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Sleeman et al.

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(54) **CAPACITIVE TOUCH SCREEN WITH NOISE SUPPRESSION**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 1196 days.

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G01D 5/24 (2006.01)
(Continued)

(52) **U.S. Cl.**
CPC **G06F 3/044** (2013.01); **G01B 7/003** (2013.01); **G01D 5/2405** (2013.01); **G06F 1/16** (2013.01);
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(58) **Field of Classification Search**
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Primary Examiner — Amare Mengistu

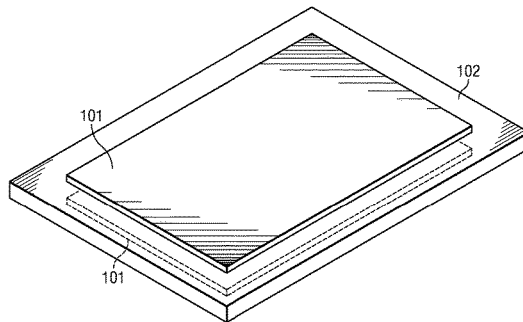
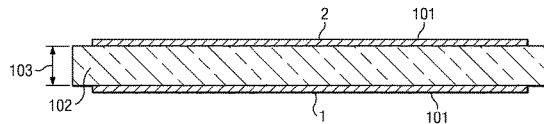
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(57) **ABSTRACT**

A capacitive touch sensor wherein the touch sensitive panel has drive electrodes arranged on the lower side of a substrate and sense electrodes arranged on the upper side. The drive electrodes are shaped and dimensioned to substantially entirely cover the touch sensitive area with individual drive electrodes being separated from each other by small gaps, the gaps being so small as to be practically invisible. The near blanket coverage by the drive electrodes also serves to screen out interference from noise sources below the drive electrode layer, such as drive signals for an underlying display, thereby suppressing noise pick-up by the sense electrodes that are positioned above the drive electrodes.

3 Claims, 10 Drawing Sheets



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|------|---|--|
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- (58) **Field of Classification Search**
 USPC 178/18; 345/173
 See application file for complete search history.

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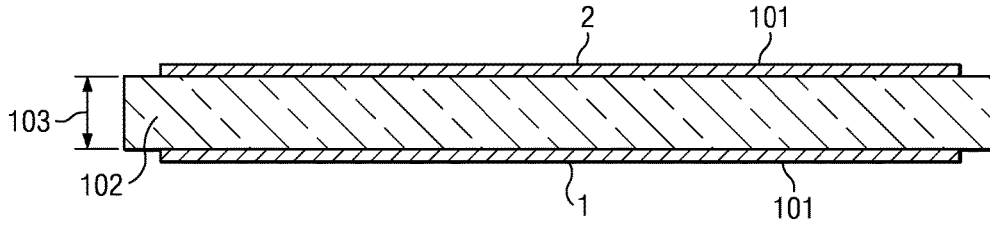


FIG. 1A

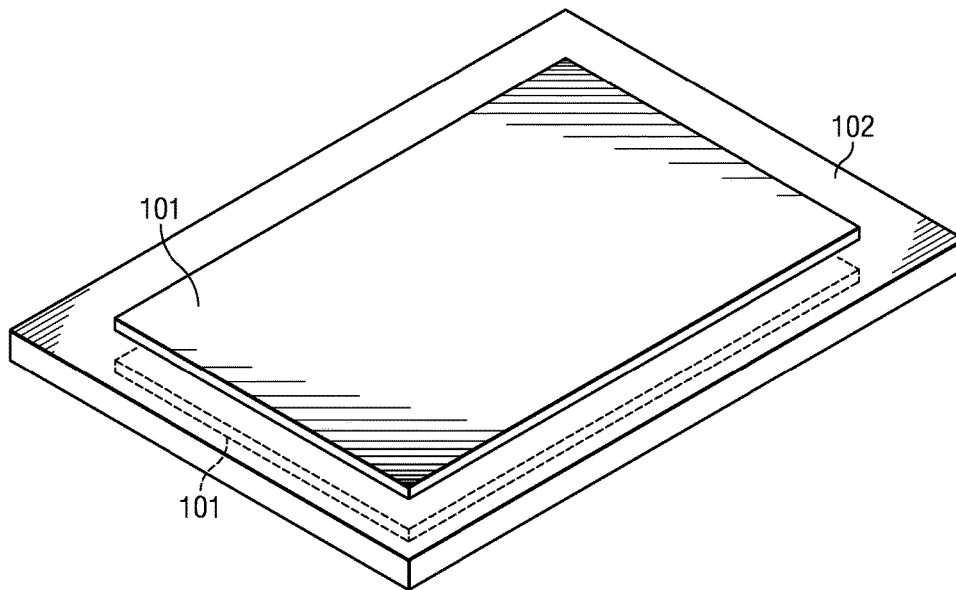


FIG. 1B

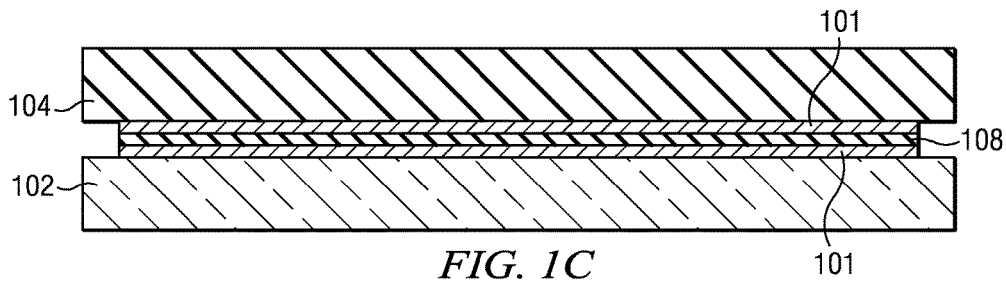
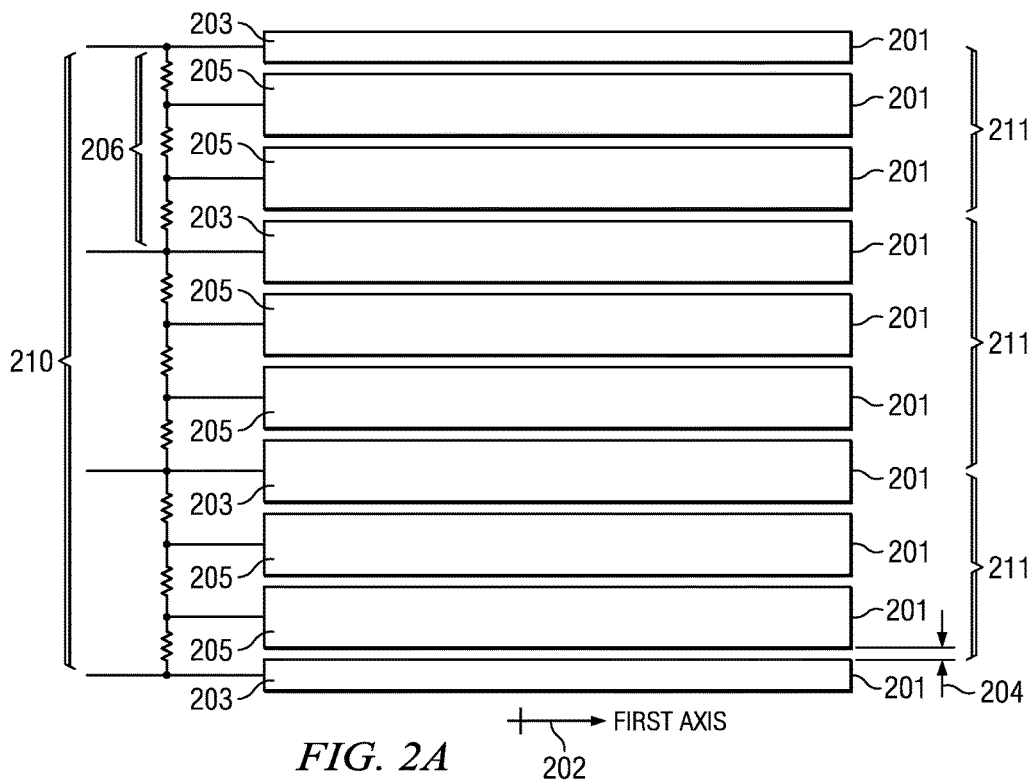
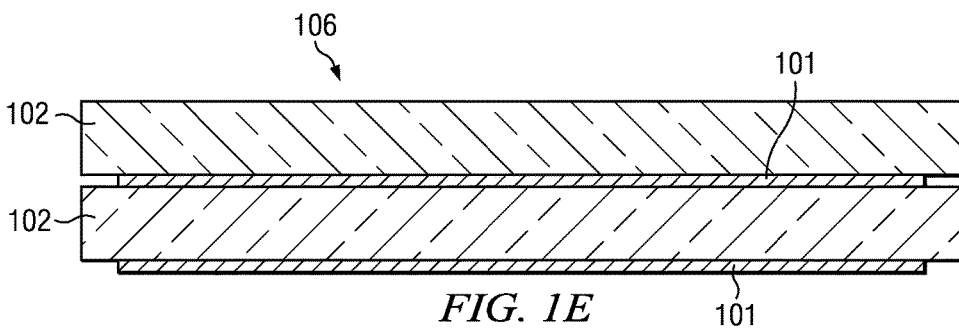
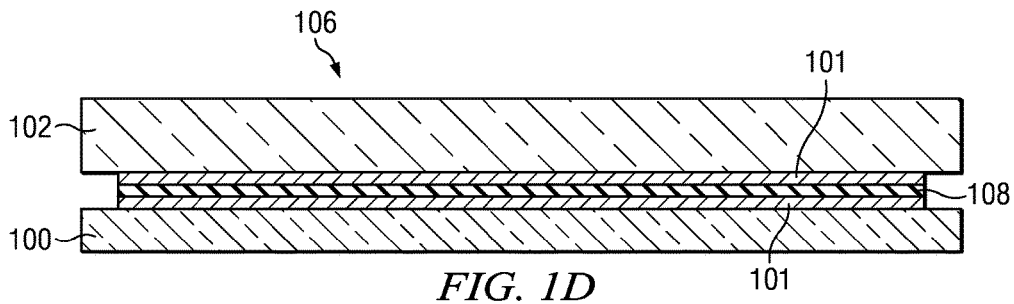


FIG. 1C



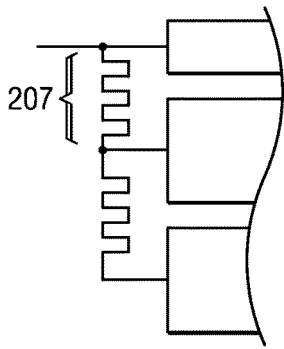


FIG. 2B

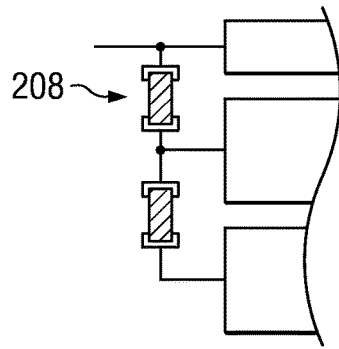


FIG. 2C

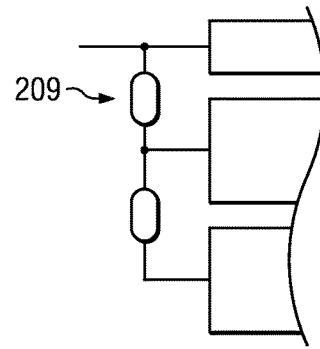


FIG. 2D

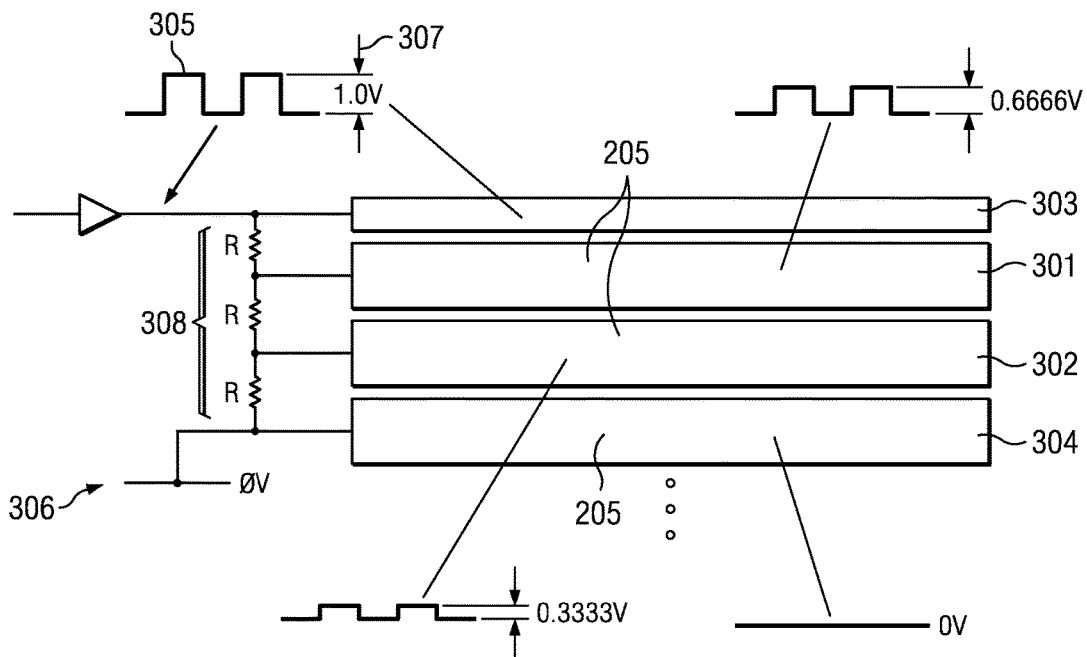


FIG. 3

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