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TACTION TECHNOLOGY, INC.

UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF CALIFORNIA

TACTION TECHNOLOGY, INC.,

Plaintiff,

vs.

APPLE INC.,

Defendant

Case No. **'21CV812 GPC MSB**

COMPLAINT FOR PATENT INFRINGEMENT

JURY TRIAL DEMANDED

Plaintiff Taction Technology, Inc. ("Taction") asserts the following claims for patent infringement against Defendant Apple Inc. ("Apple"), and alleges as follows.

INTRODUCTION

1. Taction is a technology innovator specializing in enhanced haptics for electronic devices.

2. "Haptics" refers to the science of enabling interaction with technology through the sense of touch. Haptic feedback in electronic devices such as smartphones, smartwatches, virtual reality/game controllers, and headphones provides important sensory information to users. In many such devices, haptic feedback allows users to feel the device responding to their input, and to receive tactile accompaniment to music, dialogue, or actions occurring on a screen.

3. Haptic devices can also provide alerts and other information to users, from simple buzzing when a smart phone is "ringing" in silent mode to more complex signals used to indicate specific responses to inputs. Haptic feedback in these types of devices is created by electromechanical actuators—small motors enclosed in a housing or frame. A mass inside a haptic actuator vibrates in response to electric signals. High-fidelity actuators can generate different haptic sensations based on different input signals, from short, sharp taps to low-frequency rumbles.

4. A problem with traditional low-fidelity haptic actuators is their limited ability to faithfully reproduce a variety of input signals. Haptic actuators tend to have resonant frequencies at which the movement and vibration of the mass is accentuated. For example, a resonating mass can be slow to begin producing noticeable vibration when a signal is initiated, and can continue vibrating even after the signal is removed.

5. Traditional haptic actuators can also produce attenuated vibrations when the input signal is different from the resonant frequency of the actuator. These effects can contribute to distortion of the input signal and the production of a tactile vibration that may differ significantly from the original signal. Thus, traditional low-fidelity

haptic actuators may not be capable of producing more than a relatively small number of different output signals.

6. Taction's patented inventions are directed to ways to more accurately reproduce a wider range of signals with a haptic actuator. Taction's approach can employ specific configurations of flexures, coils, magnets, and magnetic ferrofluid to act on the moving mass to lessen, or "damp," undesired vibrations while also allowing the actuator to be operated efficiently.

7. Taction's techniques can reduce the "Q-factor"—a damping metric—of a haptic actuator. This leads to tactile feedback that can more accurately reproduce complex input signals, and that can reproduce different input frequencies more precisely. Taction's technology directly improves the overall user experience of a device by enabling better haptic feedback.

8. Accurate haptic feedback is important to Apple.

9. Apple has included the specially-branded "Taptic Engine" in multiple models of the iPhone and Apple Watch to provide haptic effects.

10. Since introducing the specially-branded "Taptic Engine" haptic actuator in the iPhone and Apple Watch, Apple has updated the hardware design numerous times.

11. These updates to the Apple Taptic Engine hardware design reflect an effort to improve haptic performance in Apple's devices.

12. The initial Taptic Engines in the original Apple Watch and iPhone 6S were not damped using ferrofluid.

13. More recent Taptic Engines are damped using magnetic ferrofluid.

14. Similarly, the initial Taptic Engines in the original Apple Watch and iPhone 6S used coil springs to provide controlled resistance to motion and a central locating rod to locate the moving mass.

15. More recent Taptic Engines use a plurality of flexures to both locate the mass and to provide controlled resistance to motion.

16. Apple has also developed several software systems and APIs (libraries) for haptic feedback, such as "Core Haptics."

17. Those APIs rely upon the enhanced capabilities of Apple's updated Taptic Engines.

18. Apple advertises and touts the fidelity of the tactile sensations produced by its iPhones and Apple Watches.

19. Apple's use of haptics in its iPhones has allowed it to remove the home button and thereby maximize screen real estate.

20. Apple's use of world-class haptics in its iPhones and Apple Watches has helped it distinguish those products from those of its competitors.

21. Apple is capitalizing on Taction's innovation and success by selling devices that infringe Taction's patents. Apple is utilizing Taction's patented inventions without license or authority from Taction. Taction has brought this action to remedy Apple's infringement.

NATURE OF THE ACTION

22. This is a civil action for infringement under the patent laws of the United States of America, 35 U.S.C. § 1 *et seq.*

23. Taction is the owner of all rights, title, and interest in U.S. Patent Nos. 10,659,885 and 10,820,117 (collectively, the "Asserted Patents").

24. Apple has infringed and continues to infringe, directly and indirectly, one or more claims of Taction's Asserted Patents by making, using, selling, and offering to sell in the United States, including in this District, the Apple Watch Series 3, Apple Watch Series 4, Apple Watch Series 5, Apple Watch Series 6, Apple Watch SE, Apple Watch Nike, iPhone 8, iPhone 8 Plus, iPhone X, iPhone XR, iPhone XS, iPhone XS Max, iPhone 11, iPhone 11 Pro, iPhone 11 Pro Max, iPhone 12, iPhone 12 Mini, iPhone 12 Pro, iPhone 12 Pro Max, and 2020 iPhone SE (the "Accused Products").

25. This list of Accused Products is non-limiting and based on information currently available to Taction.

26. Taction reserves the right to modify the list of Accused Products, including as new iPhones or Apple Watches are released during the pendency of this case.

27. Taction seeks injunctive relief and monetary damages.

THE PARTIES

28. Taction is a Delaware corporation with its principal place of business at 9431 Dowdy Drive, San Diego, California, and the legal owner by assignment of the Asserted Patents, which were duly and legally issued by the United States Patent and Trademark Office.

29. Apple is a California corporation, with its principal place of business at 1 Apple Park Way, Cupertino, California.

30. Apple designs, manufactures, and sells throughout the world a wide range of products, including mobile devices that incorporate Taction's patented technologies.

31. Apple maintains offices in San Diego, and markets, offers, and distributes iPhones and Apple Watches throughout the United States, including in this District.

32. Apple directly and indirectly develops, designs, manufactures, distributes, markets, offers to sell, and sells infringing products and services in the United States, including in this District, and otherwise purposefully directs infringing activities to this District in connection with the Accused Products.

JURISDICTION AND VENUE

33. This is a civil action for patent infringement arising under the patent laws of the United States, 35 U.S.C. § 1 *et seq*.

34. This Court has subject matter jurisdiction over the matters asserted in this Complaint under 28 U.S.C. §§ 1331 and 1338(a) and 35 U.S.C. §§ 271 *et seq*.

35. This Court has personal jurisdiction over Apple because Apple is organized and exists under the laws of California.

36. Venue is proper in this District pursuant to 28 U.S.C. § 1391(b) and (c) and 28 U.S.C. § 1400(b).

37. Venue is appropriate under 28 U.S.C. 1400(b) at least because Apple is incorporated in California and because Apple has committed acts of infringement and has a regular and established place of business in this district.

38. Apple's acts of infringement in this district include but are not limited to sales of the Accused Products at Apple Store locations in this district, including but not limited to 7007 Friars Road, San Diego, CA 92108 and 4505 La Jolla Village Drive, San Diego, CA 92122.

39. Apple's Apple Stores in San Diego County alone employ at least 600 people.[1]

40. In addition to the Apple Stores, Apple has a regular and established place of business in University City, San Diego, including a "100,000 square-foot research/office building" and a second 204,000 square-foot building.[2]

41. Apple has publicly announced that its location in University City is a "principal engineering hub" and that it expects to hire 1,200 people over three years.[3]

42. Apple has stated that it would need "hundreds of thousands of square feet" of real estate in San Diego to accommodate its growing team in the area.[4]

43. Since 2019, Apple has been the employer of at least 127 recipients of H-1B visas who work and reside in San Diego.[5]

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[1] https://www.sandiegouniontribune.com/business/technology/sd-fi-apple-hiring-san-diego-20190306-story.html

[2] https://www.sandiegouniontribune.com/business/technology/story/2019-11-13/apple-inks-deal-for-second-utc-building-as-part-of-san-diego-expansoin

[3] https://www.sandiegouniontribune.com/business/technology/sd-fi-apple-hiring-san-diego-20190306-story.html

[4] https://www.pacificcoastcommercial.com/post/apple-leases-full-building-in-expansion-in-san-diego-high-tech-hub

44. Apple is currently advertising approximately 278 jobs in San Diego.[6]

45. Apple's open job listings in San Diego include at least a Haptics Firmware Engineer who will "develop Taptic Engine firmware for next-generation Apple products, including iPhone, Apple Watch, and Mac" and will "join a tightly-integrated team of hardworking engineers to deliver world-class haptic experiences that will be enjoyed by millions of customers."[7]

46. Apple's open job listings in San Diego also include at least a Haptics Quality Engineer who will "test and validate Apple's Taptic Engine firmware, software and algorithms for next generation haptic devices including iPhone [and] Watch."[8]

47. In February 2021, Apple advertised an open job listing in San Diego for a Haptics Product Design Engineer, part of "[t]he Haptic Engineering team [that] develops state of the art haptic solutions that are central to Apple's products, including the iPhone and Apple Watch," and who will "lead the design, development, and validation of next-generation haptic actuators and experiences" and "will have end-to-

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[5] H1B Salary Database, https://h1bdata.info/index.php?em=APPLE+INC&job=&city=SAN+DIEGO&year=All+Years

[6] https://jobs.apple.com/en-us/search?location=san-diego-SDO

[7] Exhibit C, https://jobs.apple.com/en-us/details/200220549/hid-haptics-firmware-engineer?team=HRDWR (last visited Feb. 26, 2021)

[8] Exhibit D, https://jobs.apple.com/en-us/details/200201277/hid-haptics-quality-engineer?team=HRDWR (las visited Apr. 19, 2021)

end responsibility for the mechanical design and integration of haptic actuators from concept to production."[9]

TACTION'S INVENTIONS AND PRODUCTS

48. Dr. S. James Biggs, the inventor of the Asserted Patents, earned his Ph.D. in Bioengineering from the University of Utah and worked early in his career at the MIT Touch Lab.

49. Dr. Biggs' research at the MIT Touch Lab focused on the effect of different types of vibrations on human skin, including the differences between axial vibrations (perpendicular to the skin) and shear vibrations (parallel to the skin).

50. Over the course of his career, Dr. Biggs has explored new types of haptic actuators that could produce shear vibrations that accurately reproduced a wider range of frequencies, including bass frequencies lower than 200 Hz.

51. As a result of his research, development, and engineering, Dr. Biggs developed an improved haptic actuator, the Taction Transporter®, that incorporates specific configurations of flexures, coils, magnets, and a magnetic ferrofluid to damp undesired vibrations while also allowing the actuator to be operated efficiently.

52. The Taction Transporter is able to produce relatively uniform output across a wider range of input frequencies than previous haptic actuators.

53. One application for the Taction Transporter is to provide an enhanced bass response for personal audio applications.

54. Taction successfully Kickstarted its own brand of haptic-enhanced headphones, the Taction Kannon.[10]

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[9] Exhibit E, https://sandiego.jobd.org/view/259155.html (last visited Feb. 26, 2021) (originally posted at https://jobs.apple.com/en-us/details/200219890/haptics-product-design-engineer?team=HRDWR)

[10] https://www.kickstarter.com/projects/2053327139/kannon-headphones-accurate-bass-you-can-feel

55. Each earcup in the Taction Kannon contained a traditional acoustic speaker driver as well as a planar haptic actuator.

56. The Taction Kannon produced shear vibrations, parallel to the side of the user's head.

57. This was an improvement over older designs that moved axially, or perpendicular to the user's head.

58. Compared to earlier devices, the Taction Kannon left the volume of air within the earcup relatively unchanged, preserving the fidelity of the audio coming from the traditional speaker driver.

59. Taction has received widespread acclaim for the Taction Kannon and the Taction Transporter.

60. One reviewer noted that "[i]t took about half a second for a wide grin to spread across my face when I first put the Taction Kannons on. It's not a generic shaking sensation as soon as bass notes hit, it's a masterfully accurate vibration that

mirrors what you would feel in the real world were such a note played."[11]

61. HiFi+ wrote that the Taction Kannon "artfully combines a traditional dynamic driver with a well crafted, proprietary Taction haptic driver."[12]

62. Taction has licensed its patented haptics technology.

63. For example, Taction's technology powers the Corsair HS60 Haptic headphones, named the "most immersive gaming headset" of 2020.[13]

64. Product review website The Gamer declared that the HS60 Haptic was "no gimmick" and that they "add a new sensory layer to any game and have the power to turn a mundane experience into a thrilling one."[14]

65. TechPowerUp's reviewer commented that "it truly manages to achieve what it set out to" and that "[t]he haptic system feels incredibly responsive and on point."[15]

TACTION'S PATENTS

66. Taction applied for and has been granted numerous United States patents since the company's inception. Two of those patents are at issue in this case.

67. U.S. Patent No. 10,659,885 (the "'885 patent") is entitled "Systems and Methods for Generating Damped Electromagnetically Actuated Planar Motion for Audio-Frequency Vibrations" and issued on May 19, 2020. A true and correct copy of the '885 patent is attached as Exhibit A to this Complaint.

68. Taction is the owner of all rights, title, and interest in and to the '885 patent, with the full and exclusive right to file suit to enforce the '885 patent, including the right to recover for past infringement.

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[11] http://www.basshead.club/taction-kannon-prototype-review/

[12] http://www.hifiplus.com/articles/canjam-socal-2016-report-part-4/?page=3

[13] https://www.pcgamesn.com/best-gaming-headset

[14] https://www.thegamer.com/corsair-hs60-haptic-headphone-review/

[15] https://www.techpowerup.com/review/corsair-hs60-haptic/4.html

69. The ’885 patent is valid and enforceable under United States patent laws.

70. The ’885 patent claims are directed to a patent-eligible, non-abstract idea. They address, among other things, a specific improvement to the way electronic devices operate, including specific claimed materials, structures, and configurations of a haptic apparatus that provides enhanced haptic sensations to an end-user.

71. U.S. Patent No. 10,820,117 (the “’117 patent”) is entitled “Systems and Methods for Generating Damped Electromagnetically Actuated Planar Motion for Audio-Frequency Vibrations” and issued on October 27, 2020. A true and correct copy of the ’117 patent is attached as Exhibit B to this Complaint.

72. Taction is the owner of all rights, title, and interest in and to the ’117 patent, with the full and exclusive right to bring suit to enforce the ’117 patent, including the right to recover for past infringement.

73. The ’117 patent is valid and enforceable under United States patent laws.

74. The ’117 patent claims are directed to a patent-eligible, non-abstract idea. They address, among other things, a specific improvement to the way electronic devices operate, including specific claimed materials, structures, and configurations of a haptic apparatus that provides enhanced haptic sensations to an end-user.

APPLE’S USE OF TACTION’S PATENTS

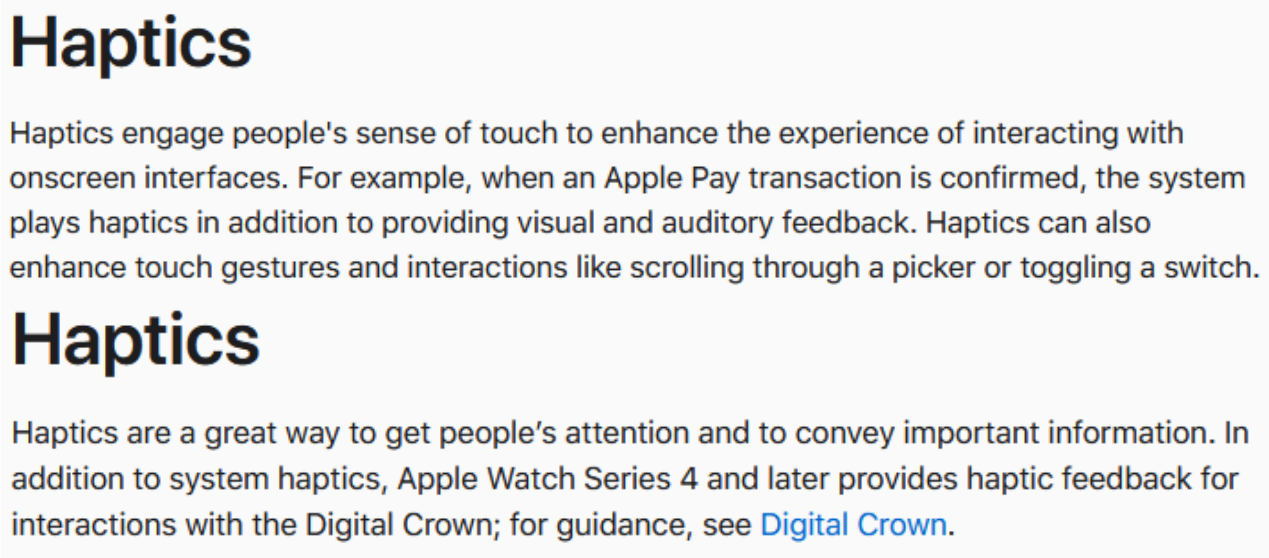
75. Haptics are important to Apple.

76. Apple offers state-of-the-art haptics solutions.

77. Apple’s haptics solutions are central in shaping the experience of using many of Apple products.

78. For example, a recent job posting by Apple for its San Diego facility stated that "state of the art haptic solutions . . . are central in shaping the experience of using Apple products."[16]

79. Apple's Human Interface Guidelines also emphasize the importance of haptics to Apple products:[17]



Haptics

Haptics engage people's sense of touch to enhance the experience of interacting with onscreen interfaces. For example, when an Apple Pay transaction is confirmed, the system plays haptics in addition to providing visual and auditory feedback. Haptics can also enhance touch gestures and interactions like scrolling through a picker or toggling a switch.

Haptics

Haptics are a great way to get people's attention and to convey important information. In addition to system haptics, Apple Watch Series 4 and later provides haptic feedback for interactions with the Digital Crown; for guidance, see Digital Crown.

80. Apple products including the iPhone and the Apple Watch have implemented increasingly sophisticated haptics technology over time.

81. Since the release of the first Apple Watch in 2015, Apple has included a customized haptic actuator, called the "Taptic Engine," in many of its devices:[18]

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[16] Exhibit D, https://sandiego.jobd.org/view/259155.html (last visited Feb. 26, 2021) (originally posted at https://jobs.apple.com/en-us/details/200219890/haptics-product-design-engineer?team=HRDWR)

[17] https://developer.apple.com/design/human-interface-guidelines/ios/user-interaction/haptics/; https://developer.apple.com/design/human-interface-guidelines/watchos/interaction/haptics/

[18] https://web.archive.org/web/20150911022920/http://www.apple.com/watch/watch-reimagined/

82. The Taptic Engines in Apple's devices have been redesigned several times to improve their haptic performance.

83. In particular, since late 2016 Taptic Engines have employed ferrofluid to damp vibrations of the moving mass.

84. Similarly, since late 2016 Taptic Engines have included in-plane flexures to locate and suspend the moving mass.

85. In 2019, Apple continued to expand its haptics functionality, introducing the Core Haptics library.

86. With the Core Haptics library, app developers can "engage users physically, with tactile and audio feedback that gets attention and reinforces actions."[19]

87. Among other things, the Core Haptics library includes functionality that allows for precise synchronization of haptic sensations to audio tracks.[20]

[19] https://developer.apple.com/documentation/corehaptics

88. Using ferrofluids to damp unwanted vibrations in the Taptic Engine allows the Taptic Engine to more accurately produce desired haptic vibrations.

89. More accurately producing desired haptic vibrations improves the overall user experience of the Accused Products.[21]

90. More accurately producing desired haptic vibrations enables other hardware aspects of the Accused Products to change in ways that improve their overall user experience.

91. For example, more accurately producing desired haptic vibrations allowed Apple to remove the physical home button from most current iPhones and to expand the size of the screen to almost the entire front surface of the device.

COUNT I: INFRINGEMENT OF U.S. PATENT NO. 10,659,885

92. Taction incorporates by reference and re-alleges all of the foregoing paragraphs of this Complaint as if fully set forth herein.

93. Apple has directly infringed, continues to infringe, and has induced or contributed to the infringement of the '885 patent by making, using, selling, and

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[20] https://developer.apple.com/videos/play/wwdc2019/520/ ("Core Haptics lets you design fully customized haptic patterns with synchronized audio. See examples of how haptics and audio enables you to create a greater sense of immersion in your app or game."); https://developer.apple.com/videos/play/wwdc2019/223/ ("Discover how to combine visuals, audio and haptics, using the Taptic Engine, to add a new level of realism and improve feedback in your app or game.").

[21] *E.g.*, https://developer.apple.com/design/human-interface-guidelines/ios/user-interaction/haptics/ ("Impact haptics provide a physical metaphor you can use to complement a visual experience. For example, people might feel a tap when a view snaps into place or a thud when two heavy objects collide."). https://developer.apple.com/documentation/corehaptics ("Use haptics to engage users physically, with tactile and audio feedback that gets attention and reinforces actions.").

offering for sale, without authority or license the Accused Products in violation of 35 U.S.C. § 271(a).

94. The Accused Products are non-limiting examples that were identified based on publicly available information, and Taction reserves the right to identify additional infringing activities, products, and services, including, for example, on the basis of information obtained during discovery.

95. By way of example only, the Accused Products meet all the limitations of at least claim 1 of the '885 patent, which recites: An apparatus for imparting motion to the skin of a user, the apparatus comprising: a housing; a plurality of coils capable of carrying electrical current; a plurality of magnets arranged in operative proximity to the plurality of coils; a moving portion comprising an inertial mass and the plurality of magnets; a suspension comprising a plurality of flexures that guides the moving portion in a planar motion with respect to the housing and the plurality of conductive coils; wherein movement of the moving portion is damped by a ferrofluid in physical contact with at least the moving portion; and wherein the ferrofluid reduces at least a mechanical resonance within the frequency range of 40-200 Hz in response to electrical signals applied to the plurality of conductive coils.

96. The Accused Products are, or contain, an apparatus for imparting motion to the skin of a user.

97. The Accused Products include Taptic Engine haptic actuators that employ ferrofluid damping.

98. The Taptic Engines use a moving mass that causes the Taptic Engines to vibrate.

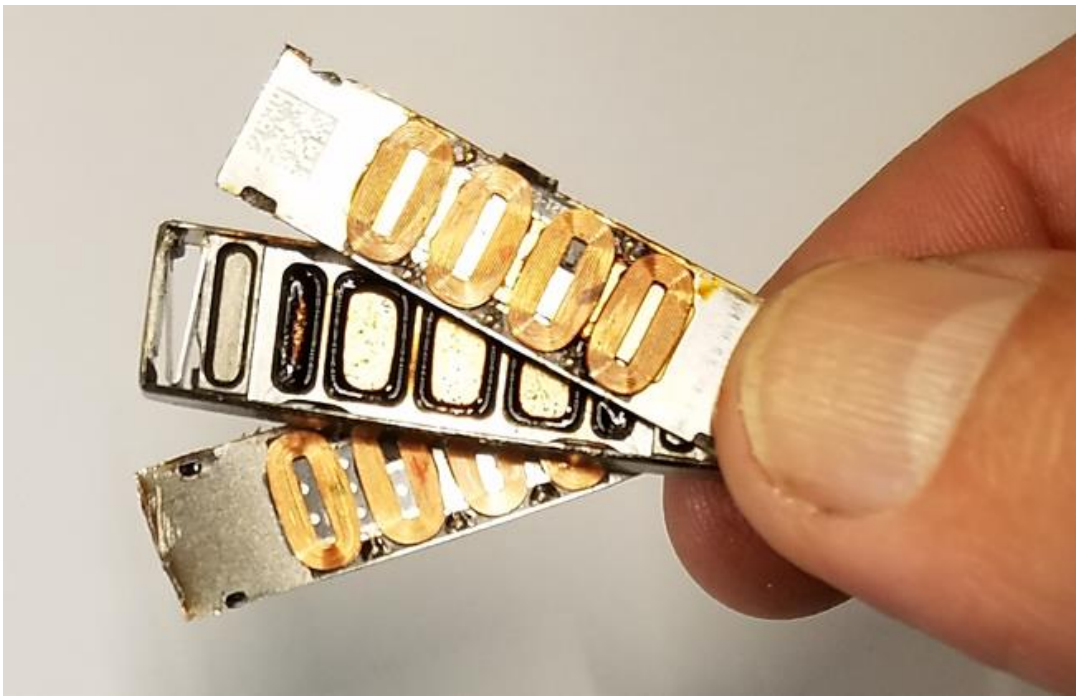
99. The vibration of the Taptic Engines is transferred to the housing of an iPhone or Apple Watch, which then imparts motion to the skin of a user in contact with the device.

100. The Accused Products contain a Taptic Engine that includes a housing.

101. One example in the 2020 iPhone SE is shown below:

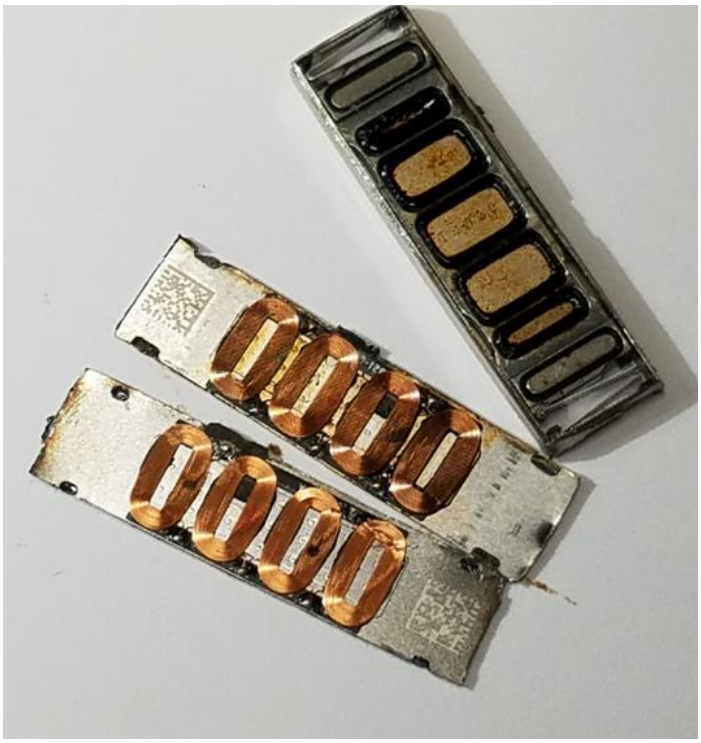
102. The Taptic Engines in the Accused Products contain a plurality of coils capable of carrying electrical current.

103. One example in the 2020 iPhone SE is shown below:



104. The Taptic Engines in the Accused Products contain a plurality of magnets arranged in operative proximity to the plurality of coils.

105. One example in the 2020 iPhone SE is shown below:

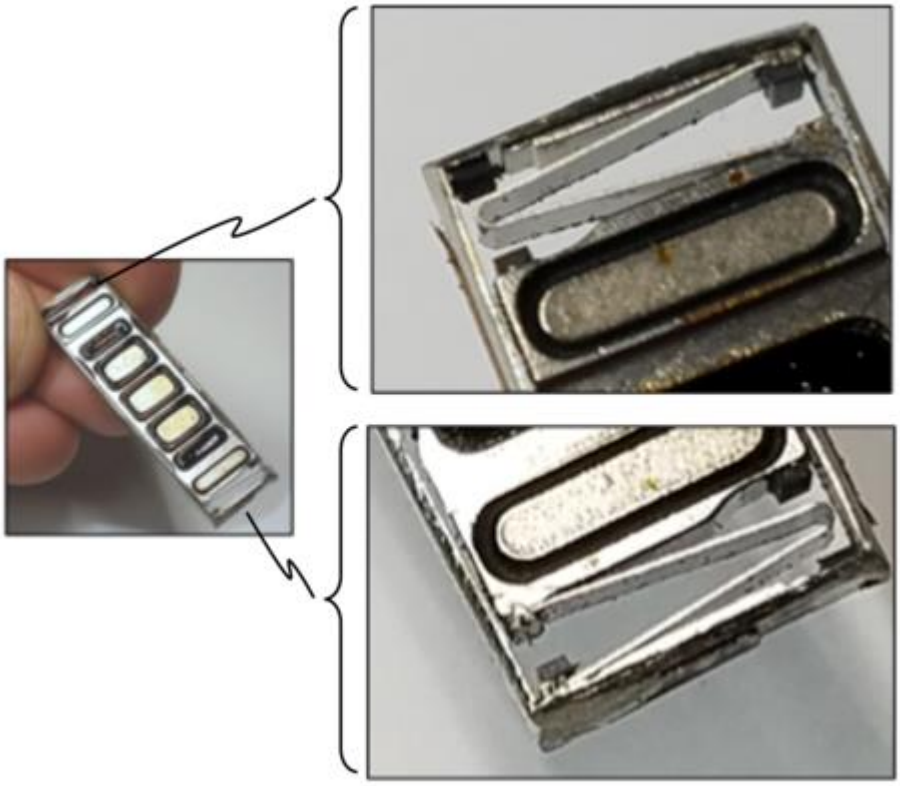


106. The Taptic Engines in the Accused Products contain a moving portion comprising an inertial mass including tungsten inserts and a plurality of magnets.

107. One example in the 2020 iPhone SE is shown below:

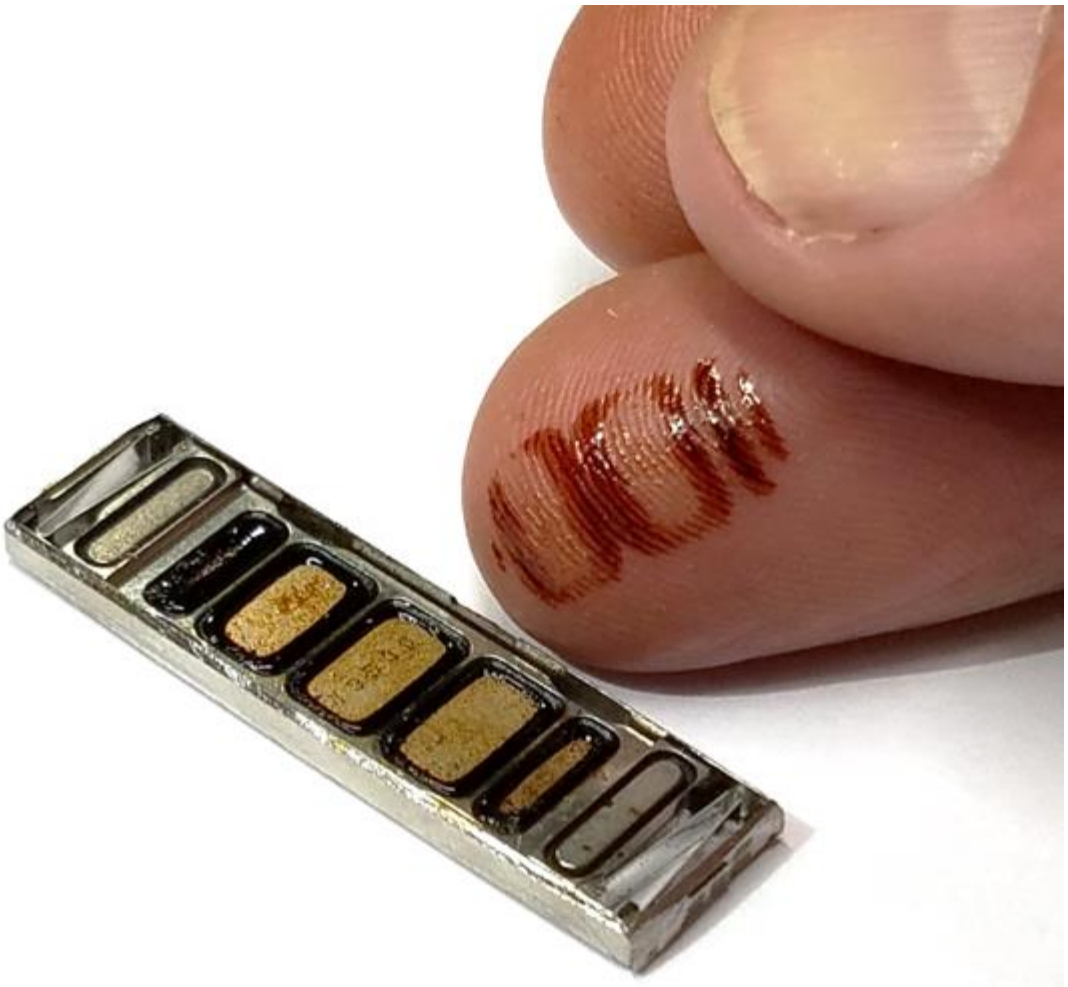
108. The Taptic Engines in the Accused Products contain a suspension comprising a plurality of flexures that guides the moving portion in a planar motion with respect to the housing and the plurality of conductive coils.

109. One example in the 2020 iPhone SE is shown below:



110. The movement of the moving portion of the Taptic Engines in the Accused Products is damped by a ferrofluid in physical contact with at least the moving portion.

111. One example in the 2020 iPhone SE is shown below:



112. On information and belief, the ferrofluid in the Taptic Engines in the Accused Products reduces at least a mechanical resonance within the frequency range of 40-200 Hz in response to electrical signals applied to the plurality of conductive coils.

113. Apple actively, knowingly, and intentionally induces infringement of one or more claims of the '885 patent under 35 U.S.C. § 271(b) by actively encouraging others to make, use, sell, and offer to sell in the United States, the Accused Products.

114. For example, Apple provides directions, instruction manuals, guides, and/or other materials that encourage and facilitate infringing use by others.

115. Apple has sold and is selling the Accused Products with the knowledge and intent that customers who buy the products will use the products for their

infringing use and therefore that customers have been and are directly infringing the '885 patent.

116. Apple contributes to the infringement of one or more claims of the '885 patent under 35 U.S.C. § 271(c) by offering to sell and selling a component of the Accused Products that constitutes a material part of the inventions, knowing the same to be especially made or especially adapted for use in an infringement of the '885 patent, and is not a staple article or commodity of commerce suitable for substantial noninfringing use.

117. Apple was aware of the '885 patent at least from the date of this Complaint.

118. On information and belief, Apple was aware of the '885 patent since its issuance on May 19, 2020.

119. As one example, on information and belief, Apple was aware of the '885 patent by purchasing, using, and reverse engineering two Taction Kannon headsets.

120. The headsets were ordered by Anna Mirabella, Product Design Engineering Program Manager at Apple, on April 7, 2017, and shipped to Apple at 1 Infinite Loop, Cupertino, California on February 24, 2018, in the care of James Vandyke, Product Design Engineer at Apple.

121. Both the headsets and their manuals were marked with U.S. Patent No. 9,439,921, and were marked with additional patents pending.

122. U.S. Patent No. 9,439,921 is in the same family as the '885 patent.

123. As an additional example, on information and belief, Apple was aware of the '885 patent because Taction's U.S. Patent Publication No. 2016/0086458, which is in the same family as the '885 patent, is cited as prior art on the face of Apple's U.S. Patent No. 10,237,660, which issued from an application filed on March 16, 2016.

124. As a further example, on information and belief, Apple was aware of the '885 patent by Apple's research into competing technology for the Accused Products, as well as competing products for the AirPods Max and various Beats headphones.

125. As another example, on information and belief, Apple was aware of the '885 patent due to Apple's knowledge of Taction and Taction's disclosure of its patents (including the '885 patent) on its website.[22]

126. On information and belief, Apple knew that the Accused Products infringe the '885 patent, or at a minimum believed there was a high probability that the accused products were covered by Taction's patents, but willfully blinded itself to Taction's patents and the infringing nature of the Accused Products.

127. The foregoing allegations are based on publicly available information and a reasonable investigation of the structure and operation of the Accused Products.

128. Taction reserves the right to modify this description, including, for example, on the basis of information about the Accused Products that it obtains during discovery.

129. The infringement details provided for claim 1 of the '885 patent are exemplary, and Taction intends to assert additional claims of the '885 patent beyond claim 1.

130. Apple's infringement has damaged and continues to damage Taction in an amount yet to be determined, of at least a reasonable royalty and the lost profits that Taction would have made but for Apple's acts of infringement.

131. This is an exceptional case. Taction is entitled to attorneys' fees and costs under 35 U.S.C. § 285 as a result of the infringement of the '885 patent by Apple.

COUNT II: INFRINGEMENT OF U.S. PATENT NO. 10,820,117

132. Taction incorporates by reference and re-alleges all of the foregoing paragraphs of this Complaint as if fully set forth herein.

133. Apple has directly infringed, continues to infringe, and has induced or contributed to the infringement of the '117 patent by making, using, selling, and

[22] https://www.tactiontechnology.com/patents/

offering for sale, without authority or license the Accused Products in violation of 35 U.S.C. § 271(a).

134. The Accused Products are non-limiting examples that were identified based on publicly available information, and Taction reserves the right to identify additional infringing activities, products, and services, including, for example, on the basis of information obtained during discovery.

135. By way of example only, the Accused Products meet all the limitations of at least claim 1 of the '117 patent, which recites: An apparatus comprising: a housing; a plurality of conductive coils capable of carrying electrical current; a plurality of magnets arranged in operative proximity to the plurality of conductive coils; a moving portion comprising an inertial mass and the plurality of magnets; a suspension comprising a plurality of flexures that guides the moving portion in a planar motion with respect to the housing and the plurality of conductive coils; wherein vibration of the apparatus imparts vibrations to a user's skin; wherein vibration of the apparatus is damped by a viscous ferrofluid in physical contact with at least the moving portion; wherein the viscous ferrofluid reduces at least a resonance within a frequency range of 40-200 Hz in response to signals applied to the plurality of conductive coils; wherein said moving portion includes at least a pocket that provides space for at least a magnet; herein each of said plurality of flexures is more resistant to motion transverse to a plane of the moving portion than it is to linear motion in the plane of the moving portion; and herein said housing is generally cuboid in shape.

136. The Accused Products are, or contain, an apparatus.

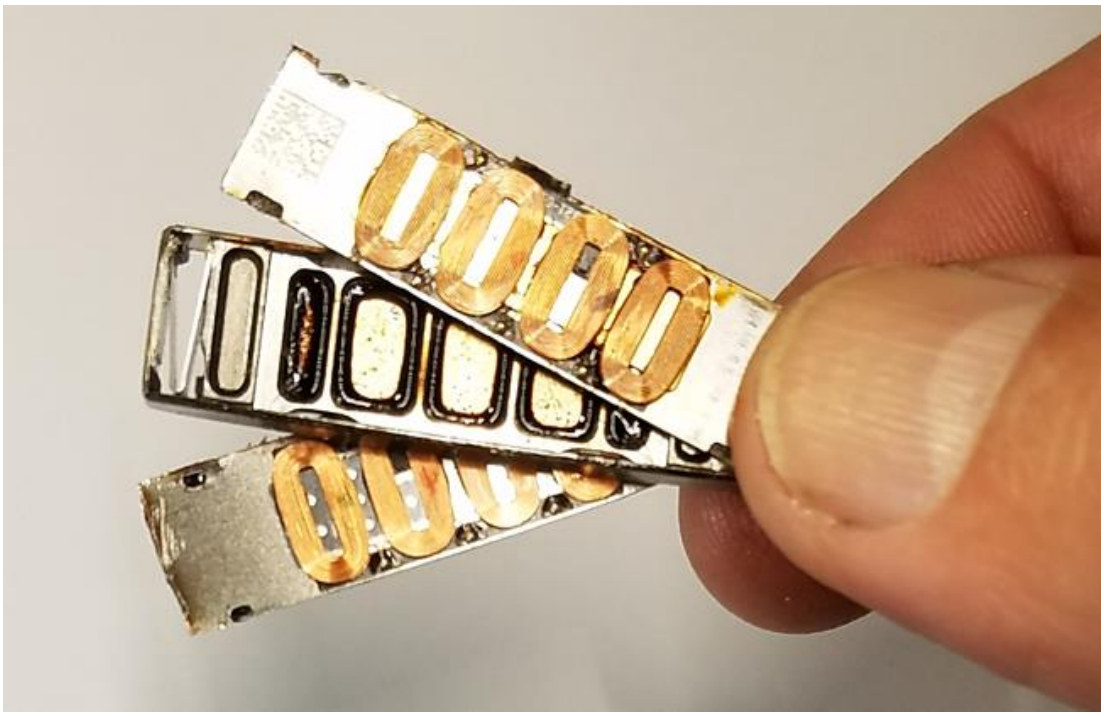
137. The Accused Products include Taptic Engine haptic actuators that employ ferrofluid damping.

138. The Accused Products contain a Taptic Engine that includes a housing.

139. One example in the 2020 iPhone SE is shown below:

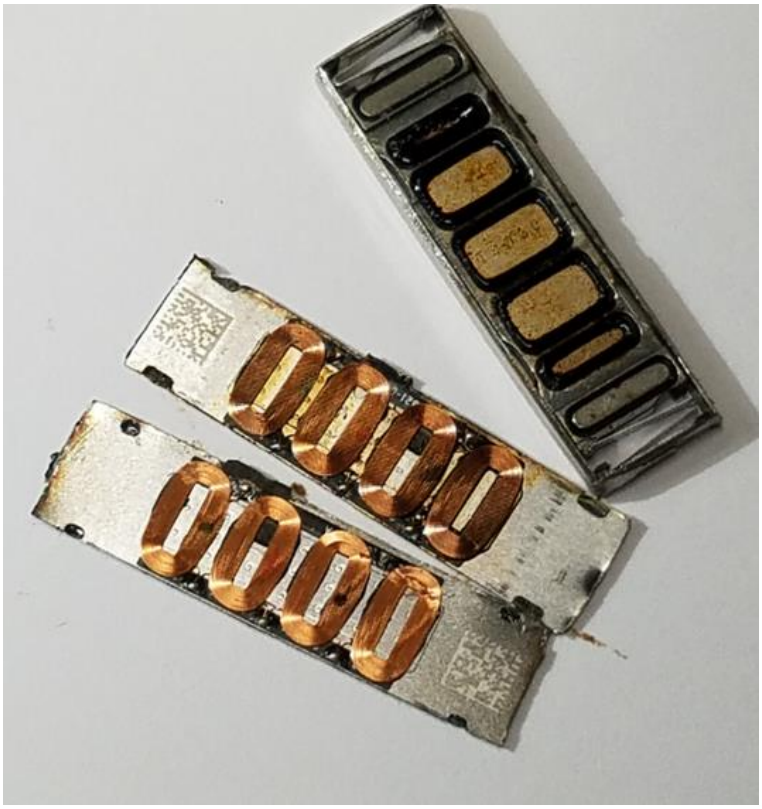
140. The Taptic Engines in the Accused Products contain a plurality of conductive coils capable of carrying electrical current.

141. One example in the 2020 iPhone SE is shown below:



142. The Taptic Engines in the Accused Products contain a plurality of magnets arranged in operative proximity to the plurality of conductive coils.

143. One example in the 2020 iPhone SE is shown below:

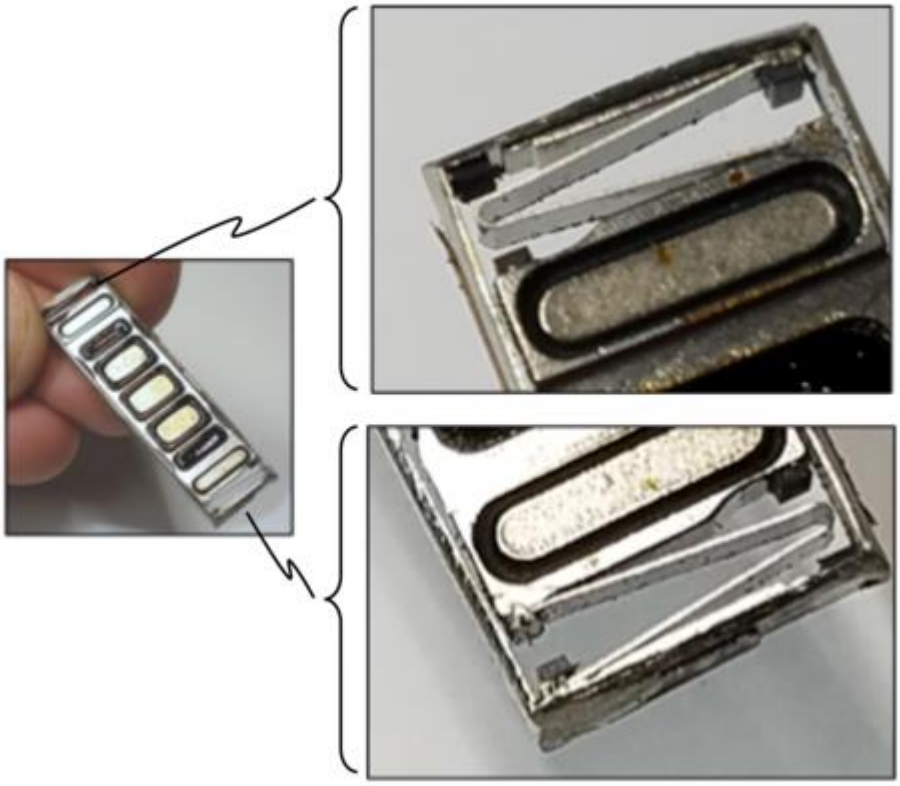


144. The Taptic Engines in the Accused Products contain a moving portion comprising an inertial mass, including tungsten inserts, and a plurality of magnets.

145. One example in the 2020 iPhone SE is shown below:

146. The Taptic Engines in the Accused Products contain a suspension comprising a plurality of flexures that guides the moving portion in a planar motion with respect to the housing and the plurality of conductive coils.

147. One example in the 2020 iPhone SE is shown below:



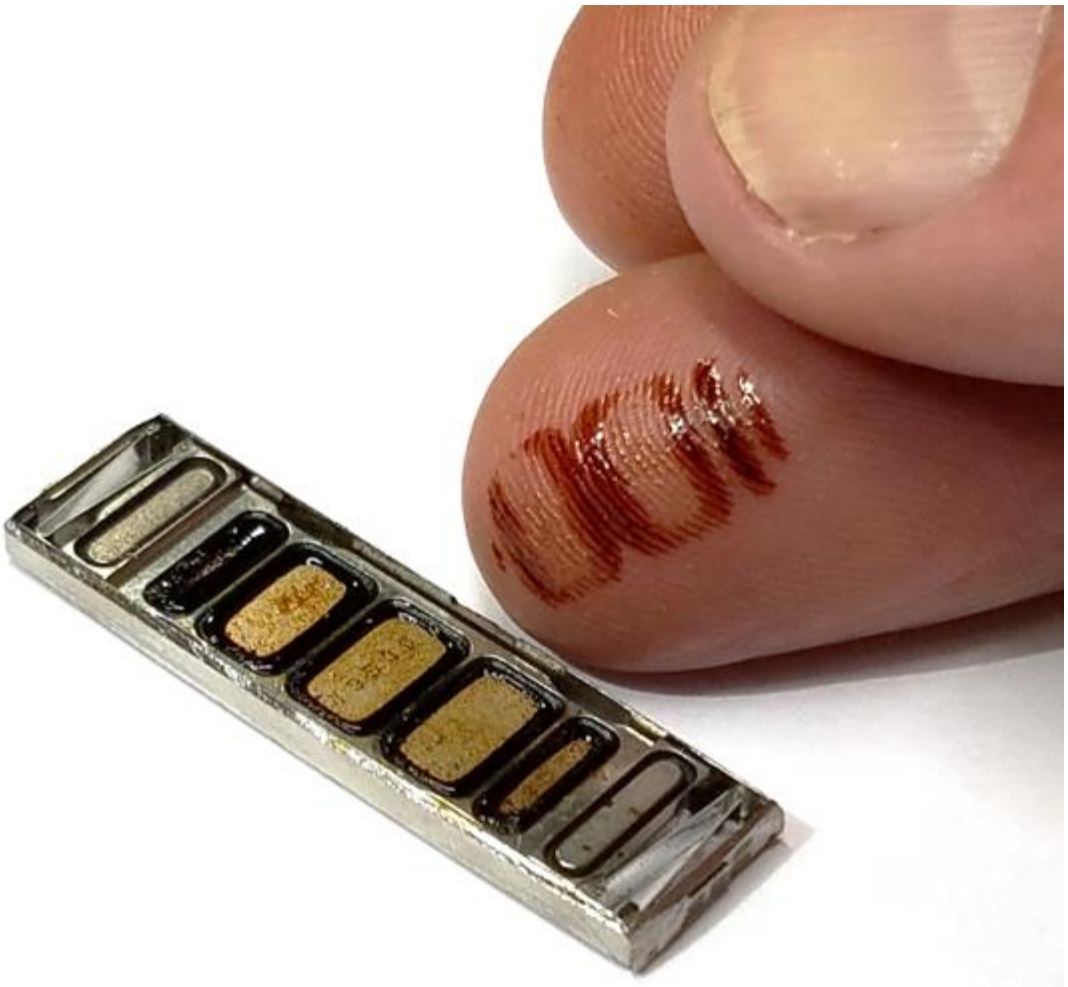
148. The vibration of the apparatus imparts vibrations to the user's skin.

149. The Taptic Engines use a moving mass that causes the Taptic Engines to vibrate.

150. The vibration of the Taptic Engines is transferred to the housing of an iPhone or Apple Watch, which then imparts motion to the skin of a user in contact with the device.

151. The vibration of the apparatus is damped by a viscous ferrofluid in physical contact with at least the moving portion.

152. One example in the 2020 iPhone SE is shown below:



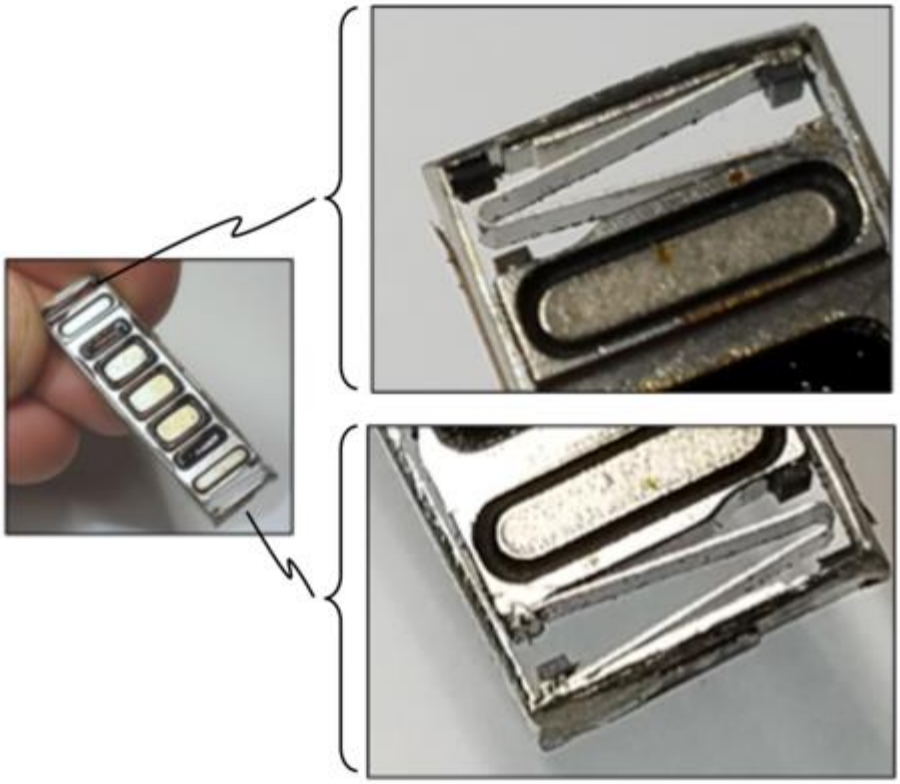
153. On information and belief, the viscous ferrofluid in the Taptic Engines in the Accused Products reduces at least a resonance within the frequency range of 40-200 Hz in response to signals applied to the plurality of conductive coils.

154. The moving portion in the Taptic Engines in the Accused Products includes at least a pocket that provides space for at least a magnet.

155. One example in the 2020 iPhone SE is shown below:

156. In the Taptic Engines in the Accused Products, each of said plurality of flexures is more resistant to motion transverse to a plane of the motion portion than it is to linear motion in the plane of the moving portion.

157. One example in the 2020 iPhone SE is shown below:



158. The housing of the Taptic Engines in the Accused Products is generally cuboid in shape.

159. One example in the 2020 iPhone SE is shown below:

160. Apple actively, knowingly, and intentionally induces infringement of one or more claims of the ’117 patent under 35 U.S.C. § 271(b) by actively encouraging others to make, use, sell, and offer to sell in the United States, the Accused Products.

161. For example, Apple provides directions, instruction manuals, guides, and/or other materials that encourage and facilitate infringing use by others. Apple has sold and is selling the Accused Products with the knowledge and intent that customers who buy the products will use the products for their infringing use and therefore that customers have been and are directly infringing the ’885 patent.

162. Apple contributes to the infringement of one or more claims of the '117 patent under 35 U.S.C. § 271(c) by offering to sell and selling a component of the Accused Products that constitutes a material part of the inventions, knowing the same to be especially made or especially adapted for use in an infringement of the '885 patent, and is not a staple article or commodity of commerce suitable for substantial noninfringing use.

163. Apple was aware of the '117 patent at least from the date of this Complaint.

164. On information and belief, Apple was aware of the '117 patent since its issuance on October 27, 2020.

165. As one example, on information and belief, Apple was aware of the '117 patent by purchasing, using, and reverse engineering two Taction Kannon headsets.

166. The headsets were ordered by Anna Mirabella, Product Design Engineering Program Manager at Apple, on April 7, 2017, and shipped to Apple at 1 Infinite Loop, Cupertino, California on February 24, 2018, in the care of James Vandyke, Product Design Engineer at Apple.

167. Both the headsets and their manuals were marked with U.S. Patent No. 9,439,921, and were marked with additional patents pending.

168. U.S. Patent No. 9,439,921 is in the same family as the '117 patent.

169. As an additional example, on information and belief, Apple was aware of the '117 patent because Taction's U.S. Patent Publication No. 2016/0086458, which is in the same family as the '885 patent, is cited as prior art on the face of Apple's U.S. Patent No. 10,237,660, which issued from an application filed on March 16, 2016.

170. As another example, on information and belief, Apple was aware of the '117 patent due to Apple's knowledge of Taction and Taction's disclosure of its patents (including the '117 patent) on its website.[23]

[23] https://www.tactiontechnology.com/patents/

171. As a further example, on information and belief, Apple was aware of the '117 patent by Apple's research into competing technology for the Accused Products, as well as competing products for the AirPods Max and various Beats headphones.

172. On information and belief, Apple knew that the Accused Products infringe the '117 patent, or at a minimum believed there was a high probability that the accused products were covered by Taction's patents, but willfully blinded itself to Taction's patents and the infringing nature of the Accused Products.

173. The foregoing allegations are based on publicly available information and a reasonable investigation of the structure and operation of the Accused Products.

174. Taction reserves the right to modify this description, including, for example, on the basis of information about the Accused Products that it obtains during discovery.

175. The infringement details provided for claim 1 of the '117 patent are exemplary, and Taction intends to assert additional claims of the '117 patent beyond claim 1.

176. Apple's infringement has damaged and continues to damage Taction in an amount yet to be determined, of at least a reasonable royalty and the lost profits that Taction would have made but for Apple's acts of infringement.

177. This is an exceptional case. Taction is entitled to attorneys' fees and costs under 35 U.S.C. § 285 as a result of the infringement of the '885 patent by Apple.

REQUEST FOR A JURY TRIAL

178. Taction requests a jury trial of all issues in this action so triable.

PRAYER FOR RELIEF

WHEREFORE, Taction respectfully requests:

A. That Judgment be entered that Apple have infringed one or more claims of the Asserted Patents, directly and indirectly, literally and under the doctrine of equivalents;

B. That, in accordance with 35 U.S.C. § 283, Apple and all its affiliates, employees, agents, officers, directors, attorneys, successors, and assigns and all those acting on behalf of or in active concert or participation with any of them, be preliminarily and permanently enjoined from (1) infringing the Asserted Patents and (2) making, using, selling, and offering for sale the Accused Products;

C. An award of damages sufficient to compensate Taction for Apple's infringement under 35 U.S.C. § 284, including an enhancement of damages on account of Apple's egregious willful infringement;

D. That the case be found exceptional under 35 U.S.C. § 285 and that Taction be awarded its reasonable attorneys' fees;

E. Costs and expenses in this action;

F. An award of prejudgment and post-judgment interest; and

G. Such other and further relief as the Court may deem just and proper.

Dated: April 26, 2021

Respectfully submitted,

By: */s/ Sean Pak*

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