

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

THERABODY, INC.
Petitioner

v.

HYPERICE IP SUBCO, LLC
Patent Owner.

Case No. PGR2024-00053
U.S. Patent No. 11,857,482

**PETITION FOR POST-GRANT REVIEW
OF U.S. PATENT NO. 11,857,482**

TABLE OF CONTENTS

	Page
I. INTRODUCTION	1
II. MANDATORY NOTICES UNDER 37 C.F.R. §42.8.....	1
III. FEE AUTHORIZATION	3
IV. GROUNDS FOR STANDING.....	3
V. PRECISE RELIEF REQUESTED	4
VI. THE CHALLENGED PATENT	5
VII. PROSECUTION HISTORY OF THE '482 PATENT.....	11
VIII. LEVEL OF ORDINARY SKILL IN THE ART	15
IX. PRIORITY DATE	15
X. CLAIM CONSTRUCTION	15
XI. DETAILED EXPLANATION OF THE UNPATENTABILITY GROUNDS UNDER 35 U.S.C. § 112	16
A. Ground 1: Claims 34-38, 40, 41, 43-46, and 58-60 Are Unpatentable Under 35 U.S.C. § 112(a) For Lack Of Written Description Support in the Specification	16
1. Ground 1A: The Specification Fails to Disclose Any Instance of a “First Massaging Head” Having a “Pocket to Receive the Quick Release Connector.”	18
2. Ground 1B: The Specification Fails to Provide Written Description Support for the Claimed “Substantially Cylindrical Pocket to Receive the Quick Release Connector”	20
3. Ground 1C: The Specification Fails to Provide Written Description Support for the Claimed “Quick Release Connector”	23
B. Ground 2: Claims 34-38, 40, 41, 43-46, and 58-60 Are Unpatentable Under 35 U.S.C. § 112(a) Because the Claimed “Substantially Cylindrical Pocket to Receive the Quick Release Connector” Is Indefinite.	26
XII. BRIEF DESCRIPTION OF THE APPLIED PRIOR ART	27

TABLE OF CONTENTS

(continued)

	Page
A. U.S. Patent No. 4,513,737 (“Mabuchi”) (Ex-1005).....	27
B. U.S. Patent No. 6,432,072 (“Harris”) (Ex-1006).....	30
C. U.S. Patent No. 6,682,496 (“Pivaroff”) (Ex-1007).....	31
XIII. DETAILED EXPLANATION OF THE UNPATENTABILITY GROUNDS UNDER 35 U.S.C. § 103	33
A. Ground 3: Claims 34, 35, and 58-60 Are Unpatentable Under 35 U.S.C. § 103 As Obvious Over Mabuchi.....	33
1. Independent Claim 34	33
a. Element 34[pre]: “A percussive massager comprising:”	33
b. Element 34[a]: “a housing;”	34
c. Element 34[b]: “a piston in the housing having a proximal end and a distal end;”	34
d. Element 34[c]: “a motor at least partially within the housing and operatively connected to the proximal end of the piston, wherein the motor is configured to cause the piston to reciprocate at a first speed;”	35
e. Element 34[d]: “a drive mechanism between the motor and the piston that controls a predetermined stroke length of the piston; and”	36
f. Element 34[e]: “a quick release connector at the distal end of the piston, wherein the quick release connector is configured to secure a first massaging head while the piston reciprocates a predetermined stroke length at the first speed, wherein the first massaging head has a substantially cylindrical pocket to receive the quick release connector.”	37
2. Claim 35: “The percussive massager of claim 34, further comprising: a second massaging head configured to releasably couple to the distal end of the piston via the quick release connector.”	42

TABLE OF CONTENTS
(continued)

	Page
3. Claim 58: “The percussive massager of claim 34, wherein the motor has an output shaft configured to rotate about a rotation axis, and wherein the drive mechanism comprises: a flywheel operatively connected to the output shaft of the motor to rotate about a flywheel axis, the output shaft extending into the flywheel along the flywheel axis; and a crank pin extending from the flywheel, the crank pin being operatively connected to the piston.”	43
4. Claim 59: “The percussive massager of claim 58, wherein an offset between the flywheel axis and an axis of the crank pin controls the predetermined stroke length of the piston.”	45
5. Claim 60: “The percussive massager of claim 59, wherein the motor is directly connected to the flywheel, and wherein the crank pin is directly connected to the flywheel.”	46
B. Ground 4: Claims 36-38, 40, 41, and 43-46 Are Unpatentable Under 35 U.S.C. § 103 As Obvious Over Mabuchi in view of Harris	46
1. A POSITA would have been motivated to combine Mabuchi and Harris’s teachings and would have had a reasonable expectation of success.....	46
2. Claim 36: “The percussive massager of claim 34, wherein the motor is configured to cause the piston to reciprocate the predetermined stroke length at a second speed.”	48
3. Claim 37: “The percussive massager of claim 36, wherein the first speed and the second speed are each less than or equal to 3600 strokes per minute.”	49
4. Claim 38: “The percussive massager of claim 36, wherein the first speed and the second speed are each greater than or equal to 600 strokes per minute.”	50

TABLE OF CONTENTS
(continued)

	Page
5. Claim 40: “The percussive massager of claim 36, further comprising: a control panel positioned on an exterior of the housing.”	50
6. Claim 41: “The percussive massager of claim 40, wherein the control panel is configured to display one or more visual indicators.”	51
7. Claim 43: “The percussive massager of claim 40, wherein the control panel has one or more inputs.”	51
8. Claim 44: “The percussive massager of claim 43, wherein the one or more inputs comprise at least one of: a button, a switch, and a dial.”	52
9. Claim 45: “The percussive massager of claim 43, wherein the first speed and the second speed are each selectable via the one or more inputs.”	52
10. Claim 46: “The percussive massager of claim 43, wherein a first selection of the one or more inputs is configured to cause the percussive massager to power on and wherein a second selection of the one or more inputs is configured to cause the percussive massager to power off.”	52
C. Ground 5: Claims 37 and 38 Are Unpatentable Under 35 U.S.C. § 103 As Obvious Over Mabuchi in view of Harris, Further In View of Pivaroff.....	53
1. A POSITA would have been motivated to combine Mabuchi, Harris, and Pivaroff’s teachings and would have had a reasonable expectation of success	53
2. Claim 37: “The percussive massager of claim 36, wherein the first speed and the second speed are each less than or equal to 3600 strokes per minute.”	55
3. Claim 38: “The percussive massager of claim 36, wherein the first speed and the second speed are each greater than or equal to 600 strokes per minute.”	55

TABLE OF CONTENTS

(continued)

Page

D.	Ground 6: Claims 34, 35, and 58-60 Are Unpatentable Under 35 U.S.C. § 103 As Obvious Over Pivaroff in view of Mabuchi	56
1.	A POSITA would have been motivated to combine Pivaroff and Mabuchi’s teachings and would have had a reasonable expectation of success.....	56
2.	Independent Claim 34	58
a.	Element 34[pre]: “A percussive massager comprising:”	58
b.	Element 34[a]: “a housing;”	58
c.	Element 34[b]: “a piston in the housing having a proximal end and a distal end;”	59
d.	Element 34[c]: “a motor at least partially within the housing and operatively connected to the proximal end of the piston, wherein the motor is configured to cause the piston to reciprocate at a first speed;”	60
e.	Element 34[d]: “a drive mechanism between the motor and the piston that controls a predetermined stroke length of the piston; and”	61
f.	Element 34[e]: “a quick release connector at the distal end of the piston, wherein the quick release connector is configured to secure a first massaging head while the piston reciprocates a predetermined stroke length at the first speed, wherein the first massaging head has a substantially cylindrical pocket to receive the quick release connector.”	62
3.	Claim 35: “The percussive massager of claim 34, further comprising: a second massaging head configured to releasably couple to the distal end of the piston via the quick release connector.”	63
4.	Claim 58: “The percussive massager of claim 34, wherein the motor has an output shaft configured to rotate about a rotation axis, and wherein the drive	

TABLE OF CONTENTS

(continued)

	Page
mechanism comprises: a flywheel operatively connected to the output shaft of the motor to rotate about a flywheel axis, the output shaft extending into the flywheel along the flywheel axis; and a crank pin extending from the flywheel, the crank pin being operatively connected to the piston.”	63
5. Claim 59: “The percussive massager of claim 58, wherein an offset between the flywheel axis and an axis of the crank pin controls the predetermined stroke length of the piston.”	66
6. Claim 60: “The percussive massager of claim 59, wherein the motor is directly connected to the flywheel, and wherein the crank pin is directly connected to the flywheel.”	67
E. Ground 7: Claims 36-38, 40, 41, and 43-46 Are Unpatentable Under 35 U.S.C. § 103 As Obvious Over Pivaroff in view of Mabuchi, Further in view of Harris.....	68
1. A POSITA would have been motivated to combine Pivaroff and Mabuchi with Harris’s teachings and would have had a reasonable expectation of success	68
1. Claim 36: “The percussive massager of claim 34, wherein the motor is configured to cause the piston to reciprocate the predetermined strokes length at a second speed.”	70
2. Claim 37: “The percussive massager of claim 36, wherein the first speed and the second speed are each less than or equal to 3600 strokes per minute.”	71
3. Claim 38: “The percussive massager of claim 36, wherein the first speed and the second speed are each greater than or equal to 600 strokes per minute.”	71
4. Claim 40: “The percussive massager of claim 36, further comprising: a control panel positioned on an exterior of the housing.”	71

TABLE OF CONTENTS
(continued)

	Page
5. Claim 41: “The percussive massager of claim 40, wherein the control panel is configured to display one or more visual indicators.”	72
6. Claim 43: “The percussive massager of claim 40, wherein the control panel has one or more inputs.”	72
7. Claim 44: “The percussive massager of claim 43, wherein the one or more inputs comprise at least one of: a button, a switch, and a dial.”	72
8. Claim 45: “The percussive massager of claim 43, wherein the first speed and the second speed are each selectable via the one or more inputs.”	73
9. Claim 46: “The percussive massager of claim 43, wherein a first selection of the one or more inputs is configured to cause the percussive massager to power on and wherein a second selection of the one or more inputs is configured to cause the percussive massager to power off.”	73
XIV. THE BOARD SHOULD NOT EXERCISE ITS DISCRETION UNDER §325(D) TO DENY HEARING THESE INVALIDITY ISSUES FOR THE FIRST TIME IN THIS PETITION	74
XV. THE BOARD SHOULD NOT DENY INSTITUTION UNDER <i>FINTIV</i>	77
XVI. CONCLUSION.....	77

LIST OF EXHIBITS¹

Ex. No.	Description
Ex-1001	U.S. Patent No. 11,857,482 (“the ’482 Patent”)
Ex-1002	Declaration of John D. Pratt, Ph.D., In Support of Petition for Post Grant Review of U.S. Patent No. 11,857,482
Ex-1003	Curriculum Vitae of Dr. John Pratt
Ex-1004	Prosecution History of the ’482 Patent (Application No. 17/681,367)
Ex-1005	U.S. Patent No. 4,513,737 (“Mabuchi”)
Ex-1006	U.S. Patent No. 6,432,072 (“Harris”)
Ex-1007	U.S. Patent No. 6,682,496 (“Pivaroff”)
Ex-1008	U.S. Publication No. 2003/0195443 (“Miller”)
Ex-1009	U.S. Publication No. 2007/0150004 (“Colloca”)
Ex-1010	Taiwanese Patent Number 9,720,7752U (“Wang”)
Ex-1011	Certified English Translation of Taiwanese Patent Number 9,720,7752U (“Wang”)
Ex-1012	U.S. Patent No. 2,550,775 (“Clark”)
Ex-1013	Appendix A1 – Claim Mapping Chart
Ex-1014	Appendix A2 – Claim Mapping Chart

¹ Four-digit pin citations that begin with 0 are to the branded numbers added by Petitioner in the bottom right corner of the exhibits. All other pin citations are to original page, column, paragraph, or line numbers.

I. INTRODUCTION

Therabody, Inc. (“Petitioner”) requests post grant review (“PGR”) of Claims 34-38, 40, 41, 43-46, and 58-60 (“challenged claims”) of U.S. Patent No. 11,857,482 (“the ’482 Patent”) (Ex 1001), currently assigned to Hyperice IP Subco, LLC (“PO”).

II. MANDATORY NOTICES UNDER 37 C.F.R. §42.8

Real Parties-in-Interest: Petitioner identifies the following real parties-in-interest: Therabody, Inc.

Related Matters: PO has asserted the ’482 Patent against Petitioner in *Hyper Ice, Inc. v. Therabody, Inc.*, 8:24-cv-00390-JWH-(DFMx) (C.D. Cal.). PO has also asserted the ’482 Patent in the following matters that remain pending:

- *Hyper Ice, Inc. v. Macy's, Inc.*, 8:24-cv-00391-JWH-(DFMx) (C.D. Cal.);
- *Hyper Ice, Inc. v. Bob and Brad, LLC*, 2:24-cv-03212-JWH-DFM (C.D. Cal.);
- *Hyper Ice Inc. v. Joicom Corporation*, 8:24-cv-00098-JWH-(DFMx) (C.D. Cal.);
- *Hyper Ice, Inc. v. Kohl's Inc.*, 6:24-cv-00032-OLG (W.D. Tex.);
- *Hyper Ice, Inc. v. MerchSource, LLC*, 8:24-cv-00410-JWH-(DFMx) (C.D. Cal.);
- *Hyper Ice, Inc. v The TJX Companies, Inc.*, 2:24-cv-00258-JRG-RSP (E.D. Tex.);
- *Hyper Ice, Inc. v. Lowes Companies, Inc.*, 2:24-cv-00073-JRG-RSP (E.D. Tex.);

- *Hyper Ice, Inc. v. Performance Health Systems, LLC*, 2:24-cv-05982-PSG-(AGR) (C.D. Cal.);
- *Hyper Ice, Inc. et al v. Worldwide Golf Shops LLC*, 6:24-cv-00034-OLG (W.D. Tex.);
- *Hyper Ice, Inc. v. Walgreen Co.*, 6:24-cv-00031-OLG (W.D. Tex.);
- *Hyper Ice, Inc. v. Home Depot U.S.A.*, 6:24-cv-00035-OLG (W.D. Tex.);
- *Hyper Ice, Inc. v. Emory Peak Wellness, LLC*, 6:24-cv-00028-OLG (W.D. Tex.);
- *Hyper Ice, Inc. v. Costco Wholesale Corporation*, 6:24-cv-00029-OLG (W.D. Tex.);
- *Hyper Ice Inc. v. Dacorm*, 8:24-cv-00097-JWH-(DFMx) (C.D. Cal.);
- *Hyper Ice, Inc. v. CVS Pharmacy Inc.*, 2:24-cv-115-JRG-RSP (E.D. Tex.); and
- *Shenzhen Kelaisiman Trading Co., Ltd. v. Hyper Ice, Inc.*, 8:24-cv-01472-JWH-(DFMx) (C.D. Cal).

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III. FEE AUTHORIZATION

Pursuant to 37 C.F.R. §42.15(a) and §42.103(a), the PTO is authorized to charge any and all fees to Deposit Account No. LA500639.

IV. GROUNDS FOR STANDING

Petitioner certifies that the '482 Patent is available for review, and Petitioner is not barred or estopped from requesting review. "A petition for a post-grant review may only be filed not later than the date that is 9 months after the date of the grant of the patent." 35 U.S.C. § 321(c); 37 C.F.R. § 42.202(a). The '482 Patent was issued on January 2, 2024, which is less than nine months prior to the filing date of this Petition. Further, the '482 Patent does not claim priority to an

effective filing date before March 16, 2013, or to any patent or application that contains or contained at any time such a claim. *See Tricam Indus., Inc. v. Little Giant Ladder Sys., LLC*, PGR2021-00044, Paper No. 10 at 14 (PTAB Aug. 3, 2021). Therefore, the '482 Patent is eligible for PGR.

V. PRECISE RELIEF REQUESTED

Petitioner requests review and cancellation of Claims 34-38, 40, 41, 43-46, and 58-60 as unpatentable based on the following grounds, supported by a declaration from Dr. John Pratt. Ex-1002; Ex-1003.

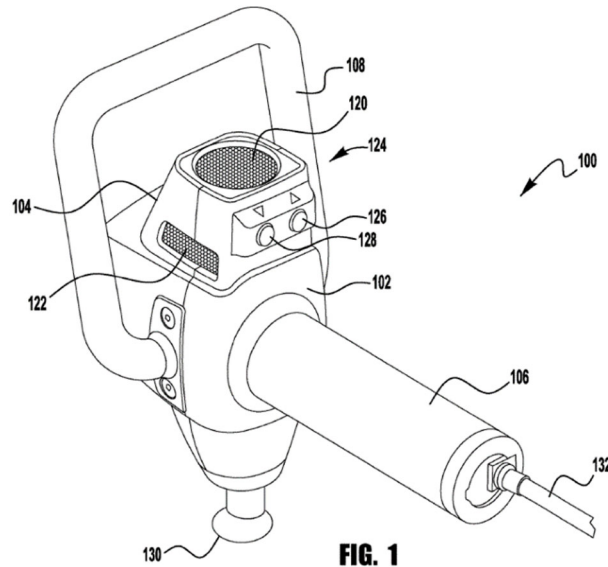
Ground	Summary
1	Claims 34-38, 40, 41, 43-46, and 58-60 are unpatentable under 35 U.S.C. § 112 based on lack of written description support.
2	Claims 34-38, 40, 41, 43-46, and 58-60 are unpatentable under 35 U.S.C. § 112 as indefinite.
3	Claims 34, 35, and 58-60 are unpatentable under 35 U.S.C. § 103 as obvious over U.S. Patent No. 4,513,737 (“Mabuchi”) (Ex-1005).
4	Claims 36-38, 40, 41, and 43-46 are unpatentable under 35 U.S.C. § 103 as obvious over Mabuchi in view of U.S. Patent No. 6,432,072 (“Harris”) (Ex-1006).
5	Claims 37 and 38 are unpatentable under 35 U.S.C. § 103 as obvious over Mabuchi in view of Harris, further in view of U.S. Patent No. 6,682,496 (“Pivaroff”) (Ex-1007).
6	Claims 34, 35, and 58-60 are unpatentable under 35 U.S.C. § 103 as obvious over Pivaroff in view of Mabuchi.
7	Claims 36-38, 40, 41, and 43-46 are unpatentable under 35 U.S.C. § 103 as obvious over Pivaroff in view of Mabuchi, further in view

Ground	Summary
	of Harris.

VI. THE CHALLENGED PATENT

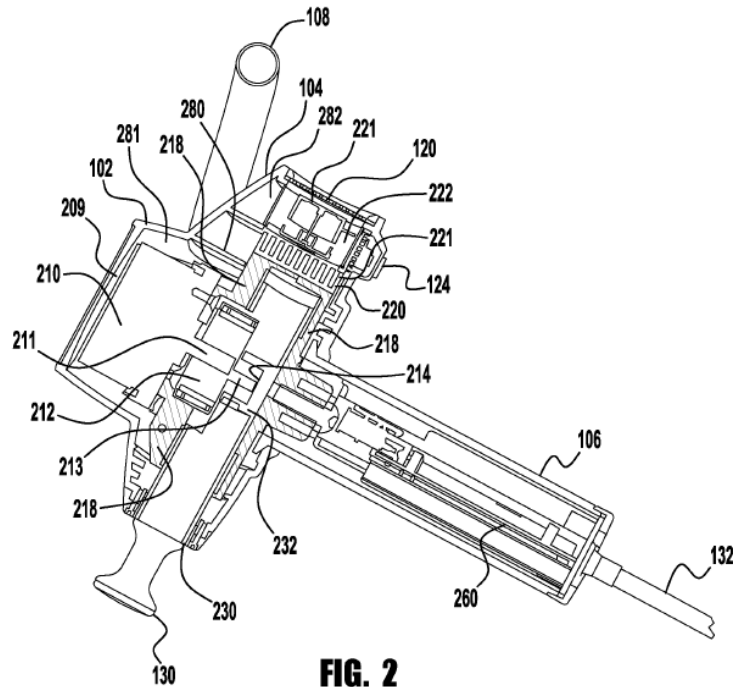
The '482 Patent is titled “Massage Device Having Variable Stroke Length.” Ex-1001, Cover. As reflected in the title, the application from which it stems largely focuses on a percussive massager with a “lost motion system” 700 that can be used “to adjust the throw or the stroke length of the massaging head to work on larger or smaller muscle groups, or deeper or shallower points of stress or soreness in the muscles.” *Id.* at 7:20-27. As described further below, however, the claims of the '482 Patent are directed to a different aspect of the percussive massage device: a “quick release connector” for securing massaging head attachments to a reciprocating piston of the device while the device is in operation.

The '482 Patent describes 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, as shown below in Figure 1. *Id.* at 3:34-41. A “control panel” 124 contains two pushbuttons 126, 128 that are described as adjusting between preset speeds and turning the device on and off. *Id.* at 3:45-4:3.



Ex-1001, Fig. 1

As shown in Figure 2 below, internally, massage 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* Fig. 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.



Ex-1001, Fig. 2

The '482 Patent's description of a "quick-connect system" for connecting a massaging head to the piston consists of four paragraphs and three figures. *Id.*, 6:47-7:19, Figs. 6, 6A, 6B. The '482 Patent 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 '482 Patent discloses a "quick-connect system [that] allows a user to quickly switch massaging heads," even "without turning off the massaging device." *Id.* at 6:53-56.

The '482 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 '482 Patent describes that, "when the shaft 621 of massaging head 620 is slid into opening in bore 608 [of piston 602], the magnets 606 and 624 are attracted to one another and magnetically hold massaging head 620 firmly in place." *Id.* at 6:67-7:3.

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.

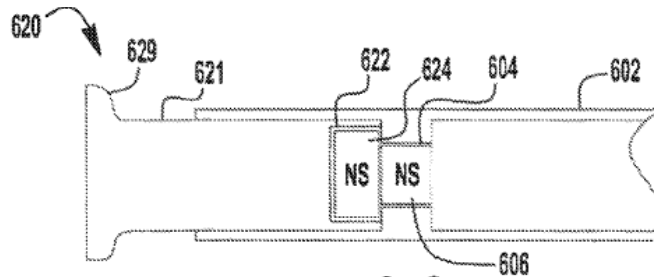


FIG. 6

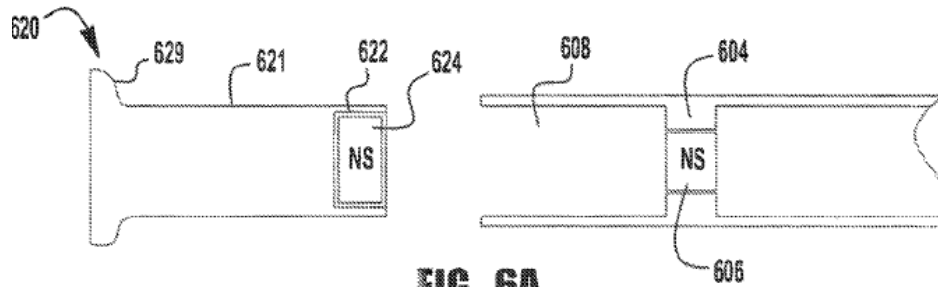


FIG. 6A

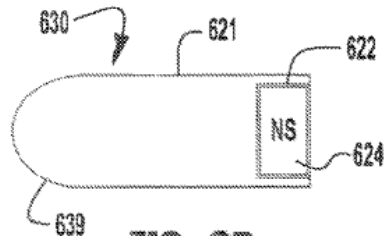


FIG. 6B

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

The '482 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.

Claim 1 of the '482 Patent, which is not challenged in this proceeding, recites a percussive massager that includes a piston that has a “substantially cylindrical bore” and a “quick-connect system” where “a proximal end of the massage head” is “slid into the bore” of the piston. Ex-1001, 9:65-10:17. But challenged independent Claim 34 recites a different configuration, where the “first massaging head” has a “substantially cylindrical pocket to receive the quick release connector.” *Id.*, 12:8-14. Specifically, Claim 34 recites:

34. A percussive massager comprising:

- [a] a housing;
- [b] a piston in the housing having a proximal end and a distal end;
- [c] a motor at least partially within the housing and operatively connected to the proximal end of the piston, wherein the motor is configured to cause the piston to reciprocate at a first speed;
- [d] a drive mechanism between the motor and the piston that controls a predetermined stroke length of the piston; and
- [e] a quick release connector at the distal end of the piston, wherein the quick release connector is configured to secure a first massaging head while the piston reciprocates a predetermined stroke length at the first speed, wherein the first massaging head has a substantially cylindrical pocket to receive the quick release connector.

Id., 11:64-12:14. Challenged Claims 35-38, 40, 41, 43-46, and 58-60 depend from Claim 34. Dependent Claim 35 recites a “second massaging head” configured to couple to the end of the piston. Dependent Claims 36-38 recite various aspects of

the speed of the reciprocation. Dependent Claims 40, 41, and 43-46 recite various aspects of a control panel for the percussive massager. And Claims 58-60 relate to aspects of the motor and drive mechanism of the percussive massager. *Id.*, 12:15-14:15.

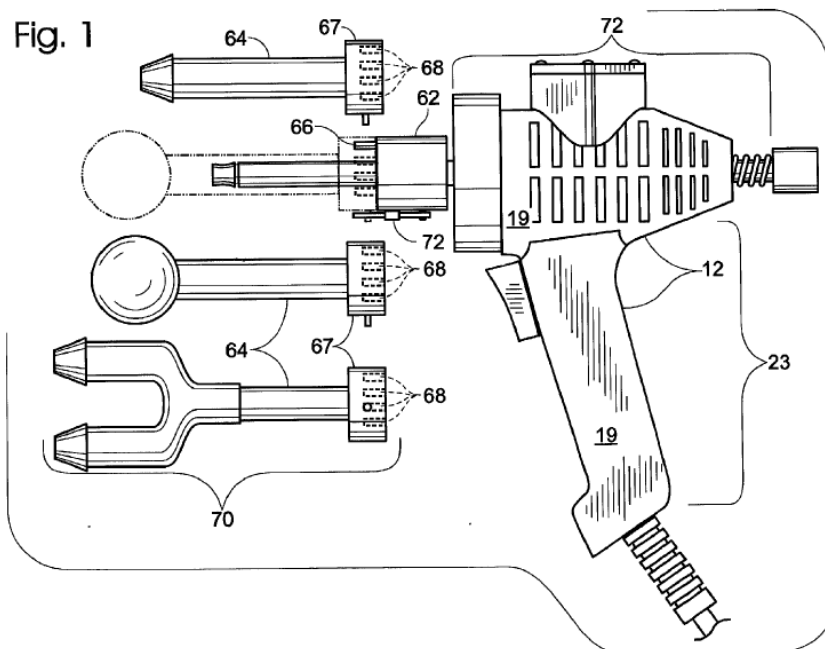
VII. PROSECUTION HISTORY OF THE '482 PATENT

The '482 Patent was filed on February 25, 2022 as U.S. Patent App. No. 17/681,367. It claims priority to several related applications and to provisional application No. 61/841,693, filed on July 1, 2013. Ex-1001, Cover.

The challenged claims were not added to the application leading to the '482 Patent until shortly before allowance. However, during prosecution, Applicants amended similar claim terms in the other claims of the '482 Patent to overcome several prior art rejections. *See* Ex-1004 at 2290-2293 (Feb. 22, 2023 Amendment), 2350-2353 (Mar. 21, 2023 Amendment), 2434-2438 (June 7, 2023 Amendment), 2524-2531 (Aug. 10, 2023 Amendment).

In the March 21, 2023 Amendment, the Applicants amended the independent claims to recite 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.” *Id.* at 2350, 2353. The Applicants did so to distinguish the prior art combination of U.S. Patent No. 5,134,777 to Meyer (“Meyer”) in view of a blog

post to Instructables.com (“Instructables”), and further in view of U.S. Publication No. 2003/0195443 to Miller (“Miller”). Miller, in particular, describes 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.” Ex-1008 ¶6. One end of the reciprocating rod “extends from the housing” with an “impact head with a coupler for the mounting of one or more impact heads.” *Id.* The coupler 62, shown below in Figure 1, “is used for affixing impact heads 70 of varying shapes,” and “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.” *Id.* ¶26.



Ex-1008, Fig. 1

The Applicants argued that a POSITA “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.” Ex-1004 at 2356. The Applicants then argued that “Miller is silent regarding the ability for its impact heads to be connected to the coupler during reciprocation of the reciprocating rod.” *Id.* at 2356-57.

In the August 10, 2023 Amendment, the Applicants again amended the independent claims, but also added new Claims 38-65 to the application, which eventually issued as challenged independent Claim 34 and its dependent claims. *Id.* at 2528-2531. Unlike the other pending claims, and the disclosed embodiment in Figures 6, 6A, and 6B, the newly added claims did not include a bore in the piston for receiving the massaging head. Instead, the newly added claims required the “*the first massaging head* has a substantially cylindrical pocket *to receive the quick release connector*” that is on the piston. *Id.* at 2528.

The Applicants also sought to distinguish Claim 34 from the Pivaroff and Rhoades prior art references that had been asserted against the other claims, arguing that “Pivaroff’s hollow head 44 fails to teach or suggest a massaging head that ‘has a **substantially cylindrical pocket** to receive the quick release connector,’” as “Pivaroff is silent regarding the hollow head 44 including any type

of pocket for receiving the recessed opening 40 in rod 38.” *Id.* at 2537-2538 (emphasis in original). The Applicants similarly argued that while Rhoades “shows and describes an exemplary threaded mating connection mechanism for an applicator attachment,” but is “silent regarding inclusion of any pocket for receiving a quick release connector.” *Id.* at 2538.

In a September 13, 2023 Notice of Allowance, the Examiner stated that Pivaroff and Rhoades did not disclose the claimed “quick-connect system” of Claim 34 because “Pivaroff does not disclose a quick-connect system configured to allow a massaging head to be secured or connected to the percussive massager while the piston reciprocates,” and “[w]hile Rhoades discloses a quick-connect system that uses magnetic coupling that might allow for a massage head to attach to a piston while the piston reciprocates, Rhoades does not disclose the claimed structure of the quick release connection system – namely . . . a substantially cylindrical pocket at the first massaging head to receive a quick release connector.” *Id.* at 2593-2594.

Sections XI and XIII of this Petition present new arguments not considered during prosecution, and in particular for the “quick-connect system” that applicants relied upon to distinguish Claim 34 and its dependents. As discussed in Section XIV, nothing precludes considering them in the first instance under 35 U.S.C.

§325(d). All challenged claims are invalid as failing to satisfy 35 U.S.C. § 112(a), and as obvious over the prior art under 35 U.S.C. § 103. Ex-1002 ¶4.

VIII. LEVEL OF ORDINARY SKILL IN THE ART

A person of ordinary skill in the art at the relevant time (“POSITA”) would have had a bachelor’s degree in mechanical engineering, or a related field, and two-to-three years of experience in the research, design, development, or testing of rotating or reciprocating mechanisms, with additional education substituting for experience and vice versa. Ex-1002 ¶37.

IX. PRIORITY DATE

The ’482 Patent is entitled to a priority date no earlier than July 1, 2013 (the filing of provisional application No. 61/841,693). Based on this priority date, all references relied upon in this Petition are prior art. Furthermore, based on this priority date, the claims are subject to the provisions of the America Invents Act, including 35 U.S.C. § 102(a) therein.

X. CLAIM CONSTRUCTION

Petitioner interprets the claims according to *Phillips*. 37 C.F.R. §42.100(b). To resolve this Petition, Petitioner does not believe that any term requires construction.³

³ Claim construction in the related district court cases have not yet begun. Petitioner respectfully reserves all rights to raise claim construction and other arguments in district court. Additionally, Petitioner may request leave to submit the

**XI. DETAILED EXPLANATION OF THE UNPATENTABILITY
GROUNDS UNDER 35 U.S.C. § 112**

**A. Ground 1: Claims 34-38, 40, 41, 43-46, and 58-60 Are
Unpatentable Under 35 U.S.C. § 112(a) For Lack Of Written
Description Support in the Specification**

The challenged claims are unpatentable under 35 U.S.C. § 112(a) because they lack written description support in the specification. As discussed above in Section VII, Claim 34 and its dependent claims were added late in prosecution, following several rounds of Office Action and amendments to the existing set of claims. Ex-1002 ¶79. Multiple aspects of the configuration recited in Element 34[e] of Claim 34, however, are not disclosed anywhere in the written description and figures. Ex-1002 ¶78.

A claim is invalid for lack of written support description under § 112(a) if the patent's disclosure does not "reasonably convey[] to those skilled in the art that the inventor had possession of the claimed subject matter as of the filing date." *Ariad Pharm., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1351 (Fed. Cir. 2010) (en banc). "[I]t is the specification itself that must demonstrate possession." *Id.* at 1352. Accordingly, the specification must demonstrate conception and at least constructive reduction to practice of "the complete and final invention with all its claimed limitations." *Id.* at 1353. A specification that merely renders the

district court's claim construction in this proceeding as soon as it becomes available.

invention obvious does not satisfy the written description requirement. *Id.* The determination “requires an objective inquiry into the four corners of the specification from the perspective of a person of ordinary skill in the art.” *Id.* at 1351.

Thus, “it is not sufficient for purposes of the written description requirement of § 112 that the disclosure, when combined with the knowledge in the art, would lead one to speculate as to the modifications that the inventor might have envisioned, but failed to disclose.” *D Three Enters., LLC v. SunModo Corp.*, 890 F.3d 1042, 1050 (Fed. Cir. 2018) (quoting *Lockwood v. Am. Airlines, Inc.*, 107 F.3d 1565, 1572 (Fed. Cir. 1997)). Moreover, “boilerplate language” in the specification allowing for modifications or permutations to the disclosed embodiments “is not sufficient to show adequate disclosure of the actual combinations and attachments” recited in the challenged claims. *Id.* at 1051 (citing *Knowles Elecs. LLC v. Cirrus Logic, Inc.*, 883 F.3d 1358, 1367-68 (Fed. Cir. 2018)).

Here, the challenged claims all recite “a quick release connector at the distal end of the piston, *wherein the quick release connector is configured to secure a first massaging head while the piston reciprocates* a predetermined stroke length at the first speed, *wherein the first massaging head has a substantially cylindrical*

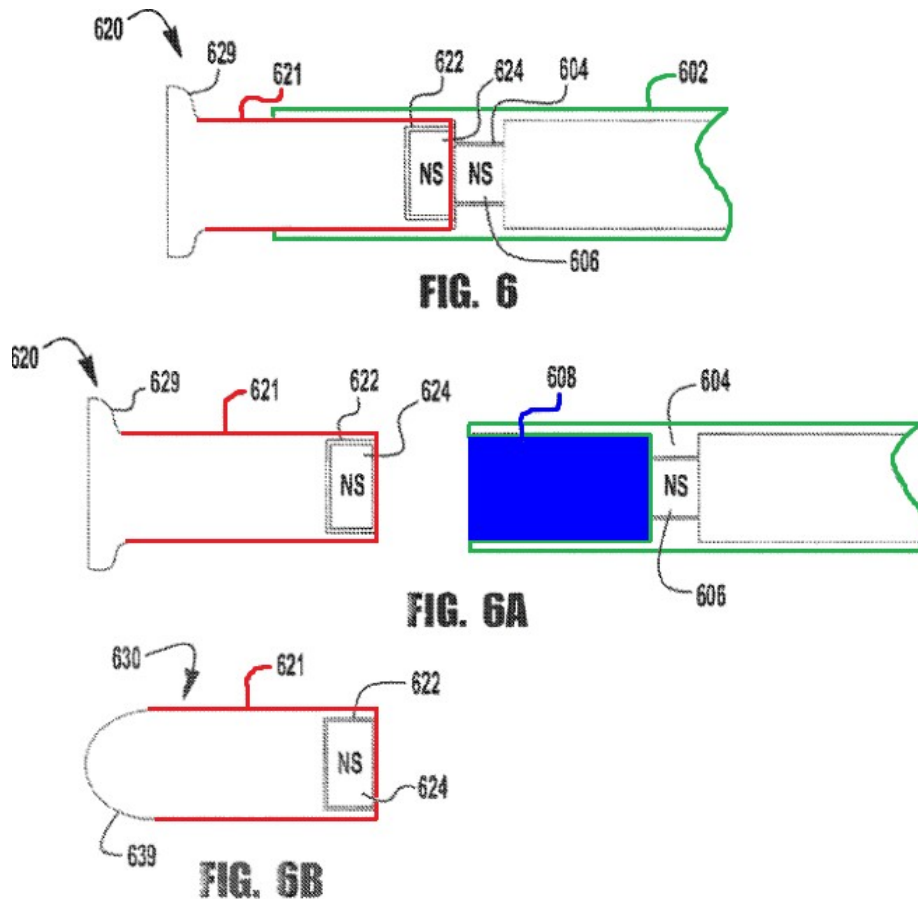
pocket to receive the quick release connector.” The ’482 Patent fails to provide written description support for this limitation for at least three reasons.

1. Ground 1A: The Specification Fails to Disclose Any Instance of a “First Massaging Head” Having a “Pocket to Receive the Quick Release Connector.”

When “the specification fails to describe *any instance* of the claimed” invention, the claim is invalid for lack of written description “as a matter of law.” *Impact Engine, Inc., v. Google, LLC*, 2024 WL 3287126, at *10 (Fed. Cir. July 3, 2024) (emphasis added). Even for relatively simple mechanical inventions, when there is a “lack of any disclosure” of a claimed limitation, that lack of disclosure is fatal. *D Three*, 890 F.3d at 1052. That is the case here.

The ’482 Patent fails to disclose any instance of a massaging head having a pocket to receive the “quick release connector.” Instead, the only disclosed embodiment in the ’482 Patent shows the opposite configuration. Ex-1002 ¶¶79-83. As shown in the annotated Figures 6, 6A, and 6B below, *the piston 602* “has a *hollow-end bore 608* for receiving the *shaft 621* of a massaging head 620.” Ex-1001 at 6:57-59. The ’482 Patent describes that, “when the *shaft 621* of massaging head 620 is slid into opening in *bore 608*, the magnets 606 and 624 are attracted to one another and magnetically hold massaging head 620 firmly in place.” *Id.* at 6:67-7:3. Indeed, the ’482 Patent notes that this disclosed configuration—with the piston having the bore that receives the shaft of the

massaging head—can be modified, such that “the end 626 *of the massaging head 620* is rounded, pointed or tapered (not shown),” allowing the end of the massaging head “to easily *slip into the opening 608 even while the piston 608 is moving.*” *Id.* at 7:9-14 (emphasis added).



Ex-1001, Figs. 6, 6A, 6B (annotated)

The only disclosure of a “pocket” *in the massaging head*, on the other hand, is the pocket 622 located in the massaging head’s shaft for holding magnet 624. *See* Ex-1001 at 6:63-65 (“Massaging head 620 includes a shaft 621 having a

cylindrical pocket 622 at the distal end. Located within the cylindrical pocket 622 is a magnet 624.”). This “pocket” in the massaging head *does not and cannot* “receive the quick release connector at the distal end of the piston,” as recited in challenged Claim 34 and its dependents. Rather, this pocket 622 merely holds the magnet 624, and the pocket, magnet, and message head shaft 621 *are all slid into a pocket (“bore 608”) in the piston 602, i.e., the opposite* of what is required by Claim 34. *See* Ex-1001 at 6:67-7:3 (“Accordingly, when the shaft 621 of massaging head 620 is slid into opening in bore 608, the magnets 606 and 624 are attracted to one another and magnetically hold massaging head 620 firmly in place.”). Ex-1002 ¶81.

“The written description requirement is particularly important when, as here, claims are added later during prosecution in response to development by others.” *FWP IP ApS v. Biogen MA, Inc.*, 749 F. App’x 969, 974 (Fed. Cir. 2018). Here, PO added claims late in the prosecution process that were unsupported by the specification. Claim 34, along with dependent Claims 35-38, 40, 41, 43-46, and 58-60, are unpatentable as a result.

2. Ground 1B: The Specification Fails to Provide Written Description Support for the Claimed “Substantially Cylindrical Pocket to Receive the Quick Release Connector”

The challenged claims are also unpatentable because they lack written description supporting the full scope of the claimed “first massaging head” that

“has a ***substantially*** cylindrical pocket to receive the quick release connector.” Ex-1002 ¶¶84-90.

First, as described above (Section XI.A.1), the patent describes only the configuration opposite to the one claimed, *i.e.*, the patent describes the shaft 621 of the massaging head 620 being inserted into ***a pocket (bore 608) in the piston 602***.⁴ But even if this disclosure provided written description support for the claimed opposite configuration of a “pocket” ***in the massaging head*** to receive the quick release connector of the piston (it does not), it does not describe a “massaging head [having] a ***substantially cylindrical*** pocket to receive the quick release connector.” The ’482 Patent does not explicitly describe the shape of the pocket (bore 608). Ex-1001, 6:57-7:3. And neither the specification nor the figures contain any disclosure of a “substantially cylindrical” bore. *See* Figs. 6, 6A, 6B.

Nevertheless, in the context of the specification, the claims, and the prosecution history, a POSITA would understand that the pocket is cylindrical (not “***substantially*** cylindrical”) so as to receive the connector “while the piston reciprocates,” ***without the need for alignment***. Ex-1002 ¶¶85-87; *see also* Ex-1001 6:55-56 (“Moreover, the exemplary quick-connect system 600 may be used

⁴ This is the configuration recited in Claim 1 of the ’482 Patent, which recites “the quick-connect system is configured to secure the first massaging head to the percussive massager by a proximal end of the massaging head being slid into the bore.” Ex-1001, 10:13-15.

without turning off the massaging device 100.”). Indeed, during prosecution, the Applicants cited the need of the prior art to align the massaging head and piston in a particular orientation as a basis for distinguishing the claimed “quick-release connector” from the prior art. Ex-1004 at 2356 (Applicants argued that a POSITA “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.”). The ’482 Patent does not disclose a “substantially cylindrical,” i.e., only approximately⁵ cylindrical, pocket, let alone one configured to not require alignment. Ex-1002 ¶89.

Second, to the extent PO points to “cylindrical pocket 622” in the massaging head as being the claimed “substantially cylindrical pocket,” this too fails to provide written description support for the claim. As a preliminary matter, this cylindrical pocket 622 does not “receive the quick-release connector,” which the claim recites as located “at the distal end ***of the piston.***” Rather, “[l]ocated within the cylindrical pocket 622 is a magnet 624”; a separate magnet 606 is seated in the piston. Ex-1001, 6:64-65. Furthermore, the “cylindrical pocket 622” is described

⁵ “The term ‘substantial’ implies ‘approximate,’ rather than ‘perfect.’” *Wilson Sporting Goods Co. v. Hillerich & Bradsby Co.*, 442 F.3d 1322, 1329 (Fed. Cir. 2006) (quoting *Liquid Dynamics Corp. v. Vaughan Co., Inc.*, 355 F.3d 1361, 1368 (Fed. Cir. 2004)).

only as being “cylindrical.” *Id.* Nowhere does the specification describe the “cylindrical pocket 622” as being only approximately cylindrical or any other shape.

The lack of disclosure of *any* shape of pocket in the massaging head that receives the quick-release connector, and the otherwise narrow disclosure of uniformly cylindrical pockets elsewhere in the disclosed embodiment, fails to provide sufficient written description to support the challenged claims’ broadened recitation of a “*substantially* cylindrical pocket” in the massaging head that receives the quick-release connector on the piston. This is a second independent reason that the challenged claims are unpatentable under § 112(a).

3. Ground 1C: The Specification Fails to Provide Written Description Support for the Claimed “Quick Release Connector”

The challenged claims are also unpatentable because they lack written description supporting the full scope of the claimed “quick release connector” that “is configured to secure a first massaging head while the piston reciprocates a predetermined stroke length at the first speed.” Ex-1002 ¶¶91-92.

In *Forte Biosciences, Inc. v. Univ. of Mass.*, 2024 WL 3104512 (PTAB June 24, 2024), the Panel found unpatentable challenged claims that were “directed broadly” to a method of treatment with “a functional description” of a compound, where the specification “only provide[d] a single working example a compound

that meets these functional requirements.” *Id.* at *7. That is because “a sufficient description of a genus” requires “the disclosure of either a representative number of species falling within the scope of the genus or structural features common to the members of the genus so that one of skill in the art can ‘visualize or recognize’ the members of the genus.” *Ariad Pharms.*, 598 F.3d at 1350 (quoting *Regents of the Univ. of Cal. v. Eli Lilly & Co.*, 119 F.3d 1559, 1568-69 (Fed. Cir. 1997)). While “functional claim language can meet the written description requirement when the art has established a correlation between structure and function,” one must “describe[e] a variety of materials constituting the genus and showing that one has invented a genus and not just a species.” *Id.*

Here, Claim 34 purports to broadly claim *any* species of connector that is a “quick release connector . . . configured to secure a first massaging head while the piston reciprocates a predetermined stroke length at the first speed.” But at most, the ’482 Patent discloses only a single working example: the “quick-connect system” with corresponding magnets in the shaft of a massaging head and within the bore of the piston. *See* Ex-1001 at 6:47-7:19. The ’482 Patent describes the use of magnets as critical to the claimed ability of the “quick connect system” to “secure” the massaging head “while the piston reciprocates”:

To remove massaging head 620, a user need only apply a sufficient amount of force to separate the two magnets 606, 624. The strength of the magnets 606, 624 are sized to prevent the massaging head 620

from separating from the piston 602 during normal use, and yet allow a user to quickly remove and replace the massaging head 620.

Id. at 7:4-9. Neither independent Claim 34, nor any of the challenged dependent claims, in any way limit the broad functional claim language of the connector, and none require the use of magnets.

As discussed in the Declaration of Dr. Pratt, there are a wide range of connectors known in the art that, depending on the context and specific application of the connector, could be argued to be “quick release connectors.” Most having nothing to do with magnets. Ex-1002 ¶¶53-58. This includes a wide range of connectors used with percussive massage devices, including several that were discussed in the prosecution history of the ’482 Patent. *Id.* ¶¶59-65.

The narrow disclosure of a single purported “quick connect system,” using magnets of certain sizes and strengths to secure and remove the massaging head, fails to provide sufficient written description to support the challenged claims’ broad functional language claiming *any* “quick release connector” that “is configured to secure a first massaging head while the piston reciprocates a predetermined stroke length at the first speed.” This is a third independent reason that the challenged claims are unpatentable under § 112(a).

B. Ground 2: Claims 34-38, 40, 41, 43-46, and 58-60 Are Unpatentable Under 35 U.S.C. § 112(a) Because the Claimed “Substantially Cylindrical Pocket to Receive the Quick Release Connector” Is Indefinite.

A patent is indefinite “if its claims, read in light of the specification delineating the patent, and the prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention.” *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 901, 134 S.Ct. 2120, 189 L.Ed.2d 37 (2014). When that “required guidance is not provided by the claims, specification, and prosecution history,” the claims are indefinite. *Dow Chem. Co. v. Nova Chems. Corp. (Canada)*, 803 F.3d 620, 634 (Fed. Cir. 2015). Words of degree like “substantially” are “not ‘inherently indefinite,’ but ‘the court must determine whether the patent provides some standard for measuring that degree.’” *Ironburg Inventions Ltd. v. Valve Corp.*, 64 F.4th 1274, 1284 (Fed. Cir. 2023) (quoting *Biosig Instruments, Inc. v. Nautilus, Inc.*, 783 F.3d 1374, 1378 (Fed. Cir. 2015)).

The '482 Patent provides no such standard for measuring whether a pocket is “substantially cylindrical.” Presumably, there is some difference, as the specification describes both the seat 604 in the bore 608 of the piston and the pocket 622 in the shaft 621 of the massaging head as “cylindrical” (Ex-1001 6:59-65), but Claim 34 recites a pocket that is “*substantially* cylindrical.” See *In re Taasera Licensing LLC, Pat. Litig.*, 2023 WL 8628323, at *20 (E.D. Tex. Dec. 13, 2023) (where patent contains both “real time” and “substantially real time,” it

“suggests some difference in scope”); *see also* Ex-1002 ¶96. Yet there is no guidance in the claims, the specification, or the file history that would allow a POSITA to determine the difference between the two, or to determine what amount of deviation from a perfect cylinder is still “substantially cylindrical.” Ex-1002 ¶96.

As discussed above in Section XI.A.2, for purposes of the ’482 Patent, this difference is meaningful. If the pocket recited in Claim 34 were only “substantially cylindrical,” a perfectly cylindrical piston would either not fit or not be securely held, while a correspondingly “substantially cylindrical” piston would require careful alignment and thus not be “configured to secure a first massaging head while the piston reciprocates a predetermined stroke length at the first speed.” Ex-1002 ¶97.

Because the ’482 Patent fails to provide any guidance as to how a POSITA could measure for a “substantially cylindrical” pocket, that term is indefinite. This is a fourth independent reason that the challenged claims are unpatentable under § 112(a).

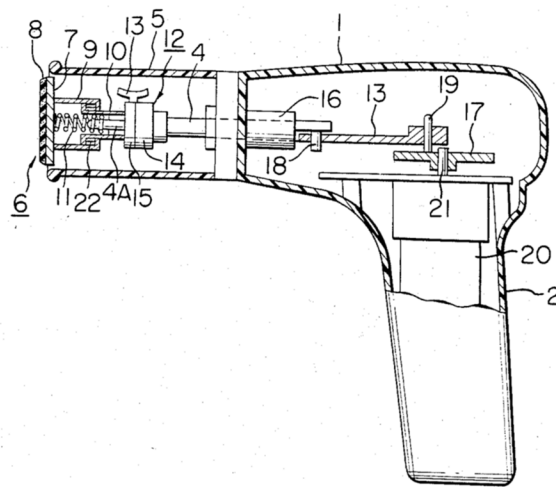
XII. BRIEF DESCRIPTION OF THE APPLIED PRIOR ART

A. U.S. Patent No. 4,513,737 (“Mabuchi”) (Ex-1005)

U.S. Patent No. 4,513,737 (“Mabuchi”) issued on April 30, 1985, and was filed on December 22, 1980. Ex-1005 at Cover. Mabuchi therefore qualifies as

prior art to the claims of the '482 Patent at least under AIA 35 U.S.C. § 102(a)(1) and (a)(2). As discussed in Section XIV, Mabuchi was disclosed during prosecution of the '482 Patent, but was never discussed by the applicants or the Examiner. Ex-1002 ¶68.

Mabuchi discloses a “beauty treatment device” that “repeatedly pats the skin by causing a patter or patter assembly to hit the skin at a given rate to impact the skin surface.” Ex-1005, 1:31-34. Mabuchi’s Figure 1 (below) shows the device, including a motor 20 that drives a rotating disc 17, which in turn reciprocates a rod 3 connected to an actuator 4. *Id.* at 2:39-52. A “patter assembly 6” is connected to the actuator 4 by a patter connecting mechanism 12. *Id.* at 2:53-57.

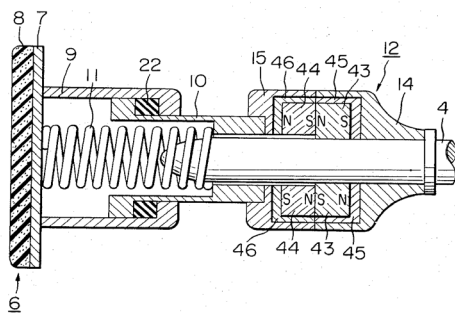


Ex-1005, Fig. 1

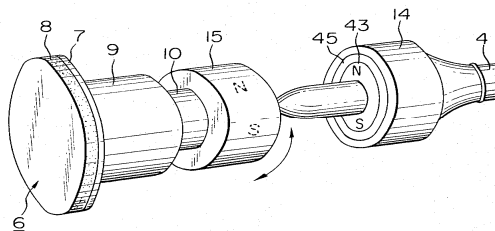
Mabuchi also discloses that the effects of the beauty treatment device “can be enhanced by changing the shape or patting intensity of the patter assembly 6 . . . in accordance with the portion being treated or the purpose of the treatment.” *Id.*,

5:52-60. Accordingly, “the patter assembly 6 requires to be interchangeable,” while also being “securely connected to the actuator 4 to prevent unwanted disengagement.” *Id.*, 5:60-64.

Mabuchi discloses a number of “patter connecting mechanisms” to provide such functionality. The embodiments shown in Mabuchi’s Figures 18 and 19 (shown below) utilize magnets similar to those disclosed in the ’482 Patent’s Figures 6, 6A, and 6B. Specifically, a magnet 43 is implanted in the coupling 14 at the distal end of actuator 4, while a corresponding magnet 44 is located in the flange 15 at the proximal end of pattern assembly 6. Ex-1005, 7:67-8:10. A substantially cylindrical protrusion (identified as the “actuator head” in other embodiments, *id.* 6:3-6) extends from the face of coupling 14, corresponding to an opening in magnet 44 and flange 15 at the proximal end of pattern assembly 6. *See* Fig. 18. The “magnet 43 implanted in the coupling 14 and the magnet 44 implanted in the flange 15 are connected to each other by attracting force caused by different polarities on the two magnets 43 and 44.” *Id.*, 8:11-15.



Ex-1005, Fig. 18



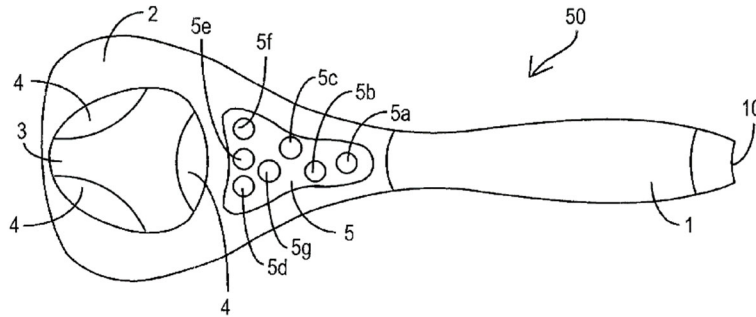
Ex-1005, Fig. 19

Mabuchi discloses that “[w]hen connecting the patter assembly 6 to the actuator 4, the end face of the actuator is brought in close contact with the end face of the flange 15. This causes the magnet 43 implanted in the coupling 14 and the magnet 44 implanted in the flange 15 to attract with each other, bringing the actuator 4 and the pattern assembly 6 in position.” *Id.*, 8:26-32. The magnets “ensure[] positive connection of the actuator 4 and the patter assembly 6,” and that positive connection “can be ensured without positioning the actuator 4 and the pattern assembly 6.” *Id.*, 8:33-39.

B. U.S. Patent No. 6,432,072 (“Harris”) (Ex-1006)

U.S. Patent No. 6,432,072 (“Harris”) was issued on August 13, 2002, and was filed on January 21, 2000. Ex-1006, Cover. Harris therefore qualifies as prior art to the claims of the ’482 Patent at least under AIA 35 U.S.C. § 102(a)(1) and (a)(2).

Harris discloses a “hand-held massager having both vibratory and percussive massage capabilities.” Ex-1006, 1:33-35. As shown in Harris’s Figure 1 (below), Harris’s massager 50 includes a control panel 5 that includes “a plurality of touch sensitive control buttons or switches, including power control button 5a, speed setting control button 5b, LED speed indicator 5c, and various massage program buttons 5d-g for setting massage sensation, intensity and frequency” of the massager’s percussive massage nodes and vibrating massage head.



Ex-1006, Fig. 1

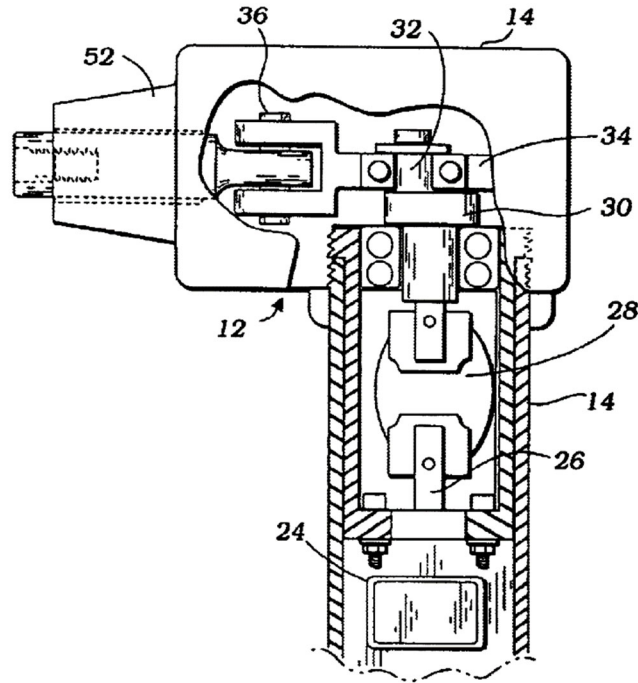
During prosecution of the '482 Patent, the Examiner cited Harris's control panel as teaching similar limitations to those found in challenged Claims 36-38, 40, 41, and 43-46. Ex-1004 at 2241; Ex-1002 ¶73. The Applicants did not dispute that Harris taught those limitations. Ex-1004 at 2268-2275; Ex-1002 ¶73.

C. U.S. Patent No. 6,682,496 ("Pivaroff") (Ex-1007)

U.S. Patent No. 6,682,496 ("Pivaroff") was issued on January 27, 2004, and was filed on December 28, 1999. Ex-1007, Cover. Pivaroff therefore qualifies as prior art to the claims of the '482 Patent at least under AIA 35 U.S.C. § 102(a)(1) and (a)(2).

Pivaroff discloses a "deep muscle stimulation device" that "provides deep muscle tissue with kinetic forms of percussion." Ex-1007, 1:31-33. As shown in Pivaroff's Figure 6 (below), Pivaroff's device includes a motor 24 that rotates a coupling system 28 and offset cam element 30, which is coupled to a reciprocating link that converts the rotational motion to a reciprocating motion of rod 38 (not labeled in Figure 1). *Id.*, 2:37-54. Pivaroff discloses that "[p]referably, the electric

motor operates at a speed of between about 2000 to 3600 RPM,” and that this “rotational speed is transferred to a reciprocating motion” of a hollow head 44 at the end of rod 38. *Id.*, 3:44-54.



Ex-1007, Fig. 6

Pivaroff's Figure 1 shows the “hollow head 44,” which along with an optional protective cup 54 is connected to the outer end of the rod 38 by “connecting means,” such as screw threads shown on pin 42.

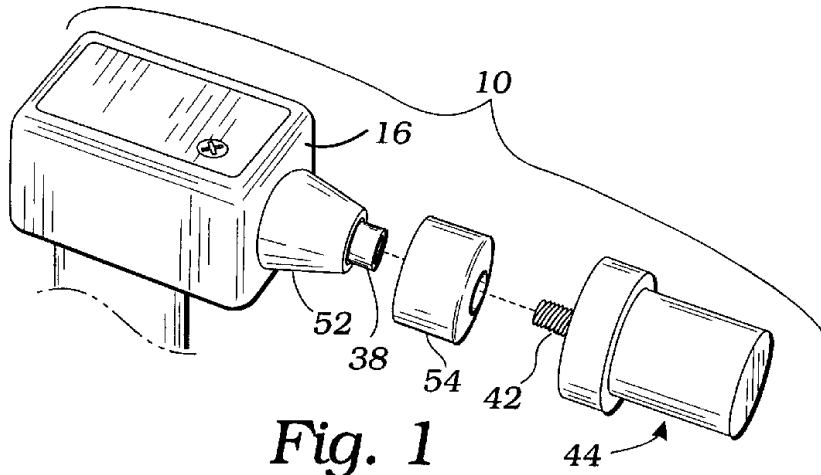


Fig. 1

Ex-1007, Fig. 1

During prosecution of the '482 Patent, the Examiner cited Pivaroff's device as teaching similar limitations to those found in challenged Claims 36-38 and 58-60, and to similar limitations to Elements 34[pre] through 34[d] (i.e., the non-“quick release connector” elements of Claim 34). Ex-1004 at 2242, 2458-2458; Ex-1002 ¶75. The Applicants did not dispute that Pivaroff taught those limitations. Ex-1004 at 2268-2275, 2537-2538; Ex-1002 ¶75.

XIII. DETAILED EXPLANATION OF THE UNPATENTABILITY GROUNDS UNDER 35 U.S.C. § 103

A. Ground 3: Claims 34, 35, and 58-60 Are Unpatentable Under 35 U.S.C. § 103 As Obvious Over Mabuchi

1. Independent Claim 34

a. Element 34[pre]: “A percussive massager comprising:”

To the extent the preamble is limiting, Mabuchi teaches or suggests Element 34[pre]. Ex-1002 ¶101. For example, Mabuchi discloses that it “relates generally

to a beauty treatment device, and more specifically to a beauty treatment device having a space guide that permits an actuator to repeatedly reciprocate and controls the motion of the actuator wherein a patten repeatedly pats a skin surface being treated at a given rate.” Ex-1005, 1:6-12.

b. Element 34[a]: “a housing;”

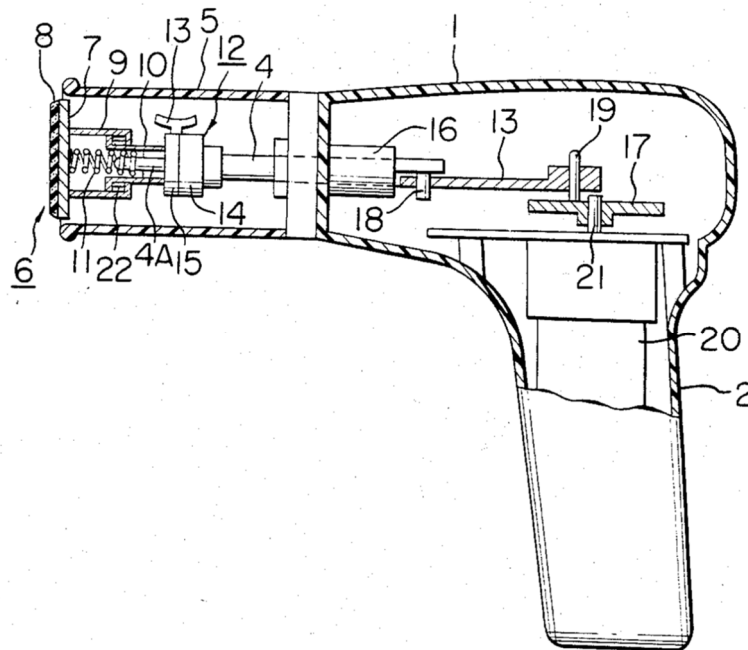
Mabuchi teaches or suggests Element 34[a]. Ex-1002 ¶102. For example, Mabuchi discloses that the “invention comprises a housing 2.” Ex-1005, 4:58. *See also* Ex-1005 Fig. 1 (showing housing 2 surrounding the exterior of device 1).

c. Element 34[b]: “a piston in the housing having a proximal end and a distal end;”

Mabuchi teaches or suggests Element 34[b]. Ex-1002 ¶103. Mabuchi’s actuator 4 is a piston having proximal and distal ends. A POSITA would understand the “proximal end” of the piston to refer to the region near an interior end of the piston, and the “distal end” of the piston to refer to the region near an exterior end of the piston. Ex-1002 ¶103. Mabuchi discloses that “as the rotating disc 17 rotates, the actuator 4 is caused to reciprocate within an actuator bearing 16 via the rod 3.” Ex-1005, 2:50-52. Actuator 4 is within housing 2. Ex-1005, Fig. 1.

- d. **Element 34[c]: “a motor at least partially within the housing and operatively connected to the proximal end of the piston, wherein the motor is configured to cause the piston to reciprocate at a first speed;”**

Mabuchi teaches or suggests Element 34[c]. Ex-1002 ¶¶104-105. For example, as shown in Mabuchi’s Figure 1, a motor 20, with motor output shaft 21, is contained within housing 2. Ex-1005, Fig. 1.



Ex-1005, Fig. 1

Motor 20 is operatively connected to the proximal end of actuator 4 (the piston). Mabuchi discloses that motor 20 “causes a motor output shaft 21 to rotate via a reduction gear (not shown),” and the output shaft 21 “in turn causes the rotating disc 17 to rotate.” Ex-1005, 2:43-47. Rod 3⁶ has one end fitted to

⁶ In Mabuchi’s Figure 1, the rod 3 appears to be mislabeled with the reference

crankshaft 19 on rotating disc 17, and the other end connected to the proximal end of actuator 4. *Id.*, 2:47-49.

Mabuchi also discloses that the motor 20 causes actuator 4 to reciprocate at a first speed. “Consequently, as the rotating disc 17 rotates, the actuator 4 is caused to reciprocate within an actuator bearing 16 via the rod 3.” *Id.*, 2:50-52. The speed of the actuator 4’s reciprocation is based on factors including the angular velocity of the rotating disk 17, which is controlled by the speed of the motor. *See e.g.*, Ex-1005, 3:39-57 (discussing the “velocity v of the actuator 4” is given by factors including “ ω : angular velocity of the rotating disk 17”).

e. Element 34[d]: “a drive mechanism between the motor and the piston that controls a predetermined stroke length of the piston; and”

Mabuchi teaches or suggests Element 34[d]. Ex-1002 ¶¶106-107. Mabuchi discloses a drive mechanism including rotating disc 17, crankshaft 19, and rod 3. The drive mechanism is between the motor and the piston: the motor output shaft 21 is connected to rotating disc 17, while one end of rod 3 is fitted to crankshaft 19 on rotating disc 17, and the other end of rod 3 is connected to actuator 4. *Id.*, 2:45-50. A POSITA would understand that the location of crankshaft 19 on rotating

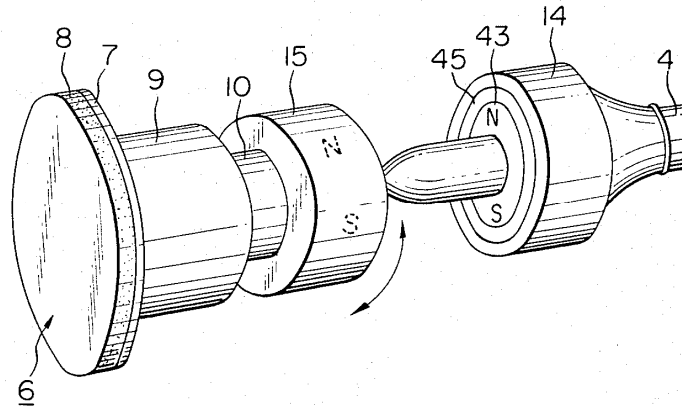
number “13.” Ex-1002 ¶109 n.4. Connecting shaft 13 is also labeled with the same reference number in Figure 1. Figures 2-7, which also show the operation of rod 3, confirm that the element between crankshaft 19 and rod shaft 18 in Figure 1 is rod 3. *Id.*

disk 17 and rod 3 controls the predetermined stroke length of actuator 4. Ex-1002 ¶107; *see also* Ex-1005, Figs. 2-5.

- f. **Element 34[e]: “a quick release connector at the distal end of the piston, wherein the quick release connector is configured to secure a first massaging head while the piston reciprocates a predetermined stroke length at the first speed, wherein the first massaging head has a substantially cylindrical pocket to receive the quick release connector.”**

Mabuchi teaches or suggests Element 34[e]. Ex-1002 ¶¶108-118.

Mabuchi discloses a quick release connector at the distal end of actuator 4. Ex-1002 ¶109. In particular, the “patter connecting mechanism” in Mabuchi’s Figures 18 and 19 (shown below) includes magnet 43 implanted in the coupling 14 and the protruding actuator head, all located at the distal end of actuator 4. Ex-1005, 7:67-8:10. These elements form a quick release connector: “The changing of the patter assembly 6 can be easily accomplished since the actuator 4 and the patter assembly 6 are automatically disconnected merely by turning each other.” *Id.*, 8:40-43.



Ex-1005, Fig. 19

Mabuchi also discloses that the quick release connector “is configured to secure a first massaging head while the piston reciprocates a predetermined stroke length at the first speed.” Ex-1002 ¶¶110-116. For example, Mabuchi discloses that padder assembly 6 (i.e., the “first massaging head”) is configured to be attached to actuator 4 merely by “the end face of the actuator [being] brought in close contact with the end face of the flange 15.” Ex-1005, 8:26-28. “This causes the magnet 43 implanted in the coupling 14 and the magnet 44 implanted in the flange 15 to attract with each other, bringing the actuator 4 and the padder assembly 6 in position.” *Id.*, 8:28-32. Mabuchi teaches that this design prevents the padder assembly 6 from unintentionally separating from the actuator 4 during use, yet allows a user to quickly remove and replace the padder assembly 6:

This connecting mechanism 12 utilizing the different polarities of the magnets 43 and 44 ensures positive connection of the actuator 4 and the padder assembly 6, both of which are subjected to vibrations caused by high-speed reciprocating motion. In addition, positive connection

can be ensured without positioning the actuator 4 and the patter assembly 6.

Ex-1005, 8:33-39.

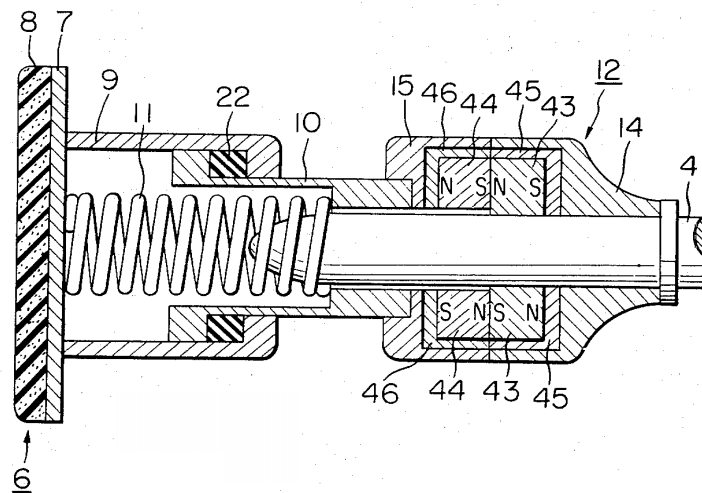
A person of ordinary skill in the art would understand that the Mabuchi patter connecting mechanism is configured to secure the massage head while the piston reciprocates a predetermined stroke length at a first speed. Ex-1002 ¶¶110-113. Mabuchi discloses that the purpose of the patter connecting mechanism is to allow for “changing the shape or patting intensity of the patter assembly 6 . . . in accordance with the portion being treated or the purpose of treatment,” and thus patter assembly 6 must be “interchangeable” while also “securely connected to the actuator 4 to prevent unwanted disengagement.” Ex-1005, 5:52-64. The patter connecting mechanism of Figures 18 and 19 utilizes the “attracting force caused by different polarities on the two magnets 43 and 44.” *Id.*, 8:11-15. Mabuchi notes that the device can be operated before the patter assembly 6 is connected: “In this state, *or in the state where the actuator 4 is connected* to the patter assembly 6, the patter assembly 6 is operated.” *Id.*, 8:15-18 (emphasis added). And Mabuchi discloses that magnet 43 in coupling 14 and magnet 44 inside flange 15 “ensures positive connection of the actuator 4 and the pattern assembly 6, both of which are subjected to vibrations caused by high-speed reciprocating motion.” *Id.*, 8:33-37.

Moreover, Mabuchi discloses that, using this patter connecting mechanism, a “positive connection can be ensured *without positioning* the actuator 4 and the

patter assembly 6.” *Id.*, 8:33-39 (emphasis added). A POSITA would understand that configuring a connecting system to ensure a positive connection without positioning (i.e., aligning) the actuator 4 and the patter assembly 6 suggests that the connecting mechanism is configured to secure the patter assembly to the actuator while the actuator is reciprocating. Ex-1002 ¶113. This is confirmed by the file history, where the Applicants distinguished a prior art device by arguing that its head “*must be aligned* in one orientation” to secure it to the piston, and thus failed to teach or suggest a similar limitation of a “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.” Ex-1004 at 2356-57; Ex-1002 ¶¶114-116. In other words, a POSITA would understand that Applicants were arguing that a connection mechanism where the massaging head is designed to be secured without the need to align it to the piston is configured to do so while the piston is reciprocating. Ex-1002 ¶116.

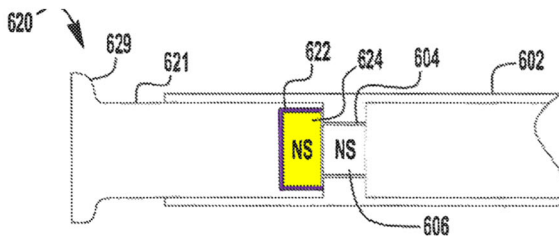
Finally, Mabuchi also discloses that patter assembly 6 (i.e., the “first massaging head”) has a substantially cylindrical pocket to receive the quick release connector. As shown in Figure 19 (above), on patter assembly 6, the proximal end of patter slide tube 10 includes a flange 15 with an implanted magnet 44. Ex-1005, 8:5-7. Meanwhile, the distal end of actuator 4 includes a substantially cylindrical protrusion, described in other embodiments as the “actuator head” (*id.* 6:1-6), that

extends from the coupling 14 and magnet 43 at the distal end of actuator 4. *Id.*, Fig. 19. Because patten assembly 6 (i.e., the “first massaging head”) is attached to actuator 4 by inserting the actuator head into the end face of flange 15, a POSITA would recognize that the opening at the end face of the flange 15 (shown below in Figure 18) is a substantially cylindrical pocket configured to receive the substantially cylindrical actuator head. Ex-1002 ¶117.

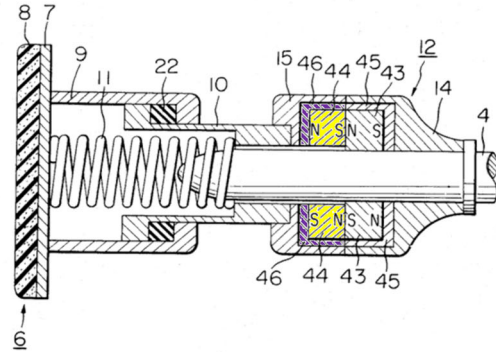


Ex-1005, Fig. 19

Furthermore, to the extent Patent Owner contends that the '482 Patent's disclosure of cylindrical pocket 622 holding magnet 624 at the distal end of shaft 621 is a “substantially cylindrical pocket to receive the quick release connector,” Mabuchi discloses the same arrangement. As shown in the annotated figures from the '482 Patent and Mabuchi below, Mabuchi similarly discloses a pocket (yoke core 46) holding magnet 44 in flange 15 of the patten assembly 6. Ex-1002 ¶118.



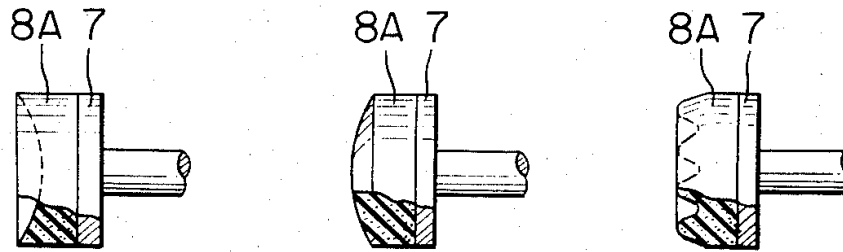
Ex-1001, Fig. 6 (annotated)



Ex-1005, Fig. 18 (annotated)

2. **Claim 35: “The percussive massager of claim 34, further comprising: a second massaging head configured to releasably couple to the distal end of the piston via the quick release connector.”**

Mabuchi teaches or suggests Claim 35. Ex-1002 ¶119. For example, Mabuchi’s Figures 21A through 21C (below) “show examples of padder assemblies that can be used interchangeably in accordance with the portion or purpose of treatment.” Ex-1005, 8:53-55. Mabuchi discloses that the treatment effects “can be enhanced by changing the shape or patting intensity of the padder assembly 6 . . . in accordance with the portion being treated or the purpose of treatment.” *Id.*, 5:57-60. *See also id.*, 9:4-13 (describing “a combination” of different padder assemblies that can be used with the device). A POSITA would have understood that these interchangeable assemblies would be configured to connect to a padder connecting mechanism like the one shown in Mabuchi’s Figures 18 and 19. Ex-1002 ¶119.



Ex-1005, Figs. 21A, 21B, and 21C

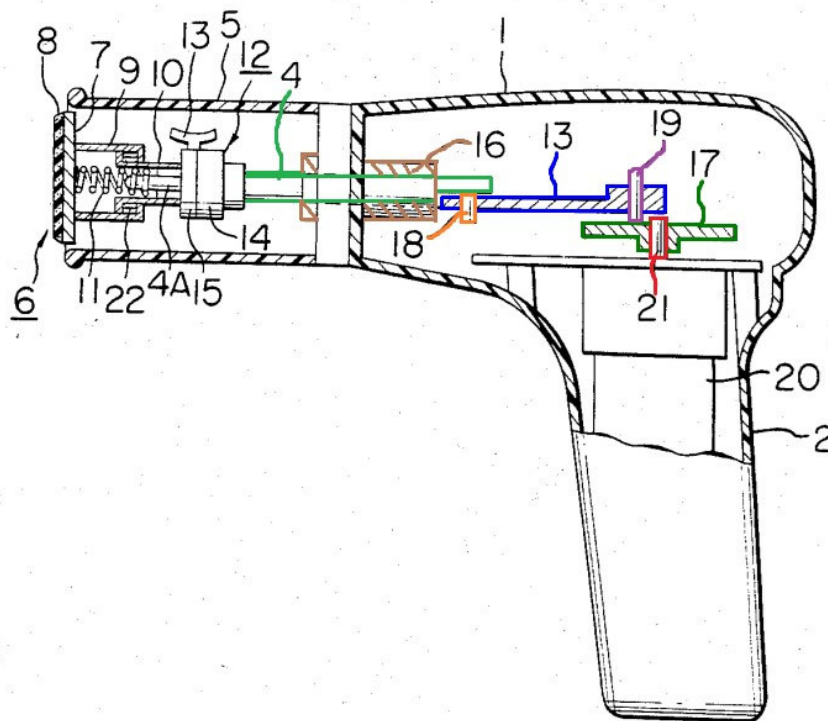
3. **Claim 58: “The percussive massager of claim 34, wherein the motor has an output shaft configured to rotate about a rotation axis, and wherein the drive mechanism comprises: a flywheel operatively connected to the output shaft of the motor to rotate about a flywheel axis, the output shaft extending into the flywheel along the flywheel axis; and a crank pin extending from the flywheel, the crank pin being operatively connected to the piston.”**

Mabuchi teaches or suggests Claim 58. Ex-1002 ¶¶120-123.

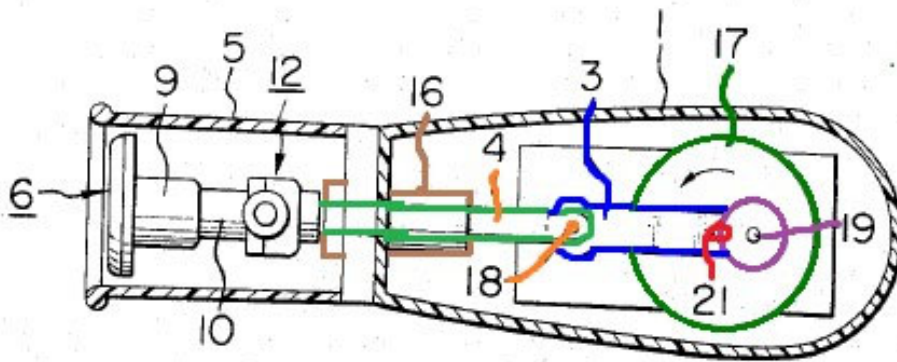
Mabuchi discloses that a motor has an output shaft configured to rotate about a rotation axis. Motor 20 “causes a motor output shaft 21 to rotate via a reduction gear (not shown) fitted thereto as necessary.” Ex-1005, 2:43-45.

Mabuchi also discloses the recited drive mechanism. Specifically, Mabuchi’s “rotating disk 17” is a “flywheel” that rotates about a “flywheel axis” and connected to the motor output shaft 21, with motor output shaft 21 extending into the rotating disk 17 about its axis. Mabuchi’s crankshaft 19 and rod 3 form the recited “crank pin operatively connected to the piston.” This arrangement is shown below in the annotated images of Mabuchi’s Figures 1 and 2. Mabuchi discloses that “rotating disc 17 is fixed to the motor output shaft 21, which in

turn causes the rotating disc 17 to rotate. A **rod 3** is fitted at an end thereof to a **crankshaft 19** provided on the rotating disc 17, the other end thereof being connected to an **actuator 4** via a **rod shaft 18**. Consequently, as the rotating disc 17 rotates, the actuator 4 is caused to reciprocate within an **actuator bearing 16** via the rod 3.” Ex-1005, 2:45-52.



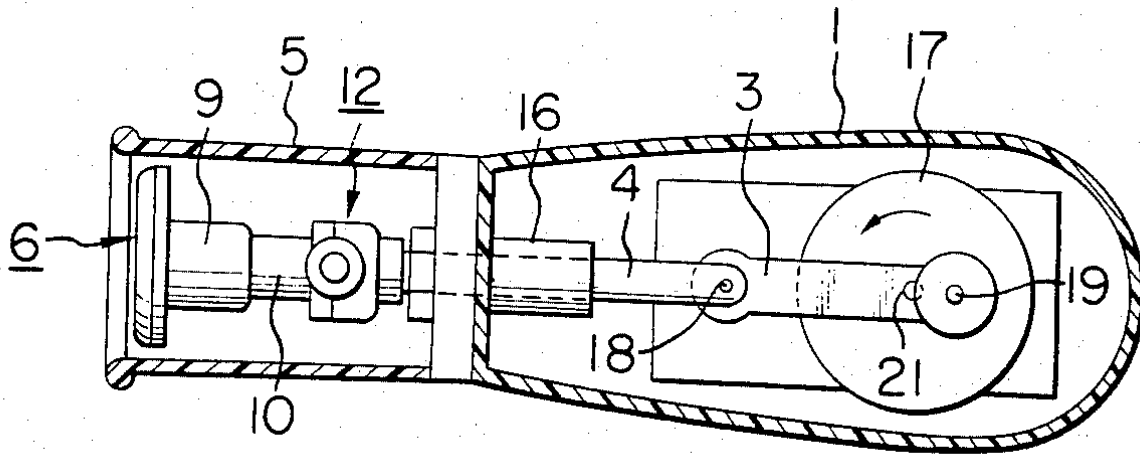
Ex-1005, Fig. 1 (annotated)



Ex-1005, Fig. 2 (annotated)

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

Mabuchi teaches or suggests Claim 59. Ex-1002 ¶124. Specifically, as shown in Mabuchi’s Fig. 2, below, a POSITA would understand that the offset between the axis of Mabuchi’s rotating disk 17 and the crankshaft 19 to which rod 3 is attached controls the stroke length of actuator 4. *Id.* As rotating disk 17 rotates in a counterclockwise direction (*see* Ex-1005, Figs. 3-5), crankshaft 19 rotates around a circumference of a circle defined by the offset of crankshaft 19 from flywheel axis 21. As a result of this movement, rod 3 pushes actuator 4 forward and backwards at a predetermined stroke length defined by that offset. Ex-1002 ¶124; *see also* Ex-1005, 4:1-22.



Ex-1005, Fig. 2

- 5. Claim 60: “The percussive massager of claim 59, wherein the motor is directly connected to the flywheel, and wherein the crank pin is directly connected to the flywheel.”**

Mabuchi teaches or suggests Claim 60. Ex-1002 ¶125. Mabuchi discloses that rotating disk 17 (i.e., the “flywheel”) “is fixed to the motor output shaft 21,” and that rod 3 (i.e., the “crank pin”) “is fitted at an end thereof to a crankshaft 19 provided on the rotating disk 17.” Ex-1005, 2:45-50.

B. Ground 4: Claims 36-38, 40, 41, and 43-46 Are Unpatentable Under 35 U.S.C. § 103 As Obvious Over Mabuchi in view of Harris

- 1. A POSITA would have been motivated to combine Mabuchi and Harris's teachings and would have had a reasonable expectation of success**

A POSITA would have been motivated to combine Mabuchi and Harris, and would have had a reasonable expectation of success in doing so. Ex-1002 ¶¶127-135.

Both Mabuchi and Harris describe percussive massage devices. Ex-1002

¶128. Mabuchi describes a “beauty treatment device having a space guide that permits an actuator to repeatedly reciprocate and controls the motion of the actuator wherein a padder repeatedly pats a skin surface being treated at a given rate.” Ex-1005, 1:7-12. Harris describes a “a hand-held massager having both vibratory and percussive massage capabilities and including a vibratory massage head, and a pair of percussive massage nodes suitable to deliver an effective therapeutic massage to the various contours of the body.” Ex-1006, 1:34-37. Both seek to address similar technical problems, i.e., providing percussive treatment that can vary depending on the user and targeted use. Ex-1002 ¶129. Furthermore, both massage systems include internal rotary electric motors that drives a flywheel-type device to provide the massaging effect. Ex-1005, 2:43-52 (describing Mabuchi’s motor 20 connected to rotating disk 17); Ex-1006 at 3:23-29 (describing Harris’s motor 40 connected to cylindrical cams 8). Ex-1002 ¶130.

Harris complements Mabuchi by expressly teaching a “control panel 5” that includes a “plurality of touch sensitive control buttons or switches, including power control button 5a, speed setting control button 5b, LED speed indicator 5c, and various massage program buttons 5d-g for setting massage sensation, intensity and frequency of the vibrations of the percussive massage nodes 20 and vibratory massage head 3.” Ex-1006 at 2:49-57; Ex-1002 ¶131. A POSITA would have

been motivated to improve Mabuchi by adding Harris’s teaching of a control panel that allows the motor to be driven at multiple speeds, resulting in multiple different selectable speeds of the percussive massage. Ex-1002 ¶132.

A POSITA would have had a reasonable expectation of success in combining the teachings of Mabuchi and Harris because they teach compatible systems—namely, they both include similar motor and drive systems, both of which power percussive massage devices for similar purposes. Both Mabuchi and Harris acknowledge that these systems are well known and conventional. *See* Ex-1005, 1:16-20; Ex-1006 at 1:15-21. *See also* Ex-1002 ¶133.

Furthermore, because Mabuchi and Harris provide percussive massage devices that operate in similar ways, including controlling the speed of a percussive effect through the rotational speed of a motor, a POSITA would have understood that their teachings could be combined with little to no change in their respective functions. Ex-1002 ¶134.

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

Mabuchi in view of Harris teaches or suggests Claim 36. Ex-1002 ¶¶136-137. For example, Mabuchi discloses “repeatedly patting the skin surface at a given speed,” and that the speed of the actuator 4 is controlled by the angular velocity ω of the rotating disk 17. Ex-1005, 9:14-17, 3:38-57. To the extent that

Mabuchi does not expressly disclose that the motor is configured to cause the piston to reciprocate the predetermined stroke length at a second speed, Harris discloses a percussive massager with a control panel 5 that includes “speed setting control button 5b” and “LED speed indicator 5c.” Ex-1006, 2:49-57. Harris also discloses that “[a]s power to the motor 40 increases,” the increased “rotational speed” of the rotating drive mechanism “increas[es] the speed of the stroke cycle of spacers 21 striking surfaces.” *Id.* at 3:36-40. Accordingly, a POSITA would understand that changing the rotation speed of Mabuchi’s motor 20 would correspondingly change the speed of reciprocation of the piston, while also not changing the predetermined stroke length, which is determined by the offset of crankshaft 19 on rotating disk 17. Ex-1002 ¶137.

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

Mabuchi in view of Harris teaches or suggests Claim 37. Ex-1002 ¶138. As discussed above in Section XIII.B.2, Mabuchi discloses that the speed of actuator 4 is controlled by the speed of rotation of rotating disk 17, and Harris discloses controlling the rotational speed at selectable speed settings. A POSITA would have understood that the selection of particular speeds that are less than or equal to 3600 strokes per minute, corresponding to approximately the same rotations per minute of the motor, would be a readily available design choice. Ex-1002 ¶138.

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

Mabuchi in view of Harris teaches or suggests Claim 38. Ex-1002 ¶139.

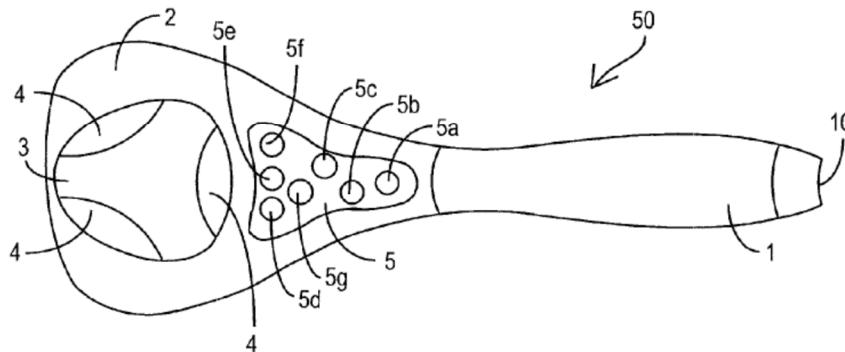
For the reasons discussed above in Section XIII.B.3, a POSITA would have understood that the selection of particular speeds that are greater than or equal to 600 strokes per minute would be a readily available design choice. *Id.*

5. Claim 40: “The percussive massager of claim 36, further comprising: a control panel positioned on an exterior of the housing.”

Mabuchi in view of Harris teaches or suggests Claim 40. Ex-1002 ¶140.

For example, as shown in Harris’s Figure 1, below, Harris discloses a percussive massager with a “control panel 5” that is “sealed to the handle” (i.e., the exterior of the housing) and includes “a plurality of touch sensitive control buttons or switches.” Ex-1006, 2:49-57. A POSITA would understand that the control panel should be similarly located on the exterior of the housing 2 of Mabuchi’s device to be accessible to a user. Ex-1002 ¶140.

FIG. 1



Ex-1006, Fig. 1.

6. **Claim 41:** “The percussive massager of claim 40, wherein the control panel is configured to display one or more visual indicators.”

Mabuchi in view of Harris teaches or suggests Claim 41. Ex-1002 ¶141. For example, Harris discloses that the control panel 5 includes an “LED speed indicator 5c.” Ex-1006, 2:49-57.

7. **Claim 43:** “The percussive massager of claim 40, wherein the control panel has one or more inputs.”

Mabuchi in view of Harris teaches or suggests Claim 43. Ex-1002 ¶142. For example, Harris’s control panel 5 includes “a plurality of touch sensitive control buttons or switches, including power control button 5a, speed setting control button 5b, LED speed indicator 5c, and various massage program buttons 5d-g for setting massage sensation, intensity and frequency of the vibrations of the percussive massager nodes 20 and vibratory massager head 3.” Ex-1006, 2:49-57.

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

Mabuchi in view of Harris teaches or suggests Claim 44. Ex-1002 ¶143. For example, Harris discloses that the inputs of control panel 5 include “a plurality of touch sensitive control buttons or switches.” Ex-1006, 2:49-57.

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

Mabuchi in view of Harris teaches or suggests Claim 45. Ex-1002 ¶144. For example, Harris discloses that the control panel 5 includes “speed setting control button 5b,” as well as “various massage program buttons 5d-g for setting massage sensation, intensity and frequency of the vibrations of the percussive massage nodes 20 and vibratory massage head 3.” Ex-1006, 2:49-57.

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

Mabuchi in view of Harris teaches or suggests Claim 46. Ex-1002 ¶145. For example, Harris discloses that the control panel 5 includes “power control button 5a.” Ex-1006, 2:49-57. A person of ordinary skill in the art would understand that a first selection of the power control button 5a would cause a device to power on, and a second selection of the power control button 5b would cause the device to power off. Ex-1002 ¶145.

C. Ground 5: Claims 37 and 38 Are Unpatentable Under 35 U.S.C. § 103 As Obvious Over Mabuchi in view of Harris, Further In View of Pivaroff

1. A POSITA would have been motivated to combine Mabuchi, Harris, and Pivaroff's teachings and would have had a reasonable expectation of success

A POSITA would have been motivated to combine the teachings of Mabuchi and Harris with Pivaroff, and would have had a reasonable expectation of success in doing so. Ex-1002 ¶¶147-152.

Like Mabuchi and Harris (*see* Section XIII.B.1), Pivaroff describes a percussive massage device. Ex-1002 ¶148. Specifically, Pivaroff describes a “deep muscle stimulation device, which provides deep muscle tissue with kinetic forms of percussion.” Ex-1007, 1:30-34. And like Mabuchi and Harris, Pivaroff's massage device includes an internal rotary electric motor that drives a flywheel-type device to provide the massaging effect. *See* Ex-1007 at 2:37-44 (describing Pivaroff's motor 24 and offset cam element 30).

Pivaroff complements Mabuchi and Harris by expressly teaching preferred speeds of the motor, and that those speeds correlate to the speed of the percussive movement of the piston. Specifically, Pivaroff describes that “[p]referably, the electric motor operates at a speed of between about 2000 to 3600 RPM, so as to rotate the shaft 26 and coupling system 28 at that speed.” Ex-1007, 3:44-46.

Pivaroff further discloses that “[t]his rotational speed is transferred to a reciprocating motion.” *Id.* at 3:46-48.

A POSITA would have been motivated to apply Pivaroff’s teaching of preferred ranges of speeds to Mabuchi and Harris’s teachings. Ex-1002 ¶150. For example, Pivaroff teaches that these speeds “provide sufficient percussion and mechanical vibrations against a portion of a patient to which it is applied by a user, to provide the deep muscle tissue within the patient's body with kinetic forms of percussion and concussion vibration.” Ex-1007, 3:46-54. Pivaroff further discloses that providing percussion at this speed “stimulates the proprioceptive functions and provides relief in increasing strength for a person suffering from chronic pain and restricted movement to under conditioned and/or damaged muscle tissue.” *Id.*, 3:54-58.

As with the combination of Mabuchi and Harris (*see* Section XIII.B.1), a POSITA would have had a reasonable expectation of success in combining Pivaroff’s teachings with those of Mabuchi and Harris because they all teach compatible systems—namely, they all include similar motor and drive systems, both of which power percussive massage devices for similar purposes. Ex-1002 ¶151. Furthermore, because Mabuchi, Harris, and Pivaroff all provide percussive massage devices that operate in similar ways, a POSITA would have understood

that their teachings could be combined with little to no change in their respective functions. Ex-1002 ¶152.

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

Mabuchi in view of Harris and Pivaroff teaches or suggests Claim 37. Ex-1002 ¶153. To the extent Mabuchi and Harris does not expressly disclose the first speed and the second speed are each less than or equal to 3600 strokes per minute, Pivaroff discloses that “[p]referably, the electric motor operates at a speed of between about 2000 to 3600 RPM, so as to rotate the shaft 26 and coupling system 28 at that speed. This rotational speed is transferred to a reciprocating motion.” Ex-1007, 3:41-53. A POSITA would have understood that, because the speed of Mabuchi’s actuator 4 is controlled by the angular velocity ω of the rotating disk 17 (Ex-1005, 3:38-57), the corresponding reciprocating speeds of Mabuchi’s actuator 4 would be less than or equal to 3600 strokes per minute. Ex-1002 ¶153.

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

Mabuchi in view of Harris and Pivaroff teaches or suggests Claim 38. Ex-1002 ¶154. For the reasons discussed above in Section XIII.C.2, because Pivaroff discloses that “the electric motor operates at a speed of between 2000 to 3600 RPM” (Ex-1007, 3:41-53) a POSITA would have understood that the

corresponding reciprocating speeds of Mabuchi's actuator 4 would be greater than or equal to 600 strokes per minute. Ex-1002 ¶154.

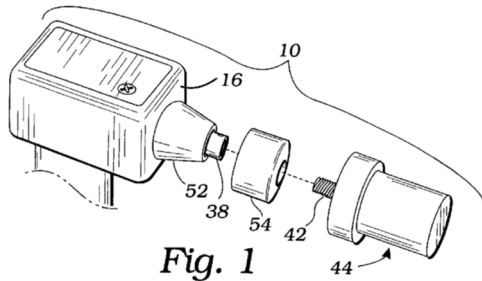
D. Ground 6: Claims 34, 35, and 58-60 Are Unpatentable Under 35 U.S.C. § 103 As Obvious Over Pivaroff in view of Mabuchi

1. A POSITA would have been motivated to combine Pivaroff and Mabuchi's teachings and would have had a reasonable expectation of success

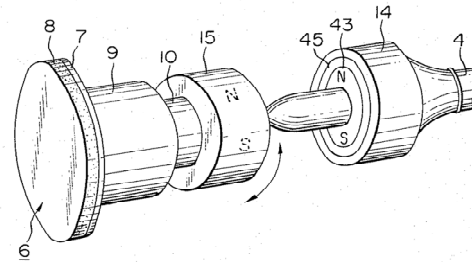
A POSITA would have been motivated to combine the teachings of Pivaroff and Mabuchi, and would have had a reasonable expectation of success in doing so. Ex-1002 ¶¶156-164.

As discussed above in Section XIII.C.1, Pivaroff and Mabuchi both describe percussive massage devices, and are directed to solving similar technical problems. Ex-1002 ¶¶157-158. As also discussed above, both massage devices include an internal rotary electric motor that drives a flywheel-type device to provide the massaging effect. Ex-1002 ¶160.

Moreover, both Pivaroff and Mabuchi teach removable massaging heads to provide the percussive massage. Ex-1002 ¶159. As shown in Pivaroff's Figure 1 below, Pivaroff discloses a hollow head 44 that has a threaded connection to attach to reciprocating rod 38 and protective cap 54. Ex-1007, 2:47-54, 3:39-41. Mabuchi discloses a padder assembly 6 with magnet 44 corresponding to magnet 43 on the end of actuator 4. Ex-1005, 8:3-10.



Ex-1007, Fig. 1



Ex-1005, Fig. 19

Mabuchi complements Pivaroff by teaching a connecting mechanism 12 comprised of coupling 14 and magnet 43 and the corresponding flange 15 and magnet 44 of pater assembly 6. Mabuchi discloses the benefits of this connecting mechanism for devices like that of Pivaroff:

This connecting mechanism 12 utilizing the different polarities of the magnets 43 and 44 ensures positive connection of the actuator 4 and the pater assembly 6, both of which are subjected to vibrations caused by high-speed reciprocating motion. In addition, positive connection can be ensured without positioning the actuator 4 and the pater assembly 6.

The changing of the pater assembly 6 can be easily accomplished since the actuator 4 and the pater assembly 6 are automatically disconnected merely by turning each other.

Ex-1005, 8:33-43.

A POSITA would have been motivated to apply Mabuchi's teaching of a connection mechanism 12 and corresponding attachment 6 to Pivaroff's teachings. Ex-1002 ¶128. For example, Mabuchi teaches that beneficial effects are "enhanced" by "changing the shape or patting intensity . . . in accordance with the portion being treated or the purpose of treatment," and thus that the attachment

(patter assembly 6) must be “interchangeable” and “securely connected to the actuator 4 to prevent unwanted disengagement.” Ex-1005, 5:52-64.

As discussed above in Section XIII.C.1, a POSITA would have had a reasonable expectation of success in combining Pivaroff’s teachings with those of Mabuchi because they teach compatible systems—namely, both include similar motor and drive systems, both of which power percussive massage devices for similar purposes. Furthermore, because Pivaroff and Mabuchi provide percussive massage devices that operate in similar ways, a POSITA would have understood that their teachings could be combined with little to no change in their respective functions. Ex-1002 ¶163.

2. Independent Claim 34

a. Element 34[pre]: “A percussive massager comprising:”

Pivaroff in view of Mabuchi teaches or suggests Element 34[pre]. Ex-1002 ¶165. For example, Pivaroff’s device “provides deep muscle tissue with kinetic forms of percussion.” Ex-1007, 1:32-33.

b. Element 34[a]: “a housing;”

Pivaroff in view of Mabuchi teaches or suggests Element 34[a]. Ex-1002 ¶166. For example, Pivaroff discloses that “the deep muscle stimulation device 10 of the present invention includes a body 12 comprised of an elongated, substantially hollow handle 14, a top element or housing 16, and a hollow head

44.” Ex-1007, 2:30-33. Pivaroff further discloses that “[t]he top hollow housing 16 of the device 10 of the present invention is preferably made from the same material as the elongated handle 14” *Id.* at 3:33-35. Accordingly, a POSITA would understand that the “housing” of Pivaroff is not limited to the top hollow housing 16, but rather covers the exterior of the device, including handle 14. Ex-1002 ¶166.

c. Element 34[b]: “a piston in the housing having a proximal end and a distal end;”

Pivaroff in view of Mabuchi teaches or suggests Element 34[b]. Ex-1002 ¶167. For example, Pivaroff discloses “a connecting element or rod 38.” Ex-1007, 2:44-46. As discussed in Section XIII.A.1.c, in the context of the ’482 Patent, a POSITA would understand the “proximal end” of the piston to refer to the region near an interior end of the piston, and the “distal end” of the piston to refer to the region near an exterior end of the piston. Rod 38 includes an “inner end” (“proximal end”) and an “outer end” (“distal end”). *Id.* at 2:46-50. Rod 38 is within top element or housing 16. *See, e.g., id.* at 3:33-38 (“The top hollow housing 16 . . . includes a removable top plate and a truncated, pyramid-shape extending portion 52 which surrounds and provides protection around the reciprocating rod 38.”).

- d. Element 34[c]: “a motor at least partially within the housing and operatively connected to the proximal end of the piston, wherein the motor is configured to cause the piston to reciprocate at a first speed;”**

Pivaroff in view of Mabuchi teaches or suggests Element 34[c]. Ex-1002 ¶¶168-170. For example, “[a]n electrical motor 24 is mounted within the elongated, hollow handle 14, and includes a central rotary arbor or shaft 26, driven by the motor.” Ex-1007, 2:37-40. A POSITA would understand that hollow handle 14 is part of the housing of device 10. Ex-1002 ¶168.

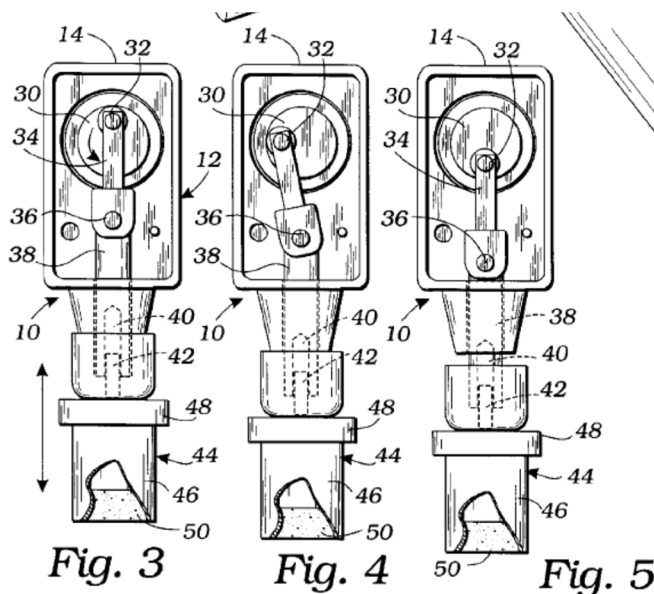
Pivaroff also discloses that the motor is operatively connected to rod 38 (“proximal end of the piston”). The rotary shaft 26 is coupled to “an offset cam element or means 30, having an upwardly extending offset element or finger 32 connected to a reciprocating link 34.” *Id.* at 2:40-44. And “[t]he reciprocating link 34 is coupled to a connecting element or rod 38,” i.e., the proximal end of the piston. Ex-1007, 2:44-47.

Pivaroff also discloses that the motor causes the piston to reciprocate at a first speed. Pivaroff’s “electric motor operates at a speed of between about 2000 to 3600 RPM, so as to rotate the shaft 26 and coupling system 28 at that speed. This rotational speed is transferred to a reciprocating motion, as shown by arrow 56 in FIG. 3, whereby the head 44 is quickly reciprocated back and forth to provide sufficient percussion and mechanical vibrations against a portion of a patient to which it is applied by a user, to provide the deep muscle tissue within the patient’s

body with kinetic forms of percussion and concussion vibration.” Ex-1007, 3:41-53.

- e. **Element 34[d]: “a drive mechanism between the motor and the piston that controls a predetermined stroke length of the piston; and”**

Pivaroff in view of Mabuchi teaches or suggests Element 34[d]. Ex-1002 ¶¶171-172. Cam element 30 and reciprocating link 34 form a drive mechanism between the motor 24 and rod 38 (the “piston”). The stroke length of rod 38 is controlled by the drive mechanism, including the location of offset element or finger 32 on cam element 30, as shown in Figures 3-5 below. Ex-1002 ¶172.



Ex-1007, Figs. 3-5.

- f. **Element 34[e]: “a quick release connector at the distal end of the piston, wherein the quick release connector is configured to secure a first massaging head while the piston reciprocates a predetermined stroke length at the first speed, wherein the first massaging head has a substantially cylindrical pocket to receive the quick release connector.”**

Pivaroff in view of Mabuchi teaches or suggests Element 34[e]. Ex-1002 ¶¶173-175. As discussed in Section XIII.A.1.f, Mabuchi’s attachment mechanism 12 includes a quick release connector including coupling 14, magnet 43, and the substantially cylindrical actuator head, all located at the distal end of the actuator 4. A POSITA would have been motivated to combine Mabuchi’s quick release connector and corresponding connecting portions of the first massaging head (i.e., flange 15 and magnet 44) with Pivaroff so that “positive connection can be ensured without positioning” Pivaroff’s rod 38 (the “piston”) and hollow body 44 (the “first massaging head”), while also allowing changing of the hollow body to “be easily accomplished.” Ex-1005, 8:33-43; Ex-1002 ¶¶174-175. As further discussed in Section XIII.A.1.f, a POSITA would understand that the Mabuchi quick release connector, with its self-aligning connection mechanism 12, is configured to secure the massaging head while the piston reciprocates a predetermined stroke length at a first speed. As further discussed in Section XIII.A.1.f, a POSITA would recognize that the end face of the flange 15 and magnet 44 of the connecting portions of Mabuchi’s padder assembly 6 (Mabuchi’s “first massaging head”) includes a

substantially cylindrical pocket configured to receive the substantially cylindrical actuator head extending from the coupling 14 and magnet 43 shown in Mabuchi's Figures 18 and 19.

3. **Claim 35: “The percussive massager of claim 34, further comprising: a second massaging head configured to releasably couple to the distal end of the piston via the quick release connector.”**

Pivaroff in view of Mabuchi teaches or suggests Claim 35. Ex-1002 ¶176. As discussed in Section XIII.A.2, Mabuchi discloses “examples of padder assemblies that can be used interchangeably in accordance with the portion or purpose of treatment.” Ex-1005, 8:53-55. A POSITA would have been motivated to combine Mabuchi's teachings with Pivaroff because Mabuchi teaches that “better treatment effects can be obtained by selecting a proper padder assembly having a desired shape or size, or equipped with a magnet according to the portion or purpose of treatment.” *Id.*, 9:18-24; Ex-1002 ¶176.

4. **Claim 58: “The percussive massager of claim 34, wherein the motor has an output shaft configured to rotate about a rotation axis, and wherein the drive mechanism comprises: a flywheel operatively connected to the output shaft of the motor to rotate about a flywheel axis, the output shaft extending into the flywheel along the flywheel axis; and a crank pin extending from the flywheel, the crank pin being operatively connected to the piston.”**

Pivaroff in view of Mabuchi teaches or suggests Claim 58. Ex-1002 ¶¶177-182.

Pivaroff discloses that motor 24 “includes a central rotary arbor or shaft 26.”

Ex-1007, 2:37-40. A POSITA would understand that the rotary shaft of a motor is configured to rotate about a rotation axis. Ex-1002 ¶177.

Pirvaroff also discloses the recited drive mechanism. This arrangement is shown in the annotated image of Pivaroff’s Figure 6 below. The “**rotary shaft 26** is coupled by any available or desired means, such as a coupling system 28 to an **offset cam element or means 30**, having an **upwardly extending offset element or finger 32** connected to a **reciprocating link 34**. The **reciprocating link 34** is coupled to a connecting element or rod 38, as by means of a **pin 36**, held in one or more openings formed in a first or inner end of the **connecting element or rod 38**.” *Id.* at 2:40-47; Ex-1002 ¶178.

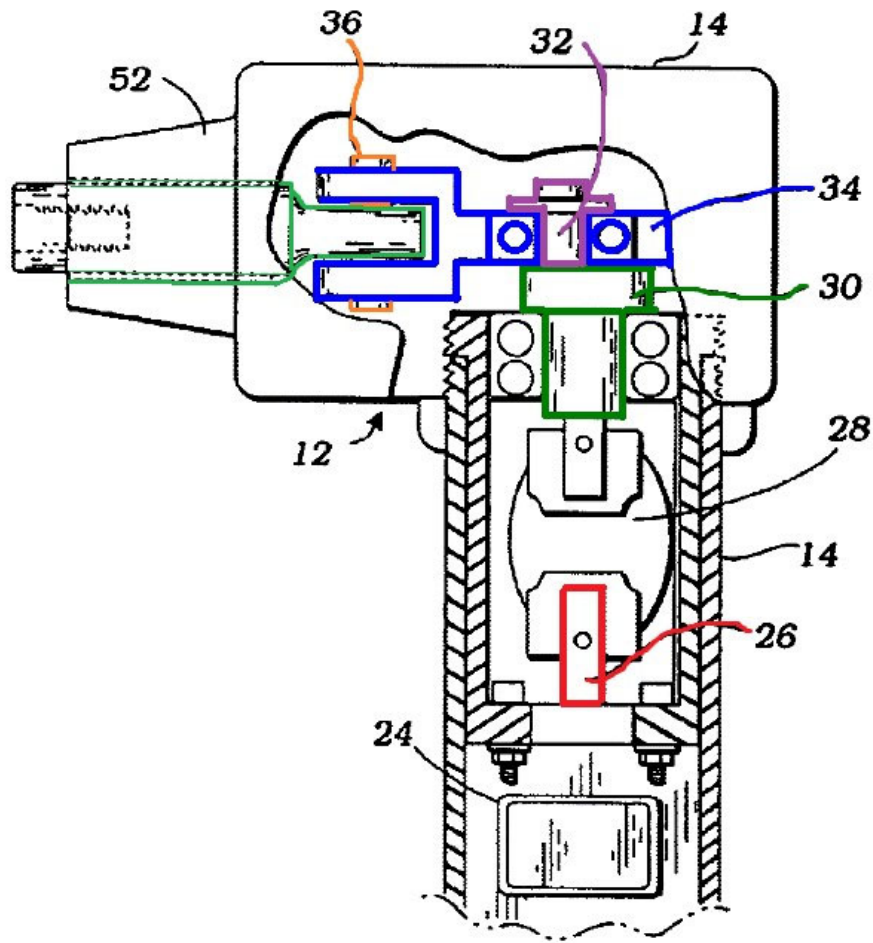


Fig. 6

Ex-1007, Fig. 6 (annotated)

Specifically, Pivaroff's "cam element 30" discloses the recited "flywheel" that rotates about a "flywheel axis" and is operatively connected to motor output shaft 26. Ex-1002 ¶179. Pivaroff's reciprocating link 34 corresponds to the recited "crank pin," and is operatively connected to rod 38. Ex-1002 ¶180.

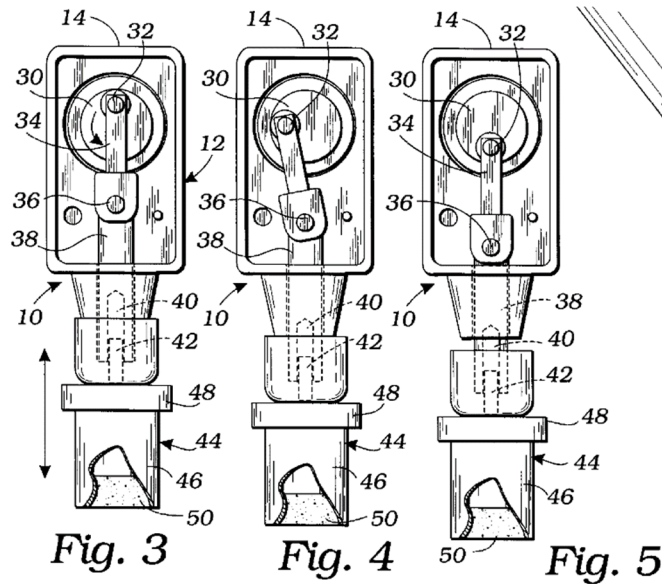
Pivaroff discloses that “rotary shaft 26 is coupled *by any available or desired means*, such as a coupling system 28” to cam element 30. Ex-1007, 2:40-42 (emphasis added). Pivaroff does not expressly disclose that rotary shaft 26 extends into cam element 30 (i.e., the “flywheel”), but one of skill in the art would recognize this was a readily available option to couple rotary shaft 26 to cam element 30. Ex-1002 ¶181. Further, as discussed in Section XIII.A.3, Mabuchi expressly discloses a motor’s output shaft extending into the flywheel along the flywheel axis. Ex-1005, Fig. 1. Furthermore, as discussed in Section XIII.A.3, Mabuchi also teaches all other limitations of this claim.

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

Pivaroff in view of Mabuchi teaches or suggests Claim 59. Ex-1002 ¶183. As shown in Pivaroff’s Figures 3-5 below, the location of offset element or finger 32 on cam element 30 controls the stroke length of rod 38. As Dr. Pratt describes in his declaration:

Specifically, as cam element 30 rotates in a counterclockwise direction, finger 32 rotates around a circumference of a circle that is defined as $\pi * r^2$, where r is the offset of finger 32 from the center of cam element 30. As a result of this movement, reciprocating link 34 pushes rod 38 forward (FIGS 4-5) then backwards (FIG. 3) at a predetermined stroke length.

Ex-1002 ¶172.



Ex-1007, Figs. 3-5.

Further, as discussed in Section XIII.A.4, Mabuchi also teaches this claim.

6. **Claim 60: “The percussive massager of claim 59, wherein the motor is directly connected to the flywheel, and wherein the crank pin is directly connected to the flywheel.”**

Pivaroff in view of Mabuchi teaches or suggests Claim 60. Ex-1002 ¶¶185-186. Pivaroff discloses that rotary shaft 26 of motor 24 “is coupled by any available or desired means, such as a coupling system 28 to an offset cam element or means 30” (i.e., the recited “flywheel”) and that the finger 32 of offset cam element 30 is “connected to a reciprocating link 34.” Ex-1007, 2:40-44. To the extent Pivaroff does not expressly disclose that the motor 24 and rotary shaft 26 are directly connected to offset cam element 30 (the “flywheel”), Mabuchi expressly teaching that the motor is directly connected to the flywheel. Ex-1005, Fig. 1 (showing Mabuchi’s output shaft 21 extending into rotating disk 17).

Further, as discussed in Section XIII.A.5, Mabuchi also teaches the remaining elements of this claim.

E. Ground 7: Claims 36-38, 40, 41, and 43-46 Are Unpatentable Under 35 U.S.C. § 103 As Obvious Over Pivaroff in view of Mabuchi, Further in view of Harris

1. A POSITA would have been motivated to combine Pivaroff and Mabuchi with Harris's teachings and would have had a reasonable expectation of success

As discussed above in Sections XIII.B.1 and XIII.C.1, a POSITA would have been motivated to combine Pivaroff and Mabuchi with the teachings of Harris, and would have had a reasonable expectation of success in doing so. Ex-1002 ¶¶188-196. All three references describe percussive massage devices that use internal rotary electric motors to drive flywheel-type devices to provide the massaging effect. Ex-1002 ¶¶189-191.

Harris complements the Pivaroff/Mabuchi combination by expressly teaching a “control panel 5” that includes a “plurality of touch sensitive control buttons or switches, including power control button 5a, speed setting control button 5b, LED speed indicator 5c, and various massage program buttons 5d-g for setting massage sensation, intensity and frequency of the vibrations of the percussive massage nodes 20 and vibratory massage head 3.” Ex-1006 at 2:49-57; Ex-1002 ¶192.

A POSITA would have been motivated to improve the Pivaroff/Mabuchi

combination by adding Harris’s teaching of a control panel that allows the motor to be driven at multiple speeds, resulting in multiple different selectable speeds of the percussive massage. Ex-1002 ¶193.

A POSITA would have had a reasonable expectation of success in combining the teachings of Harris with the Pivaroff/Mabuchi combination because all three references teach compatible systems—namely, they all include similar motor and drive systems, which power percussive massage devices for similar purposes. Ex-1002 ¶194. Both Mabuchi and Harris acknowledge that these systems are well known and conventional. *See* Ex-1005, 1:16-20 (“Conventionally, various apparatuses have been invented to produce similar face-lifting effects, in which included are an apparatus for applying vibrations to the skin surface and an apparatus for patting part of the body.”); Ex-1006 at 1:15-21 (“Hand-held vibrating massagers are well known in the art. Such massagers include a handle attached to a vibratory massaging head and driven by an electric motor with limited adjustment for intensity of the vibration. Also known in the art are hand-held percussive massagers, typically having a pair of percussion massage nodes.”).

Furthermore, because Pivaroff, Mabuchi, and Harris provide percussive massage devices that operate in similar ways, a POSITA would have understood

that their teachings could be combined with little to no change in their respective functions. Ex-1002 ¶195.

1. Claim 36: “The percussive massager of claim 34, wherein the motor is configured to cause the piston to reciprocate the predetermined strokes length at a second speed.”

Pivaroff in view of Mabuchi and Harris teaches or suggests Claim 36. Ex-1002 ¶197. For example, Pivaroff discloses that “[p]referably, the electric motor operates at a speed of between about 2000 to 3600 RPM, so as to rotate the shaft 26 and coupling system 28 at that speed,” and that “[t]his rotational speed is transferred to a reciprocating motion.” Ex-1007, 3:41-53; *see also* Fig. 3. To the extent that Pivaroff and Mabuchi do not expressly disclose that the motor is configured to cause the piston to reciprocate the predetermined stroke length at a second speed, as discussed above in Section XIII.B.2, Harris discloses a percussive massager with a control panel 5 that includes “speed setting control button 5b” and “LED speed indicator 5c.” Ex-1006, 2:49-57. Harris also discloses that “[a]s power to the motor 40 increases,” the increased “rotational speed” of the rotating drive mechanism “increas[es] the speed of the stroke cycle of spacers 21 striking surfaces.” *Id.* at 3:36-40.

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

Pivaroff in view of Mabuchi and Harris teaches or suggests Claim 37. Ex-1002 ¶198. As discussed in Section XIII.C.2, Pivaroff discloses that “[p]referably, the electric motor operates at a speed of between about 2000 to 3600 RPM, so as to rotate the shaft 26 and coupling system 28 at that speed. This rotational speed is transferred to a reciprocating motion.” Ex-1007, 3:41-53. A POSITA would have understood that the corresponding reciprocating speeds of Pivaroff’s rod 38 would be less than or equal to 3600 strokes per minute. Ex-1002 ¶199.

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

Pivaroff in view of Mabuchi and Harris teaches or suggests Claim 38. Ex-1002 ¶200. As discussed in Section XIII.C.3, a POSITA would have understood that the corresponding reciprocating speeds of Pivaroff’s rod 38 would be greater than or equal to 600 strokes per minute. *Id.*

4. Claim 40: “The percussive massager of claim 36, further comprising: a control panel positioned on an exterior of the housing.”

Pivaroff in view of Mabuchi and Harris teaches or suggests Claim 40. Ex-1002 ¶201. As discussed in Section XIII.B.5, Harris discloses a percussive massager with a “control panel 5” on an exterior of the housing that is “sealed to

the handle” and includes “a plurality of touch sensitive control buttons or switches.” Ex-1006, 2:49-57.

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

Pivaroff in view of Mabuchi and Harris teaches or suggests Claim 41. Ex-1002 ¶202. As discussed in Section XIII.B.6, Harris discloses that the control panel 5 includes an “LED speed indicator 5c.” Ex-1006, 2:49-57.

6. Claim 43: “The percussive massager of claim 40, wherein the control panel has one or more inputs.”

Pivaroff in view of Mabuchi and Harris teaches or suggests Claim 43. Ex-1002 ¶203. As discussed in Section XIII.B.7, Harris’s control panel 5 includes “a plurality of touch sensitive control buttons or switches, including power control button 5a, speed setting control button 5b, LED speed indicator 5c, and various massage program buttons 5d-g for setting massage sensation, intensity and frequency of the vibrations of the percussive massage nodes 20 and vibratory massage head 3.” Ex-1006, 2:49-57.

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

Pivaroff in view of Mabuchi and Harris teaches or suggests Claim 44. Ex-1002 ¶204. As discussed in Section XIII.B.8, Harris discloses that the inputs of

control panel 5 include “a plurality of touch sensitive control buttons or switches.”

Ex-1006, 2:49-57.

8. **Claim 45: “The percussive massager of claim 43, wherein the first speed and the second speed are each selectable via the one or more inputs.”**

Pivaroff in view of Mabuchi and Harris teaches or suggests Claim 45. Ex-1002 ¶205. As discussed in Section XIII.B.9, Harris discloses that the control panel 5 includes “speed setting control button 5b,” as well as “various massage program buttons 5d-g for setting massage sensation, intensity and frequency of the vibrations of the percussive massage nodes 20 and vibratory massage head 3.” Ex-1006, 2:49-57.

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

Pivaroff in view of Mabuchi and Harris teaches or suggests Claim 46. Ex-1002 ¶206. As discussed in Section XIII.B.10, Harris discloses that the control panel 5 includes “power control button 5a.” Ex-1006, 2:49-57. A POSITA would understand that a first selection of power control button 5a causes the percussive massager to power on, while a second selection of power control button 5a causes the percussive massager to power off.

XIV. THE BOARD SHOULD NOT EXERCISE ITS DISCRETION UNDER §325(D) TO DENY HEARING THESE INVALIDITY ISSUES FOR THE FIRST TIME IN THIS PETITION

In considering its discretion under §325(d), “the Board uses the following two-part framework: (1) whether the same or substantially the same art previously was presented to the Office or whether the same or substantially the same arguments previously were presented to the Office; and (2) if either condition of first part of the framework is satisfied, whether the petitioner has demonstrated that the Office erred in a manner material to the patentability of challenged claims.” *Advanced Bionics, LLC v. MED-EL Elektromedizinische Geräte GmbH*, IPR2019-01469, Paper 6 at 8 (PTAB Feb. 13, 2020) (precedential).

Here, the first *Advanced Bionics* prong is not met. As discussed above in Section VII, the claims that issued as Claim 34 and its dependents were added after the final Office Action during the ’482 Patent’s prosecution. The record contains no discussion of whether these claims satisfied the requirements of written description or definiteness under § 112. Furthermore, while the prior art references asserted in Grounds 3 through 7 were of record during prosecution, neither the Examiner nor the Applicants ever discussed the Mabuchi reference, relied upon herein as disclosing the “quick release connector” limitation (Element 34[e]) that was used to distinguish the other prior art references during prosecution. Stated differently, Mabuchi discloses the key “quick release connector” that was argued

to be missing from the other cited prior art and the Examiner did not address this disclosure of Mabuchi during prosecution.

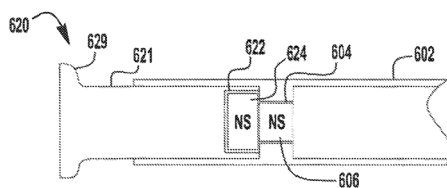
Regardless, under the second prong, it was a material error for the examiner not to have considered the written description and indefiniteness issues for the challenged Claim 34 and its dependents. “The written description requirement is particularly important when, as here, claims are added later during prosecution in response to development by others.” *FWP IP ApS v. Biogen MA, Inc.*, 749 F. App’x 969, 974 (Fed. Cir. 2018). Patent Owner added the challenged claims late in prosecution, to a patent that only disclosed the opposite orientation. *See* Section VII, *supra*.⁷ The Applicants cursorily stated that “[n]o new matter is added,” but included no citation to any support for a massaging head having “a substantially cylindrical pocket to receive the quick release connector.” Ex-1004 at 2554. The Examiner issued a Notice of Allowance immediately following their addition,

⁷ Claims 1-33 of the ’482 Patent recite the arrangement disclosed in Figures 6, 6A, and 6B. *See* Ex-1001 at 9:66-10:16 (Claim 1 reciting “the distal end of the piston having a substantially cylindrical bore” and “the quick-connect system is configured to secure the first massaging head to the percussive massager **by a proximal end of the massaging head being slid into the bore**”); 11:46-60 (Claim 32 reciting “a distal end of the piston has a quick release connector, wherein the quick release connector has a bore having a substantially cylindrical structure” and “the quick release connector is configured to secure a first massaging head **by sliding the first massaging head into the bore**”). Those claims issued from amended versions of the original claims of the application, unlike the late-added Claim 34 and its dependents, and are not challenged in this petition.

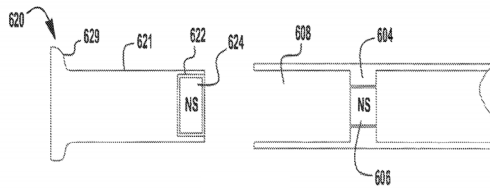
without discussion of whether those new claims had support in the specification.

Id. at 2593-2594. As discussed herein, they do not.

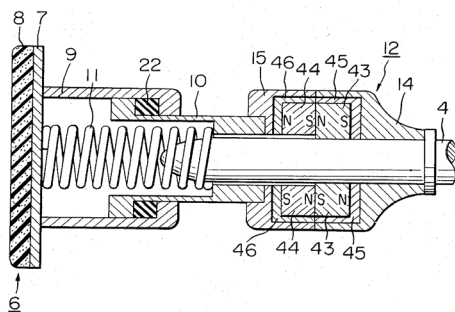
It was also material error for the Office to not consider the Mabuchi reference against the newly added claims. As shown below, Mabuchi discloses a percussive massager device and attachment with the same concept of utilizing magnets for a “quick release connector” that was later disclosed in the ’482 Patent, and having the same cylindrical pocket in the massaging head that is recited in Claim 34 and its dependent claims.



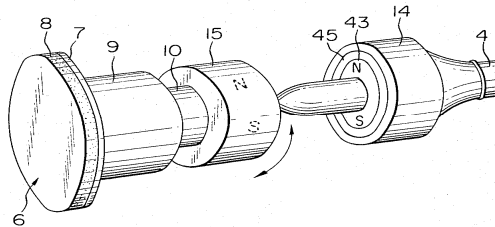
Ex-1001, Fig. 6



EX-1001, Fig. 6A



Ex-1005, Fig. 18



Ex-1005, Fig. 19

Yet the file history shows that, for these new claims, the Examiner instead only considered the two prior art references that had been cited against the other claims of the application in the immediately previous Office Action. *See* Section

VII, *infra*, and Ex-1004 at 2593-2594 (Notice of Allowance stating that Pivaroff and Rhoades did not disclose the claimed “quick-connect system” of Claim 34).

In view of the foregoing, the Board should not exercise its discretion under §325(d) to deny institution.

XV. THE BOARD SHOULD NOT DENY INSTITUTION UNDER *FINTIV*

Should PO argue against institution under *Fintiv*, Petitioner may serve a prior art stipulation and/or respectfully request leave for a Preliminary Reply to respond.

XVI. CONCLUSION

Petitioner requests institution of PGR for Claims 34-38, 40, 41, 43-46, and 58-60 of the '482 Patent based on each of the grounds in this Petition.

Respectfully Submitted,

/s/ Marc J. Pensabene

CERTIFICATE OF WORD COUNT

Pursuant to 37 C.F.R. § 42.24(d), Petitioner certifies that this petition includes 14,697 words, as measured by Microsoft Word, exclusive of the table of contents, mandatory notices under § 42.8, certificates of service, word count, and exhibits.

CERTIFICATE OF SERVICE (37 C.F.R. § 42.6(e)(1))

The undersigned hereby certifies that the above document was served on September 27, 2024, by filing this document through the Patent Trial and Appeal Board P-TACTS System, as well as delivering a copy via express mail upon the attorney of record for the patent at the following address:

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