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**Datasheet for the decision
of 3 March 2023**

Case Number: T 1888/20 - 3.5.05

Application Number: 17197444.7

Publication Number: 3316090

IPC: G06F3/041, G06F3/01, G06F3/02,
G06F3/0488

Language of the proceedings: EN

Title of invention:
INPUT DEVICE

Applicant:
Kyocera Corporation

Headword:
Input device with load detection and vibration units / Kyocera

Relevant legal provisions:
EPC Art. 54(2), 56, 84, 123(2)
RPBA 2020 Art. 12(4)

Keyword:
Amendments - added subject-matter (yes)
Novelty - main request (no) - auxiliary request (yes)
Inventive step - auxiliary request (yes)
Remittal to the department of first instance - (yes)



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Case Number: T 1888/20 - 3.5.05

D E C I S I O N
of Technical Board of Appeal 3.5.05
of 3 March 2023

Appellant: Kyocera Corporation
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Decision under appeal: **Decision of the Examining Division of the
European Patent Office posted on 29 May 2020
refusing European patent application No.
17197444.7 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chair A. Ritzka
Members: P. Tabery
K. Kerber-Zubrzycka

Summary of Facts and Submissions

- I. The appeal is directed against the examining division's decision to refuse the European patent application.
- II. The examining division decided that the application according to the main request did not meet the requirements of Article 54 EPC; the 1st auxiliary request did not fulfil the requirements of Articles 54, 84 and 123(2) EPC; and the 2nd auxiliary request did not fulfil the requirements of Articles 56 and 123(2) EPC.
- III. The documents referred to by the examining division included:
- D1** US 2007/236450 A1
 - D2** EP 1 956 466 A1
 - D3** M. Biet et al., "A Piezoelectric Tactile Display Using Travelling Lamb Wave", Proceedings of EUROHAPTICS, XP002438180, 5 July 2006, 567-570
 - D4** T. Watanabe et al., "A method for controlling tactile sensation of surface roughness using ultrasonic vibration", Proceedings of the international conference on robotics and automation, Nagoya, Japan, XP000657310, ISBN: 978-0-7803-1966-0, 21-27 May 1995, 1134-1139
 - D5** M. Takasaki et al., "Control parameters for an active type SAW tactile display", Proceedings of the international conference on intelligent robots and systems (IROS), vol. 4, XP010766321, ISBN: 978-0-7803-8463-728, 28 September to 2 October 2004, 4044-4049
- IV. In its statement of grounds of appeal, the appellant requested that a patent be granted on the basis of the

claims in accordance with either a main request or one of a 1st and 2nd auxiliary request. All requests were submitted with the statement of grounds of appeal, the main request being identical to the main request considered in the decision under appeal. If the main request was found not to be allowable, oral proceedings were requested.

- V. The board issued a summons to oral proceedings. It also set out its preliminary opinion on the case (Article 15(1) RPBA 2020).

The board considered that the **main request** and the **1st auxiliary request** did not meet the requirements of Articles 54 and 123(2) EPC.

The board was, however, of the opinion that the **2nd auxiliary request** involved an inventive step in view of document **D1** taken alone and indicated that a remittal to the examining division for further prosecution was likely.

- VI. Oral proceedings were held on 3 March 2023. The appellant requested that the decision under appeal be set aside and that a patent be granted based on the main request or on the 1st or 2nd auxiliary request.

- VII. Sole independent **claim 1** of the **main request** reads as follows:

"An input apparatus comprising:

a display unit (11) for displaying an input object;
an input unit (12) for accepting a pressure input to the display unit (11);

a load detection unit (13) for detecting a pressure load to the input unit (12);

a vibration unit (14) for vibrating the input unit (12); and

a control unit (15) configured to, when an input to the input unit (11) is an input to the input object displayed on the display unit (11), and the pressure load detected by the load detection unit (13) satisfies a predetermined criterion for accepting an input, control driving of the vibration unit (14) to ultrasonically vibrate the input unit (12) so as to generate a floating force on a pressing object pressing the input unit (12) on a pressing object pressing the input unit (12) and cause the pressing object to slip laterally with respect to the input unit (12)."

VIII. **Claim 1** of the **1st auxiliary request** reads as follows:

"An input apparatus comprising:

a display unit (11) for displaying an input object;

an input unit (12) for accepting a pressure input to the display unit (11);

a load detection unit (13) for detecting a pressure load to the input unit (12);

a vibration unit (14) for vibrating the input unit (12); and

a control unit (15) configured to, when an input to the input unit (11) is an input to the input object displayed on the display unit (11), and the pressure load detected by the load detection unit (13) satisfies a predetermined criterion for accepting an input, control driving of the vibration unit (14) to ultrasonically vibrate the input unit (12) so as to generate a floating force on a pressing object pressing the input unit (12) and cause the pressing object to slip laterally with respect to the input unit (12) when the pressing object applies a pressure force in a direction shifted with respect to the normal direction of the input device."

IX. **Claim 1** of the **2nd auxiliary request** reads as follows:

"An input apparatus comprising:

a display unit (11) for displaying an input object;

an input unit (12) for accepting a pressure input to the display unit (11);

a load detection unit (13) for detecting a pressure load to the input unit (12);

a vibration unit (14) for vibrating the input unit (12); and

a control unit (15) configured to, when an input to the input unit (11) is an input to the input object displayed on the display unit (11), and the pressure load detected by the load detection unit (13) satisfies a predetermined criterion for accepting an input, control driving of the vibration unit (14) to ultrasonically vibrate the input unit (12) for a vibration time between 16 ms and 24 ms and with a vibration amplitude of 4 μm or more so as to generate a floating force on a pressing object pressing the input unit (12), wherein the predetermined criterion for accepting the input is 0.98 N or more and 2 N or less."

Reasons for the Decision

1. The application concerns an input apparatus having a plate-shaped input unit which accepts an input by the pressing of a touch panel and presents an operator with the same real feeling of pressing as the feeling of operating a push-button switch when the operator operates a pressing-type input unit.

2. Main request

2.1 Added subject-matter (Article 123(2) EPC)

In the decision under appeal, the examining division noted that the feature "*cause the pressing object to slip laterally with respect to the input unit*" merely defined the result to be achieved since a lateral slip "*cannot be causally linked to the vibration applied*".

The appellant argued that "*the invention cannot otherwise be defined more precisely without unduly restricting the scope of the claims*". Additionally, "*slipping ... may be directly and positively verified by tests known to the skilled person without undue experimentation*".

The board concurs with the examining division that the lateral slip of claim 1 cannot be caused by the vibration. As evident from the description, paragraph [0049]-[0051], the reduced friction is a *condition* to be satisfied for the slipping rather than the *cause* of the slipping. Therefore, the board holds that the feature "*to vibrate ... so as to cause the pressing object to slip laterally*" is not originally disclosed and thus extends beyond the content of the application as filed.

Consequently, the board considers that the subject-matter of **claim 1** does not fulfil the requirements of Article 123(2) EPC.

2.2 Interpretation of claim 1

In the decision under appeal, the examining division noted that the dual occurrence of the feature "*on a pressing object pressing the input unit*" should have been avoided for clarity.

The board considers that it is immediately apparent that this constitutes a spurious duplication. Therefore, the board interprets the claim as if the duplicated feature was present only once.

2.3 Novelty (Article 54(1) EPC)

In the decision under appeal, the examining division held that the subject-matter of claim 1 was known from document **D1**. In its analysis, the examining division did not consider the feature "*cause the pressing object to slip laterally with respect to the input unit*" since it was not limiting.

The appellant submitted that document **D1** did not disclose the feature "*cause the pressing object to slip laterally with respect to the input unit*". As this feature was clear, it had to be taken into account for the assessment of novelty and inventive step.

Since the board considers that the feature argued by the appellant extends beyond what was originally disclosed, it concurs with the examining division that the subject-matter of claim 1 is known from document **D1**. Consequently, the board considers that the subject-matter of **claim 1** is not novel over the disclosure of document **D1**.

2.4 In view of the above, the **main request** is not allowable.

3. 1st auxiliary request

The 1st auxiliary request differs from the 1st auxiliary request considered in the decision under appeal in that a spurious duplication has been deleted.

The board considers this to be a straightforward correction of an obvious error. Thus, the board exercises its discretion to admit the 1st auxiliary request into the proceedings (Article 12(4) RPBA).

3.1 Amendments

Compared to claim 1 of the main request, claim 1 further specifies the condition "*when the pressing object applies a pressure force in a direction shifted with respect to the normal direction of the input device*".

3.2 Added subject-matter (Article 123(2) EPC)

In the decision under appeal, the examining division held that the newly added feature was not originally disclosed in combination with the feature "*to generate a floating force*". Rather, it constituted a non-allowable intermediate generalisation.

In the statement of grounds of appeal, the appellant submitted that paragraph [0049] provided direct and unambiguous support for the amendment. This paragraph taught that "*the finger laterally slips*" when $\mu < \tan\theta$, where μ is the "*friction coefficient*" and θ is the angle of the direction of the pressing force "*shifted [...] with respect to the normal direction of the plate*".

The board holds that this paragraph does not disclose that the vibration of the input unit causes the pressing object to *always* slip "*when the pressing object applies a pressure force in a direction shifted with respect to the normal direction of the input device*". Rather, paragraph [0049] teaches that it only slips when $\mu < \tan\theta$. The vibration is not adapted

according to the direction of the input. This would, however, evidently be required to ensure that the claimed slip of the pressing object occurred irrespective of the angle of the applied force. Therefore, the board concurs with the examining division that claim 1 comprises an intermediate generalisation.

Consequently, the board holds that claim 1 does not fulfil the requirements of Article 123(2) EPC.

3.3 Clarity (Article 84 EPC) - interpretation

In the decision under appeal, the examining division considered that the additional feature "*when the pressing object applies a pressure force in a direction shifted with respect to the normal direction of the input device*" did not limit the apparatus. Moreover, the apparatus was not able to detect a direction of the input force.

The appellant argued that the additional feature indicated the conditions under which the technical effect occurred.

The board concurs with the appellant that the additional feature is an explicit statement of the physical constraints under which the technical effect caused by the vibration of the input apparatus occurs. As also noted by the examining division, it is not a feature of the input apparatus. Therefore, the board considers that it is evident that the added feature limits the claimed input apparatus to the extent that slipping would occur if the "*shifted*" pressure force was applied.

Since the limitation specified by the added feature is unambiguously derivable, the board holds that the requirements of Article 84 EPC are fulfilled.

3.4 Novelty (Article 54(1) EPC)

In the decision under appeal, the examining division held that the subject-matter of claim 1 was known from document **D1**, referring to its analysis provided for claim 1 of the main request.

The appellant submitted that document **D1** did not disclose the additional limitation "*when the pressing object applies a pressure force in a direction shifted with respect to the normal direction of the input unit*".

The board considers that - notwithstanding the issue of added subject-matter - the additional limitation amounts to a mere formulation of physical constraints under which the slipping may occur (see the interpretation of claim 1 provided in the preceding section). It was not contested that the slipping is facilitated by the vibration of the input apparatus, this being known from document **D1** (see **D1**, claim 4). Thus, if the same "*shifted*" pressure force is applied, the slipping as claimed in claim 1 occurs as well. Consequently, the board concurs with the examining division that the subject-matter of **claim 1** is not novel over the disclosure of document **D1** for the reasons provided for claim 1 of the main request.

3.5 Therefore, the **1st auxiliary request** is not allowable either.

4. 2nd auxiliary request

The 2nd auxiliary request is based on the 2nd auxiliary request considered in the decision under appeal. Compared to claim 1 of the 2nd auxiliary request

considered in the decision under appeal, current claim 1 further specifies that "*the predetermined criterion for accepting the input is 0.98 N or more and 2 N or less*".

The appellant argued that this amendment was a reaction to the objection pursuant to Article 123(2) EPC raised in the decision under appeal.

The board considers that the straightforward amendment is suitable for overcoming the objection of the examining division. It thus exercises its discretion to admit the 2nd auxiliary request into the proceedings (Article 12(4) RPBA).

4.1 Added subject-matter (Article 123(2) EPC)

In the decision under appeal, the examining division held that claim 1 comprised an intermediate generalisation. Notably, claim 1 mentioned only two out of three disclosed parameters (vibration time and vibration amplitude, but not the input load).

The appellant argued that the amendment rendered this objection obsolete.

The board holds that the amendment overcomes the examining division's objection, and thus claim 1 fulfils the requirements of Article 123(2) EPC.

4.2 Novelty (Article 54(2) EPC)

Compared to claim 1 of the main request, the feature "*to ultrasonically vibrate etc.*" is amended to read as follows:

"to ultrasonically vibrate the input unit (12) for a vibration time between 16 ms and 24 ms and with a vibration amplitude of 4 μ m or more so as to

generate a floating force on a pressing object pressing the input unit (12), wherein the predetermined criterion for accepting the input is 0.98 N or more and 2 N or less."

In line with the decision under appeal, the board holds that the definitions of the parameters constitute the following distinguishing features over document **D1**:

- a vibration time between 16 ms and 24 ms
- a vibration amplitude of 4 μm or more
- the predetermined criterion for accepting the input being 0.98 N or more and 2 N or less

This was not contested by the appellant.

Thus, the board considers these features to constitute the distinguishing features over the disclosure of document **D1**.

4.3 Inventive step (Article 56 EPC)

In the decision under appeal, the examining division considered that the numerical values selected for vibration time and vibration amplitude were arbitrary values reflecting a subjective user preference and thus not inventive.

The appellant argued that the distinguishing feature was technical since it related to changing the frictional characteristics of the input unit. Notably, it caused the technical effect of defining a "*metal dome switch behavior*". The claimed parameters had been found by the inventors only after conducting extensive experiments and were thus not obvious.

The board considers that the arguments of the appellant are convincing. The board notes that document **D1** discloses in paragraph [0127] a "*pressure-dependent sensation for press confirmation*" but does not give any

details about the parameters for achieving it.

Therefore, the board holds that although the skilled person could have implemented the invention as claimed, there is no motivation in document **D1** for doing so.

Hence, the board considers that the invention defined in claim 1 according to the 2nd auxiliary request is not obvious in view of document **D1** taken alone.

5. Consequently, the decision under appeal has to be set aside.

6. Remittal (Article 11 RPBA)

Under Article 11 RPBA 2020, the board may remit the case to the department whose decision was appealed if there are special reasons for doing so.

The board notes that although documents **D2** to **D5** were also cited by the examining division as being highly relevant, they were neither analysed nor discussed in the decision under appeal in detail, nor in the proceedings leading to the decision.

Under these circumstances, the board does not consider it appropriate to decide on novelty and inventive step having regard to these further documents without a decision of the examining division. Thus, the board holds that special reasons exist for remitting the case to the examining division for further prosecution on the basis of the 2nd auxiliary request.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the examining division for further prosecution.

The Registrar:

The Chair:



K. Götz-Wein

A. Ritzka

Decision electronically authenticated