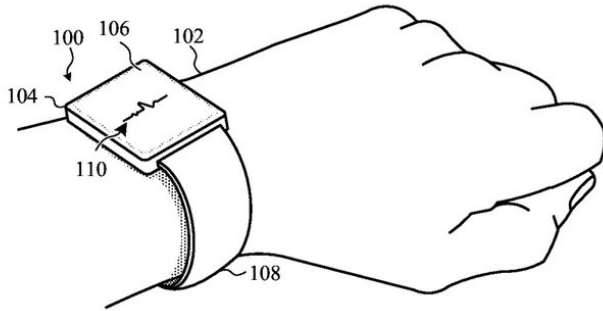


# Patent talk: Apple offers strap solutions for satisfying fit

16 October 2017, by Nancy Owano



**FIG. 1A**

Credit: United States Patent (9,781,984)

(Tech Xplore)—Not all wrists were created equal and the smartwatch that satisfies must not only work but feel comfortable. Otherwise, a "wearable" is a word that in and of itself does not fit. Apple thinks it has a solution and has been granted a patent.

Dated October 10, the patent from the USPTO has the title, "Dynamic fit adjustment for wearable electronic devices." The patent discussion is about paths to self-adjusting bands.

"Apple's [dynamically](#) adjustable Apple Watch band patent was first applied for in April 2015 and credits Andrzej T. Baranski, Serhan O. Isikman, Tyler S. Bushnell, Steven J. Martisaukas and David I. Nazzaro as its inventors," said Mikey Campbell in *AppleInsider*.

Apple noted that conventional watch bands are cumbersome, require multiple steps to achieve a desired fit, need specialized tools or are otherwise inconvenient to adjust. Also, there is often a failure to offer size increments that could suit all users, resulting in an imperfect fit.

Apple sees a solution in the form of self-adjusting bands, according to the patent discussion, whereby the bands could tighten or loosen up; bands would adjust electronically.

Different types of self-adjusting bands were mentioned.

A band could physically be implemented, including 1. shape memory wire (such as Nitinol) that could expand or contract with electrical signals; 2. fluid- or gas-filled bladder; 3. lugs that could retract into the body of the watch; or extendable case that could move the watch closer to the arm.

Regarding the latter solution, Campbell said, "With the latter method, a portion or portions of an Apple Watch chassis, or alternatively its band, extend out toward a user's skin, thereby tightening the band's fit."

Chaim Gartenberg, *The Verge*: "Apple seems to be interested in a system where users could electronically adjust the tightness or looseness of their watchbands, either manually or in automatic response to biometric data from the Watch."

Gartenberg thinks paying attention to fit is worth it. He said, "given how important a good fit on the Watch is, especially for things like comfortable fitness use and accurate heart rate [tracking](#), it's certainly possible that it could one day show up in the real world."

"Aside from being uncomfortable, less than ideal sizing could negatively impact Apple Watch sensor readings, from the bespoke heart rate sensor to data collected by sensitive accelerometers," said Campbell in *AppleInsider*.

The patent discussion addressed fasteners: "some bands have an incrementally user-adjustable size (e.g., a buckling clasp, pin and eyelet, etc.) whereas other bands have a substantially fixed

size, adjustable only with specialized tools and/or expertise (e.g., folding clasp, deployment clasp, snap-fit clasp, etc.). Still other bands may be elasticated expansion-type bands that stretch to fit around a user's wrist."

The patent discussion made a case for why problems may arise:

"In many cases, conventional watch bands may catch, pinch, or pull a user's hair or skin during use if the band is overly tight. In other cases, watch bands may slide along a user's wrist, turn about a user's wrist, or may be otherwise uncomfortable or bothersome to a user if the band is overly loose. These problems can be exacerbated during periods of heightened activity, such as while running or playing sports."

In still further examples, the fit may be different or perceived to be different given factors such as temperature, humidity, sweat, or inflammation.

The [patent](#) made a case for the watch fit to vary with use:

"For example, a user may prefer a looser fit in a timekeeping mode and a tighter fit in a fitness/health tracking mode. Accordingly, there may be a present need for systems and methods for dynamic adjustment of the fit of wearable electronic devices."

**More information:** Dynamic fit adjustment for wearable electronic devices, United States Patent ([9,781,984](#))

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