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## **Candidate's answer**

### **Letter**

Dear Sirs

We are writing in response to the communication pursuant to rule 94(3) EPC issued in connection with this application. We enclose a replacement set of claims.

### **Amendments**

Claim 1 has been amended to state that the moveable actuator comprises a conductive element at one of its ends.

This amendment is explicitly supported for each of the three described embodiments at:-

- i) Paragraph 12, lines 3 and 4 (Fig. 1 embodiment);
- ii) Paragraph 17, lines 3 and 4 (Fig. 4 embodiment); and
- iii) Paragraph 18, lines 5 and 6 (Fig. 5 embodiment)

of the application as filed.

The subject matter of previous claim 3 has been incorporated into claim 1. Since previous claim 3 was dependent on claim 1, this amendment is supported by the application as filed.

Claim 1 has been drafted in the two-part form required by Rule 43(1) EPC against D1 as closest prior art.

Previous claim 3 has been deleted and previous claims 4 to 7 have been renumbered as new claims 3 to 6 respectively with their dependencies being brought into consistency with the amended claims.

New claim 7 relating to the Fig. 4 embodiment has been inserted. It is submitted that the features of new claim 7 are explicitly supported by page 4, lines 21 to 24 of the application as filed.

It is therefore submitted that the amendments made comply with the provisions of Art. 123(2) EPC.

## **Novelty**

### **D1**

It is submitted that the features of the characterising portion of claim 1 are not described in D1.

In particular, D1 describes a resistive layer 116 along which the voltage varies in a linear fashion. However, no means for varying this voltage is described.

It is therefore submitted that the invention defined by amended claim 1 is novel over D1.

### **D2**

It is submitted that the following feature of claim 1 is not described in D2:-

“a moveable actuator comprising a conductive element at one of its ends for picking voltages off the resistive layer”.

D2 describes a moveable actuator 204. However, the conductive element (conductive layer 208) of D2 is arranged on rigid insulator 202 below insulating gel 207 and layers 205 and 206, and clearly therefore cannot be said to be at the end of actuator 204. Even when actuator is in contact with panel 201, it is in contact with protective layer 205 and not conductive layer 208.

Consequently, it is submitted that the invention defined by amended claim 1 is novel over D2.

## **Inventive Step**

### **Closest Prior Art**

It is submitted that document D1 represents the closest prior art to the invention defined by amended claim 1.

D1 describes a data input device having a resistive layer on a support and a moveable actuator having a conducting element at one end in common with claim 1 of the present application. This arrangement is suitable for use as a joystick or graphics tablet.

On the other hand, D2 relates to a data input device of low positional accuracy that is only suitable for use where a relatively large region of a surface needs to be selected, such as computer based questionnaires (Fig. 1A) or vending machine selection (Fig. 1B). Furthermore, D2 does not have a conducting element disposed on an end of a moveable support meaning that it would be very difficult to adapt the arrangement for use as a joystick.

It is therefore submitted that D1 corresponds to a similar use and would require the minimum of structural and functional modifications to arrive at the claimed invention such that D1 is the closest prior art in accordance with the Guidelines for Examination in the European Patent Office, Part C, Chapter IV, Paragraph 11.7.1.

### **Objective Problem Associated with D1**

As stated above, the features of the characterising portion of claim 1 are not described in D1.

These features provide the advantage that a point P on the resistive layer can be uniquely characterised by a voltage V1 at time +1 and a voltage V2 at time +2. This means that a full two dimensional surface can be characterised by unique points meaning that the whole surface is utilised and therefore improving the positional accuracy of the data input device.

Consequently, because D1 does not use the whole surface on which resistive layer 116 is disposed, the apparatus of D1 suffers from the drawback that the position of the actuator is inaccurate.

Consequently, the objective problem associated with D1 is how to improve the positional accuracy of the actuator.

### **Combination of D1 with D2**

It is submitted that the person skilled in the art would not look to D2 for a solution to the objective problem of D1, and would therefore not be in a position to combine D2 with D1, for the following reason.

D2 relates to a touch screen input device, whereas D1 relates to a joystick, such that D2 would not be expected to contain a solution to the problem of improving accuracy of a joystick. D2 does not utilise the technology of a conductive element on an end of an actuator and is therefore not relevant to the technology of D1.

However, it is submitted that even if the skilled person were to look to D2 for a solution to the objective problem of D1, one could not be found for two reasons.

Firstly, D2 teaches away from a solution. D2 states on Page 1, line 15 that a finger can be used for selection. The end of a finger is relatively large and is therefore not useful for solving the joystick accuracy problem. Also, paragraph 7 of D2 states:-

*The stick 204 must be blunt so that when it is used to exert pressure on the panel, the resistive layer 206 and the protective layer 205 are not punctured.*

*The use of a blunt stick or a finger furthermore results in a relatively large area of contact between the resistive layer 206 and the conductive layer 208. Therefore a reliable electrical contact can be achieved.*

Having a large area of contact between the resistive layer 206 and conductive layer 208 will reduce accuracy such that the skilled person is directed away from D2.

Secondly, it is submitted that it would be difficult, if not impossible, to combine the technologies of D1 and D2 to arrive at a device having the features of claim 1.

In order to adapt D2 to solve the problem of D1, the skilled person would have to dispense with gel layer 207 and protective layer 205 whilst mounting resistive layer 206 on rigid insulator 202. All of this is very unlikely.

The Examiner's attention is directed to the Guidelines for Examination in the EPO, Part C, Chapter IV, Paragraph 11.8 (i) which states that:

"if two disclosures considered as a whole could not in practice be readily combined because of inherent incompatibility in disclosed features essential to the invention, the combining of these disclosures should not normally be regarded as obvious".

The conductive layer 208 and protected, deformable laminar structure of D2 is inherently incompatible with the point like conductive element 118 of D1 such that combination of D1 and D2 is not regarded as obvious under the Guidelines.

Consequently, since D1 and D2 could not, and would not be readily combined, it is submitted that the invention defined by amended claim 1 involves an inventive step.

Since all other claims are dependent on claim 1, it is therefore believed that all of the Examiner's objections have been overcome and that the present application is in order for grant.

Oral Proceedings are hereby requested in the event of refusal.

Yours faithfully

## Claims

1. *Data input device (1, 11, 21) for a computer comprising:
  - a support (2, 12, 22);
  - a resistive layer (6, 16, 26) which is arranged on the support (2, 12, 22) and which is connectable to a voltage supply;
  - a moveable actuator (4, 14, 24) comprising a conductive element (8, 18, 28) at one of its ends for picking voltages off the resistive layer (6, 16, 26);and
  - a processing unit (92) for converting the voltages into output signals for the computer which represent positions of the actuator
  - characterised by:-
    - means for alternately generating a first voltage distribution and a second voltage distribution on the resistive layer (6, 16, 26), said means being synchronised with the processing unit (92).*
2. *Data input device (1, 11, 21) according to claim 1 wherein the resistive layer (6, 16, 26) is continuous and covers the entire support (2, 12, 22).*
- ~~4~~ 3. *Data input device (1, 11, 21) according to claim ~~3~~ 1 wherein said means comprises first and second pairs of contacts (A, B, and C, D) for connecting the resistive layer (6, 16, 26) to the voltage supply, and a switch (91) for alternately connecting the first pair of contacts and the second pair of contacts to the voltage supply for consecutive time periods (11, 12).*
- ~~5~~ 4. *Data input device (1, 11, 21) according to claim ~~4~~ 3 wherein each of the time periods (11, 12) is 0.01 seconds.*
- ~~6~~ 5. *Data input device (1, 11) according to any of the preceding claims wherein the data input device is a joystick (1, 11).*
- ~~7~~ 6. *Data input device (1) according to claim ~~6~~ 5 wherein the support (2) has a hemispherical shape.*
7. *Data input device (11) according to claim 5, wherein the resistive layer (16) is flat and the actuator (14) is telescopic and comprises a spring (20) which urges said conductive element (18) onto the resistive layer (16).*
8. *Data input device (21) according to any of claims 1 to 5 wherein the actuator (24) is freely moveable.*

**Note to Examiner**

The clients wish in Point 2 of his letter has been complied with by not incorporating claim 2 into claim 1.

There is no basis in the application as filed to cover the 'plurality of discrete resistive layers' embodiment in the present application. However, I would suggest to the client filing an application along those lines if he has invented such a device (and of course it is not in the public domain).