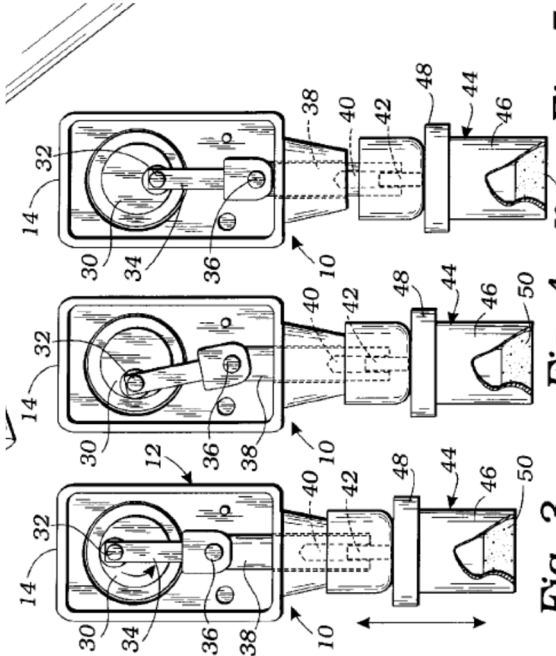


Appendix B2

U.S. Patent No. 11,938,082 (“the ’082 Patent”) Invalidity Chart Based On Primary Reference U.S. Patent No. 6,682,496 (“Pivaroff”)

<u>Asserted Claims</u>	<u>Exemplary Disclosures</u>
Claim 1	
1[pre] A percussive massager comprising:	To the extent the preamble is limiting, Pivaroff discloses and/or renders obvious “[a] percussive massager” recited in Claim 1. For example, Pivaroff discloses that a device that “provides deep muscle tissue with kinetic forms of percussion.” Pivaroff at 1:32-33.
1[a] a housing;	Pivaroff discloses and/or renders obvious “a housing.” 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.” Pivaroff at 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” <i>Id.</i> at 3:33-35.
1[b] a piston having a proximal end and a distal end, the distal end of the piston having a bore;	Pivaroff discloses and/or renders obvious “a piston having a proximal end and a distal end, the distal end of the piston having a bore.” For example, Pivaroff discloses “a connecting element or rod 38.” Pivaroff at 2:44-46. Rod 38 includes an “inner end” and an “outer end.” <i>Id.</i> at 2:46-50. Pivaroff also discloses that “[t]he 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.” <i>Id.</i> at 3:33-38. Rod 38 is within the housing of the device, and specifically within top element or housing 16. Further, Pivaroff discloses that “[t]he 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. The inner end of rod 38 or an outer end or reciprocating link 34 may be bifurcated. The other or outer end of the rod 38 includes a recessed opening 40 formed therein.” <i>Id.</i> at 2:44-50. Thus, Pivaroff discloses that rod 38, which is the piston, includes a recessed opening 40, which is the bore. <i>See, e.g., id.</i> at Figs. 1, 3, 4, 5.
1[c] a motor operatively connected to the proximal	Pivaroff discloses and/or renders obvious that the motor is “operatively connected to the proximal end of the piston.” For example, Pivaroff discloses that “a central rotary arbor or shaft 26” is “driven by the motor.” Pivaroff

<u>Asserted Claims</u>	<u>Exemplary Disclosures</u>
end of the piston, wherein the motor is configured to cause the piston to reciprocate at a first speed;	at 2:36-40. The rotary shaft 26 is coupled to “an offset cam element or means 30, having an upwardly extending offset element or finger connected to a reciprocating link 34.” <i>Id.</i> at 2:40-44. And “[t]he 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.” <i>Id.</i> at 2:44-47. Pivaroff also discloses and/or renders obvious “wherein the motor is configured to cause the piston to reciprocate at a first speed.” For example, Pivaroff discloses that “[u]pon operation of the on/off switch 18 the electric motor will be operated. Preferably, 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.” <i>Id.</i> at 3:44-54.
1[d] a drive mechanism that controls a predetermined stroke length of the piston; and	Pivaroff discloses and/or renders obvious “a drive mechanism that controls a predetermined stroke length of the piston.” For example, the drive mechanism is comprised of cam element 30 and reciprocating link 34. The stroke length of rod 38 is controlled by the drive mechanism, including the location of finger 32 on cam element 30. <i>See</i> Pivaroff at Figs. 3-5.  Fig. 3 Fig. 4 Fig. 5

Asserted Claims

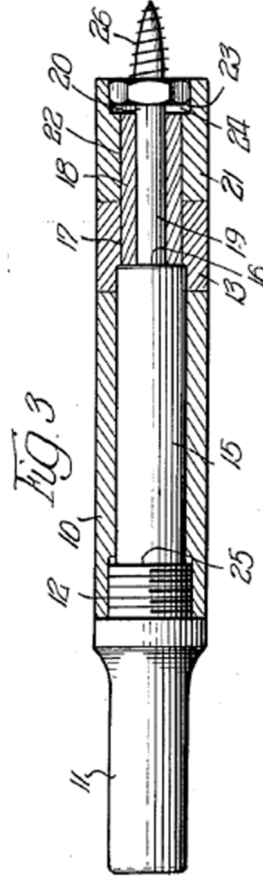
1[e] a quick-connect system comprising the distal end of the piston and a first massaging head, wherein the quick-connect system is configured to have a proximal end of the first massaging head inserted into or removed from the bore while the piston reciprocates the predetermined stroke length at the first speed.

Exemplary Disclosures

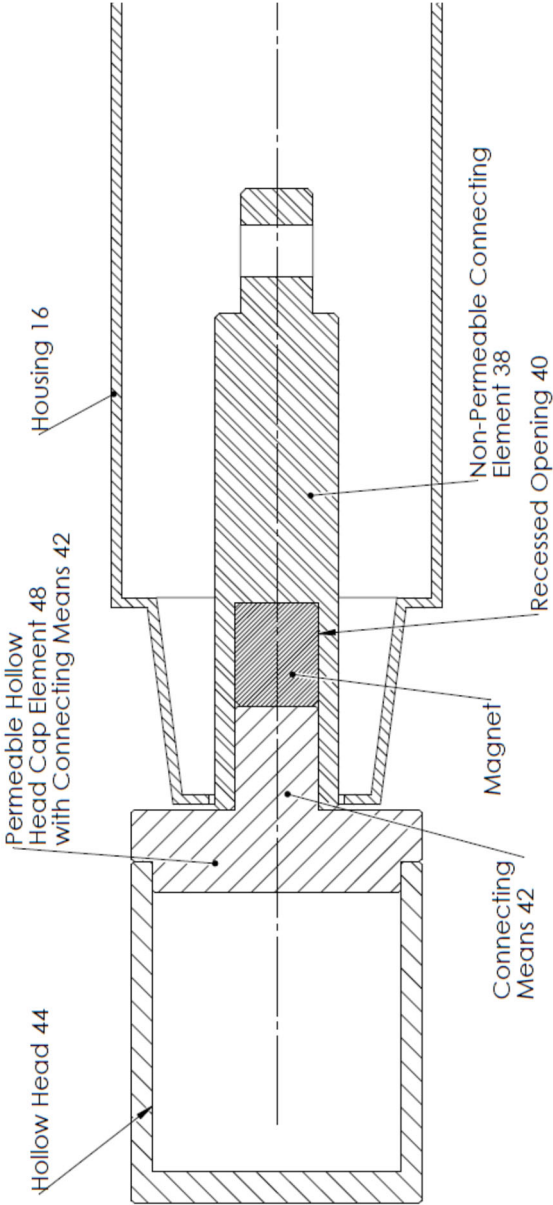
Pivaroff in view of U.S. Patent No. 3,007,504 (“Clark”) discloses and/or renders obvious “a quick-connect system comprising the distal end of the piston and a first massaging head.”

For example, Pivaroff discloses a hollow head 44 that attaches to the distal end of rod 38 and “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 3:47-54. Hollow head 44 is a first massaging head. Pivaroff at FIG. 1. Pivaroff further discloses that the recessed opening 40 at the distal end of rod 38 “captures one end of a connecting means, such as a pin 42, as by having screw threads formed therein. The other or outer end of the pin 42 is screw threaded or otherwise captured in the hollow head 44.” *Id.* at 2:50-54.

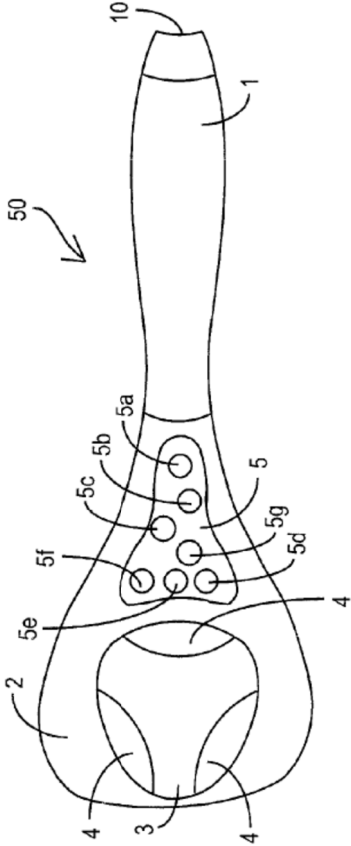
To the extent Pivaroff does not expressly disclose a “quick-connect system” that “is configured to have a proximal end of the first massaging head inserted into or removed from the bore while the piston reciprocates the predetermined stroke length at the first speed,” Clark discloses a bar magnet 15 which “abuts at one end of the shank 11 and terminates at the other end near the joint between the shell 10 and the cylindrical member 13.” Clark at 3:2-4. The embodiment in Clark’s Figure 3 (shown below) discloses that “the magnetic forces which are transmitted through the magnetically permeable membrane 19 from the magnet 15 are utilized to hold the workpiece in driving position.” *Id.* at 3:45-48. Further, Clark discloses that “the workpiece holder 21 may be easily removed from its assembled position and a workpiece holder having a different size or shape chamber 23 substituted therefor.” *Id.* at 4:1-3.



A person of ordinary skill in the art would have been motivated to configure the recessed opening 40 to capture the connecting means (i.e., connecting means 42 on the proximal end of hollow body 44) by using a magnetic connection as taught by Clark to provide a quick-connect system so that the changing of the hollow body (the first massaging head) can be easily accomplished. Furthermore, a person of ordinary skill in the art would understand that Pivaroff, as modified with Clark’s teachings of a quick-connect system, would be configured to have a proximal end of the massaging message head (i.e., connecting means 42) inserted into or removed from recessed

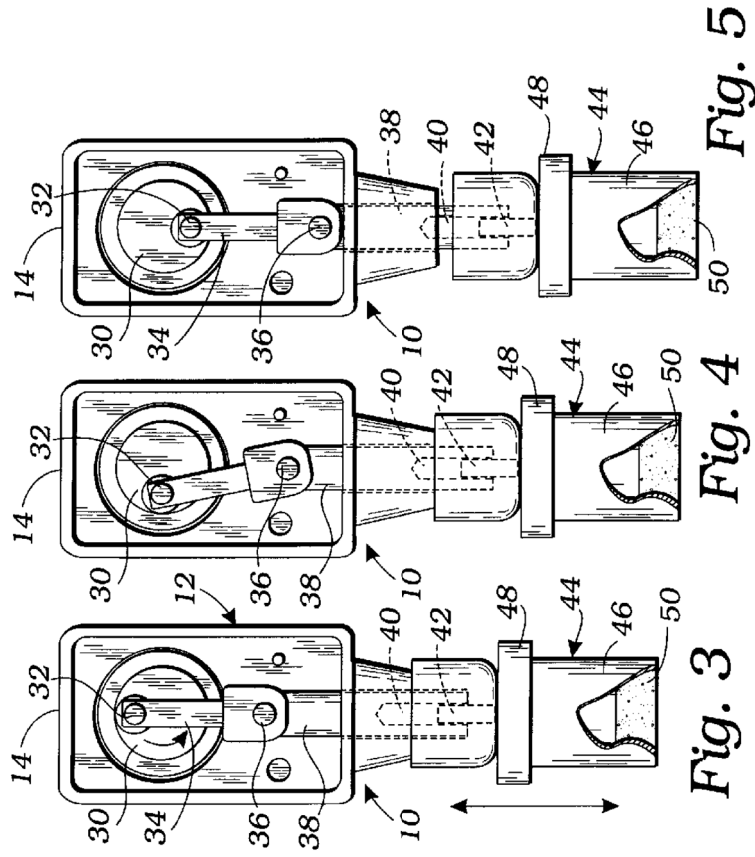
<u>Asserted Claims</u>	<u>Exemplary Disclosures</u>
	opening 40 while rod 38 reciprocates the predetermined stroke length at the first speed. Clark teaches that “the workpiece holder 21 may be easily removed from its assembled position and a workpiece holder having a different size or shape chamber 23 substituted therefor.” Clark at 4:1-3. Moreover, Clark also teaches that the bore 17 in the cylindrical portion 13 “is particularly adapted to” the configuration of the tool held therein. <i>Id.</i> at 3:11-14. A person of ordinary skill in the art would understand that Pivaroff’s connecting means, using a bar magnet as taught by Clark in place of a threaded connection, would ensure a positive connection without positioning the piston and the first massaging head.  <u>Pivaroff FIG. 5 modified in view of Clark</u>
Claim 2 2. The percussive massager of claim 1, wherein the motor is configured to cause the	Pivaroff in view of Clark 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, 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, as shown by arrow 56 in FIG. 3, whereby the head 44 is quickly reciprocated back and forth to provide

<u>Asserted Claims</u>	<u>Exemplary Disclosures</u>
piston to reciprocate at a second speed.	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; <i>see also id.</i> at Fig. 3. To the extent Pivaroff and/or Clark does not expressly disclose that the motor is configured to cause the piston to reciprocate 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 message program buttons 5d-g for setting message sensation, intensity and frequency of the vibrations of the percussive message nodes 20 and vibratory message 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.
Claim 3 3. The percussive massager of claim 1, further comprising: a control panel positioned on an exterior of the housing.	Pivaroff in view of Clark and Harris discloses and/or renders obvious a "percussive massager" with "a control panel positioned on an exterior of the housing." For example, Pivaroff discloses that handle 14 "includes an on/off switch 18 and an electric cable connection port 20, preferably formed flush with a bottom surface 22 of the handle 14." Pivaroff at 2:34-37. Furthermore, 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 message program buttons 5d-g for setting message sensation, intensity and frequency of the vibrations of the percussive message nodes 20 and vibratory message head 3." Harris at 2:49-57. A person of ordinary skill in the art would understand that control panel 5 would similarly be positioned on an exterior of the housing of Pivaroff's device. <i>See also</i> Harris at Fig. 1:

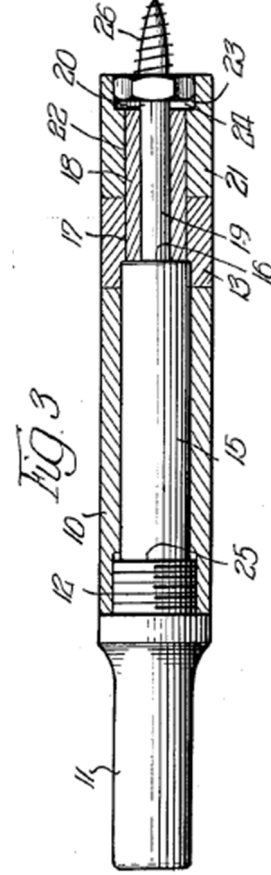
<u>Asserted Claims</u>	<u>Exemplary Disclosures</u>
Claim 4 4. The percussive massager of claim 3, wherein the control panel is configured to display one or more visual indicators.	FIG. 1 
Claim 7 7. The percussive massager of claim 1, wherein the motor has an output shaft configured to rotate about a rotation axis, and wherein the drive mechanism comprises: a flywheel operatively connected to the output shaft of the motor to rotate about a flywheel axis, the output shaft extending into the flywheel along the flywheel axis; and a crank pin extending from the flywheel, the crank pin being operatively connected to the piston.” For example, Pivaroff discloses “[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. 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	Pivaroff 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 flywheel along the flywheel axis; and a crank pin extending from the flywheel, the crank pin being operatively connected to the piston.” For example, Pivaroff discloses “[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. 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

<u>Asserted Claims</u>	<u>Exemplary Disclosures</u>
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.	of the connecting element or rod 38.” Pivaroff at 2:34-50. Specifically, Pivaroff’s “cam element 30” discloses the recited “flywheel” that rotates about a “flywheel axis,” Pivaroff’s “rotary shaft 26” corresponds to the recited “output shaft,” and Pivaroff’s finger 32 corresponds to the recited “crank pin.” See <i>also id.</i> at Figs. 3-5: Further, Pivaroff discloses that “rotary shaft 26 is coupled <i>by any available or desired means</i>, such as a coupling system 28” to cam element 30. Pivaroff at 2:40-42 (emphasis added). Accordingly, a person of ordinary skill in the art would understand that rotary shaft 26 could be coupled directly to cam element 30, and thus extend into the flywheel along the flywheel axis.
Claim 9 9. The percussive massager of claim 7, further comprising a handle, wherein the motor and the handle are on a same side of a plane perpendicular to the flywheel axis that extends through the elongated, hollow handle 14, and 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	Pivaroff discloses and/or renders obvious a “percussive massager . . . further comprising a handle, wherein the motor and the handle are on a same side of a plane perpendicular to the flywheel axis that extends through the flywheel.” For example, Pivaroff discloses “motor 24 is mounted within the elongated, hollow handle 14, and includes a central rotary arbor or shaft 26, driven by the motor. 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

<u>Asserted Claims</u>	<u>Exemplary Disclosures</u>
Claim 11	
11. The percussive massager of claim 7, wherein the motor is directly connected to the flywheel, and wherein the crank pin is directly connected to the flywheel.	Pivaroff 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, Pivaroff discloses that “rotary shaft 26 is coupled by any available or desired means, <i>such as</i> 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.” Pivaroff at 2:40-44 (emphasis added). A person of ordinary skill in the art would understand that alternatives to coupling system 28 would include a direct connection of motor shaft 26 to the flywheel and that the finger 32 (i.e., the recited “crank pin”) is directly connected to the offset cam element 30 (i.e., the recited “flywheel”).
Claim 13	
13. The percussive massager of claim 1, wherein the bore comprises a substantially cylindrical bore.	Pivaroff in view of Clark discloses and/or renders obvious a “percussive massager . . . wherein the bore comprises a substantially cylindrical bore.” For example, Pivaroff discloses that “the rod 38 includes a recessed opening 40 formed therein. The recessed opening 40 captures one end of a connecting means, <i>such as</i> a pin 42, as by having screw threads formed therein. The other or outer end of the pin 42 is screw threaded <i>or otherwise</i> captured in the hollow head 44.” Pivaroff at 2:49-54 (emphases added). A person of ordinary skill in the art would understand Pivaroff as teaching that a threaded connection is just one way of connecting the rod 38 to pin 42, and that, when using a magnetic connection as taught by Clark, the pin and corresponding recessed opening 40 (i.e., the “bore”) would be cylindrical. As shown in Pivaroff’s Figures 3-5, the recessed opening 40 is a substantially cylindrical bore.



Furthermore, as shown in Figure 3, Clark discloses a shell 10 that has a cylindrical bore to accept a cylindrical magnet 15.



<u>Asserted Claims</u>	<u>Exemplary Disclosures</u>
18[pre] A method of assembling a percussive massager, the method comprising:	To the extent the preamble is limiting, Pivaroff discloses and/or renders obvious “[a] method of assembling a percussive massager” recited in Claim 18. See, e.g., Claim 1[pre].
18[a] operatively connecting a motor to a proximal end of a piston, wherein the motor is configured to cause the piston to reciprocate at a first speed, wherein a distal end of the piston has a bore;	Pivaroff discloses and/or renders obvious “operatively connecting a motor to a proximal end of a piston, wherein the motor is configured to cause the piston to reciprocate at a first speed, wherein a distal end of the piston has a bore” recited in Claim 18. See, e.g., Claim 1[b] and [c].
18[b] providing a drive mechanism configured to control a predetermined stroke length of the piston; and	Pivaroff discloses and/or renders obvious “providing a drive mechanism configured to control a predetermined stroke length of the piston” recited in Claim 18. See, e.g., Claim 1[d].
18[c] providing a quick-connect system comprising the distal end of the piston and a first massaging head, wherein a proximal end of the first massaging head is configured to be inserted into or removed from the bore while the piston reciprocates the predetermined stroke length at the first speed.	Pivaroff in view of Clark discloses and/or renders obvious “providing a quick-connect system comprising the distal end of the piston and a first massaging head, wherein a proximal end of the first massaging head is configured to be inserted into or removed from the bore while the piston reciprocates the predetermined stroke length at the first speed” recited in Claim 18. See, e.g., Claim 1[e]. A person of ordinary skill in the art would understand that, because the proximal end of Pivaroff’s hollow head (i.e., the “first massaging head”), as modified by Clark, is configured to connect to bar magnet 15 in Pivaroff’s recessed opening 40 at the distal end of rod 38 (i.e., the piston), it has been configured to be inserted into or removed from the bore while the piston reciprocates the predetermined stroke length at the first speed. Clark discloses that “[f]rom the foregoing description it can readily be seen that the workplace holder 21 may be easily removed from its assembled position and a workplace holder having a different size or shape chamber 23 substituted therefor.” Clark at 3:75-4:3.