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21 Counsel for Defendant and Counterclaim-Plaintiff

22
23 **UNITED STATES DISTRICT COURT**
24 **CENTRAL DISTRICT OF CALIFORNIA**
25 **SOUTHERN DIVISION**

26 HYPER ICE, INC., a California
27 corporation and HYPERICE IP SUBCO,
28 LLC, a Delaware limited liability
company,

Plaintiffs and Counterclaim-
Defendants,

v.

THERABODY, INC.,

Defendant and Counterclaim-
Plaintiff.

Case No. 8:24-cv-00098-JWH-DFM
LEAD CASE

Case No. 8:24-cv-00390-JWH-DFM
CONSOLIDATED

DECLARATION OF JOHN PRATT

1 I, John Pratt, declare as follows:

2 **I. INTRODUCTION**

3 1. My name is John Pratt. I am currently the Principal of Argos Forensic
4 Engineering.

5 2. I have been retained by Therabody, Inc. (“Defendant”) as an
6 independent expert in this litigation. I have been asked by Therabody Counsel
7 (“Counsel”) to consider the meaning of certain claim terms that appear in the claims
8 of U.S. Patent Nos. 11,857,482 (“the ‘482 Patent”) and 11,938,082 (“the ’082
9 Patent”) (collectively, the “Asserted Patents”).

10 3. I have been asked to provide my opinions on the following topics: (1)
11 the level of ordinary skill in the art as of the alleged priority dates of the Asserted
12 Patents; (2) how those of ordinary skill in the art at the time of the inventions would
13 have understood statements made by the patentee during prosecution of the Asserted
14 Patents; and (3) how those of ordinary skill in the art at the time of the inventions
15 would have understood certain terms used in the claims of the Asserted Patents.

16 4. My opinions expressed in this declaration rely on my own personal
17 knowledge and experience. However, where I also considered specific documents or
18 other information in formulating the opinions expressed in this declaration, such
19 items are referred to in this declaration.

20 5. WIT Legal, LLC is being compensated at my usual and customary rate
21 of \$850 per hour. My compensation is in no way contingent on the nature of my
22 findings, the presentation of my findings in testimony, or the outcome of this or any
23 other proceeding. I have no other financial interest in this proceeding.

24 **II. BACKGROUND AND QUALIFICATIONS**

25 6. All of my opinions stated in this Declaration are based on my own
26 personal knowledge and professional judgment. In forming my opinions, I have
27 relied on my knowledge and experience in designing, developing, researching, and
28 consulting regarding the technology referenced in this Declaration.

1 7. I am over 18 years of age and, if I am called upon to do so, I would be
2 competent to testify as to the matters set forth herein. I understand that a copy of my
3 current curriculum vitae, which details my education and professional and academic
4 experience, is being submitted as Exhibit 1. The following is a brief summary of my
5 qualifications and professional experiences that are relevant to this matter. My
6 expertise qualifies me to do the type of analysis required in this case.

7 8. I have a Bachelor's degree and a Master's degree in Mechanical
8 Engineering from California State University, Fullerton, and a Ph.D. in Civil
9 Engineering with a field of study in Structural Mechanics from the University of
10 California, Irvine. My doctoral dissertation focused almost exclusively on the
11 behavior of fasteners in flush-fastened joints.

12 9. During my time in industry and in my subsequent consulting practice I
13 have gained extensive experience with various manufacturing techniques, including
14 metal forming and machining as well as molding and 3D printing of plastic parts. I
15 have worked on the development of numerous structures, such as permanent and
16 temporary fasteners, and their related tooling and equipment, for the aerospace,
17 industrial and sporting goods markets from August 1969 through the present. I am
18 the named inventor on 48 United States patents, six of which concern mechanisms
19 for aircraft applications, and many more counterpart foreign patents. Devices made
20 in accordance with my patents have been very successful, estimated to result in well
21 over \$400 million in sales.

22 10. I served as the senior engineering executive for three medium-sized
23 aerospace hardware companies from early 1979 through mid-2005. As an example,
24 I served as Vice- President for Research & Development at Cherry Textron from
25 about 1991-2000. While in that position, I had primary responsibility for research,
26 new product development, existing product engineering, product testing, and product
27 qualification to Industry and Government/Military specifications and agencies. The
28 products for which I was responsible included consumer products (quick-change

1 axles for in-line skates, threaded fasteners used to attach spikes to track and field
2 shoes), machine screws and bolts for use in military aircraft, and a wide variety of
3 other aerospace fasteners. I was also responsible for intellectual property matters
4 related to the company's research and development efforts. Further, I was responsible
5 for analyzing competitors' patents to avoid infringement and to determine the novelty
6 of new engineering concepts.

7 11. During my time in the fastener industry, I served as an active member
8 of several fastener standards organizations, including the Aero-Mechanical Fasteners
9 Requirements Group AMFRG (U. S. Air Force MIL-STD-1515), National
10 Aerospace Standards Committee NASC, International Standards Organization (as
11 International Chairman of ISO/TC20/SC4/WG8 for rivets, blind fasteners, threaded
12 and swage pin-collar fasteners), Fastener Testing and Development Group FTDG
13 (U.S. Navy, MIL-STD-1312), Fastener Engineering for Optimum Performance
14 Standards FEOPS (U.S. Navy), MIL-HDBK-5 (DoD), MMPDS (DoD/FAA), and
15 Industrial Fasteners Institute IFI (as Chairman of its Aerospace Fastener Technical
16 Committee). While with the IFI I helped lead the development of TSO-C148 at the
17 Federal Aviation Administration ("FAA") for fasteners used in commercial transport
18 aircraft.

19 12. Between 1972 and 1979 I worked on the design and development of,
20 among other things, air-driven fastener installation tools. These included pneumatic
21 tools such as the Olympic RV51G and air-over-hydraulic tools, such as the Olympic
22 RV60G. These tools incorporate one or more shifting or rotatable valves used to
23 direct the flow of fluids (air and/or hydraulic fluid) through channels in the tool's
24 housings and between chambers.

25 13. Between 1979 and mid-2000 I was focused on design and product
26 engineering of aerospace fasteners and clamping mechanisms, as well as the air-
27 driven tools needed to install them.

1 14. Between mid-2000 and late 2017, I worked on the development of
2 mechanical and electro-mechanical latching and locking devices for aircraft, as well
3 as development of fluid-driven tools for installation of aircraft assembly clamps. For
4 example, in 2001, I co-invented and led the development of intrusion-resistant
5 mechanical and electronic/electrical latches for flight deck doors and decompression
6 panels. The mechanical versions of these latches have now been installed in half the
7 world's fleet of commercial transport aircraft after the events of September 11, 2001.
8 During this period, I was also intimately involved in the design and development of
9 permanent and temporary fasteners for new aircraft.

10 15. In summary, my entire professional career has been spent designing and
11 overseeing the fabrication of mechanisms and components for mechanical devices.
12 These parts involved kinematic and stress analysis using both conventional closed
13 form mathematical methods and sophisticated linear and nonlinear finite element
14 methods employing specialized codes from Lawrence Livermore National
15 Laboratory (for whom I served as a collaborator on the software) as well as state-of-
16 the-art commercial software. My engineering work also relied heavily on
17 characterization of materials behavior including research and practical experience
18 with various forming, machining, casting and compression/injection molding of
19 various materials, including those used in the hinge components at issue in this
20 investigation.

21 16. During my time with the Hartwell Corporation, the mechanisms over
22 which I had engineering responsibility were flight critical aerospace mechanisms
23 requiring certification by aircraft government certification officials, and so were in
24 effect life-safety devices. The flightdeck door and decompression panel latch
25 mechanisms, of which I was a named inventor and had responsibility for
26 development, were implemented on half the world's fleet of commercial transport
27 aircraft after extensive testing and certification by airworthiness authorities. These
28 mechanisms comprised many dozens of precisely engineered components and after

1 qualification and certification testing were implemented into the flightdeck doors of
2 Boeing, Embraer, Bombardier, Douglas and other manufacturer's aircraft in the years
3 following 9/11.

4 17. Finally, my work on various industry and government standards and
5 mechanism-related committees has provided above average insight into the workings
6 of consensus standards committees.

7 18. I have also served as an expert in recent patent litigation concerning
8 captive panel fasteners, reversible electric strike mechanisms, magnetic door locks,
9 reversible mortise locks, pressure responsive electrical switches, bulk scrap metal
10 loading apparatus, shear wall reinforcement panels, keyboard support mechanisms,
11 hurricane abatement systems, outdoor lighting fixtures, mint and toothpick
12 dispensers, storm drain covers, box spring stapling machines, hook and loop
13 fasteners, corded and cordless window coverings, folding lawn chairs, electrically-
14 locked gun safes, television consoles, threaded dental implants, combat helmets, and
15 low profile aircraft engine nacelle latches, among other devices.

16 **III. RELEVANT LEGAL STANDARDS**

17 19. I am not an attorney and offer no legal opinions. For the purposes of this
18 Declaration, I have been informed about certain aspects of the law that are relevant
19 to my analysis, as summarized below.

20 **A. Claim Construction**

21 20. I understand that under this standard, the meaning of claim terms is
22 considered from the viewpoint of a POSITA at the time of the alleged invention. I
23 have been informed that claim terms are generally given their ordinary and customary
24 meaning as understood by one of ordinary skill in the art in light of the specification
25 and the prosecution history pertaining to the patent. I understand, however, that
26 claims terms are generally not limited by the embodiments described in the
27 specification.
28

1 21. I understand that in addition to the claims, specification, and prosecution
2 history, other evidence may be considered to ascertain the meaning of claim terms,
3 including textbooks, encyclopedias, articles, and dictionaries. I have been informed
4 that this other evidence is often less significant and less reliable than the claims,
5 specification, and prosecution history

6 **B. Perspective of One of Ordinary Skill in the Art**

7 22. When interpreting a patent, I understand that it is important to identify
8 the relevant art pertaining to that patent, as well as the level of ordinary skill in that
9 art at the time of the claimed invention. The “art” is the field of technology to which
10 the patent is related.

11 23. I am informed and understand that the POSITA is a hypothetical person
12 who is presumed to know the relevant prior art. I understand that the actual inventor’s
13 skill is not determinative of the level of ordinary skill. I further understand that
14 factors that may be considered in determining level of skill include: (i) the types of
15 problems encountered in the art; (ii) prior art solutions to those problems; (iii) the
16 rapidity with which innovations are made; (iv) the sophistication of the technology;
17 and (v) the educational level of active workers in the field. I understand that not all
18 such factors may be present in every case, and one or more of them may predominate.

19 24. I understand that a POSITA is one who is presumed to be aware of all
20 pertinent art, thinks along conventional wisdom in the art, and is a person of ordinary
21 creativity.

22 25. A person of ordinary skill in the art at the relevant time, which I have
23 been told to consider as July 1, 2013 (“POSITA”), would have had a bachelor’s
24 degree in mechanical engineering, or a related field, and two-to-three years of
25 experience in the research, design, development, or testing of rotating or
26 reciprocating mechanisms. A higher level of education or skill might make up for
27 less experience, and vice versa.

IV. BACKGROUND OF THE ASSERTED PATENTS

26. The '482 and '082 Patents are related patents with the same inventors, and share the same specification and figures.

27. The patents describe a massaging device 100 with a housing that includes a main housing 102 and upper housing 104, first and second handles 106, 108, and a massaging head 130 attached to a piston. '082 Patent at 3:35-45; Fig. 1.¹ Internally, massaging device 100 includes a motor 210 connected to a flywheel 212 that drives the piston 230, which in turn drives the massaging head 130. *Id.* at 4:41-51; *see also* Figs. 2, 4 (showing exploded view of piston 230 and flywheel 212). The rotation of flywheel 212 causes the piston 230 to move reciprocally in a longitudinal direction. *Id.* at 4:63-5:2.

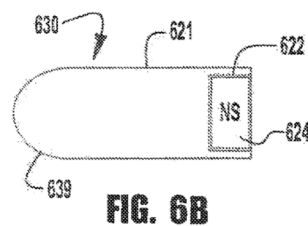
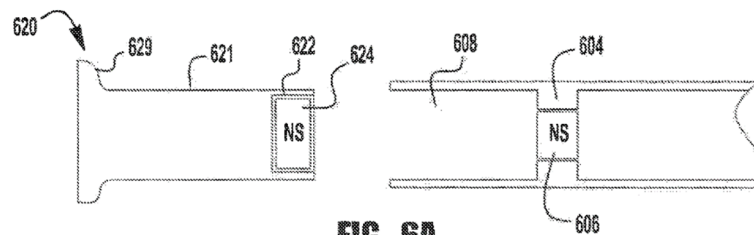
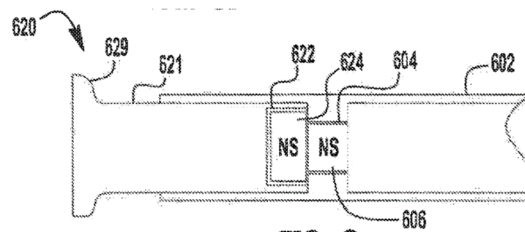
28. The '082 Patent also explains that “it may be desirable to switch massaging heads to work on different muscles or different portions of muscles during the massage.” *Id.* at 6:49-53. To this end, the '082 Patent discloses a “quick-connect system [that] allows a user to quickly switch massaging heads,” even “without turning off the massaging device.” *See id.*, 6:47-7:19, Figs. 6, 6A, 6B.

29. The '082 Patent’s “quick-connect system” uses magnets, as shown in Figures 6, 6A, and 6B, below.² In that quick-connect system, the piston 602 “has a hollow-end bore 608 for receiving the shaft 621 of a massaging head 620.” *Id.* at 6:57-59. A “cylindrical seat 604” located within piston 602 and a “cylindrical pocket 622” of the massaging head 620 each contain magnets (606, 624, respectively, labeled with “NS” to show polarity). *Id.* at 6:60-67. The '082 Patent describes that, “when the shaft 621 of massaging head 620 is slid into opening in bore 608, the

¹ Because the '482 and '082 Patent’s share a specification and figures, all citations to the disclosure of the '082 Patent apply equally to the '482 Patent.

² The massaging head embodiment 630 shown in Figure 6B is described as “substantially the same as massaging head 620 [in Figure 6A] except that the head portion 639 has a different shape than head portion 629 of massaging head 620.” *Id.* at 7:15-19.

1 magnets 606 and 624 are attracted to one another and magnetically hold massaging
2 head 620 firmly in place.” *Id.* at 6:67-7:3.



Ex-1001, Figs. 6, 6A, 6B

30. The '082 Patent describes that, in this “quick-connect system,” 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.” *Id.* at 7:6-9. Accordingly, to “remove
massaging head 620, a user need only apply a sufficient amount of force to separate
the two magnets 606, 624.” *Id.* at 7:4-6. Additionally, the end of the massaging head
620 may be “rounded, pointed or tapered . . . to allow it to easily slip into the opening
608 even while the piston 608 is moving.” *Id.* at 7:9-14.

31. Claim 34 of the '482 Patent recites a percussive massager that includes
a 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

1 piston reciprocates a predetermined stroke length at the first speed, wherein *the first*
2 *massaging head has a substantially cylindrical pocket* to receive the quick release
3 connector.”

4 32. Claim 1 of the '082 Patent, on the other hand, recites a percussive
5 massager that includes a piston with the “distal end of the piston having a bore,” and
6 “a *quick-connect system* comprising the distal end of the piston and a first massaging
7 head, wherein the quick-connect system is *configured to have a proximal end of the*
8 *first massaging head inserted into or removed from the bore* while the piston
9 reciprocates the predetermined stroke length at the first speed.” Claim 13 depends
10 from Claim 1, and recites that “the bore comprises a *substantially cylindrical* bore.”

11 V. MY OPINIONS REGARDING SPECIFIC TERMS OF THE PATENTS

12 A. '482 Patent, Claim 34: “the first massaging head has a substantially 13 cylindrical pocket to receive the quick release connector”

14 33. In my opinion, the '482 Patent's Claim 34 recited limitation of “the first
15 massaging head has a *substantially cylindrical* pocket to receive the quick release
16 connector” fails to inform, with reasonable certainty, those skilled in the art about the
17 scope of the invention, because a POSITA would not understand how far from
18 perfectly cylindrical the pocket could deviate while still meeting this limitation.

19 34. The specification provides no guidance as to how to determine whether
20 a pocket in the first massaging head is “substantially” cylindrical. The '482 Patent's
21 specification does not describe a pocket in the first massaging head for receiving a
22 quick release connector on the piston. Instead, it only discloses the bore 608 on the
23 piston receiving the shaft 621 of the massaging head. At most, the specification
24 describes **the seat 604** in the bore 608 of the piston and **the pocket 622** in the shaft
25 621 of the massaging head as “cylindrical,” without qualifier. '482 Patent, 6:59-65.
26 Neither of these elements correspond to a pocket in the first massaging head for
27 receiving the quick release connector. But this would suggest to a POSITA that there
28 was some difference between “cylindrical” and “substantially cylindrical.”

1 35. Understanding what qualified as a “substantially cylindrical” pocket
2 would be critical for informing a POSITA of the scope of the invention. Claim 34
3 recites that the “quick release connector is configured to secure a first massaging
4 head while the piston reciprocates a predetermined stroke length at the first speed.”
5 ’482 Patent, 12:9-11. But if the pocket is not cylindrical enough, then a perfectly
6 cylindrical piston would either not fit in that “substantially” cylindrical pocket, or
7 else would not be securely held by that pocket. If, on the other hand, both the piston
8 and the pocket had the same non-cylindrical shape, a user would be required to align
9 the two when securing the massaging head to the piston, and thus it would not be
10 “configured to secure a first massaging head while the piston reciprocates a
11 predetermined stroke length at the first speed,” as recited in Claim 34.

12 36. Thus, as written, the limitation “the first massaging head has a
13 substantially cylindrical pocket to receive the quick release connector” prevents a
14 POSITA from understanding what is being claimed with reasonable certainty,
15 because it fails to provide any guidance as to how cylindrical the pocket must be to
16 practice the invention.

17 **B. ’082 Patent, Claim 13: “the bore comprises a substantially**
18 **cylindrical bore”**

19 37. For similar reasons, the ’082 Patent’s Claim 1 recitation that “the bore
20 comprises a *substantially cylindrical* bore” fails to inform, with reasonable certainty,
21 those skilled in the art about the scope of the invention, because a POSITA would
22 not understand how far from perfectly cylindrical the pocket could deviate while still
23 meeting this limitation.

24 38. The ’082 Patent’s specification does not describe a substantially
25 cylindrical bore. It only describes the bore in the piston as a “hollow-end bore.” ’082
26 Patent, 6:57-59. The ’082 Patent describes the seat 604 in the bore 608 of the piston
27 and the pocket 622 in the shaft 621 of the massaging head as “cylindrical,” without
28 qualifier. *Id.*, 6:59-65. Neither of these elements correspond to a bore into which the

1 “proximal end of the first massaging head” is “inserted into or removed from,” as
2 recited in Claim 1. *Id.*, 10:8-10.

3 39. Claim 15 of the '082 Patent (which is not asserted in this action) recites
4 that a “substantially cylindrical structure” within the bore “comprises a cylindrical
5 seat.” '082 Patent, 10:63-65. This further suggests to a POSITA that there is some
6 difference between “cylindrical” and “*substantially* cylindrical.”

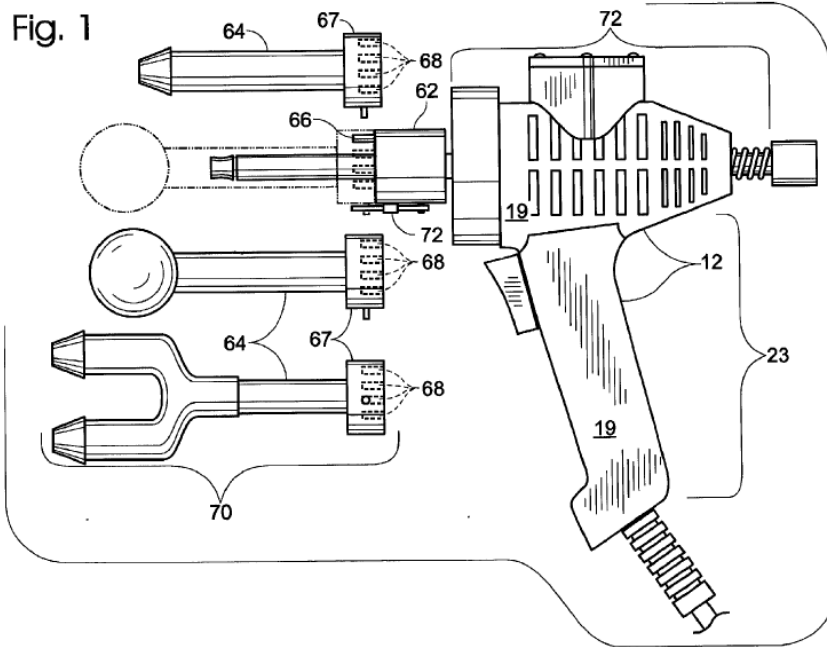
7 40. As with the term used in the '482 Patent, understanding what qualified
8 as a “substantially cylindrical” bore would likewise here be critical for informing a
9 POSITA of the scope of the invention. Claim 1, from which Claim 13 depends,
10 recites that the “quick-connect system is configured to have a proximal end of the
11 first massaging head inserted into or removed from the bore while the piston
12 reciprocates the predetermined stroke length at the first speed.” '082 Patent, 10:8-
13 12. But if the bore is not cylindrical enough, then a perfectly cylindrical proximal
14 end of the massaging head would either not fit in that “substantially” cylindrical bore,
15 or else would not be securely held by that bore. If, on the other hand, both the bore
16 and the proximal end of the massaging head had the same non-cylindrical shape, a
17 user would be required to align the two when inserting the massaging head into the
18 bore, and thus it would not be “configured to have a proximal end of the first
19 massaging head inserted into or removed from the bore while the piston reciprocates
20 the predetermined stroke length at the first speed,” as recited in Claim 1.

21 41. Thus, as written, Claim 13, reciting “the bore comprises a substantially
22 cylindrical bore,” prevents a POSITA from understanding what is being claimed with
23 reasonable certainty, because they fail to provide any guidance as to how cylindrical
24 the bore/structure must be to practice the invention.

1 C. **'482 Patent, Claim 34**: “a quick release connector at the distal end
2 of the piston, wherein the quick release connector is configured to
3 secure a first massaging head while the piston reciprocates a
4 predetermined stroke length at the first speed”; and
5 **'082 Patent, Claim 1**: “a quick-connect system comprising the distal
6 end of the piston and a first massaging head, wherein the quick-
7 connect system is configured to have a proximal end of the first
8 massaging head inserted into or removed from the bore while the
9 piston reciprocates the predetermined stroke length at the first
10 speed”

11 42. Claim 34 of the '482 Patent recites that the “quick release connector” is
12 “configured to secure a first massaging head while the piston reciprocates a
13 predetermined stroke length at the first speed.” Claim 1 of the '082 Patent recites
14 that the “quick-connect system” is “configured to have a proximal end of the first
15 massaging head inserted into or removed from the bore while the piston reciprocates
16 the predetermined stroke length at the first speed.”

17 43. A POSITA would understand from the Applicants' statements during
18 prosecution of the '482 Patent that a connector or system configured to secure or
19 insert a massaging head “while the piston reciprocates the predetermined stroke
20 length at the first speed,” is one that does not require rotational alignment to do so.
21 During prosecution of the '482 Patent, the Applicants sought to distinguish the prior
22 art Miller reference's teaching of an “impact head with a coupler for the mounting of
23 one or more impact heads.” See Exhibit 2 ('482 Patent File History, Mar. 7, 2023
24 Office Action) at HYPERICE000473-474; Exhibit 3 (U.S. Patent Publication No.
25 2003/0195443 to Miller (“Miller”)) at ¶6. Miller's coupler 62, shown below in
26 Figure 1, “is used for affixing impact heads 70 of varying shapes,” and “is formed so
27 as to permit the impact head 70 to be removably affixed to the reciprocating rod 16
28 at a set, but adjustable angle.” Exhibit 3 at ¶126.



Miller, Fig. 1

44. The Applicants distinguished Miller by arguing that a “Person of Ordinary Skill in the Art would understand that Miller’s head ***must be aligned*** in one orientation, such that the pin on the bottom of the collar 62 mates with hook or loop 72 to retain the impact head 70,” and that “the horizontal pin ***must be aligned*** and inserted into a pin notch 68 in order to retain the impact head.” Exhibit 4 (’482 Patent File History, Mar. 21, 2023 Amdt.) at HYPERICE000503 (emphasis added). The Applicants then argued that “Miller fails to teach or suggest that ‘the quick release connector is configured to connect the first massaging head while the piston moves between the minimum reciprocation stroke length and the maximum reciprocation stroke length at the first speed,’ as presently recited in claim 1.” *Id.* at 503-504. The Applicants argued “Miller is silent regarding the ability for its impact heads to be connected to the coupler during reciprocation of the reciprocating rod.” *Id.* at 504.

45. A POSITA would understand that the Applicants were arguing that Miller’s coupler would not be understood to be configured to have the massage head inserted and secured while the piston reciprocates a predetermined stroke length at a

1 first speed because it required rotational alignment with the piston in order to be
2 secured.

3 46. I declare under penalty of perjury under the laws of the United States of
4 America that the foregoing is true and correct.

5
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7 Executed on 20th day of December, 2024
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12 John D. Pratt, Ph.D., P.E.
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EXHIBIT 1

JOHN D. PRATT, Ph.D., P.E.
Curriculum Vitae 3/4/2019
44 Argos, Laguna Niguel, CA 92677

Professional Summary

Dr. John Pratt, as Principal of Argos Engineering, provides litigation consulting in the areas of mechanisms, latches and fasteners.

Before retiring as an aerospace industry executive in 2005, Dr. Pratt co-invented and led the development of the post-9/11 secure (terrorist-proof) cockpit door decompression latches now installed on half the world's fleet of transport aircraft. Previously Dr. Pratt invented and commercialized the first viable blind fastening system for laminated composites. After 30 years, that system (Monogram Aerospace Fasteners' Composi-Lok[®]) remains one of the most-used structural blind fasteners for composite airframe assembly. Recent litigation consulting projects have included defective kitchen appliances, vehicle tonneau covers, aircraft engine cylinder head bolt failure analysis, helicopter and aircraft accidents, and various patent infringement cases.

Expertise

- Fasteners
- Latching Mechanisms
- Engineering, Structural
- Mechanisms
- Products Liability
- Wind Load Analysis

Education

<u>Year</u>	<u>College or University</u>	<u>Degree</u>
2001	University of California, Irvine	Ph.D. - Civil Engineering—Structural Mechanics (Airframe Joint Behavior)
1998	California State University, Fullerton	M.S.M.E.
1996	California State University, Fullerton	B.S.M.E.

Professional Experience

From: June 2005
To: Present
Organization: Argos Engineering, Laguna Niguel, CA
Title: Principal
Summary: Dr. Pratt provides litigation consulting including deposition and trial testimony, expert reports and failure analysis. Dr. Pratt has relationships with local laboratories for in-depth mechanical testing and metallurgical analysis as needed. He is heavily involved in testing exploding kitchen appliances such as Panini makers, blenders and pressure cookers. He also offers litigation consulting and expert witness services in the following areas:

- Fasteners and mechanically-fastened joint failures.
- Latching mechanisms and latched joint failures, including aircraft structural latches.

JOHN D. PRATT, Ph.D., P.E.
Curriculum Vitae 3/4/2019
44 Argos, Laguna Niguel, CA 92677

Professional Experience (continued)

- Wind-induced building damage.
- Mechanism kinematics and failure analysis.
- Metal forming (hot and cold forging) and processing (heat treatment, finishing).

From: August 2000
To: June 2005
Organization: Hartwell Corporation, Placentia, CA
Title: Vice President, Engineering
Summary: Dr. Pratt oversaw all new product development and engineering, including development of engine nacelle latches for the Airbus A380, A318, A400M, B787 and RJ700/900 Series aircraft. He also co-invented and led the development of the post-9/11 secure cockpit door decompression mechanisms presently in use on half of the world's fleet of commercial transport aircraft.

From: March 1988
To: August 2000
Organization: Textron Aerospace Fasteners, Santa Ana, CA
Title: Vice President, Research and Development (Started as Director R&D)
Summary: Dr. Pratt led the development of various solid shank and blind fastener systems. Founded Textron Sports Technology operation within TAF in 1995 and led that group until its relocation to a commercial Textron division in 1999.

From: February 1979
To: March 1988
Organization: Monogram Aerospace Fasteners, Los Angeles, CA
Title: Engineering Manager
Summary: Dr. Pratt led the product development and standardization efforts. Invented Composi-Lok (I & II), Visu-Lok II and other product lines, accounting for sales in excess of \$250 million since 1983. Represented company at MIL-HDBK-5, NASC and other standardization activities.

From: August 1969
To: February 1979
Organization: Olympic Fastening Systems, Downey, CA
Title: Sr. Project Engineer, R&D (Started as Drafter Trainee)
Summary: Product development and manufacturing engineering activities, including fastener installation tooling and progressive header tooling. Designed hydraulic-pneumatic installation tools for Olympic's and competitor's product lines.

JOHN D. PRATT, Ph.D., P.E.
Curriculum Vitae 3/4/2019
44 Argos, Laguna Niguel, CA 92677

Professional Affiliations, Achievements & Awards

- Professional Engineering License (Mechanical Engineering), CA, 1979
- National Academy of Forensic Engineers (NAFE)
- American Academy of Forensic Sciences (AAFS)
- National Society of Professional Engineers (NSPE/CSPE)
- American Society of Mechanical Engineers (ASME)
- American Society of Civil Engineers (ASCE)
- American Society of Metals (ASM)

Patents & Publications

United States Patents

4,376,604	4,548,533	4,747,204	5,046,348	5,131,107	5,378,098	5,938,384	6,261,042	7,252,311	8,322,015	8,517,649	9,212,678
4,451,189	4,659,271	4,752,169	5,052,870	5,152,648	5,620,287	5,941,539	6,866,226	7,255,376	8,348,566	8,608,417	9,284,971
4,457,652	4,659,272	4,767,248	5,056,973	5,333,980	5,692,865	5,957,642	6,866,227	7,578,475	8,398,345	8,888,425	9,464,654
4,537,542	4,681,494	4,967,463	5,066,179	5,354,160	5,884,923	6,171,038	7,131,672	7,857,563	8,511,952	8,961,086	9,903,403

Publications:

1. "Fastening of Advanced Composites", NASA conference, 1983, Seattle, WA.
2. "Testing and Analysis of Mechanically-Fastened Lap Joints", Ph.D. Dissertation, John D. Pratt (2001)
3. "Analytical Modeling of Bolted Lap Joint Load-Elongation Behavior", *Journal of Aerospace Engineering*, January 2002 (ASCE)
4. "Comparative Load-Elongation Behavior of Single-Bolted and Dual-Bolted Lap Joints", *Journal of Aerospace Engineering*, April 2002 (ASCE)
5. "The Influence of Conical Head Geometry on the Slip Resistance of Bolted Joints", *Journal of Aerospace Engineering*, October 2002 (ASCE)
6. "Rapid Decompression of Pressurized Aircraft", *Journal of Failure Analysis and Prevention*, December, 2006 (ASM)
7. "Allowables-Based Flow Curves for Nonlinear Finite-Element Analysis", *Journal of Failure Analysis and Prevention*, April, 2007 (ASM)

EXHIBIT 2



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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/681,367	02/25/2022	Philip C. Danby	HYP-034C3	8567
162143	7590	03/07/2023		
GOODWIN PROCTER LLP/SILICON VALLEY PATENT ADMINISTRATOR 100 NORTHERN AVENUE BOSTON, MA 02210			EXAMINER STANIS, TIMOTHY A	
			ART UNIT	PAPER NUMBER
			3785	
			NOTIFICATION DATE	DELIVERY MODE
			03/07/2023	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

JGoodwin@goodwinlaw.com
TFRANKLIN@GOODWINLAW.COM
US-PatentBos@goodwinlaw.com

Office Action Summary	Application No. 17/681,367	Applicant(s) Danby et al.	
	Examiner TIMOTHY A STANIS	Art Unit 3785	AIA (FITF) Status Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on 2/22/2023.
☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on ____.

2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.

3) ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on ____; the restriction requirement and election have been incorporated into this action.

4) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5) ☒ Claim(s) 1-3 and 5-29 is/are pending in the application.
5a) Of the above claim(s) ____ is/are withdrawn from consideration.

6) ☐ Claim(s) ____ is/are allowed.

7) ☒ Claim(s) 1-3 and 5-29 is/are rejected.

8) ☐ Claim(s) ____ is/are objected to.

9) ☐ Claim(s) ____ are subject to restriction and/or election requirement

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

10) ☐ The specification is objected to by the Examiner.

11) ☒ The drawing(s) filed on 2/22/2023 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
Certified copies:
a) ☐ All b) ☐ Some** c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☒ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b)
Paper No(s)/Mail Date ____.

3) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date ____.

4) ☐ Other: ____.

Notice of Pre-AIA or AIA Status

The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

DETAILED ACTION

1. This office action is in response to the amendment and arguments filed on 2/22/2023. As directed by the amendment, claims 1, 3, 27, and 29 have been amended, claims 4 and 30 have been canceled, and no claims have been added. Thus, claims 1-3 and 5-29 are pending in the application.

Claim Interpretation- 35 USC § 112 – Sixth Paragraph/35 USC § 112(f)

2. The following is a quotation of 35 U.S.C. 112(f):

(f) Element in Claim for a Combination. – An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.

The following is a quotation of pre-AIA 35 U.S.C. 112, sixth paragraph:

An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.

The claims in this application are given their broadest reasonable interpretation using the plain meaning of the claim language in light of the specification as it would be understood by one of ordinary skill in the art. The broadest reasonable interpretation of a claim element (also commonly referred to as a claim limitation) is limited by the description in the specification when 35 U.S.C. 112(f) or pre-AIA 35 U.S.C. 112, sixth paragraph, is invoked.

As explained in MPEP § 2181, subsection I, claim limitations that meet the following three-prong test will be interpreted under 35 U.S.C. 112(f) or pre-AIA 35 U.S.C. 112, sixth paragraph:

- (A) the claim limitation uses the term “means” or “step” or a term used as a substitute for “means” that is a generic placeholder (also called a nonce term or a non-structural term having no specific structural meaning) for performing the claimed function;
- (B) the term “means” or “step” or the generic placeholder is modified by functional language, typically, but not always linked by the transition word “for” (e.g., “means for”) or another linking word or phrase, such as “configured to” or “so that”; and
- (C) the term “means” or “step” or the generic placeholder is not modified by sufficient structure, material, or acts for performing the claimed function.

Use of the word “means” (or “step”) in a claim with functional language creates a rebuttable presumption that the claim limitation is to be treated in accordance with 35 U.S.C. 112(f) or pre-AIA 35 U.S.C. 112, sixth paragraph. The presumption that the claim limitation is interpreted under 35 U.S.C. 112(f) or pre-AIA 35 U.S.C. 112, sixth paragraph, is rebutted when the claim limitation recites sufficient structure, material, or acts to entirely perform the recited function.

Absence of the word “means” (or “step”) in a claim creates a rebuttable presumption that the claim limitation is not to be treated in accordance with 35 U.S.C. 112(f) or pre-AIA 35 U.S.C. 112, sixth paragraph. The presumption that the claim limitation is not interpreted under 35 U.S.C. 112(f) or pre-AIA 35 U.S.C. 112, sixth

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paragraph, is rebutted when the claim limitation recites function without reciting sufficient structure, material or acts to entirely perform the recited function.

Claim limitations in this application that use the word “means” (or “step”) are being interpreted under 35 U.S.C. 112(f) or pre-AIA 35 U.S.C. 112, sixth paragraph, except as otherwise indicated in an Office action. Conversely, claim limitations in this application that do not use the word “means” (or “step”) are not being interpreted under 35 U.S.C. 112(f) or pre-AIA 35 U.S.C. 112, sixth paragraph, except as otherwise indicated in an Office action.

At present, no claims are interpreted under 35 USC 112(f).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103 which forms the basis for all obviousness rejections set forth in this Office action:

A patent for a claimed invention may not be obtained, notwithstanding that the claimed invention is not identically disclosed as set forth in section 102 of this title, if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains. Patentability shall not be negated by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims the examiner presumes that the subject matter of the various claims was commonly owned as of the effective filing date of the claimed invention(s) absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and effective filing dates of each claim that was not commonly owned as of the effective filing date of the later invention in order for the examiner to consider the applicability of 35 U.S.C. 102(b)(2)(C) for any potential 35 U.S.C. 102(a)(2) prior art against the later invention.

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5. Claims 1-3, 23, and 26-29 are rejected under 35 U.S.C. 103 as being unpatentable over Meyer et al (5,134,777) in view of Instructables.com (Non-Patent Literature, hereby referred to as "Instructables"), and further in view of Miller (2003/0195443).

Regarding claim 1, Meyer discloses an apparatus (Fig. 2, tool 10) comprising: a housing (Fig. 2, housing 12); a handle on the housing (Fig. 2, handle 14); a piston having a proximal end and a distal end (Figs. 2-3, ram 44. Fig. 3 depicts a proximal end of ram 44 with formation 44a. Fig. 2 depicts a distal end of ram 44 at its connection to blade holder 16); a motor within the housing operatively connected to the proximal end of the piston (Col. 2, ln. 67 discloses an electric motor not shown in the drawings. This electric motor is connected to the ram 44 via output shaft 20, drive shaft 26, and pin 40), wherein the motor is configured to cause the piston to reciprocate between a minimum reciprocation stroke length and a maximum reciprocation stroke length at a first speed (Figs. 6a-6c depict the drive mechanism of the ram 44 in the "minimum reciprocation stroke length" configuration. Figs. 7a-7c depict the drive mechanism of the ram 44 in the "maximum reciprocation stroke length" configuration. See col. 4, ln. 23-58. The motor would be running at some speed); a cam (Figs. 6a-7c, actuator plate 50, ring gear 42, and pin 40 form a cam) having a first rotational position that controls a predetermined stroke length of the piston to the minimum reciprocation stroke length (Figs. 6a-6b depict the actuator plate 50 and actuator lever 50c in a first rotational position for a minimum stroke length), a second rotational position that controls the predetermined stroke length of the piston to the maximum reciprocation stroke length (Figs. 7a-7b depict the actuator plate 50 and actuator lever 50c in a second rotational position for a

maximum stroke length), and a plurality of intermediate rotational positions that control the predetermined stroke length of the piston to a plurality of intermediate stroke lengths between the minimum reciprocation stroke length and the maximum reciprocation stroke length (Col. 4, ln. 45-54, discloses positioning the arm 50c in different intermediate positions to cause the pin 40 to move through intermediate elliptical paths); and a connection mechanism at the distal end of the piston (Fig. 2 blade holder 16).

Meyer does not disclose a first massaging head releasably coupled to the distal end of the piston via the connection mechanism.

However, Instructables teaches a method of turning a power jigsaw into a reciprocating massager, wherein a first massaging head is releasably coupled to the distal end of a reciprocating piston of the jigsaw via a connection mechanism (Page 2 depicts a picture of a key and a rubber foot turned into a “massaging head,” wherein the massaging head is inserted into the chuck of the jigsaw).

Therefore, it would have been obvious to one of ordinary skill in the art before the effective filing date of the claimed invention to turn the saw of Meyer into a percussive massager by placing a removable massaging head into the connection mechanism as taught by Instructables to create an inexpensive percussive massager based on a power tool that a user may already have lying around. Instructables demonstrates that the same reciprocating structure of a power saw can be used as a massager.

The modified apparatus of Meyer does not have the connection mechanism as a “quick release connector.”

However, Miller teaches a percussive therapeutic device (Fig. 1) comprising a plurality of massage heads (Fig. 1, impact heads 70) that are releasably coupled to the

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distal end of a piston via a quick release connector ([0026] discloses a quick release connector using a collar pin 66 and pin notches 68 as shown in Fig. 1).

Therefore, it would have been obvious to one of ordinary skill in the art before the effective filing date of the claimed invention to design the modified device of Meyer to have multiple interchangeable impact heads that can be coupled to the reciprocating piston via a quick release connector as taught by Miller to allow a user to select different types of massage heads as dictated by the user's therapy needs.

Regarding claim 2, the modified apparatus of Meyer has the maximum reciprocation stroke length corresponding to the distal end of the piston being positioned furthest from the housing (Meyer, Figs. 7a-7b depict the maximum reciprocation stroke length configuration. In this configuration, the ram 44 will be positioned at its furthest position from the housing when it reaches the furthest point in its stroke cycle).

Regarding claim 3, the modified device of Meyer has a second massaging head configured to releasably couple to the distal end of the piston via the quick release connector (Miller, Fig. 1, multiple impact heads 70 would be releasable via a quick release connector in the modified device).

Regarding claim 23, the modified apparatus of Meyer has the housing comprising a cavity, wherein the motor and the cam are positioned within the cavity (Meyer, Fig. 2, the housing 12 forms a cavity for holding the (non-depicted) motor and cam mechanism for adjusting the stroke length of the ram 44).

Regarding claim 26, the modified apparatus of Meyer has the motor positioned within the housing opposite the handle (Fig. 2, the housing portion 12a that contains the motor is located opposite from the handle 14, as the housing portion 12a is located on

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the left side of the housing and the handle 14 is located on the right side of the housing, as depicted).

Regarding claim 27, Meyer discloses a method of assembling an apparatus (Fig. 2, tool 10 is assembled), the method comprising: positioning a motor within a housing (Fig. 2, housing 12 has a motor within in section 12a), wherein a handle on the housing (Fig. 2, handle 14); operatively connecting the motor to a proximal end of a piston (Figs. 2-3, ram 44. Fig. 3 depicts a proximal end of ram 44 with formation 44a that is connected to the motor via output shaft 20, drive shaft 26, and pin 40), wherein the motor is configured to cause the piston to reciprocate between a minimum reciprocation stroke length and a maximum reciprocation stroke length at a first speed (Figs. 6a-6c depict the drive mechanism of the ram 44 in the “minimum reciprocation stroke length” configuration. Figs. 7a-7c depict the drive mechanism of the ram 44 in the “maximum reciprocation stroke length” configuration. See col. 4, ln. 23-58. The motor would be running at some speed), wherein a distal end of the piston has a connection mechanism (Fig. 2 blade holder 16); positioning a cam within the housing (Figs. 6a-7c, actuator plate 50, ring gear 42, and pin 40 form a cam that is located within housing 12), wherein the cam has a first rotational position that controls a predetermined stroke length of the piston to the minimum reciprocation stroke length (Figs. 6a-6b depict the actuator plate 50 and actuator lever 50c in a first rotational position for a minimum stroke length), a second rotational position that controls the predetermined stroke length of the piston to the maximum reciprocation stroke length (Figs. 7a-7b depict the actuator plate 50 and actuator lever 50c in a second rotational position for a maximum stroke length), and a plurality of intermediate rotational positions that control the predetermined stroke length

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of the piston to a plurality of intermediate stroke lengths between the minimum reciprocation stroke length and the maximum reciprocation stroke length (Col. 4, ln. 45-54, discloses positioning the arm 50c in different intermediate positions to cause the pin 40 to move through intermediate elliptical paths), wherein a distal end of the piston has a connection mechanism (Fig. 2 blade holder 16 is at a distal end of ram 44).

Meyer does not disclose providing a first massaging head configured to releasably couple to the distal end of the piston via the connection mechanism.

However, Instructables teaches a method of turning a power jigsaw into a reciprocating massager, wherein a first massaging head is releasably coupled to the distal end of a reciprocating piston of the jigsaw via a connection mechanism (Page 2 depicts a picture of a key and a rubber foot turned into a "massaging head," wherein the massaging head is inserted into the chuck of the jigsaw).

Therefore, it would have been obvious to one of ordinary skill in the art before the effective filing date of the claimed invention to turn the saw of Meyer into a percussive massager by placing a removable massaging head into the connection mechanism as taught by Instructables to create an inexpensive percussive massager based on a power tool that a user may already have lying around. Instructables demonstrates that the same reciprocating structure of a power saw can be used as a massager.

The modified method of Meyer does not have the connection mechanism as a "quick release connector."

However, Miller teaches a percussive therapeutic device (Fig. 1) comprising a plurality of massage heads (Fig. 1, impact heads 70) that are releasably coupled to the

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distal end of a piston via a quick release connector ([0026] discloses a quick release connector using a collar pin 66 and pin notches 68 as shown in Fig. 1).

Therefore, it would have been obvious to one of ordinary skill in the art before the effective filing date of the claimed invention to design the modified method of Meyer to have multiple interchangeable impact heads that can be coupled to the reciprocating piston via a quick release connector as taught by Miller to allow a user to select different types of massage heads as dictated by the user's therapy needs.

Regarding claim 28, the modified method of Meyer has the maximum reciprocation stroke length corresponding to the distal end of the piston being positioned furthest from the housing (Meyer, Figs. 7a-7b depict the maximum reciprocation stroke length configuration. In this configuration, the ram 44 will be positioned at its furthest position from the housing when it reaches the furthest point in its stroke cycle).

Regarding claim 29, the modified method of Meyer has a second massaging head as configured to releasably couple to the distal end of the piston via the quick release connector (Miller, Fig. 1, multiple impact heads 70 would be releasable via a quick release connector in the modified device)

6. Claims 5 and 9-15 are rejected under 35 U.S.C. 103 as being unpatentable over Meyer in view of Instructables and Miller, as applied to claim 1 above, and further in view of Harris et al (6,432,072).

Regarding claim 5, the modified apparatus of Meyer has the motor as configured to cause the piston to reciprocated between the minimum reciprocation length and the maximum reciprocation length (Meyer, col. 4, ln. 44-58).

The modified apparatus of Meyer does not have the motor and piston operating at a second speed.

However, Harris teaches a hand-held percussive massager (Fig. 1, massager 50) comprising a control panel (Fig. 1, control panel 5) comprising a speed setting control button that allows the user to percuss the massager at different speeds (Fig. 1, speed control button 5b; see col. 2, ln. 49-57).

Therefore, it would have been obvious to one of ordinary skill in the art before the effective filing date of the claimed invention to design the modified apparatus of Meyer to have a control panel with a speed control button and other control settings as taught by Harris to allow the user to select a desired speed of massage while using the device.

Regarding claim 9, the modified apparatus of Meyer (as modified in the rejection of claim 5) has a control panel positioned on an exterior of the housing (Harris, Figs. 1-2, control panel 5).

Regarding claim 10, the modified apparatus of Meyer has the control panel as configured to display one or more visual indicators (Harris, Figs. 1-2, LED speed indicator 5C).

Regarding claim 11, the modified apparatus of Meyer has the control panel having a display device (Harris, Figs. 1-2, LED speed indicator 5C is a type of display device).

Regarding claim 12, the modified apparatus of Meyer has the control panel having one or more inputs (Harris, Figs. 1-2, power control button 5a, speed control button 5b, and programs buttons 5d-5g).

Regarding claim 13, the modified apparatus of Meyer has the one or more inputs comprising a button (Harris, Figs. 1-2, power control button 5a, speed control button 5b, and programs buttons 5d-5g).

Regarding claim 14, the modified apparatus of Meyer has the first speed and the second speed as each selectable via the one or more inputs (Harris, Figs. 1-2, speed setting control button 5b would allow for selection of the first speed, second speed, and other speeds).

Regarding claim 15, the modified apparatus of Meyer has a first selection of the one or more inputs configured to cause the apparatus to power on and a second selection of the one or more inputs configured to cause the apparatus to power off (Figs. 1-2, power control button 5a allows for "power on" upon a first pressing of the button and a "power off" upon a second pressing of the button).

7. Claims 6-8 are rejected under 35 U.S.C. 103 as being unpatentable over Meyer in view of Instructables, Miller, and Harris, as applied to claim 5 above, and further in view of Pivaroff (6,682,496).

Regarding claims 6-8, the modified apparatus of Meyer does not disclose the first and second speeds.

However, Pivaroff teaches that an appropriate motor speed for a deep muscle stimulator device is between 2000 to 3600 per minute (Col. 3, ln. 44-46).

Therefore, it would have been obvious to one of ordinary skill in the art before the effective filing date of the claimed invention to design the speed(s) of the modified apparatus of Meyer to be between 2000 and 3600 as taught by Pivaroff, as such a stroke speed is appropriate for deep muscle tissue stimulation.

8. Claims 16 and 24-25 are rejected under 35 U.S.C. 103 as being unpatentable over Meyer in view of Instructables and Miller, as applied to claims 1 and 23 above, and further in view of Tsai et al (2009/0270915).

Regarding claim 16, the modified apparatus of Meyer does not have an audible feedback device configured to generate one or more audible signals.

However, Tsai teaches a handheld reciprocating massager (Fig. 1, adjuster instrument 100) comprising an audible feedback device to alert a user to the settings of the device, such as impulse speed ([0048] discloses an “annunciation structure” that provides feedback to the operator about device settings, such as “impulse frequency and amplitude.” [0048] states that the annunciation structure may be an LCD display or an audio annunciator).

Therefore, it would have been obvious to one of ordinary skill in the art before the effective filing date of the claimed invention to design the modified apparatus of Meyer to have a control panel that allows the user to changes operational settings of the device while also receiving audible feedback about device settings as taught by Tsai to allow a user to confirm the device’s operational settings in a convenient manner (i.e. audibly).

Regarding claim 24, the modified apparatus of Meyer does not have a thermally conductive motor housing positioned within the cavity proximal to the motor.

However, Tsai additionally teaches the handheld reciprocating massager comprising a motor surrounded by a housing and located within a cavity of the massager housing (Fig. 10, DC motor 114 has its components surrounded by some type of housing. DC motor 114 is located within a cavity of the device housing 110),

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wherein the housing is thermally conductive ([0038] discloses that the massager may have a heat dissipation structure 136 for dissipating heat within the instrument 100. For heat dissipation structure 136 to dissipate heat from the DC motor 114, the motor housing must be made from thermally conductive material).

Therefore, it would have been obvious to one of ordinary skill in the art before the effective filing date of the claimed invention to design the motor of the modified apparatus of Meyer to be located within a thermally conductive motor housing and located near a heat dissipating structure as taught by Tsai to help prevent the motor from overheating and the device from becoming hot to hold by the user.

Regarding claim 25, the modified apparatus of Meyer has a heat sink positioned proximal to the thermally conductive motor housing (Tsai, [0038], heat dissipation structure 136 is located proximal to the motor and motor housing 114).

9. Claims 17-22 are rejected under 35 U.S.C. 103 as being unpatentable over Meyer in view of Instructables and Miller, as applied to claim 1 above, and further in view of Ehrenreich et al (2013/0102937).

Regarding claim 17, the modified apparatus of Meyer does not have a controller having a processor, a memory, and a data connection.

However, Ehrenreich teaches a massaging device (Figs. 1 and 5) comprising a controller (Fig. 5, circuit boards 500 and 550 serve as a controller for the massaging device) having a processor, a memory, and a data connection ([0100] discloses the controller having a processor 551, a memory 552, and a communication port 554).

Therefore, it would have been obvious to one of ordinary skill in the art before the effective filing date of the claimed invention to design the modified apparatus of Meyer

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to have a controller with a processor, a memory, and a data connection as taught by Ehrenreich to allow the device to store massaging programs, update the massaging programs, and send/receive data from an outside source to track and usage of the device and update the programs of the device.

Regarding claim 18, the modified apparatus of Meyer has the data connection as a wireless data connection (Ehrenreich, [0101], discloses that the second circuit board 550 may include a variety of different wireless communication protocols).

Regarding claim 19, the modified apparatus of Meyer has the controller as configured to send, by the data connection, first data to an external computing device (Ehrenreich, [0106], discloses transmitting data relating to the amount of time the device is on. [0111] discloses transmitting data to a remote computer for analyzing patient compliance)

Regarding claim 20, the modified apparatus of Meyer has the first data as indicative of usage of the apparatus for providing a massage (Ehrenreich, [0106], discloses transmitting data relating to the amount of time the device is operating).

Regarding claim 21, the modified apparatus of Meyer has the controller configured to receive, by the data connection, second data from an external computing device (Ehrenreich, [0156], discloses that a personal computer, smartphone, or table could be used to remotely program the massage device).

Regarding claim 22, the modified apparatus of Meyer has the second data indicative of a massage program having a massage duration (Ehrenreich, [0156], discloses that the customization in programming can including the duration of therapy).

Response to Arguments

10. Applicant's arguments filed on 2/22/2023 on Pages 9-10 with respect to claim 1 and regarding the combination of the modified device of Meyer with the interchangeable heads of Miller (i) changing the principle operation of Meyer's reciprocating saw and (ii) rendering Meyer's reciprocating saw unsatisfactory for its intended purposes have been considered, but are not persuasive.

The applicant argues that replacing the blade holder of Meyer with the collar pin 66 and pin notches 68 of Miller would eliminate Meyer's saw's ability to hold a saw blade, thereby changing its principal of operation from sawing to massaging. However, the applicant appears to be ignoring the first step in the 103 rejection - combining Meyer with "Instructables." Instructables teaches repurposing a jigsaw as a reciprocating massager (see Instructables, Page 2). Therefore, the resulting Miller/Instructables combination would have its principal operation as *reciprocating massage*. The Miller/Instructables combination should be the starting point when evaluating the subsequent introduction of the interchangeable massage heads of Miller. The applicant appears to be comparing the Miller contribution (i.e. interchangeable heads) to the objective of *only* the Meyer device, as opposed to the objective of the Meyer/Instructables combined device.

Even if one were to require maintaining the "sawing" functionality of Meyer in the Miller/Instructables/Miller combination, it would have been obvious to one of ordinary skill in the art to have one of the interchangeable heads with Miller's "quick connection" be a saw blade. The Miller/Instructables combination has a saw blade and a massage head as interchangeable. The introduction of Miller's additional interchangeable

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massage heads and a new mechanism for connecting the heads to the device would not prevent one of the heads from being a saw blade, thereby allowing dual use of the device as a saw and a massager.

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TIMOTHY A STANIS whose telephone number is (571)272-5139. The examiner can normally be reached on Mon - Fri 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Justine Yu can be reached on 571-272-4835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/TIMOTHY A STANIS/
Primary Examiner, Art Unit 3785

EXHIBIT 3



(19) **United States**

(12) **Patent Application Publication**

Miller

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(43) **Pub. Date: Oct. 16, 2003**

(54) **PERCUSSIVE THERAPEUTIC DEVICE**

(57) **ABSTRACT**

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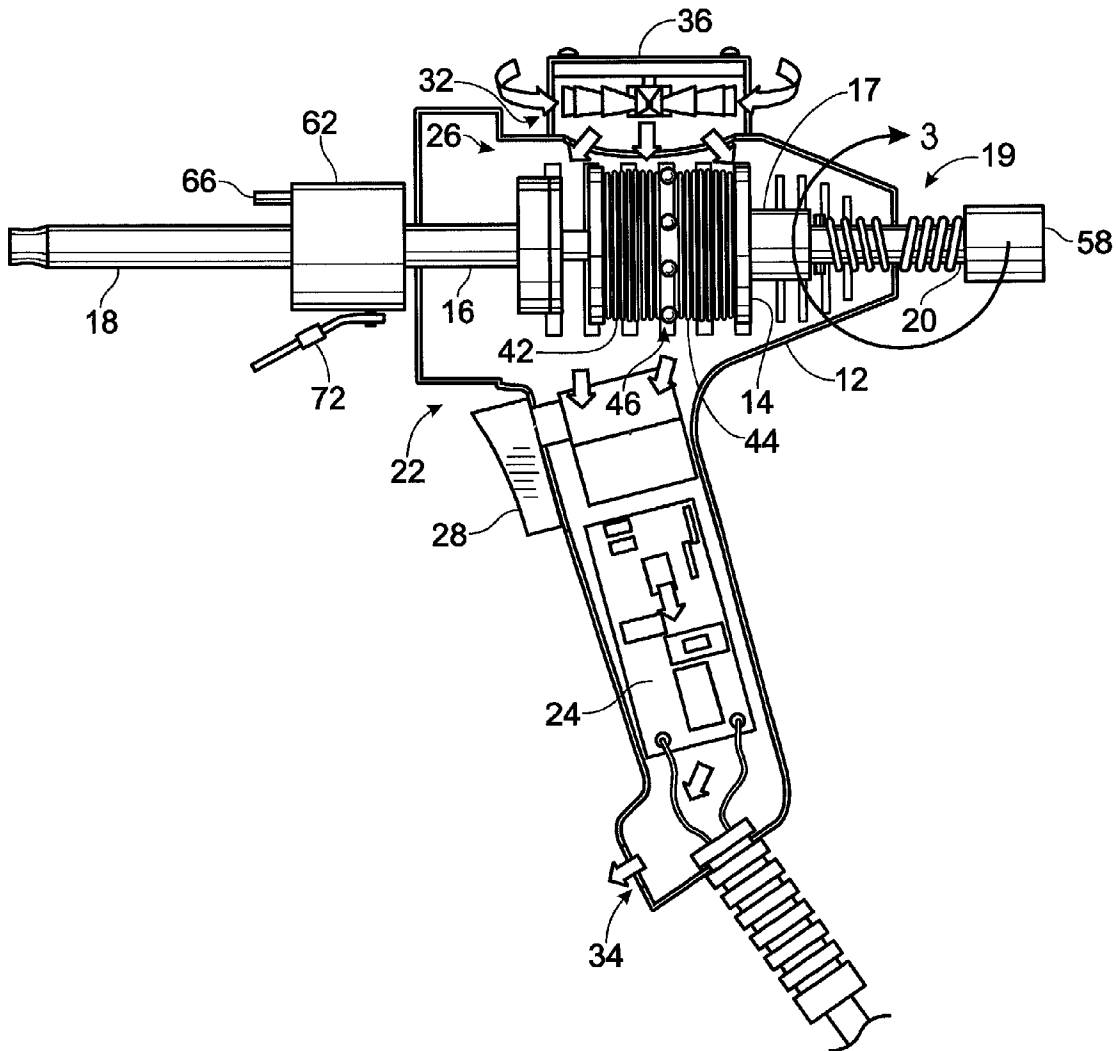
(21) Appl. No.: **10/121,568**

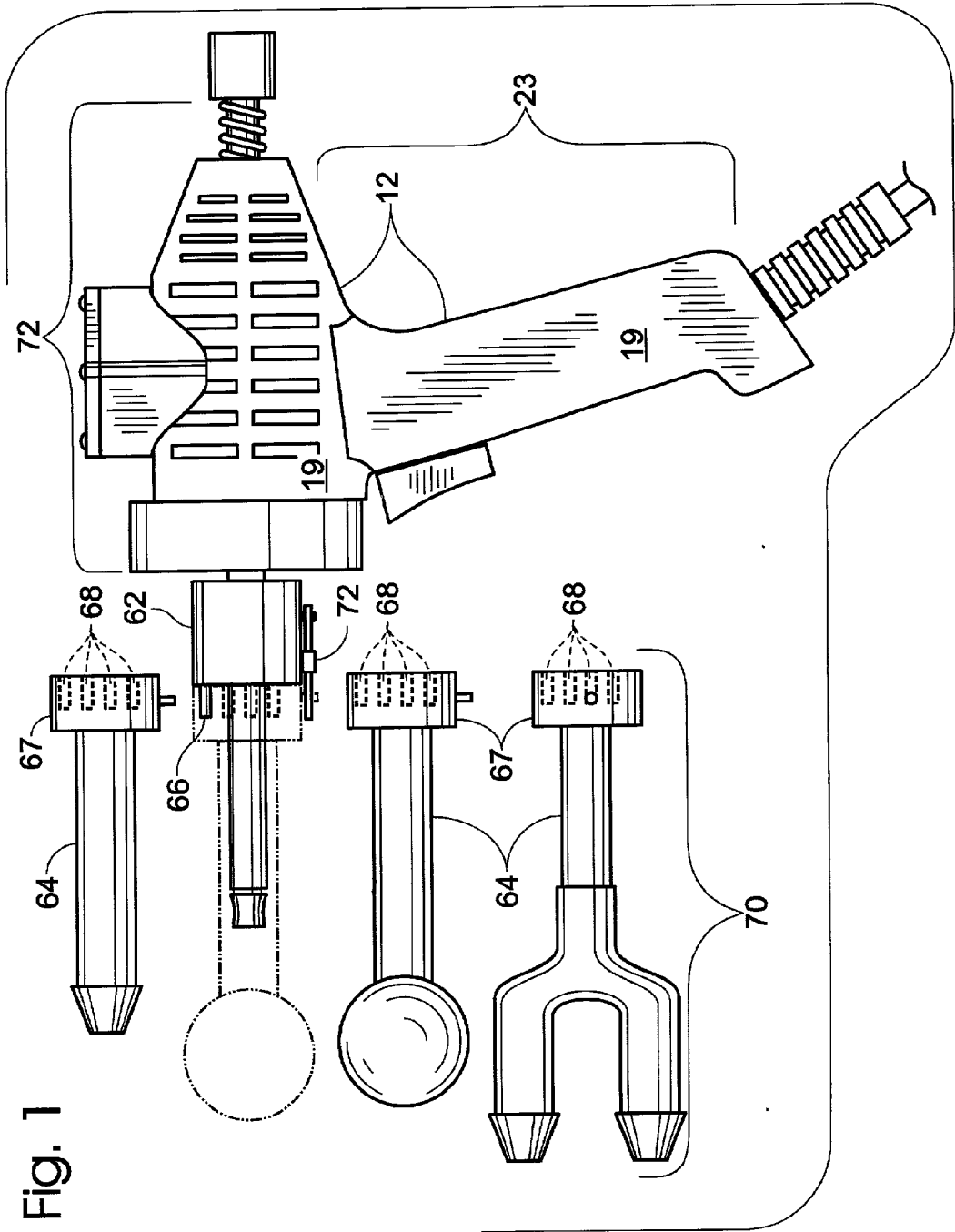
(22) Filed: **Apr. 12, 2002**

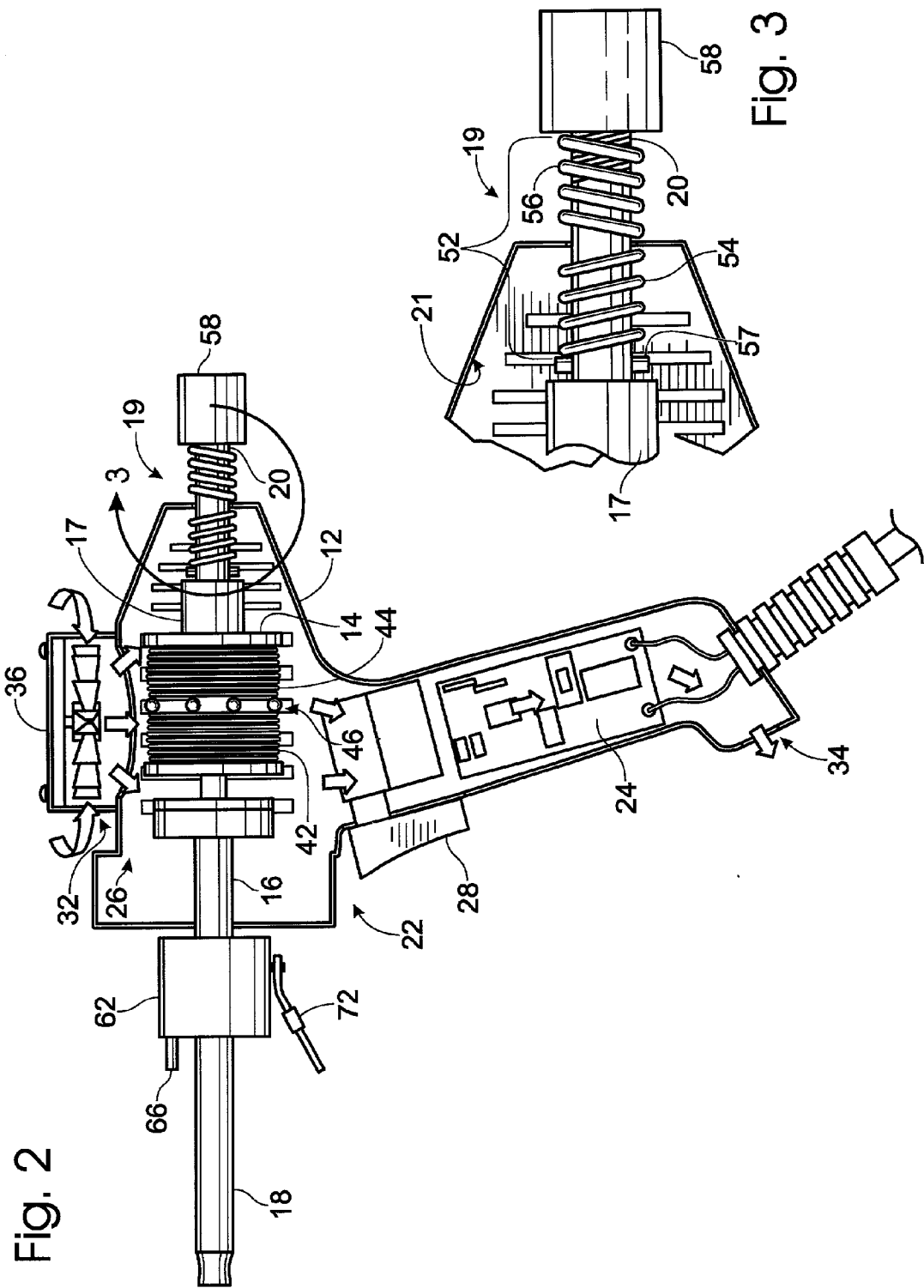
Publication Classification

(51) **Int. Cl.⁷** **A61H 1/00**
(52) **U.S. Cl.** **601/108; 606/239**

A chiropractic adjustment tool or taper comprises a housing, the housing having an open end; a impact assembly disposed within the housing and secured thereto. The impact assembly comprises a reciprocating rod with adjustable travel and impact force. An impelling means such as a solenoid is provided to accelerate the reciprocating rod. Disposed on one end of the reciprocating rod is a coupler to permit multiple impact heads to be attached to the tool. The tool is further improved with the addition of a fan unit on a port in the housing and an exit port located on a distal end of the housing, preferably at a location such that air flow is across the impelling means, and any switch or circuitry to provide cooling and extend tool life.







PERCUSSIVE THERAPEUTIC DEVICE

BACKGROUND OF THE INVENTION

[0001] The present invention involves the field of medical devices. More particularly, it involves the field of percussive medical devices used as chiropractic adjustment tools used to move bones and relieve muscle spasms and stress.

[0002] Percussion is a new treatment modality for those who suffer from musculoskeletal pain and myofascial trigger syndrome. It is a non-surgical, non-invasive procedure that may serve as a therapeutic alternative to trigger point and epidural injections or be used when other treatments have failed. Performed on an outpatient basis, percussive treatment carries little or no risk and is relatively comfortable.

[0003] As is well-known in the chiropractic art, the spines or other bones of humans sometimes go out of alignment or are otherwise mis-adjusted. This can lead to discomfort and additional physical symptoms. In such cases an adjustment of the spine or other bone to a healthy alignment can have substantial therapeutic effects.

[0004] Several attempts have been made to provide hand-held or other small devices to assist in adjusting a patient's spine or other bone by the use of impacts. However, each of these devices provide limited force, are subject to failure, and have limited application and adjustability.

[0005] Needed in the field is a multiple impact device with easily adjustable impact pressure and impact heads. Also needed is a device with increased power, and cooling to extend device life. The present invention is directed to these shortcomings in the prior art.

BRIEF SUMMARY OF THE INVENTION

[0006] The present invention provides a chiropractic adjustment tool or tapper, which, generally, comprises a housing, with or without a handle and a motor or power source to drive an axially reciprocating rod. The reciprocating rod is disposed perpendicularly or near perpendicular to the handle. One end of reciprocating rod extends from the housing and on the extended end is a impact head with a coupler for the mounting of one or more impact heads. The other end of the reciprocating rod has a spring pair assembly to permit the ready adjustment of impact force and axial travel of the reciprocating rod.

[0007] A fan is affixed to the housing and air is used to cool the device with an inport and an outport on distal ends of the unit requiring air flow to transit heat generating components, including any motor, switches and circuitry.

[0008] The operation of the device is with a solenoid, or other motive force driving the reciprocating rod axially. The reciprocating rod is slideably mounted within the housing, transiting through the solenoid coil. The reciprocating rod is held in place by springs, affixed to the reciprocating rod to limit travel and to return the reciprocating rod to the neutral position between impacts. On activation, the reciprocating rod is accelerated axially by the solenoid. Mounted on the extended end of the reciprocating rod is one of a number of impact heads. An impact head is used to impact the patient's body. When the solenoid is reactivated, the reciprocating rod is again accelerated toward the patient's body. A typical rate of impact is twelve impacts per second. Both the speed and

the force of impact are adjustable to provide optimal therapeutic effects. In a preferred embodiment, the travel and force of impact of the reciprocating rod is adjusted by adjusting the compression of the spring pair.

[0009] Improvement over the prior art is found in the reduction of the mechanical moving parts of the device, the use of the spring pair for adjusting impact force, the improved cooling of the device and the coupler to permit the use of multiple and adjustable impact heads.

[0010] Though the device may be used in a manner that provides continuous pressure punctuated by impacts, another improvement over the prior art is the use of an impact assembly that permits an impact head to provide instantaneous force without durational pressure. This is accomplished through the use of an accelerated reciprocating rod that is permitted to bounce or recoil off of the patient, providing impact force without pressure of any duration. This is advantageous as pressure is painful and increases bruising.

[0011] For a more complete understanding of the present invention, reference is made to the following detailed description and accompanying drawings. In the drawings, reference numbers refer to like parts through the several views.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING

[0012] FIG. 1 is an environmental view of an adjusting tool in accordance with the present invention with three different impact heads depicted;

[0013] FIG. 2 is a cutaway view of the impact tool depicting air flow.

[0014] FIG. 3 is a detail of the spring pair assembly.

DETAILED DESCRIPTION OF THE INVENTION

[0015] Referring to the drawings, there is depicted a chiropractic adjustment tool or tapper in accordance with the present invention, generally denoted at 10. The tapper 10, generally, comprises a housing 12, a impact assembly 26 disposed within the housing, the impact assembly 26 comprising a motive source 14, preferably a solenoid 14, the motive source 14 providing operational power to the impact assembly 26 and a reciprocating rod 16 with an impact head 70 disposed at one end and secured to the reciprocating rod 16 by a coupler. At one end of the housing is an inport 32 to permit air flow, and at a distal end, an outport 34 so positioned to permit air flow to transit the elements of the invention needing cooling such as the solenoid 14, switches 28 and any circuitry 24. A fan 36 is provided to increase airflow. Other methods of moving air, including membrane driven pumps may also be used.

[0016] The housing 12 is a hollow member having an outer surface 19 and an inner surface 21. The housing 12 is made of any convenient material, such as plastic, metal, or the like. The housing 12 has a handle portion 23 to enable easy grasping and holding of the tapper 10. The housing 12 also has a barrel portion 22 integral with the handle portion 23.

[0017] Contained in the barrel portion 22 and affixed thereto is the motive source 14, which in the preferred embodiment is a solenoid 14. An improvement in the present invention is the use of a solenoid 14 with at least two coil elements comprising a first coil 42, and a second coil 44 separated by an airspace 46 to permit improved cooling.

[0018] Transiting through the solenoid 14 is a reciprocating rod 16 responsive to the force generated by the solenoid 14 such that on activation the reciprocating rod 16 is accelerated axially.

[0019] An electric energy source is operatively connected to a switch 28, preferably mounted in the handle portion 23. The switch 28 is operatively connected to the solenoid 14 so that on activation, the solenoid 14 receives power. The switch 28 may be in any well-known form, including a "trigger" or a "button," either of which plungingly closes the circuit to the power source. In the preferred embodiment, the circuit also contains additional circuitry 24 such as a relay or similar device to automatically activate and deactivate the solenoid 14 at an adjustable rate.

[0020] In the preferred embodiment, the reciprocating rod 16 is axially elongated and has a forward first end 18 on which is mounted a coupler 62, a medial portion 17 defined by an enlarged diameter portion which receives the motive force from the solenoid 14, and a rearward second end 20 which is preferably threaded. The reciprocating rod 16 transits the barrel portion of the housing and the solenoid 14 contained therein. The reciprocating rod 16 exits two distal ends of the barrel portion of the housing. A coil spring pair 52, placed in series, is disposed around the rearward end 20 of the reciprocating rod 16 with a forward spring 54 and a rearward spring 56.

[0021] In the preferred embodiment, the rearward spring 56 is of a heavier gauge than the forward spring 54. The forward spring 54 is disposed around the reciprocating rod 16 and held in place by an adjustable stop 57 placed in the reciprocating rod 16 on the forward end of the forward spring 54 and is biased against the inner surface of the housing 21 on the rearward end of the forward spring 54. The rearward spring 56 disposed around the reciprocating rod 16 is biased against the outer surface of the housing 19 and fitted against a threaded annular head 58.

[0022] The threaded annular head 58 is rotatably threaded onto the rearward end 20 of the reciprocating rod 16. In operation the travel and force of the reciprocating rod 16 may be adjusted by tightening the annular head 58 and compressing the spring pair 52. As the rearward spring 56 in the spring pair is heavier than the forward spring 54 of the spring pair, the forward spring 54 is compressed at a greater rate than the rearward spring 56, causing the reciprocating rod 16 to draw back or be displaced towards the rear of the housing. The increased compression of the spring pair 52 and displacement of the reciprocating rod 16 adjusts axial travel of the reciprocating rod 16 when the solenoid 14 is activated. The spring pair 52 also provides the neutral position of the reciprocating rod 16 when not being impelled or accelerated by the solenoid 14, such that on deactivation of the solenoid 14, the reciprocating rod 16 recoils and returns to the neutral position as determined by the spring pair 52. This provides the additional benefit of permitting the impact head 70 to impart force on the patient being treated without pressure of any duration.

[0023] In one embodiment, the adjustable stop 57 and the annular head 58 are marked with indicators to permit calibrated adjustments to the compression of the individual springs 54, 56, in the spring pair 52. This may be accomplished by moving the stop 57 to alter the compression of the forward spring 54 against the inner surface of the housing 21 independent of the adjustments of the annular head 58 which principally adjusts the compression of the rearward spring 56. This permits added control over the force imparted by the impact head 70 on the patient, and also permits adjustment of the movement of the reciprocating rod 16, slowing or adjusting the acceleration rate.

[0024] In use, the impact head 70 makes contact and imparts force only briefly on activation of the solenoid 14, and then is immediately withdrawn and returned to the neutral position by the spring pair 52. The use of a solenoid 14 or similarly driven system permits the imparting of therapeutic force without any extended pressure. The benefit of the invention is obtained by the acceleration of the reciprocating rod 16, and then permitting the reciprocating rod 16 to bounce or recoil on impact of the impact head 70 with the patient without any persistent pressure on the patient. In the preferred embodiment, acceleration is complete prior to impact. Extended pressure of any duration increases the likelihood of bruising. Avoiding extended pressure also permits higher levels of impact to be used without causing the patient pain.

[0025] When the power source 22 is engaged via the switch 28, the solenoid 14 impels the reciprocating rod 16 forward to impact the patient. When the solenoid 14 is turned off or deactivated, the reciprocating rod 16 returns to the neutral position as determined by the spring pair 52. The device may be set to provide for a single impact in activation, or with the use of a relay or similar circuitry 24, a rate of impact may be established and adjusted by sequentially activating and deactivating the solenoid 14 once the power source is engaged. The switch 28 may be variable such that rate of impact increases with pressure on the switch 28, or a second switch or dial (not shown) may be used to adjust the rate of impact. Such second switch may be located at the point of the output 34 or another convenient location.

[0026] Affixed to the forward end 18 of the reciprocating rod 16 is a coupler 62. The coupler 62 is used for affixing impact heads 70 of varying shapes. In the preferred embodiment the coupler 62 is formed so as to permit the impact head 70 to be removably affixed to the reciprocating rod 16 at a set, but adjustable angle. This is accomplished through the use of a sleeve element 64 on the impact head 70. The coupler is comprised of a collar 62 affixed to the reciprocating rod 16, a collar pin 66 set on the collar 62 and pin notches 68 set in a sleeve base 67 of the sleeve element 64. The collar 62 is mounted on the reciprocating rod 16 offset from the forward end 18 so as to permit the sleeve element 64 of the impact head to receive a portion of the forward end 18 of the reciprocating rod 16 for stability. The sleeve base 67 abuts the collar 67 and the collar pin 66 is received into one of a number of defined pin notches 68 on the sleeve base 67 so as to prevent rotation of the impact head 70. A simple retaining hook or loop 72 or similar means retains the impact head 70.

[0027] Depending on the positioning of the annular ring 58 on the reciprocating rod 16, and the relative compression

of the spring pair **52**, the reciprocating rod **16** is driven forward and forces one of the impact heads **70** mounted thereon to contact the person being treated at any of a range of rates, travels and force levels. The single or continuous series of impacts provides therapeutic treatment to the person being treated.

[0028] While the invention has been illustrated and described in detail in the drawings and the foregoing description, the same is to be considered as illustrative and not restrictive in character, it being understood that only the preferred embodiment has been shown and described fully and that all changes and modifications that come within the spirit of the invention are desired to be protected.

I claim:

1. An impact tool, the tool comprising:

a housing, said housing having a first port and a second port,

said second port being distal to said first port,

a impact assembly disposed within the housing, said impact assembly being operatively connected to a power source, and

connected to said housing a fan

2. The impact tool of claim 1,

wherein said housing is comprised of a handle portion and a barrel portion, with said impact assembly comprising a reciprocating rod and a impelling means disposed within said barrel portion, said first port being disposed on said barrel portion opposite said handle portion, said second port being disposed on the distal end of said handle portion.

3. The impact tool of claim 2,

wherein the impelling means is comprised of a solenoid.

4. The impact tool of claim 3,

wherein the solenoid is comprised of at least two coil elements and an airspace disposed there between.

5. An impact tool comprising:

a housing containing a impact assembly,

said impact assembly comprising:

an axially reciprocating rod, said reciprocating rod operatively connected to an impelling means, said reciprocating rod having disposed on one end a coupler for removably affixing a one or more impact heads.

6. The impact tool of claim 5 further comprising,

a means to adjustably fix the angle for mounting said one or more impact heads.

7. The impact tool of claim 5 wherein said coupler is comprised of:

a collar affixed to said reciprocating rod proximate a forward end of said reciprocating rod, said collar set with a collar pin,

a sleeve element disposed within said one or more impact heads for insertably receiving said forward end of said reciprocating rod,

a sleeve base affixed to said sleeve element to abut said collar,

an at least one pin notch placed in said sleeve base for receiving said collar pin,

a means to removably secure said one or more impact heads to said reciprocating rod.

8. The impact tool of claim 5 further comprising,

a means to adjust the travel of said reciprocating rod.

9. The impact tool of claim 5 further comprising,

a means of adjusting the impact force of said reciprocating rod.

10. A method of providing therapeutic treatment comprising:

accelerating an adjustable impact head toward a patient,

permitting said accelerated adjustable impact head to impact a patient, and

returning said adjustable impact head to a neutral state.

* * * * *

EXHIBIT 4

Docket No.: HYP-034C3
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Philip C. Danby et al.

Application No.: 17/681,367

Confirmation No.: 8567

Filed: February 25, 2022

Art Unit: 3785

For: **MESSAGE DEVICE HAVING VARIABLE
STROKE LENGTH**

Examiner: T. A. Stanis

Submitted via Patent Center

AMENDMENT AFTER FINAL ACTION UNDER 37 C.F.R. § 1.116

INTRODUCTORY COMMENTS

This paper responds to the Office Action electronically sent from the Patent Office on March 7, 2023. Applicant believes that no fees are due in connection with the filing of this paper; however, in the event that any such fees are due, the Commissioner is hereby authorized to charge such fees to Deposit Account No. 07-1700 (under Ref. No. HYP-034C3).

Amendments to the Claims begin on page 2 of this paper.

Remarks/Arguments begin on page 6 of this paper.

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) An apparatus comprising:
 - a housing;
 - a handle on the housing;
 - a piston having a proximal end and a distal end;
 - a motor within the housing operatively connected to the proximal end of the piston,wherein the motor is configured to cause the piston to reciprocate between a minimum reciprocation stroke length and a maximum reciprocation stroke length at a first speed;
 - a cam having a first rotational position that controls a predetermined stroke length of the piston to the minimum reciprocation stroke length, a second rotational position that controls the predetermined stroke length of the piston to the maximum reciprocation stroke length, and a plurality of intermediate rotational positions that control the predetermined stroke length of the piston to a plurality of intermediate stroke lengths between the minimum reciprocation stroke length and the maximum reciprocation stroke length;
 - a quick release connector at the distal end of the piston; and
 - a first massaging head releasably coupled to the distal end of the piston via the quick release connector, wherein the quick release connector is configured to connect the first massaging head while the piston moves between the minimum reciprocation stroke length and the maximum reciprocation stroke length at the first speed.
2. (Original) The apparatus of claim 1, wherein the maximum reciprocation stroke length corresponds to the distal end of the piston being positioned furthest from the housing.
3. (Previously Presented) The apparatus of claim 1, further comprising:
 - a second massaging head configured to releasably couple to the distal end of the piston via the quick release connector.
4. (Cancelled)

5. (Original) The apparatus of claim 1, wherein the motor is configured to cause the piston to reciprocate between the minimum reciprocation stroke length and the maximum reciprocation stroke length at a second speed.
6. (Original) The apparatus of claim 5, wherein the first speed and the second speed are each less than or equal to 3600 strokes per minute.
7. (Original) The apparatus of claim 5, wherein the first speed and the second speed are each greater than or equal to 600 strokes per minute.
8. (Original) The apparatus of claim 5, wherein the first speed and the second speed are each selectable from a plurality of predetermined speeds in a range of 600 strokes per minute to 3600 strokes per minute.
9. (Original) The apparatus of claim 5, further comprising:
a control panel positioned on an exterior of the housing.
10. (Original) The apparatus of claim 9, wherein the control panel is configured to display one or more visual indicators.
11. (Original) The apparatus of claim 9, wherein the control panel has a display device.
12. (Original) The apparatus of claim 9, wherein the control panel has one or more inputs.
13. (Original) The apparatus of claim 12, wherein the one or more inputs comprise at least one of: a button, a switch, and a dial.
14. (Original) The apparatus of claim 12, wherein the first speed and the second speed are each selectable via the one or more inputs.

15. (Original) The apparatus of claim 12, wherein a first selection of the one or more inputs is configured to cause the apparatus to power on and wherein a second selection of the one or more inputs is configured to cause the apparatus to power off.

16. (Original) The apparatus of claim 1, further comprising an audible feedback device configured to generate one or more audible signals.

17. (Original) The apparatus of claim 1, further comprising a controller having, a processor, a memory, and a data connection.

18. (Original) The apparatus of claim 17, wherein the data connection is a wireless data connection.

19. (Original) The apparatus of claim 17, wherein the controller is configured to send, by the data connection, first data to an external computing device.

20. (Original) The apparatus of claim 19, wherein the first data is indicative of usage of the apparatus for providing a massage.

21. (Original) The apparatus of claim 17, wherein the controller is configured to receive, by the data connection, second data from an external computing device.

22. (Original) The apparatus of claim 21, 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.

23. (Original) The apparatus of claim 1, wherein the housing comprises a cavity, wherein the motor and the cam are positioned within the cavity.

24. (Original) The apparatus of claim 23, further comprising a thermally conductive motor housing positioned within the cavity proximal to the motor.

25. (Original) The apparatus of claim 24, further comprising a heat sink positioned proximal to the thermally conductive motor housing.
26. (Original) The apparatus of claim 1, wherein the motor is positioned within the housing opposite the handle.
27. (Currently Amended) A method of assembling an apparatus, the method comprising:
positioning a motor within a housing, wherein a handle is on the housing;
operatively connecting the motor to a proximal end of a piston, wherein the motor is configured to cause the piston to reciprocate between a minimum reciprocation stroke length and a maximum reciprocation stroke length at a first speed, wherein a distal end of the piston has a quick release connector;
positioning a cam within the housing, wherein the cam has a first rotational position that controls a predetermined stroke length of the piston to the minimum reciprocation stroke length, a second rotational position that controls the predetermined stroke length of the piston to the maximum reciprocation stroke length, and a plurality of intermediate rotational positions that control the predetermined stroke length of the piston to a plurality of intermediate stroke lengths between the minimum reciprocation stroke length and the maximum reciprocation stroke length; and
providing a first massaging head configured to releasably couple to the distal end of the piston via the quick release connector, wherein the quick release connector is configured to connect the first massaging head while the piston moves between the minimum reciprocation stroke length and the maximum reciprocation stroke length at the first speed.
28. (Original) The method of claim 27, wherein the maximum reciprocation stroke length corresponds to the distal end of the piston being positioned furthest from the housing.
29. (Previously Presented) The method of claim 27, wherein a second massaging head is configured to releasably couple to the distal end of the piston via the quick release connector.
30. (Cancelled)

REMARKS

Administrative Overview

Prior to the Office Action of March 7, 2023 (the “Office Action”), claims 1-3 and 5-29 were pending. In the Office Action:

- claims 1-3, 23, and 26-29 are rejected under 35 U.S.C. § 103 as being unpatentable over U.S. Patent No. 5,134,777 to Meyer (“Meyer”) in view of Instructables.com (“Instructables”), and further in view of U.S. Publication No. 2003/0195443 to Miller (“Miller”);
- claims 5 and 9-15 are rejected under 35 U.S.C. § 103 as being unpatentable over Meyer in view of Instructables and Miller, and further in view of U.S. Patent No. 6,432,072 to Harris (“Harris”);
- claims 6-8 are rejected under 35 U.S.C. § 103 as being unpatentable over Meyer in view of Instructables, Miller, Harris, and further in view of U.S. Patent No. 6,682,496 to Pivaroff (“Pivaroff”);
- claims 16 and 24-25 are rejected under 35 U.S.C. § 103 as being unpatentable over Meyer in view of Instructables and Miller, and further in view of U.S. Publication No. 2009/0270915 to Tsai et al. (“Tsai”); and
- claims 17-22 are rejected under 35 U.S.C. § 103 as being unpatentable over Meyer in view of Instructables and Miller, and further in view of U.S. Publication No. 2013/0102937 to Ehrenreich et al. (“Ehrenreich”).

In the present Amendment, claims 1 and 27 are amended without prejudice or disclaimer. No new matter is added. Thus, following entry of this Amendment, claims 1-3 and 5-29 will be pending.

Support for the claim amendments can be found in each of the applications to which the present application claims priority, including U.S. Patent No. 11,285,075 (“the ‘075 patent”), U.S. Patent No. 9,889,066 (“the ‘066 patent”), and U.S. Provisional Patent Application No. 61/841,693, each of which was incorporated by reference in the present application at the time of the present application’s filing. Thus, the claims are entitled to a priority date no later than the filing date of the earliest-filed patent application to which the present application claims priority (i.e., July 1, 2013).

Claim Rejections Under 35 U.S.C. § 103

The Office Action rejects claims 1-3, 23, and 26-29 under 35 U.S.C. § 103 as purportedly being obvious over Meyer in view of Instructables and further in view of Miller. The Office Action rejects claims 5 and 9-15 under 35 U.S.C. § 103 as purportedly being obvious Meyer in view of Instructables and Miller and further in view of Harris. The Office Action rejects claims 6-8 under 35 U.S.C. § 103 as purportedly being obvious over Meyer in view of Instructables, Miller, Harris, and further in view of Pivaroff. The Office Action rejects claims 16 and 24-25 under 35 U.S.C. § 103 as purportedly being obvious over Meyer in view of Instructables and Miller and further in view of Tsai. The Office Action rejects claims 17-22 under 35 U.S.C. § 103 as purportedly being obvious over Meyer in view of Instructables and Miller and further in view of Ehrenreich. Even assuming (without conceding) that the cited references could have properly been combined, Applicant respectfully submits that the claimed subject matter would not have been obvious to a person having ordinary skill in the art at the time the invention was made (i.e., no later than July 1, 2013) in view of the cited references.

I. Independent Claim 1 and the Claims Depending Therefrom

Without acceding to the rejection, independent claim 1 has been amended and reconsideration is respectfully requested.

Amended independent claim 1 recites:

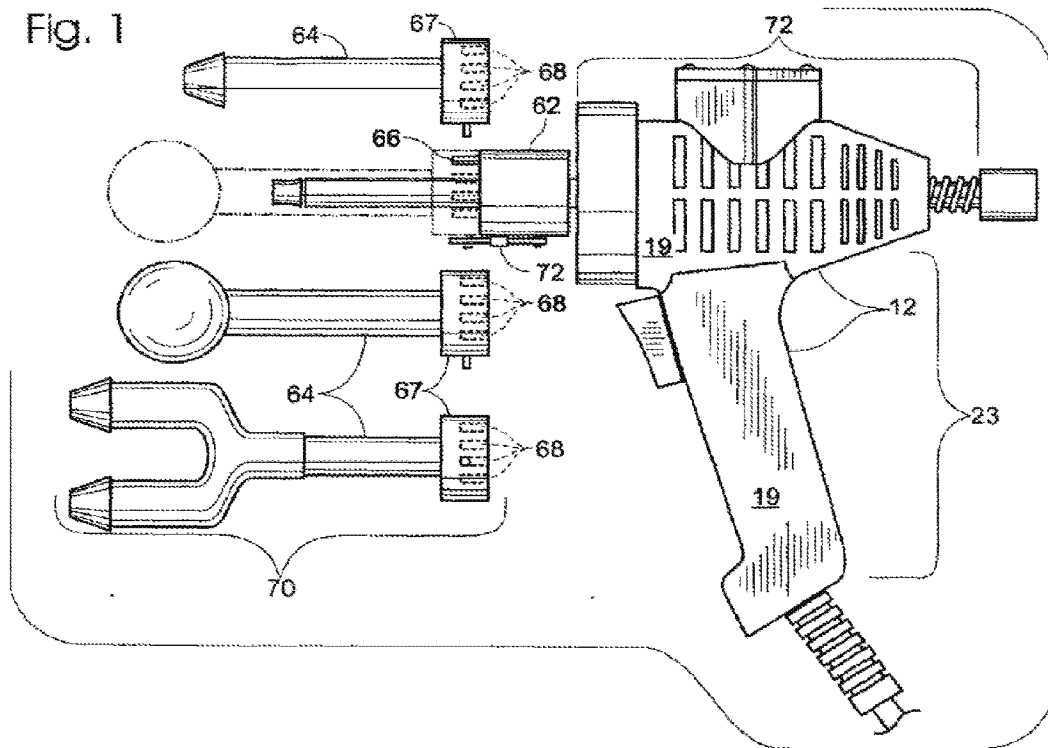
a first massaging head releasably coupled to the distal end of the piston via the quick release connector, wherein the quick release connector is configured to connect the first massaging head while the piston moves between the minimum reciprocation stroke length and the maximum reciprocation stroke length at the first speed.

Meyer is directed to a reciprocating saw including a ram driven by a scotch yoke mechanism (Meyer at Abstract). Meyer further describes the reciprocating saw includes “a blade holder 16 and an adjacent foot plate 18” and “[t]he ram 44 is suitably supported for reciprocal movement and mounts the blade holder 16” (*Id.* at col. 1, lines 1-2 and 33-34). Instructables is directed to modifying a jigsaw to form a massager (Instructables at pages 1-2).

The Office Action at page 6 states that Meyer and Instructables fail to teach or suggest the “quick release connector” as recited in claim 1, instead relying on Miller as teaching this feature. Miller as referenced at [0026] describes (emphasis added):

The coupler is comprised of a collar 62 affixed to the reciprocating rod 16, a collar pin 66 set on the collar 62 and pin notches 68 set in a sleeve base 67 of the sleeve element 64. The collar 62 is mounted on the reciprocating rod 16 offset from the forward end 18 so as to permit the sleeve element 64 of the impact head to receive a portion of the forward end 18 of the reciprocating rod 16 for stability. The sleeve base 67 abuts the collar 62 and the collar pin 66 is received into one of a number of defined pin notches 68 on the sleeve base 67 so as to prevent rotation of the impact head 70. A simple retaining hook or loop 72 or similar means retains the impact head 70.

Miller's coupler includes "a collar 62 affixed to the reciprocating rod 16, a collar pin 66 set on the collar 62 and pin notches 68 set in a sleeve base 67 of the sleeve element 64." A Person of Ordinary Skill in the Art would understand that Miller's head must be aligned in one orientation, such that the pin on the bottom of the collar 62 mates with hook or loop 72 to retain the impact head 70, as shown in Figure 1 below. Furthermore, the horizontal pin must be aligned and inserted into a pin notch 68 in order to retain the impact head.



However, Applicant respectfully submits that Miller fails to teach or suggest that "the quick release connector is configured to connect the first massaging head **while the piston moves between the minimum reciprocation stroke length and the maximum reciprocation**

stroke length at the first speed” as presently recited in amended claim 1. As recognized by Applicant, such a configuration of the quick release connector enables quick removal and replacement of a massaging head with the apparatus (Specification as-filed at [0050]-[0051]). Miller is silent regarding the ability for its impact heads to be connected to the coupler during reciprocation of the reciprocating rod.

The other cited references do not cure the above-noted deficiencies of Meyer, Instructables, and Miller with respect to amended claim 1 and are not alleged to do so.

Thus, amended independent claim 1 is allowable. Claims 2-3 and 5-26 depend from claim 1 and are allowable for at least the same reasons. Reconsideration and withdrawal of the rejections to claims 1-3 and 5-26 under 35 U.S.C. § 103 is respectfully requested.

II. Independent Claim 27 and the Claims Depending Therefrom

Without acceding to the rejection, independent claim 27 has been amended and reconsideration is respectfully requested.

As amended, independent claim 27 recites:

providing a first massaging head configured to releasably couple to the distal end of the piston via the quick release connector, wherein the quick release connector is configured to connect the first massaging head while the piston moves between the minimum reciprocation stroke length and the maximum reciprocation stroke length at the first speed.

For reasons that should be apparent from the discussion of claim 1, the cited references, individually or in proper combination, do not teach or suggest at least the above-quoted portion of amended independent claim 27. Accordingly, Applicant respectfully submits that amended independent claim 27 is allowable. Claims 28-29 depend from claim 27 and are allowable for at least the same reasons. Reconsideration and withdrawal of the rejections to claims 27-29 under 35 U.S.C. § 103 is respectfully requested.

VI. Dependent Claims

The additional references cited in the rejections of the dependent claims (i.e., Harris, Pivaroff, Tsai, and Ehrenreich) do not cure the deficiencies of the above-discussed references (Meyer, Instructables, and Miller) with respect to any of the independent claims, and the Office Action does not allege otherwise.

CONCLUSION

In light of the foregoing, Applicant submits that all pending claims are now in condition for allowance. Accordingly, Applicant respectfully requests reconsideration, withdrawal of all grounds of rejection, and allowance of the pending claims in due course.

If the Examiner believes that a telephone conversation with Applicant's agent would expedite the allowance of this application or would be helpful in resolving any other outstanding issue, the Examiner is invited to call the undersigned at the telephone number set forth below.

Dated: March 21, 2023

Respectfully submitted,

Electronic signature: /Sanjeet K. Dutta/
Sanjeet K. Dutta

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CERTIFICATE OF SERVICE

I am employed in the County of Orange, State of California. I am over the age of 18 and not a party to the within action. My business address is 610 Newport Center Drive, 17th Floor, Newport Beach, California 92660.

On December 20, 2024, I caused the below document described as:

DECLARATION OF JOHN PRATT

EXHIBITS 1-4

to be served by email to the email addresses identified below:

Benjamin A Herbert	Lawrence Robert LaPorte
Miller Barondess, LLP	Lewis Brisbois Bisgaard and Smith LLP
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I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Executed on December 20, 2024, at Newport Beach, California.



Kristin Godfrey