

Apple patent talk: Ultrasound-based force and touch sensing

September 28 2017, by Nancy Owano

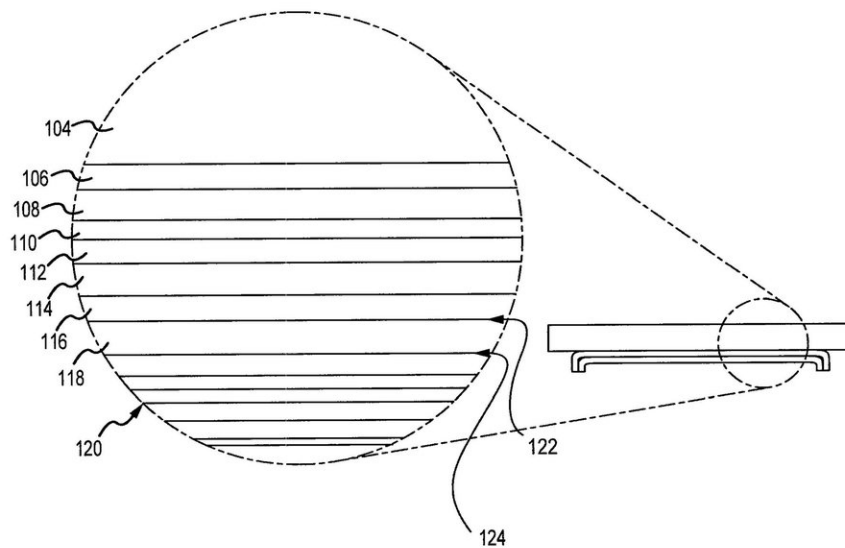


FIG. 5A

Credit: United States Patent, 9,772,721

(Tech Xplore)—Apple's patent filing addresses an ultrasound-based force and touch sensor, according to *AppleInsider*. This could lead to a thinner, less obstructive 3-D Touch mechanism, said the report.

Patently Apple also reported on the granted patent, "Ultrasound-based

[force](#) sensing and [touch](#) sensing," and said that "Apple's newly granted patent covers their invention relating to [force](#) sensing on touch devices using ultrasound."

Alex Perala in *Mobile ID World* said that the patent "may point the way toward a solution to Apple's in-display Touch ID problem. The patent describes an alternative version of 3-D Touch, Apple's pressure sensing display interaction system for the iPhone."

Mikey Campbell, *AppleInsider*, said the patent talked about "a method of determining input force by emitting and detecting ultrasonic pulses. More specifically, the system measures the interaction between said pulses and a user's [finger](#)."

Andrew London in *TechRadar* said this is about "a touch screen technology that can register pressure [sensitivity](#) of touch."

While Apple's 3-D touch is pressure responsive, London noted that the technology discussed in the patent "achieves similar results while taking up much less space under the screen, potentially leaving space for the sub-screen fingerprint sensor to make an appearance in future iterations of the iPhone."

Perala: "The system described in the patent uses ultrasonic [sensors](#) to determine the force of the press, bouncing ultrasonic pulses off of the user's finger to determine how close it is to the screen, and assessing how its shape is changing when pressed against the [display](#) to calculate the force being used."

Campbell noted the force-sensing apparatus can be disposed below a display or above it. "For example, if [ultrasonic sensors](#) were placed over presentation elements, they could be made transparent or constructed and arranged so as not to impact a user's view of the screen." Campbell

said the patent granted "could be a solution to technical troubles that supposedly thwarted under-screen Touch ID in iPhone X, and appears to be more accurate and robust than thin film options. Whether Apple plans to take advantage of the [technology](#), or continue full steam ahead with Face ID, remains to be seen."

Will this concept see the light of day in a product?

Perala: "This new ultrasonic sensor system could take up less internal space, and would seem to complement an in-display fingerprint scanning solution that is also based on [ultrasonic](#) technology."

The patent is titled filed in June 2015 by Apple.

In its Overview section, the [patent](#) points out that the disclosure is generally related to a force sensing device that may be incorporated into "electronic or computing devices, such as, but not limited to, computers, smart phones, tablet computers, track pads, and so on."

More information: Ultrasound-based force sensing and touch sensing, [United States Patent, 9,772,721](#).

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