

# EXHIBIT O

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# 10/B  
*[Handwritten signatures]*  
PATENT

TOWNSEND and TOWNSEND and CREW LLP

Attorney Docket No. 009623-010010

By *Lynne S. Rogers*



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

|                             |   |                     |
|-----------------------------|---|---------------------|
| In re application of:       | ) |                     |
| STEPHEN J. BISSET ET AL.    | ) | Examiner: Paul Bell |
| Application No.: 08/608,116 | ) | Art Unit: 2775      |
| Filed: February 28, 1996    | ) | <u>AMENDMENT</u>    |
| For: MULTI-CONTACT SENSING  | ) |                     |
| METHOD AND APPARATUS        | ) |                     |

Assistant Commissioner for Patents  
Washington, D.C. 20231

Sir:

In response to the Office Action mailed December 5, 1997, please amend the above-referenced application as follows:

In the Claims

Please cancel claims ~~2, 7-13, 15-17, and 20-23~~. Please amend claims ~~1, 28, and 35~~, and add new claims ~~46-51~~ as follows:

*Sub C1*  
*B1*

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1. (Amended) A method for detecting the operative coupling of multiple fingers to a touch sensor involving the steps of

- scanning the touch sensor to identify a first maxima in a signal corresponding to a first finger,
- scanning the touch sensor to identify a minima following the first maxima, [and]
- scanning the touch sensor to identify a second maxima in a signal corresponding to a second finger following the minima, and

11 B1  
12 cancel.  
13

~~providing an indication of the presence of two fingers  
in response to identification of said first and second  
maxima.~~

1 B2  
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~~38. (Amended) The method of claim 1 further  
comprising the step of comparing a distance [from] between said  
first maxima [to] and said second maxima to a predefined  
threshold.~~

1 Sub  
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B3

~~35. (Amended) A touch sensor for detecting the  
operative coupling of multiple fingers comprising:  
means for scanning the touch sensor to identify a first  
maxima in a signal corresponding to a first finger;  
means for scanning the touch sensor to identify a  
minima following the first maxima; [and]  
means for scanning the touch sensor to identify a  
second maxima in a signal corresponding to a second finger  
following the minima, and  
means for providing an indication of the presence of  
two fingers in response to identification of said first and  
second maxima.~~

1 B4  
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~~15  
46. (New) The method of claim 1 further comprising  
the step of determining if said first and second maxima are  
within 5 centimeters, and only providing said indication of the  
presence of two fingers if said first and second maxima are  
within 5 centimeters.~~

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~~16  
47. (New) The method of claim 1 further comprising  
the step of calculating first and second centroids corresponding  
to said first and second fingers.~~

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~~17  
48. (New) The method of claim 1 wherein said first  
and second maxima are required to be higher than a first  
threshold, and said minima is required to be less than a second  
threshold.~~

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1 <sup>29</sup>~~49~~. (New) The sensor of claim <sup>18</sup>~~35~~ further comprising  
2 means for determining if said first and second maxima are within  
3 5 centimeters, and only providing said indication of the presence  
4 of two fingers if said first and second maxima are within 5  
5 centimeters.

1 <sup>30</sup>~~50~~. (New) The sensor of claim <sup>18</sup>~~35~~ further comprising  
2 means for calculating first and second centroids corresponding to  
3 said first and second fingers.

1 <sup>31</sup>~~51~~. (New) The sensor of claim <sup>18</sup>~~35~~ wherein said first  
2 and second maxima are required to be higher than a first  
3 threshold, and said minima is required to be less than a second  
4 threshold.

B4  
cond

REMARKS

Claims 1, 3-6, and 24-51 are pending in this application.

Claims 2, and 15-17 were rejected under §112 as being indefinite. These claims have been cancelled.

The remaining claims are independent method and apparatus claims 1 and 35, and claims dependent thereon. These claims are directed to the feature of the invention which detects multiple fingers by detecting the multiple maxima in the profile on the touchpad. This distinguishes the prior art, which calculates multiple fingers by detecting a rapid movement in the total centroid. This rapid movement of the prior art is due to the centroid being calculated on the combination of the two fingers, with the result being that the centroid moves rapidly when one finger is lifted.

Miller

Claims 1, 3-13, and 26-34 were rejected as being obvious in view of Miller. Miller nowhere suggests detecting two fingers, and rather the Examiner is citing Miller as showing that it would generate the profile of two fingers if they were applied to Miller, since a value is obtained for each line. Claims 1 and

29

35 have been amended to further clarify the distinction of the invention from Miller. The present invention uniquely utilizes the detection of two maxima to determine if two fingers are present on the touchpad. Nowhere does Miller suggest analyzing profile information to obtain this result, or to use the result to provide an indication of two fingers.

In fact, Synaptics, the Assignee of the Miller patent, has also been issued Patent No. 5,543,591, enclosed with an IDS submitted with this application. That patent teaches away from the method of the present invention for multiple fingers, instead calculating the rapid movement of the centroid as a second finger is placed down on the touchpad and subsequently lifted, referred to as a "zig-zag" movement. (See, for example, column 40, line 53 of the '591 patent.) A disadvantage of the system of the '591 patent, as described in column 31, lines 43-48, is that it is "impossible to tell ... while the finger is still down" if two fingers are present. Rather, the determination of the presence of two fingers is achievable from the rapid movement of the centroid (zig-zag) when a finger is lifted or placed down. Thus, for example, if both fingers were placed down at the same time, the '591 patent method would not be able to tell that two fingers were present, and would not be able to react to a movement of the two fingers and subsequent lifting until after the second finger has been lifted.

The present invention addresses this deficiency of the '591 method by detecting two maxima in the profile information. This allows the detection of two fingers being present even if they are both placed down at the same time. Such a method is not shown or suggested by either of the Synaptics patents, which in fact teach away from this method.

Dunthorn

Claims 2, 15-17, 20-22, and 24-25 were rejected as being anticipated by Dunthorn. All of the rejected claims have been cancelled. It is noted that Dunthorn, similarly to the '591 patent, determines the presence of multiple fingers from the

speed of movement of the centroid of the combination of multiple fingers.

Greanias

Claims 2, 15, and 20 have been rejected as being anticipated by Greanias. These claims have been cancelled.

New claims 46-51 are method and apparatus dependent claims. Claims 46 and 49 are directed to the requirement that the first and second maxima be within 5 centimeters of each other to provide an indication of two fingers. None of the cited references teach such a feature, as described in the application on page 9, line 2, for instance.

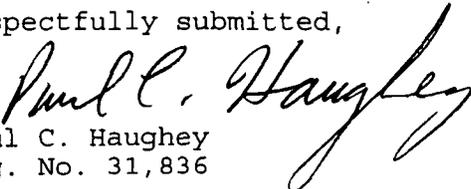
Claims 47 and 50 are directed to the embodiment where first and second centroids are calculated from the first and second maxima, as described in the application on page 13, lines 35-37, for instance. None of the cited art show or suggest such a feature.

Claims 48 and 51 are directed to the requirement that the first and second maxima must be higher than a first threshold, and the minima be lower than a second threshold. This is described, for example, on page 8, line 39 - page 9, line 6.

In view of the foregoing, Applicants believe all claims now pending in this application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at (650) 326-2400.

Respectfully submitted,

  
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