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UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF NEW YORK

HYPER ICE, INC. and HYPERICE IP SUBCO, LLC, *Plaintiffs* v. E HUNG TAT INTERNATIONAL GROUP CO., LIMITED d/b/a JQX-US and JINYUN LIGE TECHNOLOGY CO., LTD. d/b/a JINYUNLIGEKEJI, *Defendants*	**CIVIL ACTION NO.:** **COMPLAINT** **Jury Trial Requested** **FILED UNDER SEAL**

GLOSSARY

Term	Definition
Plaintiffs or Hyperice	Hyper Ice, Inc. and Hyperice IP Subco, LLC
Defendants	E Hung Tat International Group Co., Limited d/b/a Jqx-US and Jinyun Lige Technology Co., Ltd. d/b/a Jinyunligekeji
Amazon	Amazon.com, a Seattle, Washington-based, online marketplace and e-commerce platform owned by Amazon.com, Inc., a Delaware corporation, that allows manufacturers and other third-party merchants, like Defendant, to advertise, distribute, offer for sale, sell and ship their retail products, which, upon information and belief, primarily originate from China, directly to consumers worldwide and specifically to consumers residing in the U.S., including New York
Epstein Drangel	Epstein Drangel LLP, counsel for Plaintiffs
New York Address	244 Madison Ave, Suite 411, New York, New York 10016
Complaint	Plaintiffs' Complaint
Application	Plaintiffs' *ex parte* Application for: 1) a temporary restraining order; 2) an order restraining Defendants' User Accounts (as defined *infra*), Defendants' Merchant Storefronts (as defined *infra*) and Defendants' Assets (as defined *infra*) with the Financial Institutions (as defined *infra*); 3) an order to show cause why a preliminary injunction should not issue; 4) an order authorizing bifurcated and alternative service; and 5) an order authorizing expedited discovery
Arnold Dec.	Declaration of Brian Arnold in Support of Plaintiffs' Application
Levine Dec.	Declaration of Melissa J. Levine in Support of Plaintiffs' Application
Hyperice Products	Plaintiffs' Hypervolt line of battery-powered percussive massage devices, including the Hypervolt Go 2, Hypervolt 2 and Hypervolt 2 Pro which are covered by one or more claims in the Hyperice Patents (defined *infra*)
Hyperice Website	https://www.hyperice.com/
Hyperice Amazon Storefront	https://www.amazon.com/stores/Hyperice/page/D1C8E117-0D44-41F0-9B14-E5AE1F4EDD4C
Hyperice Patents	U.S. Patent No. 11,857,482 ("'482 Patent"), entitled "Massage Device Having Variable Stroke Length" and U.S. Patent No. 12,213,933 ("'933 Patent"), entitled "Massage Device with a Releasable Connection for a Massaging Head"
Infringing Products	Products which infringe one or more of the claims of the Hyperice Patents under the brand name "JQX"
Infringing Listings	Defendants' listings for Infringing Products
User Account(s)	Any and all websites owned and/or operated by Defendants, their respective officers, employees, agents, servants and all persons in active concert or participation with Defendants, advertises, promotes, offers for sale and/or sells Infringing Products held and/or operated by Defendants, and any and all accounts with online marketplace platforms such as Amazon, as well as any and all as yet undiscovered accounts with additional online marketplace platforms held by or

	associated with Defendants, their respective officers, employees, agents, servants and all persons in active concert or participation with Defendants
Merchant Storefronts	Any and all User Accounts through which Defendants, their respective officers, employees, agents, servants and all persons in active concert or participation with Defendants operate storefronts to manufacture, import, export, advertise, market, promote, distribute, display, make, use, offer for sale, sell and/or otherwise deal in Infringing Products, which are held by or associated with Defendants, their respective officers, employees, agents, servants and all persons in active concert or participation with Defendants including, without limitation, the Merchant Storefronts located at https://www.amazon.com/sp?ie=UTF8&seller=A2F5I30TBCP8PT and https://www.amazon.com/sp?ie=UTF8&seller=AZH1R74KMWHA5
Defendant's Assets	Any and all money, securities or other property or assets of Defendants (whether said assets are located in the U.S. or abroad)
Defendant's Financial Accounts	Any and all financial accounts associated with or utilized by Defendants or Defendants' User Accounts or Merchant Storefronts (whether said account is located in the U.S. or abroad)
Financial Institutions	PayPal Inc. ("PayPal"), Payoneer Inc. ("Payoneer"), Amazon payment services (e.g., Amazon Pay) and PingPong Global Solutions, Inc. ("PingPong")
Third Party Service Providers	Any third party providing services in connection with Defendants' User Accounts, including online marketplace platforms, including, without limitation, Amazon as well as any and all as yet undiscovered online marketplace platforms and/or entities through which Defendants, their respective officers, employees, agents, servants and all persons in active concert or participation with Defendants manufacture, import, export, advertise, market, promote, distribute, make, use, offer for sale, sell and/or otherwise deal in Infringing Products which are hereinafter identified as a result of any order entered in this action, or otherwise.

Plaintiffs, by and through their undersigned counsel, hereby allege as follows:[1]

NATURE OF THE ACTION

1. This action involves claims for patent infringement under 35 U.S.C. §§ 271 *et seq.* arising from Defendants' making, using, offering for sale, selling and/or importing into the United States for subsequent sale or use, unauthorized and unlicensed products that infringe Plaintiffs' Hyperice Patents.

JURISDICTION AND VENUE

2. This Court has federal subject matter jurisdiction over the claims asserted in this Action pursuant to 28 U.S.C. §§ 1331 and 1338(a), as well as pursuant to 28 U.S.C. § 1338(a) as an action arising out of violations of the Patent Act; pursuant to 28 U.S.C. § 1332, as there is diversity between the parties and the matter in controversy exceeds, exclusive of interests and costs, the sum of seventy-five thousand dollars.

3. Personal jurisdiction exists over Defendants in New York pursuant to N.Y.C.P.L.R. § 302(a)(1) and N.Y.C.P.L.R. § 302(a)(3), or in the alternative, Federal Rule of Civil Procedure 4(k), because, upon information and belief, Defendants regularly conduct, transact and/or solicit business in New York, and/or derive substantial revenue from their business transactions in New York and/or otherwise avail themselves of the privileges and protections of the laws of the State of New York such that this Court's assertion of jurisdiction over Defendants does not offend traditional notions of fair play and due process, and/or Defendants' illegal infringing actions caused injury to Plaintiffs in New York such that Defendants should reasonably expect such actions to have consequences in New York. For example:

a. Upon information and belief, Defendants were and/or are systematically directing and/or targeting their business activities at consumers in the U.S., including New

[1] Where a defined term is referenced herein but not defined, it should be understood as it is defined in the Glossary.

York, through accounts with online marketplace platforms such as Amazon, as well as any and all as yet undiscovered User Accounts, through which consumers in the U.S., including New York, can view Defendants' Merchant Storefronts that Defendants operate, use to communicate with consumers regarding their Infringing Listings and to place orders for, receive invoices for, and purchase Infringing Products for delivery in the U.S., including New York, as a means for establishing regular business with the U.S., including New York.

b. Upon information and belief, Defendants are sophisticated sellers, operating one or more commercial businesses through their User Accounts, using their Merchant Storefronts to manufacture, import, export, advertise, market, promote, distribute, make, use, offer for sale, sell and/or otherwise deal in products, including Infringing Products at significantly below-market prices to consumers worldwide, including to those in the U.S., and specifically New York.

c. Upon information and belief, Defendants accept payment in U.S. Dollars and offer shipping to the U.S., including to New York, and specifically to the New York Address.

d. Upon information and belief, Defendants have transacted business with consumers located in the U.S., including New York, for the sale and shipment of Infringing Products.

e. Upon information and belief, Defendants are aware of Plaintiffs, their Hyperice Products and the Hyperice Patents and are aware that its illegal, infringing actions alleged herein are likely to cause injury to Plaintiffs in the U.S. and specifically, in New York.

4. Venue is proper, *inter alia*, pursuant to 28 U.S.C. § 1391 because, upon information

and belief, Defendants conduct, transact and/or solicit business in New York.

THE PARTIES

5. Hyper Ice, Inc. is a California corporation with its principal place of business at 525 Technology Drive, Suite 100, Irvine, California 92618.

6. Hyperice IP Subco, LLC is a limited liability company organized under the laws of the State of Delaware.

7. Hyperice IP Subco, LLC, a wholly owned subsidiary of Hyper Ice, Inc., is the assignee and owner of the Hyperice Patents. Hyper Ice, Inc. is the exclusive licensee that has been granted the express, irrevocable right to, *inter alia*, sublicense, enforce, and defend the Hyperice Patents.

8. Upon information and belief, Defendant E HUNG TAT INTERNATIONAL GROUP CO., LIMITED d/b/a JQX-US is a merchant on Amazon, through which Defendant offers for sale and/or sells Infringing Products, with a principal place of business at Room 1306, 13th Floor, Zhenqian Building, Yau Song Road, Shenzhen, Longhua District, Guangdong Province, China and/or Flat 1512, 15/F, Lucky Centre, No.165-171 Wan Chai Road, Wan Chai Hong Kong.

9. Upon information and belief, Defendant Jinyun Lige Technology Co., Ltd. d/b/a Jinyunligekeji is a merchant on Amazon, through which Defendant offers for sale and/or sells Infringing Products, with a principal place of business at Jinyun County, Lishui City, Zhejiang Province, Room 201, 2nd Floor, Building 2, No. 1, Hong Road, Xinbi Street, Lishui City, Zhejiang Province 321403 China.

10. Upon information and belief, Defendants are related and/or affiliated individuals or companies that have collectively engaged in the illegal conduct alleged herein, and have enriched themselves, while Plaintiffs have suffered enormous financial injury.

GENERAL ALLEGATIONS

Plaintiffs and the Hyperice Patents and Hyperice Products

11. Founded in 2011, Hyperice is a technology-driven company specializing in ice, compression, thermal, vibration, contrast, and percussion technology. Hyperice's products are used by the world's best athletes and consumers throughout the United States and in over 60 countries.

12. The Hyperice '482 Patent issued on January 2, 2024, claiming priority to Provisional Application No. 61/841,693, filed on July 1, 2013, Application No. 14/317,573 filed on June 27, 2014 (issued as Patent No. 9,889,066), and Application No. 15/892,665 filed on February 9, 2018 (issued as Patent No. 11,285,075). Philip C. Danby and John Charles Danby are the named inventors of the '482 Patent. A true and correct copy of the '482 Patent is attached hereto as **Exhibit A**.

13. The Hyperice '933 Patent issued on February 4, 2025, claiming priority to Provisional Application No. 61/841,693, filed on July 1, 2013, Application No. 14/317,573 filed on June 27, 2014 (issued as Patent No. 9,889,066), Application No. 15/892,665 filed on February 9, 2018 (issued as Patent No. 11,285,075), Application No. 17/681,367 filed on February 25, 2022 (issued as Patent No. 11,857,482), and Application No. 18/466,702 filed on September 13, 2023, which is still pending. Philip C. Danby and John Charles Danby are the named inventors of the '933 Patent. A true and correct copy of the '933 Patent is attached hereto as **Exhibit B.**

14. Since 2018, Hyperice has developed, arranged for the manufacture of, offered for sale, and sold the Hypervolt line of battery-powered percussive massage devices, including the Hypervolt Go 2, Hypervolt 2, and Hypervolt 2 Pro (collectively, the "Hypervolt Products"), all of which are covered by one or more claims of the Hyperice Patents.

15. The Hypervolt Products retail for between $25.00 (for accessories) to $388.00.

16. Hyperice sells multiple product lines under the Hyperice brand, including its Hypervolt Products to consumers in over sixty countries.

17. In 2021, Hyperice was recognized by Fast Company as one of the World's Most Innovative Companies.

18. Plaintiffs have gone to great lengths to protect their interests in the Hyperice Products, including the Hypervolt Products as well as the Hyperice Patents. No one other than Plaintiffs and their authorized licensees and distributors are authorized to manufacture, import, export, advertise, offer for sale or sell any goods covered by the Hyperice Patents, without the express permission of Plaintiffs.

Amazon and Defendants' User Accounts

19. Amazon is an online marketplace and e-commerce platform that allows manufacturers, wholesalers, and other third-party merchants, like Defendants, to advertise, distribute, offer for sale, sell and ship their wholesale and retail products originating from China[2] directly to consumers worldwide and specifically to consumers residing in the U.S., including New York.

20. Amazon is recognized as one of the leaders of the worldwide e-commerce and digital retail market and the company's net sales were $169.9 billion in the fourth quarter of 2023.[3] Sales to the U.S. make up a significant percentage of the business done on Amazon.[4] As of February 3, 2025, Amazon had a market capital of $2.48 trillion, making it the fifth most valuable company in the U.S.[5]

[2] *See* Juozas Kaziukenas, *Chinese Sellers Are Building Brands on Amazon,* MARKETPLACE PULSE (Dec. 6, 2018), https://www.marketplacepulse.com/articles/chinese-sellers-are-building-brands-on-amazon.
[3] *Amazon's Record Earnings in 2023 Propelled by Strong Fourth-Quarter Results,* MSN (Mar. 8, 2024), www.msn.com/en-us/money/companies/amazon-s-record-earnings-in-2023-propelled-by-strong-fourth-quarter-results/ar-BB1ijMBv
[4] *See* Amazon.com, Inc., Quarterly Results Q4 Earnings (Form 10-K) (Feb. 1, 2024).
[5] STOCK ANALYSIS (last visited April 25, 2025), https://stockanalysis.com/stocks/amzn/market-cap/.

21. Many of the third-party merchants that have User Accounts and operate Merchant Storefronts on Amazon, like Defendants, are located in China. These third-party merchants recently accounted for nearly half of all businesses on Amazon.[6]

22. In Q1 of 2024, third party merchants generated $34.6 billion, accounting for 61% of Amazon's sales.[7] In Q2 of 2024, third party merchants generated $36.2 billion, growing approximately 13% on a year-over-year basis.[8]

23. Amazon aggressively uses the Internet and television to market itself and the products offered for sale and/or sold by its third-party merchant users to potential consumers, particularly in the U.S. In 2023 alone, Amazon spent $44.4 billion on marketing, up from $42.3 billion the previous year.[9]

24. As reflected in the federal lawsuits filed against third-party merchants offering for sale and selling infringing and/or counterfeit products on Amazon,[10] and as recently addressed in news reports, an astronomical number of counterfeit and infringing products are offered for sale and sold on Amazon at a rampant rate.[11]

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[6] John Herrman, *The Junkification of Amazon Why does it feel like the company is making itself worse?*, NEW YORK MAGAZINE (Jan. 30, 2023), https://nymag.com/intelligencer/2023/01/why-does-it-feel-like-amazon-is-making-itself-worse.html.

[7] Daniela Coppola, *Quarterly value of Amazon third-party seller services 2017-2024*, STATISTA (May 7, 2024), https://www.statista.com/statistics/1240236/amazon-third-party-seller-services-value/#:~:text=Amazon%27s%20net%20sales%20generated%20through%20its%20third-party%20seller,fees%20and%20other%20services%20related%20to%20third-party%20sellers, Daniela Coppola, *Share of paid units sold by third-party sellers on Amazon platform from 2nd quarter 2007 to 1st quarter 2024*, STATISTA (Jul. 11, 2024), https://www.statista.com/statistics/259782/third-party-seller-share-of-amazon-platform/.

[8] *Id.*

[9] Daniela Coppola, *Worldwide Amazon marketing expenditure 2010-2023*, STATISTA (Feb 8, 2024), https://www.statista.com/statistics/506535/amazon-marketing-spending/#:~:text=In%20the%20fiscal%20year%202023%2C%20Amazon%E2%80%99s%20marketing%20spending,42.3%20billion%20U.S.%20dollars%20in%20the%20previous%20year, Daniela Coppola, Share of paid units sold by third-party sellers on Amazon platform from 2nd quarter 2007 to 4th quarter 2023, STATISTA (Feb 8, 2024), https://www.statista.com/statistics/259782/third-party-seller-share-of-amazon-platform/.

[10] *See, e.g., Apple Inc. v. Mobile Star LLC*, No. C17-1120 RAJ (W.D. Cal. Aug. 4, 2017) and *Diamler AG v. Amazon.com, Inc.*, 16-cv-00518-RSM (W.D. Wash. Mar. 11, 2019).

[11] Brittney Myers, *Some Shoppers Are Fleeing Amazon Because of Counterfeit Goods*, THE ASCENT (Jan. 17, 2023), https://www.fool.com/the-ascent/personal-finance/articles/some-shoppers-are-fleeing-amazon-because-of-

25. Defendants are located in China and/or Hong Kong but, upon information and belief, conducts their business in the U.S. and other countries by means of its User Accounts, on its Merchant Storefronts on Amazon, as well as potentially yet undiscovered additional online marketplace platforms.

26. Through their Merchant Storefronts, Defendants offer for sale and sell products, including the Infringing Products, and target and ship such products to customers located in the U.S., including New York, and throughout the world.

Defendants' Wrongful and Infringing Conduct

27. Defendants are not, and have never been, authorized by Plaintiffs or any of their authorized agents, authorized licensees or authorized distributors to make, use, offer for sale, sell and/or import into the United States for subsequent sale or use the Hypervolt Products or the Hyperice Patents.

28. Defendants are directly and/or indirectly developing, designing, manufacturing, importing, distributing, marketing, offering to sell and/or selling Infringing Products under the brand name "JQX" at the very least, through their Merchant Storefronts on Amazon under following ASINs: B0DGGKTJR5, B0DGGLVGM5, B0CGN8SYDQ, and B0CGN8FM2T.

29. Defendants attempt to avoid liability by going to great lengths to conceal both their identity and the full scope of their illegal and infringing operations.

30. Hyperice is forced to file this action to combat the harm to its business caused by Defendants' infringement of the Hyperice Patents, as well as to protect unknowing consumers from purchasing the Infringing Products sold by Defendants.

31. Defendants are currently offering for sale and/or selling Infringing Products

counterfeit-goods/; *see* Brendan Case, *Amazon, Third-Party Sellers Spur Fake Goods, Group Says*, BLOOMBERG (Oct. 13, 2021), https://www.bloomberg.com/news/articles/2021-10-13/amazon-third-party-sellers-spur-counterfeit-boom-group-says#xj4y7vzkg.

through their User Accounts and Merchant Storefronts, accepting payment for Infringing Products in U.S. Dollars, and providing shipping and have actually shipped Infringing Products to the U.S., including to customers located in New York. Plaintiffs' findings are supported by Defendants' Infringing Listings and the checkout pages for Infringing Products, which are included in the screenshots of the checkout pages for such Infringing Products purchased via Defendants' Merchant Storefronts reflecting that the Defendants ship the Infringing Products to the New York Address, which are included in **Exhibit C**.

32. In addition, Defendants are on notice of the '482 Patent by Plaintiffs' virtual marking of their Hyperice Products at least as early as January 15, 2024 and, likewise, Defendants are on notice of the '933 Patent by Plaintiffs' virtual marking of the Hyperice Products at least as early as February 5, 2025.

33. Prior to bringing this action, Defendants had knowledge of Plaintiffs' Hyperice Patents, of the fame, popularity and success of the Hyperice Products, and willfully chose to offer for sale and continue selling Infringing Products. Defendants have been engaging in the infringing actions, as alleged herein, knowingly and intentionally, or with reckless disregard or willful blindness to Plaintiffs' rights.

34. As a direct and proximate consequence of Defendants' infringement of the Hyperice Patents, Hyperice has suffered irreparable harm, and Defendants have unjustly profited from such activities at Plaintiffs' expense. In addition, the inferior quality of the Infringing Products has and will result in increased skepticism in consumers presented with the genuine Hyperice Products not only undermining Hyperice's reputation and goodwill but also resulting in a loss of future sales and market share to Hyperice due to negative consumer experiences with subpar Infringing Products. Hyperice will continue to suffer irreparable harm in the future unless

Defendants are enjoined from infringing the Hyperice Patents.

35. Plaintiffs are forced to file this action to combat the harm to their business caused by Defendants' infringements of the Hyperice Patents, as well as to protect unknowing consumers from purchasing the Infringing Products sold by Defendants.

CAUSES OF ACTION

FIRST CAUSE OF ACTION
(Infringement of United States Patent No. 11,857,482)
[35 U.S.C. § 271]

36. Plaintiffs replead and incorporate by reference each and every allegation set forth in the preceding paragraphs as if fully set forth herein.

37. Defendants have infringed and continues to infringe the '482 Patent under the Patent Laws of the United States, 35 U.S.C §§ 271 *et seq*. literally and/or under the doctrine of equivalents.

38. Without Plaintiffs' authorization or consent, and with knowledge of Plaintiffs' well-known and prior rights in the '482 Patent, Defendants intentionally manufactured, imported, exported, advertised, marketed, promoted, distributed, offered for sale and/or sold their Infringing Products to the purchasing public in direct competition with Plaintiffs, and have acted with reckless disregard of Plaintiffs' rights in and to the '482 Patent through such activities.

39. Defendants' Infringing Products infringe at least claim 1 of the '482 Patent, as detailed in the representative claim charts, which are attached hereto as **Exhibit D**. Defendants offer for sale and/or sell Infringing Products, which are battery powered percussive massagers that include all the claim limitations found in at least claim 1 of the '482 Patent. Hyperice believes that the Infringing Products literally meet the limitations of claim 1 of the '482 Patent for the devices identified in **Exhibit D**. If any of the limitations are not literally met, the Infringing Products meet the limitations under the doctrine of equivalents, because they perform substantially the same

function in substantially the same way to achieve substantially the same result, and/or because the relevant structures and functions of the infringing products are insubstantially different from the claimed limitation. Namely, the following limitations found in claim 1 of the ‘482 Patent:

a. a housing;

b. a piston having a proximal end and a distal end, the distal end of the piston having a substantially cylindrical bore;

c. a motor at least partially within the housing and operatively connected to the proximal end of the piston, wherein the motor is configured to cause the piston to reciprocate at a first speed;

d. a drive mechanism that controls a predetermined stroke length of the piston; and

e. a quick-connect system comprising the distal end of the piston and a first massaging head, wherein the quick-connect system is configured to secure the first massaging head to the percussive massager by a proximal end of the massaging head being slid into the bore while the piston reciprocates the predetermined stroke length at the first speed.

40. Defendants’ acts of infringement of the ‘482 Patent were and are undertaken without authority, permission, or license from Plaintiffs. Defendants’ infringing activities therefore violate 35 U.S.C. § 271.

41. As a direct and proximate consequence of Defendants’ infringement of the ‘482 Patent, Defendants have caused substantial monetary loss and irreparable harm and damage to Plaintiffs, their business, reputation and impairment of their valuable rights in and to the ‘482 Patent. Plaintiffs have no adequate remedy at law, and unless immediately enjoined, Defendants

will continue to cause such substantial and irreparable injury, loss and damage to Plaintiffs through infringement Plaintiffs' rights to the '482 Patent.

42. Based on Defendants' actions as alleged herein, Defendants acted with deliberate and reckless disregard of Plaintiffs' rights in the '482 Patent when they blatantly and intentionally manufactured, imported, exported, advertised, marketed, promoted, distributed, offered for sale and/or sold its Infringing Product. Accordingly, Defendants' infringements of the '482 Patent is willful and Plaintiffs are entitled to treble damages as provided by 35 U.S.C. § 284.

SECOND CAUSE OF ACTION
(Infringement of United States Patent No. 12,213,933)
[35 U.S.C. § 271]

43. Plaintiffs replead and incorporate by reference each and every allegation set forth in the preceding paragraphs as if fully set forth herein.

44. Defendants have infringed and continue to infringe the '933 Patent under the Patent Laws of the United States, 35 U.S.C §§ 271 *et seq*. literally and/or under the doctrine of equivalents.

45. Without Plaintiffs' authorization or consent, and with knowledge of Plaintiffs' well-known and prior rights in the '933 Patent, Defendants intentionally manufactured, imported, exported, advertised, marketed, promoted, distributed, offered for sale and/or sold their Infringing Products to the purchasing public in direct competition with Plaintiffs, and have acted with reckless disregard of Plaintiffs' rights in and to the '933 Patent through such activities.

46. Defendants' Infringing Products infringe at least claim 1 of the '933 Patent, as detailed in the representative claim charts, which are attached hereto as **Exhibit E**. Defendants offer for sale and/or sell Infringing Products, which are battery powered percussive massagers that include all the claim limitations found in at least claim 1 of the '933 Patent. Hyperice believes that the Infringing Products literally meet the limitations of claim 1 of the '933 Patent for the devices

identified in **Exhibit E**. If any of the limitations are not literally met, the Infringing Products meet the limitations under the doctrine of equivalents, because they perform substantially the same function in substantially the same way to achieve substantially the same result, and/or because the relevant structures and functions of the infringing products are insubstantially different from the claimed limitation. Namely, the following limitations found in claim 1 of the ‘933 Patent:

a. a housing;

b. a piston having a proximal end and a distal end, the distal end of the piston having a bore;

c. a motor operatively connected to the proximal end of the piston, wherein the motor is configured to cause the piston to reciprocate at a first speed;

d. a drive mechanism that determines a predetermined stroke length of the piston; and

e. a quick-connect system comprising the distal end of the piston and a first massaging head, wherein the quick-connect system allows a proximal end of the first massaging head to be inserted into or removed from the bore while the piston reciprocates the predetermined stroke length at the first speed;

f. wherein the motor has an output shaft that is configured to rotate about a rotation axis, and

g. wherein the drive mechanism comprises:

   i. a flywheel operatively connected to the output shaft of the motor to rotate about a flywheel axis, the output shaft extending into the flywheel along the flywheel axis; and

ii. a crank pin extending from the flywheel, the crank pin being operatively connected to the piston.

47. Defendants' acts of infringement of the '933 Patent were and are undertaken without authority, permission, or license from Plaintiffs. Defendants' infringing activities therefore violate 35 U.S.C. § 271.

48. As a direct and proximate consequence of Defendants' infringement of the '933 Patent, Defendants have caused substantial monetary loss and irreparable harm and damage to Plaintiffs, their business, reputation and impairment of their valuable rights in and to the '933 Patent. Plaintiffs have no adequate remedy at law, and unless immediately enjoined, Defendants will continue to cause such substantial and irreparable injury, loss and damage to Plaintiffs through infringement Plaintiffs' rights to the '933 Patent.

49. Based on Defendants' actions as alleged herein, Defendants acted with deliberate and reckless disregard of Plaintiffs' rights in the '933 Patent when they blatantly and intentionally manufactured, imported, exported, advertised, marketed, promoted, distributed, offered for sale and/or sold their Infringing Products. Accordingly, Defendants' infringement of the '933 Patent is willful, and Plaintiffs are entitled to treble damages as provided by 35 U.S.C. § 284.

PRAYER FOR RELIEF

WHEREFORE, Plaintiffs pray for judgment against Defendants, as follows:

A. A judgment that Defendants' acts constitute patent infringement under the causes of action asserted in this Complaint;

B. An order preliminarily, and a judgment permanently, enjoining and restraining Defendants, their officers, agents, subsidiaries, servants, partners, employees, attorneys, and all others in active concert or participation with Defendants, from:

i. infringing any claim of the Hyperice Patents; and

ii. assisting, aiding, or abetting any other person or business entity in engaging in or performing any of the aforementioned activities.

C. A judgment requiring Defendants to, at Defendants' expense, withdraw from the market, account for, and properly destroy any and all Infringing Products;

D. A judgment requiring that Defendants pay Plaintiffs all of their damages caused by Defendants' unlawful acts, including under 35 U.S.C. § 284, with prejudgment and post-judgment interest, as well as post-trial damages for any ongoing infringing acts;

E. A judgment awarding Plaintiffs their reasonable attorneys' fees, costs, disbursements, and interest, as provided by law, including as provided by 35 U.S.C. § 285;

F. A judgment that Defendants' infringement has been willful, and ordering Defendants to pay treble damages as provided by law; and

G. Such other relief as the Court deems just and appropriate.

DEMAND FOR JURY TRIAL

Plaintiffs respectfully demand a trial by jury on all claims so triable.

Dated: May 1, 2025

Respectfully submitted,

EPSTEIN DRANGEL LLP

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EXHIBIT A

US011857482B1

(12) **United States Patent**
Danby et al.

(10) **Patent No.: US 11,857,482 B1**
(45) **Date of Patent: Jan. 2, 2024**

(54) **MASSAGE DEVICE HAVING VARIABLE STROKE LENGTH**

(71) Applicant: **HYPERICE IP SUBCO, LLC**, Irvine, CA (US)

(72) Inventors: **Philip C. Danby**, Key Biscayne, FL (US); **John Charles Danby**, Witham (GB)

(73) Assignee: **HYPERICE IP SUBCO, LLC**, Irvine, CA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

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See application file for complete search history.

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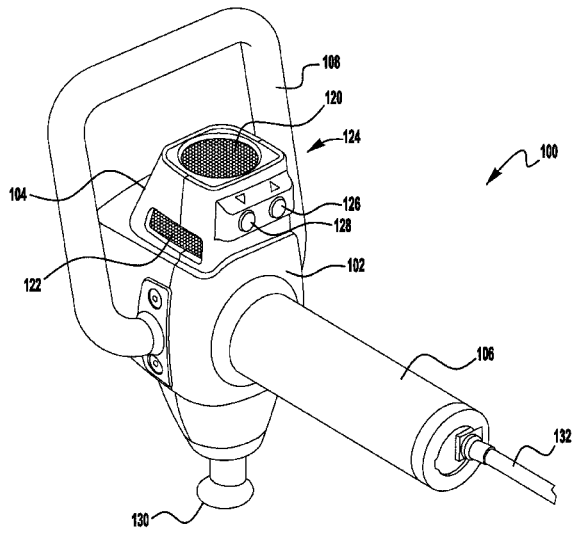
(57) **ABSTRACT**

Exemplary embodiments of massaging devices are disclosed herein. One exemplary embodiment includes a piston having a longitudinal axis, a massaging head connected to the piston, a motor located on a first side of the longitudinal axis and a handle located on a second side of the longitudinal axis. A drive mechanism for moving the piston and massage head is also included.

61 Claims, 7 Drawing Sheets



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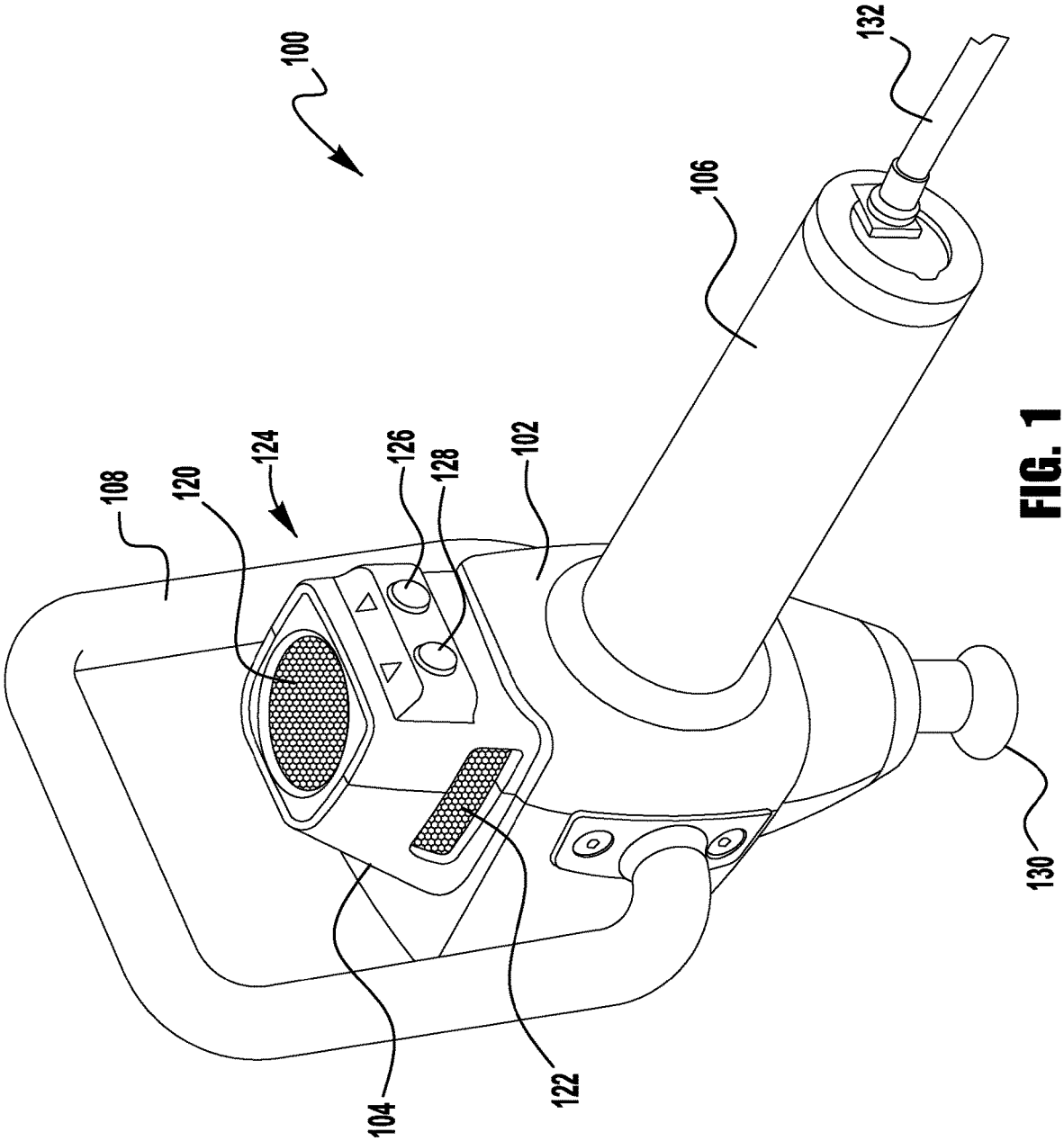

FIG. 1

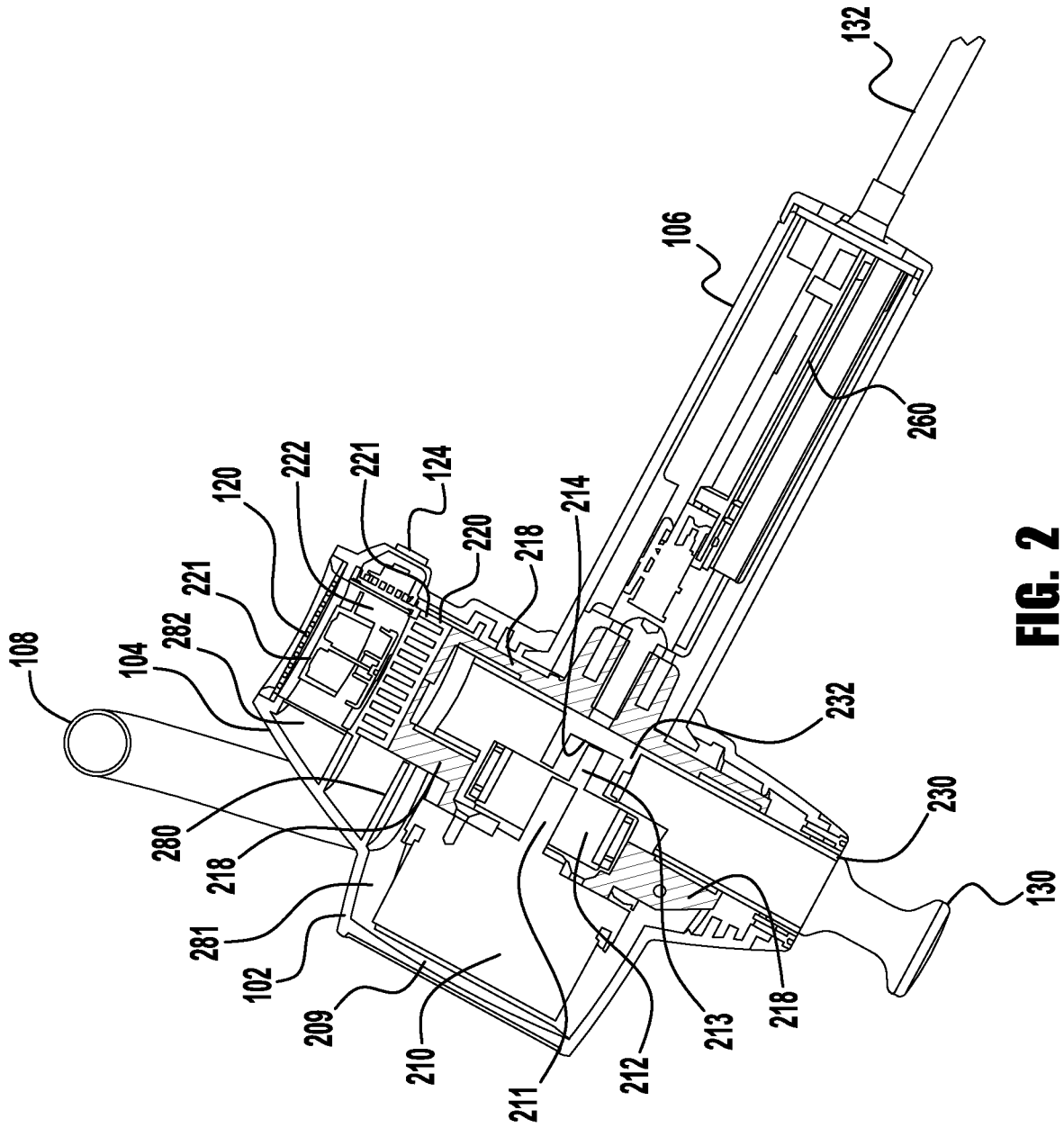
132
106
260
120
222
221
124
214
220
218
221
282
104
108
232
230
280
218
130
281
102
209
210
211
212
213
218

FIG. 2

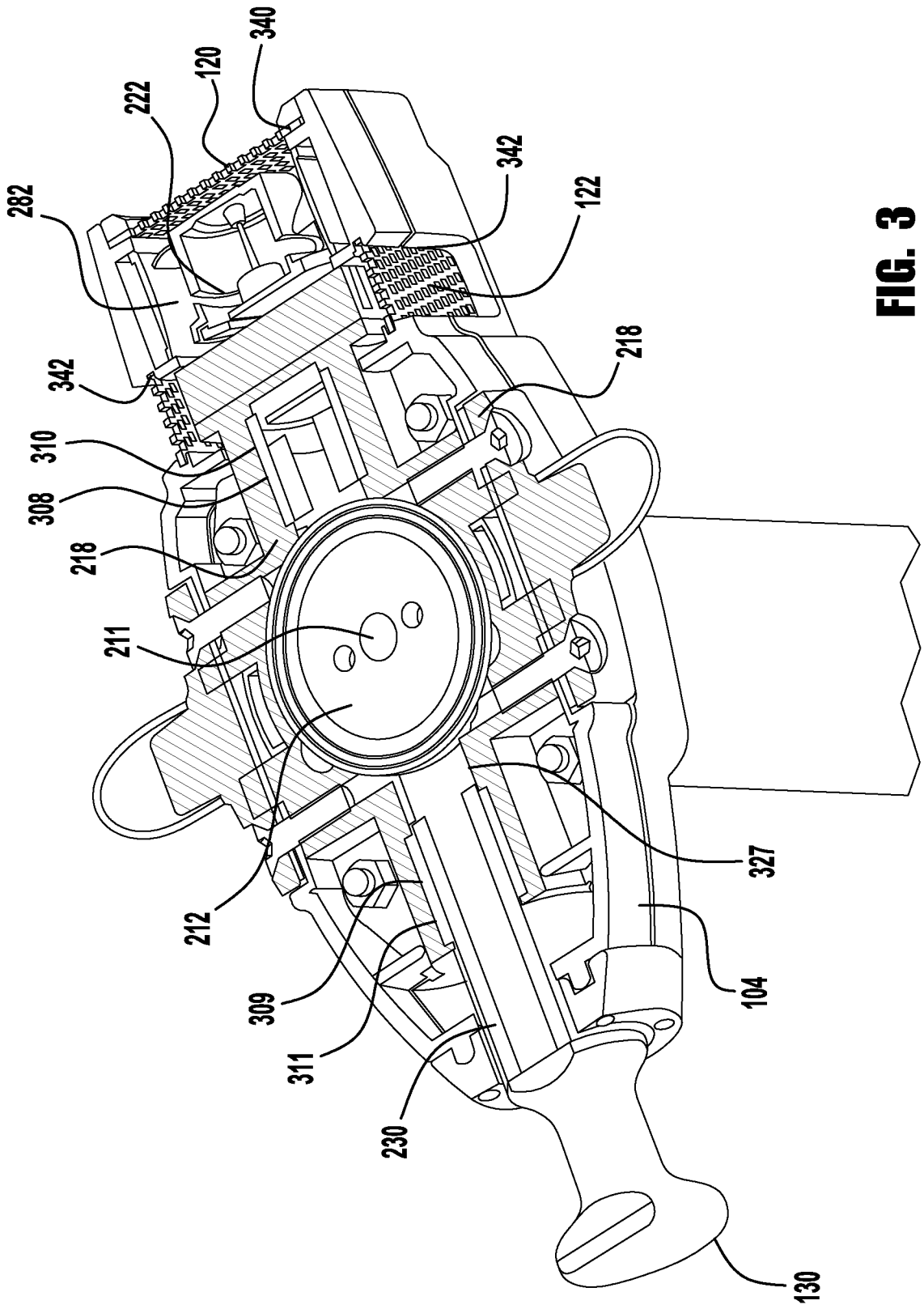
340
120
222
342
122
282
218
342
310
308
218
211
327
212
104
309
311
230
130

FIG. 3

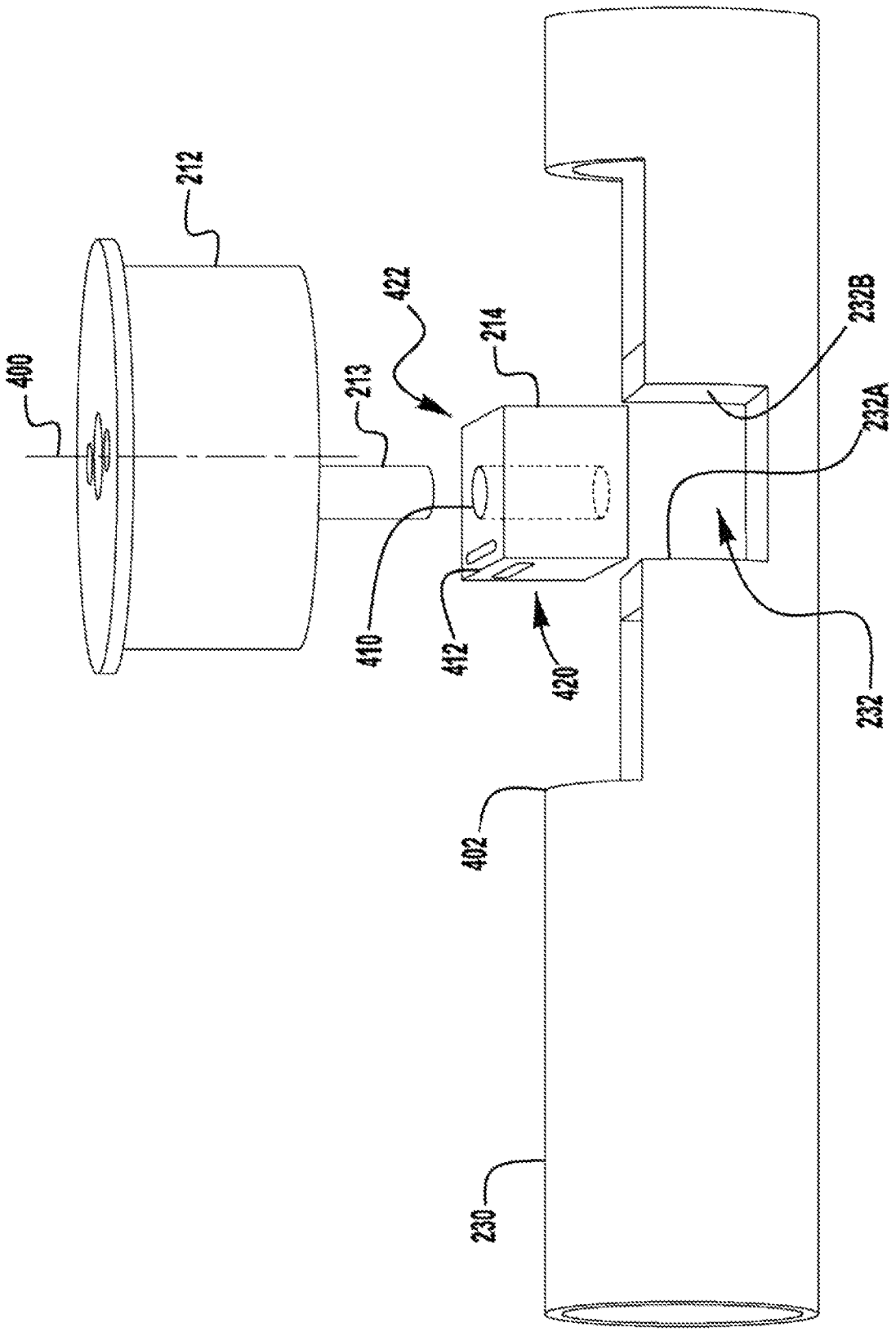

FIG. 4

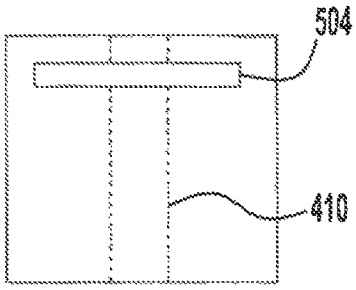

FIG. 5A

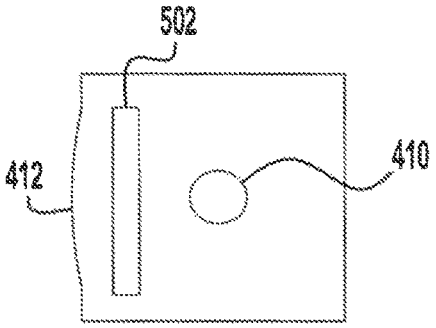

FIG. 5B

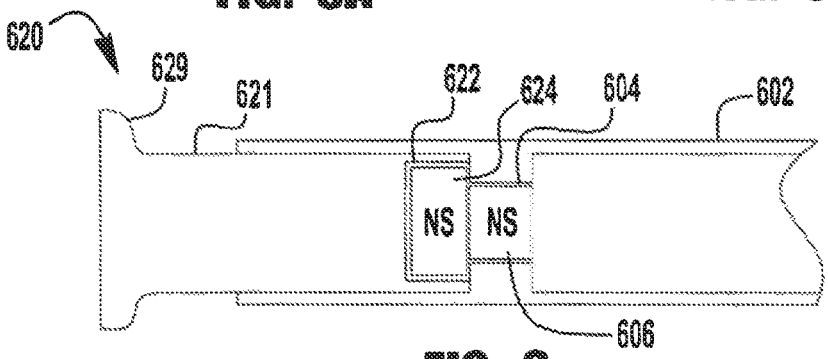

FIG. 6

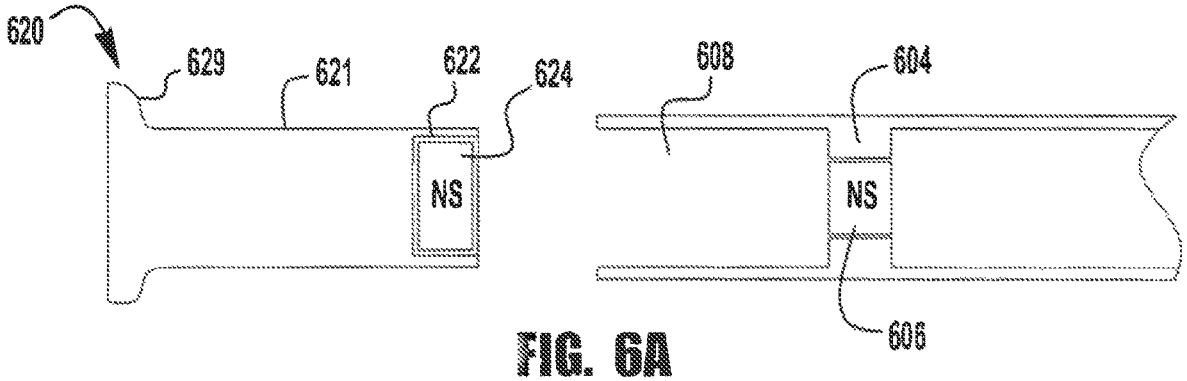

FIG. 6A

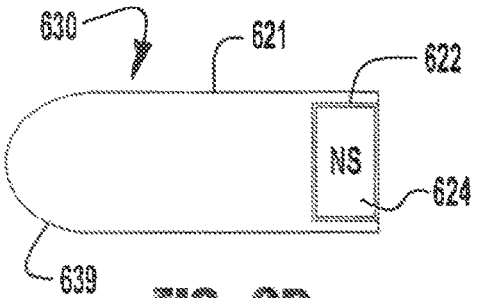

FIG. 6B

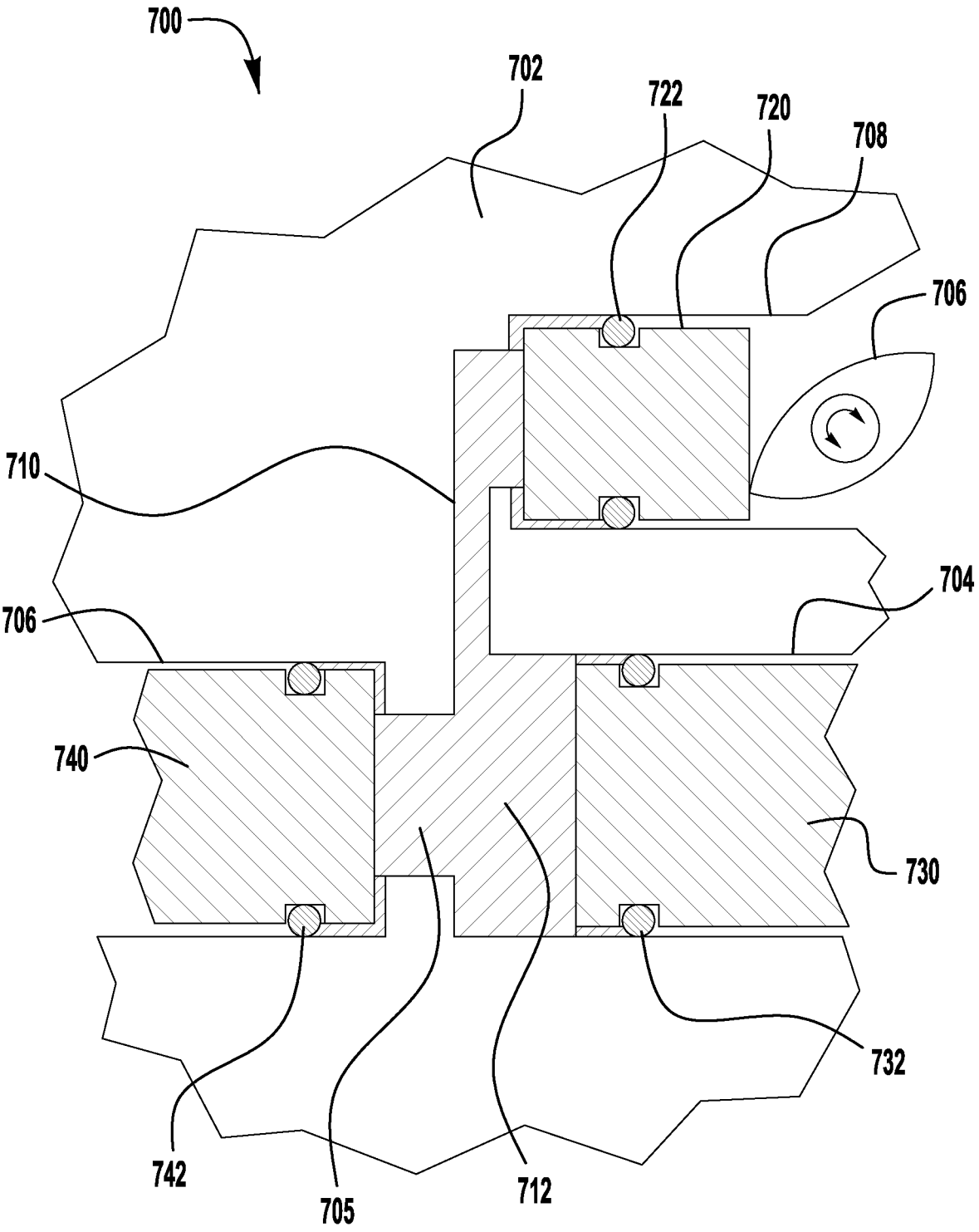

FIG. 7

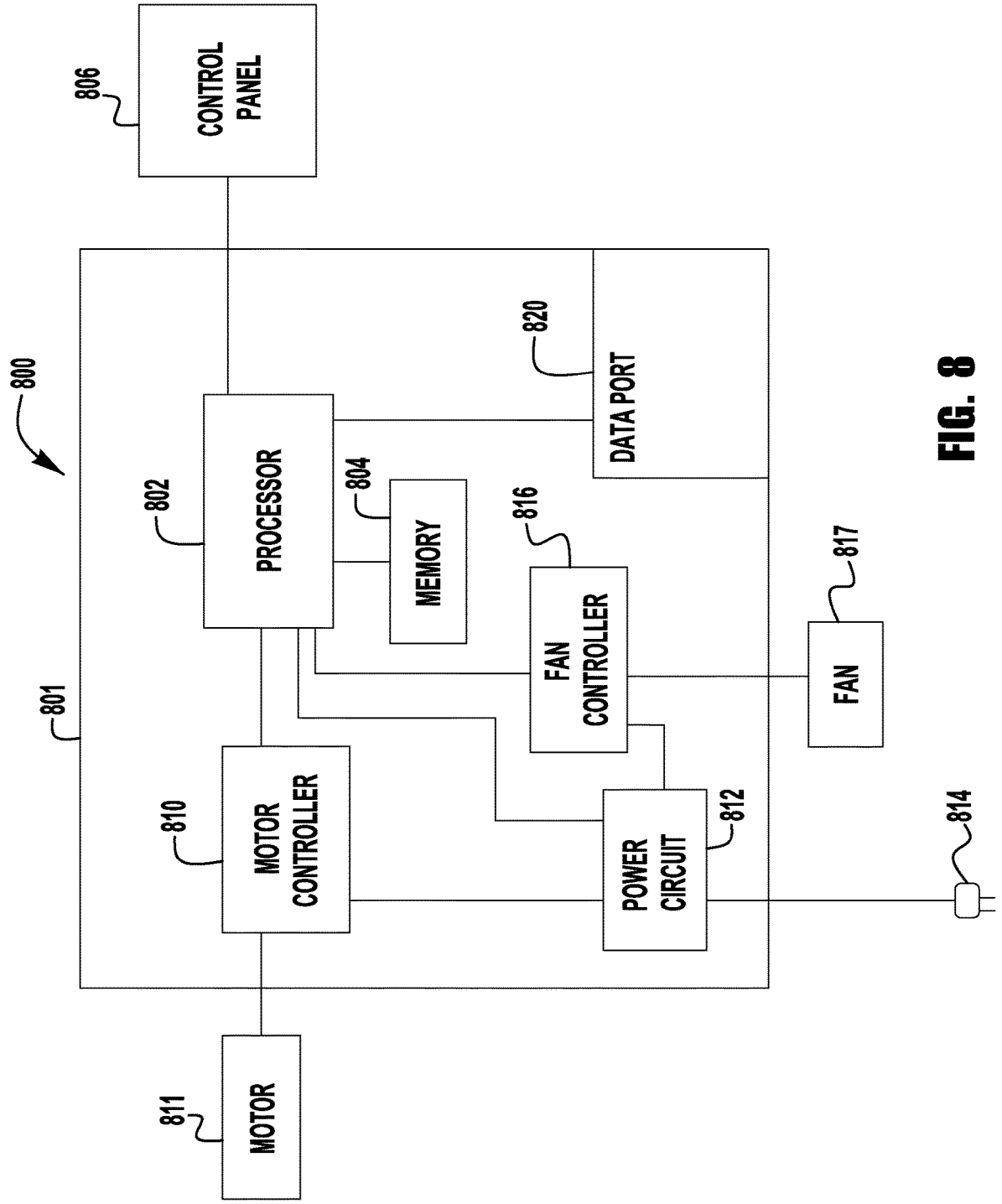
800
806
CONTROL PANEL
820
DATA PORT
802
PROCESSOR
804
MEMORY
816
FAN CONTROLLER
817
FAN
801
810
MOTOR CONTROLLER
812
POWER CIRCUIT
814
811
MOTOR

FIG. 8

MASSAGE DEVICE HAVING VARIABLE STROKE LENGTH

CROSS-REFERENCE TO RELATED APPLICATIONS

This application is a continuation of U.S. patent application Ser. No. 15/892,665 filed on Feb. 9, 2018, and entitled "MASSAGE DEVICE HAVING VARIABLE STROKE LENGTH", which is a continuation of U.S. patent application Ser. No. 14/317,573 filed on Jun. 27, 2014, and entitled "MASSAGING DEVICE HAVING A HEAT SINK" (now U.S. Pat. No. 9,889,066 issued on Feb. 13, 2018), which claims priority to and the benefits of U.S. Provisional Patent Application No. 61/841,693 filed on Jul. 1, 2013, and entitled "MASSAGING DEVICE", the entireties of which are incorporated herein by reference.

BACKGROUND

This invention relates generally to medical devices, and more particularly, to a deep muscle-stimulating device used to increase muscle metabolism, increase the lactic acid cycle and relieve pain.

Vibrating massaging devices are available on the market today; however, those devices suffer from many deficiencies. Many of the prior art massaging devices are bulky, get very hot, are noisy and/or are difficult to use for extended periods of time.

SUMMARY

Exemplary embodiments of massaging devices are disclosed herein. One exemplary embodiment includes a piston having a longitudinal axis and a massaging head connected to the piston. A motor is located on a first side of the longitudinal axis and a handle is located on a second side of the longitudinal axis. A drive mechanism for moving the piston and massage head is also included.

Another exemplary embodiment of a massaging device includes a handle, a piston, a massaging head attached to the piston, a motor, a drive mechanism for converting rotary motion of the motor to linear motion to drive the piston back and forth in a reciprocating motion, a processor, memory, a data connection in circuit communication with the processor and logic for transmitting data between the massaging device and a remote device.

Still another exemplary embodiment includes a massaging device that has a handle, a motor, a drive mechanism for converting rotary motion of the motor to reciprocating motion, a piston movable in a linear reciprocating motion connected to the drive mechanism and a massage head attached to the piston. The exemplary embodiment also includes a heat sink in thermal communication with the motor and drive mechanism, and a housing having two cavities. The first cavity at least partially surrounds the motor and the second cavity at least partially surrounds the heat sink. The cavities are separated from one another and the second cavity includes one or more openings for allowing air to flow over the heat sink to dissipate heat from the massager.

Another exemplary massaging device includes a housing, a handle extending outward from the housing and a piston having a longitudinal axis extending substantially perpendicular to the handle. A massaging head is connected to the piston. In addition, the massaging device includes a motor, a drive mechanism for moving the piston and a control panel. The control panel is located on the housing above the handle.

In yet another exemplary embodiment, a massaging device includes a handle, a piston, a quick-connection mechanism and one or more massaging heads releasably connectable to the piston by the quick-connection mechanism. The massaging device further includes a motor and a drive mechanism for moving the piston.

Another exemplary massaging device includes a handle, a piston, a massaging head connected to the piston, a motor and a drive mechanism for moving the piston. The drive mechanism includes a crank bearing that has one or more spring bars.

Still yet, another exemplary massaging device includes a handle, a piston a massaging head connected to the piston, a drive mechanism for moving the piston in a back and forth motion and a lost motion mechanism located between the massaging head and the drive mechanism.

BRIEF DESCRIPTION OF THE DRAWINGS

These and other features and advantages of the present invention will become better understood with regard to the following description and accompanying drawings in which:

FIG. **1** illustrates a perspective view of an exemplary embodiment of a massaging device;

FIG. **2** illustrates a first cross-section of the exemplary massaging device of FIG. **1**;

FIG. **3** illustrates a second cross-section of the exemplary massaging device of FIG. **1**;

FIG. **4** illustrates an exploded perspective view of an exemplary drive mechanism of the massaging device;

FIGS. **5**A and **5**B show enlarged side views of a crank bearing having spring bars for use in the exemplary drive mechanism of FIG. **4**;

FIGS. **6**, **6**A and **6**B illustrate an exemplary quick-disconnect mechanism for connecting one or more massaging heads to a massaging device;

FIG. **7** illustrates a schematic view of an exemplary lost motion control mechanism for varying the stroke of the piston driving a massaging head; and

FIG. **8** illustrates an exemplary embodiment of a simplified block circuit diagram for a massaging device.

DETAILED DESCRIPTION

The Detailed Description merely describes exemplary embodiments of the invention and is not intended to limit the scope of the claims in any way. Indeed, the invention is broader than and unlimited by the exemplary embodiments, and unless specifically indicated otherwise, the terms used in the claims have their full ordinary meaning.

"Circuit communication" as used herein indicates a communicative relationship between devices. Direct electrical, electromagnetic and optical connections and indirect electrical, electromagnetic and optical connections are examples of circuit communication. Two devices are in circuit communication if a signal from one is received by the other, regardless of whether the signal is modified by some other device. For example, two devices separated by one or more of the following—amplifiers, filters, transformers, optoisolators, digital or analog buffers, analog integrators, other electronic circuitry, fiber optic transceivers or satellites—are in circuit communication if a signal from one is communicated to the other, even though the signal is modified by the intermediate device(s). As another example, an electromag-

netic sensor is in circuit communication with a signal if it receives electromagnetic radiation from the signal. As a final example, two devices not directly connected to each other, but both capable of interfacing with a third device, such as, for example, a processor, are in circuit communication.

Also, as used herein, voltages and values representing digitized voltages are considered to be equivalent for the purposes of this application, and thus the term "voltage" as used herein refers to either a signal, or a value in a processor representing a signal, or a value in a processor determined from a value representing a signal.

"Signal," as used herein includes, but is not limited to one or more electrical signals, analog or digital signals, one or more computer instructions, a bit or bit stream, or the like.

"Logic," synonymous with "circuit" as used herein includes, but is not limited to hardware, firmware, software and/or combinations of each to perform a function(s) or an action(s). For example, based on a desired application or needs, logic may include a software-controlled processor, microprocessor or microcontroller, discrete logic, such as an application specific integrated circuit (ASIC) or other programmed logic device. Logic may also be fully embodied as software. The circuits identified and described herein may have many different configurations to perform the desired functions.

Any values identified in the detailed description are exemplary, and they are determined as needed for a particular massaging device. Accordingly, the inventive concepts disclosed and claimed herein are not limited to particular values or ranges of values used to describe the embodiments disclosed herein.

FIG. **1** is a perspective view of an exemplary embodiment of a hand-held massaging device **100**. The exemplary massaging device **100** includes a main housing **102** that houses a motor and a drive unit and an upper housing **104** that includes a heat sink and a fan. In addition, massaging device **100** includes a first handle **106**, and a second optional handle **108**. Handle **106** has a longitudinal axis that extends away from the housing **102**. The massaging device **100** also includes a massaging head **130**. As discussed in more detail below, in some embodiments massaging head **130** includes a quick-release connection.

Massaging device **100** includes a control panel **124**. In one embodiment, control panel **124** comprises a first momentary pushbutton **126** and a second momentary pushbutton **128**. First and second pushbuttons **126**, **128** may serve multiple purposes. In one embodiment, pushing the first pushbutton **126** once moves the massaging device **100** to a first preset speed. Pushing the first pushbutton **126** a second time moves the massaging device **100** to a second preset speed. Accordingly, multiple preset speeds may be selected by pushing a single pushbutton. In addition, pushing pushbutton **126** and holding it down may increase the speed of the massaging head until the user releases the pushbutton **126**.

In addition, if the massaging device **100** is turned off, pushing second pushbutton **128** once and holding it in for a period of time turns on the massaging device **100**. Pushing the second pushbutton **128** in and holding it in for a period of time, such as, for example one second, causes massaging device **100** to turn off. While massaging device **100** is turned on, pushing and releasing second pushbutton **128** decreases the speed of the massaging device **100** to the next lowest preset speed. Pushing and releasing pushbutton **128** again further reduces the speed of the massaging device **100**. In some embodiments, the operating speed of the massaging device is generally between about 600 and 3600 strokes per minute.

The control panel **124** is located above handle **106** on upper housing **104**. Control panel **124** is located off of the handle **106**, which prevents accidental contact between a user's hand and the control panel **124** and allows a user to move her hand to any position on the handle **106** during operation. Preferably, control panel **124** is located so that it is reachable by a user's thumb without the user having to remove her hand from the handle **106**. In addition, massaging device **100** includes a power cord **132** for providing power to the massaging device **100**.

Although the exemplary control panel **124** illustrates two pushbuttons **126**, **128**, other controls may be used, such as dials and switches. In addition, visual or audible signals may be generated and displayed on control panel **124**. To that extent, control panel **124** may include a visual display (not shown), an audible device (not shown) or the like, such as, for example a speaker, or the like. If a visual or audible device is used, the visual or audible device may be located proximate the pushbuttons or other controls, or may be located apart from such controls.

Upper housing **104** includes an air intake aperture covered by intake grate **120** and one or more air outlet apertures covered by outtake grate(s) **122**. As described in more detail below, the heat-generating internal components of massaging device **100** are cooled by air passing through upper housing portion **104**.

FIGS. **2** and **3** are cross-sections of massaging device **100**. Located within handle **106** is control circuitry **260**. Control circuitry **260** is in circuit communication with power cord **132**, control panel **124**, fan **222** and motor **210**.

Motor **210** is located in housing **102** opposite handle **106**. Motor **210** is a variable speed DC motor; however, motor **210** may be a constant speed motor, an AC motor or the like. In one embodiment, motor **210** has an operating speed of between about 600 and 3600 revolutions per minute (RPMs).

Motor **210** includes a shaft **211** that extends into a flywheel **212**. Flywheel **212** includes a cylindrical projecting member or crank pin **213** positioned offset from the centerline **400** (FIG. **4**) of the flywheel **212**. Crank pin **213** is inserted in an aperture **410** (FIG. **4**) of a crank bearing **214**. Crank bearing **214** is inserted into a pocket **232** of a piston **230**. The piston also has an elongated cutout **402** to receive part of the flywheel **212** for compactness while permitting piston reciprocation. Crank bearing **214** is cuboid in the exemplary embodiment, however, in some exemplary embodiments, crank bearing **214** may cylindrical.

FIG. **4** is an exploded perspective view of piston **230**, flywheel **212** and crank bearing **214**. Piston **230** may be made of any suitable material, and in some embodiments, piston **230** is made of aluminum. As illustrated in the drawings, in some embodiments, motor **210** is located on one side of the longitudinal axis of piston **230** and handle **106** is located on a second side of the longitudinal axis. Piston **230** includes a pocket **232** (or transverse slot) having a first wall **232**A and a second wall **232**B. In some embodiments, piston **230** is hollow on either side of pocket **232** to reduce weight.

Flywheel **212** includes a cylindrical projecting member **213**. Crank pin **213** is off set from the centerline **400** of flywheel **212**. Accordingly, as flywheel **212** rotates, crank pin **213** rotates in a circular path around the centerline **400** of the flywheel **212**. Rotation of crank pin **213** causes crank

bearing **214** to travel in a circular motion within piston pocket **232** causing reciprocal motion of piston **230**.

Piston **230** is restrained by two spaced apart bearings **310**, **311** (FIG. **3**). Bearing **310** is located on a first side of flywheel **212** and bearing **311** is located on a second side of flywheel **212**. Accordingly, piston **230** may only move in a back-and-forth motion along its longitudinal axis. The arrangement of the bearings **310**, **311** on both ends of the piston **230** provides for a very sturdy and robust drive mechanism. Because piston **230** is constrained to a linear back-and-forth motion, as crank bearing **214** rotates in a circular motion, it acts against side walls **232**A and **232**B of pocket **232**. This mechanism for converting rotary to linear motion is known as a "Scotch yoke."

In order to correctly assemble the components of a Scotch yoke drive, the pocket **232** (or walls of transverse slot) must be milled larger than the outside dimensions of the crank bearing **214**. The gap between the inside of pocket **232** and the outside of crank bearing **214** is typically mm inches. Motor **210** rotates at between about 600 and 3600 RPMs and each time the crank bearing **214** switches from moving, for example, toward side wall **232**A of pocket **232** to moving toward the other side wall **232**B, the bearing block **214** travels the small gap and smacks or strikes the side wall, e.g., side **232**B, which causes a significant amount of noise and wear.

In one exemplary embodiment, crank bearing **214** is made with one spring bar **412**. Figure is an enlarged elevation view of side **420** of crank bearing **214** and FIG. **5**B is an enlarged plan view showing top **422** of crank bearing **214**. The spring bars **412** are created by milling the outside of the spring block **214** proud by 0.4 mm in the area of the desired spring bar.

As illustrated in FIG. **5**A, the surface of spring bar **412** bows outward. The size of the bow is set to increase the width of the crank bearing **214** to be slightly larger (0.4 mm) than the width of the pocket **232**. In some embodiments, slots **502** and **504** are milled into the surfaces of side **420** and top **422** below the spring bar **412** to allow spring bar **412** to deflect inwards. In some embodiments, slots **502** and **504** intersect thereby leaving spring bar **412** supported only on each end.

Thus, when crank bearing **214** is inserted into pocket **232**, the spring bar **412** contacts the corresponding surface of the pocket **232** and deflects inward which causes crank bearing **214** to fit snuggly in pocket **232**. Accordingly, as crank bearing **214** changes directions from, for example, moving toward side wall **232**A to moving toward side wall **232**B, the spring bar **412** takes up the slack in the gap and prevent noise and wear that would otherwise be generated by the crank bearing **214** striking the side walls **232**A, **232**B of the pocket **232**.

Crank bearing **214** may be made of any suitable material; in some embodiments, crank bearing **214** is made of plastic. Although the exemplary embodiment is shown and described as having one spring bar, exemplary embodiments may have any number of spring bars.

Massaging device **100** includes a drive housing **218**. Drive housing **218** is made of a heat conducting material, such as, for example, aluminum and has a longitudinal bore **327** passing therethrough to receive piston **230**. As shown in FIG. **3**, drive housing **218** includes a first internal cylindrical groove **308** for holding bearing **310** and a second internal cylindrical groove **309** for holding bearing **311**. Spaced bearings **310** and **311** mount and guide the piston **230** relative to the drive housing **218**. Drive housing **318** surrounds piston **230** and flywheel **212**. In some embodiments, drive housing **318** is made up of multiple components, such as an upper drive housing and a lower drive housing.

In addition, motor **210** includes a motor housing **209** that bolts onto drive housing **218**. Motor housing **209** is also made of a heat-conducting material, such as, for example, aluminum. Secured to drive housing **218** is heat sink **220**. Heat sink **220** includes a plurality of fins **221**. Heat sink **220** is made of a heat conducting-material, such as, for example, aluminum.

Main housing **102** contains a first cavity **281**. Upper housing **104** contains a second cavity **282**. First cavity **281** and second cavity **282** are separated by a barrier **280**. Motor housing **209** and drive housing **218** are located in the first cavity **281**. Heat sink **220** is located in second cavity **282**. The exemplary embodiment describes a main housing **102** and upper housing **104**. These may be portions made up of a single structure or multiple structures secured to each other.

Second cavity **282** includes an air inlet aperture **340** which is covered by grate **120** and one or more air outlet apertures **342** covered by one or more grates **122**. A fan **222** is located in second cavity **282**. When the fan **222** is activated, air enters second cavity **282** through air inlet aperture **340** and passes over cooling fins **221** of heat sink **220**, and the air then passes out of second cavity **282** through the one or more air outlets **342**. The fan may be activated by a switch (not shown) on control panel **124**, activated automatically when the massaging device **100** is turned on, or may be activated by a thermostat (not shown). Thus, the cooling system for massaging device **100** is located in second cavity **282** and is isolated from the other components in the massaging device **100**.

In typical massaging devices, cooling air is blown over the motor. Because the massaging devices operate for long periods of time in an atmosphere that is subject to a significant amount of dust and lint because the massaging device is often used on a person wearing clothes, a towel or a robe. Over time, the dust and lint may build up on the motor and cause the prior art massaging devices to overheat. Locating the cooling system in a cavity **282** that is isolated from the rest of the internal components minimizes this type of failure. The air outlet grates **122** may be sized larger to allow any lint and dust to freely pass out of the cavity **282**. In addition, the surface of the heat sink **220** is smooth and thus, there will be few pockets for dust and lint to get trapped.

FIGS. **6** and **6**A illustrate an exemplary embodiment of a quick-connect system **600** for connecting a massaging head **620** to a piston **602**. When providing a deep tissue massage using a massaging device, such as, for example, massaging device **100**, it may be desirable to switch massaging heads to work on different muscles or different portions of muscles during the massage. The exemplary quick-connect system **600** allows a user to quickly switch massaging heads **620**. Moreover, the exemplary quick-connect system **600** may be used without turning off the massaging device **100**.

Quick-connect system **600** includes a piston **602** that has a hollow-end bore **608** for receiving the shaft **621** of a massaging head **620**. Located within the bore **608** of piston **602** is a cylindrical seat **604**. Cylindrical seat **604** retains a magnet **606**. Magnet **606** is illustrated with its north pole located flush with the seat and facing toward the opening in bore **608**. Massaging head **620** includes a shaft **621** having a cylindrical pocket **622** at the distal end. Located within the cylindrical pocket **622** is a magnet **624**. Magnet **624** is positioned so that its south pole is located at the distal end of shaft **621**. Accordingly, when the shaft **621** of massaging

head **620** is slid into opening in bore **608**, the magnets **606** and **624** are attracted to one another and magnetically hold massaging head **620** firmly in place.

To remove massaging head **620**, a user need only apply a sufficient amount of force to separate the two magnets **606**, **624**. The strength of the magnets **606**, **624** are sized to prevent the massaging head **620** from separating from the piston **602** during normal use, and yet allow a user to quickly remove and replace the massaging head **620**. In some embodiments the end **626** of the massaging head **620** is rounded, pointed or tapered (not shown) to allow it to easily slip into the opening **608** even while the piston **608** is moving.

FIG. **6**B illustrates another quick-connect massaging head **630**. Quick-connect massaging head **630** is substantially the same as massaging head **620** except that the head portion **639** has a different shape than head portion **629** of massaging head **620**.

In some instances, it may be desirable to adjust the throw or the stroke length of the massaging head to work on larger or smaller muscle groups, or deeper or shallower points of stress or soreness in the muscles. FIG. **7** illustrates an exemplary embodiment of a lost motion system **700**. Although lost motion system **700** is a hydraulic lost motion system, other mechanical lost motion devices may be used in accordance with embodiments of the present invention.

Lost motion system **700** is contained in housing **702**. Housing **702** may be similar to drive housing **218** described above except it may need to be larger to accommodate lost motion system **700**. Housing **702** includes a floating piston **720** located in first cylindrical bore **708**. Floating piston **720** includes a sealing member **722** for forming a seal between floating piston **720** and first cylindrical bore **708**. A cam **706** secured to housing **702** may be rotated to adjust the amount of travel that floating piston **720** may move. A passage **710** fluidically connects first cylindrical bore **708** to second cylindrical bore **704**.

A drive piston **730** is located in second cylindrical bore **704**. Drive piston **730** includes a sealing member **732** to seal between the drive piston **730** and second cylindrical bore **704**. Drive piston **730** may be driven in substantially the same way as described above with respect to piston **230**. A passage **705** fluidically connects second cylindrical bore **704** and passage **710** to third cylindrical bore **706**. Located within third cylindrical bore **706** is an output piston **740**.

Output piston **740** includes a sealing member **742**, such as, for example, an o-ring to form a seal between drive piston **730** and third cylindrical bore **706**. Hydraulic fluid **712** is located in passages **705**, **710** and portions of the first, second, and third cylindrical cavities **708**, **704** and **706** as illustrated. A massaging head (not shown) is connected to output piston **740**.

During operation, if cam **706** is set so that floating piston **720** is retained at the proximate end of first cylindrical bore **708** (as illustrated), movement of the drive piston **730** moves output piston **740** its maximum stroke length. If cam **706** is set so that floating piston **720** moves to adjacent the distal end of first cylindrical bore **708**, movement of the drive piston **730** moves output piston **740** its minimum stroke length. The cam may also be selectively rotated to intermediate positions to choose different magnitudes of floating piston movement resulting in different selected magnitudes of output piston movement.

In some embodiments, floating piston **720** is physically connected to the cam or other adjustment mechanism so that it is positioned in a predetermined position and remains stationary during operation of the drive piston **730**. Thus, floating piston **720** does not float during operation of the massaging device.

In some embodiments, the lost motion system may be contained in the massaging head itself, or in an adaptor that connects between the piston and the massaging head. Thus, rather than having a cam in the housing of the massaging device, different applicator heads or adaptors having a set lost motion, or variable lost motion systems integral therein may be used. In some embodiments, such adaptors and massaging heads may be adapted with a quick-connect system similar to the ones described with respect to FIGS. **6** and **6**A.

FIG. **8** illustrates a simplified exemplary electrical schematic diagram **800** of an embodiment of a massaging device. The components disclosed as being on a particular circuit board may be on multiple circuit boards or individually mounted and hardwired to one another. Circuit board **801** includes memory **804**, motor control circuitry **810** and fan control circuitry **816**, which are in circuit communication with processor **802**. Fan control circuitry **816** is in circuit communication with fan **817**.

Power circuitry **812** may be included on circuit board **801** or may be located on its own external to the massager. Power circuitry **812** includes the necessary power conditioning circuitry to provide power to both the electronics and the motors. In circuit communication with power circuitry **812** is plug **814**. Optionally two or more power circuits may be utilized. All of the connections between power circuitry **812** and the other components may not be shown in FIG. **8**; however, those skilled in the art have the required knowledge to provide power to the devices that require power. Motor control circuitry **810** is in circuit communication with drive motor **811**. Drive motor **811** is used to drive the piston and massaging head as described above.

Memory **804** is a processor readable media and includes the necessary logic to operate the massaging device. Examples of different processor readable media include Flash Memory, Read-Only Memory (ROM), Random-Access Memory (RAM), programmable read-only memory (PROM), electrically programmable read-only memory (EPROM), electrically erasable programmable read-only memory (EEPROM), magnetic disk, and optically readable mediums, and others. Still further, the processes and logic described herein can be merged into one large process flow or divided into many sub-process flows. The order in which the process flows herein have been described is not critical and can be rearranged while still accomplishing the same results. Indeed, the process flows described herein may be rearranged, consolidated and/or reorganized in their implementation as warranted or desired.

In addition, processor **802** is in circuit communication with control panel **806**. Control panel **806** includes any desired pushbuttons, dials, displays or the like. Control panel **806** provides the operator interface to operate and control the massaging device.

Processor **802** is also in circuit communication with data connection **820**. Representative data connections **820** include an Ethernet wire, Bluetooth, WiFi, optical transmitter/reader, an IR reader and the like. Combinations of two or more different data connections **820** may be used. Data connection **820** may be used to transmit data to an outside device, such as, for example, a computer or hand-held portable device. Various uses for transmitting such data are described below.

In some embodiments, processor **802** includes logic to collect and store data related to use of the massaging device.

Exemplary types of data may include usage rates, operating times or the like. In some embodiments, different massaging heads include an RFID chip and when inserted into the massaging device, an RFID reader (not shown) identifies and stores the type of massaging head utilized. In some embodiments, a customer number may be associated with the data. This data may be used to determine lease rates of the massaging device, for calculating cost/benefit analysis, or for setting up customized massages.

In some embodiments, data may be uploaded from a computer or hand-held portable device to the massaging device. Such data may include customized massaging programs tailored for individual needs. In some embodiments, the customized massaging program may be reflective of prior massages given to a customer that were particularly well-received by the customer.

In some embodiments, the customized massaging program may indicate to the user on a display on the control panel **806** massage times, locations, type of massage head to use or the like to ensure covering the desired locations with the customized massage.

While various inventive aspects, concepts and features of the inventions may be described and illustrated herein as embodied in combination in the exemplary embodiments, these various aspects, concepts and features may be used in many alternative embodiments, either individually or in various combinations and sub-combinations thereof. Unless expressly excluded herein all such combinations and sub-combinations are intended to be within the scope of the present inventions. Still further, while various alternative embodiments as to the various aspects, concepts and features of the inventions—such as alternative materials, structures, configurations, methods, circuits, devices and components, software, hardware, control logic, alternatives as to form, fit and function, and so on—may be described herein, such descriptions are not intended to be a complete or exhaustive list of available alternative embodiments, whether presently known or later developed. Those skilled in the art may readily adopt one or more of the inventive aspects, concepts or features into additional embodiments and uses within the scope of the present inventions even if such embodiments are not expressly disclosed herein. Additionally, even though some features, concepts or aspects of the inventions may be described herein as being a preferred arrangement or method, such description is not intended to suggest that such feature is required or necessary unless expressly so stated. Still further, exemplary or representative values and ranges may be included to assist in understanding the present disclosure; however, such values and ranges are not to be construed in a limiting sense and are intended to be critical values or ranges only if so expressly stated. Moreover, while various aspects, features and concepts may be expressly identified herein as being inventive or forming part of an invention, such identification is not intended to be exclusive, but rather there may be inventive aspects, concepts and features that are fully described herein without being expressly identified as such or as part of a specific invention. Descriptions of exemplary methods or processes are not limited to inclusion of all steps as being required in all cases, nor is the order that the steps are presented to be construed as required or necessary unless expressly so stated.

What is claimed is:

1. A percussive massager comprising:

a housing;

a piston having a proximal end and a distal end, the distal end of the piston having a substantially cylindrical bore;

a motor at least partially within the housing and operatively connected to the proximal end of the piston, wherein the motor is configured to cause the piston to reciprocate at a first speed;

a drive mechanism that controls a predetermined stroke length of the piston; and

a quick-connect system comprising the distal end of the piston and a first massaging head, wherein the quick-connect system is configured to secure the first massaging head to the percussive massager by a proximal end of the massaging head being slid into the bore while the piston reciprocates the predetermined stroke length at the first speed.

2. The percussive massager of claim **1**, further comprising:

a second massaging head configured to releasably couple to the distal end of the piston via the quick-connect system.

3. The percussive massager of claim **1**, wherein the motor is configured to cause the piston to reciprocate the predetermined stroke length at a second speed.

4. The percussive massager of claim **3**, wherein the first speed and the second speed are each less than or equal to 3600 strokes per minute.

5. The percussive massager of claim **3**, wherein the first speed and the second speed are each greater than or equal to 600 strokes per minute.

6. The percussive massager of claim **3**, wherein the first speed and the second speed are each selectable from a plurality of predetermined speeds in a range of greater than 700 strokes per minute to less than 1800 strokes per minute.

7. The percussive massager of claim **3**, further comprising:

a control panel positioned on an exterior of the housing.

8. The percussive massager of claim **7**, wherein the control panel is configured to display one or more visual indicators.

9. The percussive massager of claim **7**, wherein the control panel has a display device.

10. The percussive massager of claim **7**, wherein the control panel has one or more inputs.

11. The percussive massager of claim **10**, wherein the one or more inputs comprise at least one of: a button, a switch, and a dial.

12. The percussive massager of claim **10**, wherein the first speed and the second speed are each selectable via the one or more inputs.

13. The percussive massager of claim **10**, wherein a first selection of the one or more inputs is configured to cause the percussive massager to power on and wherein a second selection of the one or more inputs is configured to cause the percussive massager to power off.

14. The percussive massager of claim **1**, further comprising an audible feedback device configured to generate one or more audible signals.

15. The percussive massager of claim **1**, further comprising a controller having a processor, a memory, and a data connection.

16. The percussive massager of claim **15**, wherein the data connection is a wireless data connection.

17. The percussive massager of claim **15**, wherein the controller is configured to send, by the data connection, first data to an external computing device.

18. The percussive massager of claim 17, wherein the first data is indicative of usage of the percussive massager for providing a massage.

19. The percussive massager of claim 15, wherein the controller is configured to receive, by the data connection, second data from an external computing device.

20. The percussive massager of claim 19, wherein the second data is indicative of a massage program having at least one of a massage duration, a massage location, and a type of massaging head.

21. The percussive massager of claim 1, wherein the housing comprises a cavity, wherein the motor and the drive mechanism are positioned within the cavity.

22. The percussive massager of claim 21, further comprising a thermally conductive motor housing positioned within the cavity proximal to the motor.

23. The percussive massager of claim 22, further comprising a heat sink positioned proximal to the thermally conductive motor housing.

24. The percussive massager of claim 1, wherein the motor is positioned within the housing opposite a handle.

25. The percussive massager of claim 1, wherein the motor has an output shaft configured to rotate about a rotation axis, and wherein the drive mechanism comprises:

a flywheel operatively connected to the output shaft of the motor to rotate about a flywheel axis, the output shaft extending into the flywheel along the flywheel axis; and

a crank pin extending from the flywheel, the crank pin being operatively connected to the piston.

26. The percussive massager of claim 25, wherein an offset between the flywheel axis and an axis of the crank pin controls the predetermined stroke length of the piston.

27. The percussive massager of claim 26, wherein the motor is directly connected to the flywheel, and wherein the crank pin is directly connected to the flywheel.

28. The percussive massager of claim 1, wherein a handle is on an opposite side of the piston with respect to the motor.

29. The percussive massager of claim 1, further comprising a substantially cylindrical structure within the bore.

30. The percussive massager of claim 29, wherein the substantially cylindrical structure comprises a cylindrical seat.

31. The percussive massager of claim 29, wherein the substantially cylindrical structure comprises a magnet.

32. A method of assembling a percussive massager, the method comprising:

positioning a motor at least partially within a housing;

operatively connecting the motor to a proximal end of a piston, wherein the motor is configured to cause the piston to reciprocate at a first speed, wherein a distal end of the piston has a quick release connector, wherein the quick release connector has a bore having a substantially cylindrical structure; and

positioning a drive mechanism that controls a predetermined stroke length of the piston within the housing, wherein the quick release connector is configured to secure a first massaging head by sliding the first massaging head into the bore while the piston reciprocates the predetermined stroke length at the first speed.

33. The method of claim 32, wherein a second massaging head is configured to releasably couple to the distal end of the piston via the quick release connector.

34. A percussive massager comprising:

a housing;

a piston in the housing having a proximal end and a distal end;

a motor at least partially within the housing and operatively connected to the proximal end of the piston, wherein the motor is configured to cause the piston to reciprocate at a first speed;

a drive mechanism between the motor and the piston that controls a predetermined stroke length of the piston; and

a quick release connector at the distal end of the piston, wherein the quick release connector is configured to secure a first massaging head while the piston reciprocates a predetermined stroke length at the first speed, wherein the first massaging head has a substantially cylindrical pocket to receive the quick release connector.

35. The percussive massager of claim 34, further comprising:

a second massaging head configured to releasably couple to the distal end of the piston via the quick release connector.

36. The percussive massager of claim 34, wherein the motor is configured to cause the piston to reciprocate the predetermined stroke length at a second speed.

37. The percussive massager of claim 36, wherein the first speed and the second speed are each less than or equal to 3600 strokes per minute.

38. The percussive massager of claim 36, wherein the first speed and the second speed are each greater than or equal to 600 strokes per minute.

39. The percussive massager of claim 36, wherein the first speed and the second speed are each selectable from a plurality of predetermined speeds in a range of greater than 700 strokes per minute to less than 1800 strokes per minute.

40. The percussive massager of claim 36, further comprising:

a control panel positioned on an exterior of the housing.

41. The percussive massager of claim 40, wherein the control panel is configured to display one or more visual indicators.

42. The percussive massager of claim 40, wherein the control panel has a display device.

43. The percussive massager of claim 40, wherein the control panel has one or more inputs.

44. The percussive massager of claim 43, wherein the one or more inputs comprise at least one of: a button, a switch, and a dial.

45. The percussive massager of claim 43, wherein the first speed and the second speed are each selectable via the one or more inputs.

46. The percussive massager of claim 43, wherein a first selection of the one or more inputs is configured to cause the percussive massager to power on and wherein a second selection of the one or more inputs is configured to cause the percussive massager to power off.

47. The percussive massager of claim 34, further comprising an audible feedback device configured to generate one or more audible signals.

48. The percussive massager of claim 34, further comprising a controller having a processor, a memory, and a data connection.

49. The percussive massager of claim 48, wherein the data connection is a wireless data connection.

50. The percussive massager of claim 49, wherein the controller is configured to send, by the data connection, first data to an external computing device.

51. The percussive massager of claim 50, wherein the first data is indicative of usage of the percussive massager for providing a massage.

52. The percussive massager of claim 48, wherein the controller is configured to receive, by the data connection, second data from an external computing device.

53. The percussive massager of claim 52, wherein the second data is indicative of a massage program having at least one of a massage duration, a massage location, and a type of massaging head.

54. The percussive massager of claim 34, wherein the housing comprises a cavity, wherein the motor and the drive mechanism are positioned within the cavity.

55. The percussive massager of claim 54, further comprising a thermally conductive motor housing positioned within the cavity proximal to the motor.

56. The percussive massager of claim 55, further comprising a heat sink positioned proximal to the thermally conductive motor housing.

57. The percussive massager of claim 34, further comprising a handle, wherein the motor is positioned within the housing opposite the handle.

58. The percussive massager of claim 34, wherein the motor has an output shaft configured to rotate about a rotation axis, and wherein the drive mechanism comprises:

a flywheel operatively connected to the output shaft of the motor to rotate about a flywheel axis, the output shaft extending into the flywheel along the flywheel axis; and

a crank pin extending from the flywheel, the crank pin being operatively connected to the piston.

59. The percussive massager of claim 58, wherein an offset between the flywheel axis and an axis of the crank pin controls the predetermined stroke length of the piston.

60. The percussive massager of claim 59, wherein the motor is directly connected to the flywheel, and wherein the crank pin is directly connected to the flywheel.

61. The percussive massager of claim 34, further comprising a handle, wherein the handle is on an opposite side of the piston with respect to the motor.

* * * * *

EXHIBIT B

US012213933B1

(12) **United States Patent**
Danby et al.

(10) **Patent No.: US 12,213,933 B1**
(45) **Date of Patent: *Feb. 4, 2025**

(54) **MASSAGE DEVICE WITH A RELEASABLE CONNECTION FOR A MASSAGING HEAD**

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See application file for complete search history.

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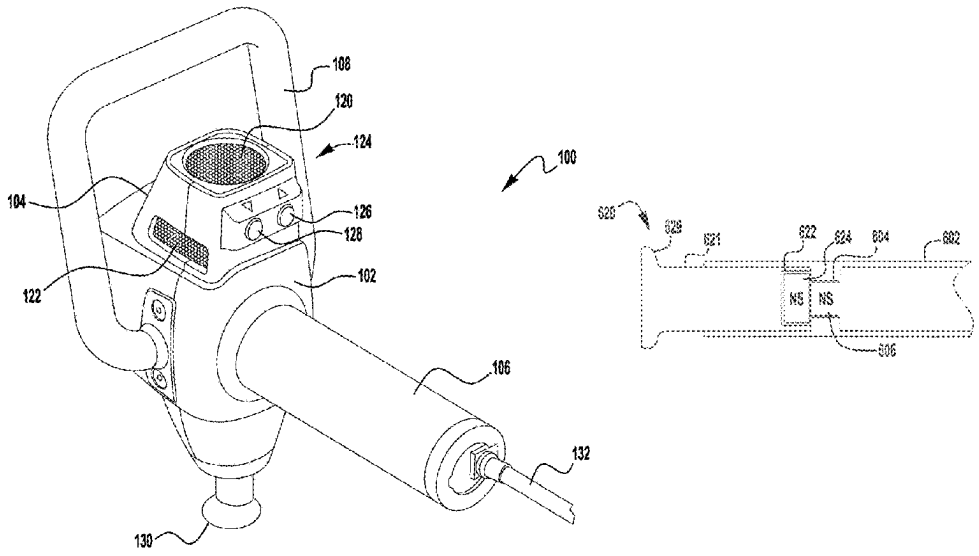
(57) **ABSTRACT**

Exemplary embodiments of massaging devices are disclosed herein. One exemplary embodiment includes a piston having a longitudinal axis, a massaging head connected to the piston, a motor located on a first side of the longitudinal axis and a handle located on a second side of the longitudinal axis. A drive mechanism for moving the piston and massage head is also included.

15 Claims, 7 Drawing Sheets



Related U.S. Application Data

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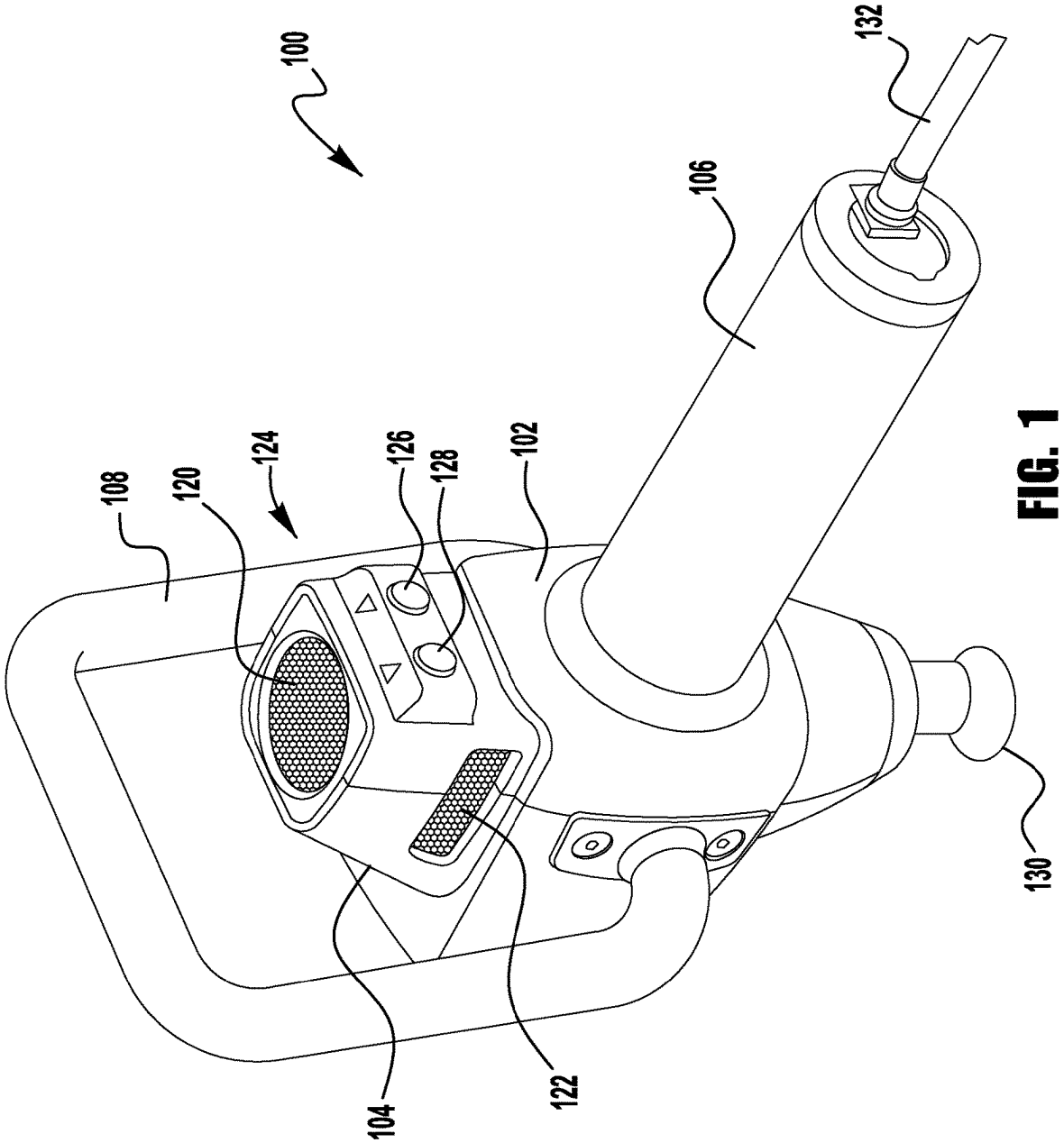

FIG. 1

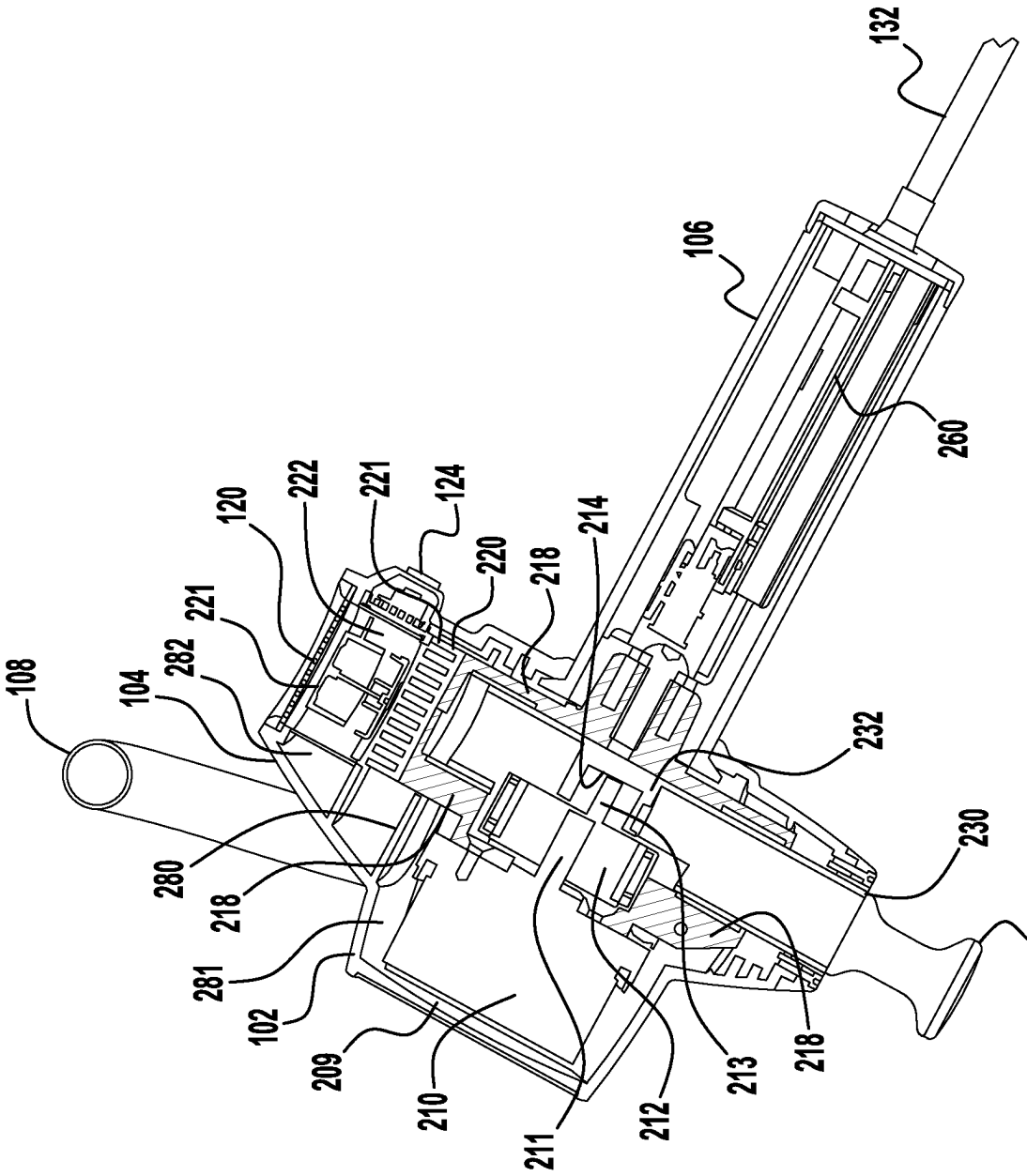
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FIG. 2

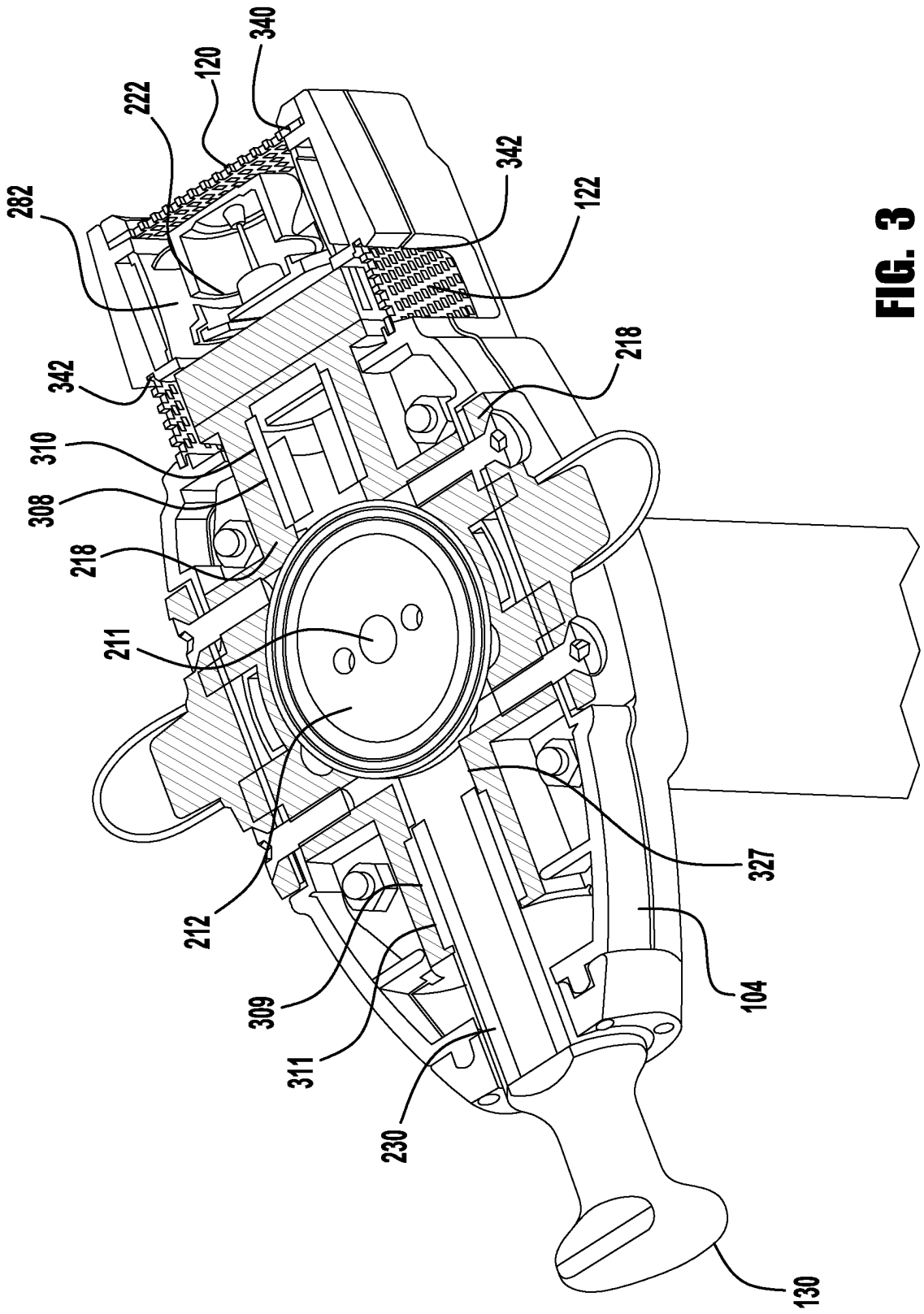
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FIG. 3

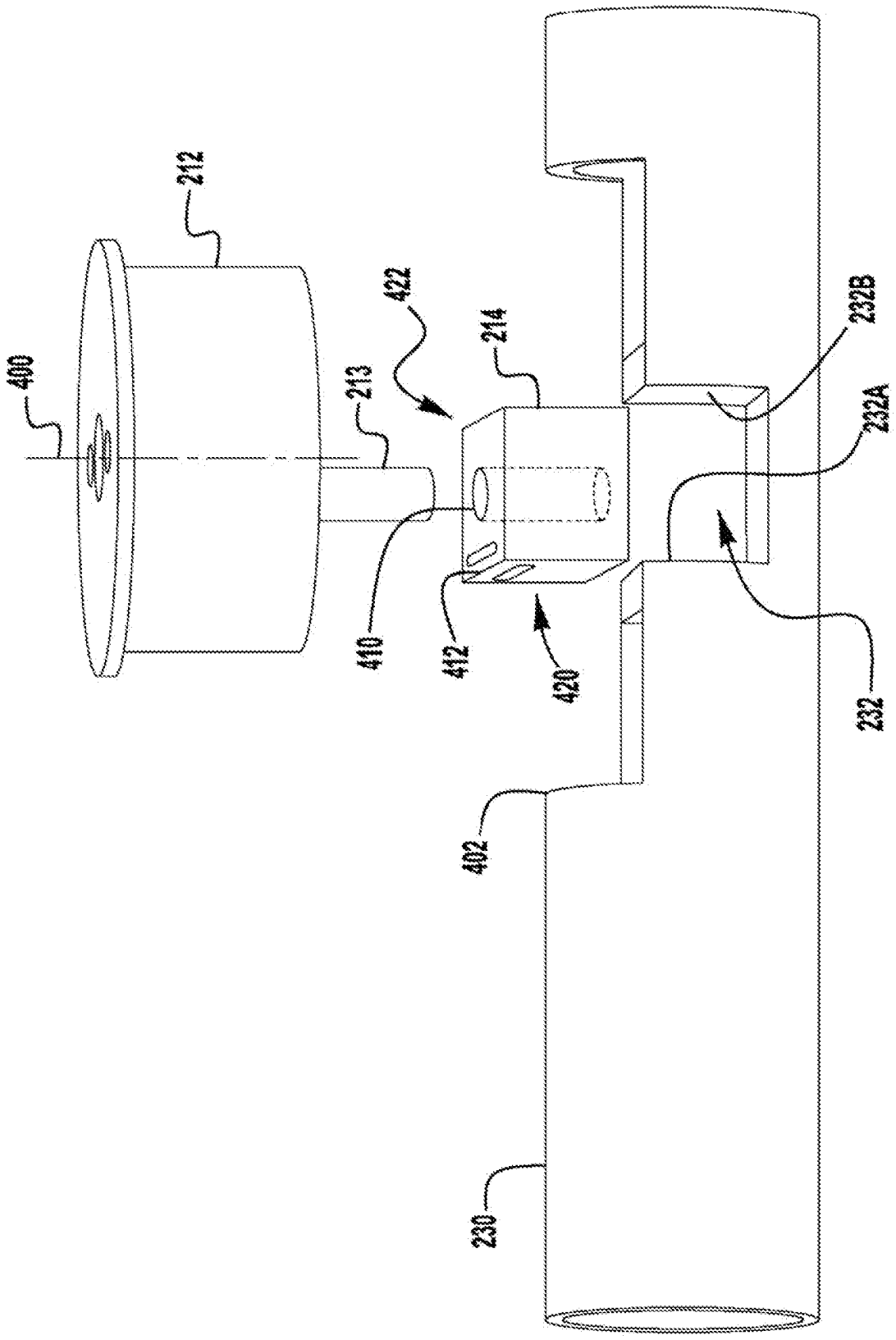

FIG. 4

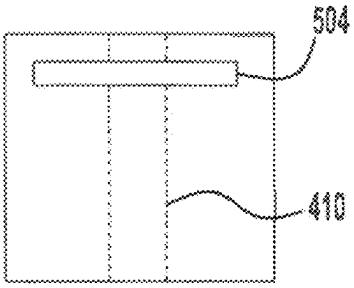

FIG. 5A

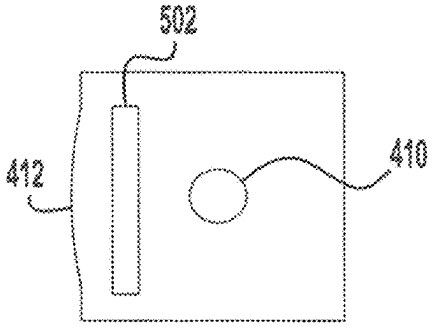

FIG. 5B

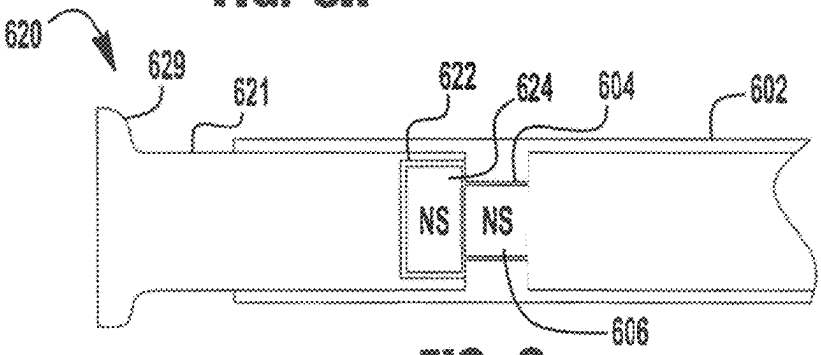

FIG. 6

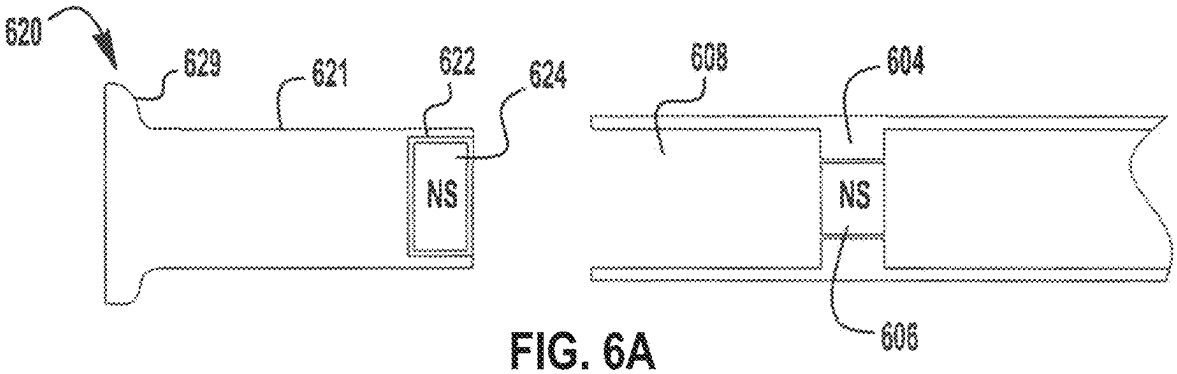

FIG. 6A

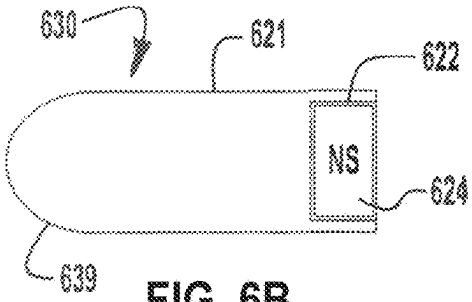

FIG. 6B

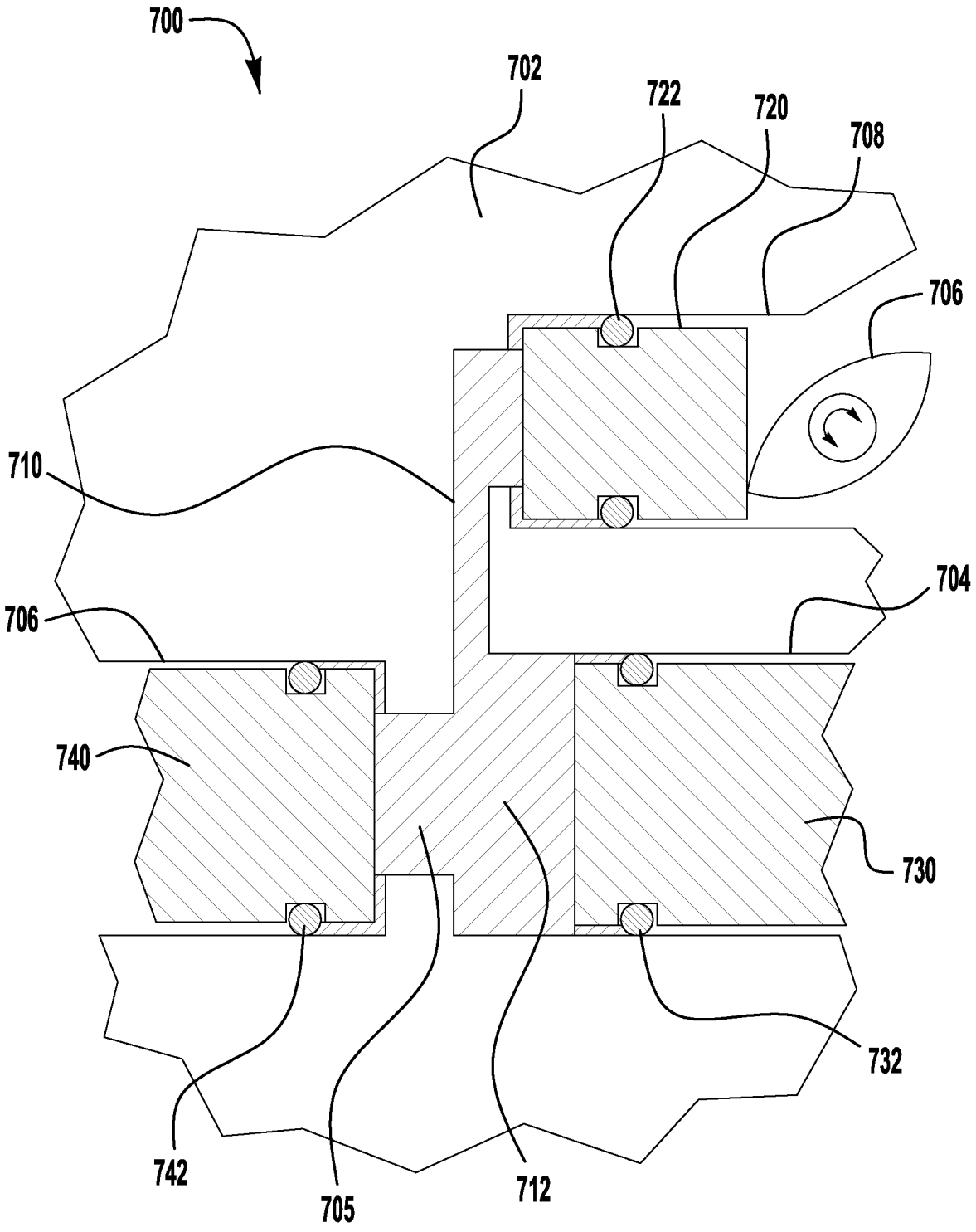

FIG. 7

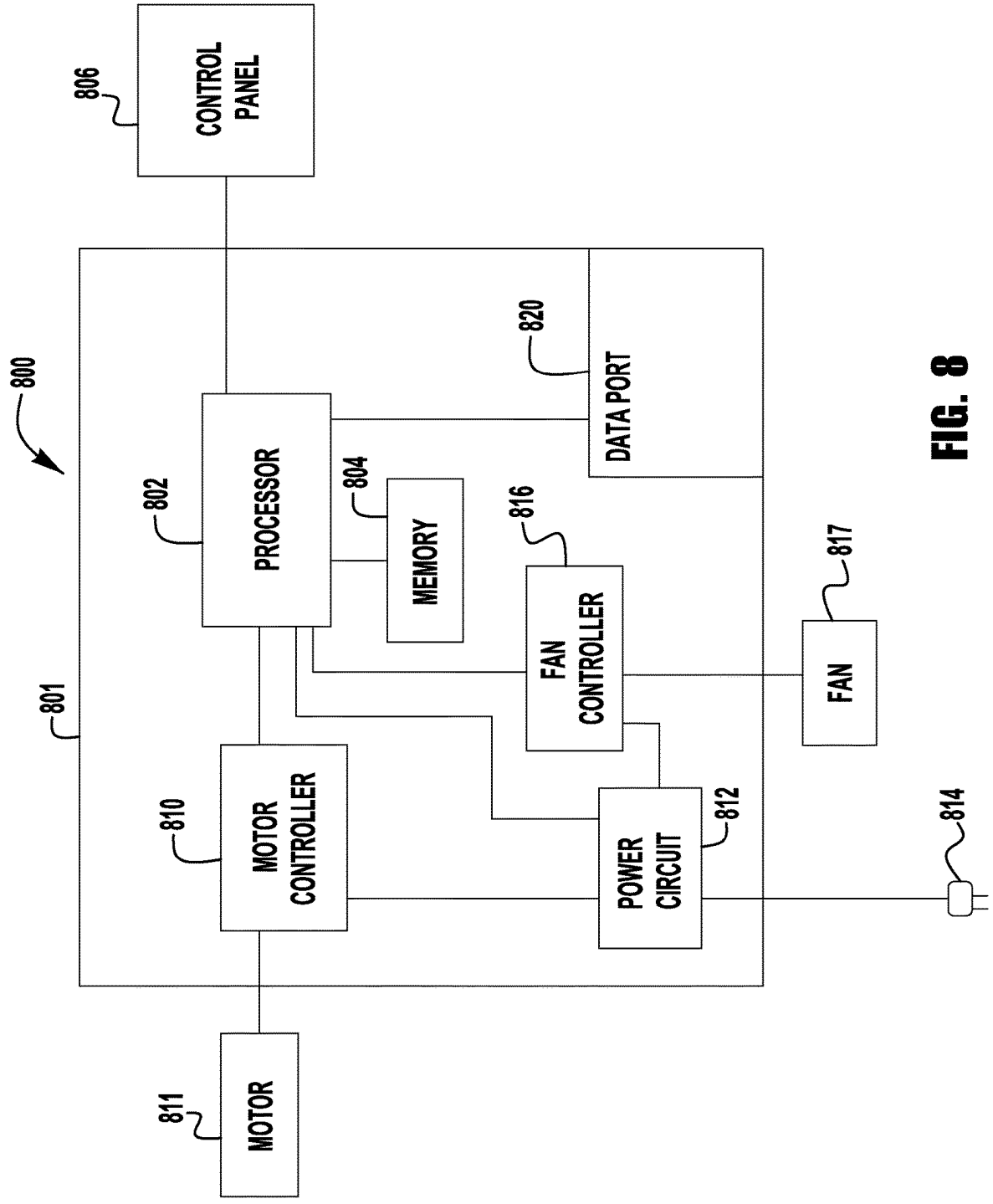
800
801
802
PROCESSOR
804
MEMORY
806
CONTROL PANEL
810
MOTOR CONTROLLER
811
MOTOR
812
POWER CIRCUIT
814
816
FAN CONTROLLER
817
FAN
820
DATA PORT

FIG. 8

MASSAGE DEVICE WITH A RELEASABLE CONNECTION FOR A MASSAGING HEAD

CROSS-REFERENCE TO RELATED APPLICATIONS

This application is a continuation of U.S. patent application Ser. No. 18/466,702 filed on Sep. 13, 2023, which is a continuation of U.S. patent application Ser. No. 17/681,367 filed on Feb. 25, 2022, which is a continuation of U.S. patent application Ser. No. 15/892,665 filed on Feb. 9, 2018, and entitled "MASSAGE DEVICE HAVING VARIABLE STROKE LENGTH", (now U.S. Pat. No. 11,285,075 issued on Mar. 29, 2022), which is a continuation of U.S. patent application Ser. No. 14/317,573 filed on Jun. 27, 2014, and entitled "MASSAGING DEVICE HAVING A HEAT SINK" (now U.S. Pat. No. 9,889,066 issued on Feb. 13, 2018), which claims priority to and the benefits of U.S. Provisional Patent Application No. 61/841,693 filed on Jul. 1, 2013, and entitled "MASSAGING DEVICE", the entireties of which are incorporated herein by reference.

BACKGROUND

This invention relates generally to medical devices, and more particularly, to a deep muscle-stimulating device used to increase muscle metabolism, increase the lactic acid cycle and relieve pain.

Vibrating massaging devices are available on the market today; however, those devices suffer from many deficiencies. Many of the prior art massaging devices are bulky, get very hot, are noisy and/or are difficult to use for extended periods of time.

SUMMARY

Exemplary embodiments of massaging devices are disclosed herein. One exemplary embodiment includes a piston having a longitudinal axis and a massaging head connected to the piston. A motor is located on a first side of the longitudinal axis and a handle is located on a second side of the longitudinal axis. A drive mechanism for moving the piston and massage head is also included.

Another exemplary embodiment of a massaging device includes a handle, a piston, a massaging head attached to the piston, a motor, a drive mechanism for converting rotary motion of the motor to linear motion to drive the piston back and forth in a reciprocating motion, a processor, memory, a data connection in circuit communication with the processor and logic for transmitting data between the massaging device and a remote device.

Still another exemplary embodiment includes a massaging device that has a handle, a motor, a drive mechanism for converting rotary motion of the motor to reciprocating motion, a piston movable in a linear reciprocating motion connected to the drive mechanism and a massage head attached to the piston. The exemplary embodiment also includes a heat sink in thermal communication with the motor and drive mechanism, and a housing having two cavities. The first cavity at least partially surrounds the motor and the second cavity at least partially surrounds the heat sink. The cavities are separated from one another and the second cavity includes one or more openings for allowing air to flow over the heat sink to dissipate heat from the massager.

Another exemplary massaging device includes a housing, a handle extending outward from the housing and a piston having a longitudinal axis extending substantially perpendicular to the handle. A massaging head is connected to the piston. In addition, the massaging device includes a motor, a drive mechanism for moving the piston and a control panel. The control panel is located on the housing above the handle.

In yet another exemplary embodiment, a massaging device includes a handle, a piston, a quick-connection mechanism and one or more massaging heads releasably connectable to the piston by the quick-connection mechanism. The massaging device further includes a motor and a drive mechanism for moving the piston.

Another exemplary massaging device includes a handle, a piston, a massaging head connected to the piston, a motor and a drive mechanism for moving the piston. The drive mechanism includes a crank bearing that has one or more spring bars.

Still yet, another exemplary massaging device includes a handle, a piston a massaging head connected to the piston, a drive mechanism for moving the piston in a back and forth motion and a lost motion mechanism located between the massaging head and the drive mechanism.

BRIEF DESCRIPTION OF THE DRAWINGS

These and other features and advantages of the present invention will become better understood with regard to the following description and accompanying drawings in which:

FIG. **1** illustrates a perspective view of an exemplary embodiment of a massaging device;

FIG. **2** illustrates a first cross-section of the exemplary massaging device of FIG. **1**;

FIG. **3** illustrates a second cross-section of the exemplary massaging device of FIG. **1**;

FIG. **4** illustrates an exploded perspective view of an exemplary drive mechanism of the massaging device;

FIGS. **5**A and **5**B show enlarged side views of a crank bearing having spring bars for use in the exemplary drive mechanism of FIG. **4**;

FIGS. **6**, **6**A and **6**B illustrate an exemplary quick-disconnect mechanism for connecting one or more massaging heads to a massaging device;

FIG. **7** illustrates a schematic view of an exemplary lost motion control mechanism for varying the stroke of the piston driving a massaging head; and

FIG. **8** illustrates an exemplary embodiment of a simplified block circuit diagram for a massaging device.

DETAILED DESCRIPTION

The Detailed Description merely describes exemplary embodiments of the invention and is not intended to limit the scope of the claims in any way. Indeed, the invention is broader than and unlimited by the exemplary embodiments, and unless specifically indicated otherwise, the terms used in the claims have their full ordinary meaning.

"Circuit communication" as used herein indicates a communicative relationship between devices. Direct electrical, electromagnetic and optical connections and indirect electrical, electromagnetic and optical connections are examples of circuit communication. Two devices are in circuit communication if a signal from one is received by the other, regardless of whether the signal is modified by some other device. For example, two devices separated by one or more of the following—amplifiers, filters, transformers, optoisolators, digital or analog buffers, analog integrators, other electronic circuitry, fiber optic transceivers or satellites—are

in circuit communication if a signal from one is communicated to the other, even though the signal is modified by the intermediate device(s). As another example, an electromagnetic sensor is in circuit communication with a signal if it receives electromagnetic radiation from the signal. As a final example, two devices not directly connected to each other, but both capable of interfacing with a third device, such as, for example, a processor, are in circuit communication.

Also, as used herein, voltages and values representing digitized voltages are considered to be equivalent for the purposes of this application, and thus the term "voltage" as used herein refers to either a signal, or a value in a processor representing a signal, or a value in a processor determined from a value representing a signal.

"Signal," as used herein includes, but is not limited to one or more electrical signals, analog or digital signals, one or more computer instructions, a bit or bit stream, or the like.

"Logic," synonymous with "circuit" as used herein includes, but is not limited to hardware, firmware, software and/or combinations of each to perform a function(s) or an action(s). For example, based on a desired application or needs, logic may include a software-controlled processor, microprocessor or microcontroller, discrete logic, such as an application specific integrated circuit (ASIC) or other programmed logic device. Logic may also be fully embodied as software. The circuits identified and described herein may have many different configurations to perform the desired functions.

Any values identified in the detailed description are exemplary, and they are determined as needed for a particular massaging device. Accordingly, the inventive concepts disclosed and claimed herein are not limited to particular values or ranges of values used to describe the embodiments disclosed herein.

FIG. **1** is a perspective view of an exemplary embodiment of a hand-held massaging device **100**. The exemplary massaging device **100** includes a main housing **102** that houses a motor and a drive unit and an upper housing **104** that includes a heat sink and a fan. In addition, massaging device **100** includes a first handle **106**, and a second optional handle **108**. Handle **106** has a longitudinal axis that extends away from the housing **102**. The massaging device **100** also includes a massaging head **130**. As discussed in more detail below, in some embodiments massaging head **130** includes a quick-release connection.

Massaging device **100** includes a control panel **124**. In one embodiment, control panel **124** comprises a first momentary pushbutton **126** and a second momentary pushbutton **128**. First and second pushbuttons **126**, **128** may serve multiple purposes. In one embodiment, pushing the first pushbutton **126** once moves the massaging device **100** to a first preset speed. Pushing the first pushbutton **126** a second time moves the massaging device **100** to a second preset speed. Accordingly, multiple preset speeds may be selected by pushing a single pushbutton. In addition, pushing pushbutton **126** and holding it down may increase the speed of the massaging head until the user releases the pushbutton **126**.

In addition, if the massaging device **100** is turned off, pushing second pushbutton **128** once and holding it in for a period of time turns on the massaging device **100**. Pushing the second pushbutton **128** in and holding it in for a period of time, such as, for example one second, causes massaging device **100** to turn off. While massaging device **100** is turned on, pushing and releasing second pushbutton **128** decreases the speed of the massaging device **100** to the next lowest preset speed. Pushing and releasing pushbutton **128** again further reduces the speed of the massaging device **100**. In some embodiments, the operating speed of the massaging device is generally between about 600 and 3600 strokes per minute.

The control panel **124** is located above handle **106** on upper housing **104**. Control panel **124** is located off of the handle **106**, which prevents accidental contact between a user's hand and the control panel **124** and allows a user to move her hand to any position on the handle **106** during operation. Preferably, control panel **124** is located so that it is reachable by a user's thumb without the user having to remove her hand from the handle **106**. In addition, massaging device **100** includes a power cord **132** for providing power to the massaging device **100**.

Although the exemplary control panel **124** illustrates two pushbuttons **126**, **128**, other controls may be used, such as dials and switches. In addition, visual or audible signals may be generated and displayed on control panel **124**. To that extent, control panel **124** may include a visual display (not shown), an audible device (not shown) or the like, such as, for example a speaker, or the like. If a visual or audible device is used, the visual or audible device may be located proximate the pushbuttons or other controls, or may be located apart from such controls.

Upper housing **104** includes an air intake aperture covered by intake grate **120** and one or more air outlet apertures covered by outtake grate(s) **122**. As described in more detail below, the heat-generating internal components of massaging device **100** are cooled by air passing through upper housing portion **104**.

FIGS. **2** and **3** are cross-sections of massaging device **100**. Located within handle **106** is control circuitry **260**. Control circuitry **260** is in circuit communication with power cord **132**, control panel **124**, fan **222** and motor **210**.

Motor **210** is located in housing **102** opposite handle **106**. Motor **210** is a variable speed DC motor; however, motor **210** may be a constant speed motor, an AC motor or the like. In one embodiment, motor **210** has an operating speed of between about 600 and 3600 revolutions per minute (RPMs).

Motor **210** includes a shaft **211** that extends into a flywheel **212**. Flywheel **212** includes a cylindrical projecting member or crank pin **213** positioned offset from the centerline **400** (FIG. **4**) of the flywheel **212**. Crank pin **213** is inserted in an aperture **410** (FIG. **4**) of a crank bearing **214**. Crank bearing **214** is inserted into a pocket **232** of a piston **230**. The piston also has an elongated cutout **402** to receive part of the flywheel **212** for compactness while permitting piston reciprocation. Crank bearing **214** is cuboid in the exemplary embodiment, however, in some exemplary embodiments, crank bearing **214** may cylindrical.

FIG. **4** is an exploded perspective view of piston **230**, flywheel **212** and crank bearing **214**. Piston **230** may be made of any suitable material, and in some embodiments, piston **230** is made of aluminum. As illustrated in the drawings, in some embodiments, motor **210** is located on one side of the longitudinal axis of piston **230** and handle **106** is located on a second side of the longitudinal axis. Piston **230** includes a pocket **232** (or transverse slot) having a first wall **232**A and a second wall **232**B. In some embodiments, piston **230** is hollow on either side of pocket **232** to reduce weight.

Flywheel **212** includes a cylindrical projecting member **213**. Crank pin **213** is off set from the centerline **400** of flywheel **212**. Accordingly, as flywheel **212** rotates, crank pin **213** rotates in a circular path around the centerline **400** of the flywheel **212**. Rotation of crank pin **213** causes crank

bearing **214** to travel in a circular motion within piston pocket **232** causing reciprocal motion of piston **230**.

Piston **230** is restrained by two spaced apart bearings **310**, **311** (FIG. **3**). Bearing **310** is located on a first side of flywheel **212** and bearing **311** is located on a second side of flywheel **212**. Accordingly, piston **230** may only move in a back-and-forth motion along its longitudinal axis. The arrangement of the bearings **310**, **311** on both ends of the piston **230** provides for a very sturdy and robust drive mechanism. Because piston **230** is constrained to a linear back-and-forth motion, as crank bearing **214** rotates in a circular motion, it acts against side walls **232**A and **232**B of pocket **232**. This mechanism for converting rotary to linear motion is known as a "Scotch yoke."

In order to correctly assemble the components of a Scotch yoke drive, the pocket **232** (or walls of transverse slot) must be milled larger than the outside dimensions of the crank bearing **214**. The gap between the inside of pocket **232** and the outside of crank bearing **214** is typically 0.1 mm inches. Motor **210** rotates at between about 600 and 3600 RPMs and each time the crank bearing **214** switches from moving, for example, toward side wall **232**A of pocket **232** to moving toward the other side wall **232**B, the bearing block **214** travels the small gap and smacks or strikes the side wall, e.g., side **232**B, which causes a significant amount of noise and wear.

In one exemplary embodiment, crank bearing **214** is made with one spring bar **412**. FIG. **5**A is an enlarged elevation view of side **420** of crank bearing **214** and FIG. **5**B is an enlarged plan view showing top **422** of crank bearing **214**. The spring bars **412** are created by milling the outside of the spring block **214** proud by 0.4 mm in the area of the desired spring bar.

As illustrated in FIG. **5**A, the surface of spring bar **412** bows outward. The size of the bow is set to increase the width of the crank bearing **214** to be slightly larger (0.4 mm) than the width of the pocket **232**. In some embodiments, slots **502** and **504** are milled into the surfaces of side **420** and top **422** below the spring bar **412** to allow spring bar **412** to deflect inwards. In some embodiments, slots **502** and **504** intersect thereby leaving spring bar **412** supported only on each end.

Thus, when crank bearing **214** is inserted into pocket **232**, the spring bar **412** contacts the corresponding surface of the pocket **232** and deflects inward which causes crank bearing **214** to fit snuggly in pocket **232**. Accordingly, as crank bearing **214** changes directions from, for example, moving toward side wall **232**A to moving toward side wall **232**B, the spring bar **412** takes up the slack in the gap and prevent noise and wear that would otherwise be generated by the crank bearing **214** striking the side walls **232**A, **232**B of the pocket **232**.

Crank bearing **214** may be made of any suitable material; in some embodiments, crank bearing **214** is made of plastic. Although the exemplary embodiment is shown and described as having one spring bar, exemplary embodiments may have any number of spring bars.

Massaging device **100** includes a drive housing **218**. Drive housing **218** is made of a heat conducting material, such as, for example, aluminum and has a longitudinal bore **327** passing therethrough to receive piston **230**. As shown in FIG. **3**, drive housing **218** includes a first internal cylindrical groove **308** for holding bearing **310** and a second internal cylindrical groove **309** for holding bearing **311**. Spaced bearings **310** and **311** mount and guide the piston **230** relative to the drive housing **218**. Drive housing **318** surrounds piston **230** and flywheel **212**. In some embodiments, drive housing **318** is made up of multiple components, such as an upper drive housing and a lower drive housing.

In addition, motor **210** includes a motor housing **209** that bolts onto drive housing **218**. Motor housing **209** is also made of a heat-conducting material, such as, for example, aluminum. Secured to drive housing **218** is heat sink **220**. Heat sink **220** includes a plurality of fins **221**. Heat sink **220** is made of a heat conducting-material, such as, for example, aluminum.

Main housing **102** contains a first cavity **281**. Upper housing **104** contains a second cavity **282**. First cavity **281** and second cavity **282** are separated by a barrier **280**. Motor housing **209** and drive housing **218** are located in the first cavity **281**. Heat sink **220** is located in second cavity **282**. The exemplary embodiment describes a main housing **102** and upper housing **104**. These may be portions made up of a single structure or multiple structures secured to each other.

Second cavity **282** includes an air inlet aperture **340** which is covered by grate **120** and one or more air outlet apertures **342** covered by one or more grates **122**. A fan **222** is located in second cavity **282**. When the fan **222** is activated, air enters second cavity **282** through air inlet aperture **340** and passes over cooling fins **221** of heat sink **220**, and the air then passes out of second cavity **282** through the one or more air outlets **342**. The fan may be activated by a switch (not shown) on control panel **124**, activated automatically when the massaging device **100** is turned on, or may be activated by a thermostat (not shown). Thus, the cooling system for massaging device **100** is located in second cavity **282** and is isolated from the other components in the massaging device **100**.

In typical massaging devices, cooling air is blown over the motor. Because the massaging devices operate for long periods of time in an atmosphere that is subject to a significant amount of dust and lint because the massaging device is often used on a person wearing clothes, a towel or a robe. Over time, the dust and lint may build up on the motor and cause the prior art massaging devices to overheat. Locating the cooling system in a cavity **282** that is isolated from the rest of the internal components minimizes this type of failure. The air outlet grates **122** may be sized larger to allow any lint and dust to freely pass out of the cavity **282**. In addition, the surface of the heat sink **220** is smooth and thus, there will be few pockets for dust and lint to get trapped.

FIGS. **6** and **6**A illustrate an exemplary embodiment of a quick-connect system **600** for connecting a massaging head **620** to a piston **602**. When providing a deep tissue massage using a massaging device, such as, for example, massaging device **100**, it may be desirable to switch massaging heads to work on different muscles or different portions of muscles during the massage. The exemplary quick-connect system **600** allows a user to quickly switch massaging heads **620**. Moreover, the exemplary quick-connect system **600** may be used without turning off the massaging device **100**.

Quick-connect system **600** includes a piston **602** that has a hollow-end bore **608** for receiving the shaft **621** of a massaging head **620**. Located within the bore **608** of piston **602** is a cylindrical seat **604**. Cylindrical seat **604** retains a magnet **606**. Magnet **606** is illustrated with its north pole located flush with the seat and facing toward the opening in bore **608**. Massaging head **620** includes a shaft **621** having a cylindrical pocket **622** at the distal end. Located within the cylindrical pocket **622** is a magnet **624**. Magnet **624** is positioned so that its south pole is located at the distal end of shaft **621**. Accordingly, when the shaft **621** of massaging

head **620** is slid into opening in bore **608**, the magnets **606** and **624** are attracted to one another and magnetically hold massaging head **620** firmly in place.

To remove massaging head **620**, a user need only apply a sufficient amount of force to separate the two magnets **606**, **624**. The strength of the magnets **606**, **624** are sized to prevent the massaging head **620** from separating from the piston **602** during normal use, and yet allow a user to quickly remove and replace the massaging head **620**. In some embodiments the end **626** of the massaging head **620** is rounded, pointed or tapered (not shown) to allow it to easily slip into the opening **608** even while the piston **608** is moving.

FIG. **6**B illustrates another quick-connect massaging head **630**. Quick-connect massaging head **630** is substantially the same as massaging head **620** except that the head portion **639** has a different shape than head portion **629** of massaging head **620**.

In some instances, it may be desirable to adjust the throw or the stroke length of the massaging head to work on larger or smaller muscle groups, or deeper or shallower points of stress or soreness in the muscles. FIG. **7** illustrates an exemplary embodiment of a lost motion system **700**. Although lost motion system **700** is a hydraulic lost motion system, other mechanical lost motion devices may be used in accordance with embodiments of the present invention.

Lost motion system **700** is contained in housing **702**. Housing **702** may be similar to drive housing **218** described above except it may need to be larger to accommodate lost motion system **700**. Housing **702** includes a floating piston **720** located in first cylindrical bore **708**. Floating piston **720** includes a sealing member **722** for forming a seal between floating piston **720** and first cylindrical bore **708**. A cam **706** secured to housing **702** may be rotated to adjust the amount of travel that floating piston **720** may move. A passage **710** fluidically connects first cylindrical bore **708** to second cylindrical bore **704**.

A drive piston **730** is located in second cylindrical bore **704**. Drive piston **730** includes a sealing member **732** to seal between the drive piston **730** and second cylindrical bore **704**. Drive piston **730** may be driven in substantially the same way as described above with respect to piston **230**. A passage **705** fluidically connects second cylindrical bore **704** and passage **710** to third cylindrical bore **706**. Located within third cylindrical bore **706** is an output piston **740**.

Output piston **740** includes a sealing member **742**, such as, for example, an o-ring to form a seal between drive piston **730** and third cylindrical bore **706**. Hydraulic fluid **712** is located in passages **705**, **710** and portions of the first, second, and third cylindrical cavities **708**, **704** and **706** as illustrated. A massaging head (not shown) is connected to output piston **740**.

During operation, if cam **706** is set so that floating piston **720** is retained at the proximate end of first cylindrical bore **708** (as illustrated), movement of the drive piston **730** moves output piston **740** its maximum stroke length. If cam **706** is set so that floating piston **720** moves to adjacent the distal end of first cylindrical bore **708**, movement of the drive piston **730** moves output piston **740** its minimum stroke length. The cam may also be selectively rotated to intermediate positions to choose different magnitudes of floating piston movement resulting in different selected magnitudes of output piston movement.

In some embodiments, floating piston **720** is physically connected to the cam or other adjustment mechanism so that it is positioned in a predetermined position and remains stationary during operation of the drive piston **730**. Thus, floating piston **720** does not float during operation of the massaging device.

In some embodiments, the lost motion system may be contained in the massaging head itself, or in an adaptor that connects between the piston and the massaging head. Thus, rather than having a cam in the housing of the massaging device, different applicator heads or adaptors having a set lost motion, or variable lost motion systems integral therein may be used. In some embodiments, such adaptors and massaging heads may be adapted with a quick-connect system similar to the ones described with respect to FIGS. **6** and **6**A.

FIG. **8** illustrates a simplified exemplary electrical schematic diagram **800** of an embodiment of a massaging device. The components disclosed as being on a particular circuit board may be on multiple circuit boards or individually mounted and hardwired to one another. Circuit board **801** includes memory **804**, motor control circuitry **810** and fan control circuitry **816**, which are in circuit communication with processor **802**. Fan control circuitry **816** is in circuit communication with fan **817**.

Power circuitry **812** may be included on circuit board **801** or may be located on its own external to the massager. Power circuitry **812** includes the necessary power conditioning circuitry to provide power to both the electronics and the motors. In circuit communication with power circuitry **812** is plug **814**. Optionally two or more power circuits may be utilized. All of the connections between power circuitry **812** and the other components may not be shown in FIG. **8**; however, those skilled in the art have the required knowledge to provide power to the devices that require power. Motor control circuitry **810** is in circuit communication with drive motor **811**. Drive motor **811** is used to drive the piston and massaging head as described above.

Memory **804** is a processor readable media and includes the necessary logic to operate the massaging device. Examples of different processor readable media include Flash Memory, Read-Only Memory (ROM), Random-Access Memory (RAM), programmable read-only memory (PROM), electrically programmable read-only memory (EPROM), electrically erasable programmable read-only memory (EEPROM), magnetic disk, and optically readable mediums, and others. Still further, the processes and logic described herein can be merged into one large process flow or divided into many sub-process flows. The order in which the process flows herein have been described is not critical and can be rearranged while still accomplishing the same results. Indeed, the process flows described herein may be rearranged, consolidated and/or reorganized in their implementation as warranted or desired.

In addition, processor **802** is in circuit communication with control panel **806**. Control panel **806** includes any desired pushbuttons, dials, displays or the like. Control panel **806** provides the operator interface to operate and control the massaging device.

Processor **802** is also in circuit communication with data connection **820**. Representative data connections **820** include an Ethernet wire, Bluetooth, WiFi, optical transmitter/reader, an IR reader and the like. Combinations of two or more different data connections **820** may be used. Data connection **820** may be used to transmit data to an outside device, such as, for example, a computer or hand-held portable device. Various uses for transmitting such data are described below.

In some embodiments, processor **802** includes logic to collect and store data related to use of the massaging device.

Exemplary types of data may include usage rates, operating times or the like. In some embodiments, different massaging heads include an RFID chip and when inserted into the massaging device, an RFID reader (not shown) identifies and stores the type of massaging head utilized. In some embodiments, a customer number may be associated with the data. This data may be used to determine lease rates of the massaging device, for calculating cost/benefit analysis, or for setting up customized massages.

In some embodiments, data may be uploaded from a computer or hand-held portable device to the massaging device. Such data may include customized massaging programs tailored for individual needs. In some embodiments, the customized massaging program may be reflective of prior massages given to a customer that were particularly well-received by the customer.

In some embodiments, the customized massaging program may indicate to the user on a display on the control panel **806** massage times, locations, type of massage head to use or the like to ensure covering the desired locations with the customized massage.

While various inventive aspects, concepts and features of the inventions may be described and illustrated herein as embodied in combination in the exemplary embodiments, these various aspects, concepts and features may be used in many alternative embodiments, either individually or in various combinations and sub-combinations thereof. Unless expressly excluded herein all such combinations and sub-combinations are intended to be within the scope of the present inventions. Still further, while various alternative embodiments as to the various aspects, concepts and features of the inventions—such as alternative materials, structures, configurations, methods, circuits, devices and components, software, hardware, control logic, alternatives as to form, fit and function, and so on—may be described herein, such descriptions are not intended to be a complete or exhaustive list of available alternative embodiments, whether presently known or later developed. Those skilled in the art may readily adopt one or more of the inventive aspects, concepts or features into additional embodiments and uses within the scope of the present inventions even if such embodiments are not expressly disclosed herein. Additionally, even though some features, concepts or aspects of the inventions may be described herein as being a preferred arrangement or method, such description is not intended to suggest that such feature is required or necessary unless expressly so stated. Still further, exemplary or representative values and ranges may be included to assist in understanding the present disclosure; however, such values and ranges are not to be construed in a limiting sense and are intended to be critical values or ranges only if so expressly stated. Moreover, while various aspects, features and concepts may be expressly identified herein as being inventive or forming part of an invention, such identification is not intended to be exclusive, but rather there may be inventive aspects, concepts and features that are fully described herein without being expressly identified as such or as part of a specific invention. Descriptions of exemplary methods or processes are not limited to inclusion of all steps as being required in all cases, nor is the order that the steps are presented to be construed as required or necessary unless expressly so stated.

What is claimed is:

1. A percussive massager comprising:

a housing;

a piston having a proximal end and a distal end, the distal end of the piston having a bore;

a motor operatively connected to the proximal end of the piston, wherein the motor is configured to cause the piston to reciprocate at a first speed;

a drive mechanism that determines a predetermined stroke length of the piston; and

a quick-connect system comprising the distal end of the piston and a first massaging head,

wherein the quick-connect system allows a proximal end of the first massaging head to be inserted into or removed from the bore while the piston reciprocates the predetermined stroke length at the first speed,

wherein the motor has an output shaft that is configured to rotate about a rotation axis, and

wherein the drive mechanism comprises:

a flywheel operatively connected to the output shaft of the motor to rotate about a flywheel axis, the output shaft extending into the flywheel along the flywheel axis; and

a crank pin extending from the flywheel, the crank pin being operatively connected to the piston.

2. The percussive massager of claim **1**, wherein the motor is configured to cause the piston to reciprocate at a second speed.

3. The percussive massager of claim **1**, further comprising:

a control panel positioned on an exterior of the housing.

4. The percussive massager of claim **3**, wherein the control panel is configured to display one or more visual indicators.

5. The percussive massager of claim **1**, further comprising a handle portion, wherein the handle portion is on an opposite side of the flywheel with respect to the motor.

6. The percussive massager of claim **1**, further comprising a handle portion on the housing, wherein the motor and the handle portion are on opposite sides of a plane perpendicular to the flywheel axis that extends through the flywheel.

7. The percussive massager of claim **1**, further comprising a handle portion on the housing, wherein the motor and the handle portion are on a same side of a plane perpendicular to the flywheel axis that extends through the flywheel.

8. The percussive massager of claim **1**, wherein an offset between the flywheel axis and an axis of the crank pin determines the predetermined stroke length of the piston.

9. The percussive massager of claim **1**, wherein the motor is directly connected to the flywheel, and wherein the crank pin is directly connected to the flywheel.

10. The percussive massager of claim **1**, wherein the motor causes the piston to reciprocate at the first speed along a longitudinal axis.

11. The percussive massager of claim **1**, wherein the bore comprises a substantially cylindrical bore.

12. The percussive massager of claim **1**, further comprising a substantially cylindrical structure within the bore.

13. The percussive massager of claim **12**, wherein the substantially cylindrical structure comprises a cylindrical seat.

14. The percussive massager of claim **12**, wherein the substantially cylindrical structure comprises a magnet.

15. The percussive massager of claim **1**, wherein the proximal end of the first massaging head has a pocket to receive the distal end of the piston.

* * * * *

EXHIBIT C

DEFENDANT JQX-US

Defendant's Infringing Listing

Amazon.com: JQX Massage Gun

https://www.amazon.com/JQX-Handheld-Electric-Percussion-Vibration/dp/B0CGN8SYDQ/ref=sr_1_1?dib=eyJ2IjoiMSJ9.Bcv2B9snObsr1yEcc0nFuw.PWvzBc6hAxFne80jH73pvV8RF4b8MFu...

Roll over image to zoom in

JQX Massage Gun Deep Tissue, Handheld Electric Body Muscle Massage Gun, High Percussion Vibration Back Neck Massager for Athletes with 30 Speed Levels & 9 Heads, Gifts for Men and Women (Black)

Visit the JQX Store

4.5 ★★★★½ (504) | Search this page

100+ bought in past month

-50% $19.99 ($19.99 / Count)

Typical price: $39.99

FREE Returns

Exclusive Prime price

Pay $19.99 **$0.00**; **get a $125 Amazon Gift Card** upon approval for the Amazon Business Prime Card. Terms apply. Learn more

Color: **Black**

$19.99 ($19.99 / Count) $39.99 FREE Delivery **Tuesday**	$19.99 ($19.99 / Count) $39.99 FREE Delivery **Tuesday**

Use for	Body
Power Source	Battery Powered
Material	Metal

$19.99 ($19.99 / Count)

FREE Returns

FREE delivery **Tuesday, April 22** for Prime members. Order within 8 hrs 40 mins

Deliver to Hans - New York 10016

In Stock

Quantity: 1

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Sold by	JQX-US
Returns	30-day refund/replacement
Customer service	Amazon

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Defendant's Merchant Storefront

Amazon.com

https://www.amazon.com/s?me=A2F5I30TBCP8PT&marketplaceID=ATVPDKIKX0DER

amazon prime | Deliver to Hans New York 10016 | JQX-US | Search Amazon | EN | Hello, jason Account & Lists | Returns & Orders | 0 Cart

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JQX Massage Gun Deep Tissue, Handheld Electric Body Muscle Massage Gun, High Percussion Vibration Back Neck Massager for Athletes with 30 Speed Levels & 9 Heads,...

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Cotsoco 20-Speed Deep Tissue Massage Gun

4.3 ★★★★½ 7,790

$19.98 prime

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244 MADISON AVE STE 411, NEW YORK, NY, 10016-2817, United States

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FREE pickup available nearby

Paying with American Express 5002 Change

Want to use American Express Membership Rewards® points for this order? Learn more

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Arriving Apr 22, 2025

If you order in the next 8 hours and 40 minutes Details

JQX Massage Gun Deep Tissue, Handheld Electric Body Muscle Massage Gun, High Percussion Vibration Back Neck Massager for Athletes with 30 Speed Levels & 9 Heads, Gifts for Men and Women (Black)

$19.99 ($19.99 / Count)

& FREE Returns

Exclusive Prime price

Ships from Amazon.com

Sold by JQX-US

Quantity: 1 Change

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◉ **Tuesday, Apr 22** FREE

Place your order

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Items:	$19.99
Shipping & handling:	$0.00
Estimated tax to be collected:	$1.77
Order total:	**$21.76**

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Order total: $21.76

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Order Details

https://www.amazon.com/gp/your-account/order-details?ie=UTF8&orderID=112-2938305-6166632&ref=ppx_yo2ov_dt_b_fed_veo

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Order Details

Order placed April 16, 2025 | Order # 112-2938305-6166632

View invoice

Shipping Address

Hans Diamond
244 MADISON AVE STE 411
NEW YORK, NY 10016-2817
United States

Change

Payment method

AMEX ending in 5002

Order Summary

Item(s) Subtotal:	$19.99
Shipping & Handling:	$0.00
Total before tax:	$19.99
Estimated tax to be collected:	$1.77
Grand Total:	**$21.76**

Arriving Tuesday

JQX Massage Gun Deep Tissue, Handheld Electric Body Muscle Massage Gun, High Percussion Vibration Back Neck Massager for Athletes with 30 Speed Levels & 9 Heads, Gifts for Men and Women (Black)

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$19.99

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DEFENDANT jinyunligekeji

Defendant's Infringing Listing

Amazon.com: JQX Massage Gun

https://www.amazon.com/JQX-Massager-Percussion-Athelets-Handheld/dp/B0DGGKTJR5/ref=sr_1_1?crid=HMYET9P3C4WC&dib=eyJ2IjoiMSJ9.bmzeC6NWiZVicUB1Ni9SQg.CdVAPeexRM...

amazon prime | Deliver to Hans New York 10016 | Beauty & Personal Care | asin+B0DGGKTJR5 | EN | Hello, jason Account & Lists | Returns & Orders | 0 Cart

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Health & Household › Wellness & Relaxation › Massage Tools & Equipment › Electric Massagers › Back Massagers

5 VIDEOS

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JQX Massage Gun, Deep Tissue Massager Gun for Pain Relief, Percussion Muscle Massage Gun for Athelets, Handheld Electric Back Massager with 30 Speed Levels & 9 Massage Heads

Visit the JQX Store

4.6 ★★★★½ (194) | Search this page

300+ bought in past month

$35.99 ($35.99 / Count)

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Coupon: $5 off coupon applied Shop items› | Terms

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Color: **Black**

$35.99 ($35.99 / Count) FREE Delivery **Tomorrow**	$35.99 ($35.99 / Count) FREE Delivery **Tomorrow**

Use for	Back
Power Source	Battery Powered
Material	Plastic
Item Weight	1 Kilograms

$35.99 ($35.99 / Count)

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https://www.amazon.com/s?me=AZH1R74KMWHA5&marketplaceID=ATVPDKIKX0DER

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Add to cart

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4.0 ★★★★☆ (24)

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$29.99 ($29.99/Count) List: ~~$39.99~~

FREE delivery **Tue, Apr 22** for Prime members

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JQX Hand Massager with Heat and Compression, Cordless Electric Hand Massager, 3 Levels Pressure for Finger, Gifts for Women, Men(Grey)

3.9 ★★★★☆ (33)

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$30.99

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$5.00 discount applied

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Shipping & handling:	$0.00
Your Coupon Savings:	-$5.00
Estimated tax to be collected:	$2.75
Order total:	**$33.74**

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Order total: $33.74

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Amazon.com: JQX Massage Gun | Order Details

https://www.amazon.com/gp/your-account/order-details?ie=UTF8&orderID=112-3383910-6463407&ref=ppx_yo2ov_dt_b_fed_veo

amazon prime | Deliver to Hans New York 10016 | All | Search Amazon | EN | Hello, jason Account & Lists | Returns & Orders | 0 Cart

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Order Details

Order placed April 16, 2025 | Order # 112-3383910-6463407

View invoice

Shipping Address

Hans Diamond
244 MADISON AVE STE 411
NEW YORK, NY 10016-2817
United States

Change

Payment method

AMEX ending in 5002

Order Summary

Item(s) Subtotal:	$35.99
Shipping & Handling:	$0.00
Your Coupon Savings:	-$5.00
Total before tax:	$30.99
Estimated tax to be collected:	$2.75
Grand Total:	**$33.74**

Arriving tomorrow by 10 PM

JQX Massage Gun, Deep Tissue Massager Gun for Pain Relief, Percussion Muscle Massage Gun for Athelets, Handheld Electric Back Massager with 30 Speed Levels & 9 Massage Heads

Sold by: jinyunligekeji

$35.99

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10016–2817 NEW YORK , NY United
States
TBA320748126887
DJR3
CYCLE 1
BhFqHQ9PL
1 / 4012
NT5
001
EWR8
D JR3
LGA5
B 010
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M68-7

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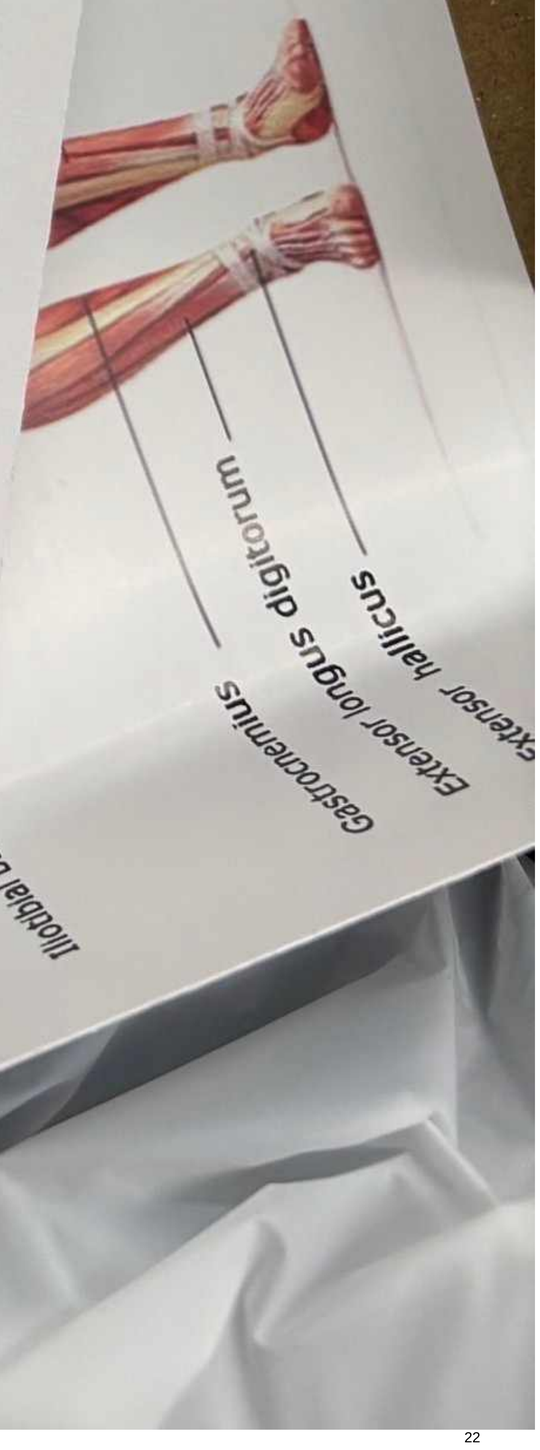


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suffocation, keep this bag
cribs, beds, carriages
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CE FC
DC IN : 5V
2A
2500mAh
Li-ion
MODEL: M68-7

2.6 Lbs | 04/17 | DJR3

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10016-2817 NEW YORK , NY United
States

TBA320744671019

DJR3 | CYCLE 1

B7PJ8IhIL
1 / 3042

B7PJ8IhIL
1 / 3042

BDL4
& JR3

spSH13QI6I3

X004E0CQUF

JQX Massage Gun, Deep Ti...ght and Portable - Black
New

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We really appreciate your support!

Send us your order number to join our VIP membership, we would like to offer you 10% off coupons for your next purchase.

Thank you for buying our products!

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Trigge


INPUT:
AC 100V-240V
50/60Hz
MADE IN CHINA
Li-ion
DC IN
7.4V
0.7A
2500MAH
Read instructions carefully before using
MODEL:X1
ON
OFF

SCAN

TO GET 2-YEA

If you're not satisfied
suggestions,pleas

E-mail:

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We really appr

Send us your order num
we would like to offer you 10%

Trigger Poi

Please Scan the QR Code for an
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USER'S MANUAL

MASSAGE GUN

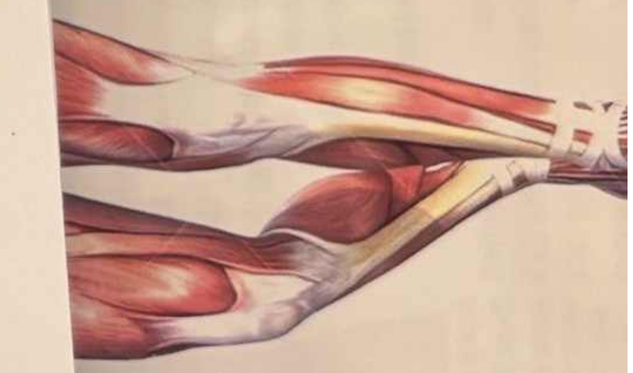


EXHIBIT D

Claim Chart – U.S. Patent No. 11,857,482 – JQX (ASIN B0CGN8SYDQ)

U.S. Patent No. 11,857,482	JQX (ASIN B0CGN8SYDQ)
1. A percussive massager comprising:	The accused product is a percussive massager: JQX Massage Gun Deep Tissue, Handheld Electric Body Muscle Massage Gun, High Percussion Vibration Back Neck Massager for Athletes with 30 Speed Levels & 9 Heads, Gifts for Men and Women (Black) Visit the JQX Store 4.5 ★★★★½ (505) | Search this page **100+ bought** in past month 

a housing;	The accused product has a housing: 

a piston having a proximal end and a distal end, the distal end of the piston having a substantially cylindrical bore;	The piston has a proximal end and a distal end. The proximal end of the piston is operatively connected to the drive mechanism (as shown in the cavity below):  The distal end of the piston has a substantially cylindrical bore: 

a motor at least partially within the housing and operatively connected to the proximal end of the piston,	The accused product has a motor at least partially within the housing:  and is operatively connected to the proximal end of the piston, 

wherein the motor is configured to cause the piston to reciprocate at a first speed;	In the accused product, the motor is configured to cause the piston to reciprocate at a first speed. 

a drive mechanism that controls a predetermined stroke length of the piston; and	The accused product has a drive mechanism that is operatively connected to the piston. Thus, the drive mechanism controls a predetermined stroke length of the piston. The drive mechanism includes a crank pin and a flywheel powered by the motor.  

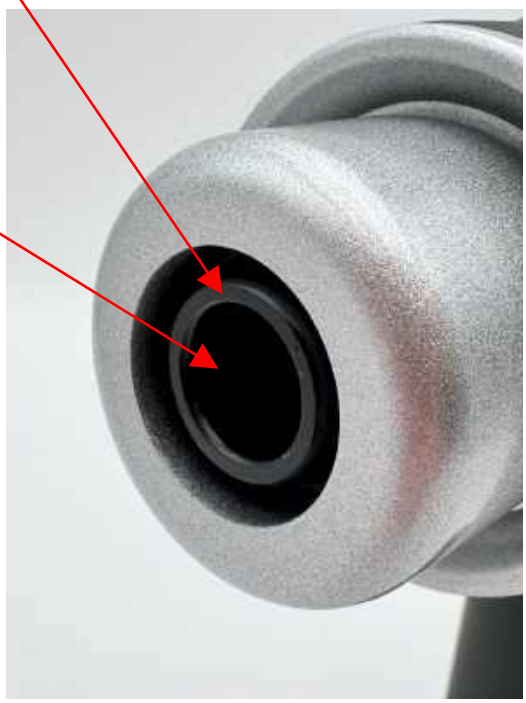
a quick-connect system comprising the distal end of the piston and a first massaging head,	The accused product has a quick-connect system comprising the distal end of the piston and a first massaging head.   

wherein the quick-connect system is configured to secure the first massaging head to the percussive massager by a proximal end of the massaging head being slid into the bore while the piston reciprocates the predetermined stroke length at the first speed.	The quick-connect system of the accused product is configured to secure the first massaging head to the percussive massager by a proximal end of the massaging head being slid into the bore while the piston reciprocates the predetermined stroke length at the first speed. *Click to see Video* Note: To the extent the Court is unable to open the link in the video, Plaintiffs will provide the Court with an alternative method to access the video at the Court's request.

Claim Chart – U.S. Patent No. 11,857,482 – JQX (ASIN B0DGGKTJR5)

U.S. Patent No. 11,857,482	JQX (ASIN B0DGGKTJR5)
1. A percussive massager comprising:	The accused product is a percussive massager: JQX Massage Gun, Deep Tissue Massager Gun for Pain Relief, Percussion Muscle Massage Gun for Athelets, Handheld Electric Back Massager with 30 Speed Levels & 9 Massage Heads Visit the JQX Store 4.6 ★★★★½ (194) | Search this page **300+ bought** in past month 

a housing;	The accused product has a housing: 

a piston having a proximal end and a distal end, the distal end of the piston having a substantially cylindrical bore;	The piston has a proximal end and a distal end. The proximal end of the piston is operatively connected to the drive mechanism (as shown in the cavity below): drive mechanism  The distal end of the piston has a substantially cylindrical bore: 

a motor at least partially within the housing and operatively connected to the proximal end of the piston,	The accused product has a motor at least partially within the housing:  and is operatively connected to the proximal end of the piston, 

wherein the motor is configured to cause the piston to reciprocate at a first speed;	In the accused product, the motor is configured to cause the piston to reciprocate at a first speed. 

a drive mechanism that controls a predetermined stroke length of the piston; and	The accused product has a drive mechanism that is operatively connected to the piston. Thus, the drive mechanism controls a predetermined stroke length of the piston. The drive mechanism includes a crank pin and a flywheel powered by the motor. 

a quick-connect system comprising the distal end of the piston and a first massaging head,	The accused product has a quick-connect system comprising the distal end of the piston and a first massaging head.   

wherein the quick-connect system is configured to secure the first massaging head to the percussive massager by a proximal end of the massaging head being slid into the bore while the piston reciprocates the predetermined stroke length at the first speed.	The quick-connect system of the accused product is configured to secure the first massaging head to the percussive massager by a proximal end of the massaging head being slid into the bore while the piston reciprocates the predetermined stroke length at the first speed. *Click to see Video* Note: To the extent the Court is unable to open the link in the video, Plaintiffs will provide the Court with an alternative method to access the video at the Court's request.

EXHIBIT E

Claim Chart – U.S. Patent No. 12,213,933 – JQX (ASIN B0CGN8SYDQ)

U.S. Patent No. 12,213,933	JQX (ASIN B0CGN8SYDQ)
1. A percussive massager comprising:	The accused product is a percussive massager: JQX Massage Gun Deep Tissue, Handheld Electric Body Muscle Massage Gun, High Percussion Vibration Back Neck Massager for Athletes with 30 Speed Levels & 9 Heads, Gifts for Men and Women (Black) Visit the JQX Store 4.5 ★★★★½ (505) | Search this page 100+ bought in past month 

a housing;	The accused product has a housing: 

a piston having a proximal end and a distal end, the distal end of the piston having a bore,	The accused product has a piston with a proximal end and a distal end. The proximal end of the piston is operatively connected to the drive mechanism as shown below. The distal end of the piston has a bore.  

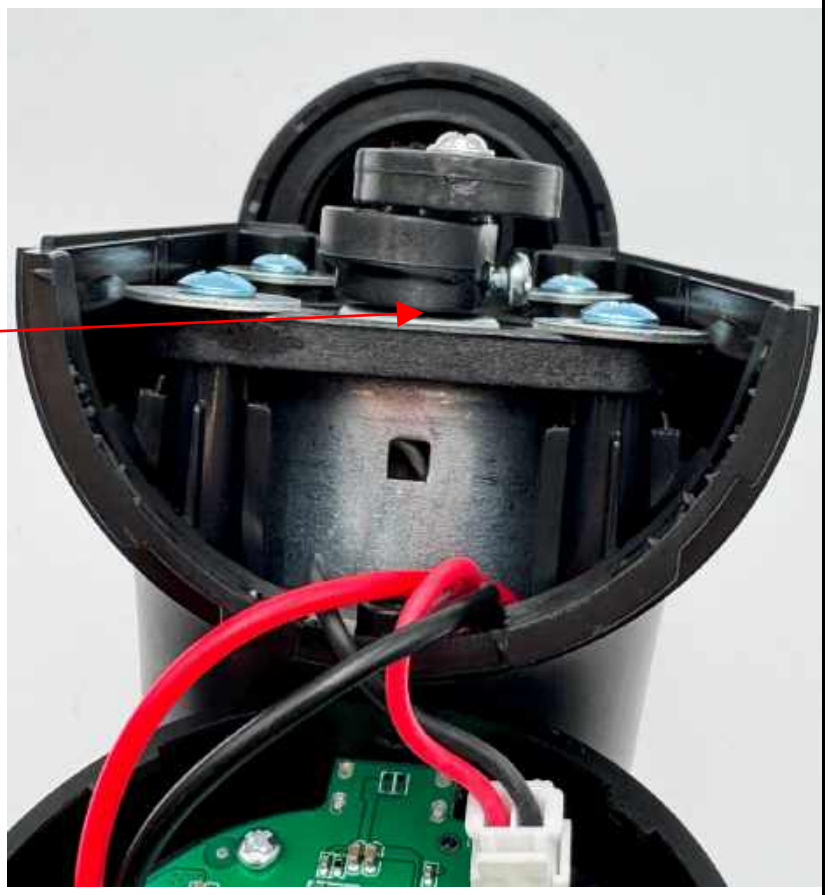
a motor operatively connected to the proximal end of the piston,	The accused product has a motor operatively connected to the proximal end of the piston:  

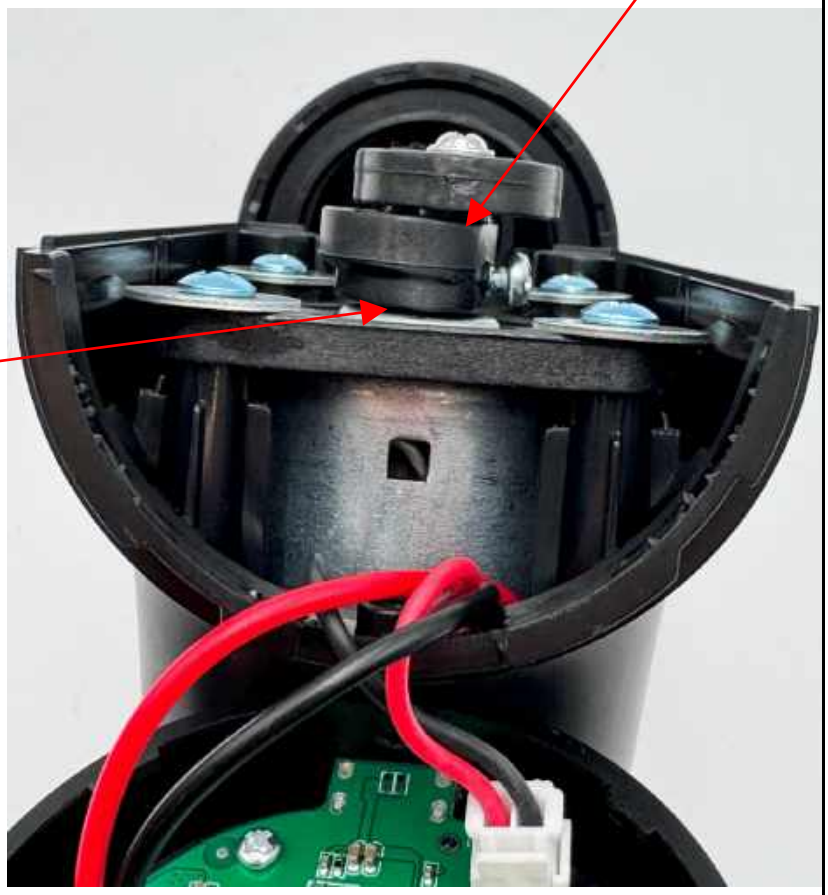
wherein the motor is configured to cause the piston to reciprocate at a first speed;	In the accused product, the motor is configured to cause the piston to reciprocate at a first speed. 

a drive mechanism that determines a predetermined stroke length of the piston; and	The accused product has a drive mechanism that is operatively connected to the piston. Thus, the drive mechanism determines a predetermined stroke length of the piston. The drive mechanism includes a crank pin and a flywheel powered by the motor.  

a quick-connect system comprising the distal end of the piston and a first massaging head,	The accused product has a quick-connect system comprising the distal end of the piston and a first massaging head:   

wherein the quick-connect system allows a proximal end of the first massaging head to be inserted into or removed from the bore while the piston reciprocates the predetermined stroke length at the first speed,	The quick-connect system of the accused product allows a proximal end of the first massaging head to be inserted into or removed from the bore while the piston reciprocates the predetermined stroke length at the first speed. *Click to see Video* Note: To the extent the Court is unable to open the link in the for the video, Plaintiffs will provide the Court with an alternative method to access the video at the Court's request.

wherein the motor has an output shaft that is configured to rotate about a rotation axis, and	The motor of the accused product has an output shaft that is configured to rotate about a rotation axis: 

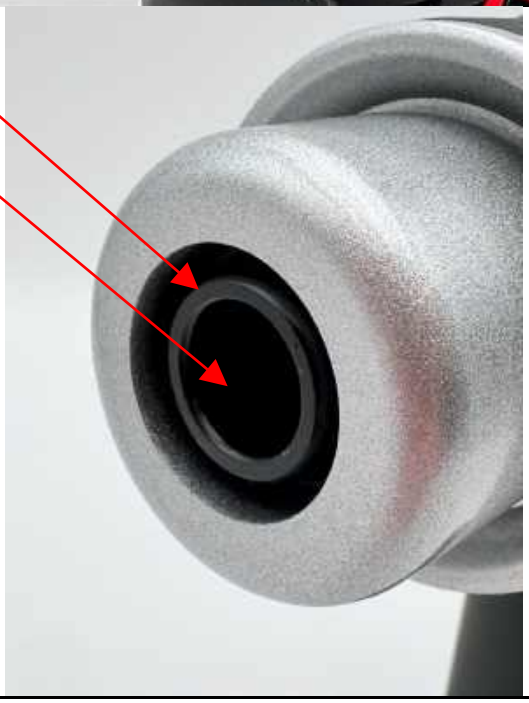
wherein the drive mechanism comprises: a flywheel operatively connected to the output shaft of the motor to rotate about a flywheel axis, the output shaft extending into the flywheel along the flywheel axis; and	The drive mechanism of the accused product comprises a flywheel operatively connected to the output shaft of the motor to rotate about a flywheel axis, the output shaft extending into the flywheel along the flywheel axis: 

a crank pin extending from the flywheel, the crank pin being operatively connected to the piston.	The drive mechanism of the accused product includes a crank pin extending from the flywheel, the crank pin being operatively connected to the piston: 

Claim Chart – U.S. Patent No. 12,213,933 – JQX (ASIN B0DGGKTJR5)

U.S. Patent No. 12,213,933	JQX (ASIN B0DGGKTJR5)
1. A percussive massager comprising:	The accused product is a percussive massager: JQX Massage Gun, Deep Tissue Massager Gun for Pain Relief, Percussion Muscle Massage Gun for Athelets, Handheld Electric Back Massager with 30 Speed Levels & 9 Massage Heads Visit the JQX Store 4.6 ★★★★½ (194) | Search this page **300+ bought** in past month 

a housing;	The accused product has a housing: 

a piston having a proximal end and a distal end, the distal end of the piston having a bore,	The accused product has a piston with a proximal end and a distal end. The proximal end of the piston is operatively connected to the drive mechanism as shown below. The distal end of the piston has a bore.  

a motor operatively connected to the proximal end of the piston,	The accused product has a motor operatively connected to the proximal end of the piston:  

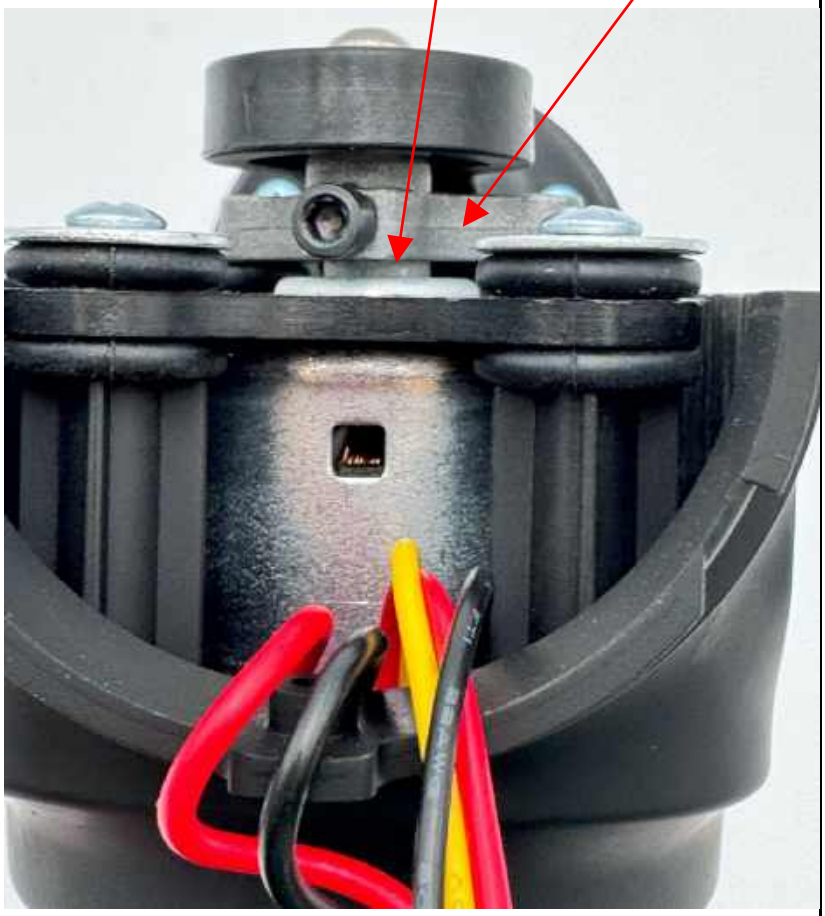
wherein the motor is configured to cause the piston to reciprocate at a first speed;	In the accused product, the motor is configured to cause the piston to reciprocate at a first speed. 

a drive mechanism that determines a predetermined stroke length of the piston; and	The accused product has a drive mechanism that is operatively connected to the piston. Thus, the drive mechanism determines a predetermined stroke length of the piston. The drive mechanism includes a crank pin and a flywheel powered by the motor. 

a quick-connect system comprising the distal end of the piston and a first massaging head,	The accused product has a quick-connect system comprising the distal end of the piston and a first massaging head:   

wherein the quick-connect system allows a proximal end of the first massaging head to be inserted into or removed from the bore while the piston reciprocates the predetermined stroke length at the first speed,	The quick-connect system of the accused product allows a proximal end of the first massaging head to be inserted into or removed from the bore while the piston reciprocates the predetermined stroke length at the first speed. *Click to see Video* Note: To the extent the Court is unable to open the link in the for the video, Plaintiffs will provide the Court with an alternative method to access the video at the Court's request.

wherein the motor has an output shaft that is configured to rotate about a rotation axis, and	The motor of the accused product has an output shaft that is configured to rotate about a rotation axis: 

wherein the drive mechanism comprises: a flywheel operatively connected to the output shaft of the motor to rotate about a flywheel axis, the output shaft extending into the flywheel along the flywheel axis; and	The drive mechanism of the accused product comprises a flywheel operatively connected to the output shaft of the motor to rotate about a flywheel axis, the output shaft extending into the flywheel along the flywheel axis: 

a crank pin extending from the flywheel, the crank pin being operatively connected to the piston.	The drive mechanism of the accused product includes a crank pin extending from the flywheel, the crank pin being operatively connected to the piston: