

**PATENT COOPERATION TREATY**

**PCT**

**INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY**

(Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44bis)

Applicant's or agent's file reference <b>T0709.70059</b>	<b>FOR FURTHER ACTION</b>		See item 4 below
International application No. <b>PCT/US2015/031248</b>	International filing date ( <i>day/month/year</i> ) <b>15 May 2015 (15.05.2015)</b>	Priority date ( <i>day/month/year</i> ) <b>15 May 2014 (15.05.2014)</b>	
International Patent Classification (8th edition unless older edition indicated) <b>See relevant information in Form PCT/ISA/237</b>			
Applicant <b>T-INK, INC.</b>			

<p>1. This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 bis.1(a).</p> <p>2. This REPORT consists of a total of 7 sheets, including this cover sheet.</p> <p>In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.</p>																								
<p>3. This report contains indications relating to the following items:</p> <table border="0"> <tr> <td><input checked="" type="checkbox"/></td> <td>Box No. I</td> <td>Basis of the report</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. II</td> <td>Priority</td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td>Box No. III</td> <td>Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td>Box No. IV</td> <td>Lack of unity of invention</td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td>Box No. V</td> <td>Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. VI</td> <td>Certain documents cited</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. VII</td> <td>Certain defects in the international application</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. VIII</td> <td>Certain observations on the international application</td> </tr> </table> <p>4. The International Bureau will communicate this report to designated Offices in accordance with Rules 44bis.3(c) and 93bis.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44bis .2).</p>	<input checked="" type="checkbox"/>	Box No. I	Basis of the report	<input type="checkbox"/>	Box No. II	Priority	<input checked="" type="checkbox"/>	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability	<input checked="" type="checkbox"/>	Box No. IV	Lack of unity of invention	<input checked="" type="checkbox"/>	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement	<input type="checkbox"/>	Box No. VI	Certain documents cited	<input type="checkbox"/>	Box No. VII	Certain defects in the international application	<input type="checkbox"/>	Box No. VIII	Certain observations on the international application
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	Date of issuance of this report <b>15 November 2016 (15.11.2016)</b>
The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer  <b>Agnès Wittmann-Regis</b>
Facsimile No. +41 22 338 82 70	e-mail: pt06.pct@wipo.int

## PATENT COOPERATION TREATY

From the  
INTERNATIONAL SEARCHING AUTHORITY

To: ROBERT H. WALAT  
WOLF, GREENFIELD & SACKS, P.C.  
600 ATLANTIC AVENUE  
BOSTON, MA 02210-2206

**PCT**

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Date of mailing  
(day/month/year)

**05 NOV 2015**

Applicant's or agent's file reference  
T0709.70059

**FOR FURTHER ACTION**

See paragraph 2 below

International application No.

PCT/US 15/31248

International filing date (day/month/year)

15 May 2015 (15.05.2015)

Priority date (day/month/year)

15 May 2014 (15.05.2014)

International Patent Classification (IPC) or both national classification and IPC

IPC(8) - G06F 3/044 (2015.01)

CPC - G06F 3/044, G06F 3/03, G06F 1/3231, G06F 2203/04108, G06F 3/017

Applicant T-INK, INC.

## 1. This opinion contains indications relating to the following items:

- Box No. I Basis of the opinion
- Box No. II Priority
- Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- Box No. IV Lack of unity of invention
- Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- Box No. VI Certain documents cited
- Box No. VII Certain defects in the international application
- Box No. VIII Certain observations on the international application

## 2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1 bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

Name and mailing address of the ISA/US  
Mail Stop PCT, Attn: ISA/US  
Commissioner for Patents  
P.O. Box 1450, Alexandria, Virginia 22313-1450  
Facsimile No. 571-273-8300

Date of completion of this opinion

13 October 2015 (13.10.2015)

Authorized officer:

Lee W. Young

PCT Helpdesk: 571-272-4300  
PCT OSP: 571-272-7774

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/US 15/31248

## Box No. 1 Basis of this opinion

1. With regard to the language, this opinion has been established on the basis of:
- the international application in the language in which it was filed.
  - a translation of the international application into \_\_\_\_\_ which is the language of a translation furnished for the purposes of international search, (Rules 12.3(a) and 23.1(b)).
2.  This opinion has been established taking into account the rectification of an obvious mistake authorized by or notified to this Authority under Rule 91 (Rule 43bis.1(a)).
3.  With regard to any nucleotide and/or amino acid sequence disclosed in the international application, this opinion has been established on the basis of a sequence listing:
- a.  forming part of the international application as filed:
    - in the form of an Annex C/ST.25 text file.
    - on paper or in the form of an image file.
  - b.  furnished together with the international application under PCT Rule 13ter.1(a) for the purposes of international search only in the form of an Annex C/ST.25 text file.
  - c.  furnished subsequent to the international filing date for the purposes of international search only:
    - in the form of an Annex C/ST.25 text file (Rule 13ter.1(a)).
    - on paper or in the form of an image file (Rule 13ter.1(b) and Administrative Instructions, Section 713).
4.  In addition, in the case that more than one version or copy of a sequence listing has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that forming part of the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
5. Additional comments:

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

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## Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non obvious), or to be industrially applicable have not been examined in respect of:

- the entire international application.
- claims Nos. 4-32, 34-45, 47-52, 54-67

because:

- the said international application, or the said claims Nos. \_\_\_\_\_ relate to the following subject matter which does not require an international search (*specify*):

- the description, claims or drawings (*indicate particular elements below*) or said claims Nos. 4-32, 34-45, 47-52, 54-67 are so unclear that no meaningful opinion could be formed (*specify*):

because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

- the claims, or said claims Nos. \_\_\_\_\_ are so inadequately supported by the description that no meaningful opinion could be formed (*specify*):

- no international search report has been established for said claims Nos. 4-32, 34-45, 47-52, 54-67

- a meaningful opinion could not be formed without the sequence listing; the applicant did not, within the prescribed time limit:

- furnish a sequence listing in the form of an Annex C/ST.25 text file, and such listing was not available to the International Searching Authority in the form and manner acceptable to it; or the sequence listing furnished did not comply with the standard provided for in Annex C of the Administrative Instructions.

- furnish a sequence listing on paper or in the form of an image file complying with the standard provided for in Annex C of the Administrative Instructions, and such listing was not available to the International Searching Authority in the form and manner acceptable to it; or the sequence listing furnished did not comply with the standard provided for in Annex C of the Administrative Instructions.

- pay the required late furnishing fee for the furnishing of a sequence listing in response to an invitation under Rule 13ter.1(a) or (b).

- See Supplemental Box for further details.

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## Box No. IV Lack of unity of invention

1.  In response to the invitation (Form PCT/ISA/206) to pay additional fees the applicant has, within the applicable time limit:
- paid additional fees.
- paid additional fees under protest and, where applicable, the protest fee.
- paid additional fees under protest but the applicable protest fee was not paid.
- not paid additional fees.

2.  This Authority found that the requirement of unity of invention is not complied with and chose not to invite the applicant to pay additional fees.

3. This Authority considers that the requirement of unity of invention in accordance with Rule 13.1, 13.2 and 13.3 is

complied with.

not complied with for the following reasons:

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees must be paid.

Group I: Claims 1-3, 46, 53, drawn to a system for extracting hand distance and/or position above a surface

Group II: Claims 33, drawn to method comprising transforming one path function of a hand through at least one dimensional space.

The inventions listed as Groups I through II do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons:

## Special Technical Features

Group I includes the special technical feature of circuitry configured to produce measurable change of a parameter as a function of capacitance of said at least one capacitive plate, not included in the other groups.

Group II includes the special technical feature of transforming one path function into at least one different path function, not included in the other groups.

## Common Technical Features:

The only technical feature shared by Groups I and II that would otherwise unify the groups, determining a hand position in space. However, this shared technical feature does not represent a contribution over prior art, because the shared technical feature is disclosed by US 6,288,707 B1 (Philipp).

Philipp discloses determining a hand position in space (abstract; claim 1, measuring a position of an object adjacent a homogeneous resistive sensing layer).

As the technical feature was known in the art at the time of the invention, this cannot be considered a special technical feature that would otherwise unify the groups.

Therefore, Groups I-II lack unity under PCT Rule 13.

Note: Claims 4-32, 34-45, 47-52 and 54-67 are determined to be unsearchable because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a) and are, therefore, not included in any claim group.

4. Consequently, this opinion has been established in respect of the following parts of the international application:

all parts.

the parts relating to claims Nos. 1-3, 46, 53

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**Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

**1. Statement**

Novelty (N)	Claims	<u>53</u>	YES
	Claims	<u>1-3, 46</u>	NO
Inventive step (IS)	Claims	<u>None</u>	YES
	Claims	<u>1-3, 46, 53</u>	NO
Industrial applicability (IA)	Claims	<u>1-3, 46, 53</u>	YES
	Claims	<u>None</u>	NO

**2. Citations and explanations:**

Claims 1-3 and 46 lack novelty under PCT Article 33(2) as being anticipated by US 2004/0043696 A1 (Suzuki).

Regarding claim 1, Suzuki discloses a system for extracting hand distance and/or position across and/or above a surface (claim 1), comprising of: a substrate (para [0021], a number of sensing areas 12 underneath the skin of the doll); at least one capacitive plate (Fig 1, 2; para [0024], [0028], small conductive surface areas made of conductive tape, copper-clad-PCB, flat copper braid, or any of the many available low-cost conductive materials used in electronics manufacturing); circuitry configured to produce measurable change of a parameter as a function of capacitance of said at least one capacitive plate (para [0026], [0027]. When a body part comes into proximity of a sensing area, micro-controller 58 can sense the increase in capacitance of the particular sensing area and cause the toy to respond in a preprogrammed way, depending on the sensing area activated...output of the oscillator is changed by variable capacitor C.sub.v due to the proximity of a human body part to the sensing area); a source of power (para [0006], battery); and a processor (para [0026], microprocessor continually scans each of the sensor areas using the multiplexer to select each one sequentially).

Regarding claim 2, Suzuki discloses the system of any preceding claim, wherein said at least one capacitive plate is at least one of the following: printed, etched, deposited, discrete, in-molded, adhesively applied, laminated within, molded, cast, stamped, a weldment and/or fabrication and/or assembly and/or subassembly, and/or any metallic and/or conductive element capable of forming one plate of a capacitor (para [0024], [0028], small conductive surface areas made of conductive tape, copper-clad-PCB, flat copper braid, or any of the many available low-cost conductive materials used in electronics manufacturing).

Regarding claim 3, Suzuki discloses the system of any preceding claim, wherein said substrate is contained within a plane and/or near planar surface (Fig 1, hands and feet bottom are near planar).

Regarding claim 46, Suzuki discloses a system (claim 1), comprising:

a substrate (para [0021], a number of sensing areas 12 underneath the skin of the doll);

a capacitive plate, wherein the capacitive plate has a capacitance that can be altered by the presence of a human body part that is not in direct contact with the capacitive plate (Fig 1, 2; para [0024], [0026], [0028], small conductive surface areas made of conductive tape, copper-clad-PCB, flat copper braid, or any of the many available low-cost conductive materials used in electronics manufacturing...When a body part comes into proximity of a sensing area, micro-controller 58 can sense the increase in capacitance of the particular sensing area and cause the toy to respond in a preprogrammed way); and

one or more electronic devices, wherein the one or more electronic devices configured to produce a measureable change of a parameter as a function of the capacitance of the capacitive plate (para [0026], [0027]. When a body part comes into proximity of a sensing area, micro-controller 58 can sense the increase in capacitance of the particular sensing area and cause the toy to respond in a preprogrammed way, depending on the sensing area activated...output of the oscillator is changed by variable capacitor C.sub.v due to the proximity of a human body part to the sensing area).

— see continuatio in supplemental box

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INTERNATIONAL SEARCHING AUTHORITY

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## Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of:

Box No. V(2) -- Citations and Explanations

Claim 53 lacks an inventive step under PCT Article 33(3) as being obvious over Suzuki in view of US 6,323,846 B1 to Westerman et al. (hereinafter Westerman).

Regarding claim 53, Suzuki discloses a system for extracting hand distance and/or position across and/or above a surface (claim 1) comprising of: a substrate (para [0021], a number of sensing areas 12 underneath the skin of the doll); at least one moveable capacitive plate (Fig 1, 2; para [0024], [0028], small conductive surface areas made of conductive tape, copper-clad -PCB, flat copper braid, or any of the many available low-cost conductive materials used in electronics manufacturing; plates inherently move with flexing/movement of doll's arms and legs); circuitry configured to produce measurable change of a parameter as a function of capacitance of said at least one capacitive plate (para [0026], [0027], When a body part comes into proximity of a sensing area, micro-controller 58 can sense the increase in capacitance of the particular sensing area and cause the toy to respond in a preprogrammed way, depending on the sensing area activated...output of the oscillator is changed by variable capacitor C.sub.v due to the proximity of a human body part to the sensing area); a source of power (para [0006], battery); and a processor (para [0026], microprocessor continually scans each of the sensor areas using the multiplexer to select each one sequentially). Suzuki discloses the capacitive sensor with the substrate, but does not disclose the capacitive plate can rotate into and out of the plane of said substrate; however, Westerman discloses a system for extracting hand distance and/or position across and/or above a surface (col 7, ln 12-20) comprising a capacitive plate (Fig 1; col 7, ln 45-51; col 13, ln 4-10) wherein the capacitive plate can rotate into and out of plane (col 13, ln 8-13; Fig 1, showing capacitive sensor arched out of plane, flexible to accommodate various configurations). While Westerman does not specifically disclose the capacitive plate rotating into and out of the plane of a substrate, it would have been obvious to one of skill in the art to have optimized the sensor of Suzuki to rotate into and out of the plane of said substrate, in view of the teachings of Westerman, wherein providing the flexible capacitive sensor of Westerman in the system of Suzuki, allows the sensor to conform to any substrate type while optimizing the sensor position with respect to the user (see Westerman, col 13, ln 8-13).

Claims 1-3, 46 and 53 have industrial applicability as defined by PCT Article 33(4) because the subject matter can be made or used in industry.