

EXHIBIT C-2
Kremin alone and in view of Partow
U.S. Patent No. 9,933,866

Upon information and belief, U.S. Patent Publication No. 20120105362 to Kremin et al. (“Kremin”) (published May 3, 2012) either expressly, implicitly, or inherently anticipates the asserted claims of U.S. Patent No. 9,933,866 (“’866 Patent”) under 35 U.S.C. § 102 and/or renders those claims obvious under 35 U.S.C. § 103 alternatively in view of U.S. Patent No. 6,377,248 to Partow et al. (“Partow”) (issued April 23, 2002), as set forth in the chart below.

A person of ordinary skill in the art would have been motivated to modify the technology of Kremin based on Partow for the obvious benefit of providing additional ways to modify voltages in styluses, 1:67– 2:64.

The following contentions are subject to revision and amendment pursuant to Federal Rule of Civil Procedure 26(e) and the Court Orders in this matter subject to further investigation and discovery regarding the references.

1[a] one or more electrodes;

The stylus 850 of Kremin contains a stylus tip 895 by which the amplified stylus transmit signal is capacitively coupled to the capacitive sense array. Kremin Claim 6, ¶ [0085]. Capacitive coupling is a transfer of electric signals that inherently requires a pairing of electrodes—a person of ordinary skill in the art would understand that the tip 895 must comprise an electrode.

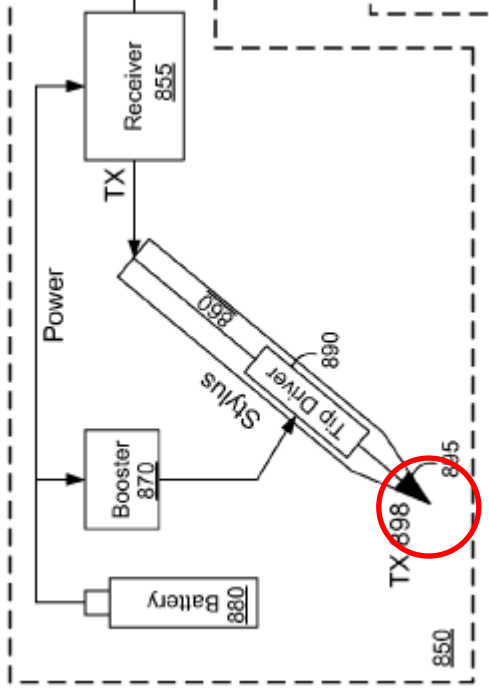


FIG. 8 of Kremin

And in describing the position tracking system for the stylus, Kremin discloses that the row 660 and column 640 electrodes in the sense array are capacitively coupled to the stylus 680, detecting the charge coupled at the contact point 695 with the stylus—this is inherently only possible if there is electrode in the stylus, as well. Kremin ¶ [0073]. Accordingly, Kremin discloses limitation 1[a].

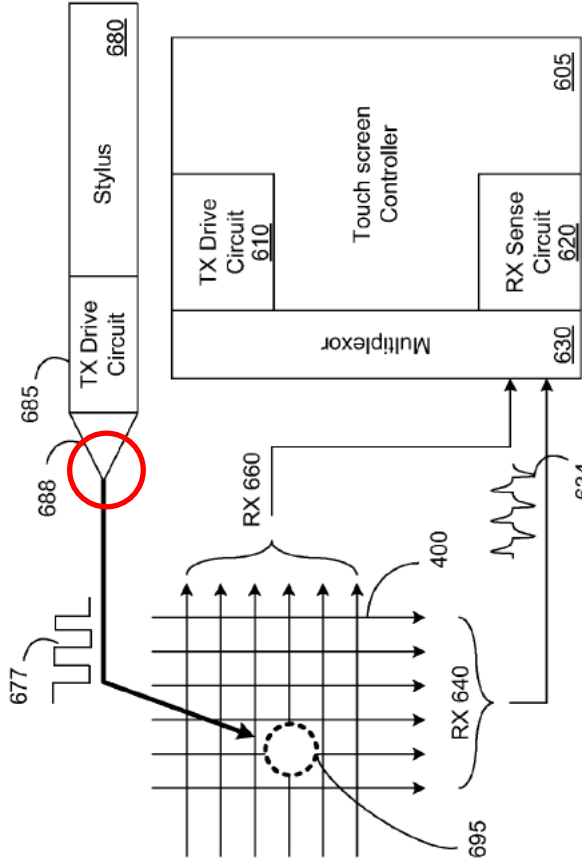


FIG. 6 of Kremin

1[b] one or more computer-readable non-transitory storage media embodying logic for transmitting signals wirelessly to a device through a touch sensor of the device, at least some of the signals comprising high-voltage signals associated with a high voltage comprising a relatively large potential difference compared to a voltage within a voltage range of approximately 1 to approximately 3 volts;

Kremin discloses that embodiments of the systems and methods can be implemented using instructions stored on a computer-readable medium. Kremin ¶ [0140]. Additionally, Kremin discloses a booster 870 to boost a battery voltage (e.g., of 1.5 volts) to allow a tip driver 890 to amplify a TX signal 835 of a host device 805 to a higher voltage (e.g., 10 to 20 volts). Kremin ¶ [0084]. The “high-voltage” signal of Kremin allows the stylus to be detected while “hovering” (i.e., without a wired connection and therefore “wirelessly”). *Id.* The untethered, or “wireless” active stylus 850 of Kremin contains a receiver, 855, a battery 880, a booster 870, a tip driver 890, and a stylus tip 895. Kremin ¶¶ [0079], [0081]. The stylus 850 generates a signal 898 based on a signal 835 received by the receiver 855 from the transmitter 840. *Id.* ¶ [0083]. The stylus 850 capacitively couples that signal 898 to the device via the stylus tip 895. *Id.* ¶ [0085]. A person of ordinary skill in the art reading this limitation would understand that “wirelessly” in the context of this claim means communicating through contact with the device that is not a hardwired connection.

Defendant contends that the terms “high voltage” and “relatively large potential difference” are indefinite and this claim is therefore invalid. While the term “high-voltage” is indefinite, the ’866 Patent specifically states that a voltage in the range of 10-20V would be “high-voltage.” *See* ’866 Patent at 11:51-54 & claim 3. To the extent these terms are not indefinite, Kremin discloses a “high-voltage signal” that has a “relatively large potential difference” from the range of 1-3 volts. The signal 835 may be amplified by the booster 870 to a higher voltage signal 898, for example up to 10 to 20 volts, which has a relatively large potential difference compared to a voltage within a voltage range of approximately 1 to 3 volts. *Id.* ¶ [0084]. The signal 898 is transmitted via the touch sensor stylus tip 895. *Id.* In some embodiments, the signal can be amplified to a voltage of 20 to 50 volts. *Id.* ¶ [0048]. The high voltage signal is then capacitively coupled with the sensing device through the tip 895. *Id.* ¶ [0085].

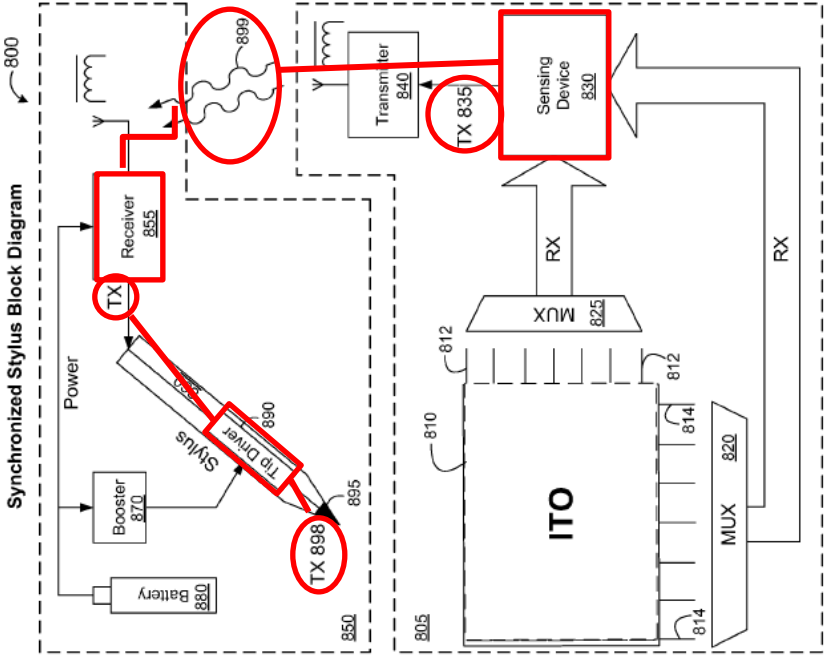


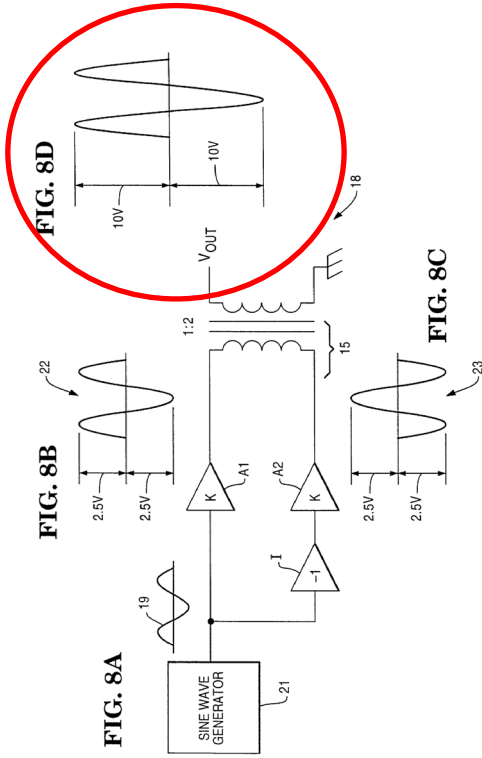
FIG. 8 of Kremin

Kremin further discloses that embodiments may be implemented in a manner that includes instructions stored on a computer-readable medium. Kremin ¶ [00140]. The instructions may be used to program a processor to perform the described operations. *Id.* Kremin lists a non-exhaustive variety of computer-readable storage media, including random-access memory or optical disks; such storage is “non-transitory,” or unchanging. *Id.* A person of ordinary skill would understand the storage mediums described by Kremin as computer-readable non-transitory storage media. Kremin therefore fully discloses the limitations of claim 1[b].

To the extent Plaintiff contends Kremin does not expressly, implicitly, or inherently disclose the substance of claim 15, one of ordinary skill in the art would, based on one’s knowledge and Kremin, understand how to modify Kremin to meet this limitation. Alternatively, one of ordinary skill could modify Kremin in view of Partow to meet this limitation.

Partow discloses “an improved stylus for a portable digitizing pad, which produces a large position signal.” Partow, 1:65-67. The technology

of Partow uses a transformer to output a signal that is “about 20 volts, peak-to-peak.” Partow, 2:51-62. While the term “high-voltage” is indefinite, the ’866 Patent specifically states that a voltage in the range of 10-20V would be “high-voltage.” See ’866 Patent at 11:51-54 & claim 3. Further, Partow specifically discloses an embodiment with “a power supply voltage of 3.0 volts” that is fed into a transformer, and the “output of the transformer is 60 volts, zero-to-peak, or 120 volts, peak-to-peak,” Partow at 3:37-46, well in excess of the “high voltage” range discussed on the ’866 Patent. Accordingly, Partow also discloses “high-voltage signals associated with a high voltage comprising a relatively large potential difference compared to a voltage within a voltage range of approximately 1 to approximately 3 volts” because the output of the technology of Partow (as shown in FIG. 8D) is a high voltage signal, as claimed.



FIGs. 8A-8D of Partow

It would have been obvious to a person of ordinary skill in the art to modify the stylus of Kremin to implement the particular way of producing a high-voltage signal disclosed in Partow, and a person of ordinary skill in the art would have been motivated to so modify the stylus of Kremin for the obvious benefit of more easily producing a boosted voltage. See Partow, 2:62-64. In addition, Partow specifically discloses that the ranges of power can and should be modified as the circumstances require. It contains an entire section titled “Important Considerations” that discusses several examples with different voltage levels. See Partow at 1:35-4, cols. 3-6.

Claim 1 1[c] a component operable to convert the voltage of approximately 1 to 3 volts to the high voltage; and	Example Disclosures in Prior Art As described above, the stylus 850 of Kremin includes a receiver 855, booster 870, and tip driver 860 connected to a battery 880. The tip driver 890 of Kremin is a powered component containing a booster 870 operable to convert the initial voltage signal 835 to a “high voltage” signal 898 of 10 to 20 volts. Kremin ¶ [0081], [0084]. Kremin discloses a booster 870 to boost a battery voltage (e.g., of 1.5 volts) to allow a tip driver 890 to amplify a TX signal 835 of a host device 805 to a higher voltage (e.g., 10 to 20 volts). Kremin ¶ [0084]. Additional embodiments make this clear: an embodiment to detect force identifies the same voltage booster 870, tip driver 890, and stylus tip 895, with an actuator 893 to receive force sensed by the force sensor 1360. Kremin ¶ [00104], [00109]. Stylus with Data Modulation FIG. 13 of Kremin
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Claim 1	Example Disclosures in Prior Art
1[e] wherein the high-voltage signals result from the one or more electrodes receiving the high voltage.	As described above, Kremin states that the tip driver 890 drives or amplifies (with booster 870) the transmit signal 835, and the stylus tip 895 capacitively couples the amplified stylus transmit signal 898 to the device’s sense array 810. Kremin ¶¶ [0085], [00106]-[00107]. Kremin makes clear throughout that the signal passes through the tip driver 890, is amplified, and then sent to the stylus tip. <i>Id.</i> Accordingly, Kremin discloses limitation [1.5].

Claim 3	Example Disclosures in Prior Art
The stylus of claim 1, wherein the high voltage comprises a voltage within the voltage range of approximately 10 to approximately 20 volts.	Defendant contends that the terms “high voltage” and “relatively large potential difference” are indefinite and this claim is therefore invalid. To the extent these terms are not indefinite, Kremin discloses a “high-voltage signal” that is within the range of 10 to 20 volts. As discussed above, the stylus 850 of Kremin includes a tip driver 890 with voltage booster 870 coupled to a battery 880. Kremin describes an embodiment with a high voltage stylus transmit signal 898 within a voltage range of 10 to 20 volts. Kremin ¶ [0084]. The high-voltage signal of Kremin allows the stylus to be detected while “hovering” (i.e., without a wired connection and therefore “wirelessly”). <i>Id.</i> Kremin accordingly discloses claim 3.

Claim 4	Example Disclosures in Prior Art
The stylus of claim 1, wherein the high-voltage signals identify a location of the stylus relative to the touch sensor of the device.	Kremin discloses that the high voltage stylus signal 898 allows for robust detection of the stylus 850 location, as well as detection while hovering over but not physically touching a sensing device (i.e., without a wired connection and therefore “wirelessly”). Kremin ¶ [0084]. Kremin therefore discloses claim 4.

Claim 6		Example Disclosures in Prior Art
The stylus of claim 5, wherein the object is least a part of a human hand.		As discussed above, the technology of Kremin can be used both to simulate a touch by a user's finger and to distinguish the touch of a user's palm or finger. Kremin ¶¶ [0024], [0051], [0076], [0086], [00102]-[00103].
		Plaintiff's infringement contentions for Claim 6 specifically cite a user's palm, a heavy focus of Kremin and seen in Figures 12A and 12B. Accordingly, Kremin discloses claim 6.

voltage, is accordingly based on the voltage used by the touch sensor.

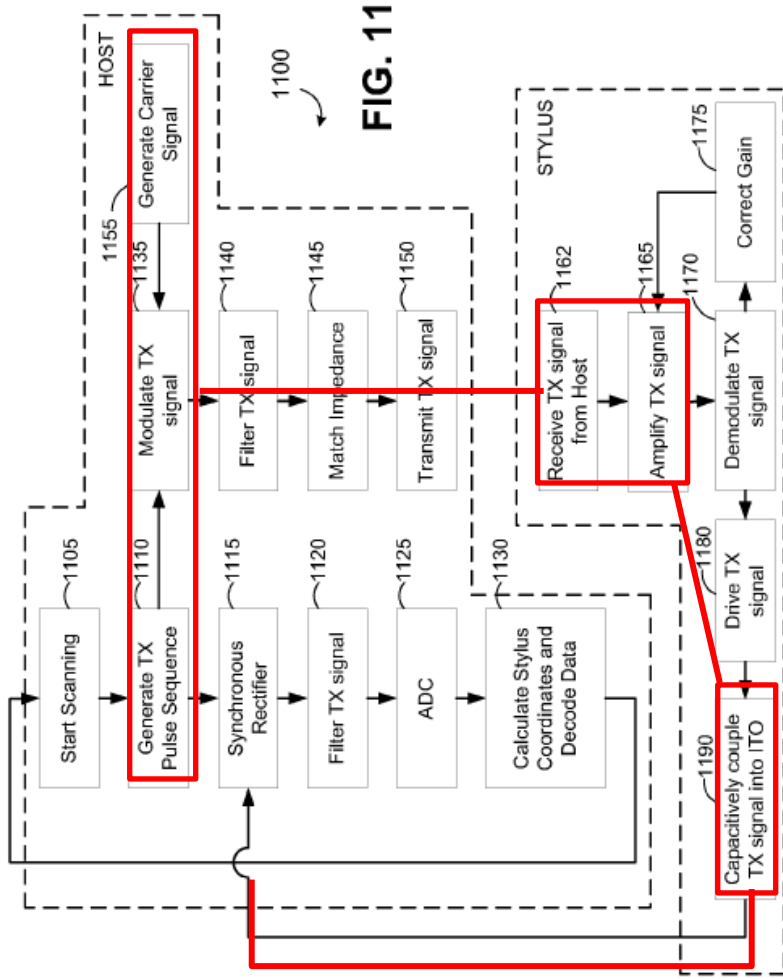


FIG. 11 of Kremin

This is iterated in Kremin’s explanation of palm rejection technology: the palm is not stimulated by the transmit signal that originated from the transmit drive circuit of the touch screen controller/touch sensor, so the device is able to differentiate between the stylus and a hand, because it can recognize the signal it created. Kremin ¶ [00103].

In each of the foregoing embodiments, a person of ordinary skill would appreciate that transmit signals are necessarily based on a voltage used by at least a portion of the touch sensor of the device, because they are generated from the touch sensor of the device. Kremin therefore discloses claim 7.

Claim 15	Example Disclosures in Prior Art
15[pre] One or more non-transitory computer-readable storage media embodying logic that is operable when executed to:	To the extent the preamble is limiting, Kremin specifically describes embodiments that may be implemented as a computer program product on a computer-readable medium. Kremin ¶ [00140].

15[a] transmit electromagnetic signals from a stylus to a device through a touch sensor of the device, at least some of the electromagnetic signals comprising high-voltage signals associated with a high voltage comprising a relatively large potential difference compared to a voltage within a voltage range of approximately 1 to approximately 3 volts, the stylus comprising:

Defendant contends that the terms “high voltage” and “relatively large potential difference” are indefinite and this claim is therefore invalid.

To the extent these terms are not indefinite, Kremin discloses a “high-voltage signal” that has a “relatively large potential difference” from the range of 1-3 volts. The stylus 850 of Kremin contains a receiver, 855, a battery 880, a booster 870, a tip driver 890, and a stylus tip 895. Kremin ¶¶ [0079], [0081]. The stylus 850 generates a signal 898 based on a signal 835 received by the receiver 855 from the transmitter 840. *Id.* ¶ [0083]. The stylus 850 capacitively couples that signal 898 to the device via the stylus tip 895. *Id.* ¶ [0085]. The signal 835 may be amplified by the booster 870 to a higher voltage signal 898, for example up to 10 to 20 volts, which has a relatively large potential difference compared to a voltage within a voltage range of approximately 1 to 3 volts. *Id.* ¶ [0084]. Accordingly, the transmit signal of Kremin is a high-voltage signal associated with a high voltage, and a POSITA would appreciate that the transmit signal is an electromagnetic signal. Kremin therefore discloses limitation **15[a]**.

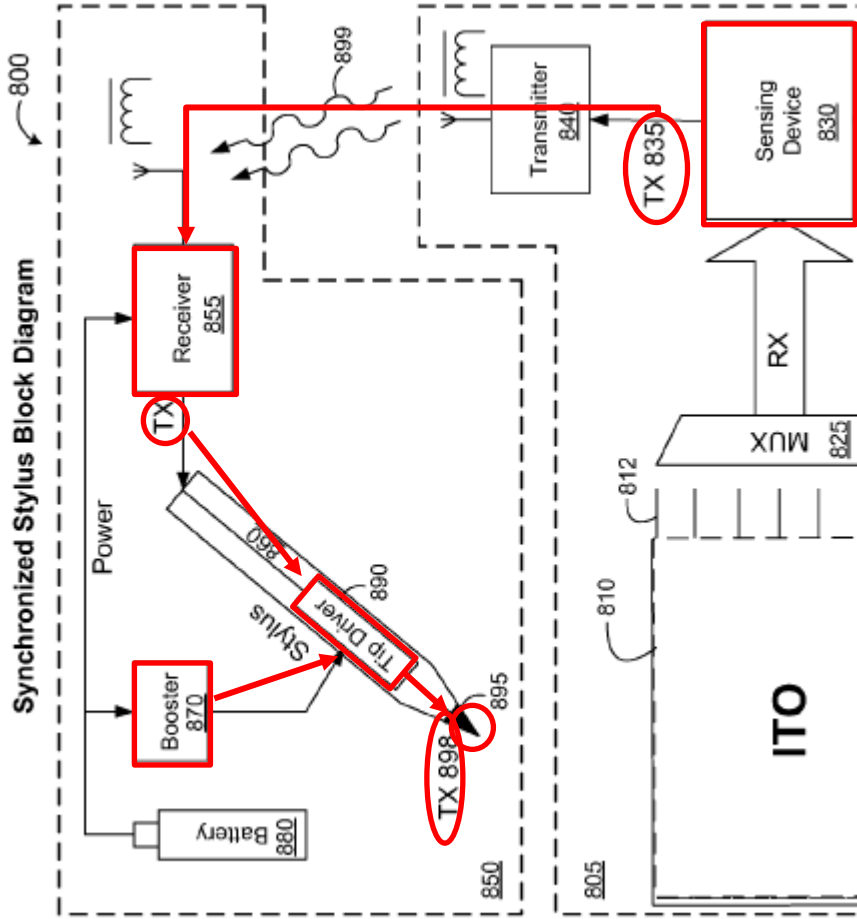


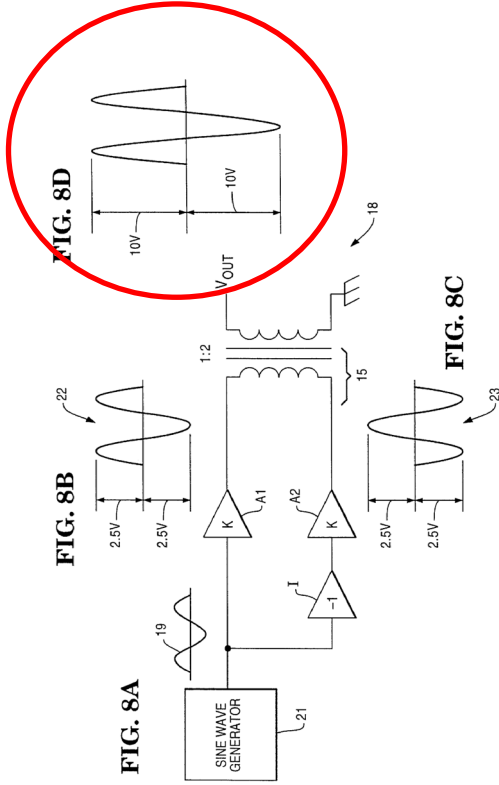
FIG. 8 of Kremin

Claim 15

Example Disclosures in Prior Art

To the extent Plaintiff contends Kremin does not expressly, implicitly, or inherently disclose the substance of claim 15, one of ordinary skill in the art would, based on one's knowledge and Kremin, understand how to modify Kremin to meet this limitation. Alternatively, one of ordinary skill could modify Kremin in view of Partow to meet this limitation.

Partow discloses “an improved stylus for a portable digitizing pad, which produces a large position signal.” Partow, 1:65-67. Specifically, the technology of Partow uses a transformer to output a signal that is “about 20 volts, peak-to-peak.” Partow, 2:51-62. While the term “high-voltage” is indefinite, the ’866 Patent specifically states that a voltage in the range of 10-20V would be “high-voltage.” See ’866 Patent at 11:51-54 & claim 3. Further, Partow specifically discloses an embodiment with “a power supply voltage of 3.0 volts” that is fed into a transformer, and the “output of the transformer is 60 volts, zero-to-peak, or 120 volts, peak-to-peak,” Partow at 3:37-46, well in excess of the “high voltage” range discussed on the ’866 Patent. Accordingly, Partow also discloses “high-voltage signals associated with a high voltage comprising a relatively large potential difference compared to a voltage within a voltage range of approximately 1 to approximately 3 volts” because the output of the technology of Partow (as shown in FIG. 8D) is a high voltage signal, as claimed. Additionally, a POSITA would appreciate that the signals output by the transformer are electromagnetic signals.



FIGs. 8A-8D of Partow

Claim 15

Example Disclosures in Prior Art

15[a1] one or more electrodes for wirelessly transmitting the signals to the device;

The stylus 850 of Kremin contains a stylus tip 895 by which the amplified stylus transmit signal is capacitively coupled to the capacitive sense array. Kremin Claim 6, ¶ [0085]. Capacitive coupling is a transfer of electric signals that inherently requires a pairing of electrodes—a person of ordinary skill in the art would understand that the tip 895 must comprise an electrode.

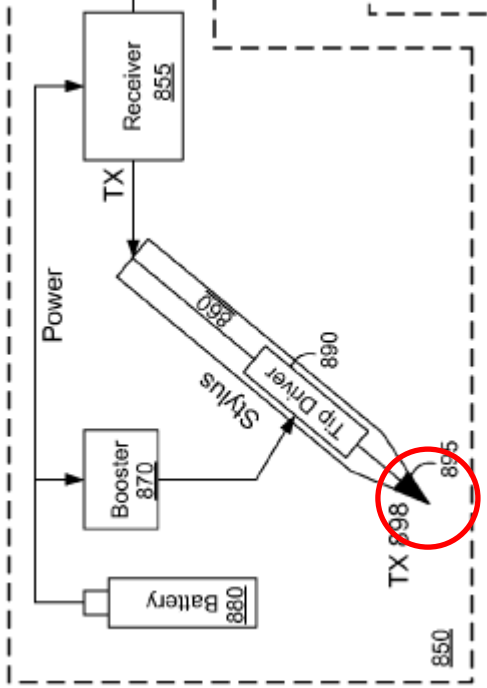


FIG. 8 of Kremin

And in describing the position tracking system for the stylus, Kremin discloses that the row 660 and column 640 electrodes in the sense array are capacitively coupled to the stylus 680, detecting the charge coupled at the contact point 695 with the stylus—this is inherently only possible if there is electrode in the stylus tip. Kremin ¶ [0073]. The high-voltage signal of Kremin allows the stylus to be detected while “hovering” (i.e., without a wired connection and thus wirelessly). Kremin ¶ [0084]. Kremin accordingly discloses limitation 15[a1].

15[a2] a component operable to convert the voltage of approximately 1 to 3 volts to the high voltage; and

As described above, the stylus 850 of Kremin includes a receiver 855, booster 870, and tip driver 860 connected to a battery 880. The tip driver 890 of Kremin is a powered component containing a booster 870 operable to convert the initial voltage signal 835 to a high voltage signal 898 of 10 to 20 volts. Kremin ¶ [0081], [0084]. Kremin discloses a booster 870 to boost a battery voltage (e.g., of 1.5 volts) to allow a tip driver 890 to amplify a TX signal 835 of a host device 805 to a higher voltage (e.g., 10 to 20 volts). Kremin ¶ [0084].

Additional embodiments make this clear: an embodiment to detect force identifies the same voltage booster 870, tip driver 890, and stylus tip 895, with an actuator 893 to receive force sensed by the force sensor 1360. Kremin ¶¶ [00104], [00109].

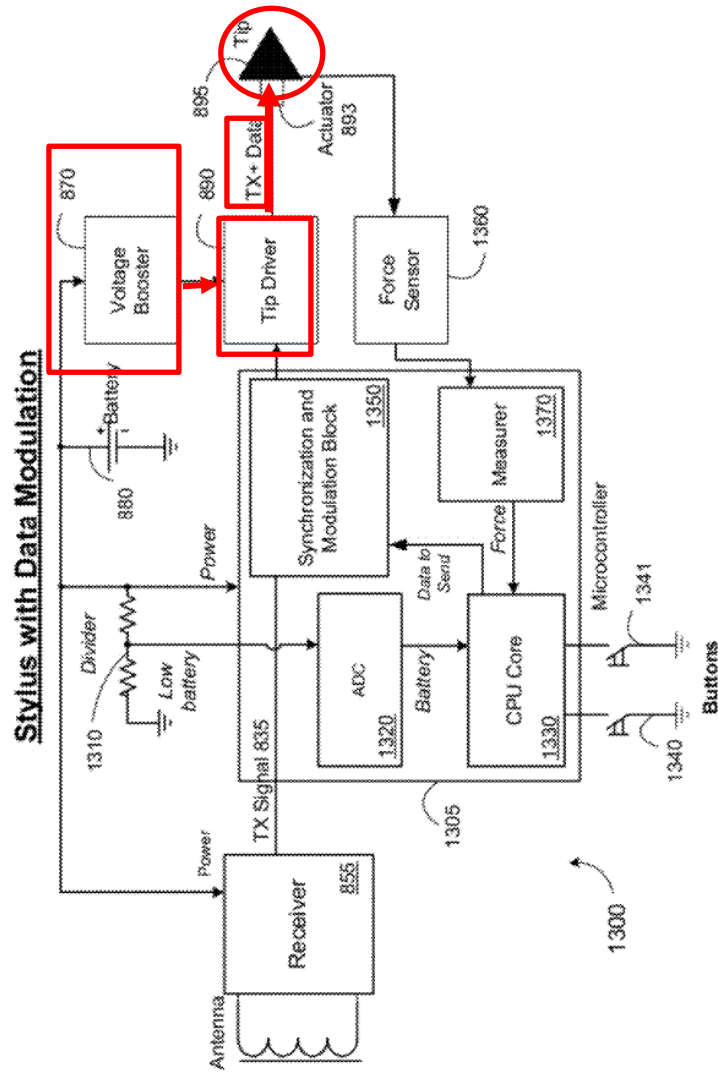


FIG. 13 of Kremin

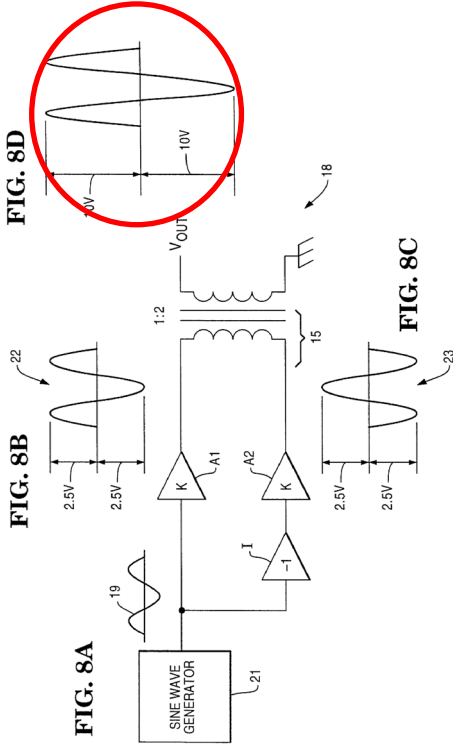
One embodiment in Kremin describes a process for amplifying the transmit signal to 20 to 50 volts to allow for detection while the stylus tip hovers over the host device. Kremin ¶¶ [0048], [0099]. Kremin therefore discloses limitation **15[a2]**.

To the extent Plaintiff contends Kremlin does not expressly, implicitly, or inherently disclose the substance of claim 15, one of ordinary skill in the art would, based on one's knowledge and Kremlin, understand how to modify Kremlin to meet this limitation. Alternatively, one of ordinary skill could modify Kremlin in view of Partow to meet this limitation.

Claim 15

Example Disclosures in Prior Art

As discussed above, the technology of Partow produces “a large position signal” (i.e., a high-voltage signal). Partow, 1:65-67. The technology includes a transformer 18 that receives sine waves that are 5 volts peak-to-peak (or 2.5 volts zero-to-peak) and outputs a signal that is 20 volts peak-to-peak (or 10 volts zero-to-peak). Partow, 2:53-62 & 6:20-22.¹



FIGS. 8A-8D of Partow

¹ The '866 Patent does not differentiate between peak-to-peak and zero-to-peak voltages. Notably, the signal provided to the transformer of Partow is within a range of 1 to 3 volts, when measured zero-to-peak (i.e., 2.5 volts). Nonetheless, the specific voltages recited in the claims of the '866 Patent are a mere design choice that do not require any inventive step over the prior art. As shown in Partow, techniques were well known in the art for converting voltage from a first lower voltage to a second higher voltage, and it would have been well within the capabilities of a POSITA to convert a voltage in a range of 1 to 3 volts to a high voltage. See *also* Partow, 2:35-49. Partow even explains that the specific voltages discussed therein are “somewhat arbitrary.” Partow, 2:38-40. Based on the disclosure of Partow and the knowledge of a POSITA, a POSITA would have known to convert a voltage in the range of 1 to 3 volts (e.g., a power supply voltage) to a high voltage.

Claim 15

Example Disclosures in Prior Art

15[a3] a stylus tip, one or more of the one or more electrodes being disposed at the stylus tip;

The stylus 850 of Kremin contains a stylus tip 895 by which the amplified stylus transmit signal is capacitively coupled to the capacitive sense array. Kremin Claim 6, ¶ [0085]. Capacitive coupling is a transfer of electric signals that inherently requires a pairing of electrodes—a person of ordinary skill would understand that the tip 895 must comprise an electrode. Accordingly, Kremin discloses limitation 15[a3].

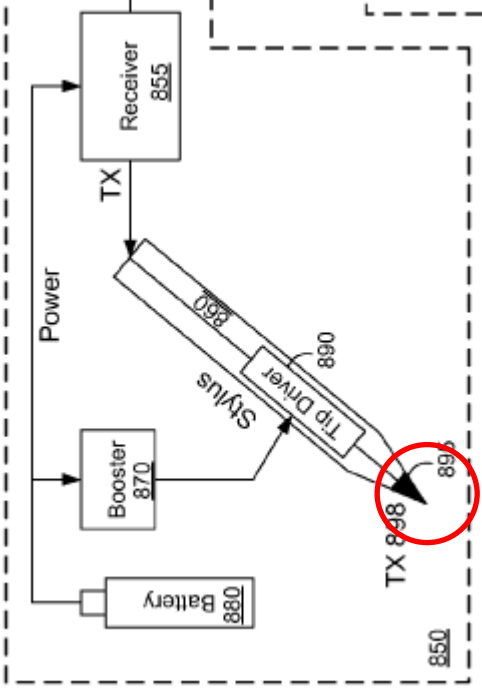


FIG. 8 of Kremin

15[a4] wherein the high-voltage signals result from the one or more electrodes receiving the high voltage.

As discussed above, the tip 895 of Kremin emits the transmit signal directed and amplified through the tip driver 890, which is a high voltage signal. Kremin Claim 6, ¶ [0085]. Therefore, Kremin discloses that high-voltage signals are emitted/result from the high voltage being received from the one or more electrodes. Kremin discloses limitation 15[a4].