

EXHIBIT B

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(084)

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EX PARTE REEXAMINATION COMMUNICATION TRANSMITTAL FORM

REEXAMINATION CONTROL NO. 90/008,379.

PATENT NO. 5999084.

ART UNIT 3992.

Enclosed is a copy of the latest communication from the United States Patent and Trademark Office in the above identified *ex parte* reexamination proceeding (37 CFR 1.550(f)).

Where this copy is supplied after the reply by requester, 37 CFR 1.535, or the time for filing a reply has passed, no submission on behalf of the *ex parte* reexamination requester will be acknowledged or considered (37 CFR 1.550(g)).

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
90/008,379	12/18/2006	5999084	6620-76454-03	3933

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EXAMINER	
ART UNIT	PAPER NUMBER

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DATE MAILED: 01/30/2008

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action in Ex Parte Reexamination	**Control No.** 90/008,379	**Patent Under Reexamination** 5999084	
	Examiner James Menefee	**Art Unit** 3992	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

a☐ Responsive to the communication(s) filed on _____ . b☐ This action is made FINAL.
c☒ A statement under 37 CFR 1.530 has not been received from the patent owner.

A shortened statutory period for response to this action is set to expire 2 month(s) from the mailing date of this letter.
Failure to respond within the period for response will result in termination of the proceeding and issuance of an *ex parte* reexamination certificate in accordance with this action. 37 CFR 1.550(d). **EXTENSIONS OF TIME ARE GOVERNED BY 37 CFR 1.550(c).**
If the period for response specified above is less than thirty (30) days, a response within the statutory minimum of thirty (30) days will be considered timely.

Part I THE FOLLOWING ATTACHMENT(S) ARE PART OF THIS ACTION:

1. ☐ Notice of References Cited by Examiner, PTO-892.
2. ☐ Information Disclosure Statement, PTO/SB/08.
3. ☐ Interview Summary, PTO-474.
4. ☐ _____.

Part II SUMMARY OF ACTION

1a. ☒ Claims *1-11* are subject to reexamination.
1b. ☐ Claims _____ are not subject to reexamination.
2. ☐ Claims _____ have been canceled in the present reexamination proceeding.
3. ☐ Claims _____ are patentable and/or confirmed.
4. ☒ Claims *1-11* are rejected.
5. ☐ Claims _____ are objected to.
6. ☐ The drawings, filed on _____ are acceptable.
7. ☐ The proposed drawing correction, filed on _____ has been (7a)☐ approved (7b)☐ disapproved.
8. ☐ Acknowledgment is made of the priority claim under 35 U.S.C. § 119(a)-(d) or (f).
   a)☐ All b)☐ Some* c)☐ None of the certified copies have
   1☐ been received.
   2☐ not been received.
   3☐ been filed in Application No. _____ .
   4☐ been filed in reexamination Control No. _____.
   5☐ been received by the International Bureau in PCT application No. _____.
   * See the attached detailed Office action for a list of the certified copies not received.
9. ☐ Since the proceeding appears to be in condition for issuance of an *ex parte* reexamination certificate except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte* Quayle, 1935 C.D. 11, 453 O.G. 213.
10. ☐ Other: _____

cc: Requester (if third party requester)

REEXAM NON-FINAL REJECTION

This is an *ex parte* reexamination of U.S. Patent No. 5,999,084 ("the '084 patent"). Original patent claims 1-11 are under reexamination.

Citations

U.S. Patent No. Re. 34,095 to Padula et al. ("Padula").

U.S. Patent No. 5,164,697 to Kramer ("Kramer").

Japanese Laid-Open Utility Model S61-103836 ("Matsumoto").

Admitted prior art from the '084 patent ("APA").

Request for Reexamination filed 12/18/2006 ("Request").

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-11 are rejected under 35 U.S.C. 102(b) as being anticipated by Padula.

Claim 1:

Padula discloses:

A pressure-sensitive variable-conductance analog sensor with tactile feedback, comprising;

Padula discloses such a sensor as will be apparent from the discussion below.

a housing; at least two conductive elements fixed to said housing and in-part within said housing;

Padula discloses stylus housing including nose cone 6, outer barrel 80, and end cap 84, which as seen in Fig. 1 house the rest of the device. See col. 4 lines 55-58, col. 7 lines 32-44.

Padula discloses two conductive coaxial cable connections as part of cable assembly 60 fixed to the housing, one connected to ground and soldered to terminal 24e of flex board 22, the other providing the analog signal to the stylus electronics and soldered to terminal 24d of flex board 22. See col. 7 lines 3-7, 45-53; Figs. 1, 4, 9. The flex board is within the housing, see col.

5 lines 10-11. The cable assembly 60, and thus the conductive connections within said assembly, are in part within and in part external to the housing as seen in Fig. 1.

a depressible actuator retained by said housing and in-part exposed external to said housing;

The pen refill 2 as seen in Fig. 1 is retained by the housing but in part exposed external the housing at the stylus tip. When the tip is pressed against the tablet surface it is depressed and axially displaced relative to the housing. Col. 4 lines 55-57. This action exerts pressure onto the plunger 20 and plug 46, transferring the pressure from the tip to these inner portions, and therefore onto the pressure sensitive material 26 that is between these portions. Col. 6 lines 26-44. The stylus tip is therefore a depressible actuator.

a resilient snap-through dome-cap positioned within said housing and depressible with force from said actuator applied to said dome-cap to cause said dome-cap to snap-through and create a tactile feedback;

Padula discloses this at Fig. 12 and col. 9 lines 12-31. Padula discloses there may be a flexible material in the shape of a dome, i.e. a resilient dome-cap, between the plug 12 and plunger 20. The dome is positioned such that when enough force is applied to the stylus for enabling the device the dome undergoes reversible collapse, a "snap action" that provides "a definite tactile feedback" to the user. The dome snaps back to the original position when pressure is removed.

pressure-sensitive variable-conductance material within said housing and positioned as a variably conductive element electrically between said two conductive elements, and further positioned for receiving force applied to said dome-cap, whereby electrical conductivity of said pressure-sensitive variable-conductance material is altered relative to received force and electrical output of said sensor is variable.

Padula discloses pressure-sensitive variable conductance material 26 within the housing as seen in Fig. 3, and electrically between the conductive elements. The material will connect electrodes 24f,24g, which in turn connect terminals 24d,24e, which in turn connect the soldered coaxial cable connections as described above in discussing the conductive elements, providing a variably conductive path between the conductive elements. See col. 5 lines 18-21, 51-54, col. 8 lines 1-18, Fig. 9. The element receives force when force is applied to the dome cap, as the point of the dome cap is to indicate when enabling pressure is applied to the stylus. As seen in Fig. 10, electrical conductivity of the variable-conductance material is altered relative to received force in an analog way and thus the electrical output of the sensor is variable. Padula also discloses the output of the device when pressure is applied may be an analog signal that can be used, e.g., to alter thickness of a drawn line due to varying applied pressure to the stylus. Col. 3 lines 26-37.

Claim 2:

Padula discloses **wherein said two conductive elements are of high and relatively constant conductivity.** Padula discloses coaxial cable terminals that are soldered to terminals 24d,24e. Col. 7, lines 2-7 and 45-53. Such elements are commonly of high and relatively constant conductivity. Further, Padula discloses that the output signal from the stylus is sent to a digitizer via the cable, and depends on the transducer connected between 24d and 24e. Col. 7 lines 45-53. It is clear then that these must be high and relatively constant in conductivity.

Claim 3:

Padula discloses **wherein said pressure-sensitive variable-conductance material is variable in terms of electrical resistivity, the electrical resistivity of said pressure-sensitive variable-conductance material lowering with received force thereon.** As seen in Fig. 10, pressure-sensitive variable conductance material 26 varies with resistivity, which lowers with received force thereon. See also col. 8 lines 10-12.

Claim 4:

Padula discloses **wherein said housing is formed of non-conductive plastics.** Padula describes nose cap 6 is made of molded plastics. Col. 4 lines 57-58. It is inherently non-conductive so as to prevent electrical connections between the inner electronics and whatever is touching the outside of the stylus.

Claim 5:

Padula discloses:

An improved pressure-sensitive variable-conductance analog sensor of the type

Padula discloses such a sensor as will be apparent from the discussion below.

having at least two electrically conductive elements operationally connected to pressure-sensitive variable-conductance material;

Padula discloses two conductive coaxial cable connections as part of cable assembly 60, one connected to ground and soldered to terminal 24e of flex board 22, the other providing the analog signal to the stylus electronics and soldered to terminal 24d of flex board 22. See col. 7 lines 3-7, 45-53; Figs. 1, 4, 9. The flex board is within the housing, see col. 5 lines 10-11. Padula discloses pressure-sensitive variable conductance material 26 within the housing and electrically between the conductive elements. The material will connect electrodes 24f,24g, which in turn connect terminals 24d,24e, which in turn connect the soldered coaxial cable connections as described above in discussing the conductive elements, providing a variably conductive path between the conductive elements when force is applied, thus they are operationally connected. See col. 5 lines 18-21, 51-54, col. 8 lines 1-18, Fig. 9. As seen in Fig. 10, electrical conductivity of the variable-conductance material is altered relative to received force in an analog way and thus the electrical output of the sensor is variable. Padula also discloses the output of the device when pressure is applied may be an analog signal that can be used, e.g., to alter thickness of a drawn line due to varying applied pressure to the stylus. Col. 3 lines 26-37.

a depressible actuator retained relative to said pressure-sensitive variable-conductance material; said actuator depressible toward said pressure-sensitive variable-conductance material for transferring force into said pressure-sensitive variable-conductance material;

The pen refill 2 as seen in Fig. 1 is retained by the housing relative to the pressure-sensitive variable-conductance material and in part exposed external the housing at the stylus tip. When the tip is pressed against the tablet surface it is depressed and axially displaced relative to the housing. Col. 4 lines 55-57. This action exerts pressure onto the plunger 20 and plug 46, transferring the pressure from the tip to these inner portions, and therefore onto the pressure sensitive material 26 that is between these portions. Col. 6 lines 26-44. The stylus tip is therefore a depressible actuator.

wherein the improvement comprises: a resilient snap-through dome-cap positioned to provide tactile feedback to a user upon actuation of said pressure-sensitive variable-conductance material.

Padula discloses this at Fig. 12 and col. 9 lines 12-31. Padula discloses there may be a flexible material in the shape of a dome, i.e. a resilient dome-cap, between the plug 12 and plunger 20. The dome is positioned such that when enough force is applied to the stylus for enabling the device, i.e. upon actuation of the pressure-sensitive variable-conductance material, the dome undergoes reversible collapse, a "snap action" that provides "a definite tactile feedback" to the user. The dome snaps back to the original position when pressure is removed.

Claim 6:

Padula discloses **wherein said snap-through dome-cap is positioned between said actuator and said pressure-sensitive variable-conductance material.** As described above, the actuator is the stylus tip which is at the right end of the pen refill 2 as shown in Figs. 1 and 2.

The other end of the pen refill is received by the plug 12. Then the dome cap 102 as shown in Fig. 12 is between the plug 12 and the plunger 20. Finally, the pressure-sensitive variable conductance material 26 is even further to the left in Fig. 3. Thus, the dome cap is located between the actuator and the pressure-sensitive variable–conductance material.

Claim 7:

Padula discloses:

An improved momentary-On snap-through switch package of the type

Padula discloses such a sensor as will be apparent from the discussion of the limitations below. The device is enabled upon pressing of the stylus upon the tablet, col. 2 lines 23-25, or in other words, upon actuation of the switch and is of the momentary-On type.

having a housing; at least two conductive elements fixed to said housing and in-part within said housing and at least in-part exposed external of said housing;

Padula discloses stylus housing including nose cone 6, outer barrel 80, and end cap 84, which as seen in Fig. 1 house the rest of the device. See col. 4 lines 55-58, col. 7 lines 32-44.

Padula discloses two conductive coaxial cable connections as part of cable assembly 60 fixed to the housing, one connected to ground and soldered to terminal 24e of flex board 22, the other providing the analog signal to the stylus electronics and soldered to terminal 24d of flex board 22. See col. 7 lines 3-7, 45-53; Figs. 1, 4, 9. The flex board is within the housing, see col. 5 lines 10-11. The cable assembly 60, and thus the conductive connections within said assembly, are in part within and in part external to the housing as seen in Fig. 1.

a resilient snap-through dome-cap positioned within said housing;

Padula discloses this at Fig. 12 and col. 9 lines 12-31. Padula discloses there may be a flexible material in the shape of a dome, i.e. a resilient dome-cap, between the plug 12 and plunger 20. The dome is positioned such that when enough force is applied to the stylus for enabling the device, i.e. upon actuation of the pressure-sensitive variable-conductance material, the dome undergoes reversible collapse, a "snap action" that provides "a definite tactile feedback" to the user. The dome snaps back to the original position when pressure is removed, i.e. as a momentary-On type switch. Compare '084 patent col. 1 lines 64-67 (describing this feature as yielding a momentary-On switch).

a depressible actuator retained by said housing and in-part exposed external to said housing; said actuator depressible for depressing said dome-cap and creating a highly conductive electrical path between said two conductive elements;

The pen refill 2 as seen in Fig. 1 is retained by the housing and in part exposed external the housing at the stylus tip. When the tip is pressed against the tablet surface it is depressed and axially displaced relative to the housing. Col. 4 lines 55-57. This action exerts pressure onto the plunger 20 and plugs 12 and 46, transferring the pressure from the tip to these inner portions, and therefore onto the dome cap and pressure sensitive material 26 that are between these portions. Col. 6 lines 26-44. The stylus tip is therefore a depressible actuator. A highly conductive electrical path is formed between the conductive elements due to the applied pressure reducing the resistance of the pressure sensitive material 26 that is electrically between the elements. See col. 8 lines 1-18.

wherein the improvement comprises: pressure-sensitive analog variable-conductance material within said housing and positioned for creating a variably conductive electrical path between said two conductive elements upon variable depression of said dome-cap.

Padula discloses two conductive coaxial cable connections as part of cable assembly 60, one connected to ground and soldered to terminal 24e of flex board 22, the other providing the analog signal to the stylus electronics and soldered to terminal 24d of flex board 22. See col. 7 lines 3-7, 45-53; Figs. 1, 4, 9. The cable assembly 60, and thus the connections of the coaxial cable of said assembly, is in part within and in part external to the housing as seen in Fig. 1. Padula discloses pressure-sensitive variable conductance material 26 within the housing as seen in Fig. 3, and electrically between the conductive elements, providing a variably conductive path depending on applied force. The material will connect electrodes 24f,24g, which in turn connect terminals 24d,24e, which in turn connect the soldered coaxial cable connections as described above in discussing the conductive elements, providing a variably conductive path between the conductive elements upon depression of the dome cap. See col. 5 lines 18-21, 51-54, col. 8 lines 1-18, Fig. 9. As seen in Fig. 10, electrical conductivity of the variable-conductance material is altered relative to received force in an analog way and thus the electrical output of the sensor is variable. Padula also discloses the output of the device when pressure is applied may be an analog signal that can be used, e.g., to alter thickness of a drawn line due to varying applied pressure to the stylus. Col. 3 lines 26-37.

Claim 8:

Padula discloses **wherein said pressure-sensitive variable-conductance material is variable in terms of electrical resistivity, the electrical resistivity of said pressure-sensitive analog variable-conductance material lowering with received force thereon.** As seen in Fig. 10, pressure-sensitive variable conductance material 26 varies with resistivity, which lowers with received force thereon. See also col. 8 lines 10-12.

Claim 9:

Padula discloses:

A method of manufacturing a pressure-sensitive analog variable-conductance sensor with tactile feedback, comprising the steps of:

Padula discloses a pressure-sensitive variable-conductance analog sensor with tactile feedback, as will be apparent from the discussion of the limitations below. It is noted the claim only recites generic method steps such as "forming" which will necessarily occur during the manufacturing of Padula's device.

a) forming two conductive elements;

b) forming a housing engaging said two conductive elements, and leaving a portion of said two conductive elements exposed external of said housing;

Padula discloses stylus housing including nose cone 6, outer barrel 80, and end cap 84, which as seen in Fig. 1 house the rest of the device. See col. 4 lines 55-58, col. 7 lines 32-44.

Padula discloses two conductive coaxial cable connections as part of cable assembly 60 that engages the housing, one connected to ground and soldered to terminal 24e of flex board 22, the other providing the analog signal to the stylus electronics and soldered to terminal 24d of flex board 22. See col. 7 lines 3-7, 45-53; Figs. 1, 4, 9. The flex board is within the housing, see col. 5 lines 10-11. The cable assembly 60, and thus the conductive connections within said assembly, are in part within and in part external to the housing as seen in Fig. 1.

c) installing pressure-sensitive analog variable-conductance material positioned as a variably conductive element electrically between said two conductive elements;

Padula discloses pressure-sensitive variable conductance material 26 within the housing and electrically between the conductive elements. The material will connect electrodes 24f,24g, which in turn connect terminals 24d,24e, which in turn connect the soldered coaxial cable connections as described above in discussing the conductive elements, providing a variably conductive path between the conductive elements. See col. 5 lines 18-21, 51-54, col. 8 lines 1-18, Fig. 9.

d) installing a resilient tactile feedback dome-cap positioned within said housing and operationally associated with said pressure-sensitive variable-conductance material;

Padula discloses this at Fig. 12 and col. 9 lines 12-31. Padula discloses there may be a flexible material in the shape of a dome, i.e. a resilient dome-cap, between the plug 12 and plunger 20. The dome is positioned such that when enough force is applied to the stylus for enabling the device, i.e. upon actuation of the pressure-sensitive variable-conductance material, the dome undergoes reversible collapse, a "snap action" that provides "a definite tactile feedback" to the user. The dome-cap is thus operationally associated with the pressure-sensitive material.

e) installing an actuator in-part within said housing and in-part exposed external of said housing and positioned for transferring externally applied force onto said actuator through said dome-cap and onto said pressure-sensitive variable-conductance material.

The pen refill 2 as seen in Fig. 1 is retained by the housing and in part exposed external the housing at the stylus tip. When the tip is pressed against the tablet surface it is depressed and axially displaced relative to the housing. Col. 4 lines 55-57. This action exerts pressure onto the plunger 20 and plugs 12 and 46, transferring the pressure from the tip to these inner portions, and therefore onto the dome cap and pressure sensitive material 26 that are between these portions. Col. 6 lines 26-44. The stylus tip is therefore a depressible actuator.

Claim 10:

Padula discloses:

An improved method of manufacturing a sensor of the type comprising the steps of:

Padula discloses a pressure-sensitive variable-conductance analog sensor with tactile feedback, as will be apparent from the discussion of the limitations below. It is noted the claim only recites generic method steps such as "forming" which will necessarily occur during the manufacturing of Padula's device.

forming two conductive elements; forming a housing engaging said two conductive elements, and leaving a portion of said two conductive elements exposed external of said housing;

Padula discloses stylus housing including nose cone 6, outer barrel 80, and end cap 84, which as seen in Fig. 1 house the rest of the device. See col. 4 lines 55-58, col. 7 lines 32-44.

Padula discloses two conductive coaxial cable connections as part of cable assembly 60 that engages the housing, one connected to ground and soldered to terminal 24e of flex board 22, the other providing the analog signal to the stylus electronics and soldered to terminal 24d of flex board 22. See col. 7 lines 3-7, 45-53; Figs. 1, 4, 9. The flex board is within the housing, see col. 5 lines 10-11. The cable assembly 60, and thus the conductive connections within said assembly, are in part within and in part external to the housing as seen in Fig. 1.

installing an actuator in-part within said housing and in-part exposed external of said housing;

The pen refill 2 as seen in Fig. 1 is retained by the housing and in part exposed external the housing at the stylus tip. When the tip is pressed against the tablet surface it is depressed and axially displaced relative to the housing. Col. 4 lines 55-57. This action exerts pressure onto the plunger 20 and plugs 12 and 46, transferring the pressure from the tip to these inner portions, and therefore onto the dome cap and pressure sensitive material 26 that are between these portions. Col. 6 lines 26-44. The stylus tip is therefore a depressible actuator.

installing a resilient snap-through dome-cap positioned within said housing;

Padula discloses this at Fig. 12 and col. 9 lines 12-31. Padula discloses there may be a flexible material in the shape of a dome, i.e. a resilient dome-cap, between the plug 12 and plunger 20. The dome is positioned such that when enough force is applied to the stylus for enabling the device, i.e. upon actuation of the pressure-sensitive variable-conductance material, the dome undergoes reversible collapse, a "snap action" that provides "a definite tactile feedback" to the user.

wherein the improvement comprises the step of: installing pressure-sensitive analog variable-conductance material positioned as a variably conductive element electrically between said two conductive elements.

Padula discloses pressure-sensitive variable conductance material 26 within the housing as seen in Fig. 3, and electrically between the conductive elements. The material will connect electrodes 24f,24g, which in turn connect terminals 24d,24e, which in turn connect the soldered coaxial cable connections as described above in discussing the conductive elements, providing a variably conductive path electrically between the conductive elements upon depression of the dome cap. See col. 5 lines 18-21, 51-54, col. 8 lines 1-18, Fig. 9. As seen in Fig. 10, electrical conductivity of the variable-conductance material is altered relative to received force in an analog way and thus the electrical output of the sensor is variable. Padula also discloses the output of the device when pressure is applied may be an analog signal that can be used, e.g., to alter thickness of a drawn line due to varying applied pressure to the stylus. Col. 3 lines 26-37.

Claim 11:

Padula discloses:

An improved method of manufacturing a pressure-sensitive analog variable-conductance sensor, comprising the steps of:

Padula discloses a pressure-sensitive variable-conductance analog sensor with tactile feedback, as will be apparent from the discussion of the limitations below. It is noted the claim only recites generic method steps such as "forming" which will necessarily occur during the manufacturing of Padula's device.

forming two conductive elements;

Padula discloses two conductive coaxial cable connections as part of cable assembly 60, one connected to ground and soldered to terminal 24e of flex board 22, the other providing the analog signal to the stylus electronics and soldered to terminal 24d of flex board 22. See col. 7 lines 3-7, 45-53; Figs. 1, 4, 9.

locating pressure-sensitive variable-conductance material positioned as a variably conductive element electrically between said two conductive elements;

Padula discloses pressure-sensitive variable conductance material 26 within the housing as seen in Fig. 3, and electrically between the conductive elements. The material will connect electrodes 24f,24g, which in turn connect terminals 24d,24e, which in turn connect the soldered coaxial cable connections as described above in discussing the conductive elements, providing a variably conductive path between the conductive elements. See col. 5 lines 18-21, 51-54, col. 8 lines 1-18, Fig. 9. The element receives force when force is applied to the dome cap, as the point of the dome cap is to indicate when enabling pressure is applied to the stylus. As seen in Fig. 10, electrical conductivity of the variable-conductance material is altered relative to received force in an analog way and thus the electrical output of the sensor is variable. Padula also discloses the output of the device when pressure is applied may be an analog signal that can be used, e.g., to alter thickness of a drawn line due to varying applied pressure to the stylus. Col. 3 lines 26-37.

positioning an actuator for transferring externally applied force onto said pressure-sensitive analog variable-conductance material;

The pen refill 2 as seen in Fig. 1 is retained by the housing relative to the pressure-sensitive variable-conductance material and in part exposed external the housing at the stylus tip. When the tip is pressed against the tablet surface it is depressed and axially displaced relative to the housing. Col. 4 lines 55-57. This action exerts pressure onto the plunger 20 and plug 46, transferring the pressure from the tip to these inner portions, and therefore onto the pressure sensitive material 26 that is between these portions. Col. 6 lines 26-44. The stylus tip is therefore a depressible actuator.

wherein the improvement comprises the step of; positioning a resilient tactile feedback dome-cap operationally associated with said pressure-sensitive variable-conductance material.

Padula discloses this at Fig. 12 and col. 9 lines 12-31. Padula discloses there may be a flexible material in the shape of a dome, i.e. a resilient dome-cap, between the plug 12 and plunger 20. The dome is positioned such that when enough force is applied to the stylus for enabling the device, i.e. upon actuation of the pressure-sensitive variable-conductance material, the dome undergoes reversible collapse, a "snap action" that provides "a definite tactile feedback" to the user. The dome is therefore operationally associated with the pressure-sensitive variable-conductance material.

Claims 1-3, 5-6, and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Kramer.

Claim 1:

Kramer discloses:

A pressure-sensitive variable-conductance analog sensor with tactile feedback, comprising;

Kramer discloses in Fig. 1 a pressure-sensitive variable-conductance analog sensor with tactile feedback, as will be apparent from the discussion of the limitations below.

a housing; at least two conductive elements fixed to said housing and in-part within said housing; a depressible actuator retained by said housing and in-part exposed external to said housing;

Kramer shows housing 23, col. 3 line 42, at least two conductive elements 11.1, 11.2, col. 3 line 44, that are fixed to said housing, and depressible actuator 22 that is retained by the housing at lower portion 27 and in-part exposed external to the housing, col. 3 lines 44-51.

a resilient snap-through dome-cap positioned within said housing and depressible with force from said actuator applied to said dome-cap to cause said dome-cap to snap-through and create a tactile feedback;

Kramer discloses this in col. 5 lines 36-51. Namely, Kramer discloses that in an embodiment not illustrated that the spring element may be attached to the ceiling of a rubber dome that, upon actuation of actuator 22, actuates a switching process with a snap effect to allow pressure dependent adjustment. This rubber dome is necessarily resilient because it is rubber and provides a snap effect, and the providing of a snap effect is deemed to be "snap-through" as recited in the claim. Kramer also notes the spring member 20 "convey[s] to [the user] the feeling of increasing pressure as the operational displacement of the pushbutton becomes greater." Col. 5 lines 34-36. The combination of this conveyance of increasing pressure along with the snap effect of the dome will create a tactile feedback to the user. Note also col. 5 lines 48-51, which show that this embodiment also includes the pressure-sensitive variable conductance material described herein.

pressure-sensitive variable-conductance material within said housing and positioned as a variably conductive element electrically between said two conductive elements, and further positioned for receiving force applied to said dome-cap, whereby electrical conductivity of said pressure-sensitive variable-conductance material is altered relative to received force and electrical output of said sensor is variable.

Kramer discloses countercontact 16 comprising conducting layer 17 and carbonized plastic foil 14. Col. 3 lines 55-58. This element is located within the housing and will receive force applied to the dome cap. The element is further a pressure-sensitive variable-conductance material, as its conductivity is altered relative to received force applied to the pushbutton actuator. Col. 4 line 63 – col. 5 line 8. The resistance of the element diminishes linearly with pressure, col. 5 lines 2-3, therefore Kramer's sensor acts in an analog nature as in the preamble.

Claim 2:

Kramer discloses **wherein said two conductive elements are of high and relatively constant conductivity.** Kramer's contact linings 11.1, 11.2 are disclosed as graphite. Col. 3 lines 58-66. Graphite contacts necessarily have a high and relatively constant conductivity, therefore this limitation is inherent. See col. 3 lines 5-11 (referring to the graphite layers as "conducting layers" thus given the context they must have a high conductivity; also noting that their contact properties change insignificantly, or are relatively constant, over a period of time).

Claim 3:

Kramer discloses **wherein said pressure-sensitive variable-conductance material is variable in terms of electrical resistivity, the electrical resistivity of said pressure-sensitive variable-conductance material lowering with received force thereon.** As noted above, Kramer explains the resistance of the element diminishes with increasing pressure, col. 5 lines 2-3.

Claim 5:

Kramer discloses:

An improved pressure-sensitive variable-conductance analog sensor

Kramer discloses in Fig. 1 a pressure-sensitive variable-conductance analog sensor, as will be apparent from the discussion of the limitations below.

of the type having at least two electrically conductive elements operationally connected to pressure-sensitive variable-conductance material;

Kramer discloses countercontact 16 comprising conducting layer 17 and carbonized plastic foil 14. Col. 3 lines 55-58. The element is further a pressure-sensitive variable-conductance material, as its conductivity is altered relative to received force applied to the pushbutton actuator. Col. 4 line 63 – col. 5 line 8. The resistance of the element diminishes linearly with pressure, col. 5 lines 2-3, therefore Kramer's sensor acts in an analog nature as in the preamble. The element is operationally connected to two electrically conductive elements 11.1, 11.2 as seen in the dashed lines of Fig. 1 (indicating the device with the pushbutton depressed).

a depressible actuator retained relative to said pressure-sensitive variable-conductance material; said actuator depressible toward said pressure-sensitive variable-conductance material for transferring force into said pressure-sensitive variable-conductance material;

Kramer includes pushbutton 22 that is an actuator that is retained above and thus relatively to said variable-conductance material, and is depressible toward and transfers externally applied force onto said variable-conductance material. See col. 5 lines 4-8 (noting contact pressure on the variable-conductance material comes from the operating pressure on pushbutton 22).

wherein the improvement comprises: a resilient snap-through dome-cap positioned to provide tactile feedback to a user upon actuation of said pressure-sensitive variable-conductance material.

Kramer discloses this in col. 5 lines 36-51. Namely, Kramer discloses that in an embodiment not illustrated that the spring element may be attached to the ceiling of a rubber dome that, upon actuation of actuator 22, actuates a switching process with a snap effect to allow pressure dependent adjustment. This rubber dome is necessarily resilient because it is rubber and provides a snap effect, and the providing of a snap effect is deemed to be "snap-through" as recited in the claim. Kramer also notes the spring member 20 "convey[s] to [the user] the feeling of increasing pressure as the operational displacement of the pushbutton becomes greater." Col. 5 lines 34-36. The combination of this conveyance of increasing pressure along with the snap effect of the dome will create a tactile feedback to the user. As the snap effect occurs upon pressing of the actuator, which thereby provides pressure onto the variable-conductance material, the tactile feedback is provided upon actuation of the pressure-sensitive variable-conductance material. Note also col. 5 lines 48-51, which show that this embodiment also includes the pressure-sensitive variable conductance material described herein.

Claim 6:

Kramer discloses **wherein said snap-through dome-cap is positioned between said actuator and said pressure-sensitive variable-conductance material.** As noted by Kramer, the rubber dome (i.e. snap-through dome cap) is between the actuator 22 and the spring 20, and the variable-conductance material 16 is located further below the spring 20, therefore the snap-through dome-cap is between the actuator and the variable-conductance material.

Claim 11:

Kramer discloses:

An improved method of manufacturing a pressure-sensitive analog variable-conductance sensor, comprising the steps of:

Kramer discloses in Fig. 1 a pressure-sensitive variable-conductance analog sensor with tactile feedback, as will be apparent from the discussion of the limitations below. It is noted the claim only recites generic method steps such as "forming" which will necessarily occur during the manufacturing of Kramer's device.

forming two conductive elements;

Kramer includes conductive elements 11.1, 11.2.

locating pressure-sensitive variable-conductance material positioned as a variably conductive element electrically between said two conductive elements;

Kramer discloses countercontact 16 comprising conducting layer 17 and carbonized plastic foil 14. Col. 3 lines 55-58. The element is further a pressure-sensitive variable-conductance material, as its conductivity is altered relative to received force applied to the pushbutton actuator. Col. 4 line 63 – col. 5 line 8. The resistance of the element diminishes linearly with pressure, col. 5 lines 2-3, therefore Kramer's sensor acts in an analog nature as in the preamble. The element is located electrically between the conductive elements 11.1, 11.2 as seen in the dashed lines of Fig. 1 (indicating the device with the pushbutton depressed).

positioning an actuator for transferring externally applied force onto said pressure-sensitive analog variable-conductance material;

Kramer includes pushbutton 22 that is an actuator that transfers externally applied force onto said variable-conductance material. See col. 5 lines 4-8 (noting contact pressure on the variable-conductance material comes from the operating pressure on pushbutton 22).

wherein the improvement comprises the step of; positioning a resilient tactile feedback dome-cap operationally associated with said pressure-sensitive variable-conductance material.

Kramer discloses this in col. 5 lines 36-51. Namely, Kramer discloses that in an embodiment not illustrated that the spring element may be attached to the ceiling of a rubber dome that, upon actuation of actuator 22, actuates a switching process with a snap effect to allow pressure dependent adjustment. This rubber dome is necessarily resilient because it is rubber and provides a snap effect, and the providing of a snap effect is deemed to be "snap-through" as recited in the claim. Kramer also notes the spring member 20 "convey[s] to [the user] the feeling of increasing pressure as the operational displacement of the pushbutton becomes greater." Col. 5 lines 34-36. The combination of this conveyance of increasing pressure along with the snap effect of the dome will create a tactile feedback to the user. As the snap effect occurs upon pressing of the actuator, which thereby provides pressure onto the variable-conductance material, the rubber dome-cap is operationally associated with the pressure-sensitive variable-conductance material. Note also col. 5 lines 48-51, which show that this embodiment also includes the pressure-sensitive variable conductance material described herein.

Claims 1-3 and 5-11 are rejected under 35 U.S.C. 102(b) as being anticipated by Matsumoto.

Claim 1:

Matsumoto discloses:

A pressure-sensitive variable-conductance analog sensor with tactile feedback, comprising;

Matsumoto discloses a pressure-sensitive variable-conductance analog sensor with tactile feedback, as will be apparent from the discussion of the limitations below.

a housing; at least two conductive elements fixed to said housing and in-part within said housing; a depressible actuator retained by said housing and in-part exposed external to said housing;

Matsumoto shows in the figures housing 2A,2B, at least two conductive elements fixed to said housing and in-part within said housing (5A and 5B are electrodes within the housing, which also have portions 5C,5D located external to the housing, as seen in Fig. 4), and a depressible actuator 1 retained by the housing an in-part exposed external to the housing. See p. 362 for discussion of these elements.

a resilient snap-through dome-cap positioned within said housing and depressible with force from said actuator applied to said dome-cap to cause said dome-cap to snap-through and create a tactile feedback;

Matsumoto describes curved plate 3 with longitudinal ends curved upward so that it is concave facing the top of the device. See Figs. 4-5, p. 363. This element has "spring-like properties" and therefore is resilient. P. 364. When force is applied to the pushbutton 1 (i.e. actuator) it presses and inverts the plate so ends that were curved upward are now curved downward, producing a "click action." P. 365. In this way the "switching can be easily recognized through the feeling of pressure on a fingertip." P. 359; see also p. 360 discussing this click point that allows the user to clearly recognize the switching. This type of action, where the curved plate inverts allowing the user to recognize the change in pressure through the click point is deemed to be snap-through tactile feedback in the same sense as shown in the '084 patent.

The above discussion does not show the curved plate as a "dome-cap" as claimed; indeed, comparing element 16 of the '084 patent figures with element 3 Matsumoto Fig. 5, the Matsumoto curved plate appears to be directly the opposite of a dome-cap. But Matsumoto additionally discloses that the curved plate may be a dome-cap. On page 364, Matsumoto states: "In this embodiment, the elastic electro-conductive curved plate 3 has the longitudinal ends curved upward. However, the longitudinal ends curved downward yield the same click action." Thus, imagining the curved plate 3 as shown in Fig. 5 with the ends curved downward rather than curved upward, one can see that the plate 3 will look identical to element 16 shown in the '084 patent. Given this Matsumoto disclosure, the ends may be curved downward and since the element will seemingly be the same as that of the '084 patent, providing similar click action with the same shape, this embodiment of Matsumoto can properly be called a dome-cap as claimed.

pressure-sensitive variable-conductance material within said housing and positioned as a variably conductive element electrically between said two conductive elements, and further positioned for receiving force applied to said dome-cap, whereby electrical conductivity of said pressure-sensitive variable-conductance material is altered relative to received force and electrical output of said sensor is variable.

Matsumoto discloses pressure-sensitive electro-conductive rubber 6 that is located within the housing and electrically between the elements 5A,5B. The element is positioned for receiving force applied via pushbutton 1 and thus dome cap 3, and when the rubber 6 is pressed the resistance is reduced relative to the received force. This operation is discussed at pp. 365-366. This change of resistance allows for a variable electrical output, i.e. an analog output, of the sensor as noted at p. 368 1st par., where it is described that the switch can not only turn a motor on/off, but can also control the motor speed by varying the resistance.

Claim 2:

Matsumoto discloses **wherein said two conductive elements are of high and relatively constant conductivity.** Elements 5A and 5B are described as electrodes, p. 362, and inherently will have high and relatively constant conductivity.

Claim 3:

Matsumoto discloses **wherein said pressure-sensitive variable-conductance material is variable in terms of electrical resistivity, the electrical resistivity of said pressure-sensitive variable-conductance material lowering with received force thereon.** On pp. 365-366 Matsumoto describes that when electro-conductive rubber 6 is pressed the resistance is reduced, and when the pressure is released the resistance increases.

Claim 5:

Matsumoto discloses:

An improved pressure-sensitive variable-conductance analog sensor

Matsumoto discloses a pressure-sensitive variable-conductance analog sensor with tactile feedback, as will be apparent from the discussion of the limitations below.

of the type having at least two electrically conductive elements operationally connected to pressure-sensitive variable-conductance material;

There are at least two electrically conductive elements 5A,5B,5C,5D. Matsumoto discloses pressure-sensitive electro-conductive rubber 6 that is located within the housing and electrically between the elements 5A,5B. The element is positioned for receiving force applied via pushbutton 1 and thus dome cap 3, and when the rubber 6 is pressed the resistance is reduced relative to the received force. This operation is discussed at pp. 365-366. This change of resistance allows for a variable electrical output, i.e. an analog output, of the sensor as noted at p. 368 1st par., where it is described that the switch can not only turn a motor on/off, but can also control the motor speed by varying the resistance. Thus, the variable-conductance material is operationally connected between the above noted electrodes.

a depressible actuator retained relative to said pressure-sensitive variable-conductance material; said actuator depressible toward said pressure-sensitive variable-conductance material for transferring force into said pressure-sensitive variable-conductance material;

Matsumoto includes push button 1 that is an actuator that is retained above and thus relatively to said variable-conductance material 6, and is depressible toward and transfers externally applied force onto said variable-conductance material. See pp. 365-366 discussing the operation.

wherein the improvement comprises: a resilient snap-through dome-cap positioned to provide tactile feedback to a user upon actuation of said pressure-sensitive variable-conductance material.

Matsumoto describes curved plate 3 with longitudinal ends curved upward so that it is concave facing the top of the device. See Figs. 4-5, p. 363. This element has "spring-like properties" and therefore is resilient. P. 364. When force is applied to the pushbutton 1 (i.e. actuator) it presses and inverts the plate so ends that were curved upward are now curved downward, producing a "click action." P. 365. In this way the "switching can be easily recognized through the feeling of pressure on a fingertip." P. 359; see also p. 360 discussing this click point that allows the user to clearly recognize the switching. This type of action, where the curved plate inverts allowing the user to recognize the change in pressure through the click point is deemed to be snap-through tactile feedback in the same sense as shown in the '084 patent.

The above discussion does not show the curved plate as a "dome-cap" as claimed; indeed, comparing element 16 of the '084 patent figures with element 3 Matsumoto Fig. 5, the Matsumoto curved plate appears to be directly the opposite of a dome-cap. But Matsumoto additionally discloses that the curved plate may be a dome-cap. On page 364, Matsumoto states: "In this embodiment, the elastic electro-conductive curved plate 3 has the longitudinal ends curved upward. However, the longitudinal ends curved downward yield the same click action." Thus, imagining the curved plate 3 as shown in Fig. 5 with the ends curved downward rather than curved upward, one can see that the plate 3 will look identical to element 16 shown in the '084 patent. Given this Matsumoto disclosure, the ends may be curved downward and since the element will seemingly be the same as that of the '084 patent, providing similar click action with the same shape, this embodiment of Matsumoto can properly be called a dome-cap as claimed.

The above noted snap-through action occurs when the push button is pressed thereby operating the switch, therefore it occurs upon actuation of the pressure-sensitive variable-conductance material as claimed.

Claim 6:

Matsumoto discloses **wherein said snap-through dome-cap is positioned between said actuator and said pressure-sensitive variable-conductance material.** The dome-cap 3 is located between actuator 1 and pressure-sensitive variable-conductance material 6 as seen in the figures.

Claim 7:

Matsumoto discloses:

An improved momentary-On snap-through switch package

Matsumoto discloses a switch that provides both on/off switching and variable resistance. See p. 359 last par.; p. 369 1st par. It is therefore an improvement on the momentary-On type which simply turns on and off by the pressing and release of the button, as described in the specification of the '084 patent. See col. 1 lines 64-67.

of the type having a housing; at least two conductive elements fixed to said housing and in-part within said housing and at least in-part exposed external of said housing;

Matsumoto shows in the figures housing 2A,2B, at least two conductive elements fixed to said housing and in-part within said housing and in-part exposed external of the housing (5A and 5B are electrodes within the housing, which also have portions 5C,5D located external to the housing, as seen in Fig. 4).

a resilient snap-through dome-cap positioned within said housing;

Matsumoto describes curved plate 3 with longitudinal ends curved upward so that it is concave facing the top of the device. See Figs. 4-5, p. 363. This element has "spring-like properties" and therefore is resilient. P. 364. When force is applied to the pushbutton 1 (i.e. actuator) it presses and inverts the plate so ends that were curved upward are now curved downward, producing a "click action." P. 365. In this way the "switching can be easily recognized through the feeling of pressure on a fingertip." P. 359; see also p. 360 discussing this click point that allows the user to clearly recognize the switching. This type of action, where the curved plate inverts allowing the user to recognize the change in pressure through the click point is deemed to be snap-through tactile feedback in the same sense as shown in the '084 patent.

The above discussion does not show the curved plate as a "dome-cap" as claimed; indeed, comparing element 16 of the '084 patent figures with element 3 Matsumoto Fig. 5, the Matsumoto curved plate appears to be directly the opposite of a dome-cap. But Matsumoto additionally discloses that the curved plate may be a dome-cap. On page 364, Matsumoto states: "In this embodiment, the elastic electro-conductive curved plate 3 has the longitudinal ends curved upward. However, the longitudinal ends curved downward yield the same click action." Thus, imagining the curved plate 3 as shown in Fig. 5 with the ends curved downward rather than curved upward, one can see that the plate 3 will look identical to element 16 shown in the '084 patent. Given this Matsumoto disclosure, the ends may be curved downward and since the element will seemingly be the same as that of the '084 patent, providing similar click action with the same shape, this embodiment of Matsumoto can properly be called a dome-cap as claimed.

a depressible actuator retained by said housing and in-part exposed external to said housing; said actuator depressible for depressing said dome-cap and creating a highly conductive electrical path between said two conductive elements;

Depressible actuator 1 is retained by the housing and in-part exposed external to the housing. When the actuator 1 is depressed it depresses dome-cap 3 as described above. This ultimately depresses the pressure-sensitive variable-conductance material as described below, thus creating a highly conductive path between the conductive elements. This is so because as pressure is increased the resistance is lowered "which allows current to easily flow" as noted on page 366, and therefore with enough pressure applied the path may be considered highly conductive.

wherein the improvement comprises: pressure-sensitive analog variable-conductance material within said housing and positioned for creating a variably conductive electrical path between said two conductive elements upon variable depression of said dome-cap.

Matsumoto discloses pressure-sensitive electro-conductive rubber 6 that is located within the housing and electrically between the elements 5A,5B. The element is positioned for receiving force applied via pushbutton 1 and thus dome cap 3, and when the rubber 6 is pressed the resistance is reduced relative to the received force. This operation is discussed at pp. 365-366. This change of resistance allows for a variable conductive path between the elements 5A,5B depending on how much pressure is applied, as the resistance in the path depends on the pressure.

Claim 8:

Matsumoto discloses **wherein said pressure-sensitive variable-conductance material is variable in terms of electrical resistivity, the electrical resistivity of said pressure-sensitive variable-conductance material lowering with received force thereon.** On pp. 365-366 Matsumoto describes that when electro-conductive rubber 6 is pressed the resistance is reduced, and when the pressure is released the resistance increases.

Claim 9:

Matsumoto discloses:

A method of manufacturing a pressure-sensitive analog variable-conductance sensor with tactile feedback, comprising the steps of:

Matsumoto discloses a pressure-sensitive variable-conductance analog sensor with tactile feedback, as will be apparent from the discussion of the limitations below. It is noted the claim only recites generic method steps such as "forming" which will necessarily occur during the manufacturing of Matsumoto's device.

a) forming two conductive elements;

b) forming a housing engaging said two conductive elements, and leaving a portion of said two conductive elements exposed external of said housing;

Matsumoto shows in the figures housing 2A,2B, at least two conductive elements engaging said housing and in-part within said housing and in-part exposed external of the housing (5A and 5B are electrodes within the housing, which also have portions 5C,5D located external to the housing, as seen in Fig. 4).

c) installing pressure-sensitive analog variable-conductance material positioned as a variably conductive element electrically between said two conductive elements;

Matsumoto discloses pressure-sensitive electro-conductive rubber 6 that is located within the housing and electrically between the elements 5A,5B.

d) installing a resilient tactile feedback dome-cap positioned within said housing and operationally associated with said pressure-sensitive variable-conductance material;

Matsumoto describes curved plate 3 with longitudinal ends curved upward so that it is concave facing the top of the device. See Figs. 4-5, p. 363. This element has "spring-like properties" and therefore is resilient. P. 364. When force is applied to the pushbutton 1 (i.e. actuator) it presses and inverts the plate so ends that were curved upward are now curved downward, producing a “click action.” P. 365. In this way the “switching can be easily recognized through the feeling of pressure on a fingertip.” P. 359; see also p. 360 discussing this click point that allows the user to clearly recognize the switching. This type of action, where the curved plate inverts allowing the user to recognize the change in pressure through the click point is deemed to be snap-through tactile feedback in the same sense as shown in the '084 patent.

The above discussion does not show the curved plate as a “dome-cap” as claimed; indeed, comparing element 16 of the '084 patent figures with element 3 Matsumoto Fig. 5, the Matsumoto curved plate appears to be directly the opposite of a dome-cap. But Matsumoto additionally discloses that the curved plate may be a dome-cap. On page 364, Matsumoto states: “In this embodiment, the elastic electro-conductive curved plate 3 has the longitudinal ends curved upward. However, the longitudinal ends curved downward yield the same click action.” Thus, imagining the curved plate 3 as shown in Fig. 5 with the ends curved downward rather than curved upward, one can see that the plate 3 will look identical to element 16 shown in the '084 patent. Given this Matsumoto disclosure, the ends may be curved downward and since the element will seemingly be the same as that of the '084 patent, providing similar click action with the same shape, this embodiment of Matsumoto can properly be called a dome-cap as claimed.

When the above noted snap-through action occurs the push button is pressed thereby operating the switch, therefore the dome-cap is operationally associated with the pressure-sensitive variable-conductance material as claimed.

e) installing an actuator in-part within said housing and in-part exposed external of said housing and positioned for transferring externally applied force onto said actuator through said dome-cap and onto said pressure-sensitive variable-conductance material.

Actuator 1 is located in-part within and in-part external of the housing. The actuator 1 is positioned so that force is applied via actuator 1 and thus dome-cap 3, and is transferred to rubber 6, changing the resistance in the rubber. This operation is discussed at pp. 365-366. This change of resistance allows for a variable electrical output, i.e. an analog output, of the sensor as noted at p. 368 1st par., where it is described that the switch can not only turn a motor on/off, but can also control the motor speed by varying the resistance.

Claim 10:

Matsumoto discloses:

An improved method of manufacturing a sensor of the type comprising the steps of:

Matsumoto discloses a sensor as will be apparent from the discussion of the limitations below. It is noted the claim only recites generic method steps such as "forming" which will necessarily occur during the manufacturing of Matsumoto's device.

forming two conductive elements; forming a housing engaging said two conductive elements, and leaving a portion of said two conductive elements exposed external of said housing;

Matsumoto shows in the figures housing 2A,2B, at least two conductive elements engaging said housing and in-part within said housing and in-part exposed external of the housing (5A and 5B are electrodes within the housing, which also have portions 5C,5D located external to the housing, as seen in Fig. 4).

installing an actuator in-part within said housing and in-part exposed external of said housing;

Matsumoto shows actuator 1 in part within the housing and in part exposed external of the housing.

installing a resilient snap-through dome-cap positioned within said housing;

Matsumoto describes curved plate 3 with longitudinal ends curved upward so that it is concave facing the top of the device. See Figs. 4-5, p. 363. This element has "spring-like properties" and therefore is resilient. P. 364. When force is applied to the pushbutton 1 (i.e. actuator) it presses and inverts the plate so ends that were curved upward are now curved downward, producing a "click action." P. 365. In this way the "switching can be easily recognized through the feeling of pressure on a fingertip." P. 359; see also p. 360 discussing this click point that allows the user to clearly recognize the switching. This type of action, where the curved plate inverts allowing the user to recognize the change in pressure through the click point is deemed to be snap-through tactile feedback in the same sense as shown in the '084 patent.

The above discussion does not show the curved plate as a "dome-cap" as claimed; indeed, comparing element 16 of the '084 patent figures with element 3 Matsumoto Fig. 5, the Matsumoto curved plate appears to be directly the opposite of a dome-cap. But Matsumoto additionally discloses that the curved plate may be a dome-cap. On page 364, Matsumoto states: "In this embodiment, the elastic electro-conductive curved plate 3 has the longitudinal ends curved upward. However, the longitudinal ends curved downward yield the same click action." Thus, imagining the curved plate 3 as shown in Fig. 5 with the ends curved downward rather than curved upward, one can see that the plate 3 will look identical to element 16 shown in the '084 patent. Given this Matsumoto disclosure, the ends may be curved downward and since the element will seemingly be the same as that of the '084 patent, providing similar click action with the same shape, this embodiment of Matsumoto can properly be called a dome-cap as claimed.

wherein the improvement comprises the step of: installing pressure-sensitive analog variable-conductance material positioned as a variably conductive element electrically between said two conductive elements.

Matsumoto discloses pressure-sensitive electro-conductive rubber 6 that is a variably conductive element, see p. 366, and is electrically between the conductive elements 5A,5B.

Claim 11:

Matsumoto discloses:

An improved method of manufacturing a pressure-sensitive analog variable-conductance sensor, comprising the steps of:

Matsumoto discloses a pressure-sensitive variable-conductance analog sensor with tactile feedback, as will be apparent from the discussion of the limitations below. It is noted the claim only recites generic method steps such as "forming" which will necessarily occur during the manufacturing of Matsumoto's device.

forming two conductive elements;

Conductive elements 5A,5B are formed in the device.

locating pressure-sensitive variable-conductance material positioned as a variably conductive element electrically between said two conductive elements;

Matsumoto discloses pressure-sensitive electro-conductive rubber 6 that is located within the housing and between the elements 5A,5B as seen in Fig. 4. The element is positioned for receiving force applied via pushbutton 1 and thus dome cap 3, and when the rubber 6 is pressed the resistance is reduced relative to the received force. This operation is discussed at pp. 365-366. This change of resistance allows for a variable electrical output, i.e. an analog output, of the sensor as noted at p. 368 1st par., where it is described that the switch can not only turn a motor on/off, but can also control the motor speed by varying the resistance.

positioning an actuator for transferring externally applied force onto said pressure-sensitive analog variable-conductance material;

Matsumoto includes push button 1 that is an actuator that is above said variable-conductance material 6, and is depressible toward and transfers externally applied force onto said variable-conductance material. See pp. 365-366 discussing the operation.

wherein the improvement comprises the step of; positioning a resilient tactile feedback dome-cap operationally associated with said pressure-sensitive variable-conductance material.

Matsumoto describes curved plate 3 with longitudinal ends curved upward so that it is concave facing the top of the device. See Figs. 4-5, p. 363. This element has "spring-like properties" and therefore is resilient. P. 364. When force is applied to the pushbutton 1 (i.e.

actuator) it presses and inverts the plate so ends that were curved upward are now curved downward, producing a "click action." P. 365. In this way the "switching can be easily recognized through the feeling of pressure on a fingertip." P. 359; see also p. 360 discussing this click point that allows the user to clearly recognize the switching. This type of action, where the curved plate inverts allowing the user to recognize the change in pressure through the click point is deemed to be snap-through tactile feedback in the same sense as shown in the '084 patent.

The above discussion does not show the curved plate as a "dome-cap" as claimed; indeed, comparing element 16 of the '084 patent figures with element 3 Matsumoto Fig. 5, the Matsumoto curved plate appears to be directly the opposite of a dome-cap. But Matsumoto additionally discloses that the curved plate may be a dome-cap. On page 364, Matsumoto states: "In this embodiment, the elastic electro-conductive curved plate 3 has the longitudinal ends curved upward. However, the longitudinal ends curved downward yield the same click action." Thus, imagining the curved plate 3 as shown in Fig. 5 with the ends curved downward rather than curved upward, one can see that the plate 3 will look identical to element 16 shown in the '084 patent. Given this Matsumoto disclosure, the ends may be curved downward and since the element will seemingly be the same as that of the '084 patent, providing similar click action with the same shape, this embodiment of Matsumoto can properly be called a dome-cap as claimed.

When the above noted snap-through action occurs the push button is pressed thereby operating the switch, therefore the dome-cap is operationally associated with the pressure-sensitive variable-conductance material as claimed.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 4 and 7-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kramer in view of APA.

Claim 4:

Kramer discloses the limitations of parent claims 1-3 as described above, but does not disclose **wherein said housing is formed of non-conductive plastics.** Kramer is silent as to the material of the housing. APA describes a sensor similar to that of Kramer where the housing is made of non-conducting plastics. Col. 4 line 62 – col. 5 line 1; col. 1 lines 22-23. It seems that the '084 patent applicant admitted that it was conventional in the art for the housing of such sensors to be made of plastics. It would have been obvious to a person of ordinary skill in the art to use non-conductive plastics as the housing material, as this is merely a simple substitution of one known element for another to yield predictable results. See MPEP 2141; 2143(B).

The prior art in Kramer contained a sensor that differs from the claimed device only in that a non-conductive plastic housing would be substituted for Kramer's generic housing. The substituted non-conductive plastic housing and its function were known in the art, as APA teaches that non-conductive plastic housings were conventionally used for similar sensors. A person of ordinary skill in the art could have made the sensor housing of such non-conductive plastics, and the results of this substitution would have been predictable. Plastics are so widely known that their manufacture would have been simple to the skilled artisan, particularly in this case where it is disclosed by APA that such sensors are "typically" made of such materials. Further, the result of the combination would have been predictable to a person of ordinary skill in the art. Again, as use of such plastics for housings is so typical, the skilled artisan need only look at such typical devices to see how the plastic housing would operate. And since plastics are so well known, the skilled artisan would understand that their use would provide certain features, such as protection of the inner workings of the device, and prevention of electrical conduction between the inner electrical components and the housing. The examiner finds that the use of plastics for the housing would have been entirely predictable to a person of ordinary skill in the art. In light of the above findings, an obviousness rejection based on the combination of Kramer and APA is appropriate.

Claim 7:

Kramer discloses:

An improved momentary-On snap-through switch package of the type

Kramer improves on momentary-On type snap-through switches as follows.

having a housing; at least two conductive elements fixed to said housing and in-part within said housing . . .

Kramer shows housing 23, col. 3 line 42, at least two conductive elements 11.1, 11.2, col. 3 line 44, that are fixed to said housing and in-part within the housing.

a resilient snap-through dome-cap positioned within said housing;

Kramer discloses this in col. 5 lines 36-51. Namely, Kramer discloses that in an embodiment not illustrated that the spring element may be attached to the ceiling of a rubber dome that, upon actuation of actuator 22, actuates a switching process with a snap effect to allow pressure dependent adjustment. This rubber dome is necessarily resilient because it is rubber and provides a snap effect, and the providing of a snap effect is deemed to be "snap-through" as recited in the claim. Kramer also notes the spring member 20 "convey[s] to [the user] the feeling of increasing pressure as the operational displacement of the pushbutton becomes greater." Col. 5 lines 34-36. The combination of this conveyance of increasing pressure along with the snap effect of the dome will create a tactile feedback to the user. Note also col. 5 lines 48-51, which show that this embodiment also includes the pressure-sensitive variable conductance material described herein.

a depressible actuator retained by said housing and in-part exposed external to said housing; said actuator depressible for depressing said dome-cap and creating a highly conductive electrical path between said two conductive elements;

Kramer discloses depressible actuator 22 that is retained by the housing at lower portion 27 and in-part exposed external to the housing, col. 3 lines 44-51. Pressing of the actuator 22 creates a highly conductive path between the two conductive elements via the pressure-sensitive variable-conductance material as described below.

wherein the improvement comprises: pressure-sensitive analog variable-conductance material within said housing and positioned for creating a variably conductive electrical path between said two conductive elements upon variable depression of said dome-cap.

Kramer discloses countercontact 16 comprising conducting layer 17 and carbonized plastic foil 14. Col. 3 lines 55-58. This element is located within the housing and will receive force applied to the dome cap. The element is further a pressure-sensitive variable-conductance material, as its conductivity is altered relative to received force applied to the pushbutton actuator. Col. 4 line 63 – col. 5 line 8. The resistance of the element diminishes linearly with pressure, col. 5 lines 2-3, therefore Kramer's sensor acts in an analog nature. The element creates a variably conductive path between the two electrically conductive elements 11.1, 11.2 as seen in the dashed lines of Fig. 1 (indicating the device with the pushbutton depressed, where a connection is provided between the conductors via the countercontact).

Kramer does not additionally disclose the conductive elements are in-part external of said housing; as seen in Fig. 1, it appears that Kramer's conductive elements are totally within the housing. APA teaches that in similar sensors of the prior art, the conductive elements may be located in-part within and in-part exposed external of the housing. Col. 1 lines 22-26; col. 5 lines 1-5. APA further teaches that the external portions are electrical conductors and also may serve as mechanical mounts for structural attachment of the sensor to a circuit board. Col. 1 lines 41-45; col. 5 lines 11-18. Thus, APA indicates that it is advantageous to include such connections both in-part within and in-part external to the housing, so that they may be used for several purposes: providing connections within the device, connections external to the device, and mounting the device. It would have been obvious to one skilled in the art to extend the conductive elements of Kramer so that they are in-part exposed external of the housing. The motivation being that so that these elements may be additionally utilized for mounting the sensor or for making electrical connections to the device from a point external of the sensor, as is indicated by APA.

Claim 8:

Kramer discloses **wherein said pressure-sensitive variable-conductance material is variable in terms of electrical resistivity, the electrical resistivity of said pressure-sensitive analog variable-conductance material lowering with received force thereon.** As noted above, Kramer explains the resistance of the element diminishes linearly with increasing pressure, col. 5 lines 2-3.

Claim 9:

Kramer discloses:

A method of manufacturing a pressure-sensitive analog variable-conductance sensor with tactile feedback, comprising the steps of:

Kramer discloses in Fig. 1 a pressure-sensitive variable-conductance analog sensor with tactile feedback, as will be apparent from the discussion of the limitations below. It is noted the claim only recites generic method steps such as "forming" which will necessarily occur during the manufacturing of Kramer's device.

a) forming two conductive elements;

b) forming a housing engaging said two conductive elements. . .;

Kramer shows housing 23, col. 3 line 42, at least two conductive elements 11.1, 11.2, col. 3 line 44, that are engaged with the housing.

c) installing pressure-sensitive analog variable-conductance material positioned as a variably conductive element electrically between said two conductive elements;

Kramer discloses countercontact 16 comprising conducting layer 17 and carbonized plastic foil 14. Col. 3 lines 55-58. This element is located within the housing and will receive force applied to the dome cap. The element is further a pressure-sensitive variable-conductance material, as its conductivity is altered relative to received force applied to the pushbutton actuator. Col. 4 line 63 – col. 5 line 8. The resistance of the element diminishes linearly with pressure, col. 5 lines 2-3, therefore Kramer's sensor acts in an analog nature. The element creates a variably conductive path between the two electrically conductive elements 11.1, 11.2 as seen in the dashed lines of Fig. 1, and therefore is located electrically between those elements (indicating the device with the pushbutton depressed, where a connection is provided between the conductors via the countercontact).

d) installing a resilient tactile feedback dome-cap positioned within said housing and operationally associated with said pressure-sensitive variable-conductance material;

Kramer discloses this in col. 5 lines 36-51. Namely, Kramer discloses that in an embodiment not illustrated that the spring element may be attached to the ceiling of a rubber dome that, upon actuation of actuator 22, actuates a switching process with a snap effect to allow pressure dependent adjustment. This rubber dome is necessarily resilient because it is rubber and provides a snap effect, and the providing of a snap effect is deemed to be "snap-through" as recited in the claim. Kramer also notes the spring member 20 "convey[s] to [the user] the feeling of increasing pressure as the operational displacement of the pushbutton becomes greater." Col. 5 lines 34-36. The combination of this conveyance of increasing pressure along with the snap effect of the dome will create a tactile feedback to the user. As the snap effect occurs upon pressing of the actuator, which thereby provides pressure onto the variable-conductance material, the rubber dome-cap is operationally associated with the pressure-sensitive variable-conductance material. Note also col. 5 lines 48-51, which show that this embodiment also includes the pressure-sensitive variable conductance material described herein.

e) installing an actuator in-part within said housing and in-part exposed external of said housing and positioned for transferring externally applied force onto said actuator through said dome-cap and onto said pressure-sensitive variable-conductance material.

Kramer includes depressible actuator 22 that is in-part within the housing at lower portion 27 and in-part exposed external to the housing, col. 3 lines 44-51. Pressing of the actuator causes transfer of force onto the dome-cap and subsequently to the variable-conductance material.

Similarly as with claim 7, Kramer does not disclose that a portion of the conductive elements is exposed external of said housing. But this feature is taught by APA and is obvious for the reasons as described in the rejection of claim 7 above, which is incorporated by reference herein.

Claim 10:

Kramer discloses:

An improved method of manufacturing a sensor of the type comprising the steps of:

Kramer discloses in Fig. 1 a sensor, as will be apparent from the discussion of the limitations below. It is noted the claim only recites generic method steps such as "forming" which will necessarily occur during the manufacturing of Kramer's device.

forming two conductive elements; forming a housing engaging said two conductive elements . . . ; installing an actuator in-part within said housing and in-part exposed external of said housing;

Kramer shows housing 23, col. 3 line 42, at least two conductive elements 11.1, 11.2, col. 3 line 44, that engage said housing, and depressible actuator 22 that is in-part within the housing at lower portion 27 and in-part exposed external to the housing, col. 3 lines 44-51.

installing a resilient snap-through dome-cap positioned within said housing;

Kramer discloses this in col. 5 lines 36-51. Namely, Kramer discloses that in an embodiment not illustrated that the spring element may be attached to the ceiling of a rubber dome that, upon actuation of actuator 22, actuates a switching process with a snap effect to allow pressure dependent adjustment. This rubber dome is necessarily resilient because it is rubber and provides a snap effect, and the providing of a snap effect is deemed to be "snap-through" as recited in the claim. Kramer also notes the spring member 20 "convey[s] to [the user] the feeling of increasing pressure as the operational displacement of the pushbutton becomes greater." Col. 5 lines 34-36. The combination of this conveyance of increasing pressure along with the snap effect of the dome will create a tactile feedback to the user. Note also col. 5 lines 48-51, which show that this embodiment also includes the pressure-sensitive variable conductance material described herein.

wherein the improvement comprises the step of: installing pressure-sensitive analog variable-conductance material positioned as a variably conductive element electrically between said two conductive elements.

Kramer discloses countercontact 16 comprising conducting layer 17 and carbonized plastic foil 14. Col. 3 lines 55-58. This element is located within the housing and will receive force applied to the dome cap. The element is further a pressure-sensitive variable-conductance material, as its conductivity is altered relative to received force applied to the pushbutton actuator. Col. 4 line 63 – col. 5 line 8. The resistance of the element diminishes linearly with pressure, col. 5 lines 2-3, therefore Kramer's sensor acts in an analog nature. The element creates a variably conductive path between the two electrically conductive elements 11.1, 11.2 as seen in the dashed lines of Fig. 1, and therefore is located electrically between those elements (indicating the device with the pushbutton depressed, where a connection is provided between the conductors via the countercontact).

Similarly as with claim 7, Kramer does not disclose leaving a portion of the conductive elements exposed external of said housing. But this feature is taught by APA and is obvious for the reasons as described in the rejection of claim 7 above, which is incorporated by reference herein.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Matsumoto in view of APA.

Claim 4:

Matsumoto discloses the limitations of parent claims 1-3 as described above, but does not disclose **wherein said housing is formed of non-conductive plastics.** Matsumoto is silent as to the material of the housing. APA describes a sensor similar to that of Matsumoto where the housing is made of non-conducting plastics. Col. 4 line 62 – col. 5.line 1; col. 1 lines 22-23. It seems that the '084 patent applicant admitted that it was conventional in the art for the housing of such sensors to be made of plastics. It would have been obvious to a person of ordinary skill in the art to use non-conductive plastics as the housing material, as this is merely a simple substitution of one known element for another to yield predictable results. See MPEP 2141; 2143(B).

The prior art in Matsumoto contained a sensor that differs from the claimed device only in that a non-conductive plastic housing would be substituted for Matsumoto's generic housing.

The substituted non-conductive plastic housing and its function were known in the art, as APA teaches that such housings were conventionally used for similar sensors. A person of ordinary skill in the art could have made the sensor housing of such non-conductive plastics, and the results of this substitution would have been predictable. Plastics are so widely known that their manufacture would have been simple to the skilled artisan, particularly in this case where it is disclosed by APA that such sensors are "typically" made of such materials. Further, the result of the combination would have been predictable to a person of ordinary skill in the art. Again, as use of such plastics for housings is so typical, the skilled artisan need only look at such typical devices to see how the plastic housing would operate. And since plastics are so well known, the skilled artisan would understand that their use would provide certain features, such as protection of the inner workings of the device, and prevention of electrical conduction between the inner electrical components and the housing. The examiner finds that the use of plastics for the housing would have been entirely predictable to a person of ordinary skill in the art. In light of the above findings, an obviousness rejection based on the combination of Matsumoto and APA is appropriate.

Response to Arguments

This section is to address several issues raised in the Request.

The Request indicated that Matsumoto renders the claims obvious in view of APA. The Request used APA to supply teachings of a dome-cap, apparently because the Requester found this feature lacking in Matsumoto. The examiner did not make this rejection, instead making an anticipation rejection based on Matsumoto alone. The Requester never cited the section of Matsumoto—cited in the above rejections—that states that the curved plate can be in effect flipped upside down to produce the same effect. As described above, the examiner finds this disclosure sufficient to show Matsumoto teaches a dome-cap.

The Request indicated that Matsumoto discloses the limitations of claim 4, that the housing is formed of non-conductive plastics. Request p. 76. Nowhere does Matsumoto disclose this limitation, but the Requester came to this conclusion because of the type of cross-hatching used in the figures; namely, Matsumoto uses the cross-hatching that MPEP 608.02 (IX) indicates should be used to represent plastics. The examiner, however, declines to make any rejection based on such symbols because there is no indication whether Matsumoto actually followed these conventions when making the drawings. It is noted that Matsumoto, as a Japanese patent document, had no reason to follow the conventions of the MPEP, and there is no indication that the symbols are so standard that Matsumoto's cross-hatching used for the housing must represent plastic. The examiner instead rejects this claim by combining Matsumoto with APA.

NOTICE RE PATENT OWNER'S CORRESPONDENCE ADDRESS

Effective May 16, 2007, 37 CFR 1.33(c) has been revised to provide that:

The patent owner's correspondence address for all communications in an *ex parte* reexamination or an *inter partes* reexamination is designated as the correspondence address of the patent.

> *Revisions and Technical Corrections Affecting Requirements for Ex Parte and Inter Partes Reexamination*, 72 FR 18892 (April 16, 2007)(Final Rule)

The correspondence address for any pending reexamination proceeding not having the same correspondence address as that of the patent is, by way of this revision to 37 CFR 1.33(c), automatically changed to that of the patent file as of the effective date.

This change is effective for any reexamination proceeding which is pending before the Office as of May 16, 2007, including the present reexamination proceeding, and to any reexamination proceeding which is filed after that date.

Parties are to take this change into account when filing papers, and direct communications accordingly.

In the event the patent owner's correspondence address listed in the papers (record) for the present proceeding is different from the correspondence address of the patent, it is strongly encouraged that the patent owner affirmatively file a Notification of Change of Correspondence Address in the reexamination proceeding and/or the patent (depending on which address patent owner desires), to conform the address of the proceeding with that of the patent and to clarify the record as to which address should be used for correspondence.

Telephone Numbers for reexamination inquiries:

Central Reexam Unit (CRU)	(571) 272-7705
Reexamination Facsimile Transmission No.	(571) 273-9900

Conclusion

In order to ensure full consideration of any amendments, affidavits or declarations, or other documents as evidence of patentability, such documents must be submitted in response to this Office action. Submissions after the next Office action, which is intended to be a final action, will be governed by the requirements of 37 CFR 1.116, after final rejection and 37 CFR 41.33 after appeal, which will be strictly enforced.

The patent owner is reminded that any proposed amendment to the specification and/or claims in this reexamination proceeding must comply with 37 CFR 1.530(d)-(j).

Extensions of time under 37 CFR 1.136(a) will not be permitted in this proceeding because the provisions of 37 CFR 1.136 apply only to "an applicant" and not to parties in a reexamination proceeding. Additionally, 35 U.S.C. 305 requires that reexamination proceedings "will be conducted with special dispatch." Extensions of time in ex parte reexamination proceedings are provided for in 37 CFR 1.550(c).

The patent owner is reminded of the continuing responsibility under 37 CFR 1.565(a), to apprise the Office of any litigation activity, or other prior or concurrent proceeding, involving the '084 patent throughout the course of this reexamination proceeding. See MPEP §§ 2207, 2282 and 2286. The third party is also reminded of the ability to apprise the office of such activity.
All correspondence relating to this *ex parte* reexam proceeding should be directed as follows:

By **U.S. Postal Service Mail** to:

Mail Stop *Ex Parte* Reexam
ATTN: Central Reexamination Unit
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

By FAX to: (571) 273-9900
Central Reexamination Unit

By hand to: Customer Service Window
Randolph Building
401 Dulany St.
Alexandria, VA 22314

Any inquiry concerning this communication or earlier communications from the Reexamination Legal Advisor or Examiner, or as to the status of this proceeding, should be directed to the Central Reexamination Unit at telephone number (571) 272-7705.

Signed:

/James Menefee/

James Menefee
Primary Examiner
Central Reexamination Unit 3992
(571) 272-1944

January 17, 2008

Conferees:

/Margaret Rubin/

Primary Examiner, CRU 3992

OP&A