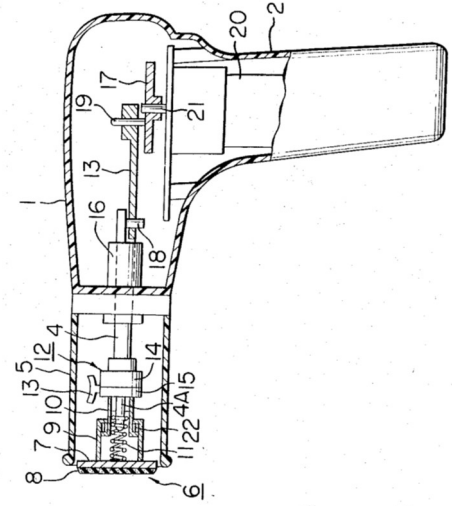


Exhibit A

U.S. Patent No. 11,857,482 (“the ’482 Patent”) Invalidity Chart Based On Primary Reference U.S. Patent No. 4,513,737 (“Mabuchi”)

<u>Asserted Claims</u>	<u>Exemplary Disclosures</u>
Claim 34	
34[pre] A percussive massager comprising:	To the extent the preamble is limiting, Mabuchi discloses and/or renders obvious “[a] percussive massager” recited in Claim 34. For example, Mabuchi discloses that “This invention 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.” Mabuchi 1:6-12.
34[a] a housing;	Mabuchi discloses and/or renders obvious “a housing.” For example, Mabuchi discloses that “the invention comprises a housing 2 with a crank member in the form of disk 17 with crank shaft 19 rotatably mounted about a center of rotation at motor shaft 21. An actuator in the form of actuator 4 and connecting shaft 13, has one end rotatably mounted on crank shaft 19, at an eccentric radial location on crank member 17, with an opposite end of the actuator slidably mounted with respect to the housing 2 for motion in a linear stroke with rotation of the crank member 17.” Mabuchi 4:58-66. <i>See also</i> Mabuchi at Fig. 1:

FIG. 1



<u>Asserted Claims</u>	<u>Exemplary Disclosures</u>
34[b] a piston in the housing having a proximal end and a distal end,	<p>Mabuchi discloses and/or renders obvious “a piston in the housing having a proximal end and a distal end.” For example, Mabuchi’s actuator 4 is a piston. It is mounted in the housing 2 and has a proximal and distal end. For example, Mabuchi discloses that actuator 4 “has one end rotatably mounted on crank shaft 19, at an eccentric radial location on crank member 17, with an opposite end of the actuator slidably mounted with respect to the housing 2 for motion in a linear stroke with rotation of the crank member 17.” Mabuchi 4:62-66.</p>
<p>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;</p>	<p>Mabuchi discloses and/or renders obvious “a motor at least partially within the housing.” For example, Mabuchi discloses that “[i]n the handle 2, housed is a motor 20 which causes a motor output shaft 21 to rotate via a reduction gear (not shown) fitted thereto as necessary.” Mabuchi 2:42-45. Motor 20 is at least partially within the housing 2, as shown in Mabuchi’s Figure 1.</p> <div data-bbox="584 588 1128 1134" data-label="Image"> </div> <p>FIG. 1</p> <p>Mabuchi also discloses and/or renders obvious that the motor is “operatively connected to the proximal end of the piston.” For example, Mabuchi discloses that “[a] 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.” Mabuchi 2:45-52. The end of actuator 4 connected to rod 3 by rod shaft 18 is the proximal end of actuator 4.</p> <p>Mabuchi discloses and/or renders obvious “wherein the motor is configured to cause the piston to reciprocate at a first speed.” For example, Mabuchi discloses that “as the rotating disc 17 rotates, the actuator 4 is caused to</p>

Asserted Claims

Exemplary Disclosures

reciprocate within an actuator bearing 16 via the rod 3.” Mabuchi 2:50-52. The “rotation of the motor 20 is transmitted to the actuator 4 in the form of reciprocating motion, which is in turn transmitted to the plate member 7 and the cushion member 8.” 3:30-33.

Further, Mabuchi discloses that 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. Mabuchi discloses:

In general, the velocity v of the actuator 4 is given by the following equation.

$$V \approx r\{\sin \theta - (\lambda/2) \sin 2\theta\}\omega$$

where:

r : radius of crankshaft 19

l : length of rod 3

θ : rotating angle of rotating disc 17 (the rotating angle θ in a state where the patten assembly 6 is retracted farthest from the open end of the space guide 5 is assumed to be 0.)

ω : angular velocity of rotating disc 17

λ : r/l

Mabuchi, 3:38-51.

34[d] a drive mechanism between the motor and the piston that controls a predetermined stroke length of the piston; and

Mabuchi discloses and/or renders obvious “a drive mechanism between the motor and the piston that controls a predetermined stroke length of the piston.” For example, 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.” Mabuchi, 2:45-52. As shown below in Mabuchi’s Figures 2-5, the offset of crankshaft 19 on rotating disc 17 controls the predetermined stroke length of actuator 4. See also Mabuchi 4:1-2 (in Figure 2, “the actuator 4 is moved to the extreme right side”) and 4:22-23 (in Figure 4, “the actuator 4 assumes the extreme left-hand position”).

FIG. 2

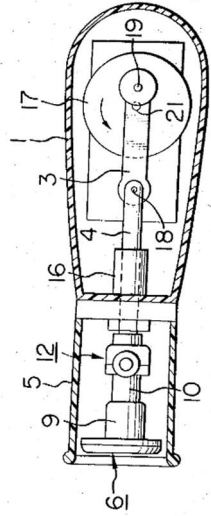


FIG. 3

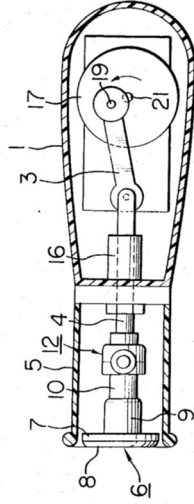


FIG. 4

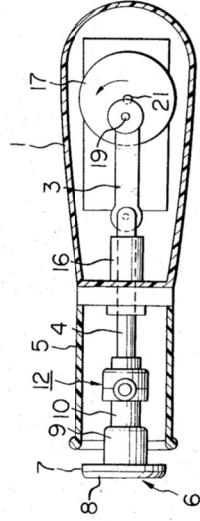
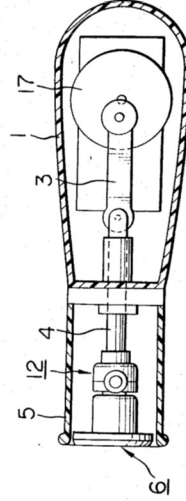


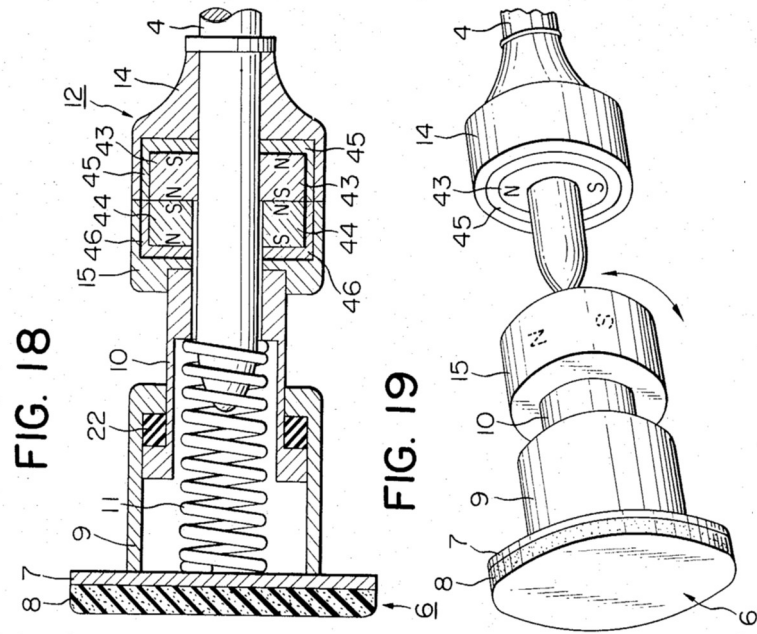
FIG. 5



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

Mabuchi discloses and/or renders obvious “a quick release connector at the distal end of the piston.” For example, the “patter connecting mechanism” in Mabuchi’s Figures 18 and 19 (shown below) includes a quick release connector comprised of magnet 43 implanted in the coupling 14 and the substantially cylindrical actuator head at the distal end of actuator 4. Mabuchi, 7:67-8:10. Mabuchi discloses that “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,” and that “[t]o change the patter assembly 6, the coupling 14 or the flange 15 or both are turned in either direction shown by arrows shown in FIG. 19.” *Id.* 8:11-20. Thus, Mabuchi discloses that “[t]he 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.

substantially cylindrical pocket to receive the quick release connector.



Mabuchi also discloses and/or renders obvious “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.” For example, Mabuchi discloses:

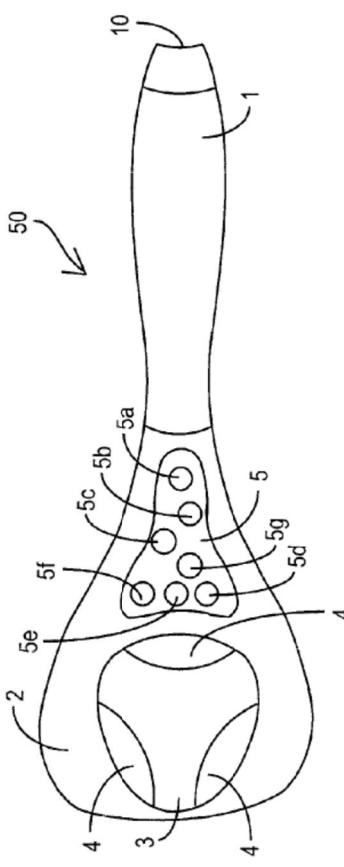
When connecting the patter assembly 6 to the actuator 4, the end face of the actuator is brought in close contact with the end face of the flange 15. This causes the magnet 43 implanted in the coupling 14 and the magnet 44 implanted in the flange 15 to attract with each other, bringing the actuator 4 and the patter assembly 6 in position.

This connecting mechanism 12 utilizing the different polarities of the magnets 43 and 44 ensures positive connection of the actuator 4 and the patter 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.

<u>Asserted Claims</u>	<u>Exemplary Disclosures</u>
	<p>Mabuchi, 8:26-39.</p> <p>A person of ordinary skill in the art would understand that the Mabuchi quick release connector with its self-aligning actuator 4 (i.e., ensuring positive connection without the need for positioning actuator 4 and patten assembly 6), is configured to secure the message head while the piston reciprocates a predetermined stroke length at a first speed. This self-aligning feature of the actuator 4 and magnet 44 inside flange 15 in combination with magnetic coupling between magnets 43 and 44 facilitate attaching the message head at a variety of speeds and stroke lengths because the user does not need to carefully control the angular orientation or spatial positioning of the message head in relation to the message tool during attachment.</p> <p>Mabuchi discloses and/or renders obvious “wherein the first massaging head has a substantially cylindrical pocket to receive the quick release connector.” For example, as shown in Mabuchi’s Figure 19, the connector in Mabuchi’s Figures 18 and 19 includes a substantially cylindrical actuator head that extends from coupling 14 and magnet 43 at the distal end of actuator 4. As shown in Mabuchi’s Figure 18, patten slide tube 10 in the pattern assembly 6 includes a pocket to receive the actuator head. Furthermore, magnets 43 and 44 are implanted in the “end face” of coupling 14 and flange 15, respectively. <i>Id.</i> 8:3-10. Mabuchi discloses that “[w]hen connecting the patten 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.” <i>Id.</i> 8:26-28. Accordingly, a person of ordinary skill in the art would recognize that the end face of the flange 15 of attachment sliding tube 10 includes a substantially cylindrical pocket configured to receive the substantially cylindrical actuator head of actuator 4 extending from the coupling 14 and magnet 43 shown in Figure 19.</p>
<p>Claim 35</p> <p>35. The percussive massager of claim 34, further comprising:</p> <p>a second massaging head configured to releasably couple to the distal end of the piston via the quick release connector.</p>	<p>Mabuchi discloses and/or renders obvious a “percussive massager” with “a second massaging head configured to releasably couple to the distal end of the piston via the quick release connector.” For example, Mabuchi’s Figures Mabuchi’s Figures 21A through 21C “show examples of patten assemblies that can be used interchangeably in accordance with the portion or purpose of treatment.” Ex-1005, 8:53-55. A person of ordinary skill in the art would understand that the patten assemblies shown here could include the patten connecting mechanism disclosed in Mabuchi’s Figures 18 and 19. Furthermore, Mabuchi discloses that the patten assemblies must be “interchangeable,” because the effects of the device “can be enhanced by changing the shape or patting intensity of the patten assembly 6 or using a magnet as a part of the patten assembly 6 in accordance with the portion being treated or the purpose of treatment.” <i>Id.</i> at 5:57-62.</p>
<p>Claim 36</p>	

<u>Asserted Claims</u>	<u>Exemplary Disclosures</u>
<p>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.</p>	<p>Mabuchi discloses and/or renders obvious a “percussive massager . . . wherein the motor is configured to cause the piston to reciprocate the predetermined stroke length at a second speed.” For example, Mabuchi discloses that “the beauty treatment device of this invention makes it possible to stimulate subcutaneous muscular tissues and prevent the loosening of the skin by repeatedly patting the skin surface at a given speed.” Mabuchi 9:14-18. Mabuchi also discloses that the speed of the actuator 4 is controlled by the angular velocity ω of the rotating disk 17. <i>Id.</i> at 3:38-57. Accordingly, one of skill in the art would understand that Mabuchi discloses causing the piston to reciprocate at multiple speeds.</p> <p>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, U.S. Patent No. 6,432,072 (“Harris”) discloses a percussive massager with 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.” Harris at 2:49-57. Harris further discloses that the “[a]s power to the motor 40 increases, the rotational speed of cylindrical eccentric cams 8 driven by rotary drives 6 and rotary drive arms 7 increases, increasing the speed of the stroke cycle of spacers 21 striking surfaces.” <i>Id.</i> at 3:36-40.</p>
<p>Claim 37</p> <p>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.</p>	<p>Mabuchi in view of Harris discloses and/or renders obvious a “percussive massager . . . wherein the first speed and the second speed are each less than or equal to 3600 strokes per minute.” For example, Mabuchi discloses that “the beauty treatment device of this invention makes it possible to stimulate subcutaneous muscular tissues and prevent the loosening of the skin by repeatedly patting the skin surface at a given speed.” Mabuchi 9:14-18. Mabuchi also discloses that the speed of the actuator 4 is controlled by the angular velocity ω of the rotating disk 17. <i>Id.</i> at 3:38-57. Harris further teaches a “speed setting control button 5b,” and that “[a]s power to the motor 40 increases, the rotational speed of cylindrical eccentric cams 8 driven by rotary drives 6 and rotary drive arms 7 increases, increasing the speed of the stroke cycle of spacers 21 striking surfaces.” Harris 3:36-40. Accordingly, one of skill in the art would understand that Mabuchi in view of Harris discloses causing the piston to reciprocate at multiple speeds, and the selection of particular speeds that are less than or equal to 3600 strokes per minute (or less than or equal to 60 Hz) would be a readily available design choice.</p> <p>To the extent Mabuchi and/or Harris does not expressly disclose the first speed and the second speed are each less than or equal to 3600 strokes per minute, U.S. Patent No. 6,682,496 (“Pivaroff”) discloses a percussive massage device with a similar electric motor, shaft, and coupling system, and 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</p>

<u>Asserted Claims</u>	<u>Exemplary Disclosures</u>
	<p>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." Pivaroff at 3:41-53.</p>
<p>Claim 38</p> <p>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.</p>	<p>Mabuchi in view of Harris discloses and/or renders obvious a "percussive massager . . . wherein the first speed and the second speed are each greater than or equal to 600 strokes per minute." For example, Mabuchi discloses that "the beauty treatment device of this invention makes it possible to stimulate subcutaneous muscular tissues and prevent the loosening of the skin by repeatedly patting the skin surface at a given speed." Mabuchi 9:14-18. Mabuchi also discloses that the speed of the actuator 4 is controlled by the angular velocity ω of the rotating disk 17. <i>Id.</i> at 3:38-57. Harris further teaches a "speed setting control button 5b," and that "[a]s power to the motor 40 increases, the rotational speed of cylindrical eccentric cams 8 driven by rotary drives 6 and rotary drive arms 7 increases, increasing the speed of the stroke cycle of spacers 21 striking surfaces." Harris 3:36-40. Accordingly, one of skill in the art would understand that Mabuchi discloses causing the piston to reciprocate at multiple speeds, and the selection of particular speeds that are greater than or equal to 600 strokes per minute (or greater than or equal to 10 Hz) would be a readily available design choice.</p> <p>To the extent Mabuchi and/or Harris does not expressly disclose the first speed and the second speed are each greater than or equal to 600 strokes per minute, Pivaroff discloses a percussive massage device with a similar electric motor, shaft, and coupling system, and 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, 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." Pivaroff at 3:41-53.</p>
<p>Claim 40</p> <p>40. The percussive massager of claim 36, further comprising:</p>	<p>Mabuchi in view of Harris discloses and/or renders obvious a "percussive massager" with "a control panel positioned on an exterior of the housing." For example, Harris discloses a percussive massager with a "control panel 5" that "preferably comprises a capacitive switch having an elastomeric membrane activator, sealed to the handle, and covering 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</p>

<u>Asserted Claims</u>	<u>Exemplary Disclosures</u>
<p>a control panel positioned on an exterior of the housing.</p>	<p>massage sensation, intensity and frequency of the vibrations of the percussive massage nodes 20 and vibratory message head 3.” Harris at 2:49-57. <i>See also</i> Harris FIG. 1:</p> <p style="text-align: center;">FIG. 1</p> 
<p>Claim 41</p> <p>41. The percussive massager of claim 40, wherein the control panel is configured to display one or more visual indicators.</p>	<p>Mabuchi in view of Harris discloses and/or renders obvious a “percussive massager . . . wherein the control panel is configured to display one or more visual indicators.” For example, Harris discloses that the control panel 5 includes an “LED speed indicator 5c.” Harris at 2:49-57.</p>
<p>Claim 43</p> <p>43. The percussive massager of claim 40, wherein the control panel has one or more inputs.</p>	<p>Mabuchi in view of Harris discloses and/or renders obvious a “percussive massager . . . wherein the control panel has one or more inputs.” For example, Harris discloses that the 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 message program buttons 5d-g for setting message sensation, intensity and frequency of the vibrations of the percussive massage nodes 20 and vibratory message head 3.” Harris at 2:49-57.</p>

<u>Asserted Claims</u>	<u>Exemplary Disclosures</u>
Claim 44	
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 discloses and/or renders obvious a “percussive massager . . . wherein the one or more inputs comprise at least one of: a button, a switch, and a dial.” For example, Harris discloses that the inputs of control panel 5 include “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.” Harris at 2:49-57.
Claim 45	
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 discloses and/or renders obvious a “percussive massager . . . wherein the first speed and the second speed are each selectable via the one or more inputs.” For example, Harris discloses that the control panel 5 includes “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.” Harris at 2:49-57.
Claim 46	
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 discloses and/or renders obvious a “percussive massager . . . 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.” For example, Harris discloses that the control panel 5 includes “power control button 5a.” Harris at 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 5a would cause the device to power off.
Claim 58	
58. The percussive massager of claim 34, wherein the motor has an output shaft	Mabuchi discloses and/or renders obvious a “percussive massager . . . 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

<u>Asserted Claims</u>	<u>Exemplary Disclosures</u>
<p>configured to rotate about a rotation axis, and wherein the drive mechanism comprises:</p> <p>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.</p>	<p>flywheel along the flywheel axis; and a crank pin extending from the flywheel, the crank pin being operatively connected to the piston.” For example, Mabuchi discloses that motor 20 “causes a motor output shaft 21 to rotate via a reduction gear (not shown) fitted thereto as necessary. A 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.” Mabuchi 2:42-52. Specifically, Mabuchi’s “motor output shaft 21” corresponds to the recited “output shaft” that is “configured to rotate about a rotation axis,” Mabuchi’s “rotating disc 17” discloses the recited “flywheel” that rotates about a “flywheel axis,” and Mabuchi’s crankshaft 19 and rod 3 correspond to the recited “crank pin.” See also Mabuchi at Figs. 1, 2:</p>

FIG. 1

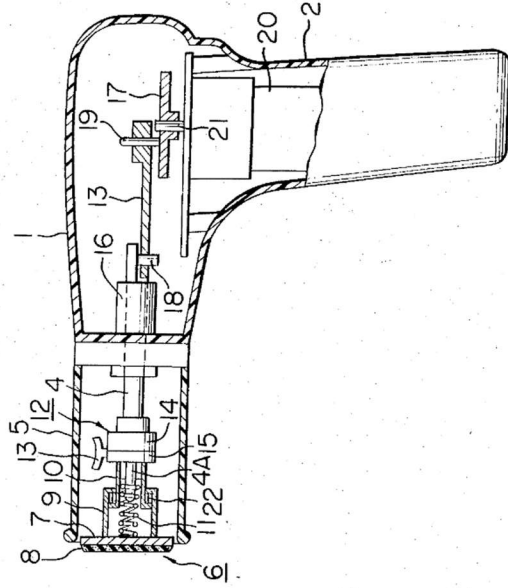
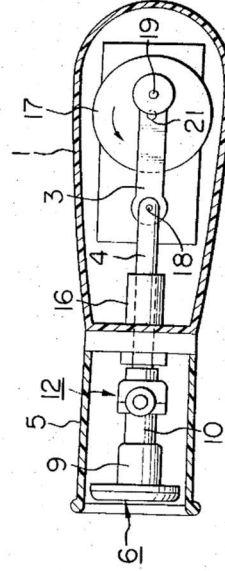


FIG. 2



Claim 59

59. The percussive massager of claim 58, wherein an offset between the flywheel axis and an axis of the crank

Mabuchi discloses and/or renders obvious a “percussive massager . . . wherein an offset between the flywheel axis and an axis of the crank pin controls the predetermined stroke length of the piston.” For example, Mabuchi discloses that “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

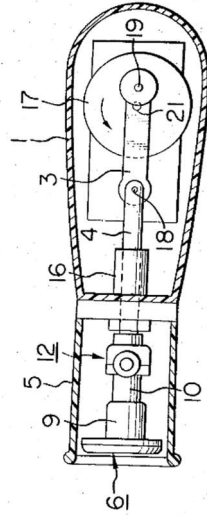
Asserted Claims

pin controls the predetermined stroke length of the piston.

Exemplary Disclosures

actuator 4 is caused to reciprocate within an actuator bearing 16 via the rod 3." Mabuchi, 2:45-52. As shown below in Mabuchi's Figures 2-5, the offset of crankshaft 19 (the recited "axis of the crankpin") on rotating disc 17 (the recited "flywheel") controls the predetermined stroke length of actuator 4. See *also* Mabuchi 4:1-2 (in Figure 2, "the actuator 4 is moved to the extreme right side") and 4:22-23 (in Figure 4, "the actuator 4 assumes the extreme left-hand position"). A person of ordinary skill in the art would understand that the offset between the axis of the rotating disk 17 and the crankshaft 19 controls the stroke length of actuator 4.

FIG. 2



Asserted Claims

Exemplary Disclosures

FIG. 3

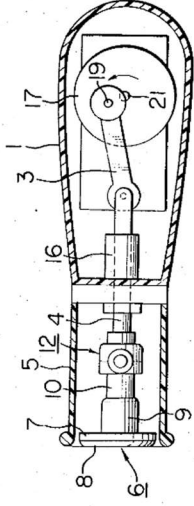


FIG. 4

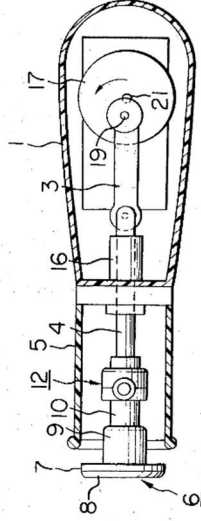
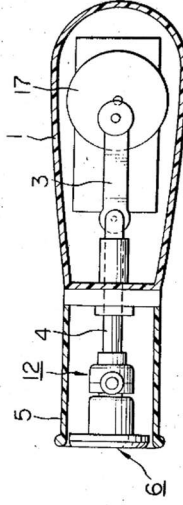


FIG. 5



Claim 60

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

Mabuchi discloses and/or renders obvious a "percussive massager . . . wherein the motor is directly connected to the flywheel, and wherein the crank pin is directly connected to the flywheel." For example, Mabuchi discloses that "rotating disk 17 is fixed to the motor output shaft 21, which in turn causes rotating disc 17 to rotate." Mabuchi 2:45-47. Mabuchi also discloses that "rod 3 is fitted at an end thereof to a crankshaft 19 provided on the rotating disc 17." *Id.* 2:47-48.

<u><i>Asserted Claims</i></u>	<u><i>Exemplary Disclosures</i></u>
crank pin is directly connected to the flywheel.	