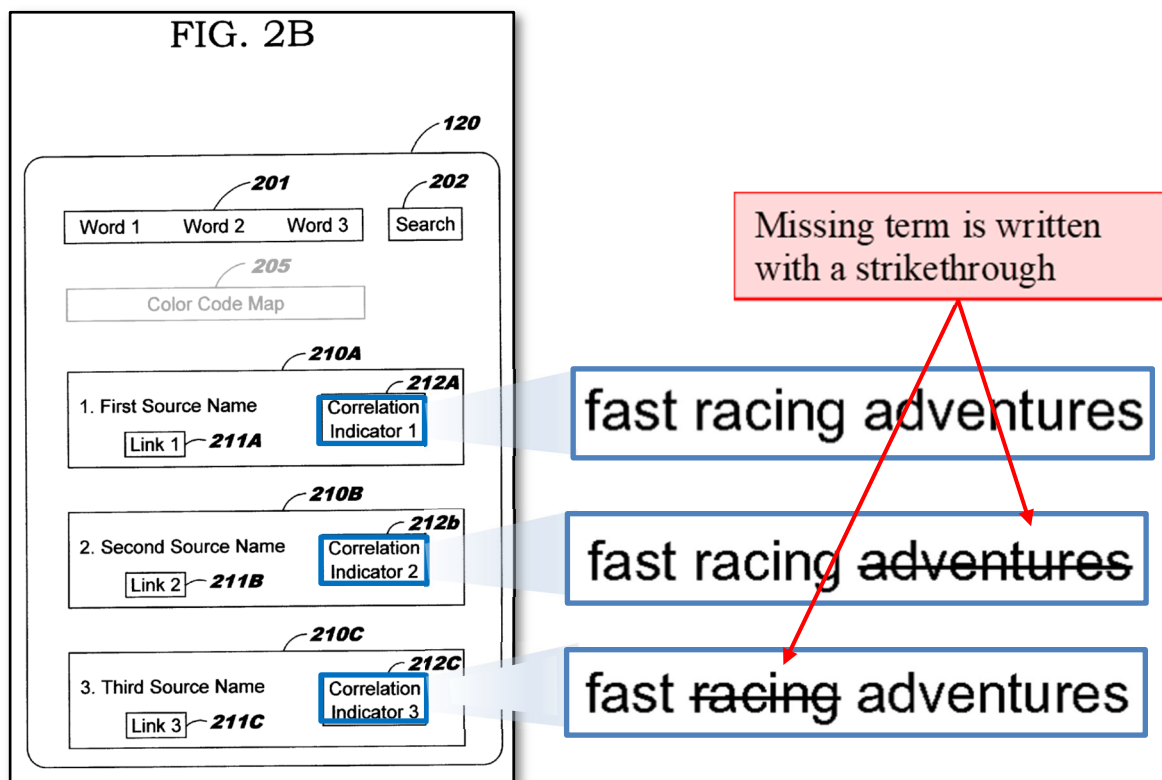
2. Claim 3

Bates-Brinson-Mehta and Bates-Bhagat-Brinson-Mehta meet claim 3 because their correlation indicators use *text representing* a missing search term (*e.g., the first search term elements* discussed *supra* §VI.E.1.e) in a *format* recited in claim 3. Bederson-Decl., ¶206.

In Bates-Brinson-Mehta (below), each missing *search term element* is written in a font “color not associated with any keyword by the color code map 205” (Bates, [0033]) (*e.g., muted-gray*), which meets (*i*) *a font representing the text has been altered* (from its initially-assigned color (*e.g., “blue” or “red”*) to a different color (*e.g., muted-gray*)). Bederson-Decl., ¶¶207-208.



In Bates-Bhagat-Brinson-Mehta (below), each missing *search term element* is written in strikethrough, which meets the *formats of text* shown with (i) its *font...altered*, (ii) *...one or more lines merged with the text*, and/or (iii) *...one or more lines superimposed thereupon*. Bederson-Decl., ¶209.



3. **Claim 4: ...first Internet search result would not have been displayed...if...the search engine was operated by using an “AND” logical operation....**

As discussed above (§VI.E.1.c, [1B]), the example *first Internet search results* in Bates-Brinson and Bates-Bhagat-Brinson are missing a *first search term element*, which is displayed in gray (Bates-Brinson-Mehta) and/or strikethrough (Bates-Bhagat-Brinson-Mehta) font. Those results *would not have been displayed if...the*

search engine was operated by using an “AND” logical operation that includes the first search term element because that term is missing in those results and including that term in an “AND” logical operation would require that term to be present. Bederson-Decl., ¶¶210-212 (citing Wang, [0002]).

4. Claim 5: ...the first webpage has one or more descendant webpages...also missing the first search term element, and...linked directly one level from the first webpage.

A “*descendant webpage*” is a webpage to which a search-result webpage links; for example, if www.uspto.gov is the search-result webpage, then www.uspto.gov/patent is a “*descendant webpage*” because a link to www.uspto.gov/patent is found at www.uspto.gov. Bederson-Decl., ¶¶213-214; *see also* EX1001, 10:48-11:38, FIGS. 6-7. Although claim 5 requires that the *first webpage* have *one or more descendant webpages* that each (like the *first webpage*) are *missing the first search term element*, the claim does **not** require that the *first search term*’s absence in the *descendant webpage(s)* impacts how the *search result that references the first webpage* is displayed.

POSAs understood it would have been commonplace for a *first webpage* like those discussed *supra* §VI.E.1.c ([1B]; e.g., a website’s homepage) to *have one or more descendant webpages* that are each *linked directly one level from the first webpage*, and for each *descendant webpage* to be *missing the same* (e.g., *first search term element* as the *first webpage* (e.g., the term “USA” could be missing

from a website’s homepage *and* its *descendant webpages linked directly* therefrom). Bederson-Decl., ¶215 (citing EX1029, 3:65-4:5); *see also* Naick, [0003]-[0004] (discussed *infra* §VIII.A).

5. Claims 6, 8

a. [6A]/[8A]:...the personal computing device is a smartphone with a smaller display screen...

Bates’s “terminal 110” (*personal computing device*) can be “a personal digital assistant, [or] a web-enabled cellular telephone” (Bates, [0023]), which POSAs understood includes (or at least renders obvious) *a smart phone with a smaller display screen than* the other devices recited in [6A]/[8A]. Bederson-Decl., ¶¶216-217 (citing EX1067, [0007], [0031]).

b. [6B]/[8B]:...updated Internet search user interface enables the smaller display screen to display an increased number of Internet search results...

As discussed above (§VI.E.1.i, [1H]), *the updated Internet search user interface* removes from display *search result(s)* missing *the first search term element* because the filtering designates that term mandatory. Once removed, the search engine will be able to display additional search results (from the original set of results) that are *not* missing the *first search term element*, in the display space now vacated by the removed search result(s). Bederson-Decl., ¶218 (citing Bates, [0028]; EX1015, [0005]).

Thus, the *updated Interface user interface* will *enable the smaller display screen to display an increased number of Internet search results that each reference a webpage containing (i.e., not missing) the first search term element compared with the Internet search user interface prior to the selection of the filtering option, without being scrolled by the search engine user* (because additional results will occupy screen space freed-up by removing other results). Doing so *further speeds the search engine user's operation of Internet search* because the user can see additional relevant results without spending time scrolling or viewing less relevant results. Bederson-Decl., ¶¶219-220.

6. Claim 7

Based on Bates, *a search term element is considered to be contained in a webpage if the webpage contains the **search term element** itself*. Bates, [0006], [0024]. Bederson-Decl., ¶221.

Additionally, considering the presence of *synonyms* and *misspelled versions* of search terms would have been obvious as the use of a known technique to improve the Bates-Brinson-Mehta and Bates-Bhagat-Brinson-Mehta search engine in the same way as was known in POSAs' background knowledge, by beneficially ensuring webpages were not excluded because of spelling errors and/or including only synonyms. *KSR*, 550 U.S. at 417. Bederson-Decl., ¶¶222-224 (citing corroborating EX1059, [0014]-[0015]; EX1060, [0002], [0005]).

7. Claim 13

- a. [13A] ...selectable advertisement and the first search result grouping are simultaneously viewable...

Based on Mehta's Figure 3A (highlighted below) and conventional search-engine interface design, Ground 1B's combinations include "sponsored [selectable] advertisements 210 [red] rendered along with [simultaneously viewable on the display screen as] a plurality of search results 220 [blue]." Mehta, [0033]; see also, e.g., EX1015, FIG. 3, [0032]. In Bates-Brinson-Mehta and Bates-Bhagat-Brinson-Mehta, the search results include *the first search result groupings* discussed above §VI.E.1.e ([1D]). Bederson-Decl., ¶¶225-227.

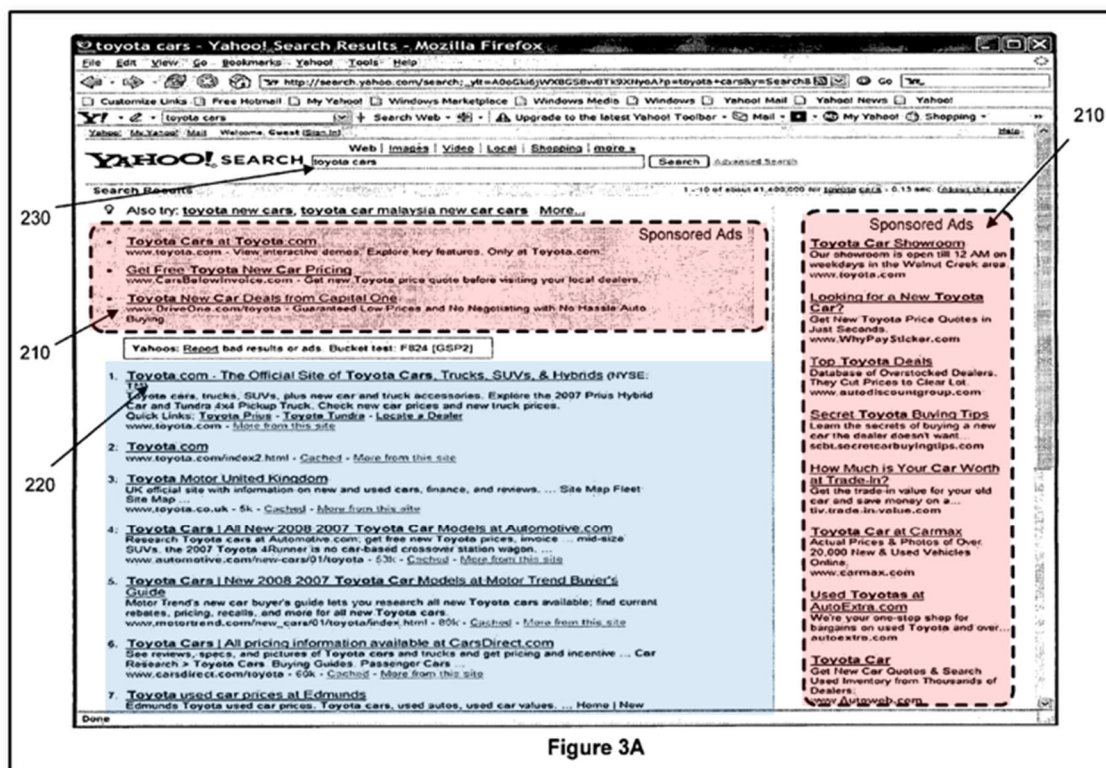


Figure 3A

- b. [13B] ...first Internet search result grouping would not have been displayed...if...the search engine was operated by using an “AND” logical operation....

See **claim 4** (*supra* §VII.C.3); Bederson-Decl., ¶228.

8. **Claim 14: ...selectable advertisement and the first or second search result grouping are adjacent to each other.**

As discussed above (§VII.B), based on Mehta, *the selectable advertisement and search results (including the first and/or second search results) are adjacent to each other* (e.g., advertisements above and/or alongside search results). Bederson-Decl., ¶229.

9. **Claims 16-22, 27-28, 30-38**

Bates-Brinson-Mehta and Bates-Bhagat-Brinson-Mehta meet the limitations added by the claims below for the reasons discussed in the corresponding sections above. Bederson-Decl., ¶230.

Claims	Addressed in Section:
16/30	§VII.C.1 ([claim 2])
17/31	§VII.C.2 ([claim 3])
18/32	§VII.C.3 ([claim 4]; for claim 32 see also §VI.E.3 ([29B] (identifying <i>second Internet search result</i> missing the <i>second search term element</i>))

19/33	§VII.C.4 ([claim 5])
20/22/34/36	§VII.C.5 ([claim 6])
21/35	§VII.C.6 ([claim 7])
27/37	§VII.C.7 ([claim 13]; for claim 37 see also §VI.E.3 ([29B] (identifying <i>second Internet search results</i> missing <i>the second search term element</i>)))
28/38	§VII.C.8 ([claim 14])

VIII. GROUND 1C: THE GROUND 1B COMBINATIONS IN VIEW OF NAICK RENDER OBVIOUS CLAIMS 9-12, 23-26

Ground 1C challenges claims 9 and 23 (and their dependent claims 10-12 and 24-26), which require that the ***absence*** of a *warning that a search term element[] is missing...indicates that the...search term is contained in...the descendant webpages...linked directly one level from the second webpage* (hereinafter “the *descendant-webpage* limitation”). In other words, the *warning* that a search term is missing is not generated if the term is present in a level-one *descendant webpage* of the referenced webpage. EX1001, 10:48-11:38, FIGS. 6-7; Bederson-Decl., ¶¶231-234.

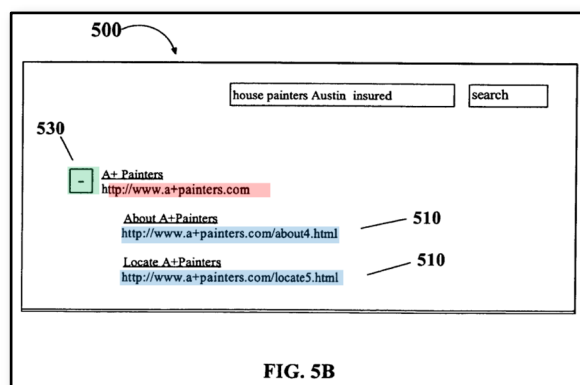
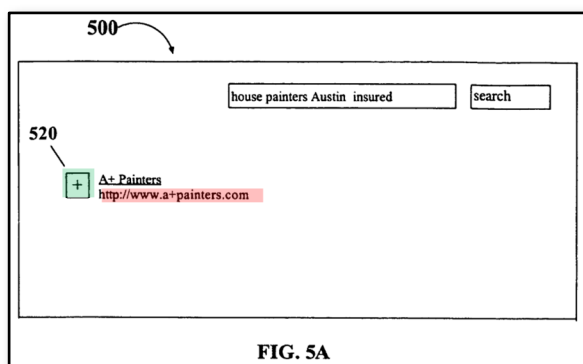
A. Naick (EX1009)

Naick concerns “query based Internet searching.” Naick, [0001]. Naick teaches that some “conventional search systems fail to return web sites that may contain the requested information” because the website “do[es] not have all search terms located on *a single page* of the site.” Naick, [0004]. A website may be relevant to the query, but because no single page on the website includes every search term, it is not returned as a search result, which prevents the user “from receiving possibl[y] relevant information.” Naick, [0004]; [0023]; Bederson-Decl., ¶¶235-236.

Naick addresses this potential deficiency by “provid[ing] results wherein at least one of the query terms...may appear on a different page of a web site or domain.” Naick, [0005], [0018]. With Naick’s search, “grouped pages may be evaluated as a single searchable entity, and search results may be grouped according to domain.” Naick, [0006]. Naick’s search technique evaluates a keyword index that “hold[s] and compare[s] domain information *i.e.* web site information rather than web page information.” Naick, [0021]. Thus, rather than indexing search terms only for individual webpages, Naick indexes search terms based on their presence in at least one of multiple, related webpages from the same website.

In Naick’s Figure 5A (highlighted below left), search results initially display only the relevant website’s homepage/top-level domain (*e.g.*,

“http://www.a+painters.com” highlighted red). Naick, [0025]-[0026], [0018]-[0019] (“other pages within a web site” are identified by “follow[ing] links...on a home page”). Clicking the “+/- icon” (green) shows descendant webpages (highlighted blue in Figure 5B below right) that contributed to the top-level website being identified in the results, *i.e.*, Naick identifies descendant webpages that contained one or more search terms. Naick, [0002]. Bederson-Decl., ¶¶237-238.



B. Bates-Brinson-Mehta-Naick and Bates-Bhagat-Brinson-Mehta-Naick Combinations

Naick teaches that providing search results based only on matching keywords for individual webpages, rather than considering related webpages within the same website, may miss “possibl[y] relevant information.” Naick, [0004]. Thus, POSAs had motivation to include in Ground 1B’s combinations the ability to identify potentially relevant results based on search terms found on both a webpage (*e.g.*, a homepage) and its related, descendant webpages. Bederson-Decl., ¶239. In these Ground 1C combinations, based on Naick, Bates’s search engine identifies a

webpage as relevant based on the presence of keywords in the webpage itself and/or its descendant webpage(s). *Id.*

Naick also teaches that “[a] user may set search parameters to include or discard results based on distance between search terms within a domain.” Naick, [0027]. POSAs understood that means that the number of descendant-webpage levels to search for a term was a design option (*e.g.*, searching just descendants one link away versus multiple descendant levels).

In Ground 1C’s Bates-Brinson-Mehta-Naick and Bates-Bhagat-Brinson-Mehta-Naick combinations, POSAs would have been motivated to provide implementations that consider only one descendant level, as POSAs knew this was a design tradeoff that may be desirable in situations where speed (*i.e.*, reducing the number of levels to aggregate and search) was prioritized over finding all relevant webpages at all possible levels. Bederson-Decl., ¶¶240-243 (citing corroborating EX1058). This implementation is also consistent with Naick’s Figure 5B which only depicts descendant webpages (*e.g.*, “<http://www.a+painters.com/about4.html>”) that are linked directly one level from the referenced webpage (“<http://www.a+painters.com/>”). Naick, [0024]-[0025]; Bederson-Decl., ¶244.

POSAs would have reasonably expected success because Naick’s “[s]earch logic may be substantially similar to that of conventional search systems” ([0026])

and only requires a “search engine” with “conventional components” ([0027]-[0028]). Bederson-Decl., ¶245.

C. Mapping to Claims

1. Claims 9, 23

Claims 9 and 23 depend, respectively, from claims 3 and 17. Ground 1C’s combinations build on Ground 1B’s combinations and meet claims 3 and 17 for the same reasons Ground 1B’s combinations do. *Supra* Ground 1B; Bederson-Decl., ¶246.

a. [9A]/[23A]

See Ground 1B, **claim 5** (*supra* §VII.C.4). Bederson-Decl., ¶247.

b. [9B]/[23B]

For the same reasons discussed above (§VII.C.4, **claim 5**) that it would have been obvious for *the first webpage* to have *descendant webpages*, it would have been obvious for *the second webpage* to have *descendant webpages*.

As discussed above (§VIII.B), each Ground 1C combination includes either Bates-Brinson’s or Bates-Bhagat-Brinson’s annotations. *Supra* Ground 1A, [1D]. Based on Naick, these annotations would *not compris[e] any warning that any of the...search terms elements is missing from the second referenced webpage* if the terms were present in the webpage or its descendant webpage(s). Naick, [0004]-[0006], [0022]-[0023]. As discussed *supra* §VIII.B, POSAs had reason to limit the search to descendant webpages that are *linked directly one level from the referenced*

webpage. Thus, when the second webpage is missing a second search term element, the absence of any warning would indicate that the second search term element is contained in at least one...descendant webpage[]...linked directly one level therefrom. Bederson-Decl., ¶¶248-250.

2. Claims 10-12, 24-26

Bates-Brinson-Mehta-Naick and Bates-Bhagat-Brinson-Mehta-Naick meet the limitations added by the claims below for the reasons discussed in the corresponding sections above. Bederson-Decl., ¶251.

Claim(s)	Addressed in Section(s):
10/24	§VII.C.5 ([claim 6])
11/25	§VII.C.6 ([claim 7])
12/26	§VI.E.4.a ([39A])

IX. GROUND 2A: WANG-MILLS-BRINSON RENDERS OBVIOUS CLAIMS 1, 15, 29, 39

A. Wang (EX1005)

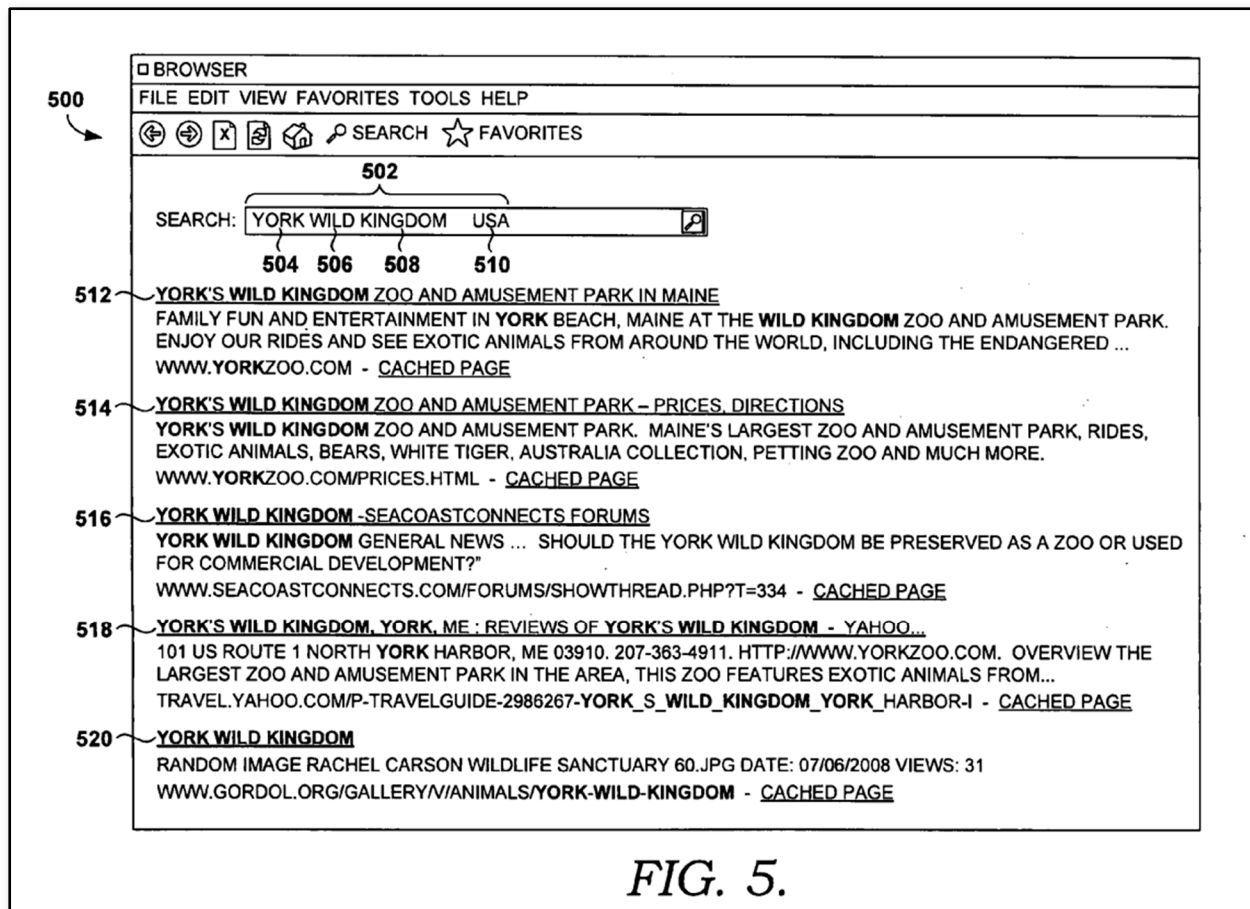
Wang concerns keyword-based search engines. Wang, [0001], [0014], [0016]. Wang says “[m]ost keyword-based search engines...assum[e] that the user intends to only find documents that contain all of the [user-selected] search terms.” Wang, [0002]. Wang calls this “and-based searching.” *Id.*; Bederson-Decl., ¶¶252-253 (discussing Boolean “AND” operator).

A problem with “and-based searching” occurs when a user “over-specifies a query by including unnecessary terms.” Wang, [0002]. When this happens, relevant search results “missing one or more of the extra terms will not be located.” *Id.* For example, with a four-keyword query, the search engine “will not return documents that do not include all four keywords” even though there may be relevant webpages that hit only some of those keywords.⁵ Wang, [0001]-[0002]; Bederson-Decl., ¶254.

To reduce the risk of excluding potentially relevant documents, Wang teaches “relaxed searching,” which identifies search results “that include only a subset of the keywords submitted by a user.” Wang, [0014], [0031]. “The subset of keywords equals the total number of keywords (N) minus a given number (K) less than N.” Wang, [0014]. “For example, if a query” contained four keywords “and K was equal to 1, documents would only have to include any three of the” “words to be included on the results list.” Wang, [0014], [0031].

Wang’s Figure 5 (below) illustrates “a search-results list from a search engine performing relaxed searching.” Wang, [0053]. In the example, a user submitted a four-word query (“york,” “wild,” “kingdom,” and “USA”), and the search engine “returned a list of results that...have at least 3 of the 4 keywords.” *Id.*; Bederson-Decl., ¶¶255-256.

⁵ Wang’s “documents” include Internet webpages. Wang, [0030].



As shown above, Wang emphasizes (in bold) search terms that *appear* in each search-result grouping, explicitly identifying search terms present in the corresponding search result, and thereby *suggesting* which search term(s) is/are missing. Bederson-Decl., ¶¶257-260. POSAs would have been motivated to extend Wang by making missing search terms explicit. Bederson-Decl., ¶261.

B. Mills (EX1006)

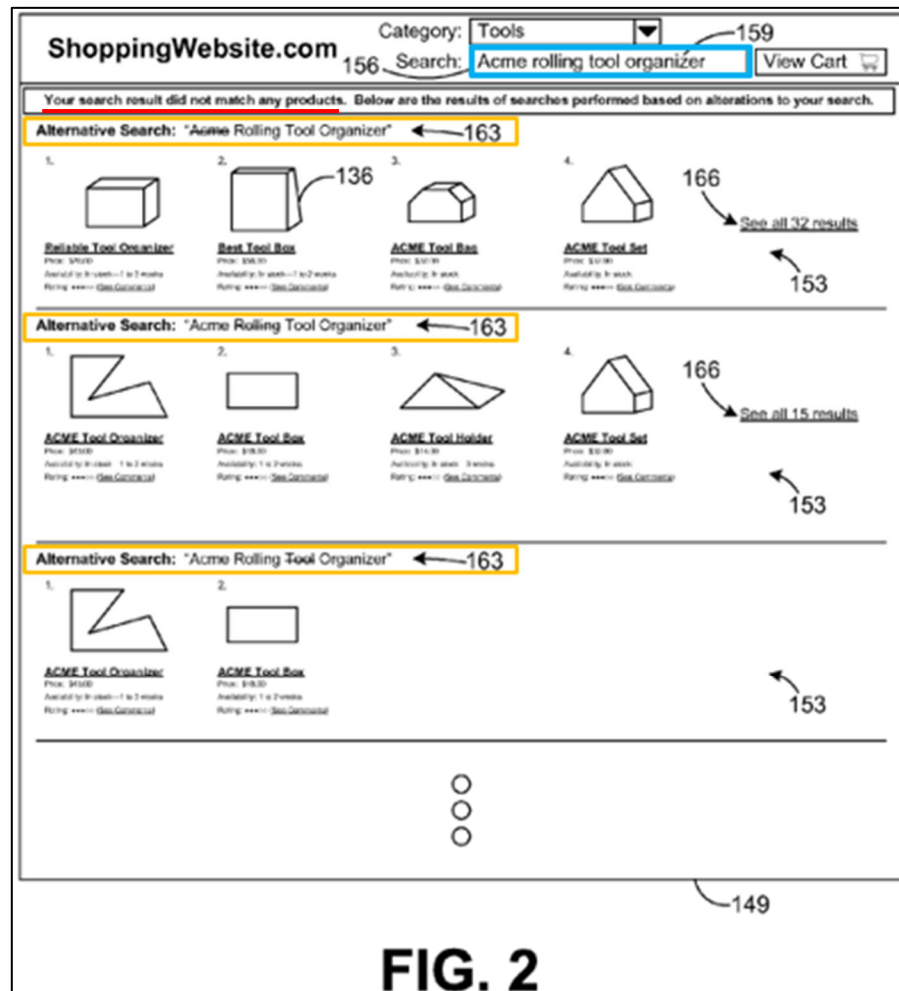
Mills relates to keyword searching. Mills, 1:39-45, 3:26-28, 4:16-19. Mills discusses examples of searching “to identify...products for purchase,” but says this

is just “one example” and the described techniques are applicable more generally, such as “to perform a web search.” Mills, 2:40-44, 4:16-19.

Like Wang, Mills observes a problem when a “customer...enter[s] a word search that has too many terms”: the search engine may return few (if any) results because of the “overly constrained” search parameters. Mills, 1:8-11; *see also* 3:29-56.

To address this problem, Mills’s search engine “detects when a query...generated from a search string fail[ed] to identify at least a predefined threshold number of items,” *e.g.*, at least 10 “items,” which in a web-search embodiment would be “web search” results. Mills, 4:39-47; *see also* 2:40-44, 4:16-19; Bederson-Decl., ¶¶262-265. When the threshold is not met, “the search engine...generate[s] one or more altered versions of the search string by making various modifications to the search string.” Mills, 4:48-53. Mills’s “altered” search strings can be generated by removing one or more keywords from the original search string. Mills, 5:60-63.

Figure 2 (annotated below) illustrates an interface for Mills’s search engine. Mills, 1:25-27. The user inputs a search string into search box 156. Mills, 6:29-33. The example search string—“acme rolling tool organizer”—is highlighted blue below.



In this example, the search string “does not provide any results for a search” (see red-underlined notification above). Mills, 6:33-36. Therefore, the search engine “generates a plurality of altered versions of the search string 159 that are displayed as altered search strings 163.” Mills, 6:38-46. Each altered search string

(orange boxes above) is the original four-word string with one word removed. Bederson-Decl., ¶¶265-267. For example, the second altered search string is “Acme ~~Rolling~~ Tool Organizer,” which is the original search string altered by removing “Rolling.” Bederson-Decl., ¶267.

“Each altered search string is graphically associated with a group 153 of items identified based upon a second query generated from the altered search string 163.” Mills, 6:43-46. For example, the second “group 153” identifies results that matched the three-word search “acme tool organizer.” Bederson-Decl., ¶268. The strikethrough annotation (“~~Rolling~~”) indicates that in each result in the second group the search engine found “Acme,” “Tool,” and “Organizer,” but did *not* find “Rolling” in any of those results because, otherwise, the original search *would* have found products that matched all four terms. *Id.*

Mills ensures that a “user advantageously receives results to a search even though the search string 159 that they entered would result in no identified items” and “educate[s] users...as they can compare and contrast” the results of their original search with results from various altered searches. Mills, 7:32-40. Bederson-Decl., ¶¶269-274.

C. Wang-Mills-Brinson Combination

1. Annotating based on Mills

Given Mills, POSAs had reason to modify Wang’s interface to annotate each search result with the user’s keywords and to identify the keyword(s) (if any) missing in each corresponding webpage. Bederson-Decl., ¶275.

Wang and Mills address a common problem: preparing search results based on over-constrained search strings. Bederson-Decl., ¶276. They do so in similar ways: displaying search results of altered (and broadened) versions of the user’s original search string (*e.g.*, with one of the keywords removed). *Id.*

Mills, however, recognizes a potential problem: “irrelevant items [] may be included in a search result generated based upon part [*i.e.*, a subset] of [an] entire search string.” Mills, 3:61-64. That may cause a user to “lose faith that” the search engine “will reveal relevant results,” which may “discourage further user participation.” Mills, 3:64-4:4. Bederson-Decl., ¶277.

To mitigate that problem, Mills annotates search results by “graphically associat[ing],” *i.e.*, annotating, the search results with the altered search strings that yielded those results. Mills, 6:43-46. Mills identifies two principal benefits to its annotations. Bederson-Decl., ¶278.

First, displaying search results “along with the associated altered search strings 163 allows a user to see how other permutations of the original search string”

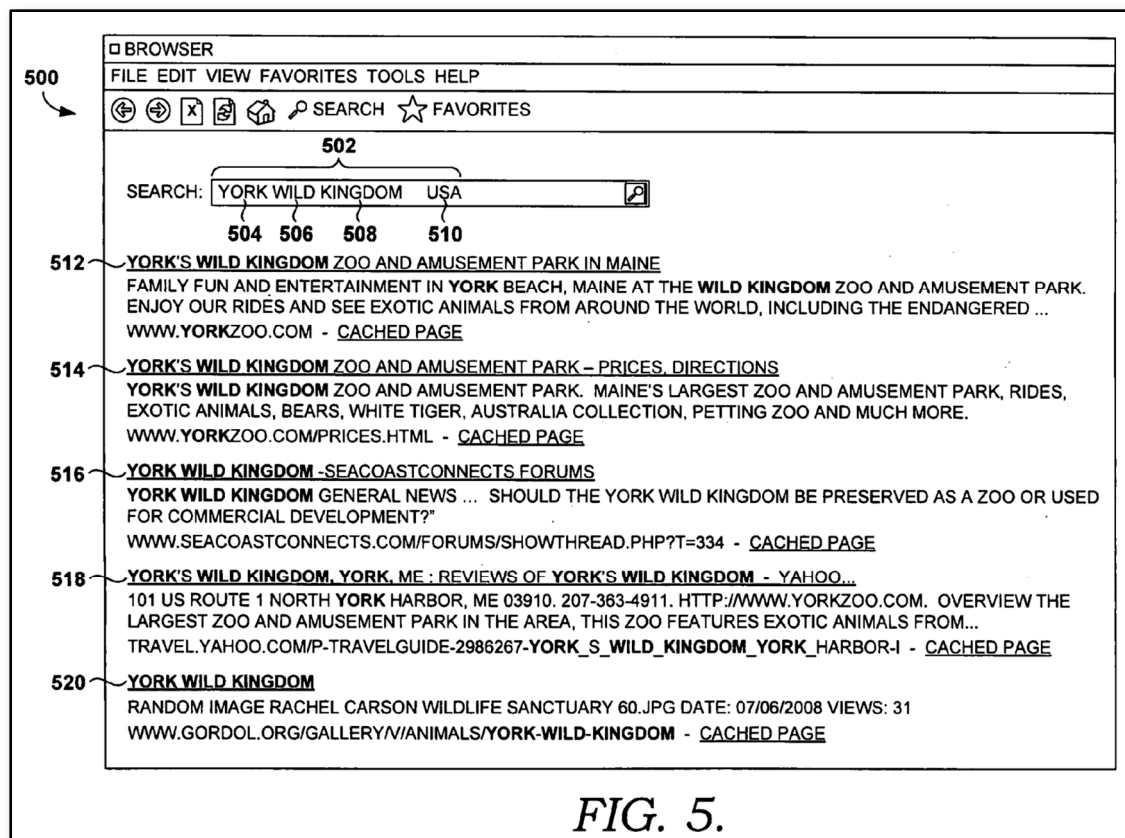
yielded results whereas the original search string did not. Mills, 7:18-23. This “disabuse[s]” the user of the belief that there are no search results relevant to the user’s original search string. Mills, 7:23-25. Bederson-Decl., ¶279.

Second, because “the altered search strings 163 are displayed in association with” their respective search results, “a user can see how the alteration made to the respective altered search string 163 may have resulted in” results “that are not particularly relevant” to the user’s original search string. Mills, 7:25-31. That is, the annotations identify what term was removed to identify a result and thus what term is missing, which may change its relevance to the user. Bederson-Decl., ¶280; *see also* Mills 7:35-40 (annotations “serve[] to educate users”), 5:18-28 (annotations help identify results that may “be more relevant”).

POSAs would have recognized that Mills’s search-term annotations are applicable to any search system that displays results that can match only a subset of search terms. As discussed above, Wang is such a system and thus suffers the potential problems Mills identified: some of Wang’s search results might match only a subset of user-supplied search terms but (without Mills) Wang does not indicate which search terms have been removed for each broadened search result.

Wang’s Figure 5 example (below) includes four keywords—YORK WILD KINGDOM USA. Wang says “[t]he resulting documents...have at least 3 of the 4 keywords.” Wang, [0053]. Each search-result grouping includes in **bold** “YORK,”

“WILD,” and “KINGDOM,” and thus each corresponding result clearly includes those keywords. Bederson-Decl., ¶¶281-282. However, it is unclear whether any result’s webpage also includes “USA” because even though “USA” is not displayed in the search-result grouping it could still be present somewhere in the webpage, (e.g., somewhere other than its title, URL, or excerpt). Wang, [0053] (“*As is shown*,...all [results] contain at least 3 of [the] keywords.”). Bederson-Decl., ¶¶281-282 (citing EX1055-EX1057).



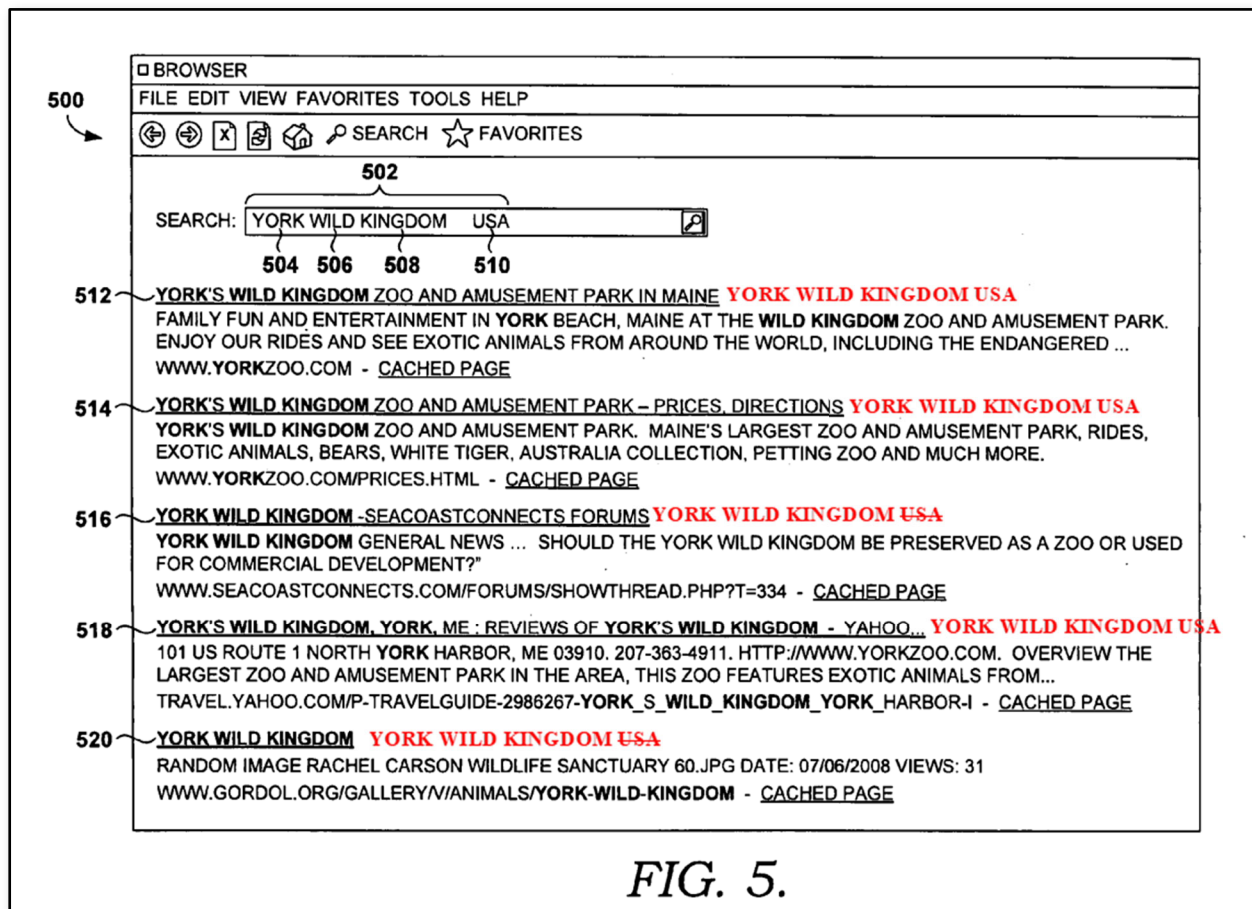
Because it is unclear whether any un-displayed keyword is actually missing from each webpage (and which webpages are missing the keyword), POSAs would have recognized Wang’s system as ready for improvement via the above-described

benefits of Mills’s annotations (*e.g.*, helping the user ignore potentially irrelevant results), which would have been achieved by displaying the specific keywords that Wang used to identify each search result and crossing out keyword(s) missing in the associated webpage. Bederson-Decl., ¶283. The combination would have thus been the use of a known technique (displaying Mills’s altered search strings) to improve a similar device (Wang’s search engine) in the same way (providing users with additional information that improves their searching experience). *Id.*; *KSR*, 550 U.S. at 417.

Using Wang’s Figure 5 as an example, the interface in Wang-Mills would have displayed the altered search string adjacent to (or below) each search result, with strikethrough applied to any term(s) missing from the corresponding search result. Bederson-Decl., ¶292. Including the annotations adjacent/below each search result is consistent with Wang’s FIG. 5 which already bolds search terms present in each search result and is consistent with how known search engines annotated search results. Bederson-Decl., ¶¶284-291 (discussing additional examples of per-search-result annotations).

As discussed above, Wang’s FIG. 5 is consistent with one or more search results missing “USA” on their corresponding webpage. In the hypothetical example below, “USA” is missing from webpages of results 516 and 520 (as indicated by

“USA”) but “USA” is present in webpages of results 512, 514, and 518. Bederson-Decl., ¶292.



POSAs would have reasonably expected success in the above implementation. Wang and Mills both relate to search engines that identify search results that match a subset of a user's multi-word search query; modifying Wang's interface to display keywords used in an altered query with each search result would have required only routine software programming skills. Bederson-Decl., ¶293; Mills, 10:26-45.

2. Filtering option based on Brinson

Wang’s relaxed search identifies search results containing a subset, but potentially not all, of the user’s search terms. But Wang also says “certain keywords in the search-engine query may be designated not to be relaxed, meaning all retrieved documents *must include* the non-relaxed word.” Wang, [0045]. However, Wang does not say how the user can identify a “must include” term. Bederson-Decl., ¶294.

As discussed in Ground 1A, Brinson discloses a user-friendly GUI that allows a user to identify a search term as “Require[d],” meaning “results must include this term.” Brinson, [0045], [0070]-[0071], [0075]. Bederson-Decl., ¶295.

Thus, based on Brinson, POSAs had reason to augment Wang-Mills to include user-selectable GUI elements for “designat[ing]” that a search term “must [be] include[d]” in the search results. Wang, [0045]. Doing so would have also been applying aspects of Brinson’s known GUI elements for beneficially making a search term mandatory to known search engines ready for that improvement to yield the predictable result of Wang’s search engine providing an interface that lets users make a search term mandatory (as Wang says to do). Bederson-Decl., ¶¶296-297; *KSR*, 550 U.S. at 417.

In the Wang-Mills-Brinson combination, the search engine is augmented to include user-selectable GUI elements that allows users to designate a search term as a required term that must be included in each search result. Bederson-Decl., ¶297.

As discussed above (§VI.D.2; citing corroboration), a known, beneficial way to implement what Brinson describes was to filter already-identified results, without executing another search. Bederson-Decl., ¶295. Thus, in one obvious implementation, each search term within an altered search string displayed adjacent to a search-result grouping would be selectable to set that term as “required” and remove results that are missing that term. Bederson-Decl., ¶296 (citing EX1068, [0017]-[0018], as additional example of known user-selectable GUI elements for filtering results). Such an implementation is explicitly suggested by Mills’s teaching that its altered search strings can be “clicked upon” to refine a search. Mills, 6:53-57; Bederson-Decl., ¶295. And this implementation is consistent with Brinson, which discloses an embodiment where individual keywords displayed adjacent to search results “can be selected by the user to refine the present search,” *e.g.*, by designating them “Required.” Brinson, [0073]; FIG. 18; Bederson-Decl., ¶295.

POSAs would have reasonably expected success because, as discussed above, Wang expressly supports the ability to make a search term mandatory, Mills teaches making the text of its altered search strings selectable to filter search results, and it would have required only ordinary programming skill to adapt weight-selecting aspects of Brinson’s GUI (*e.g.*, clickable text) for Wang-Mills-Brinson. Bederson-Decl., ¶298.

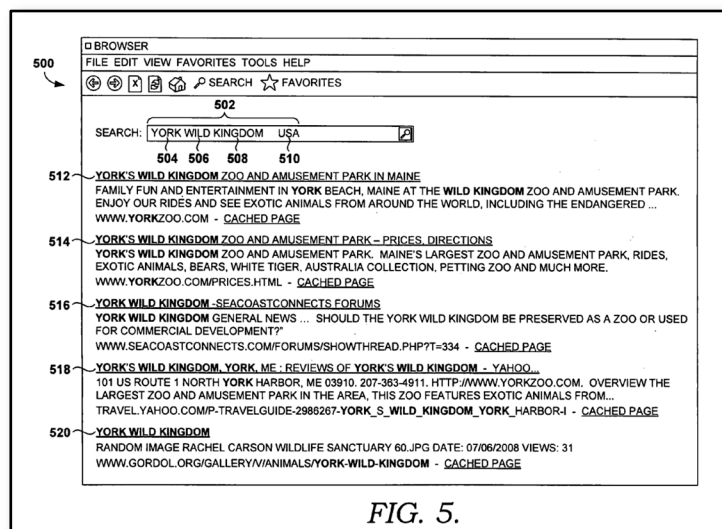
D. Mapping to Claims

1. Claim 1

a. [1PRE]

Wang discloses *a process* “for performing relaxed searching on a search engine...connected to a network” (Wang, [0032], FIG. 4), *e.g.*, “the *Internet*” (Wang, [0030], FIG. 3A). Wang’s “search engine” “creates a list of results for a search-engine query by identifying documents [*e.g.*, webpages] that include only a subset of the keywords [*search term elements*] submitted by *a user*” of the *search engine*. Wang, [0013]; *see also* [0035]. “Once the web pages are located, their URLs are transmitted back to the client computing device” “and displayed as hyperlinks” (*search results*). Wang, [0035]; Bederson-Decl., ¶¶299-300.

Wang’s Figure 5 (below) depicts “web browser window 500 rendering a web site for the search engine,” which provides the *interactive GUI* below. Wang, [0053], [0035]. Bederson-Decl., ¶301.



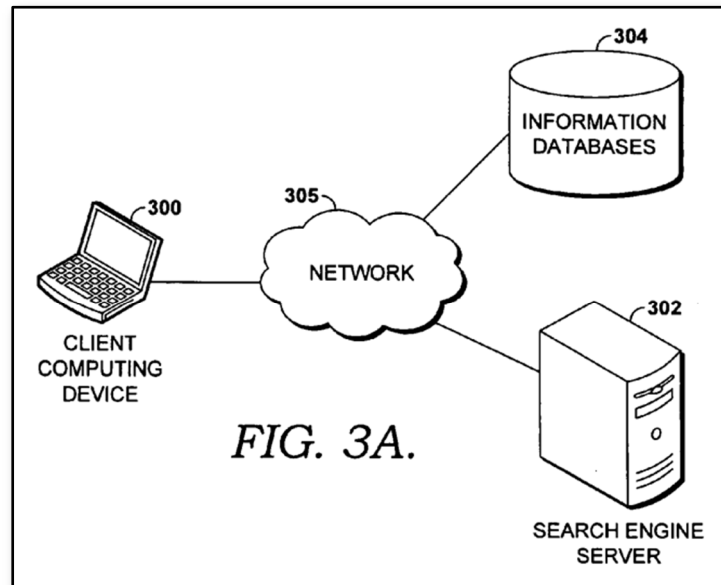
As discussed above (§IX.C.1) and further below (§IX.D.1.e, [1D]), based on Mills, Wang-Mills-Brinson *enhances* Wang’s GUI by *providing annotations* to search results that *do not contain a desired search term element* (by displaying those terms in strikethrough). Bederson-Decl., ¶302.

As discussed above (§IX.C.2) and further below (§IX.D.1.i, [1H]), based on Brinson, Wang-Mills-Brinson *enhances* Wang’s GUI by *providing* user-selectable GUI elements (e.g., clickable text) allowing users to designate a search term as “required” (i.e., mandatory). That selection provides *filtering* so the GUI *enables a search engine user to automatically remove search results that each reference a webpage that does not contain the user-designated (i.e., desired) mandatory search term element*. Bederson-Decl., ¶303.

Thus, Wang-Mills-Brinson *enables a faster operation of Internet search for the search engine user by enabling the search engine user to avoid spending time visiting a webpage that is missing the desired search term element* because the *annotations* allow the user to readily identify, and the mandatory-term filtering allows users to remove from being displayed, search results that are missing a search term element, thereby avoiding visiting the webpages of those search results. Bederson-Decl., ¶304.

b. [1A]

Wang's Figure 3A (below) shows a client's *personal "computing device"* ([0032]) having "*a display device*" ([0021]) and "communicat[ing] with the search-engine server" ([0038]).



"[T]he user can submit keywords to the search engine, and the client computing device 300, in turn, transmits the keywords to the search engine server 302." Wang, [0039]. "[T]he search engine server 302 receives the query and parses the query into one or more keywords." Wang, [0040], FIG. 3B.

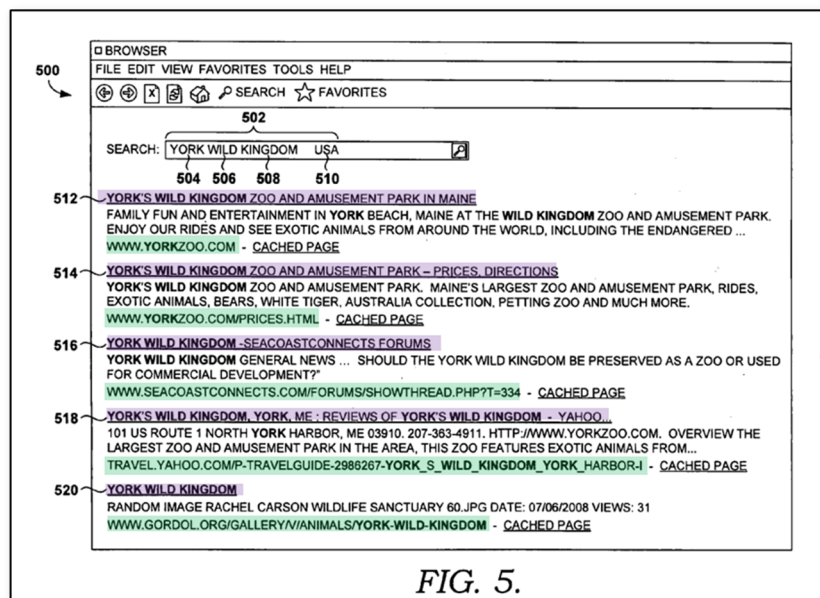
Thus, Wang's "query" *is received as a search request from a search engine user on a personal computing device and comprises "keywords" (search term elements)*. Wang, [0035], [0002], [0004]. Bederson-Decl., ¶¶305-307.

c. [1B]

In response to receiving the search request, Wang's "search engine server" operates to "search[]" one or more inverted indexes for documents that contain" at least a subset of the "keywords." Wang, [0040], FIG. 5 (search request 502).

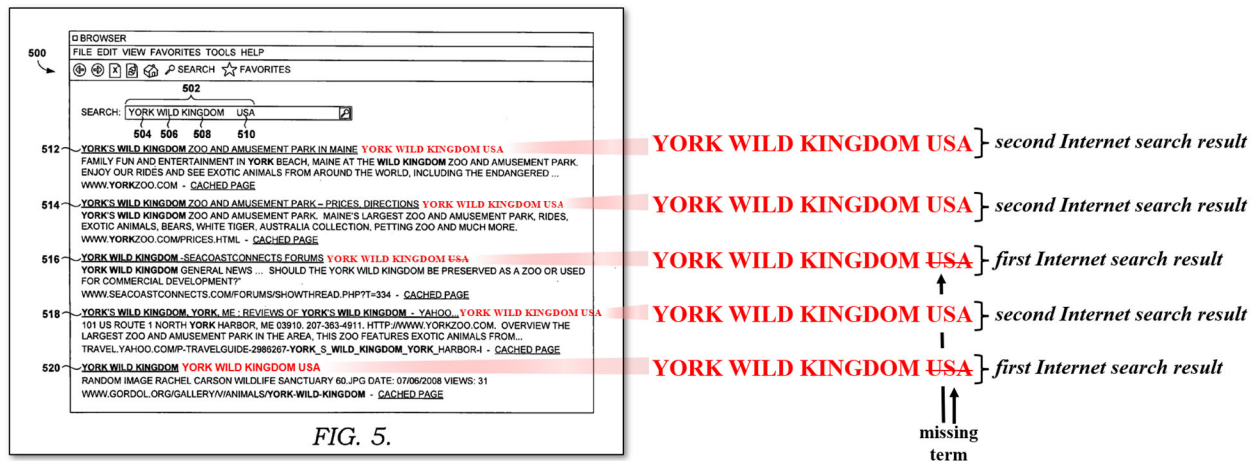
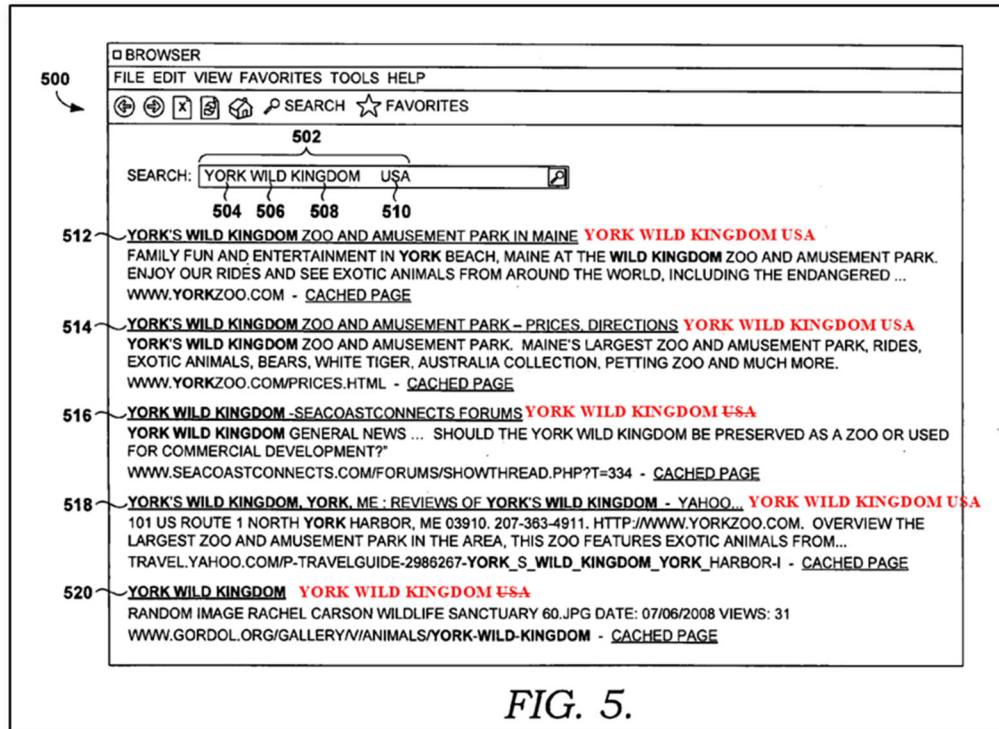
Results generated using inverted indexes, as in Wang, are *Internet search results* because each "inverted index is prepared by web [*i.e.*, *Internet*] crawlers browsing documents stored in the information databases 304," which "may be hosting a web page comprising numerous online documents." Wang, [0041], [0035], [0016]; Bederson-Decl., ¶¶308-309.

Wang's Figure 5 (highlighted below) depicts "a web browser window 500 rendering a web site for the search engine" (Wang, [0053]), which shows the generated *Internet search results* that reference "webpages" via titles (purple) and "hyperlinks" (green) (Wang, [0035]). Bederson-Decl., ¶310.



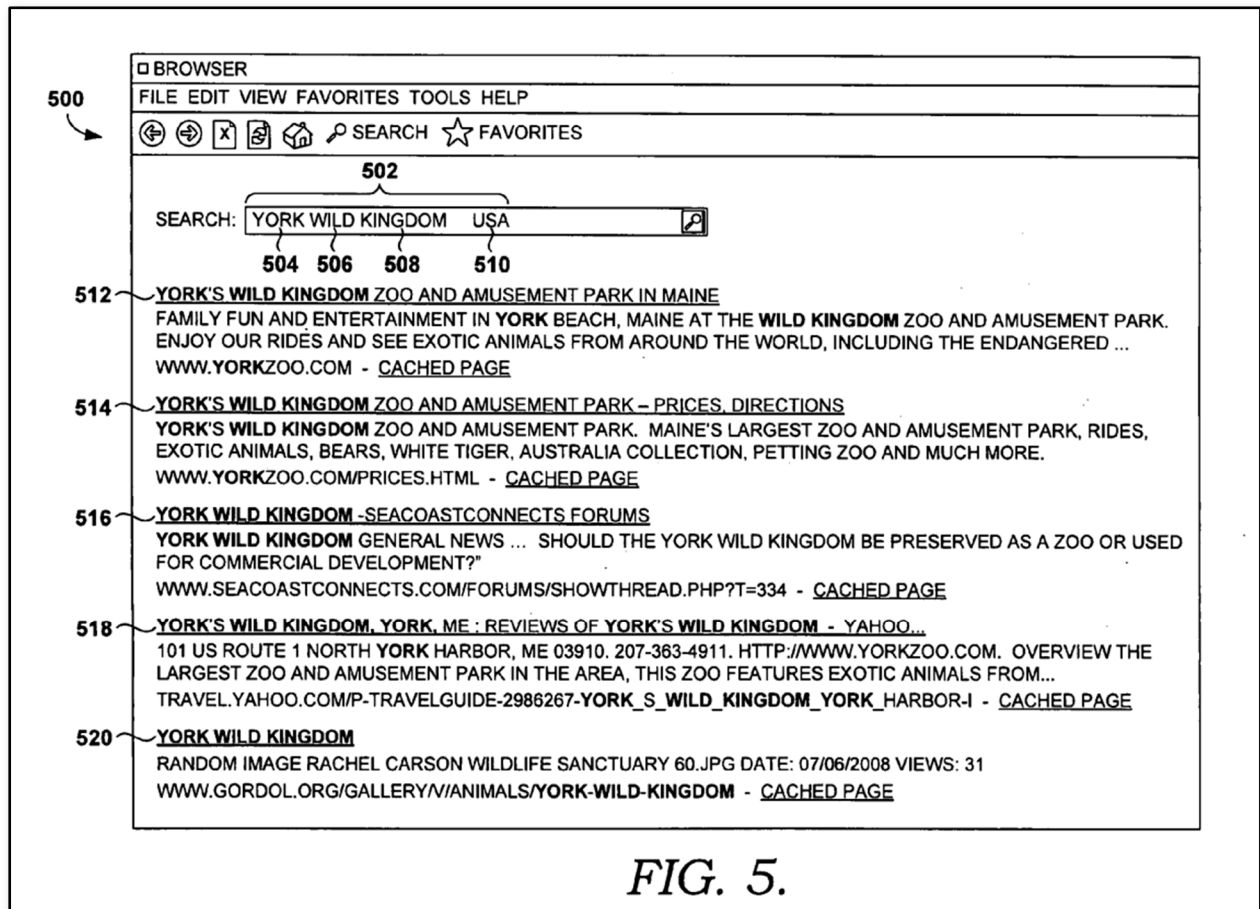
In this example, the “user submitted a search-engine query 502 with keywords ‘york,’ ‘wild,’ ‘kingdom,’ and ‘USA.’” Wang, [0053]. Wang’s “relaxed search[]” identified “documents” (websites) that “have at least 3 of the 4 keywords.” Wang, [0053]. POSAs understood each result above includes at least “york,” “wild,” and “kingdom” (because those keywords are bolded in each search result) but may or may not include “USA.” Bederson-Decl., ¶311; *see supra* §IX.A.

As discussed above (§IIX.C.1) and illustrated below based on Wang’s Figure 5 (annotated), Wang-Mills-Brinson’s process augments Wang’s search results with text of the search terms, based on Mills. Result 516 or 520 below meets *a first Internet search result that references a first webpage that is missing a first search term element* (“USA”); result 512, 514, or 518 meets *a second Internet search result that references a second webpage*. Bederson-Decl., ¶312.



d. [1C]

“The client [*personal*] *computing device*” includes “a web browser” that “enabl[es] a user to display and interact with information located on the Web.” Wang, [0038]. Wang’s Figure 5 (below) depicts “a web browser window 500 rendering a web site for the search engine,” that is *generated and provided for display as an Internet search user interface*. Wang, [0053], [0035]. Bederson-Decl., ¶13. EX1001, 5:28-30 (“The user interface...appears...in a browser window....”).



e. [1D]

Using the example Wang-Mills-Brinson search-results page illustrated below, the *Internet search user interface* comprises the first Internet search result (516 or 520) and annotations (red), which each include a first warning to the search engine user that those webpages are missing the first search term element by annotating “USA” as “USA,” which comprises a text representing the first search term element. Bederson-Decl., ¶314.

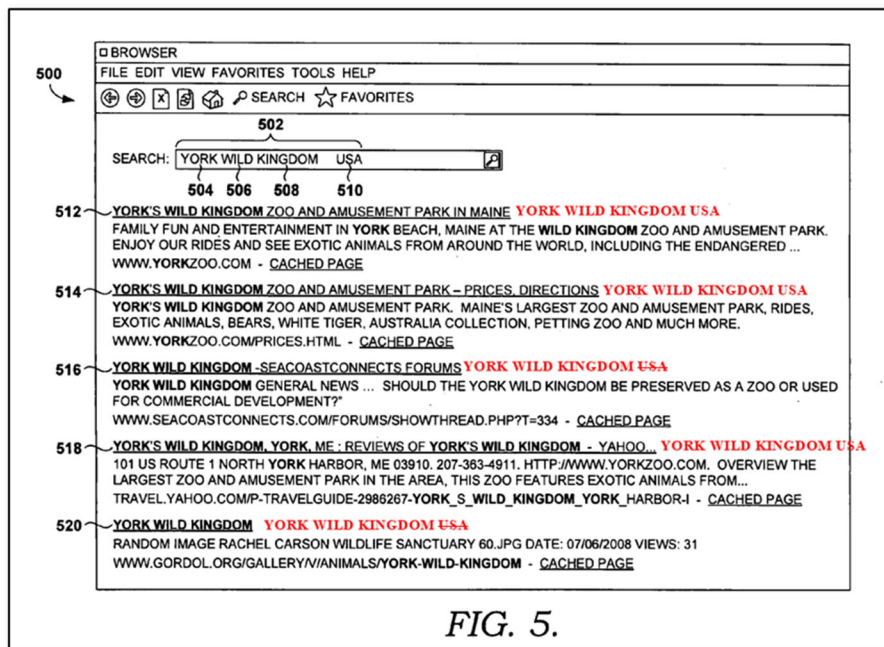


FIG. 5.

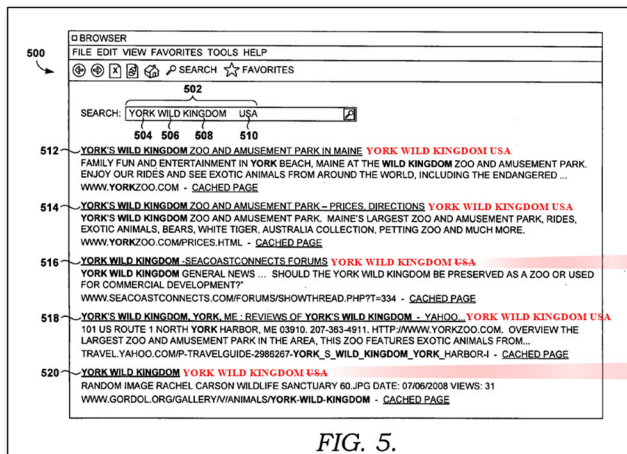


FIG. 5.

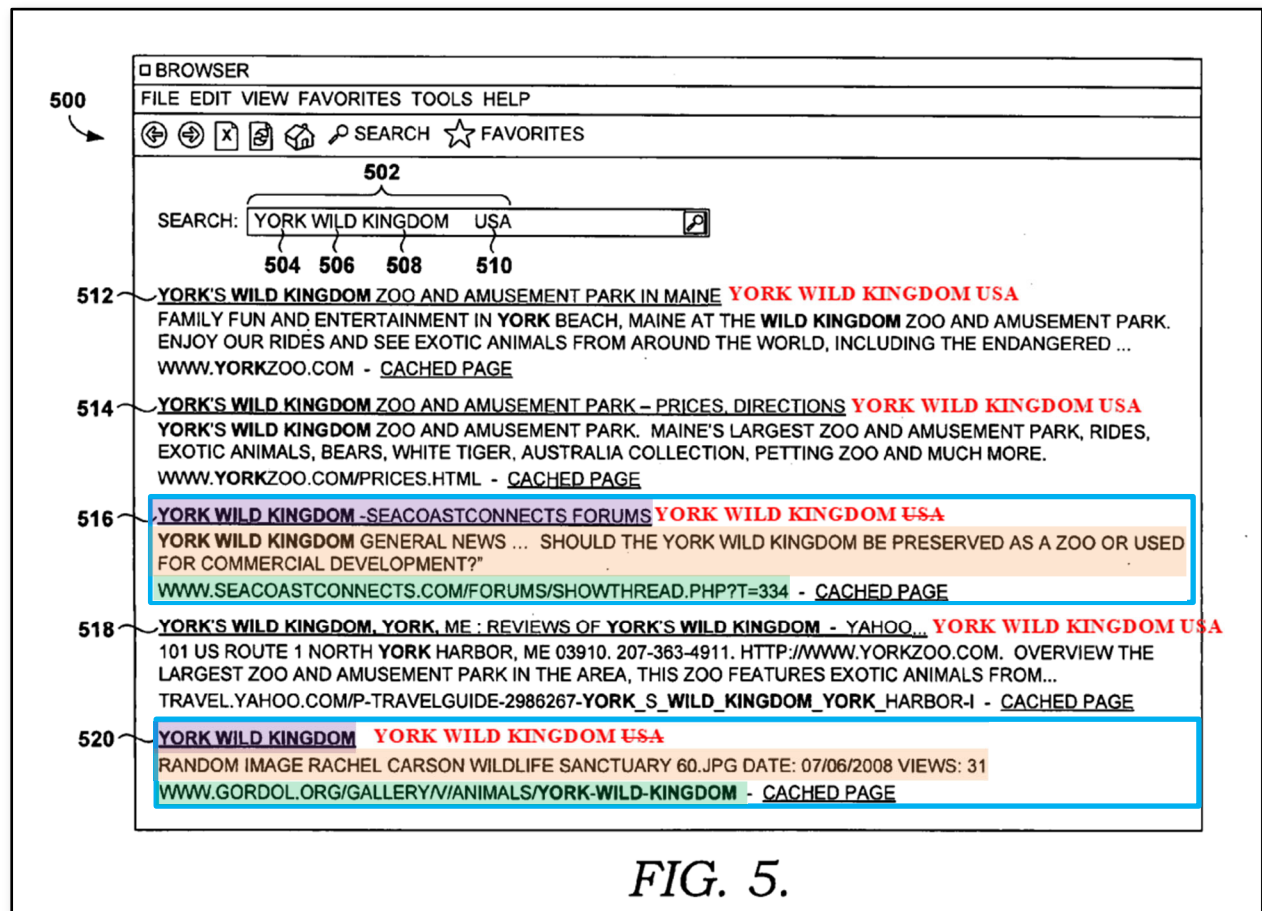
YORK WILD KINGDOM USA } first Internet search result

YORK WILD KINGDOM USA } first Internet search result

↑
warning that
term is missing

f. [1E]

The example *first Internet search result* (516 or 520 below) is organized for display as a *first search result grouping* (blue boxes), comprising a *first excerpt* (orange), *Internet link* (green), and *warning* (red). Bederson-Decl., ¶315; see also Wang, [0035], [0053].



g. [1F]

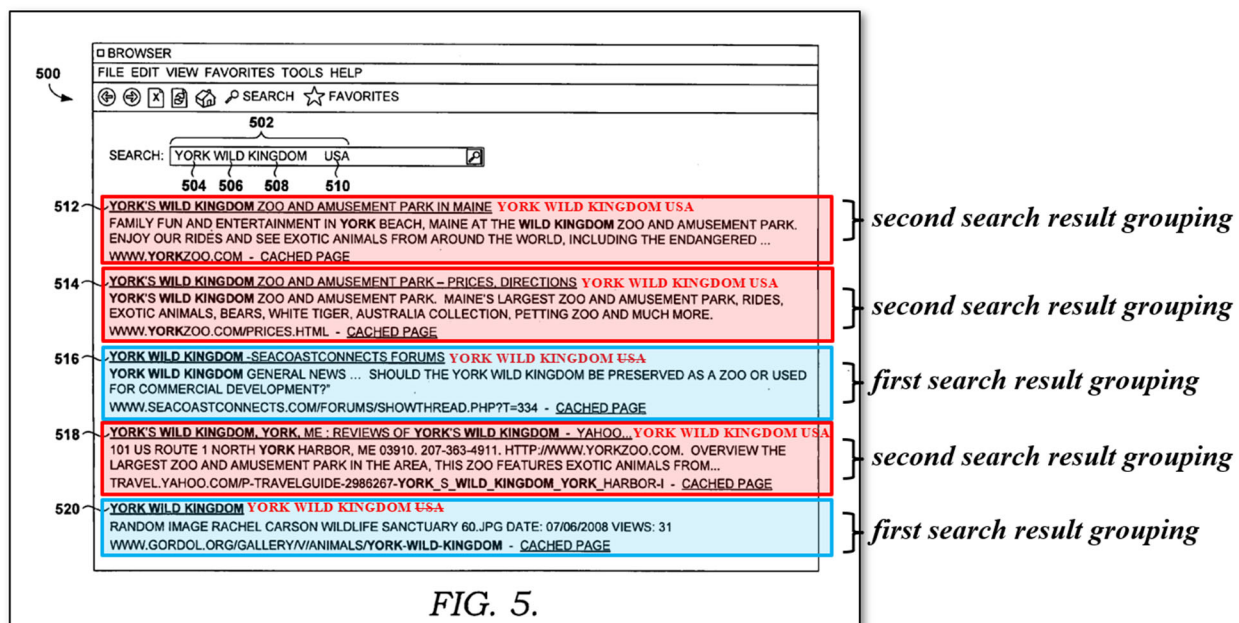
The example Wang-Mills-Brinson search-results page above shows the *Internet search user interface* further comprises the *second Internet search result* (result 512, 514, or 518), which, like the *first Internet search result*, are each

organized as a (second) search result grouping that comprises a respective (second) excerpt and (second) Internet link. Wang, [0035], [0053]. Bederson-Decl., ¶316.

As discussed above (§IX.D.1.c, [1B]), each example *second Internet search result* is **not** missing any search term. Thus, its search result grouping will **not** comprise any warning that any of the search term elements is missing from the *second webpage*—rather, in those results, each search term is displayed **without** strikethrough. Bederson-Decl., ¶317.

h. [1G]

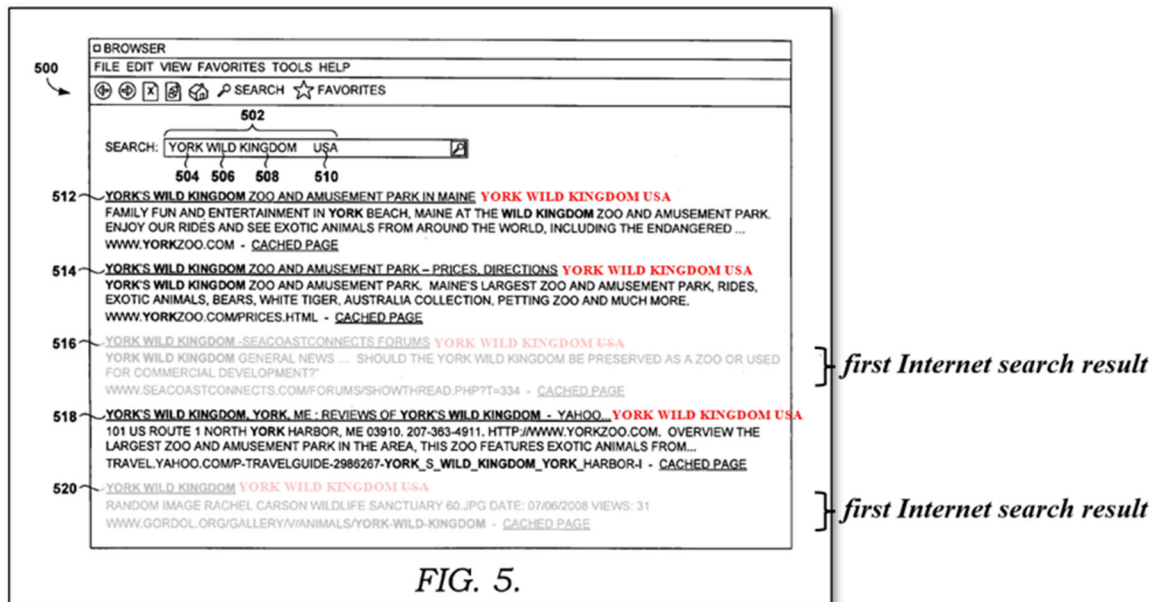
As shown below, the first (blue) and second (red) search result groupings are each a unique search result grouping displayed separately from each other. Bederson-Decl., ¶318.



i. [1H]

As discussed above (§IX.C.2), based on Brinson, Wang-Mills-Brinson includes user-selectable GUI elements (*e.g.*, clickable search-term text) that allow users to designate a search term as “required” (*i.e.*, mandatory). *See also supra* §IX.D.1.a ([1PRE]). Bederson-Decl., ¶319. That *provides a filtering option* that, when selected by the user, *causes an updated Internet search user interface to be generated and provided for display on the terminal (personal computing device)* because all search-result webpages missing the now-mandatory search term will be removed from being displayed. Bederson-Decl., ¶319. As discussed (§VI.D.2; citing corroboration), a known, beneficial, and obvious way to implement what Brinson describes was to filter already-identified results, without executing another search. Bederson-Decl., ¶319.

In the Wang-Mills-Brinson example illustrated below, *the updated user interface will not display the first Internet search results 516 and 520* if the user selects “USA” as mandatory because, as discussed ([1B]), their webpages are missing that term. Bederson-Decl., ¶320.



j. [11]

Wang-Mills-Brinson's *process* discussed above is performed on Wang's "search-engine server," which "receive[s] queries from [the] remote...client [personal] computing device." Wang, [0035], FIGS. 3A-3B, 4. Bederson-Decl., ¶321.

2. Claim 15

Wang-Mills-Brinson meets the following limitations of claim 15 for the reasons discussed in the corresponding sections above. Bederson-Decl., ¶322.

Limitation	Addressed in Section:
[15PRE]	§IX.D.1.a ([1PRE]; Wang, FIG. 3A (illustrating <i>system</i>))
[15A]	§IX.D.1.b ([1A]; discussing <i>personal computing device</i>); §IX.D.1.j ([1I]; search engine comprising <i>servers</i>)
[15B]	§IX.D.1.b ([1A]; <i>search request</i>)
[15C]	§IX.D.1.c ([1B])
[15D]	§IX.D.1.d ([1C])
[15E]	§IX.D.1.e ([1D])
[15F]	§IX.D.1.f ([1E])
[15G]	§IX.D.1.g ([1F])
[15H]	§IX.D.1.h ([1G])
[15I]	§IX.D.1.i ([1H])

3. Claim 29

Wang-Mills-Brinson meets the following limitations of claim 29 for the reasons discussed in the corresponding sections above. Bederson-Decl., ¶323.

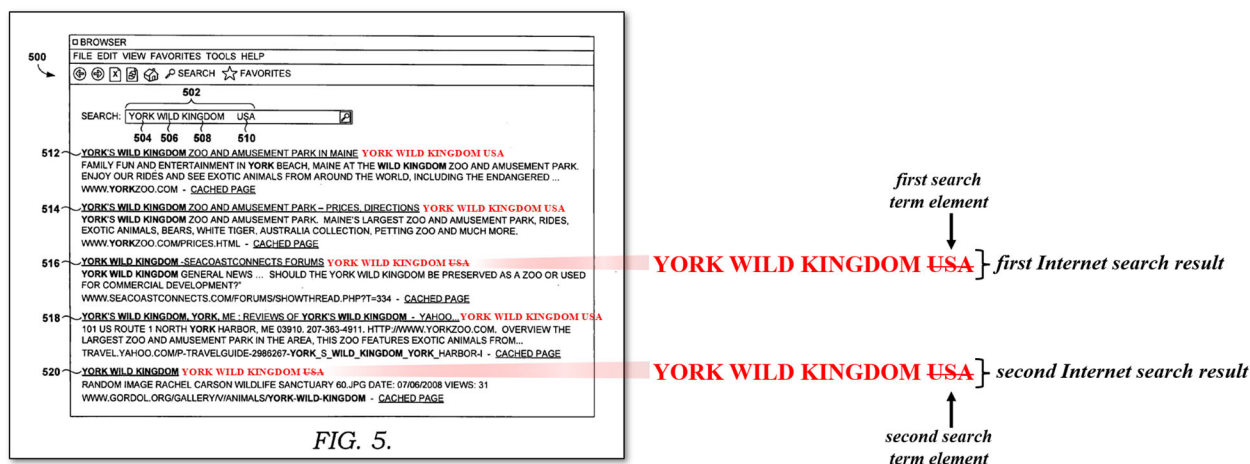
Limitation	Addressed in Section:
[29PRE]	§IX.D.1.a ([1PRE])
[29A]	§IX.D.1.b ([1A])
[29B]	§IX.D.1.c ([1B]; result 516 meets <i>a first Internet search result...missing a first search term</i> (“USA”); result 520 meets <i>a second Internet search result...missing a second search term</i> (also “USA”); <i>see infra</i> claim 39 (<i>first and second search term can be the same</i>))
[29C]	§IX.D.1.d ([1C])
[29D]	§IX.D.1.e ([1D])
[29E]	§IX.D.1.f ([1E])
[29F]	§IX.D.1.g ([1F]; result 520’s annotation provides <i>a second warning</i>)

[29G]	§IX.D.1.f ([1E])
[29H]	§IX.D.1.h ([1G])
[29I]	§IX.D.1.i ([1H]; where, as discussed <i>supra</i> §IX.C.2, a search term in an annotation could be designated mandatory by, <i>e.g.</i>, clicking the term; designating “USA” as mandatory in result 516’s annotation meets <i>a first filtering option that causes a first updated Internet search user interface to not display</i> result 516; designating “USA” as mandatory in result 520’s annotation meets <i>a second filtering option that causes a second updated Internet search user interface to not display</i> result 520)
[29J]	§IX.D.1.j ([1I])

4. Claim 39

a. [39A]

In the example Wang-Mills-Brinson search-results page below, *the first and second search term elements are a same search term element (“USA”) and their warning first/second text are identical (“USA”)*. Bederson-Dec1., ¶324.



b. [39B]

As discussed above (§IX.D.1.i, [1H]), *the updated Internet search user interface removes from display search result(s) missing the first search term element* because the filtering designates that term mandatory. Thus, in the examples above ([39A]) *the first and second Internet search results – both missing the first search term (“USA”) – would not be displayed in the first and second updated user interfaces*. Bederson-Dec1., ¶325.

X. GROUND 2B: WANG-MILLS-BRINSON-MEHTA RENDERS OBVIOUS CLAIMS 2-8, 13-14, 16-22, 27-28, 30-38

A. Wang-Mills-Brinson-Mehta Combination

As discussed in Ground 1B, Mehta teaches displaying “relevant advertisement[s]” as “click[able]” (*i.e.*, selectable) “[s]ponsored links” alongside Internet search results. Mehta, [0005]-[0006], [0033]. *See also* EX1001, 2:66-3:3. For the same reasons discussed in Ground 1B (*e.g.*, generating revenue), POSAs had reasons to display selectable advertisements based on Mehta in Wang-Mills-Brinson (Ground 2A). Bederson-Decl., ¶¶326-327 (citing EX1015, [0004]; EX1016, [0006]).

Based on Mehta, Wang-Mills-Brinson-Mehta’s search-engine interface displays selectable advertisements “relevant to [the user’s] search criteria.” Mehta, [0005]-[0006]. POSAs would have reasonably expected success because, as discussed above (§VII.B, Ground 1B), displaying such advertisements was conventional. Bederson-Decl., ¶¶328-329.

B. Mapping to Claims

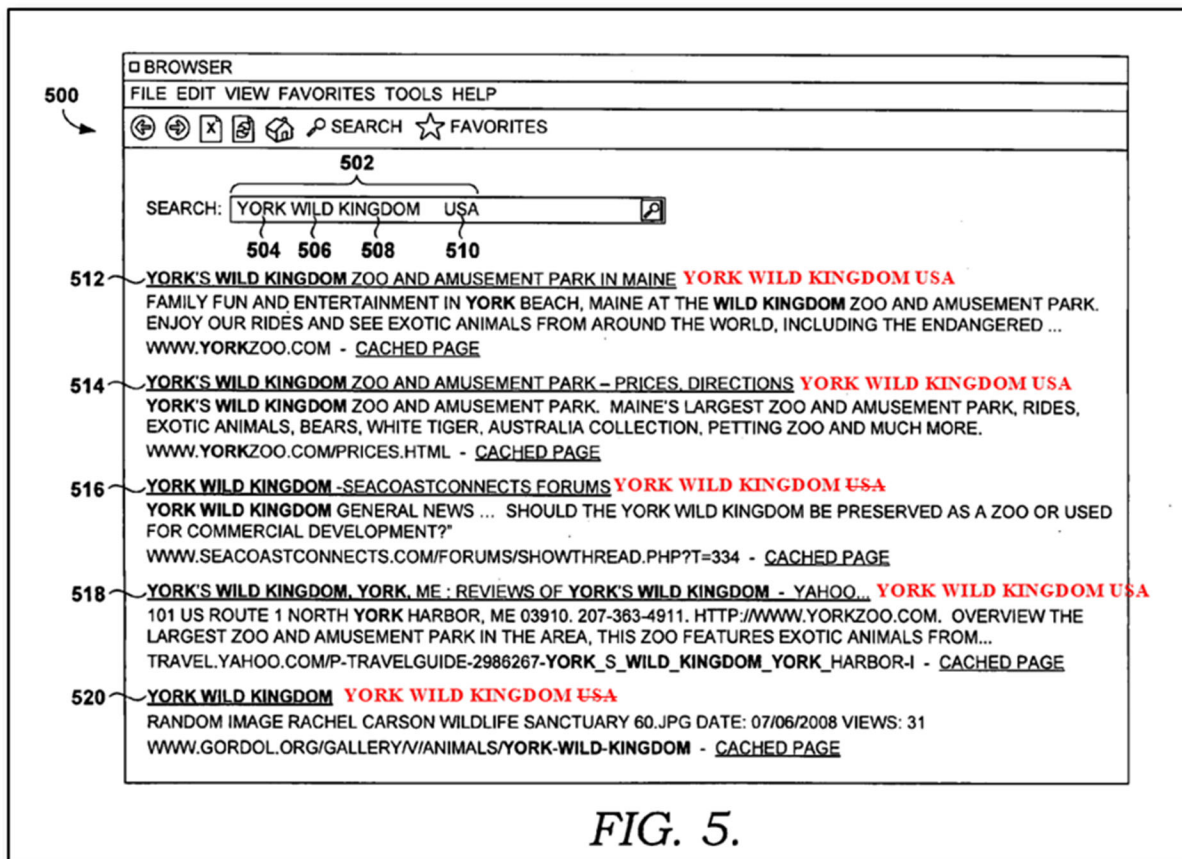
1. Claim 2

Claim 2 depends from claim 1. Ground 2B’s Wang-Mills-Brinson-Mehta builds on Ground 2A’s Wang-Mills-Brinson combination and meets claim 1 as Wang-Mills-Brinson does. *Supra* Ground 2A; Bederson-Decl., ¶330.

As discussed above, Mehta provides motivation to augment Wang-Mills-Brinson to display *selectable* (clickable) “[s]ponsored *advertisements*” related to the user’s search terms. Mehta, [0005]-[0006]. Bederson-Decl., ¶331. Once augmented, Wang-Mills-Brinson-Mehta meets claim 2’s *selectable-advertisement* limitation. Bederson-Decl., ¶331.

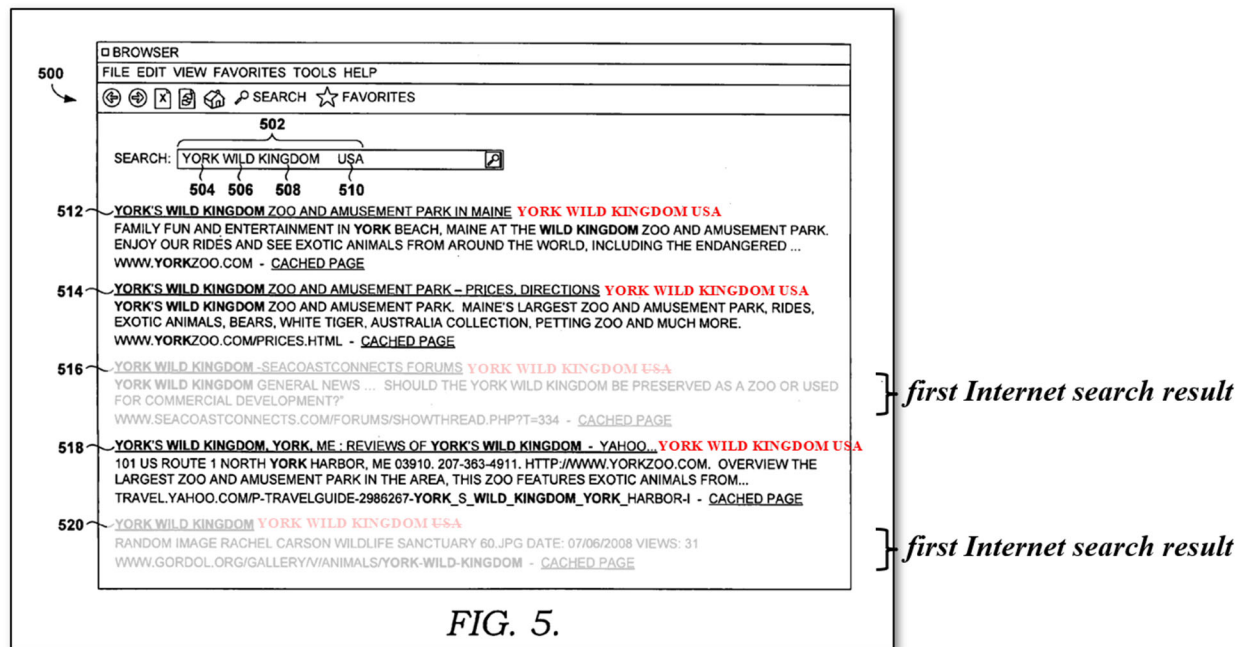
2. Claim 3

Wang-Mills-Brinson-Mehta’s *annotation* comprises text representing at least one search term element (e.g., “USA”) in strikethrough, which is a *format* of text with (i) its font...altered, (ii)...lines merged with the text, and/or (iii)...lines superimposed thereupon. Bederson-Decl., ¶332.



3. Claim 4

As discussed above (§IX.D.1.c, [1B]), each example *first Internet search result* (516 or 520 below) is missing “USA.” Those results *would not have been displayed if...the search engine was operated by using an “AND” logical operation that includes “USA” (the first search term element)* because “USA” is missing in those results and an “AND” logical operation would require “USA” to be present. *Bederson-Decl.*, ¶333 (citing Wang, [0002]).



4. Claim 5

In Wang’s Figure 5, result 512 references “**WWW.YORKZOO.COM**” and result 514 references “**WWW.YORKZOO.COM/PRICES.HTML**,” which discloses (or at least suggests and renders obvious) that 514’s webpage is a descendant linked directly one level from 512’s webpage. Similarly, it would have

been obvious for the *first webpage* (see §IX.D.1.c, [1B]) to be a different example (e.g., website’s homepage) that *has one or more descendant webpages* that are each *linked directly one level* therefrom (e.g., a “prices” webpage), and for scenarios to occur where each *descendant webpage is also missing the same (first) search term element as the first webpage*. Bederson-Decl., ¶334 (citing EX1029, 3:65-4:5; Naick, [0003]-[0004]).

5. Claims 6, 8

a. [6A]/[8A]

Wang’s *personal “computing device...may be a...smartphone”* ([0019], [0037]), which conventionally had *a smaller display screen than* the other devices recited in [6A]/[8A]. Bederson-Decl., ¶335.

b. [6B]/[8B]

As discussed above (§IX.D.1.i, [1H]), *the updated Internet search user interface* removes from display *search result(s) missing the first search term element*. Once removed, the search engine will display additional search results that are **not** missing the *first search term element*. Wang, [0050]. Bederson-Decl., ¶336 (EX1015, [0005]).

Thus, the *updated Interface user interface* will *enable the smaller display screen to display an increased number of Internet search results that each reference a webpage containing (i.e., not missing) the first search term element compared with the Internet search user interface prior to the selection of the filtering option, without*

being scrolled by the search engine user (because additional results will occupy screen space freed-up by removing results). Doing so *further speeds the search engine user's operation of Internet search* because the user can see additional relevant results without spending time scrolling or viewing less relevant results. Bederson-Decl., ¶337.

6. Claim 7

As discussed above (§IX.D.1.c, [1B]), *a search term element* in Wang-Mills-Brinson is *considered to be contained in a webpage if the webpage contains the search term element* itself. Wang, [0004], [0031], [0040]. Bederson-Decl., ¶338.

For the reasons discussed above (§VII.C.6; Ground 1B, **claim 7**), it would have also been beneficial, conventional, and obvious for Wang-Mills-Brinson-Mehta's search engine to consider a webpage to contain a search term if it *contains a synonym or a misspelled version of the search term element*. Bederson-Decl., ¶¶339-340 (citing EX1059, EX1060).

7. Claim 13

a. [13A]

Based on Mehta's Figure 3A (highlighted below) and conventional search-engine interface design, Wang-Mills-Brinson-Mehta includes "sponsored [*selectable*] advertisements 210 [red] rendered along with [*simultaneously viewable on the display screen* as] a plurality of *search results* 220 [blue]." Mehta, [0033]; *see also, e.g.*, EX1015, FIG. 3, [0032]. In Wang-Mills-Brinson-Mehta, the search

results include *the first search result groupings* discussed above (§IX.D.1.e, [1D]).

Bederson-Decl., ¶¶341-342.

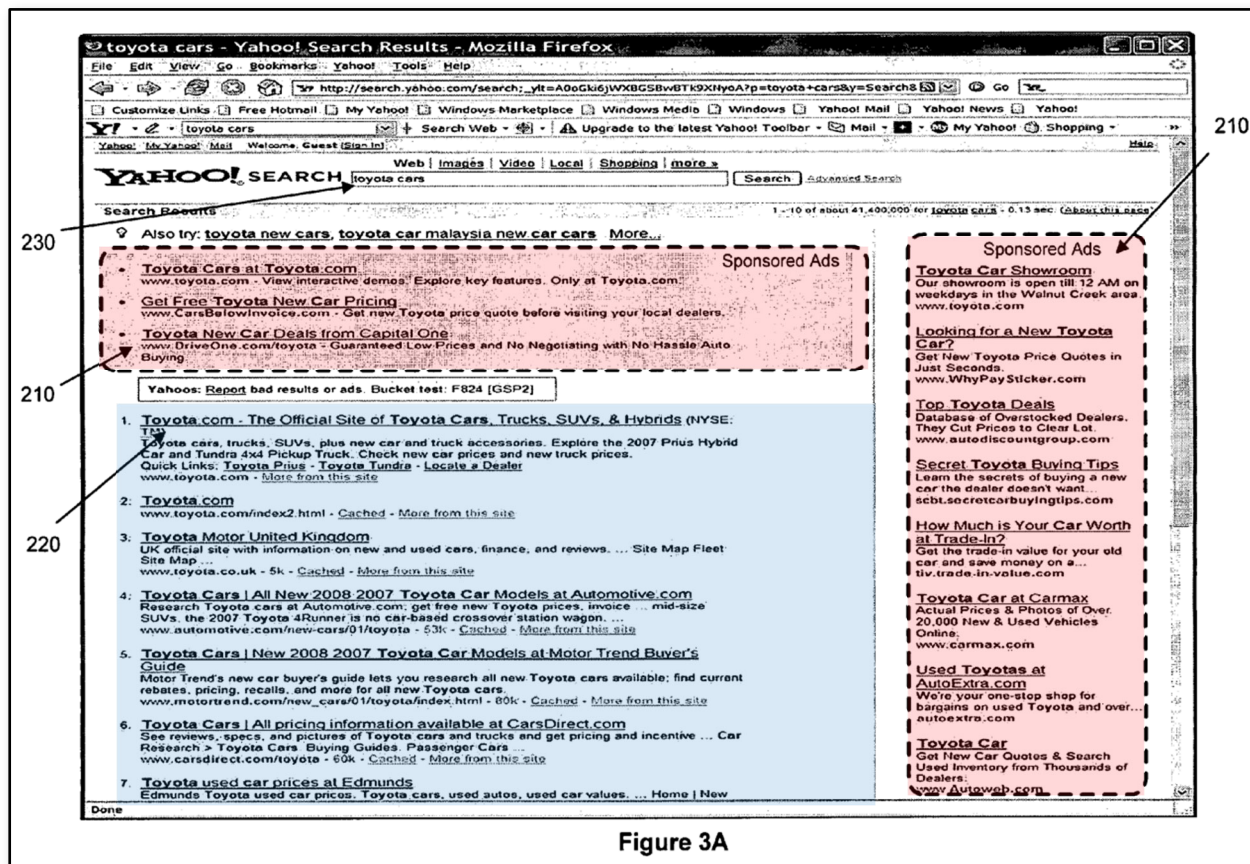


Figure 3A

b. [13B]

See claim 4 (*supra* §X.B.3); Bederson-Decl., ¶343.

8. Claim 14

As discussed above (§X.B.7.a, [13A]), based on Mehta, *the selectable advertisement and search results* (including *the first and/or second search results*) are adjacent to each other (e.g., advertisements above and/or alongside search results). Bederson-Decl., ¶¶344-345.

9. Claims 16-22, 27-28, 30-38

Wang-Mills-Brinson-Mehta meets the limitations added by the claims below for the reasons discussed in the corresponding sections above. Bederson-Decl., ¶346.

Claims	Addressed in Section:
16/30	§X.B.1 ([claim 2])
17/31	§X.B.2 ([claim 3])
18/32	§X.B.3 ([claim 4]; for claim 32 see also §IX.D.3 ([29B] (identifying <i>second Internet search result</i> missing <i>second search term</i>)))
19/33	§X.B.4 ([claim 5])
20/22/34/36	§X.B.5 ([claim 6])
21/35	§X.B.6 ([claim 7])
27/37	§X.B.7 ([claim 13]; for claim 37 see also §IX.D.3 ([29B] (identifying <i>second Internet search result</i> missing <i>second search term</i>)))
28/38	§X.B.8 ([claim 14])

**XI. GROUND 2C: WANG-MILLS-BRINSON-MEHTA-NAICK
RENDERS OBVIOUS CLAIMS 9-12, 23-26**

A. Wang-Mills-Brinson-Mehta-Naick Combination

As discussed in Ground 1C, Naick’s search technique considers whether search terms are found on a webpage or its descendant webpage(s) because this better ensures that the search identifies “possible relevant information.” Naick, [0004]; Bederson-Decl., ¶347.

POSAs had the same reasons to augment Wang-Mills-Brinson-Mehta based on Naick in the same ways discussed above in Ground 1C that POSAs had reason to augment Bates-Brinson-Mehta and Bates-Bhagat-Brinson-Mehta based on Naick. Bederson-Decl., ¶¶348-349.

POSAs would have reasonably expected success because Naick’s “[s]earch logic may be substantially similar to that of conventional search systems” ([0026]) and only requires a “search engine” with “conventional components” ([0028]-[0029]). Bederson-Decl., ¶350.

B. Mapping to Claims

1. Claims 9, 23

a. [9A]/[23A]

See Ground 2B, **claim 5** (*supra* §X.B.4); Bederson-Decl., ¶351.

b. [9B]/[23B]

For the same reasons discussed above (§X.D.4, **claim 5**) that it would have been obvious for *the first webpage* to have *descendant webpages*, it would have been obvious and commonplace for *the second webpage* to have *descendant webpages*.

As discussed above (§XI.A), each Ground 2C combination includes Wang-Mills-Brinson's annotations (*supra* Ground 2A, [1D]). Based on Naick, these annotations would *not compris[e] any warning that any of the...search terms elements is missing from the second referenced webpage* if the terms were present in the webpage's descendant webpage(s). Naick, [0004]-[0006], [0022]-[0023]. As discussed *supra* §XI.A, POSAs had reason to only search descendant webpages that are *linked directly one level from the referenced webpage*. Thus, when *the second webpage is missing a second search term element* the absence of *any warning* would *indicate that the second search term element is contained in at least one...descendant webpage[]...linked directly one level therefrom*. Bederson-Decl., ¶¶352-354.

2. Claims 10-12, 24-26

Wang-Mills-Brinson-Mehta-Naick meets the limitations added by the claims below for the reasons discussed in the corresponding sections above. Bederson-Decl., ¶355.

Claim(s)	Addressed in Section(s):
10/24	§X.B.5 ([claim 6])
11/25	§X.B.6 ([claim 7])
12/26	§IX.D.4.a ([39A])

XII. CONCLUSION

The Board should institute review and cancel claims 1-39.

Dated: 2026-03-13

Respectfully submitted,
Google LLC

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XIII. CLAIM LISTING APPENDIX

Claim 1
[1PRE] A process for Internet search, annotation, and filtering for providing an enhanced interactive graphical user interface for Internet search that enables a search engine user to automatically remove one or more search results that each reference a webpage that does not contain a desired search term element, enabling a faster operation of Internet search for the search engine user by enabling the search engine user to avoid spending time visiting a webpage that is missing the desired search term element, the process comprising:
[1A] receiving a search request from a search engine user on a personal computing device having a display screen, the search request comprising one or more search term elements;
[1B] generating, by operating a search engine in response to receiving the search request, a first Internet search result that references a first webpage that is missing a first search term element and a second Internet search result that references a second webpage;
[1C] generating and providing, for display on the personal computing device, an Internet search user interface;
[1D] wherein the Internet search user interface comprises the first Internet search result and a first warning to the search engine user that the first webpage is missing the first search term element, wherein the first warning comprises a text representing the first search term element;
[1E] wherein the first Internet search result is organized for display as a first search result grouping comprising a first excerpt for the first webpage, a first Internet link for the first webpage, and the first warning;
[1F] wherein the Internet search user interface further comprises the second Internet search result; wherein the second Internet search result is organized for display as a second search result grouping that comprises a second excerpt from the second webpage and a second Internet link for the second webpage but does not comprise any warning that any of the one or more search term elements is missing from the second webpage;
[1G] wherein the first and second search result groupings are each a unique search result grouping displayed separately from each other;

[1H] wherein the Internet search user interface provides a filtering option, wherein the search engine user's selection of the filtering option causes an updated Internet search user interface to be generated and provided for display on the personal computing device, and wherein the updated Internet search user interface does not display the first Internet search result; and
[1I] wherein the process is performed on one or more servers located remotely from the personal computing device.
Claim 2
The process of claim 1, wherein the Internet search user interface further comprises a selectable advertisement that is related to at least some of the one or more of the search term elements.
Claim 3
The process of claim 2, wherein the text representing the first search term element is shown in at least one of the following formats: (i) a font representing the text has been altered; (ii) the text is shown with one or more lines merged with the text; (iii) the text is shown with one or more lines superimposed thereupon; (iv) the text is shown within a shaded area; and (v) the text is shown with a reversed format.
Claim 4
The process of claim 3, wherein the first Internet search result would not have been displayed on the Internet search user interface if, in response to receiving the search request, the search engine was operated by using an "AND" logical operation that includes the first search term element.
Claim 5
The process of claim 4, wherein the first webpage has one or more descendant webpages, wherein each of the one or more descendant webpages is also missing the first search term element, and wherein each of the one or more descendant webpages is linked directly one level from the first webpage.
Claim 6
[6A] The process of claim 5, wherein the personal computing device is a smartphone with a smaller display screen than a laptop, desktop, or tablet computer's display screen, and

[6B] wherein the updated Internet search user interface enables the smaller display screen to display an increased number of Internet search results that each reference a webpage containing the first search term element compared with the Internet search user interface prior to the selection of the filtering option, without being scrolled by the search engine user, thereby further speeding the search engine user's operation of Internet search.

Claim 7

The process of claim 6, wherein a search term element is considered to be contained in a webpage if the webpage contains at least one of: the search term element, a synonym of the search term element, or a misspelled version of the search term element.

Claim 8

[8A] The process of claim 3, wherein the personal computing device is a smartphone with a smaller display screen than a laptop, desktop, or tablet computer's display screen, and

[8B] wherein the updated Internet search user interface enables the smaller display screen to display an increased number of Internet search results that each reference a webpage containing the first search term element compared with the Internet search user interface prior to the selection of the filtering option, without being scrolled by the search engine user, thereby further speeding the search engine user's operation of Internet search.

Claim 9

[9A] The process of claim 3, wherein the first webpage has one or more first descendant webpages, wherein each of the one or more first descendant webpages is also missing the first search term element, wherein each of the one or more first descendant webpages is linked directly one level from the first referenced webpage; and

[9B] wherein the second webpage is missing a second search term element, wherein the second webpage has one or more second descendant webpages, wherein the second search result grouping not comprising any warning that any of the one or more search term elements is missing from the second referenced webpage indicates that the second search term element is contained in at least one of the one or more second descendant webpages, and wherein each of the one or more second descendant webpages is linked directly one level from the second webpage.

Claim 10
[10A] The process of claim 9, wherein the personal computing device is a smartphone with a smaller display screen than a laptop, desktop, or tablet computer's display screen, and
[10B] wherein the updated Internet search user interface enables the smaller display screen to display an increased number of Internet search results that each reference a webpage containing the first search term element compared with the Internet search user interface prior to the selection of the filtering option, without being scrolled by the search engine user, thereby further speeding the search engine user's operation of Internet search.
Claim 11
The process of claim 10, wherein a search term element is considered to be contained in a webpage if the webpage contains at least one of: the search term element, a synonym of the search term element, or a misspelled version of the search term element.
Claim 12
The process of claim 9, wherein the first search term element and the second search term element are a same search term element.
Claim 13
[13A] The process of claim 2, wherein the selectable advertisement and the first search result grouping are simultaneously viewable on the display screen; and
[13B] wherein the first Internet search result grouping would not have been displayed on the Internet search user interface if, in response to receiving the search request, the search engine was operated by using an "AND" logical operation that includes the first search term element.
Claim 14
The process of claim 13, wherein the selectable advertisement and the first or second search result grouping are adjacent to each other.

Claim 15

[15PRE] A system for providing an enhanced interactive graphical Internet search user interface for an Internet search process combining Internet search, annotation, and filtering that enables a search engine user to request an Internet search and automatically remove one or more search results that each reference a webpage that does not contain a desired search term element, enabling a faster operation of Internet search for the search engine user by enabling the search engine user to avoid spending time visiting a webpage that is missing the desired search term element, the system comprising:

[15A] one or more servers for operating a search engine and for providing an Internet search user interface to a search engine user for operation on a personal computing device having a display screen;

[15B] wherein the one or more servers receive a search request from the search engine user via the personal computing device, the search request comprising one or more search term elements;

[15C] wherein the one or more servers generate, by operating the search engine in response to receiving the search request, a first Internet search result that references a first webpage that is missing a first search term element and a second Internet search result that references a second webpage;

[15D] wherein the one or more servers generate and provide, for display on the personal computing device, the Internet search user interface;

[15E] wherein the Internet search user interface comprises the first Internet search result and a first warning to the search engine user that the first webpage is missing the first search term element, wherein the first warning comprises a text representing the first search term element;

[15F] wherein the first Internet search result is organized for display as a first search result grouping comprising a first excerpt for the first webpage, a first Internet link for the first webpage, and the first warning;

[15G] wherein the Internet search user interface further comprises the second Internet search result, wherein the second Internet search result is organized for display as a second search result grouping that comprises a second excerpt from the second webpage and a second Internet link for the second webpage but does not comprise any warning that any of the one or more search term elements is missing from the second webpage;

[15H] wherein the first and second search result groupings are each a unique search result grouping displayed separately from each other;

[15I] wherein the Internet search user interface provides a filtering option, wherein the search engine user's selection of the filtering option causes an updated Internet search user interface to be generated and provided, by the one or more servers, for display on the personal computing device; and wherein the updated Internet search user interface does not display the first Internet search result.

Claim 16

The system of claim 15, wherein the Internet search user interface further comprises a selectable advertisement that is related to at least some of the one or more of the search term elements.

Claim 17

The system of claim 16, wherein the text representing the first search term element is shown in at least one of the following formats: (i) a font representing the text has been altered; (ii) the text is shown with one or more lines merged with the text; (iii) the text is shown with one or more lines superimposed thereupon; (iv) the text is shown within a shaded area; and (v) the text is shown with a reversed format.

Claim 18

The system of claim 17, wherein the first Internet search result would not have been displayed on the Internet search user interface if, in response to receiving the search request, the search engine was operated by using an "AND" logical operation that includes the first search term element.

Claim 19

The system of claim 18, wherein the first webpage has one or more descendant webpages, where each of the one or more descendant webpages is also missing the first search term element, and wherein each of the one or more descendant webpages is linked directly one level from the first webpage.

Claim 20

[20A] The system of claim 19, wherein the personal computing device is a smartphone with a smaller display screen than a laptop, desktop, notebook, or tablet computer's display screen, and

[20B] wherein the updated Internet search user interface enables the smaller display screen to display an increased number of Internet search results that each reference a webpage containing the first search term element compared with the Internet search user interface prior to the selection of the filtering option without being scrolled by the search engine user, thereby further speeding the search engine user's operation of Internet search.

Claim 21

The system of claim 20, wherein a search term element is considered to be contained in a webpage if the webpage contains at least one of: the search term element, a synonym of the search term element, or a misspelled version of the search term element.

Claim 22

[22A] The system of claim 17, wherein the personal computing device is a smartphone with a smaller display screen than a laptop, desktop, notebook, or tablet computer's display screen, and

[22B] wherein the updated Internet search user interface enables the smaller display screen to display an increased number of Internet search results that each reference a webpage containing the first search term element compared with the Internet search user interface prior to the selection of the filtering option without being scrolled by the search engine user, thereby further speeding the search engine user's operation of Internet search.

Claim 23

[23A] The system of claim 17, wherein the first webpage has one or more first descendant webpages, wherein each of the one or more first descendant webpages is also missing the first search term element, wherein each of the one or more first descendant webpages is linked directly one level from the first webpage; and

[23B] wherein the second webpage is missing a second search term element, wherein the second webpage has one or more second descendant webpages, wherein the second search result grouping not comprising any warning that any of the one or more search term elements is missing from the second webpage indicates that the second search term element is contained in at least one of the one or more second descendant webpages, and wherein each of the one or more second descendant webpages is linked directly one level from the second webpage.

Claim 24
[24A] The system of claim 23, wherein the personal computing device is a smartphone with a smaller display screen than a laptop, desktop, notebook, or tablet computer's display screen, and
[24B] wherein the updated Internet search user interface enables the smaller display screen to display an increased number of Internet search results that each reference a webpage containing the first search term element compared with the Internet search user interface prior to the selection of the filtering option without being scrolled by the search engine user, thereby further speeding the search engine user's operation of Internet search.
Claim 25
The system of claim 24, wherein a search term element is considered to be contained in a webpage if the webpage contains at least one of: the search term element, a synonym of the search term element, or a misspelled version of the search term element.
Claim 26
The system of claim 23, wherein the first search term element and the second search term element are a same search term element.
Claim 27
[27A] The system of claim 16, wherein the selectable advertisement and the first search result grouping are simultaneously viewable on the display screen; and
[27B] wherein the first Internet search result grouping would not have been displayed on the Internet search user interface if, in response to receiving the search request, the search engine was operated by using an "AND" logical operation that includes the first search term element.
Claim 28
The system of claim 27, wherein the selectable advertisement and the first or second search result grouping are adjacent to each other.
Claim 29
[29PRE] A process for Internet search, annotation, and filtering for providing an enhanced interactive graphical user interface for Internet search that enables a search engine user to automatically remove one or more search results that each reference a webpage that does not contain a desired search term element, enabling a faster operation of Internet search for the search engine user by enabling the search engine user to avoid spending time visiting a webpage that is missing the desired search term element, the process comprising:

[29A] receiving a search request from a search engine user via a personal computing device having a display screen, the search request comprising one or more search term elements;
[29B] generating, by operating a search engine in response to receiving the search request, a first Internet search result that references a first webpage that is missing a first search term element and a second Internet search result that references a second webpage that is missing a second search term element;
[29C] generating and providing, for display on the personal computing device, an Internet search user interface;
[29D] wherein the Internet search user interface comprises the first Internet search result and a first warning to the search engine user that the first webpage is missing the first search term element, wherein the first warning comprises a first text representing the first search term element;
[29E] wherein the first Internet search result is organized for display as a first search result grouping comprising a first excerpt from the first webpage, a first Internet link for the first webpage, and the first warning;
[29F] wherein the Internet search user interface further comprises the second Internet search result and a second warning to the search engine user that the second webpage is missing the second search term element, wherein the second warning comprises a second text representing the second search term element;
[29G] wherein the second Internet search result is organized for display as a second search result grouping comprising a second excerpt from the second webpage, a second Internet link for the second webpage, and the second warning;
[29H] wherein the first and second search result groupings are each a unique search result grouping displayed separately from each other, wherein the first warning from the first search result grouping and the second warning from the second search result grouping are each an individual warning displayed separately from each other;
[29I] wherein the Internet search user interface provides a first filtering option in connection with the first search term element and a second filtering option in connection with the second search term element, wherein the search engine user's selection of the first filtering option causes a first updated Internet search user interface to be generated and provided for display on the personal computing device, wherein the first updated Internet search user interface does not display the first Internet search result, wherein the search engine user's selection of the second filtering option causes a second updated Internet search

user interface to be generated and provided for display on the personal computing device, wherein the second updated Internet search user interface does not display the second Internet search result; and
[29J] wherein the process is performed on one or more servers located remotely from the personal computing device.
Claim 30
The process of claim 29, wherein the Internet search user interface further comprises a selectable advertisement that is related to at least some of the one or more search term elements.
Claim 31
The process of claim 30, wherein the first or second text representing the first or second search term element, respectively, is shown in at least one of the following formats: (i) a font representing the first or second text has been altered; (ii) the first or second text is shown with one or more lines merged with the text; (iii) the first or second text is shown with one or more lines superimposed thereupon; (iv) the first or second text is shown within a shaded area; and (v) the first or second text is shown with a reversed format.
Claim 32
The process of claim 31, wherein the first and second Internet search results would not have been displayed on the Internet search user interface if, in response to receiving the search request, the search engine was operated by using an “AND” logical operation that includes the first and second search term elements.
Claim 33
The process of claim 32, wherein the first webpage has one or more descendant webpages, wherein each of the one or more descendant webpages is also missing the first search term element, and wherein each of the one or more descendant webpages is linked directly one level from the first referenced webpage.
Claim 34
[34A] The process of claim 33, wherein the personal computing device is a smartphone with a smaller display screen than a laptop, desktop, notebook, or tablet computer’s display screen, and

[34B] wherein the first and second updated Internet search user interfaces enable the smaller display screen to display an increased number of Internet search results that each reference a webpage containing the first or second search term elements, respectively, compared with the Internet search user interface prior to the selection of the first or second filtering option, respectively, without being scrolled by the search engine user, thereby further speeding the search engine user's operation of Internet search.

Claim 35

The process of claim 34, wherein a search term element is considered to be contained in a webpage if the webpage contains at least one of: the search term element, a synonym of the search term element, or a misspelled version of the search term element.

Claim 36

[36A] The process of claim 31, wherein the personal computing device is a smartphone with a smaller display screen than a laptop, desktop, notebook, or tablet computer's display screen, and

[36B] wherein the first and second updated Internet search user interfaces enable the smaller display screen to display an increased number of Internet search results that each reference a webpage containing the first or second search term elements, respectively, compared with the Internet search user interface prior to the selection of the first or second filtering option, respectively, without being scrolled by the search engine user, thereby further speeding the search engine user's operation of Internet search.

Claim 37

[37A] The process of claim 30, wherein the selectable advertisement and the first or second search result grouping are simultaneously viewable on the display screen; and

[37B] wherein the first and second Internet search results would not have been displayed on the Internet search user interface if, in response to receiving the search request, the search engine was operated by using an "AND" logical operation that includes the first and second search term elements.

Claim 38

The process of claim 37, wherein the selectable advertisement and the first or second search result grouping are adjacent to each other.

Claim 39

[39A] The process of claim 29, wherein the first search term element and the second search term element are a same search term element, wherein the first text and the second text are identical, and

[39B] wherein each of the first and second updated Internet search user interfaces does not display the first and second Internet search results.

CERTIFICATE OF WORD COUNT

Pursuant to 37 C.F.R. § 42.24, the undersigned certifies that the foregoing Petition for *Inter Partes* Review contains 13,892 words excluding a table of contents, a table of authorities, Mandatory Notices under § 42.8, a certificate of service or word count, or appendix of exhibits or claim listing. Petitioner has relied on the word count feature of the word processing system used to create this paper in making this certification.

Date: March 13, 2026

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CERTIFICATE OF SERVICE UNDER 37 C.F.R. § 42.6 (E)(4)

I certify that on March 13, 2026, a copy of the foregoing document, including any exhibits or appendices filed therewith, is being served via Overnight FedEx at the following correspondence address of record for the patent:

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Date: March 13, 2026

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