

**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>10025831-4</b>	<b>FOR FURTHER ACTION</b>		See item 4 below
International application No. <b>PCT/US2014/068401</b>	International filing date ( <i>day/month/year</i> ) <b>03 December 2014 (03.12.2014)</b>	Priority date ( <i>day/month/year</i> ) <b>05 December 2013 (05.12.2013)</b>	
International Patent Classification (8th edition unless older edition indicated) <b>See relevant information in Form PCT/ISA/237</b>			
Applicant <b>ADERS, Aaron Benjamin</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 8 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> <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 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 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 checked="" 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 type="checkbox"/>	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability	<input 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 checked="" type="checkbox"/>	Box No. VIII	Certain observations on the international application
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	Date of issuance of this report <b>07 June 2016 (07.06.2016)</b>
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## PATENT COOPERATION TREATY

From the  
INTERNATIONAL SEARCHING AUTHORITY

To: Roman Tsibulevskiy  
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PO Box 061080  
Wacker Drive Station, Willis Tower  
Chicago, Illinois 60606  
United States of America

PCT

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Date of mailing  
(day/month/year) **04 MAR 2015**

Applicant's or agent's file reference  
10025831-4

FOR FURTHER ACTION

See paragraph 2 below

International application No.

PCT/US14/68401

International filing date (day/month/year)

03 December 2014 (03.12.2014)

Priority date (day/month/year)

05 December 2013 (05.12.2013)

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

IPC(8) - A63C 17/12 (2015.01)

CPC - A63C 17/01, 17/015, 17/12

Applicant

Aaron Benjamin Aders

## I. 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. 571-273-3201

Date of completion of this opinion

31 January 2015 (31.01.2015)

Authorized officer:

Shane Thomas

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

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/US14/68401

## 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 filed or furnished:
- a. (means)
- on paper
- in electronic form
- b. (time)
- in the international application as filed
- together with the international application in electronic form
- subsequently to this Authority for the purposes of search
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 in 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. 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>1-20</u>	YES
	Claims	<u>NONE</u>	NO
Inventive step (IS)	Claims	<u>10 and 14</u>	YES
	Claims	<u>1-9, 11-13 and 15-20</u>	NO
Industrial applicability (IA)	Claims	<u>1-20</u>	YES
	Claims	<u>NONE</u>	NO

**2. Citations and explanations:**

Claims 1, 5-9, 11, 16-17 and 19-20 lack an inventive step under PCT Article 33(3) as being obvious over US 2013/0081891 A1 to BOOSTED BOARDS (hereinafter 'Board').

As per claim 1, Board discloses an apparatus (vehicle/electric skateboard (apparatus); abstract; figures 16-17; paragraphs [0053-0054]) comprising: a platform (a deck 200 (platform); figures 16-17; paragraph [0053]); a plurality of trucks coupled to the platform (trucks 300 (plurality of trucks) mounted on the deck 200; figures 16-17; paragraph [0053]), wherein the trucks are longitudinally opposing each other (the trucks 300 are longitudinally opposed to one another; figures 4, 16-17; paragraphs [0027-0028, 0053]); and a plurality of roller assemblies coupled to the platform (a multiple wheel bearing 400 (plurality of roller assemblies) linked to the deck 200 through trucks 300; figures 4, 16-17; paragraph [0026]), wherein the assemblies are longitudinally opposing each other between the trucks (the multiple wheel bearing 400 are longitudinally opposed to one another between the trucks 300; figures 4, 16-17; paragraphs [0026, 0053]), wherein the assemblies are configured for omnidirectional rotation (the multiple wheel bearing 400 are designed to be flexible and freely rotate about an axle 312 in multiple directions (omnidirectional rotation); figures 5a-5c; paragraph [0028]), wherein at least one of the assemblies comprises a motor (the multiple wheel bearing 400 includes an electric motor 500; figures 4, 16-17; paragraphs [0026-0028, 0038, 0053-0054]). Board fails to disclose wherein the assemblies are elastically biased for longitudinal alignment. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include wherein the assemblies are elastically biased for longitudinal alignment, since it was known in the art that the elastically biased connection is used for the advantage of the wheel assembly to the deck to enhance flexibility and maneuverability of the apparatus.

As per claim 5, Board discloses the apparatus of claim 1. Board further discloses wherein the at least one of the assemblies comprising a roller and a timing band, (the multiple wheel bearing 400 includes a wheel 420 (roller) and power train 120 includes a toothed belt 122 (timing band); paragraph [0035]), wherein the band is coupled to the roller and the motor such that the motor drives the roller (the power train 120 is linked to the wheel 420 and the electric motor 500 to generate a rotational force to rotate the wheel 420; paragraphs [0034, 0036]).

As per claim 6, Board discloses the apparatus of claim 5. Board further discloses wherein the at least one of the assemblies comprising a plurality of mounts, wherein the roller is interposed between at least two of the mounts (the multiple wheel bearing 400 includes multiple nut, cotter pin (plurality of mounts) to attach two wheel 420 to axle 312 between the nut, cotter pin; figure 4; paragraphs [0028, 0035]).

As per claim 7, Board discloses the apparatus of claim 6. Board further discloses wherein the motor is interposed between the at least two of the mounts (the motor 500 is positioned between at least two nuts, cotter pins; figure 4).

As per claim 8, Board discloses the apparatus of claim 1. Board further discloses wherein the platform is defined via a first platform segment and a second platform segment (the deck 200 is formed via an array of pressure sensor strips 860 comprising at least a first and second deck strip (first platform segment and a second platform segment); figures 9-10, 16-17; paragraphs [0045]), wherein the first segment and the second segment are configured for assembly with each other (the first deck strip and the second deck strip are attached in the array formation (assembly with each other) on the deck 200; figures 9-10; paragraphs [0045]).

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WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

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**Box No. VIII Certain observations on the international application**

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

Claims 15 and 18 are objected to under PCT Rule 66.2(a)(v) as lacking clarity under PCT Article 6 because claims 15 and 18 are indefinite for the following reason(s):

Claim 15 contains the language "the ring" which lacks antecedent basis. For the purpose of this opinion "the ring" is interpreted to read "the slip ring".

Claim 18 contains the language "the rings" which lacks antecedent basis. For the purpose of this opinion "the rings" is interpreted to read "the slip rings".

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

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**Supplemental Box**

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

Continuation of:

-\*\*\*-Continued from Box V: Citations and Explanations-\*\*\*-

As per claim 9, Board discloses the apparatus of claim 8. Board further discloses wherein the first segment comprising a first circuit portion and the second segment comprising a second circuit portion (the first deck strip is a pressure sensor (first circuit portion) and the second deck strip is a pressure sensor (second circuit portion); figures 9-10; paragraphs [0045-0047]), wherein the first portion and the second portion form a circuit based on the first segment and the second segment being mated with each other (the first deck strip comprised of and the second deck strip form a force sensor 840 (circuit) relative to the first deck strip and the second deck strip being linked (mated) in array formation; figures 9-10; paragraphs [0045-0046]), wherein the circuit facilitates powering of the motor (the force sensor 840 enables power to be transmitted to the motor 500; figures 9-10; paragraphs [0045-0047]).

As per claim 11, Board discloses the apparatus of claim 1. Board further discloses comprising: a plurality of speed controllers (each motor includes a motor controller/pulse modulated speed controller 520 (plurality of speed controllers); figures 4, 16-17; paragraph [0038]), wherein the assemblies comprising the controllers (each wheel bearing 400 includes the pulse modulated speed motor 520; figures 4, 16-17; paragraphs [0024, 0026, 0038]), wherein each of the assemblies comprises a motor (each wheel bearing 400 includes the motor 500; figures 4, 16-17; paragraphs [0026]), wherein each of the controllers is coupled to each of the motors (each pulse modulated speed motor 520 is linked to each motor 500; figures 4, 16-17); a processor coupled to the platform (a processor 600 is linked to the deck 200; figures 4, 16-17; paragraphs [0026, 0039]); and a remote control unit configured to send speed control data to the processor (a remote control 820 is wired to send a signal 802 indicative of acceleration (speed control data) to the processor 600; paragraph [0040]) such that the processor determines speed level data (the processor indicates the motor operations between an acceleration state, a deceleration state and cruising state (speed level data); paragraphs [0040-0041]), sends the determined speed level data to the controllers (sends the indicated acceleration state, deceleration state and/or the cruising state to the motor comprising pulse modulated speed motor 520; paragraphs [0038-0039, 0041-0042]), receives speed data from the controllers (receives the signal 802 indicative of acceleration, deceleration, or cruising from the pulse modulated speed motor 520; paragraphs [0026, 0038-0040]), determines a plurality of actual speeds of the motors (indicative of the acceleration, deceleration, or cruising (plurality of actual speeds) of the motors 500; paragraphs [0026, 0038-0040]), adjusts the actual speeds of the motors (adjusting the acceleration, deceleration, or cruising of the motor 500; paragraphs [0038-0042]) such that the actual speeds substantially match (the acceleration, deceleration, or cruising of the motor 500 match; paragraphs [0038-0042]), and outputs new speed level data to the controllers (outputs an adjusted acceleration, deceleration, or cruising (new speed level data) to the pulse modulated speed motor 520; paragraphs [0038-0041]).

As per claim 16, Board discloses the apparatus of claim 1. Board further discloses comprising: a power source (an energy storage device 700 comprising a battery 702 (power source); abstract; paragraphs [0023, 0053]), wherein the at least one of the assemblies comprising the source (each of the wheel bearing 400 includes the battery 702; figure 17; paragraph [0053]); and a speed controller coupled to the source and the motor (pulse modulated speed controller 520 (speed controller) linked to the battery 702 and the motor 500; figures 16-17; paragraph [0053]).

As per claim 17, Board discloses the apparatus of claim 1. Board further discloses comprising: a power source, wherein the platform comprising the source (an energy storage device 700 comprising a battery 702 (power source) is mounted to the deck 200; figures 16-17; paragraphs [0023, 0053]); and a speed controller coupled to the source and the motor (pulse modulated speed controller 520 (speed controller) linked to the battery 702 and the motor 500; figures 16-17; paragraphs [0023, 0053]).

As per claim 19, Board discloses the apparatus of claim 1. Board further discloses wherein each of the assemblies comprises a motor (the multiple wheel bearing 400 includes an electric motor 500; paragraph [0053]).

As per claim 20, Board discloses the apparatus of claim 1. Board further discloses comprising: a battery (battery 702; paragraph [0053]).

Claims 2-3 lack an inventive step under PCT Article 33(3) as being obvious over Board in view of US 4,969,655 A to Katz, R. (hereinafter "Katz").

As per claim 2, Board discloses the apparatus of claim 1. Board fails to disclose a foot hook coupled to the platform, wherein the hook is adjustable based on a size of a rider's foot. However, Katz discloses comprising: a foot hook coupled to the platform (first binding 14 and second binding 16 (foot hook) mounted to a snow board 10 (platform); abstract; figures 1-2; column 2, lines 19-26), wherein the hook is adjustable based on a size of a rider's foot (the bindings 14 and 16 includes a first and second elongated plastic bands 36 and 38 to surround (adjustable) the foot of the rider (size of the rider's foot); figures 1-2; column 2, lines 58-65). It would have been a matter of obvious experimentation to one of ordinary skill in the art at the time of the invention to modify the Board's invention to provide a foot hook coupled to the platform, as taught by Katz, for the advantage of securing a rider's foot to body of a board (Katz; abstract; column 2, lines 19-26, 58-65).

As per claim 3, Board in view of Katz discloses the apparatus of claim 2. Board fails to disclose wherein the hook comprising at least one of an elastic member, a hinge, and a fastener, wherein the hook is adjustable via at least one of the elastic member, the hinge, and the fastener. However, Katz discloses the hook comprising at least one of an elastic member, a hinge, and a fastener, wherein the hook is adjustable via at least one of the elastic member, the hinge, and the fastener (the bindings 14 and 16 includes a first and second elongated plastic bands 36 and 38 (elastic member) to surround the foot of the rider; figures 1-2; column 2, lines 58-65). It would have been a matter of obvious experimentation to one of ordinary skill in the art at the time of the invention to modify the Board's invention to provide an elastic member, as taught by Katz, for the advantage of securing a rider's foot to body of a board (Katz; abstract; column 2, lines 19-26, 58-65).

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**Supplemental Box**

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Continuation of:

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Claim 4 lacks an inventive step under PCT Article 33(3) as being obvious over Board in view of US 2007/0272465 A1 to Su, C. (hereinafter 'Su').

As per claim 4, Board discloses the apparatus of claim 1. Board further discloses comprising: a battery powering the motor (a battery 702 provides power to the electric motor 500; figures 4, 16-17; paragraph [0031]), wherein the platform comprising the battery (the deck 200 includes the battery 702; figures 4, 16-17; paragraph [0031]). Board fails to disclose a photovoltaic cell charging the battery, wherein the platform comprising the cell. However, Su discloses a photovoltaic cell charging the battery, wherein the platform comprising the cell (solar cell 2 (photovoltaic cell) charging the battery on a board 1 (platform); figures 1-2; paragraph [0021]). It would have been a matter of obvious experimentation to one of ordinary skill in the art at the time of the invention to modify the Board's invention to provide a photovoltaic cell charging the battery, wherein the platform comprising the cell, as taught by Su, for the advantage of charging a rechargeable battery to supply power to a motor on a solar skateboard (Su; abstract; paragraph [0021]).

Claims 12-13 lacks an inventive step under PCT Article 33(3) as being obvious over Board in view of US 5,487,441 A to Endo, S. et al (hereinafter 'Endo').

As per claim 12, Board discloses the apparatus of claim 11. Board discloses the unit (remote control 820 sends the signal 802 to the processor 600; paragraph [0040]). Board fails to disclose the unit is at least one of a wearable computer and a mobile phone. However, Endo discloses the unit is at least one of a wearable computer and a mobile phone (remote or radio control means (remote control unit) is linked to a portion of a vest-like garment 26 (wearable); figure 28; column 2, lines 60-63; column 4, lines 1-11). It would have been a matter of obvious experimentation to one of ordinary skill in the art at the time of the invention to modify the Board's invention to provide the remote control with a means to be a wearable computer, as taught by Endo, for the advantage of operating and controlling the speed of a skateboard (Endo; abstract; column 1, lines 55-56, column 2, lines 60-63).

As per claim 13, Board discloses the apparatus of claim 11. Board fails to disclose wherein the unit is a handheld device. However, Endo discloses wherein the unit is a handheld device (remote control pressure switch 21 is held in a hand; abstract; figure 28; column 3, lines 20-30). It would have been a matter of obvious experimentation to one of ordinary skill in the art at the time of the invention to modify the Board's invention to provide a handheld device, as taught by Endo, for the advantage of operating and controlling the speed of a skateboard (Endo; abstract; column 1, lines 55-56, column 2, lines 60-63).

Claims 15 and 18 lack an inventive step under PCT Article 33(3) as being obvious over Board in view of US 2012/0169178 A1 to Toledo, T. et al (hereinafter 'Toledo').

As per claim 15, Board discloses the apparatus of claim 1. Board further discloses comprising: a speed controller (pulse modulated speed controller 520 (plurality of speed controller); figure 4; paragraphs [0036-0038]); and a power source coupled to the controller (an energy storage device 700 is linked to the pulse modulated speed controller 520; figures 16-17). Board fails to disclose a slip ring coupled to the motor; controller coupled to the slip ring. However, Toledo discloses a slip ring coupled to the motor (slip ring 115 is linked to a motor 147; abstract; paragraph [0044]); controller coupled to the slip ring (a computer processor based controller 180 is linked to the slip ring 115; abstract; paragraphs [0047-0049]). It would have been a matter of obvious experimentation to one of ordinary skill in the art at the time of the invention to modify the Board's invention to provide slip ring coupled to the motor and the speed controller coupled to the slip ring, as taught by Toledo, for the advantage of a motor assembly that is able to make a positive electrical connection while maintaining rotational movability and having direct control over each motor.

As per claim 18, Board discloses the apparatus of claim 1. Board further discloses comprising: a power source, wherein each of the assemblies comprises a motor (an energy storage device 700 comprising a battery 702 (power source) and each of the wheel bearing 400 includes a motor 500; figure 17; paragraph [0053]); a speed controller coupled to the source (pulse modulated speed controller 520 (speed controller) linked to the battery 702; figures 16-17; paragraph [0053]). Board fails to disclose a plurality of slip rings coupled to the controller. Toledo discloses a plurality of slip rings coupled to the controller, wherein the slip rings are coupled to the motor (a slip rings 115 (plurality of slip rings) is linked to a computer processor based controller 180, wherein the slip rings 115 is coupled the motor 147; paragraphs [0047-0049]). It would have been obvious to one of ordinary skill in the art at the time of the invention modify the apparatus of Board, to include wherein each of the slip rings is coupled to each of the motors, as taught by Toledo, for the advantage of having a motor assembly that is able to make a positive electrical connection while maintaining rotational movability and having direct control over each motor.

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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.

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Claim 10 meets the criteria set out in PCT Article 33(2)-(3), because the prior art does not teach or fairly suggest the male member at least partially comprising the first portion, the female member at least partially comprising the second portion.

US 5,540,455 A to Chambers, L. (hereinafter 'Chambers') discloses the first segment comprising a male member (skateboard platforms P1 (first segment) including a bolt (male member) of combination 11 of P1; figures 5-7; column 4, lines 16-27), wherein the second segment comprising a female member (skateboard platform P2 (second segment) including a nut (female member) of combination 11 of P2; figures 5-7; column 4, lines 16-27). Chambers and the references of record fail to disclose the male member at least partially comprising the first portion, the female member at least partially comprising the second portion. It would not have been obvious to employ this arrangement.

Claim 14 meets the criteria set out in PCT Article 33(2)-(3), because the prior art does not teach or fairly suggest the unit is hand-size adjustable.

Endo discloses wherein the unit is a handheld device (remote control pressure switch 21 is held in a hand; abstract; figure 28; column 3, lines 20-30). Endo and the references of record fail to disclose the unit is hand-size adjustable. It would not have been obvious to employ this arrangement.

Claims 1-20 have industrial applicability as defined by PCT Article 33(4) because the subject matter can be made or used in industry.