IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Reexamination of

U.S. Patent No. 6,351,205

Inventor: Armstrong

Issued: February 26, 2002

Recorded Assignee: Anascape, Ltd.

For: VARIABLE-CONDUCTANCE SENSOR

LITIGATION

Atty. Ref.: 723-2109

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January 31, 2007

MAIL STOP *INTER PARTES* REEXAMINATION
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Sir:

REQUEST FOR *INTER PARTES* REEXAMINATION

Nintendo Company of America ("NOA," also the "Requestor") requests reexamination under 35 U.S.C. § 311 of all claims of U.S. Patent 6,351,205 ("the '205 patent") issued February 26, 2002 to Brad A. Armstrong ("Armstrong").[1]

1. A listing of prior art relied upon to establish a substantial new question of patentability (Section III).

2. A statement pointing out each substantial new question of patentability based on prior patents and printed publications (Section IV);

[1] Contemporaneous with this Request, NOA has also filed requests for *inter partes* reexamination of Armstrong's U.S. Patent No. 6,344,791 ("the '791 patent") and U.S. Patent No. 6,563,415 ("the '415 patent"). This Request, however, is limited to the '205 patent.

3. An identification of every claim for which Reexamination is requested, and a detailed explanation of the pertinency and manner of applying the cited art to every claim for which Reexamination is requested (Section IV);

4. A copy of the entire '205 patent including Terminal Disclaimers (Appendix A);

5. A copy of every patent or printed publication relied upon for establishing a substantial new question of patentability, including English language translations of all non-English patents or publications (Appendix B);[2] and patents or printed publications cited as background prior art (Appendix C)

6. A certification that a copy of the Request has been served in its entirety on the patent owner at the name and address provided for in §1.33(c) (Appendix E); and,

7. A credit card authorization form PTO-2038 for the fee of $8,800.00 required by 37 C.F.R. § 1.20(c)(2) is submitted herewith. The Commissioner is hereby authorized to charge any additional fees that may be due, or credit any overpayment to Deposit Account 14-1140.

8. Requestor certifies that this a new reexamination request, and that therefore the estoppel provisions of 37 C.F.R. §1.907 do not prohibit this Request.

9. The Requestor and real party in interest for this Request in Nintendo Company of America.

Notice of Pending Litigation

On July 31, 2006, Anascape, Ltd. ("Anascape") (purported assignee of the '205 patent) filed an Original Complaint for Patent Infringement ("Complaint") in the United States District

[2] Additional prior art, not specifically relied upon, is discussed herein and/or cited in Section V below. Copies of the additional prior art are included in Appendix C. In addition, copies of the '791 and '415 patents and documents from the prosecution history of the '205 patent (as well as documents from the prosecution history of the '415 patent) are included in Appendix D.

Court for the Eastern District of Texas, alleging infringement of the '205 patent by NOA and Microsoft Corporation. The case is styled *Anascape, Ltd. v. Microsoft Corporation and Nintendo of America, Inc.* and has been assigned Case No. 9:06-CV-00158-RC. Anascape filed a First Amended Complaint for Patent Infringement ("Amended Complaint") on November 21, 2006. NOA filed its Answer and Counterclaims to Anascape, Ltd.'s First Amended Complaint on December 6, 2006.

I. INTRODUCTION

The subject matter of the '205 patent for which reexamination is requested relates generally to the combination of snap-through tactile feedback and a variable conductance switch, and it was on that combination of features that the Examiner based his decision to allow the claims of the '205 patent. Indeed, the '205 patent states that:

> [W]hile the present invention can be viewed as an improved pressure-sensitive variable-conductance sensor improved by way of integrating a tactile feedback dome-cap therein, the invention can also be viewed as an improved momentary-On snap switch improved by way of integrating pressure-sensitive variable-conductance material electrically into a current flow path between the first and second conductive elements.

'205 patent at col. 6, line 66 to col. 7, line 6.[3] Further, in allowing the issued claims of the patent, the Examiner stated that "[t]he claimed method of employing an analog or variable output sensor with a snap tactile feedback is not disclosed or suggested by the prior art of record." Notice of Allowability at 2.

There is no dispute here that both snap-through switches or sensors – as well as pressure-sensitive, variable conductance switches or sensors – were well known long prior to the sensor

[3] By describing his invention in this manner, Armstrong appears to identify snap-through tactile feedback as a feature common to momentary-on switches.

described in the '205 patent.[4] For example, dome-cap switches, characterized by a snap-through tactile feedback, have been used for several years in devices such as computer keyboards, television remote controls, calculators, game controllers and the like. Further, the '205 patent characterizes the dome-cap switch as "a very common prior art switch," '205 patent at col. 1, lines 29-37, and Armstrong recognizes in his '791 patent that:

> Elastomeric or flexible injection-molded dome-cap momentary-On switches (sensors) are well known and widely used in the prior art as switches incorporated in such common host devices as remote controls for television and stereos, and in electronic game control devices ....

'791 Patent at col. 1, lines 28-31.

The use of variable conductance analog switches has also long preceded any development work related to the '205 patent. Armstrong acknowledges as much, stating that "pressure-sensitive variable conductance sensors have also been known for decades." '205 patent at col. 2, lines 33-36.

It is significant that Armstrong also acknowledges that most elastomeric injection molded dome-cap switches produce the well known snap-through tactile feedback phenomenon that makes such switches attractive in devices such as those mentioned above. *See* '791 patent at col. 1, line 66 to col. 2, line 17. Indeed, UK Published Patent Application No. 2156588 A to Meleard et al. (published in 1985), notes that:

> It is often considered desirable to provide for tactile feedback so that, when the keys are pressed by the finger of a person operating the keyboard, the keys 'snap' and force discontinuity is transmitted to the finger of the user indicating that the key has been actuated and an electrical signal thus generated in the circuit associated with the key.

[4] The '205 patent uses "switch" and "sensor" interchangeably. '205 patent at col. 1, line 30.

Meleard at 1, lines 21-29. Further, in discussing other prior art variable-resistance switches, JP S61-100844 to Kaneko et al. (published June 27, 1986) and JP S61-103836 to Matsumoto et al. (published July 2, 1986) both observe that, "when the push button is pressed while the switch is off, there is no switchover point (click action) to indicate when it is turned on in the course of operation to activate the variable resistance function from the off-state." Kaneko (translation) at 2; Matsumoto (translation) at 2.[5] This is precisely the reason Armstrong sought to incorporate snap-through tactile feedback in his switches:

> A benefit provided by a sensor in accordance with the present invention is a reduction of confusion or potential confusion on the part of the user as to when the analog sensor is actuated and de-actuated.

'205 patent at col. 3, lines 15-38. Ultimately, Armstrong purportedly solved his problem in the same way Kaneko and Matsumoto solved theirs more than a decade earlier: by combining snap-through tactile feedback with a variable-conductance sensor. *See* Kaneko at 2; Matsumoto at 2-3, 11.

As for the source of the snap-through tactile feedback, it was well known to use dome-caps. For example, Meleard describes domes as "tactile snap-action elements." In particular, Meleard discloses that a typical membrane type keyboard having snap-through tactile feedback is comprised of "an active member switch circuit layer ... [that] is often comprised of a plurality of tactile snap-action elements such as domes." Meleard at 1, lines 30-42 (emphasis added). U.S. Patent No. 3,590,195 to Driver explains the mechanics as to why a dome-cap provides snap-through tactile feedback:

> The principle of the invention is based upon that of the conventional oilcan in which, to eject a quantity of oil from the can, each of the sides, or the base, depending upon the type of can, is depressed and snaps inward into a deformed

[5] Please note that all references to non-English documents cite the translations for those documents.

> condition, which however is unstable, so that when pressure is released each side or the base, as the case may be, snaps back into its previous undistorted condition, In applying this principle, a plate of springy material, such for example as nickel silver, is provided, by means of a stamping or press operation, with one or more dome-shaped projections such as shown at 2 in FIGS. 1 and 4. This domed projection provides a pushbutton. In analogy with the oilcan, when finger pressure is applied to the dome it becomes distorted and clicks inward as depicted in FIG. 3. When pressure is released the deformed material clocks out again into its original shape.

Driver at col. 1, line 70 to col. 2, line 9.

CSI Keyboards, Inc.'s 1988 "Design Specifications for Membrane Keyboards" ("CSI") further illustrates the association of snap-through tactile feedback with dome switches. For example, CSI states that, among other things, a tactile membrane keyboard consists of "a domed upper circuit layer." CSI at 3. CSI defines "tactile feel" as "[t]he snap action feel of domed keyboards with graphics or keytops, and the full stroke of full travel membrane keyboard." *Id.* at 60. "Pressure applied to the raised key location causes the protrusion in the upper circuit to flex through the spacer opening. This action results in a momentary switch closure and simultaneous tactile feedback." *Id.* at 3; *see also id.* at 4 ("[p]ressure applied to the dome allows it [sic, to] travel through the dome spacer layer and make contact to the lower circuit creating a momentary switch closure. This action also produces a tactile response."), 5-7, 10, 11, 14, 26. Furthermore, section 3.5 on page 16 addresses the issue of analog output.

Thus, both the prior art and Armstrong's '205 patent make clear that dome-caps are readily associated with snap-through tactile feedback. In addition, the '205 patent appears to identify snap-through tactile feedback as a feature common to momentary-on switches, which often take the form of dome-caps.

Armstrong nevertheless has criticized certain prior art, such as JP5-87760 to Furukawa et al. ("Furukawa '760"), for not explicitly stating that the disclosed structure provides snap-

through tactile feedback, despite striking similarities between the prior art and structure that Armstrong discloses as having such feedback. *Compare, e.g.*, Furukawa '760 at Fig. 2 *with* '791 patent at Fig. 1. However, if as Armstrong recognizes, dome-caps are often used as momentary-on switches and momentary-on switches provide snap-through tactile feedback, it should not be surprising that the prior art may not explicitly call out that feature in every instance. This is especially so, given Armstrong's acknowledgement during prosecution of the '415 patent that Furukawa '760 has a "resilient return or restoring structure," '415 patent, May 16, 2002 Response at 3, a hallmark of momentary-on switches. *See, e.g.*, '205 patent at col. 2, lines 5-9 ("The dome-cap being of resilient design, returns to a raised position off of the second conductive element when the actuator is no longer depressed, and thus the switch or sensor is a momentary-On type."); *id.* at col. 6, line 66 to col. 7, line 6.

This Request has been filed because the prior art demonstrates that well before the effective filing date of the '205 patent, others had recognized that variable-conductance switches could be constructed to provide snap-through tactile feedback. As discussed above, Matsumoto and Kaneko disclose such sensors. Additional examples, such as UK Published Patent Specification 1412298 to Knox (published in 1975) and U.S. Patent No. 5,164,697 to Kramer, are described below.

Further, JP H5-304007 to Tanami et al. discloses a pressure-sensitive switch with tactile feedback. For example, Tanami provides the following disclosures:

> Since the pressure-sensitive conductive rubber 4 has the cross-sectional shape of an inverted recess and becomes cavity-like in the non-pressure state, a moderate feeling in the switching is obtained by the collapse deformation of the pressure-sensitive conductive rubber 4.
>
> * * *

> [T]he pressure-sensing conductive rubber is formed in the cross-sectional shape of an inverted recess when accomplishing switching due to a resistance change accompanied by the applied pressure of the pressure-sensitive conductive rubber with the pressure-sensitive conductive rubber as a movable contact, therefore the pressure-sensitive conductive rubber is easily collapsed and deformed, ensuring a large contact area in the collapse deformation, and a large drop of resistance value is instantaneously obtained by applying only a very small applied pressure, and once the resistance value starts to lower, additional pressure force need not be applied, greatly improving the sensitivity or responsiveness as a pressure sensitive switch.
>
> * * *
>
> Since a moderate feeling accompanied by the collapse deformation of the pressure-sensitive conductive rubber itself is also obtained when the pressure-sensitive conductive rubber is pressurized, the pressure sensitive switch also operates satisfactorily.

Tanami at 7.

Other prior art discussed in this Request, such as Furukawa '760, disclose dome-cap switches with analog capability that would appear to inherently exhibit snap-through tactile feedback, even though they do not use the exact terminology "snap-through." Such feedback in that prior art is especially evident in view of the '205 patent's descriptions of dome-cap momentary-on switches. In addition, certain of the prior art references (see especially Furukawa '760) disclose the use of such sensors or switches in controllers for video games. *See also* Japanese Laid Open Patent Application No. JP5-326217 (Furukawa et al.), published Dec. 10, 1993 ("Furukawa '217").

Furthermore, in the course of the pending litigation, Anascape has provided infringement contentions requiring a claim scope that would read on other prior art. For example, Anascape's infringement contentions rely on a claim scope in which the variable conductance feature is provided by an element other than the element providing snap-through tactile feedback. NOA does not agree with the claim scope presented in Anascape's infringement contentions.

However, out of an abundance of caution, NOA identifies prior art that would fall within the scope of those contentions.

For example, U.S. Patent No. 5,231,386 to Brandenburg et al. discloses an integrated keyswitch/pointing assembly on a keyboard. The keyboard is of the elastomeric type, including a baseplate or printed circuit board 30 having a plurality of switch contacts 32, and a rubber dome sheet 20 formed with a plurality of dome springs, one shown at 21, aligned over a respective contact 32. The underside of the dome cap is said to be provided with a conductive pad. A conventional key cap 10 is coupled to a plunger 12 that is arranged for sliding movement through a plunger guide 14, enabling the plunger to engage the top surface of the dome spring 21. When the key cap 10 is depressed, the plunger 12 will push the dome cap 21downwardly into engagement with the contact 32 such that the conductive pad on the underside of the dome cap engages the contact 32 to thereby close the switch and actuate, for example, a typing key stroke. Note that surface 11 of the key cap 10 will bottom on the upper surface 18 of the guide 14. The guide 14 is also provided with four actuator surfaces 17 arranged to contact respective force-sensing resistor elements 24 of a force-sensing array 22 arranged between the base plate 30 and the rubber dome sheet 20. Thus, after surfaces 11 and 18 are engaged, further pressure applied to the key cap 10 will cause actuator surfaces 17 to engage the force-sensing array 22 in a pointing modality to, for example, control cursor speed. Thus, Brandenburg integrates digital ON/OFF and analog force-sensitive modalities in a single dome cap switch. Brandenburg also notes that "[t]he tactile response or 'feel' of the keyswitch is the same as an unmodified keyswitch, in that it is determined by the usual dome spring 21 on the rubber dome sheet 20." Brandenburg at col. 6, lines 39-42.

In addition, U.S. Patent No. 5,692,956 to Rifkin discloses a combination computer mouse and game play control in the context of computer mouse configured to resemble a miniature automobile. The control includes "an analog switch 57 which is coupled in tandem to click switch 55." Rifkin at col. 4, lines 44-47, Fig. 3. Rifkin also discloses the use of an electric motor 60 and eccentric weight 61 to provide engine vibration simulation. *Id.* at col. 4, lines 38-42. In describing the control's functionality, Rifkin states:

> During game play operation, movements to the left in the direction of arrow 24 or to the right in the direction of arrow 25 of game play control 30 are communicated by the trackball unit on the underside of game play control 30 (seen in FIG. 3) to cause display scrolling in the directions indicated by arrows 26 and 27 upon display screen 12. This facilitates game play in which the user "steers" the simulated vehicle viewed on display 12 by moving game play control unit 30 to the left and to the right. In addition, depressing right push button 32 communicates game play information to processor 16 corresponding to depressing the accelerator in a vehicle. In response and by means set forth below in greater detail, game play control 30 is caused to vibrate simulating engine vibration and communicates to processor 16 the acceleration which in turn produces output sounds played through speakers 13 and 14 corresponding to engine noise. In addition, a pair of simulated gages 28 and 29 which represent a tachometer and speedometer of the simulated vehicle respectively also respond to the pressure exerted upon right push button 32. Thus, the combined effect observed by the game player in depressing right button 32 is the increase in vehicle speed, the increase in engine RPM, an increase in tactile vibration felt in the game play control and a rise in the engine noise pitch produced through the sound system of computer system 10.
>
> In addition, as the user depresses push button 33 of game play control 30, a braking action is simulated and the image upon display 12 responds accordingly to depict a slower speed with reduced scrolling in the forward direction. In addition, the pressing of button 33 communicates to processor 16 an appropriate command which causes processor 16 to cause sounds representative of brake screeching to be outputted through the computer sound system. Thus, as the game player releases button 32 and presses button 33, the front to back scrolling of the image upon display 12 slows and the sound of brake screeching is heard.
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> * * *
>
> In accordance with the present invention, the user places a hand upon the upper portion of body 31 in the manner shown in dashed-line representation such that

> the user's thumb extends downwardly along the left side and the user's fingers extend downwardly to right button 32 and left button 33. When so gripped, the user is able to move game play control 30 from side to side to provide the above-described directional command input or to press either of buttons 32 or 33 to manipulate the above-described game play of acceleration and braking respectively. Thus, as the user forces button 32 downwardly in the direction of arrow 40, an increasingly greater acceleration command is communicated to processor 16 via cable 20. Correspondingly, when the user presses left button 33 downwardly in the direction of arrow 41, the above described braking action commands are coupled to processor unit 16.

Id. at col. 3, lines 31-67, col. 4, lines 13-28.

Accordingly, based on the wealth of evidence contained in the prior art cited herein, it is apparent that Armstrong was not entitled to the claims as issued in the '205 patent.

II. Background

The '205 Patent

The '205 patent issued on February 26, 2002 to Brad A. Armstrong, from application Serial No. 09/455,821, filed December 6, 1999. The application was characterized as a continuation of application Serial No. 09/106,825, filed June 29, 1998 (now U.S. Patent No. 5,999,084), and which is in turn characterized as a continuation-in-part of application Serial No. 08/677,378 filed July 5, 1996 (now U.S. Patent No. 6,222,525).[6]

The invention is said to relate to the use of electrical sensors of the type useful to control electrical flow through a circuit and is said to specifically involve the use of a tactile feedback dome-cap in conjunction with pressure-sensitive variable-conductance material to provide momentary-on pressure-dependant variable electrical output. The tactile feedback is user-discernable for indicating actuation and deactuation of the sensor. '205 patent at col. 1, lines 13-

[6] This Request does not comment on the extent to which the '205 patent may be entitled to an effective date earlier than December 6, 1999, or the extent to which the claimed subject matter of the '205 patent

20. According to Armstrong, his invention lay in the combination of well-known features, namely snap-through tactile feedback and a variable conductance switch. '205 patent at col. 6, line 66 to col. 7, line 6.

As illustrated by a comparison of the figures of the '205 patent, the basic difference between the acknowledged prior art (Figure 3) and Armstrong's sensor (*e.g.*, Figures 4-6) is the addition of variable conductive material 30: "FIG. 4 shows a median cross section view of a flat mount sensor in accordance with the present invention and structured the same as the FIG. 3 [prior art] sensor with the exception of the installation of a pressure-sensitive variable-conductance material 30 shown contacting and adhered in place on second conductive element 14 within housing 10." '205 patent at col. 6, lines 42-47 (emphasis added). Accordingly, the housing 10, first conductive elements 12, second conductive elements 14, conductive dome-cap 16, depressive actuator 18, flange 20, housing plate 22, hole 24 and plastics studs 26 – as well as their functional attributes – of the Armstrong sensor were all features of the prior art. '205 patent at Figs. 3, 4. Indeed, the patent states that "the present invention can be viewed as an improved pressure-sensitive variable-conductance sensor improved by way of integrating a tactile feedback dome-cap therein, [and that] the invention can also be viewed as an improved momentary-On snap switch improved by way of integrating pressure-sensitive variable-conductance material electrically into a current flow path between the first and second conductive elements." '205 patent at col. 6, line 66 to col. 7, line 6.

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was disclosed in the original application for that patent. However, Anascape has asserted in the pending litigation that the '205 patent is entitled to a priority date of July 5, 1996.

In describing the prior art, the '205 patent notes that:

> Sufficient depression of the actuator causes the actuator to apply force to the dome-cap, causing the dome-cap to bow (snap-through) downward, causing a center portion of the dome-cap to contact a more centrally positioned end of the second conductive element and resulting in a conductive bridging or closing between the first and second conductive elements with the current flow path being through the conductive dome-cap. The dome-cap when pressed against sufficiently to bow toward the second conductive element has resistance to moving which begins low and increases toward a snap-through threshold wherein at the threshold the dome-cap snaps creating a snap or click which is user discenable [sic] in the form of a tactile sensation. The dome-cap then moves further toward the second conductive element. The dome-cap being of resilient design, returns to a raised position off of the second conductive element when the actuator is no longer depressed, and thus the switch or sensor is a momentary-On type. A tactile sensation is also produced by the dome-cap upon returning to the normally raised position and in doing so moving back through the snap-through threshold.

'205 patent at col. 1, line 58 to col. 2, line 11 (emphasis added). Thus, the '205 patent teaches that snap-through tactile feedback occurs when a convex structure is elastically deformed to become concave (or vice versa).[7] The patent also appears to identify snap-through tactile feedback as a feature common to momentary-on switches and cites dome-caps as an example of momentary-on switches. '205 patent at col. 2, lines 5-9, col. 6, line 66 to col. 7, line 6.

In addition, the '205 patent demonstrates that a structure having snap-through tactile feedback upon actuation will also have snap-through tactile feedback upon deactuation. *See, e.g.*, '205 patent at col. 2, lines 5-11, col. 6, lines 4-11. U.S. Patent No. Re. 34,095 to Padula further demonstrates this feature of momentary-on snap-through structures. Padula at col. 9, lines 25-32 ("The snap action during collapse of the dome can be sensed by the stylus user, providing a definite tactile feedback indicating to the user that the digitizing apparatus has switched from the disabled state to the enabled state. When pressure is removed from the stylus

tip, the dome snaps back to its original undeformed state, ready for the next operation."); *see also* Kaneko at 5-7; Matsumoto at 7-8; JP S53-128861 to Amase at 4-5.

With reference now to Figures 1 and 2 of the application drawings, the '205 patent discloses the exterior of a sensor having, *inter alia*, a housing 10, a first conductive element 12, a second conductive element 14, and an actuator 18. Figure 3 discloses a cross-section view of a prior art switch additionally showing conductive dome-cap 16. Figure 4 shows a cross-section view of the "present invention" and, as noted above, differs from the prior art switch of Figure 3 only in the addition of pressure-sensitive variable-conductance material 30 to the surface of second conductive element 14. Convex conductive dome-cap 16 is designed to collapse in a snap-through action upon application of pressure to the actuator 18 (and therethrough to the dome cap), such that conductive dome-cap 16 (which is already engaging first conductive element 12) engages pressure-sensitive variable-conductance material 30 (which is already engaging second conductive element 14). Upon release, the spring characteristic of conductive dome-cap 16 returns the switch to the OFF position. Figures 5-13 show various iterations of the same basic principle. In particular, Figure 5 shows a cross-section view of an alternative embodiment of the "present invention," in which pressure-sensitive variable-conductance material 30 has been added to the underside of conductive dome-cap 16. According to the patent, both Figures 4 and 5 (as well as others) depict snap-through switches, in which the travel space for the dome-cap has been narrowed from that in the prior art snap-through switch (Figure 3). '205 patent at col. 6, lines 52-54; col. 8, lines 55-67; col. 9, lines 29-34, 44-46; col. 10, lines 56-58; col. 11, lines 18-22, 44-63.

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[7] That teaching is consistent with the teachings of the prior art. *See, e.g.*, JP S53-128861 to Amase at 4-5; *see also* JP H5-304007 to Tanami at 7; Kramer at col. 5, lines 36-48.

All claims of the '205 patent are method claims that were added in place of originally filed apparatus claims. Sept. 5, 2001 Preliminary Amendment at 2-4. During prosecution, Armstrong distinguished various cited prior art as not combining an analog sensor and snap-through tactile feedback.

One prior art reference cited by the Examiner was U.S. Patent No. 5,164,697 to Kramer, which discloses a pushbutton switch device (switching device 3) for use with an input keyboard for an electronic "appliance" (*e.g.*, a remote control transmitter) in entertainment electronics. Kramer discusses ON/OFF type rubber dome switches, and notes the desirability of having a switch that not only performs choosing or setting functions (i.e., ON/OFF functions), but also a changing value function, or "adjustment process." Kramer at col. 1, lines 21-51. Kramer also discloses that its sensor is of the pressure-sensitive, variable conductance type:

> The pressure-dependent contact resistance between the contact surface 18 of the carbonized plastic foil and the contact surfaces 15.1 and 15.2 of the contact linings 11.1 and 11.2 of the conductor strips 12.1 and 12.2 of the printed circuit board 10 is schematically indicated in FIG. 2 by means of the resistances Rk(P) controlled by a pressure P. These resistances diminish linearly as the contact pressure increases, the linear relationship being preserved over a range of two to three powers of ten. This contact pressure is constituted by the operating pressure P acting on the pushbutton 22, since the spring element 20 transfers this pressure to the contact surface 18 of the carbonized plastic foil 14.

Kramer at col. 4, line 63 to col. 5, line 8. Kramer describes at least three embodiments of a switch that can be used to produce not only a switching process but also an adjustment process.

In response to the Office Action, Armstrong argued that "Kramer, while apparently including analog output, does not have a dome shaped cap or tactile feedbacks alerting the user of actuation and then deactuation of the varying of the analog output." Jan. 29, 2001 Response at 11-12. However, Kramer explicitly discloses the use of both a dome-cap and snap-through tactile feedback:

> In another advantageous embodiment of such an input keyboard that is not illustrated in the drawing attached hereto, the spring element 20 is attached to the ceiling surface of a rubber dome of a contact mat that is arranged between the bottom 27 of a pushbutton 22 and the said spring element 20. Like the thin insulating plate in the previous embodiment, the rubber dome bears against the printed circuit board 10 and, upon the depression of the appropriate pushbutton 22, will first actuate a switching process with a snap effect and subsequently permit pressure-dependent adjustment of a function variable. In this way it becomes possible to combine switching devices with and without an additional pressure-dependent adjustment function in one and the same contact mat.

Kramer at col. 5, lines 36-50 (emphasis added); *see also id.* at col. 1, lines 28-35 (describing dome switches).

In addition, in his September 5, 2001 Preliminary Amendment, Armstrong distinguished Furukawa '760 and JP 73-02159, asserting that "[n]either of these two Japanese documents teaches or suggests snap through 'tactile feedback' of any kind ... ." Preliminary Amendment at 1-2. Further, an Interview Summary indicates that Armstrong spoke with the Examiner about Furukawa '760 on September 19, 2001.

Published November 26, 1993, Furukawa '760 discloses a pressure-sensing switch to enable an operator to freely control, for example, the operation of a character of a video game. The controller disclosed in Furukawa '760 is configured to be held by both hands with depressible buttons on the left hand and the right hand sides of the controller. The button on the left hand of the controller is identified as cross key 12, which is positioned to be operated by a user's left thumb. Fig. 1. Cross key 12 comprises rubber contact (or dome-cap) 29, which is disclosed as a dome cap formed of an elastic rubber material. Disposed at each section of cross key 12 is a moving part (or pushbutton) 30, from which elastic leg 31 slopes to meet substrate 5. Furukawa '760 at 6-7, Figs. 1, 2. Disposed at the bottom end of each pushbutton 30 is a moving

contact 32 formed of conductive rubber. A conductive portion 33, whose resistance changes with the pressure exerted on cross key 12, is fixed on the bottom surface of the pushbutton 30.

When cross key 12 is pressed, pushbutton 30 comes into electrical contact with fixed contacts 7, 7 of a wiring pattern on the substrate 5. As a result of the pressure-sensitive characteristics of conductive part 33, varying the pressing force on cross key 12 will vary the electrical resistance through conductive part 33 between fixed contacts 7, 7, thereby generating a variable electrical output in response to varying physical pressure on the video game button. Furukawa '760 at 6-7, Figs. 1, 2. The variable output based on variable pressure applied to a button on a video game controller can be used, for example, to change the speed of a character's movement according to the amount of pressure applied to the button. Furukawa '760 at 6-8.[8]

According to the Interview Summary, both Armstrong and the Examiner reached an agreement that Furukawa '760 does not disclose snap-through tactile feedback. Although the Interview Summary provides little insight into how Armstrong distinguished Furukawa '760, the prosecution history of Armstrong's '415 patent – characterized as a divisional of the '205 patent – is more informative of Armstrong's position.

During prosecution of the '415 patent, various claims requiring snap-through tactile feedback in a variable-output switch were rejected as being anticipated by Furukawa '760. '415 patent, May 3, 2002 Office Action at 4. Consistent with the '415 patent's (as well as the '205 patent's) teaching regarding momentary-on switches and snap-through, the Examiner noted, among other things, that "Furukawa discloses the claimed invention at Fig. 2 where the snap-through action is due to the restoring of 30, and 33 provides the analog sensor that is pressure

[8] Furukawa '760 notes that the invention is not limited to variable control on a cross key button. Furukawa '760 at 6.

sensitive." '415 patent, May 3, 2002 Office Action at 4. In response, Armstrong distinguished Furukawa '760 solely on the basis of snap-through tactile feedback.

In particular, Armstrong addressed Furukawa '760 by arguing that "there is not the slightest hint in the Furukawa disclosure of the dome cap or sensor having a snap-through or threshold tactile feedback" and that "a threshold snap-through tactile feedback is not an inherent feature of a dome cap or sensor." '415 patent, May 16, 2002 Response at 3, 5. Contrary to what he said in the '415 patent (and also in the '205 patent), Armstrong asserted that the "resilient return or restoring structure" of Furukawa '760 is not tantamount to snap-through tactile feedback. *Compare* 415 patent, May 16, 2002 Response at 3-4 *with* '415 patent at col. 2, lines 14-17, col. 7, lines 5-12; *see also* '205 patent at col. 2, lines 5-9, col. 6, line 66 to col. 7, line 6.

Armstrong also argued that Furukawa '760 teaches away "from structuring which would provide threshold snap-through tactile feedback" because "element '33' in Fig. 2 narrows the spacing between the dome cap carried pill '33' and the conductors 7, the narrowing of the spacing being the opposite structural arrangement which would normally be applied if one desired the dome cap to be able to be depressed to a point of crossing a threshold snap-through before the depressive stroke has bottomed-out." '415 patent, May 16, 2002 Response at 5. In the end, the Examiner concluded that Furukawa '760 does not disclose "a snap-through device" and reasoned that:

> [I]t would appear that using a snap type device would interfere with smooth analog-type sensing, or at the least, there is no reason or suggestion to combine the two types of action. While applicant admits at page 2 of his application a common prior art switch has a metal dome-cap, there is no suggestion to combine that with an analog device such as that of Furukawa for reasons noted.

'415 patent, July 12, 2002 Office Action at 4-5.

Contrary to the Examiner's reasoning, however, the prior art does disclose the use of snap-through tactile feedback with analog-type sensing, as well as the use of metal dome-caps with analog switches. *See, e.g.*, Kramer at col. 5, lines 36-48; Padula at col. 7, line 54 to col. 9, line 55; Matsumoto at 1-3, 6-11; Kaneko at 1-3, 5-7.

In addition, the '415 and '205 patents themselves – which share virtually identical disclosures – demonstrate the problem with Armstrong's distinction of Furukawa '760. To begin, the '415 and '205 patents define "snap-through" as "causing the dome-cap to bow ... downward." '205 patent at col. 1, lines 58-60; '415 patent at col. 2, lines 1-2.[9] That is, snap-through occurs as a convex dome-cap is elastically deformed to become concave (and vice versa).[10] The patents also teach that resilient return is characteristic of momentary-on switches and that Armstrong considered momentary-on switches to provide snap-through tactile feedback. 415 patent at col. 2, lines 14-17, col. 7, lines 5-12; '205 patent at col. 2, lines 5-9, col. 6, line 66 to col. 7, line 6.

It is clear from the disclosure of Furukawa '760 that pressing on pushbutton 30 will cause the dome-cap to bow downward to establish contact between conductive portion 33 and fixed contacts 7, 7. Furukawa '760 at 7 ("By performing the pressing operation, the moving part 30 is lowered while being resisted by an elastic urging force of the elastic leg portion 31 so that it is electrically connected to the fixed contacts, 7, 7 of a wiring pattern disposed on the substrate

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[9] *See also* '205 patent at col. 1, line 66 to col. 2, line 4 ("The dome-cap when pressed against sufficiently to bow toward the second conductive element has resistance to moving which begins low and increases toward a snap-through threshold wherein at the threshold the dome-cap snaps creating a snap or click which is user discernable in the form of a tactile sensation.").

[10] Indeed, Armstrong notes in his '791 patent that "most, but not all elastomeric injection molded dome-caps when depressed produce a soft snap which is a user discernable tactile feedback." '791 patent at col. 1, line 66 to col. 2, line 2.

5."), Fig. 2; *compare* '415 patent at col. 2, lines 7-12 ("The dome-cap when pressed against sufficiently to bow toward the second conductive element has resistance to moving which begins low and increases toward a snap-through threshold wherein at the threshold the dome-cap snaps creating a snap or click which is user discernable in the form of a tactile sensation." (emphasis added)); '205 patent at col. 1, line 66 to col. 2, line 4 (same). Thus, the convex dome-cap of Furukawa '760 is elastically deformed to become concave. Furthermore, even Armstrong acknowledged the resilient return/momentary-on characteristics of the Furukawa '760 dome-cap. '415 patent, May 16, 2002 Response at 3.

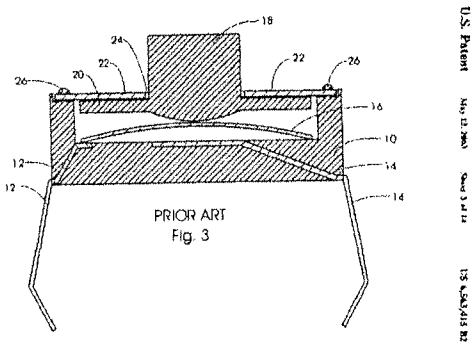
The inherent snap-through feature of the Furukawa '760 structure is demonstrated elsewhere in the prior art.[11] For example, JP S53-128861 to Amase discloses a "pressure sensitive switch mechanism by which a person operating the switch may perceive whether the switch become the ON state or the OFF state, i.e. whether the switch reliably operates or not by a click feeling ... ." JP S53-128861 at 3; *id.* at 4, 5. In particular, the "click feeling" – *i.e.*, snap-through tactile feedback – results from the inversion of a convex spring 12, which inversion occurs both as pressure is applied and as pressure is released. JP S53-128861 at 4-5; *see also* U.S. Patent No. 3,643,041 to Jackson at col. 2, lines 23-42; Padula at col. 9, lines 25-32 ("The snap action during collapse of the dome can be sensed by the stylus user, providing a definite tactile feedback indicating to the user that the digitizing apparatus has switched from the disabled state to the enabled state. When pressure is removed from the stylus tip, the dome snaps back to its original undeformed state, ready for the next operation."); Tanami at 7 ("Since the pressure-sensitive conductive rubber 4 has the cross-sectional shape of an inverted recess and becomes

cavity-like in the non-pressure state, a moderate feeling in the switching is obtained by the collapse deformation of the pressure-sensitive conductive rubber 4."); Kaneko at 2, 6-7; Matsumoto at 2-3, 7-8; Kramer at col. 1, lines 28-35, col. 5, lines 36-48, Fig. 1.

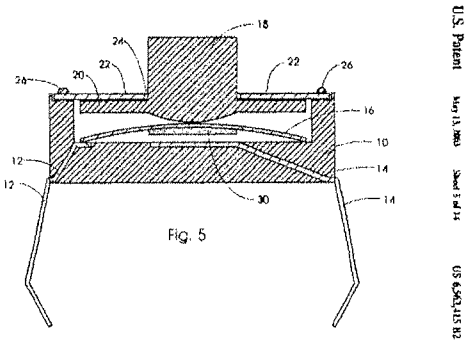
In any event, a comparison of Figures 3 and 5 of the '415 and '205 patents most tellingly shows the problem with Armstrong's distinction of Furukawa '760. Figure 3 of the '205 and '415 patents depicts a prior art switch. Figure 5 depicts the same structure as Figure 3, the sole exception being the addition of variable conductance material 30 on the underside of conductive dome-cap 16. Thus, as in Furukawa '760, the difference between the prior art and the variable conductance sensor is the addition of variable conductance material to the underside of the dome-cap, resulting in a "narrowing [of] the spacing between the dome cap ... and the conductors ... ." '415 patent, May 16, 2002 Response at 5. Compare the figures below.

[11] *See, e.g., Continental Can Co. USA, Inc. v. Monsanto Co.*, 948 F.2d 1264, 1268 (Fed. Cir. 1991) ("To serve as an anticipation when the reference is silent about the asserted inherent characteristic, such gap in the reference may be filled with recourse to extrinsic evidence.").

ARMSTRONG
Patent No. 6,351,205

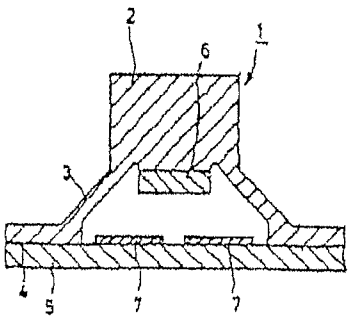


'415 &'205 Patents – Prior Art



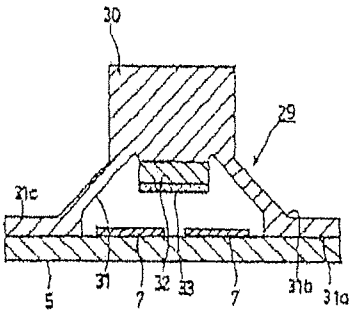
'415 &'205 Patents

【図３】



Furukawa '760 – Prior Art

【図２】



Furukawa '760

Armstrong does not identify – and the figures do not exhibit – that any "[c]areful designing or engineering in elastic legs and dome structures and other associated parts" occurred in order to carry over the snap-through tactile feedback feature from the prior art structure to the Figure 5 structure. *See id.* at 5.

With respect to Furukawa '760, Armstrong argues that such structure teaches away from snap-through tactile feedback. With respect to the embodiment of "the present invention" shown in Figure 5 of the '205 and '415 patents, however, Armstrong states that such structure embodies snap-through tactile feedback. '205 patent at col. 8, lines 55-67, col. 9, lines 29-34; '415 patent at col. 8, line 61 to col. 9, line 6, col. 9, lines 35-40. If, as Armstrong told the Examiner, "the

narrowing of the spacing [is] the opposite structural arrangement which would normally be applied if one desired the dome cap to be able to be depressed to a point of crossing a threshold snap-through before the depressive stroke has bottomed-out," then his assertions in the '205 and '415 patents that the structure of Figure 5 shows snap-through tactile feedback is simply wrong. The same error would apply to at least the embodiments of Figures 4, 6, 9 10, 11 and 13, as well. '415 patent, May 16, 2002 Response at 5; *see* '205 patent at col. 6, lines 52-54; col. 8, lines 55-57; col. 9, lines 44-46; col. 10, lines 56-58; col. 11, lines 18-22, 44-63; '415 patent at col. 6, lines 58-60; col. 8, lines 61-63; col. 9, lines 50-52; col. 10, lines 62-64; col. 11, lines 23-27, 49-67. The more reasonable conclusion, especially in view of the teachings of the '205 and '415 patents, is that simply narrowing the spacing within a dome-cap does not indicate an absence of snap-through tactile feedback, and Armstrong has not shown any concrete reason to believe that the momentary-on dome-cap switch of Furukawa '760 does not provide such feedback.

As with the '415 patent, the Examiner ultimately allowed the claims of the '205 patent. In doing so, the Examiner reasoned that "[t]he claimed method of employing an analog or variable output sensor with a snap tactile feedback is not disclosed or suggested by the prior art of record." '205 patent, Notice of Allowability at 2. As noted above and discussed in further detail below, however, ample prior art disclosed just such a method well before the date of Armstrong's alleged invention.

III. PRIOR ART RELIED UPON BY REQUESTOR THAT ESTABLISHES A SUBSTANTIAL NEW QUESTION OF PATENTABILITY

A. List of Prior Art Patents/Publications

The following is a list of patents and publications attached in support of this Request. For convenience, the prior art is categorized as "cited" or "not cited" during the prosecution of the '205 patent.[12]

- UK Published Patent Application No. 2 156 588 A (Meleard et al.), published Oct. 9, 1985 (not cited);
- U.S. Patent No. 3,590,195 (Driver), issued June 29, 1971;
- Japanese Laid Open Utility Model Application No. JP S61-103836 (Matsumoto et al.), published July 2, 1986 (not cited);
- Japanese Laid Open Utility Model Application No. JP S61-100844 (Kaneko et al.), published June 27, 1986 (not cited);
- UK Published Patent Specification No. 1 412 298 (Knox), published Nov. 5, 1975 (not cited);
- U.S. Patent No. 5,164,697 (Kramer), issued Nov. 17, 1992 (cited);
- U.S. Patent No. Re. 34,095 (Padula et al.), issued October 13, 1992 (original patent issued Nov. 22, 1988) (not cited);
- U.S. Patent No. 3,643,041 (Jackson), issued Feb. 15, 1972 (not cited);
- Japanese Laid Open Utility Model Application No. JP5-87760 (Furukawa et al.), published Nov. 26, 1993 (cited);
- JP S53-128861 (Amase), published 1978 (not cited);
- Japan Examined Utility Model Publication H1-40545 (Kawashima et al.), published on December 4, 1989 (not cited);
- U.S. Patent No. 4,353,552 (Pepper), issued October 12, 1982 (not cited).

[12] All translations have been certified.

B. Summary of Prior Art

As explained further below, each of Matsumoto, Kaneko and Knox anticipates the subject matter of at least claims 3 and 4 of the '205 patent. Further, each of Kramer and Furukawa '760 anticipates (35 U.S.C. 102) the subject matter of at least claims 1-5, 7 and 8. Each of these references independently and respectively establishes a substantial new question of patentability with respect to these claims. In addition, other prior art references, discussed in greater detail below, render the additional features of claims 6 and 9 obvious and establish a substantial new question of patentability with respect to those claims.

Certain of the prior art references discussed herein were cited during prosecution of the '205 patent application. However, it is clear from the prosecution history that the full teachings of those references were not appreciated.

According to Armstrong, his invention lay in the combination of well-known features, namely snap-through tactile feedback and a variable conductance switch, and it was on that combination of features that the Examiner based his decision to allow the claims of the '205 patent. '205 patent at col. 6, line 66 to col. 7, line 6; Notice of Allowability at 2. However, as discussed above, the general desirability for snap-through tactile feedback has long been recognized, and the use of such feedback with a variable output sensor certainly is not new.

For example, as discussed above, Meleard explains the desirability of snap-through tactile feedback, identifying domes as "tactile snap-action elements," Meleard at 1, lines 21-42, and Driver explains the mechanics as to why a dome-cap provides snap-through tactile feedback. Driver at col. 1, line 70 to col. 2, line 9.

In addition, Kaneko and Matsumoto disclose a variable resistance switch having snap-through tactile feedback by virtue of a curved phosphor bronze plate. *See, e.g.*, Kaneko at 1, 5;

Matsumoto at 1, 6 ("The present invention relates to a variable resistance switch of which the on/off switching can be easily recognized through the feeling of pressure on a fingertip and the resistance between two terminals can be changed depending on how much the push button of the switch is pressed."); Kaneko at 2; Matsumoto at 2-3 ("The purpose of the present invention is to resolve the above problems with the prior art variable resistance switch and to provide an excellent variable resistance switch in which a switchover point (click point) is provided in the middle of the stroke of the push button so that the operator clearly recognizes the switching from the off-state to the on-state in the course of the pressing operation, and the resistance between two terminals is changed when the push button is further pressed."); *see also* Kaneko at 5-7; Matsumoto at 5-11.

Knox is directed to electrical signal initiating keyboards, including telephone instrument push-button keyboards. Knox discloses the use of a "resiliently deformable variable resistance element" with snap-through tactile feedback. Knox at 2, lines 4-5; 3, line 98 to 4, line 16; *id.* at 4, lines 30-33 ("If desired, each key can be arranged to act against a metal spring so that a snap-action and an audible 'click' is obtained on depressing the key.").

Kramer, discussed above, shows yet another example combining snap-through tactile feedback with a pressure-sensitive variable-conductance dome-cap switch.

Another example is U.S. Patent No. Re. 34,095 to Padula et al., which discloses a pressure sensitive dome-cap switch having snap-through tactile feedback. For example, Padula, directed to a digitizer stylus switch, provides the following disclosures:

> As the pressure on the stylus tip is increased, the resistance of the FSR [force-sensitive resistant] transducer 26 decreases, whereby the dc level of the analog signal increases.
>
> * * *

> FIG. 12 indicates another embodiment of a pressure transducer in which a layer 100 of flexible material, for example, a thin sheet of silver or other metal, formed with a dome 102 is positioned between, for example, the refill interface plug 12 and the plunger 20. The dome 102 is surrounded by a planar annular portion 106 which is seated on the radial end face of refill interface plug 12. When a predetermined pressing force is applied to the dome by refill interface plug 12 and plunger 20, the dome undergoes reversible collapse. The metal dome is designed so that the collapse of the bubble takes place at a pressure which is substantially equal to the pressure at which the processing of data from the stylus is enabled, as previously described. The snap action during collapse of the dome can be sensed by the stylus user, providing a definite tactile feedback indicating to the user that the digitizing apparatus has switched from the disabled state to the enabled state. When pressure is removed from the stylus tip, the dome snaps back to its original undeformed state, ready for the next operation.

Padula at col. 8, lines 23-26; col. 9, lines 12-32 (emphasis added).

U.S. Patent No. 3,643,041 to Jackson discloses a push button diaphragm switch for a keyboard formed of a plurality of openings 18. A metal switch 20 underlies a metal keyboard base plate 16 and is formed with a plurality of dome-shaped resiliently deformable dimples 22 that project into corresponding openings 18 and serve as keyboard push buttons. *See* Jackson at col. 1, lines 64-73. The dimples 22 are adapted to engage contact buttons 30 secured to a contact board 28 as best seen in Figure 3. According to the reference:

> Downward pressure on the dimple will be resisted until a certain predetermined force is exerted, whereupon the dimple "collapses" with a snap action, resulting in the convex portion of the dimple becoming concave and the dimple contacting the button 30, as shown in FIG. 4. This snap action results in a mechanical sensory feedback signal through the fingertip of the operator. The sensation received by the operator is a snap sensation similar to that received when operating a toy clicker device which emits an audible clicking sound when depressed. The action of the dimple while collapsing is a modified overcenter action wherein a force on the convex portion of the dimple beyond a predetermined portion results in the collapse of the dimple but does not cause the dimple to permanently assume a convex shape; rather, immediately upon releasing the dimple, it will snap into its original shape. This snap action provides the operator with a desirable mechanical sensory feedback signal which enables him to determine that the key has properly been depressed.

Id. at col. 2, lines 25-42.

In a second embodiment illustrated in Figure 5, a continuous flat insulating sheet 35 without openings or holes insulates the dimple 22 from the contact button 36. According to the patent document, "[w]hen the dimple 22 is depressed as shown in FIG. 5, the capacitance existing between the button 37 [sic, 36] and the dimple 22 is substantially greater than when the dimple is in its original position." *Id.* at col. 3, lines 72-75. It is disclosed that "a circuit connected between the contact button 36 and the switchplate 20 will incorporate a variable capacitance depending on the position of the dimple 22 with respect to the contact button 36. Conventional capacitance change sensed circuitry may be utilized to detect this change in capacitance resulting from the depression of the dimple 22, thus providing a keyboard operable through an induced change in capacitance at the selected keys." *See id.* at col. 2, line 75 to col. 3, line 7.

Other references disclose variable-conductance sensors but do not explicitly state that the sensors provide snap-through tactile feedback. Nevertheless, the disclosure of snap-through tactile feedback is inherent in those references. For example, as discussed above, Furukawa '760 inherently discloses snap-through tactile feedback in a variable conductance switch.

As noted above, JP S53-128861 to Amase discloses a pressure sensitive dome-cap switch, by which a person may perceive "whether the switch reliably operates or not by a click feeling" that results from inversion of dome spring 12. Amase at 3; *id.* at 4, 5. That inversion occurs both as pressure is applied and as pressure is released. *Id.* at 5. Thus, snap-through feedback is provided on both application and release of pressure.

With respect to other claimed features of the '205 patent, Japan Examined Utility Model Publication H1-40545 to Kawashima et al. discloses pressure-sensitive variable-conductance pushbuttons for video game controllers. Specifically, Kawashima disclosed a game control

device for a personal computer having a pressure sensitive rubber switch in which the electrical resistance varies with the pressing force applied by the user. Kawashima at col. 1. Such a variable output could be used to vary the rate of on/off switching for firing of missiles or pistols in a video game. *Id.* at cols. 1-2.

It was also known to use a touch pad for firing operations in video games and to use a stylus with such a touch pad. This is disclosed in U.S. Patent No. 4,353,552 to Pepper. Specifically, Pepper discloses a touch panel, and discloses using a stylus with the touch pad, stating, "[i]n the context of this invention the term "point" encompasses the area of contact between a human finger and a surface, or the area of contact of an implement, such as the pointed end of a stylus, with a surface." Pepper at col. 1, lines 27-30. Pepper also discloses using the touch panel for video game firing operations: "In addition, ball rebound velocity or other game characteristics can be controlled by pressure-sensing means similar to those shown in FIG. 6. If the game requires the firing of a gun or other discrete action, this can occur when pressure on the playing surface exceeds a certain threshold, for example." Pepper at col. 10, lines 13-18.

IV. DETAILED APPLICATION OF PRIOR ART TO THE CLAIMS OF THE '205 PATENT

As explained further below, each of Matsumoto, Kaneko and Knox anticipates the subject matter of at least claims 3 and 4 of the '205 patent. Further, each of Kramer and Furukawa '760 clearly anticipates (35 U.S.C. 102) the subject matter of at least claims 1-5, 7 and 8. Each of these references independently establishes a substantial new question of patentability with respect to these claims.

In addition, other prior art references, discussed in greater detail below, render the additional features of claims 6 and 9 obvious and establish a substantial new question of patentability with respect to those claims.

1. Anticipation

a. Matsumoto Anticipates At Least Claims 3 and 4 Under 35 U.S.C. § 102

CLAIM LANGUAGE OF THE '205 PATENT	MATSUMOTO
CLAIM 3	
A method of controlling a variable output sensor, comprising	Matsumoto discloses a method of controlling a variable output sensor.
pressing an actuator with force, using a thumb or a finger, to receive a first snap-through tactile feedback to the thumb or finger pressing the actuator, and using the first snap-through tactile feedback as indication of output of the sensor beginning to be varied, then,	"The present invention relates to a variable resistance switch of which the on/off switching can be easily recognized through the feeling of pressure on a fingertip and the resistance between two terminals can be changed depending on how much the push button of the switch is pressed." Matsumoto at 1. "The purpose of the present invention is to resolve the above problems with the prior art variable resistance switch and to provide an excellent variable resistance switch in which a switchover point (click point) is provided in the middle of the stroke of the push button so that the operator clearly recognizes the switching from the off-state to the on-state in the course of the pressing operation, and the resistance between two terminals is changed when the push button is further pressed." Matsumoto at 2-3; *see also id.* at 9.
Increasing the pressing force for further varying the output of the sensor, followed by	"The purpose of the present invention is to resolve the above problems with the prior art variable resistance switch and to provide an excellent variable resistance switch in which a switchover point (click point) is provided in the middle of the stroke of the push button so that the operator clearly recognizes the switching from the off-state to the on-state in the course of the pressing operation, and the resistance between two terminals is changed when the push button is

ARMSTRONG
Patent No. 6,351,205

CLAIM LANGUAGE OF THE '205 PATENT	MATSUMOTO
	further pressed." Matsumoto at 2-3. "With the push button 1 being further pressed, the pressure-sensitive electro-conductive rubber 6 is compressed and has reduced resistance, gradually reducing the resistance between the terminals 5C and 5D." Matsumoto at 8.
reducing the pressing force until a second snap-through tactile feedback is received by the thumb or finger pressing the actuator, and using the second snap-through tactile feedback as an indication of the output of the sensor no longer being varied.	"On the other hand, with the pressure on the push button 1 being released, the pressure-sensitive electro-conductive rubber 6 tends to return to its original state due elasticity and the resistance is increased." Matsumoto at 8. "When the pressing is discontinued, first, the pressure-sensitive electro-conductive rubber 6 returns to its no-load state due to elasticity; then, the resistance through the thickness reaches an infinite value, nujllifying [sic] the conductivity between the terminals 5C and 5D. Then, the restoration of the elastic electro-conductive curved plate 3 returns to its no-load state so that it is no longer in contact with the electrode 4B, nullifying the conductivity between the terminals 4C and 4D." Matsumoto at 8. It is inherent in the structure of Matsumoto that a second snap-through tactile feedback is received by the finger as the curved plate 3 returns through the click point to its no-load states and that the second click point indicates that the output of the sensor is no longer being varied. *See* Matsumoto at 1-3, 7-10; Padula at col. 9, lines 26-32; '205 patent at col. 2, lines 5-9.
CLAIM 4	
A method according to claim 3 further including receiving of said second snap-through tactile feedback and using said second snap-through tactile feedback as indication the sensor is no longer being varied and acting by increasing the pressing force to receive another tactile feedback and again vary the output of the sensor.	See discussion of claim 3 with respect to Matsumoto. Matsumoto provides snap-through threshold tactile feedback upon activation. Utilizing the dome-type sensor in Matsumoto as intended would inherently involve releasing pressure after depressing the button, and subsequently increasing pressure in a subsequent action. Momentary-on dome switches

CLAIM LANGUAGE OF THE '205 PATENT	MATSUMOTO
	as described in Matsumoto provide tactile feedback in both directions. *See, e.g.*, Padula at col. 9, lines 26-32; '205 patent at col. 2, lines 5-9; Driver at col. 1, line 70 to col. 2, line 9; Jackson at col. 2, lines 23-24; *cf.* Matsumoto at 8 describing restoration of curved plate 3 to the no-load state). Thus, it is inherent that the same structure will provide the claimed snap-through threshold tactile feedback upon deactivation, just as in the '205 patent. *See, e.g.*, Padula at col. 9, lines 26-32; '205 patent at col. 2, lines 5-9; Driver at col. 1, line 70 to col. 2, line 9; Jackson at col. 2, lines 23-24. Matsumoto at 1 ("The present invention relates to a variable resistance switch of which the on/off switching can be easily recognized through the feeling of pressure on a fingertip and the resistance between two terminals can be changed depending on how much the push button of the switch is pressed."); *id.* at 4, Figs. 3-9; *id.* at 2-3 ("The purpose of the present invention is to resolve the above problems with the prior art variable resistance switch and to provide an excellent variable resistance switch in which a switchover point (click point) is provided in the middle of the stroke of the push button so that the operator clearly recognizes the switching from the off-state to the on-state in the course of the pressing operation, and the resistance between two terminals is changed when the push button is further pressed."); *see also id.* at 6-9.

b. Kaneko Anticipates At Least Claims 3 and 4 Under 35 U.S.C. § 102

CLAIM LANGUAGE OF THE '205 PATENT	KANEKO
CLAIM 3	
A method of controlling a variable output sensor, comprising	Kaneko discloses a method of controlling a variable output sensor.
pressing an actuator with force, using a thumb or a finger, to receive a first snap-through tactile feedback to the thumb or finger pressing the actuator, and using the first snap-through tactile feedback as indication of output	"The present invention relates to a variable resistance switch of which the on/off switching can be easily recognized through the feeling of pressure on a fingertip and the resistance between

ARMSTRONG
Patent No. 6,351,205

CLAIM LANGUAGE OF THE '205 PATENT	KANEKO
of the sensor beginning to be varied, then,	two terminals can be changed depending on how far the push button of the switch is pressed." Kaneko at 1. "The purpose of the present invention is to resolve the above problems with the prior art variable resistance switch and to provide an excellent variable resistance switch in which a switchover point (click point) is provided in the middle of the stroke of the push button so that the operator clearly recognizes the switching from the off-state to the on-state in the course of the pressing operation." Kaneko at 2; *see also id.* at 7.
Increasing the pressing force for further varying the output of the sensor, followed by	"The purpose of the present invention is to resolve the above problems with the prior art variable resistance switch and to provide an excellent variable resistance switch in which a switchover point (click point) is provided in the middle of the stroke of the push button so that the operator clearly recognizes the switching from the off-state to the on-state in the course of the pressing operation." Kaneko at 2. "With the push button 1 being further pressed, the pressure-sensitive electro-conductive rubber 6 is compressed and has reduced resistance, gradually reducing the resistance between the terminals 7A and 7B." Kaneko at 7.
reducing the pressing force until a second snap-through tactile feedback is received by the thumb or finger pressing the actuator, and using the second snap-through tactile feedback as an indication of the output of the sensor no longer being varied.	"When pressing is discontinued, the restoration of the elastic electro-conductive curved plate 3 pushes up the push button 1 and the elastic electro-conductive curved plate 3 returns to the no-load state so that it is no longer in contact with the pressure-sensitive electro-conductive rubber 6, with the resistance between terminals 7A and 7B reaching an infinite value." Kaneko at 7. It is inherent in the structure of Kaneko that a second snap-through tactile feedback is received by the finger as the curved plate 3 returns through the click point to its no-load states and that the second click point indicates that the output of the sensor is no longer being varied. *See* Kaneko at 1-

ARMSTRONG
Patent No. 6,351,205

CLAIM LANGUAGE OF THE '205 PATENT	KANEKO
	2, 7; Padula at col. 9, lines 26-32; '205 patent at col. 2, lines 5-9.
CLAIM 4	
A method according to claim 3 further including receiving of said second snap-through tactile feedback and using said second snap-through tactile feedback as indication the sensor is no longer being varied and acting by increasing the pressing force to receive another tactile feedback and again vary the output of the sensor.	See discussion of claim 3 with respect to Kaneko. See discussion of claim 17 with respect to Kaneko. Kaneko provides snap-through threshold tactile feedback upon activation. Utilizing the dome-type sensor in Kaneko as intended would inherently involve releasing pressure after depressing the button, and subsequently increasing pressure in a subsequent action. Momentary-on dome switches as described in Kaneko provide tactile feedback in both directions. *See, e.g.*, Padula at col. 9, lines 26-32; '205 patent at col. 2, lines 5-9; Driver at col. 1, line 70 to col. 2, line 9; Jackson at col. 2, lines 23-24; *cf.* Kaneko at 7 (describing restoration of curved plate 3 to the no-load state). Thus, it is inherent that the same structure will provide the claimed snap-through threshold tactile feedback upon deactivation, just as in the '205 patent. *See, e.g.*, Padula at col. 9, lines 26-32; '205 patent at col. 2, lines 5-9; Driver at col. 2, line 70 to col. 2, line 9; Jackson at col. 2, lines 23-24. Kaneko at 1 ("The present invention relates to a variable resistance switch of which the on/off switching can be easily recognized through the feeling of pressure on a fingertip and the resistance between two terminals can be changed depending on how far the push button of the switch is pressed."); *id.* at 4, Figs. 1-4; *id.* at 2 ("The purpose of the present invention is to resolve the above problems with the prior art variable resistance switch and to provide an excellent variable resistance switch in which a switchover point (click point) is provided in the middle of the stroke of the push button so that the operator clearly recognizes the switching from the off-state to the on-state in the course of the pressing operation."); *see also id.* at 5-8.

c. Knox Anticipates At Least Claims 3 and 4 Under 35 U.S.C. § 102

CLAIM LANGUAGE OF THE '205 PATENT	KNOX
CLAIM 3	
A method of controlling a variable output sensor, comprising	Knox discloses a method of controlling a variable output sensor.
pressing an actuator with force, using a thumb or a finger, to receive a first snap-through tactile feedback to the thumb or finger pressing the actuator, and using the first snap-through tactile feedback as indication of output of the sensor beginning to be varied, then,	Knox at 3, lines 98-115 ("Depression of the key bearing the number 1, for example, cause [sic] compression of the part of the foam on which the conductive tracks connected to terminals D and E are positioned. Compression of the foam by an overlying key results in the conductive tracks underlying the key being brought into contact with the conductive layer 14. The resistance on contact decreases with increased pressure on the key and in an experimental keyboard was found to be 100 k for 40Z, 50 k for 80 Z and 15 k for 16 OZ. The spacer ensures infinite resistance when the key is unrepressed. Thus, a resistance drop is observed between terminal D and layer 14, and between terminal E and layer 13 when the key bearing the number '1' is depressed."); *id.* at 4, lines 30-33 ("If desired, each key can be arranged to act against a metal spring so that a snap-action and an audible 'click' is obtained on depressing the key."). Knox inherently discloses using the first snap-through tactile feedback as indication of output of the sensor beginning to be varied. Because the sensor of Knox is disclosed in the context of an input keyboard it is inherent that cap 8 of key 3 may be depressed by a finger or thumb of the human user.
Increasing the pressing force for further varying the output of the sensor, followed by	Knox at 3, lines 98-115 ("Depression of the key bearing the number 1, for example, cause [sic] compression of the part of the foam on which the conductive tracks connected to terminals D and E are positioned. Compression of the foam by an overlying key results in the conductive tracks underlying the key being brought into contact with the conductive layer 14. The resistance on contact decreases with increased pressure on the key and

ARMSTRONG
Patent No. 6,351,205

CLAIM LANGUAGE OF THE '205 PATENT	KNOX
	in an experimental keyboard was found to be 100 k for 40Z, 50 k for 80 Z and 15 k for 16 OZ. The spacer ensures infinite resistance when the key is unrepressed. Thus, a resistance drop is observed between terminal D and layer 14, and between terminal E and layer 13 when the key bearing the number '1' is depressed.");
reducing the pressing force until a second snap-through tactile feedback is received by the thumb or finger pressing the actuator, and using the second snap-through tactile feedback as an indication of the output of the sensor no longer being varied.	Knox at 3, lines 98-115 ("Depression of the key bearing the number 1, for example, cause [sic] compression of the part of the foam on which the conductive tracks connected to terminals D and E are positioned. Compression of the foam by an overlying key results in the conductive tracks underlying the key being brought into contact with the conductive layer 14. The resistance on contact decreases with increased pressure on the key and in an experimental keyboard was found to be 100 k for 40Z, 50 k for 80 Z and 15 k for 16 OZ. The spacer ensures infinite resistance when the key is unrepressed. Thus, a resistance drop is observed between terminal D and layer 14, and between terminal E and layer 13 when the key bearing the number '1' is depressed."); *id.* at 4, lines 30-33 ("If desired, each key can be arranged to act against a metal spring so that a snap-action and an audible 'click' is obtained on depressing the key."). Utilizing the dome-type sensor in Knox as intended would inherently involve releasing pressure after depressing the button, and subsequently increasing pressure in a subsequent action. Dome switches as described in Knox are typically of the momentary-on type and provide tactile feedback in both directions. *See, e.g.*, Padula at col. 9, lines 26-32; '205 patent at col. 2, lines 5-9; Driver at col. 1, line 70 to col. 2, line 9. In the context of Knox, the second snap-through tactile feedback acts as an indication of the output of the sensor no longer being varied.

CLAIM LANGUAGE OF THE '205 PATENT	KNOX
CLAIM 4	
A method according to claim 3 further including receiving of said second snap-through tactile feedback and using said second snap-through tactile feedback as indication the sensor is no longer being varied and acting by increasing the pressing force to receive another tactile feedback and again vary the output of the sensor.	See discussion of claim 3 with respect to Knox. Utilizing the dome-type sensor in Knox as intended would inherently involve releasing pressure after depressing the button, and subsequently increasing pressure in a subsequent action. That is, Knox is directed to a sensor that is inherently intended for repeated use, and Knox therefore discloses the "acting by increasing the pressing force to receive another tactile feedback and again vary the output of the sensor" requirement.

d. Kramer Anticipates At Least Claims 1-5, 7 and 8 Under 35 U.S.C. § 102

CLAIM LANGUAGE OF THE '205 PATENT	KRAMER
CLAIM 1	
A method of controlling variable output of a variable output sensor, comprising	Kramer discloses a method of controlling variable output of a variable output sensor.
pressing an actuator with force, using only a single human thumb, to receive a first Snap-through tactile feedback to the thumb pressing the actuator, then,	Kramer discloses the pressing of an actuator (pushbutton 22) with force. Kramer at col. 4, line 63 to col. 5, line 8 ("The pressure-dependent contact resistance between the contact surface 18 of the carbonized plastic foil and the contact surfaces 15.1 and 15.2 of the contact linings 11.1 and 11.2 of the conductor strips 12.1 and 12.2 of the printed circuit board 10 is schematically indicated in FIG. 2 by means of the resistances Rk(P) controlled by a pressure P. These resistances diminish linearly as the contact pressure increases, the linear relationship being preserved over a range of two to three powers of ten. This contact pressure is constituted by the operating pressure P acting on the pushbutton 22, since the spring element 20 transfers this pressure to the contact surface 18 of the carbonized plastic foil 14."). Because the sensor of Kramer is disclosed in the context of an input keyboard it is inherent that pushbutton 22 may be depressed by any single

CLAIM LANGUAGE OF THE '205 PATENT	KRAMER
	finger of the human user, including a thumb. Kramer discloses receiving snap-through tactile feedback to the thumb pressing pushbutton 22: "In another advantageous embodiment of such an input keyboard that is not illustrated in the drawing attached hereto, the spring element 20 is attached to the ceiling surface of a rubber dome of a contact mat that is arranged between the bottom 27 of a pushbutton 22 and the said spring element 20. Like the thin insulating plate in the previous embodiment, the rubber dome bears against the printed circuit board 10 and, upon the depression of the appropriate pushbutton 22, will first actuate a switching process with a snap effect and subsequently permit pressure-dependent adjustment of a function variable." Kramer at col. 5, lines 36-48; *see also id.* at col. 1, lines 28-35.
varying the pressing force for varying the output of the sensor, followed by	"The pressure-dependent contact resistance between the contact surface 18 of the carbonized plastic foil and the contact surfaces 15.1 and 15.2 of the contact linings 11.1 and 11.2 of the conductor strips 12.1 and 12.2 of the printed circuit board 10 is schematically indicated in FIG. 2 by means of the resistances Rk(P) controlled by a pressure P. These resistances diminish linearly as the contact pressure increases, the linear relationship being preserved over a range of two to three powers of ten. This contact pressure is constituted by the operating pressure P acting on the pushbutton 22, since the spring element 20 transfers this pressure to the contact surface 18 of the carbonized plastic foil 14." Kramer at col. 4, line 63 to col. 5, line 8.
reducing the pressing force until a second snap-through tactile feedback is received by the thumb.	Kramer at col. 5, lines 36-48. Kramer provides snap-through threshold tactile feedback upon actuation of carbonized plastic foil 14. It is inherent that the same structure will provide the claimed snap-through threshold tactile feedback upon deactuation of the carbonized plastic foil 14. *See, e.g.*, Padula at col. 9, lines 25-32; '205 patent at col. 2, lines 5-9. Indeed, utilizing the dome-type sensor in Kramer as intended (for adjusting values in remote transmitters associated with

ARMSTRONG
Patent No. 6,351,205

CLAIM LANGUAGE OF THE '205 PATENT	KRAMER
	"entertainment electronics") would inherently involve releasing pressure after depressing the button, and subsequently increasing pressure in a subsequent action. Dome switches as described in Kramer are typically of the momentary-on type and provide tactile feedback in both directions. *See, e.g.*, Padula at col. 9, lines 29-31; '205 patent at col. 2, lines 5-9; Driver at col. 1, line 70 to col. 2, line 9; Jackson at col. 2, lines 23-24.
CLAIM 2	
A method of controlling variable output of a variable output sensor according to claim 1 further including	See discussion of claim 1 with respect to Kramer.
Increasing the pressing force because of receiving said second snap-through tactile feedback, to receive a third snap-through tactile feedback and to vary the output of the sensor with varying force.	Utilizing the dome-type sensor in Kramer as intended (for adjusting values in remote transmitters associated with "entertainment electronics") would inherently involve releasing pressure after depressing the button, and subsequently increasing pressure in a subsequent action. Dome switches as described in Kramer are typically of the momentary-on type and provide tactile feedback in both directions. That is, Kramer is directed to a sensor that is inherently intended for repeated use. Thus, Kramer inherently discloses the "third snap-through tactile feedback and to vary the output of the sensor with varying force" requirement. Kramer at col. 5, lines 36-48.
CLAIM 3	
A method of controlling a variable output sensor, comprising	Kramer discloses a method of controlling a variable output sensor.
pressing an actuator with force, using a thumb or a finger, to receive a first snap-through tactile feedback to the thumb or finger pressing the actuator, and using the first snap-through tactile feedback as indication of output of the sensor beginning to be varied, then,	Kramer discloses the pressing of an actuator (pushbutton 22) with force. Kramer at col. 4, line63 to col. 5, line 8 ("The pressure-dependent contact resistance between the contact surface 18 of the carbonized plastic foil and the contact surfaces 15.1 and 15.2 of the contact linings 11.1 and 11.2 of the conductor strips 12.1 and 12.2 of the printed circuit board 10 is schematically indicated in FIG. 2 by means of the resistances Rk(P) controlled by a pressure P. These resistances diminish linearly as the contact pressure increases, the linear relationship being preserved over a range of two to three powers of ten. This contact

CLAIM LANGUAGE OF THE '205 PATENT	KRAMER
	pressure is constituted by the operating pressure P acting on the pushbutton 22, since the spring element 20 transfers this pressure to the contact surface 18 of the carbonized plastic foil 14."). Because the sensor of Kramer is disclosed in the context of an input keyboard it is inherent that pushbutton 22 may be depressed by any single finger of the human user, including a thumb. Kramer discloses receiving snap-through tactile feedback to the thumb pressing pushbutton 22: "In another advantageous embodiment of such an input keyboard that is not illustrated in the drawing attached hereto, the spring element 20 is attached to the ceiling surface of a rubber dome of a contact mat that is arranged between the bottom 27 of a pushbutton 22 and the said spring element 20. Like the thin insulating plate in the previous embodiment, the rubber dome bears against the printed circuit board 10 and, upon the depression of the appropriate pushbutton 22, will first actuate a switching process with a snap effect and subsequently permit pressure-dependent adjustment of a function variable." Kramer at col. 5, lines 36-48; *see also id.* at col. 1, lines 28-35. Given that Kramer is directed to a pressure-sensitive, variable-conductance sensor, it is inherent that the snap-through tactile feedback indicates output of the sensor beginning to be varied.
Increasing the pressing force for further varying the output of the sensor, followed by	"The pressure-dependent contact resistance between the contact surface 18 of the carbonized plastic foil and the contact surfaces 15.1 and 15.2 of the contact linings 11.1 and 11.2 of the conductor strips 12.1 and 12.2 of the printed circuit board 10 is schematically indicated in FIG. 2 by means of the resistances Rk(P) controlled by a pressure P. These resistances diminish linearly as the contact pressure increases, the linear relationship being preserved over a range of two to three powers of ten. This contact pressure is constituted by the operating pressure P acting on the pushbutton 22, since the spring element 20

ARMSTRONG
Patent No. 6,351,205

CLAIM LANGUAGE OF THE '205 PATENT	KRAMER
	transfers this pressure to the contact surface 18 of the carbonized plastic foil 14." Kramer at col. 4, line 63 to col. 5, line 8.
reducing the pressing force until a second snap-through tactile feedback is received by the thumb or finger pressing the actuator, and using the second snap-through tactile feedback as an indication of the output of the sensor no longer being varied.	Kramer at col. 5, lines 36-48. Kramer provides snap-through threshold tactile feedback upon actuation of carbonized foil 14. Dome switches as described in Kramer are typically of the momentary-on type and provide tactile feedback in both directions. *See, e.g.*, Padula at col. 9, lines 29-31; '205 patent at col. 2, lines 5-9; Driver at col. 1, line 70 to col. 2, line 9. Indeed, utilizing the dome-type sensor in Kramer as intended (for adjusting values in remote transmitters associated with "entertainment electronics") would inherently involve releasing pressure after depressing the button, and subsequently increasing pressure in a subsequent action. In the context of Kramer, the second snap-through tactile feedback acts as an indication of the output of the sensor no longer being varied.
CLAIM 4	
A method according to claim 3 further including receiving of said second snap-through tactile feedback and using said second snap-through tactile feedback as indication the sensor is no longer being varied and acting by increasing the pressing force to receive another tactile feedback and again vary the output of the sensor.	See discussion of claim 3 with respect to Kramer. Utilizing the dome-type sensor in Kramer as intended (for adjusting values in remote transmitters associated with "entertainment electronics") would inherently involve releasing pressure after depressing the button, and subsequently increasing pressure in a subsequent action. Dome switches as described in Kramer are typically of the momentary-on type and provide tactile feedback in both directions. *See, e.g.*, Padula at col. 9, lines 29-31; '205 patent at col. 2, lines 5-9; Driver at col. 1, line 70 to col. 2, line 9; Jackson at col. 2, lines 23-24.That is, Kramer is directed to a sensor that is inherently intended for repeated use. Thus, Kramer inherently discloses the "increasing the pressing force to receive another tactile feedback and again vary the output of the sensor" requirement. Kramer at col. 5, lines 36-48.

ARMSTRONG
Patent No. 6,351,205

CLAIM LANGUAGE OF THE '205 PATENT	KRAMER
CLAIM 5	
A method of using an analog sensor variably depressed by a human finger to variably control an electronic game, said method including the steps:	Kramer discloses the use of an analog sensor providing a variable output used for controlling "entertainment electronics," of which electronic games are a prime example. Kramer at col.1, lines 8-9, 36-48. Variably controlling an electronic game is typically associated with video games.[13] Because the sensor of Kramer is disclosed in the context of an input keyboard it is inherent that pushbutton 22 may be depressed by any human finger.
a) depressing said analog sensor with varying pressure;	"The pressure-dependent contact resistance between the contact surface 18 of the carbonized plastic foil and the contact surfaces 15.1 and 15.2 of the contact linings 11.1 and 11.2 of the conductor strips 12.1 and 12.2 of the printed circuit board 10 is schematically indicated in FIG. 2 by means of the resistances Rk(P) controlled by a pressure P. These resistances diminish linearly as the contact pressure increases, the linear relationship being preserved over a range of two to three powers of ten. This contact pressure is constituted by the operating pressure P acting on the pushbutton 22, since the spring element 20 transfers this pressure to the contact surface 18 of the carbonized plastic foil 14." Kramer at col. 4, line 63 to col. 5, line 8.
b) receiving a user discernible snap-through tactile feed-back.	Kramer discloses that, "[i]n another advantageous embodiment of such an input keyboard that is not illustrated in the drawing attached hereto, the spring element 20 is attached to the ceiling surface of a rubber dome of a contact mat that is arranged between the bottom 27 of a pushbutton 22 and the said spring element 20. Like the thin insulating plate in the previous embodiment, the rubber dome bears against the printed circuit board 10 and, upon the depression of the appropriate pushbutton 22,

[13] Furukawa '760 discloses the use of an analog sensor for controlling a video game. Thus, it alternatively would have been obvious (under 35 U.S.C. 103) in view of Furukawa '760 to use the Kramer sensor to control an electronic game, particularly since Kramer's remote transmitter is intended for use in "entertainment electronics."

ARMSTRONG
Patent No. 6,351,205

CLAIM LANGUAGE OF THE '205 PATENT	KRAMER
	will first actuate a switching process with a snap effect and subsequently permit pressure-dependent adjustment of a function variable." Kramer at col. 5, lines 36-48; *see also id.* at col. 1, lines 28-35.
CLAIM 7	
A method of using an analog sensor for controlling a host device showing an electronic game, said method including the steps:	Kramer discloses the use of an analog sensor providing a variable output used for controlling "entertainment electronics," of which electronic games are a prime example. Kramer at col. 1, lines 8-9, 36-48. Controlling a host device showing an electronic game is typically associated with video games.[14]
a) pressing, with a human finger, a button associated with the analog sensor;	Kramer discloses pressing pushbutton 22 associated with the analog sensor. Kramer at col. 4, line 63 to col. 5, line 48. Because the sensor of Kramer is disclosed in the context of an input keyboard it is inherent that pushbutton 22 may be depressed by any finger of the human user.
b) receiving, through said finger, a snap threshold tactile feedback.	Kramer discloses receiving a snap threshold tactile feedback through the finger pressing pushbutton 22: "In another advantageous embodiment of such an input keyboard that is not illustrated in the drawing attached hereto, the spring element 20 is attached to the ceiling surface of a rubber dome of a contact mat that is arranged between the bottom 27 of a pushbutton 22 and the said spring element 20. Like the thin insulating plate in the previous embodiment, the rubber dome bears against the printed circuit board 10 and, upon the depression of the appropriate pushbutton 22, will first actuate a switching process with a snap effect and subsequently permit pressure-dependent adjustment of a function variable." Kramer at col. 5, lines 36-48; *see also id.* at col. 1, lines 28-35.

[14] Furukawa '760 discloses the use of an analog sensor for controlling a video game. Thus, it alternatively would have been obvious (under 35 U.S.C. 103) in view of Furukawa '760 to use the Kramer sensor to control an electronic game, particularly since Kramer's remote transmitter is intended for use in "entertainment electronics."

ARMSTRONG
Patent No. 6,351,205

CLAIM LANGUAGE OF THE '205 PATENT	KRAMER
CLAIM 8	
A method according to claim 7 wherein said threshold tactile feedback is a snap-through threshold tactile feedback.	See discussion of claim 7 with respect to Kramer. Kramer discloses that, "[i]n another advantageous embodiment of such an input keyboard that is not illustrated in the drawing attached hereto, the spring element 20 is attached to the ceiling surface of a rubber dome of a contact mat that is arranged between the bottom 27 of a pushbutton 22 and the said spring element 20. Like the thin insulating plate in the previous embodiment, the rubber dome bears against the printed circuit board 10 and, upon the depression of the appropriate pushbutton 22, will first actuate a switching process with a snap effect and subsequently permit pressure-dependent adjustment of a function variable." Kramer at col. 5, lines 36-48.

b. Furukawa '760 Anticipates at Least Claims 1-5, 7 and 8 Under 35 U.S.C. § 102

CLAIM LANGUAGE OF THE '205 PATENT	FURUKAWA '760
CLAIM 1	
A method of controlling variable output of a variable output sensor, comprising	Furukawa '760 discloses a method of controlling variable output of a variable output sensor.
pressing an actuator with force, using only a single human thumb, to receive a first Snap-through tactile feedback to the thumb pressing the actuator, then,	Furukawa '760 discloses the pressing of an actuator (cross key 12) with force. Furukawa '760 at 7-8 ("the pressing force applied by the fingertip on each pressing portion of the cross key 12 changes the electrical resistance through the conductive portion 33, whose resistance changes according to the pressing force, fixed on the bottom surface of the moving part 30 of the rubber contact 29."). Fig. 1 shows a controller 10 with cross key 12 positioned such that cross key 12 may be pressed by a single human thumb. Furukawa inherently discloses the claimed feature of snap-through tactile feedback. Fig. 2 shows rubber dome-cap 29 constructed such that, when

ARMSTRONG
Patent No. 6,351,205

CLAIM LANGUAGE OF THE '205 PATENT	FURUKAWA '760
	pressed to make contact between conductive portion 33 and fixed contacts 7, the convex structure of rubber dome-cap 29 is elastically deformed to become concave, and pressing cross key 12 provides a snap-through tactile feedback to the thumb. *See also* '205 patent at col. 1, line 58 to col. 2, line 5; JP S53-128861 at 4-5; Kramer at col. 1, lines 28-35, col. 5, lines 36-48; Driver at col. 1, line 70 to col. 2, line 9; Meleard at 1, lines 21-42..
varying the pressing force for varying the output of the sensor, followed by	Furukawa discloses that "the pressing force applied by the fingertip on each pressing portion of the cross key 12 changes the electrical resistance through the conductive portion 33, whose resistance changes according to the pressing force, fixed on the bottom surface of the moving part 30 of the rubber contact 29." Furukawa '760 at 7-8.
reducing the pressing force until a second snap-through tactile feedback is received by the thumb.	Furukawa discloses that, "[b]y discontinuing the pressing operation, the moving part 30 is lifted by an elastic restoring force of the elastic leg portion 31, thereby releasing the above-described electrical connection." Furukawa '760 at 7. Furukawa inherently discloses the claimed feature of snap-through tactile feedback. Fig. 2 shows rubber dome-cap 29 constructed such that, when pressed to make contact between conductive portion 33 and fixed contacts 7, the convex structure of rubber dome-cap 29 is elastically deformed to become concave, and pressing cross key 12 provides a snap-through tactile feedback to the thumb. *See also* '205 patent at col. 1, line 58 to col. 2, line 5; JP S53-128861 at 4-5; Kramer at col. 5, lines 36-48. The same structure provides snap-through threshold tactile feedback upon deactivation of the conductive portion 33. *See* '205 patent at col. 2, lines 5-11; Padula at col. 9, lines 25-32; '205 patent at col. 2, lines 5-9; Jackson at col. 2, lines 23-24. Indeed, utilizing the dome-type sensor in Furukawa as intended (for varying output associated with a video game) would inherently involve releasing pressure after depressing the button, and subsequently increasing pressure in a subsequent action. Momentary-on

ARMSTRONG
Patent No. 6,351,205

CLAIM LANGUAGE OF THE '205 PATENT	FURUKAWA '760
	dome switches as described in Furukawa provide tactile feedback in both directions. *See, e.g.*, Padula at col. 9, lines 29-31; '205 patent at col. 2, lines 5-9; Driver at col. 1, line 70 to col. 2, line 9; Meleard at 1, lines 21-42..
CLAIM 2	
A method of controlling variable output of a variable output sensor according to claim 1 further including	See discussion of claim 1 with respect to Furukawa '760.
Increasing the pressing force because of receiving said second snap-through tactile feedback, to receive a third snap-through tactile feedback and to vary the output of the sensor with varying force.	Furukawa inherently discloses the claimed feature of snap-through tactile feedback. Fig. 2 shows rubber dome-cap 29 constructed such that, when pressed to make contact between conductive portion 33 and fixed contacts 7, the convex structure of rubber dome-cap 29 is elastically deformed to become concave, and pressing cross key 12 provides a snap-through tactile feedback to the thumb. *See also* '205 patent at col. 1, line 58 to col. 2, line 5; JP S53-128861 at 4-5; Kramer at col. 1, lines 28-35, col. 5, lines 36-48; Driver at col. 1, line 70 to col. 2, line 9; Meleard at 1, lines 21-42.. Furukawa discloses that "the pressing force applied by the fingertip on each pressing portion of the cross key 12 changes the electrical resistance through the conductive portion 33, whose resistance changes according to the pressing force, fixed on the bottom surface of the moving part 30 of the rubber contact 29." Furukawa '760 at 7-8. Utilizing the dome-type sensor in Furukawa as intended (for varying output associated with a video game) would inherently involve releasing pressure after depressing the button, and subsequently increasing pressure in a subsequent action. Momentary-on dome switches as described in Furukawa provide tactile feedback in both directions. *See, e.g.*, Padula at col. 9, lines 29-31; '205 patent at col. 2, lines 5-9; Driver at col. 1, line 70 to col. 2, line 9. That is, Furukawa discloses a game controller, the cross key 12 of which is inherently intended for multiple use. Thus, Furukawa inherently discloses the claimed step of

ARMSTRONG
Patent No. 6,351,205

CLAIM LANGUAGE OF THE '205 PATENT	FURUKAWA '760
	increasing the pressing force because of receiving said second snap-through tactile feedback, to receive a third snap-through tactile feedback and to vary the output of the sensor with varying force.
CLAIM 3	
A method of controlling a variable output sensor, comprising	Furukawa '760 discloses a method of controlling a variable output sensor.
pressing an actuator with force, using a thumb or a finger, to receive a first snap-through tactile feedback to the thumb or finger pressing the actuator, and using the first snap-through tactile feedback as indication of output of the sensor beginning to be varied, then,	Furukawa '760 discloses the pressing of an actuator (cross key 12) with force. Furukawa '760 at 7-8 ("the pressing force applied by the fingertip on each pressing portion of the cross key 12 changes the electrical resistance through the conductive portion 33, whose resistance changes according to the pressing force, fixed on the bottom surface of the moving part 30 of the rubber contact 29."). Fig. 1 shows a controller 10 with cross key 12 positioned such that cross key 12 may be pressed by a single human thumb. Furukawa inherently discloses the claimed feature of snap-through tactile feedback. Fig. 2 shows rubber dome-cap 29 constructed such that, when pressed to make contact between conductive portion 33 and fixed contacts 7, the convex structure of rubber dome-cap 29 is elastically deformed to become concave, and pressing cross key 12 provides a snap-through tactile feedback to the thumb. *See also* '205 patent at col. 1, line 58 to col. 2, line 5; JP S53-128861 at 4-5; Kramer at col. 1, lines 28-35, col. 5, lines 36-48; Driver at col. 1, line 70 to col. 2, line 9; Meleard at 1, lines 21-42.. The snap-through feedback of Furukawa inherently provides an indication of output of the sensor beginning to be varied, given that the Furukawa sensor is a pressure-sensitive, variable-conductance sensor. *See, e.g.*, Meleard at 1, lines 21-29 ("It is often considered desirable to provide for tactile feedback so that, when the keys are pressed by the finger of a person operating the

ARMSTRONG
Patent No. 6,351,205

CLAIM LANGUAGE OF THE '205 PATENT	FURUKAWA '760
	keyboard, the keys 'snap' and force discontinuity is transmitted to the finger of the user indicating that the key has been actuated and an electrical signal thus generated in the circuit associated with the key."); Padula U.S. Patent No. Re. 34,095 at col. 9, lines 29-31 ("When pressure is removed from the stylus tip, the dome snaps back to its original undeformed state, ready for the next operation.").
Increasing the pressing force for further varying the output of the sensor, followed by	Furukawa '760 discloses increasing the pressing force for further varying the output of the sensor. Furukawa '760 at 7-8 ("the pressing force applied by the fingertip on each pressing portion of the cross key 12 changes the electrical resistance through the conductive portion 33, whose resistance changes according to the pressing force, fixed on the bottom surface of the moving part 30 of the rubber contact 29."); Meleard at 1, lines 21-42. Furukawa also discloses that, "[b]y pressing the pressing portion of the cross key 12 with a fingertip, the character of the video game is moved in the direction corresponding to the pressed portion, and the speed of the character's movement changes according to the magnitude of the pressing force applied by a fingertip." Furukawa '760 at 7.
reducing the pressing force until a second snap-through tactile feedback is received by the thumb or finger pressing the actuator, and using the second snap-through tactile feedback as an indication of the output of the sensor no longer being varied.	Furukawa discloses that, "[b]y discontinuing the pressing operation, the moving part 30 is lifted by an elastic restoring force of the elastic leg portion 31, thereby releasing the above-described electrical connection." Furukawa '760 at 7. As discussed above, Furukawa inherently discloses the claimed feature of snap-through tactile feedback. Furukawa '760 at Fig. 2; *see also* '205 patent at col. 1, line 58 to col. 2, line 5; JP S53-128861 at 4-5; Kramer at col. 5, lines 36-48. The same structure provides snap-through threshold tactile feedback upon deactuation of the conductive portion 33. *See* '205 patent at col. 2, lines 5-11; Padula at col. 9, lines 25-32; '205 patent at col. 2, lines 5-9; Jackson at col. 2, lines 23-24. Indeed, utilizing the dome-type sensor in

CLAIM LANGUAGE OF THE '205 PATENT	FURUKAWA '760
	Furukawa as intended (for varying output associated with a video game) would inherently involve releasing pressure after depressing the button, and subsequently increasing pressure in a subsequent action. Momentary-on dome switches as described in Furukawa provide tactile feedback in both directions. *See, e.g.*, Padula at col. 9, lines 29-31; '205 patent at col. 2, lines 5-9; Driver at col. 1, line 70 to col. 2, line 9; Meleard at 1, lines 21-42; Jackson at col. 2, lines 23-24.. The snap-through feedback of Furukawa inherently provides an indication of output of the sensor no longer being varied, given that the Furukawa sensor is a pressure-sensitive, variable-conductance sensor. . *See, e.g.*, Furukawa '760 at 7; Meleard at 1, lines 21-29 ("It is often considered desirable to provide for tactile feedback so that, when the keys are pressed by the finger of a person operating the keyboard, the keys 'snap' and force discontinuity is transmitted to the finger of the user indicating that the key has been actuated and an electrical signal thus generated in the circuit associated with the key."); Padula at col. 9, lines 29-31 ("When pressure is removed from the stylus tip, the dome snaps back to its original undeformed state, ready for the next operation.").
CLAIM 4	
A method according to claim 3 further including receiving of said second snap-through tactile feedback and using said second snap-through tactile feedback as indication the sensor is no longer being varied and acting by increasing the pressing force to receive another tactile feedback and again vary the output of the sensor.	See discussion of claim 3 with respect to Furukawa '760. Utilizing the dome-type sensor in Furukawa '760 as intended (for adjusting values in remote transmitters associated with "entertainment electronics") would inherently involve releasing pressure after depressing the button, and subsequently increasing pressure in a subsequent action. Momentary-on dome switches as described in Kramer provide tactile feedback in both directions. *See, e.g.*, Padula at col. 9, lines 29-31; '205 patent at col. 2, lines 5-9; Driver at col. 1, line 70 to col. 2, line 9. That is, Furukawa '760 is directed to a sensor that is inherently intended for

ARMSTRONG
Patent No. 6,351,205

CLAIM LANGUAGE OF THE '205 PATENT	FURUKAWA '760
	repeated use. Thus, Furukawa '760 inherently discloses the "acting by increasing the pressing force to receive another tactile feedback and again vary the output of the sensor" requirement. Kramer at col. 5, lines 36-48; '205 patent at col. 2, lines 9-11; Driver at col. 1, line 70 to col. 2, line 9.
CLAIM 5	
A method of using an analog sensor variably depressed by a human finger to variably control an electronic game, said method including the steps:	Furukawa discloses the use of an analog sensor variably depressed by a human finger to variably control an electronic game. Furukawa discloses that "the pressing force applied by the fingertip on each pressing portion of the cross key 12 changes the electrical resistance through the conductive portion 33, whose resistance changes according to the pressing force, fixed on the bottom surface of the moving part 30 of the rubber contact 29." Furukawa '760 at 7-8. Fig. 1 shows a controller 10 with cross key 12 positioned such that cross key 12 may be pressed by a single human finger.
a) depressing said analog sensor with varying pressure;	Furukawa '760 discloses the pressing of an actuator (cross key 12) with force. Furukawa '760 at 7-8 ("the pressing force applied by the fingertip on each pressing portion of the cross key 12 changes the electrical resistance through the conductive portion 33, whose resistance changes according to the pressing force, fixed on the bottom surface of the moving part 30 of the rubber contact 29."); Fig. 1. Furukawa also discloses that, "[b]y pressing the pressing portion of the cross key 12 with a fingertip, the character of the video game is moved in the direction corresponding to the pressed portion, and the speed of the character's movement changes according to the magnitude of the pressing force applied by a fingertip." Furukawa '760 at 7.
b) receiving a user discernible snap-through tactile feed-back.	Furukawa inherently discloses the claimed feature of snap-through tactile feedback. Fig. 2 shows rubber dome-cap 29 constructed such that, when pressed to make contact between conductive

ARMSTRONG
Patent No. 6,351,205

CLAIM LANGUAGE OF THE '205 PATENT	FURUKAWA '760
	portion 33 and fixed contacts 7, the convex structure of rubber dome-cap 29 is elastically deformed to become concave, and pressing cross key 12 provides a snap-through tactile feedback to the thumb. *See also* '205 patent at col. 1, line 58 to col. 2, line 5; JP S53-128861 at 4-5; Kramer at col. 1, lines 28-35, col. 5, lines 36-48; Driver at col. 1, line 70 to col. 2, line 9; Meleard at 1, lines 21-42..
CLAIM 7	
A method of using an analog sensor for controlling a host device showing an electronic game, said method including the steps:	Furukawa discloses the use of an analog sensor for controlling a host device showing an electronic game. Furukawa discloses that "the pressing force applied by the fingertip on each pressing portion of the cross key 12 changes the electrical resistance through the conductive portion 33, whose resistance changes according to the pressing force, fixed on the bottom surface of the moving part 30 of the rubber contact 29." Furukawa '760 at 7-8. Furukawa also discloses that, "[b]y pressing the pressing portion of the cross key 12 with a fingertip, the character of the video game is moved in the direction corresponding to the pressed portion, and the speed of the character's movement changes according to the magnitude of the pressing force applied by a fingertip." Furukawa '760 at 7.
a) pressing, with a human finger, a button associated with the analog sensor;	Fig. 1 shows a controller 10 with cross key 12 positioned such that cross key 12 may be pressed by a single human finger. *See also* Furukawa '760 at 7-8 ("the pressing force applied by the fingertip on each pressing portion of the cross key 12 changes the electrical resistance through the conductive portion 33, whose resistance changes according to the pressing force, fixed on the bottom surface of the moving part 30 of the rubber contact 29."); *id.* at Fig. 1.
b) receiving, through said finger, a snap threshold tactile feedback.	Furukawa inherently discloses the claimed feature of snap-through tactile feedback. Fig. 2 shows rubber dome-cap 29 constructed such that, when pressed to make contact between conductive

CLAIM LANGUAGE OF THE '205 PATENT	FURUKAWA '760
	portion 33 and fixed contacts 7, the convex structure of rubber dome-cap 29 is elastically deformed to become concave, and pressing cross key 12 provides a snap-through tactile feedback to the thumb. *See also* '205 patent at col. 1, line 58 to col. 2, line 5; JP S53-128861 at 4-5; Kramer at col. 1, lines 28-35, col. 5, lines 36-48; Driver at col. 1, line 70 to col. 2, line 9; Meleard at 1, lines 21-42.
CLAIM 8	
A method according to claim 7 wherein said threshold tactile feedback is a snap-through threshold tactile feedback.	See discussion of claim 7 with respect to Furukawa '760. Furukawa inherently discloses the claimed feature of snap-through tactile feedback. Fig. 2 shows rubber dome-cap 29 constructed such that, when pressed to make contact between conductive portion 33 and fixed contacts 7, the convex structure of rubber dome-cap 29 is elastically deformed to become concave, and pressing cross key 12 provides a snap-through tactile feedback to the thumb. *See also* '205 patent at col. 1, line 58 to col. 2, line 5; JP S53-128861 at 4-5; Kramer at col. 1, lines 28-35, col. 5, lines 36-48; Driver at col. 1, line 70 to col. 2, line 9; Meleard at 1, lines 21-42.

2. **Obviousness**

a. **At Least Claims 6 and 9 are Obvious Under 35 U.S.C. § 103 Over Kramer in View of Furukawa '760 and Kawashima**

CLAIM LANGUAGE OF THE '205 PATENT	PRIOR ART
CLAIM 6	
A method according to claim 5 wherein said depressing includes depressing harder to make a firing rate faster.	See discussion of claim 5 with respect to Kramer. Kramer discloses an improved analog sensor providing a variable output used for controlling entertainment electronics. Kramer at col. 1, lines 8-9, 36-48. Furukawa also discloses that, "[b]y pressing the

CLAIM LANGUAGE OF THE '205 PATENT	PRIOR ART
	pressing portion of the cross key 12 with a fingertip, the character of the video game is moved in the direction corresponding to the pressed portion, and the speed of the character's movement changes according to the magnitude of the pressing force applied by a fingertip." Furukawa '760 at 7. It would have been merely an obvious design choice to use the Kramer sensor to control the speed of a firing rate given Furukawa's disclosure of controlling the speed of the character's movement changes. If necessary, Kawashima confirms the obviousness of controlling firing rate by disclosing control of repeated firing operations. It would have been obvious to make this combination because Kawashima teaches that it is useful to control firing of missiles or pistols using analog pressure sensors, and the Furukawa '760 game control sensors are such sensors. *See* MPEP § 2144.07 ("Art Recognized Suitability for an Intended Purpose" as a rationale for obviousness). *See also* Pepper.
CLAIM 9	
A method according to claim 8 wherein said pressing includes pressing harder to make a firing rate faster.	See discussion of claim 8 with respect to Kramer. Kramer discloses an improved analog sensor providing a variable output used for controlling entertainment electronics. Kramer at col. 1, lines 8-9, 36-48. Furukawa '760 also discloses that, "[b]y pressing the pressing portion of the cross key 12 with a fingertip, the character of the video game is moved in the direction corresponding to the pressed portion, and the speed of the character's movement changes according to the magnitude of the pressing force applied by a fingertip." Furukawa '760 at 7. It would have been merely an obvious design choice to use the Kramer sensor to control the speed of a firing rate given Furukawa's disclosure of controlling the speed of the character's movement changes. If necessary, Kawashima

CLAIM LANGUAGE OF THE '205 PATENT	PRIOR ART
	confirms the obviousness of controlling firing rate by disclosing control of repeated firing operations. It would have been obvious to make this combination because Kawashima teaches that it is useful to control firing of missiles or pistols using analog pressure sensors, and the Furukawa '760 game control sensors are such sensors. *See* MPEP § 2144.07 ("Art Recognized Suitability for an Intended Purpose" as a rationale for obviousness). *See also* Pepper.

b. At Least Claims 6 and 9 are Obvious Under 35 U.S.C. § 103 Over Furukawa '760 in view of Kawashima and Pepper

CLAIM LANGUAGE OF THE '205 PATENT	PRIOR ART
CLAIM 6	
A method according to claim 5 wherein said depressing includes depressing harder to make a firing rate faster.	See discussion of claim 5 with respect to Furukawa '760. Furukawa '760 also discloses that, "[b]y pressing the pressing portion of the cross key 12 with a fingertip, the character of the video game is moved in the direction corresponding to the pressed portion, and the speed of the character's movement changes according to the magnitude of the pressing force applied by a fingertip." Furukawa '760 at 7. It would have been merely an obvious design choice to use the Furukawa '760 sensor to control the speed of a firing rate given Furukawa '760's disclosure of controlling the speed of the character's movement changes. If necessary, Kawashima and Pepper confirm the obviousness of controlling firing rate by disclosing control of repeated firing operations. It would have been obvious to make this combination because Kawashima and Pepper teach that it is useful to control firing of missiles and guns or pistols using analog pressure sensors, and the Furukawa '760 game control sensors are such sensors. *See* MPEP § 2144.07 ("Art Recognized Suitability for an Intended Purpose" as a rationale for obviousness).

ARMSTRONG
Patent No. 6,351,205

CLAIM LANGUAGE OF THE '205 PATENT	PRIOR ART
CLAIM 9	
A method according to claim 8 wherein said pressing includes pressing harder to make a firing rate faster.	See discussion of claim 8 with respect to Furukawa '760. Furukawa '760 also discloses that, "[b]y pressing the pressing portion of the cross key 12 with a fingertip, the character of the video game is moved in the direction corresponding to the pressed portion, and the speed of the character's movement changes according to the magnitude of the pressing force applied by a fingertip." Furukawa '760 at 7. It would have been merely an obvious design choice to use the sensor of Furukawa '760 to control the speed of a firing rate given Furukawa '760's disclosure of controlling the speed of the character's movement changes. If necessary, Kawashima and Pepper confirm the obviousness of controlling firing rate by disclosing repeated firing operations. It would have been obvious to make this combination because Kawashima and Pepper teach that it is useful to control firing of missiles and guns or pistols using analog pressure sensors, and the Furukawa '760 game control sensors are such sensors. *See* MPEP § 2144.07 ("Art Recognized Suitability for an Intended Purpose" as a rationale for obviousness).

The proposed rejections set forth herein are merely representative of several bases for rejection that could be made based on the disclosures and suggestions in the cited prior art documents. For example, Section 103 obviousness rejections can be made using the acknowledged prior art (APA) in the '205 patent combined with any of several prior patents discussed herein on the grounds that it would have been obvious to one of ordinary skill in the art in view of the teachings in the various secondary references to combine snap-through tactile feedback with a variable-conductance switch or sensor.

V. ADDITIONAL RELEVANT PRIOR ART

Further to the prior art references discussed in detail above, the following prior art references are relevant to an understanding of the knowledge of one of ordinary skill in the art at the time of the alleged invention of the subject matter claimed in the '205 patent:

- U.S. Patent No. 4,508,942 (Inaba), Issued April 2, 1985 (not cited) (keyboard switch with snap action domes);
- Japanese Laid Open Utility Model Application No. JP HEI1-62627 (Yasufumi), Published April 21, 1989 (dome-cap ON/OFF and pressure-sensitive/variable resistance switch with apparent snap-through tactile feedback);
- Japanese Laid Open Utility Model Application No. JP H3-61304 (Kawashima), Published June 17, 1991 (not cited) (see-saw-type variable resistor);
- Italian Patent Application (Industrial Invention) No. MI 91 A 00 3315 (Marcio et al.), Laid Open to the Public June 11, 1993 (not cited) (pressure-sensitive switch with vibrating tactile feedback);
- Japanese Laid Open Patent Application No. JP5-190051 (Tanami et al.), Published July 30, 1993 (not cited) (rubber dome-cap-type pressure-sensitive switch);
- Japanese Laid Open Patent Application No. JP8-222070 (Yamamoto et al.), Published Aug. 30, 1996 (not cited) (rubber dome-cap-type pressure-sensitive switch used for video game);
- U.S. Patent No. 5,440,237 (Brown et al.), issued Aug. 8, 1995 (cited) (dome-cap switch with tactile response combined with pressure-sensitive, variable-output sensor);
- Japanese Laid Open Patent Application No. JP H5-304007 (Tanami et al.), published Nov. 16, 1993 (not cited) (pressure-sensitive switch with tactile feedback);
- Japanese Laid Open Patent Application No. JP5-326217 (Furukawa et al.), published Dec. 10, 1993 (not cited) (pressure-sensitive dome-cap switch for controlling, *inter alia*, cursor speed and character reaction speed in computer games);

- Japanese Laid Open Utility Model Application No. JP H6-56740 (Furukawa et al.), published Aug. 5, 1994 (not cited) (pressure sensitive device dome-cap switch similar to that described in Furukawa '760);

- U.S. Patent No. 5,231,386 (Brandenburg et al.), issued July 27, 1993 (cited during prosecution of Armstrong's U.S. Patent No. 5,222,525) (dome-cap switch with tactile response combined with pressure-sensitive, variable-output sensor);

- U.S. Patent No. 5,692,956 (Rifkin), issued Dec. 2, 1997, Filed Feb. 9, 1996 (not cited) (combination computer mouse and game play control including an analog switch coupled in tandem to a click switch, and including structure for providing engine vibration simulation);

- "Design Specifications for Membrane Keyboards" (CSI Keyboards, Inc.) (1988) (not cited) (describing membrane keyboards and dome switches);

- U.S. Patent No. 5,278,557 (Stokes et al), issued Jan. 11, 1994 (dual ON/OFF, pressure sensitive switch that incorporates a dome sheet formed with individual resiliently collapsible dome caps).

VI. CONCLUSION

The above comparisons clearly establishes that the subject matter of all claims of the '205 patent was well known in the art as of the effective filing date of the '205 patent.

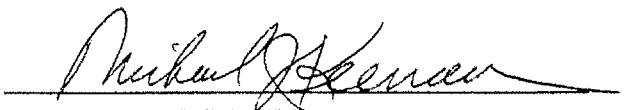
Accordingly, Requestor respectfully submits that substantial new questions of patentability have been raised herein with respect to all claims of the '205 patent.

On this basis, granting of this Request is solicited.

ARMSTRONG
Patent No. 6,351,205

Respectfully submitted,

NIXON & VANDERHYE P.C.

By: 

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