UNITED STATES PATENT AND TRADEMARK OFFICE

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Brooks Kushman
1000 Town Center
22nd Floor
Southfield, MI 48075

EXAMINER
MUSHAMBO, MARTIN

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kdilucia@brookskushman.com

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UNITED STATES PATENT AND TRADEMARK OFFICE
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BEFORE THE PATENT TRIAL AND APPEAL BOARD
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Ex parte JULIA ENGLISH WINTER
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Appeal 2019-000627
Application 14/700,722
Technology Center 2600
_____

Before MAHSHID D. SAADAT, MARC S. HOFF, and JOHN P. PINKERTON *Administrative Patent Judges*.

HOFF, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Appellant appeals under 35 U.S.C. § 134 from a non-final rejection of claims 1–15. We have jurisdiction under 35 U.S.C. § 6(b).

We affirm.

Appellant's invention provides a method for teaching chemical reaction mechanisms to a user. A graphical representation of a first molecule is presented to a user. A first atom selection or bond selection is received from the user by a pointing device. A first set of atom features or bond features are graphically displayed to the user. The user provides input to alter bonding or structure of the first molecule, and a graphical display of an

altered molecule representing the user's selection is presented on the display.
Spec. ¶ 6.

Claim 1 is exemplary of the claims on appeal:

1. A method comprising:
a) presenting a user with a graphical representation of a first
molecule including a plurality of atoms, the graphical
representation being presented on a display;
b) receiving a first atom or bond selection from the user by a
pointing device;
c) presenting a first set of atom features to the user for the first
atom or bond
selection, the first set of atom features including an atom's lone
pairs wherein a user taps on an atom to show the atom's lone
pairs which can be used to form bonds;
d) receiving a first input from the user to alter bonding or
structure of the first
molecule; and
e) displaying an altered molecule from the first input.

Claim Appendix.

The Examiner relies upon the following prior art in rejecting the

claims on appeal:

| Smith et al. | US 2013/0222265 A1 | Aug. 29, 2013 |
| Banerjee et al. | US 2009/0177455 A1 | July 9, 2009 |

Claims 1–15 stand rejected under 35 U.S.C. § 103(a) as being

unpatentable over Smith and Banerjee.

Throughout this decision, we make reference to the Appeal Brief

("Appeal Br.," filed February 20, 2018) and the Examiner's Answer ("Ans.,"

mailed July 23, 2018) for their respective details.

ISSUES

Appellant's arguments present us with the following issues:

1. Does the combination of Smith and Banerjee teach or suggest presenting a first set of atom features to the user, including an atom's lone pairs?

2. Does the combination of Smith and Banerjee teach or suggest manipulating a depiction of electrons by the user dragging said electrons to atoms or other bonds?

3. Does the combination of Smith and Banerjee teach or suggest that a user breaks a bond by selecting a bond and then dragging from the center of the bond to the atom which will receive electrons from the bond?

4. Does the combination of Smith and Banerjee teach or suggest clues provided to indicate atoms that are to be involved in a mechanism?

5. Does the combination of Smith and Banerjee teach or suggest presenting the user with a graphical representation of a second molecule, and receiving input from the user to move electrons from the first molecule to the second molecule to form a bond?

ANALYSIS

CLAIMS 1–5, 9, 10, AND 12–15

Appellant argues that neither Smith nor Banerjee teaches or suggests "presenting a first set of atom features to the user for the first atom or bond selection, the first set of atom features including an atom's lone pairs wherein a user taps on an atom to show the atom's lone pairs which can be used to form bonds." Appeal Br. 3–4. Appellant contends that Banerjee's teaching on this topic lacks "any disclosure that the lone pair of electrons can be used to form bonds." Appeal Br. 4.

We are not persuaded that the Examiner erred. First, we agree with the Examiner that the claim recites only an intended use that an atom's lone pairs "can be used" to form bonds. Ans. 13. We agree with the Examiner's finding that Banerjee teaches display of an atom's lone pairs. "The 'Pair' and 'Single' buttons are used to assign a lone pair of electrons or a single electron to an atom." Banerjee ¶ 80, Fig. 3. We observe that Banerjee also teaches that "FIG. 7 is a screen shot of an animation from showing the double bond disappearing. The two electrons, represented by '··', are clearly visible". Banerjee ¶ 82. Last, we agree with the Examiner's finding that "lone pairs are known based on the periodic table group and that there are no chemical bonding without lone pairs." Ans. 14.

We conclude that the Examiner did not err in rejecting claims 1–5, 9, 10, and 12–15 over the combination of Smith and Banerjee. Thus, we sustain the Examiner's § 103(a) rejection.

CLAIM 6

Appellant argues that Smith does not disclose the ability of a user to drag a depiction of electrons to atoms or other bonds. Appeal Br. 5. We do not agree with Appellant. Smith teaches that "the user may edit the chemical structure representation 106 by selecting an atom or bond location in the chemical structure representation. The atom or bond location may be selected by, for example, delivering a tap gesture upon the input interface at a location corresponding to the atom or bond in the working view." Smith ¶ 57. Smith further teaches that "the user translates a chemical structure representation 300 within the graphical display . . . using a multi-touch drag gesture." Smith ¶ 58.

We conclude that the Examiner did not err in rejecting claim 6 as being unpatentable over Smith and Banerjee. Thus, we sustain the § 103(a) rejection of claim 6.

CLAIM 7

Appellant argues that Smith fails to teach or suggest a user breaking a bond "by first selecting a bond and then dragging from the center of the bond to the atom which will receive electrons from this bond."

We are not persuaded by Appellant's argument. Smith teaches a variety of chemical structure manipulations that may be accomplished by a user performing finger drags, pinches, and similar manual maneuvers. *See* Smith Figs. 3–18. The Examiner finds that Smith's teaching of a multi-finger selection "is pretty much a grab feature of the chemical structure/molecule and moving the whole thing in a specific direction." Ans. 10. The user "translates a chemical structure representation 300 within the graphical display . . . using a multi-touch drag gesture." Smith ¶ 58. "For example, if the user wishes to translate the chemical structure representation 300 to the right . . . the fingers 302 are dragged along the input interface 100 to the right." *Id.* We agree with the Examiner that the various teachings of Smith suggest the claimed selection and dragging of a bond from one atom to another. For example, Figure 4 of Smith depicts using a drag gesture for lengthening a molecular chain. Smith ¶ 59. We find that lengthening a molecular chain necessarily involves the creation of new chemical bonds, which includes atoms that will receive electrons from such a bond.

We further find that Smith suggests that there are a finite number of alternatives involved in a touch-based user interface for chemical structure editing, and the person having skill in the art would have found it obvious,

from the explicit teachings of Smith, to break a bond by dragging an atom from one position on a displayed chemical structure to another position. We further determine that Smith teaches joining two chemical structure representations together by performing a pinch gesture. Smith ¶ 66. "[T]he user joins the two chemical structure representations 1302, 1306 together at a bond location 1402 by originating the pinch gesture at chemical bonds in the first and second chemical representations." *Id.*

We conclude that the Examiner did not err in rejecting claim 7 as being unpatentable over Smith and Banerjee. Thus, we sustain the § 103(a) rejection of claim 7.

CLAIM 8

Appellant argues that the Examiner failed to cite any portion of Smith in support of the finding that Smith teaches "clues are provided to indicate atoms that are to be involved in a mechanism." Appeal Br. 5.

Appellant's argument is not persuasive, in view of the Examiner's Answer. The Examiner finds, and we agree, that upon receiving a user input to change an atom label, Smith displays "contextual menu 806 having a selection of atom labels" from which a user may choose. Smith ¶ 63, Fig. 8.

We conclude that the Examiner did not err in rejecting claim 8 over Smith and Banerjee. Thus, we sustain the Examiner's § 103(a) rejection.

CLAIM 11

Appellant argues that Smith fails to teach or suggest "presenting the user with a graphical representation of a second molecule including a plurality of atoms, the graphical representation of the second molecule being presented on a display" and "receiving input from the user to move

electrons from the first molecule to the second molecule to form a bond."
Appeal Br. 6.

We do not agree with Appellant. The essence of Smith's entire invention is to allow a user to edit a chemical structure representation. Smith ¶ 57. The user selects an atom or bond location by a tap gesture, and may modify the structure by selecting a representation of a chemical structure element 206 from a menu. *Id.* Smith then teaches a large variety of editing techniques the user may employ. Smith ¶¶ 59-67. "In certain embodiments, the user joins two chemical structure representations together by performing a fling gesture." Smith ¶ 67.

We conclude that the Examiner did not err in rejecting claim 11 as being unpatentable over Smith and Banerjee. Thus, we sustain the § 103(a) rejection of claim 11.

CONCLUSIONS

1. The combination of Smith and Banerjee teaches presenting a first set of atom features to the user, including an atom's lone pairs.

2. The combination of Smith and Banerjee teaches manipulating a depiction of electrons by the user dragging said electrons to atoms or other bonds.

3. The combination of Smith and Banerjee teaches that a user breaks a bond by selecting a bond and then dragging from the center of the bond to the atom which will receive electrons from the bond.

4. The combination of Smith and Banerjee teaches clues provided to indicate atoms that are to be involved in a mechanism.

5. The combination of Smith and Banerjee teaches presenting the user with a graphical representation of a second molecule, and receiving input from the user to move electrons from the first molecule to the second molecule to form a bond.

ORDER

The Examiner's decision to reject claims 1–15 under 35 U.S.C. § 103(a) is affirmed.

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

AFFIRMED