

EXHIBIT U

240-102

CP 2415



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Patent *L. Will*
1/15/97

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Mark A. Della Bona et al.
Application No.: 08/381,471
Filing Date: January 31, 1995
For: A Method And An Apparatus For
Contacting A Touch-Sensitive
Cursor-Controlling Input Device To
Generate Button Values Simulating
The Button State Of A Mechanical
Button Switch

Examiner: Raymond J. Bayerl
Art Unit: 2415

Assistant Commissioner for Patents
Washington, D.C. 20231

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AMENDMENT

Sir:

In response to the Office Action mailed October 24, 1996, it is respectfully requested that the following amendments be entered.

IN THE CLAIMS

Please cancel claims 3-7, 9, 13-17, 19, and 21-25 without prejudice, and amend claims 1, 2, 8, 10-12, 18, 20, and 26 as follows:

- 1 1. (Amended) A method of [contacting] operating a touch-sensitive input
- 2 device [to move a cursor on a display screen] of a computer system [and to change the
- 3 value of a ButtonState variable to one of a first button value and a second button value, said

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4 ButtonState variable simulating a button state of a mechanical button switch, said method]
5 comprising the steps of:

6 a) detecting contact intervals when [the] a user contacts the touch-
7 sensitive input device;

8 b) detecting gap intervals between subsequent contact intervals; and

9 c) [moving the cursor on the display screen and changing the value of
10 the ButtonState variable] distinguishing between a first cursor control operation, a second
11 cursor control operation and a third cursor control operation based on the duration of said
12 contact and gap intervals; and

13 d) reporting one of said first, second or third cursor control operations
14 in accordance with said step of distinguishing.

1 ✓ 2. (Amended) A method of using a touch-sensitive input device coupled to a
2 computer system to move a cursor on a display screen of the computer system and to
3 change the value of a ButtonState variable to one of a first button value and a second button
4 value, said ButtonState variable simulating a button state of a mechanical button switch,
5 said method comprising the steps of:

6 a) detecting a first contact interval when a user first contacts said touch-
7 sensitive input device;

8 b) determining if said first contact interval lasts longer than a first
9 predetermined maximum time interval; [and]

10 c) [if said first contact interval lasts longer than said first predetermined
11 maximum time interval,] supplying positional data relating to the first contact interval to

12 said computer system to cause the cursor to move across said display screen if said first
13 contact interval lasts longer than said first predetermined maximum time interval;[.]

14 d) setting the value of the ButtonState variable to the first button value
15 if said first contact interval does not last longer than said first predetermined maximum time
16 interval;

17 e) detecting whether a second contact interval follows said first contact
18 interval in less than a second predetermined maximum time interval;

19 f) setting the value of the ButtonState variable to the second button
20 value if said second contact interval does not follow said first contact interval in less than
21 said second predetermined maximum time interval;

22 g) determining if said second contact interval lasts longer than a third
23 predetermined maximum time interval if said second contact interval does follow said first
24 contact interval in less than said second predetermined maximum time interval;

25 h) supplying positional data relating to the second contact interval to
26 said computer system to cause the cursor to move across said display screen if said second
27 contact interval lasts longer than said third predetermined maximum time interval;

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cont.

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28 i) detecting whether a third contact interval follows said second contact
29 interval in less than a fourth predetermined maximum time interval;

30 j) setting the value of the ButtonState variable to the second button
31 value if said third contact interval does not follow said second contact interval in less than
32 said fourth predetermined maximum time interval;

33 k) determining if said third contact interval lasts longer than a fifth
34 predetermined maximum time interval if said third contact interval does follow the second
35 contact interval in less than said fourth predetermined maximum time interval; and

36 l) supplying positional data relating to the third contact interval to said
37 computer system in order to maintain the cursor movements initiated by supplying
38 positional data relating to the second contact interval to the computer system if said third
39 contact interval lasts longer than said fifth predetermined maximum time interval.

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1 3 p. (Amended) The method of claim [7] 2 further comprising the step of setting
2 the value of the ButtonState variable to the second button value if said third contact interval
3 does not last longer than said fifth predetermined maximum time interval.

A3
1 ✓ 4 p. (Amended) [The method of claim 9 further comprising the steps of:] A
2 method of using a touch-sensitive input device coupled to a computer system to move a
3 cursor on a display screen of the computer system and to change the value of a ButtonState
4 variable to one of a first button value and a second button value, said ButtonState variable
5 simulating a button state of a mechanical button switch, said method comprising the steps
6 of:

7 a) detecting a first contact interval when a user first contacts said touch-
8 sensitive input device;

- 9 b) determining if said first contact interval lasts longer than a first
10 predetermined maximum time interval; [and]
- 11 c) [if said first contact interval lasts longer than said first predetermined
12 maximum time interval.] supplying positional data relating to the first contact interval to
13 said computer system to cause the cursor to move across said display screen if said first
14 contact interval lasts longer than said first predetermined maximum time interval;[.]
- 15 d) setting the value of the ButtonState variable to the first button value
16 if said first contact interval does not last longer than said first predetermined maximum time
17 interval;
- 18 e) detecting whether a second contact interval follows said first contact
19 interval in less than a second predetermined maximum time interval;
- 20 f) setting the value of the ButtonState variable to the second button
21 value if said second contact interval does not follow said first contact interval in less than
22 said second predetermined maximum time interval;
- 23 g) determining if said second contact interval lasts longer than a third
24 predetermined maximum time interval if said second contact interval does follow said first
25 contact interval in less than said second predetermined maximum time interval;
- 26 h) supplying positional data relating to the second contact interval to
27 said computer system to cause the cursor to move across said display screen if said second
28 contact interval lasts longer than said third predetermined maximum time interval;

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29 i) setting the value of the ButtonState variable to the second button
30 value if said second contact interval does not last longer than said third predetermined
31 maximum time interval;

32 j) setting the value of the ButtonState variable to the first button value;

33 k) detecting whether a third contact interval follows said second contact
34 interval in less than a fourth predetermined maximum time interval;

35 l) setting the value of the ButtonState variable to the second button
36 value if said third contact interval does not follow said second contact interval in less than
37 said fourth predetermined maximum time interval;

38 [a] m) [if said third contact interval does follow said second contact
39 interval in less than said fourth predetermined maximum time interval,] determining if said
40 third contact interval lasts longer than a fifth predetermined maximum time interval if said
41 third contact interval does follow said second contact interval in less than said fourth
42 predetermined maximum time interval; and

43 [b] n) supplying positional data relating to the third contact interval to said
44 computer system to cause the cursor to move across said display screen if said third contact
45 interval lasts longer than said fifth predetermined maximum time interval.

1 5/11. (Amended) An apparatus for [contacting] operating a touch-sensitive input
2 device [to move a cursor on a display screen] of a computer system [and to change the
3 value of a ButtonState variable to one of a first button value and a second button value, said
4 ButtonState variable simulating a button state of a mechanical button switch, said
5 apparatus] comprising:

6 a) means for detecting contact intervals when [the] a user contacts the
7 touch-sensitive input device;

8 b) means for detecting gap intervals between subsequent contact
9 intervals; and

10 c) means for [moving the cursor on the display screen and changing
11 the value of the ButtonState variable] distinguishing between a first cursor control
12 operation, a second cursor control operation and a third cursor control operation based on
13 the duration of said contact and gap intervals and for reporting one of said first, second or
14 third cursor control operations in accordance therewith.

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1 ^{1/2} (Amended) An apparatus for using a touch-sensitive input device coupled
2 to a computer system to move a cursor on a display screen of the computer system and to
3 change the value of a ButtonState variable to one of a first button value and a second button
4 value, said ButtonState variable simulating a button state of a mechanical button switch,
5 said apparatus comprising:

6 a) circuitry for detecting a first contact interval when a user first
7 contacts said touch-sensitive input device;

8 b) circuitry for determining if said first contact interval lasts longer than
9 a first predetermined maximum time interval; [and]

10 c) circuitry for supplying positional data relating to the first contact
11 interval to said computer system to cause the cursor to move across said display screen if
12 said first contact interval lasts longer than said first predetermined maximum time
13 interval[.];

14 d) circuitry for setting the value of the ButtonState variable to the first
15 button value if said first contact interval does not last longer than said first predetermined
16 maximum time interval;

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17 e) circuitry for detecting whether a second contact interval follows said
18 first contact interval in less than a second predetermined maximum time interval;

19 f) circuitry for setting the value of the ButtonState variable to the
20 second button value if said second contact interval does not follow said first contact interval
21 in less than said second predetermined maximum time interval;

22 g) circuitry for determining if said second contact interval lasts longer
23 than a third predetermined maximum time interval, if said second contact interval does
24 follow said first contact interval in less than said second predetermined maximum time
25 interval;

26 h) circuitry for supplying positional data relating to the second contact
27 interval to said computer system to cause the cursor to move across said display screen, if
28 said second contact interval lasts longer than said third predetermined maximum time
29 interval;

30 i) circuitry for detecting whether a third contact interval follows said
31 second contact interval in less than a fourth predetermined maximum time interval;

32 j) circuitry for setting the value of the ButtonState variable to the
33 second button value if said third contact interval does not follow said second contact
34 interval in less than said fourth predetermined maximum time interval;

35 k) circuitry for determining if said third contact interval lasts longer
36 than a fifth predetermined maximum time interval, if said third contact interval does follow
37 the second contact interval in less than said fourth predetermined maximum time interval;
38 and

39 l) circuitry for supplying positional data relating to the third contact
40 interval to said computer system in order to maintain the cursor movements initiated by

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41 supplying positional data relating to the second contact interval to the computer system, if
42 said third contact interval lasts longer than said fifth predetermined maximum time interval.

A4

1 ¹ 1/8. (Amended) The apparatus of claim [17] ⁶ 1/2 further comprising circuitry for
2 setting the value of the ButtonState variable to the second button value if said third contact
3 interval does not last longer than said fifth predetermined maximum time interval.

A5

1 ⁸ 20. (Amended) [The apparatus of claim 19 further comprising:] An apparatus
2 for using a touch-sensitive input device coupled to a computer system to move a cursor on
3 a display screen of the computer system and to change the value of a ButtonState variable to
4 one of a first button value and a second button value, said ButtonState variable simulating a
5 button state of a mechanical button switch, said apparatus comprising:

6 a) circuitry for detecting a first contact interval when a user first
7 contacts said touch-sensitive input device;

8 [✓] b) circuitry for determining if said first contact interval lasts longer than
9 a first predetermined maximum time interval;

10 c) circuitry for supplying positional data relating to the first contact
11 interval to said computer system to cause the cursor to move across said display screen if
12 said first contact interval lasts longer than said first predetermined maximum time interval;

13 d) circuitry for setting the value of the ButtonState variable to the first
14 button value if said first contact interval does not last longer than said first predetermined
15 [✓] maximum time interval;

16 e) circuitry for detecting whether a second contact interval follows said
17 first contact interval in less than a second predetermined maximum time interval;

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18 f) circuitry for setting the value of the ButtonState variable to the
19 second button value if said second contact interval does not follow said first contact interval
20 in less than said second predetermined maximum time interval;

21 g) circuitry for determining if said second contact interval lasts longer
22 than a third predetermined maximum time interval, if said second contact interval does
23 follow said first contact interval in less than said second predetermined maximum time
24 interval;

25 h) circuitry for supplying positional data relating to the second contact
26 interval to said computer system to cause the cursor to move across said display screen, if
27 said second contact interval lasts longer than said third predetermined maximum time
28 interval;

29 i) circuitry for setting the value of the ButtonState variable to the
30 second button value if said second contact interval does not last longer than said third
31 predetermined maximum time interval;

32 j) circuitry for setting the value of the ButtonState variable to the first
33 button value;

34 k) circuitry for detecting whether a third contact interval follows said
35 second contact interval in less than a fourth predetermined maximum time interval;

36 l) circuitry for setting the value of the ButtonState variable to the
37 second button value if said third contact interval does not follow said second contact
38 interval in less than said fourth predetermined maximum time interval;

39 [a)] m) circuitry for determining if said third contact interval lasts longer
40 than a fifth predetermined maximum time interval, if said third contact interval does follow

41 said second contact interval in less than said fourth predetermined maximum time interval;
42 and

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43 [b)] n) circuitry for supplying positional data relating to the third contact
44 interval to said computer system to cause the cursor to move across said display screen if
45 said third contact interval lasts longer than said fifth predetermined maximum time interval.

1 9 76. [The computer system of claim 25, wherein said apparatus further
2 comprises:] A computer system comprising:

3 a) a bus;

4 b) a touch-sensitive input device coupled to said bus;

5 c) an apparatus for using said touch-sensitive input device to move a
6 cursor on a display screen of the computer system and to change the value of a ButtonState
7 variable to one of a first button value and a second button value, said ButtonState variable
8 simulating a button state of a mechanical button switch, said apparatus including:

9 1) circuitry for detecting a first contact interval when a user first
10 contacts said touch-sensitive input device;

11 2) circuitry for determining if said first contact interval lasts
12) longer than a first predetermined maximum time interval;

13 3) circuitry for supplying positional data relating to the first
14 contact interval to said computer system to cause the cursor to move across said display
15 screen if said first contact interval lasts longer than said first predetermined maximum time
16 interval;

17 4) circuitry for setting the value of the ButtonState variable to
18 the first button value if said first contact interval does not last longer than said first
19 predetermined maximum time interval:

20 5) circuitry for detecting whether a second contact interval
21 follows said first contact interval in less than a second predetermined maximum time
22 interval:

23 6) circuitry for setting the value of the ButtonState variable to
24 the second button value if said second contact interval does not follow said first contact
25 interval in less than said second predetermined maximum time interval:

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26 7) circuitry for determining if said second contact interval lasts
27 longer than a third predetermined maximum time interval, if said second contact interval
28 does follow said first contact interval in less than said second predetermined maximum time
29 interval:

30 8) circuitry for supplying positional data relating to the second
31 contact interval to said computer system to cause the cursor to move across said display
32 screen, if said second contact interval lasts longer than said third predetermined maximum
33 time interval:

34 9) circuitry for detecting whether a third contact interval follows
35 said second contact interval in less than a fourth predetermined maximum time interval:

36 10) circuitry for setting the value of the ButtonState variable to
37 the second button value if said third contact interval does not follow said second contact
38 interval in less than said fourth predetermined maximum time interval:

39 [a)] 11) circuitry for determining if said third contact interval lasts
40 longer than a fifth predetermined maximum time interval, if said third contact interval does

41 follow the second contact interval in less than said fourth predetermined maximum time
42 interval; and

43 [b)] 12) circuitry for supplying positional data relating to the third
44 contact interval to said computer system in order to maintain the cursor movements initiated
45 by supplying positional data relating to the second contact interval to the computer system,
46 if said third contact interval lasts longer than said fifth predetermined maximum time
47 interval.

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Please add new claim 30 as follows.

1 30 (New) A method of operating a computer system having a touch-sensitive
2 input apparatus, comprising the steps of:
3 detecting a plurality of contact and gap intervals associated with user
4 contacts of said touch-sensitive input apparatus;
5 determining whether said contact and gap intervals represent an operation
6 type chosen from the list consisting of: a cursor manipulation operation, a single click
7 operation, a multi-click operation, a click-and-drag operation, a multi-click-and-drag
8 operation, a drag operation, or a sticky drag operation; and
9 reporting said operation type to said computer system in accordance with
10 said step of determining.

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REMARKS

Reconsideration of this application, as amended, is respectfully requested. Claims 3-7, 9, 13-17, 19 and 21-25 have been canceled. Claims 1, 2, 8, 10-12, 18, 20, and 26-30 are currently pending.

In the Office Action of October 24, 1996, claims 1-6, 9, 11-16, 19 and 21-25 were rejected under 35 U.S.C. § 102(e) as being anticipated by Calder et al., U.S. Patent No. 5,432,531 ("Calder"). Claims 7, 8, 10, 17, 18, 20 and 26-29 were objected to as being

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dependent upon a rejected base claim, however, it was indicated that these claims would be allowable if rewritten in independent form.

Claim 2 has been amended to include all of the limitations of claim 7. Accordingly, it is respectfully submitted that claim 2 is in condition for allowance. Claim 8 has been amended to depend from claim 2 and is also in condition for allowance.

Claims 10, 20 and 26 have been rewritten as independent claims and are respectfully submitted to be in condition for allowance. Claims 27-29 depend from claim 26 and are also in condition for allowance.

Claim 12 has been amended to include all of the limitations of claim 17 and claim 18 has been amended to depend from claim 12. These claims are respectfully submitted to be in condition for allowance.

Claim 1 has been amended to recite a method of operating a touch sensitive input device of a computer system and includes the steps of detecting and reporting one of a first, second or third cursor control operation based upon the duration of contact and gap intervals. It is respectfully submitted that these features are neither taught by nor suggested by Calder. Calder describes a coordinate processor for a computer system input device which provides for positioning a cursor on a display and for issuing a button click command to the computer system. [Calder at col. 2, ll. 10-24.] The coordinate processor distinguishes button click commands from cursor move commands, however, only one type of button click command can be recognized and reported to the computer system at a time. To allow a specific set of stimuli to be recognized as a desired button click command and reported as same, Calder uses a predetermined value, NCLICK, which is set by application software prior to use. [Calder at col. 5, ll. 53-57.] If the NCLICK value is preset to 2, representing a double-click command, only a double-click operation (and not a single-click operation) will be reported to the computer system. [See Calder at col. 6, ll. 5-60, describing the recognition and reporting of a double-click command. Note that a single-click is not reported-col. 6, ll. 25-30.] For a single click to be recognized and

reported, application software must set the NCLICK value to 1. [Calder at col. 7, ll. 9-15.] However, once NCLICK is set to 1, a double-click operation cannot be reported. [See Calder at col. 7, ll. 16-45, describing the recognition and reporting of a single-click operation.] Because BCNT is reset to zero each time a single-click is recognized [Calder, col. 7, ll. 40-42], BCNT can never progress beyond a value of 1 and so no double-or multiple-click operations will ever be recognized or reported.

In contrast, claim 1 recites steps of distinguishing between a first cursor control operation (e.g., a drag), a second cursor control operation (e.g., a single-click) and a third cursor control operation (e.g., a multiple-click) and reporting same. These are features which the coordinate processor of Calder simply cannot perform as discussed above. Accordingly, Calder neither teaches nor suggests the method recited in claim 1 and claim 1 is therefore patentable over Calder.

Claim 11 recites an apparatus for operating a computer system which includes means for distinguishing between a first, a second and a third cursor control operation and for reporting a cursor control operation in accordance therewith. As discussed above, the coordinate processor described by Calder cannot distinguish between three cursor control operations and report one of the three in accordance therewith. It follows that Calder does not teach or suggest an apparatus including means for such distinguishing and reporting and claim 11 is therefore patentable over Calder.

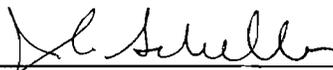
Claim 30 recites a method of operating a computer system including the step of determining whether detected contact and gap intervals represent an operation type chosen from a list consisting of a cursor manipulation operation, a single click operation, a multi-click operation, a click-and-drag operation, a multi-click-and-drag operation, a drag operation, or a sticky drag operation. As recognized in the Office Action, Calder fails to teach or suggest a method which would allow a touch sensitive input device to recognize and report a sticky drag operation. Accordingly, claim 30 is patentable over Calder.

Please charge any shortages of fees to our Deposit Account No. 02-2666.

Respectfully submitted,

BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP

Date: 12/23, 1996



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