

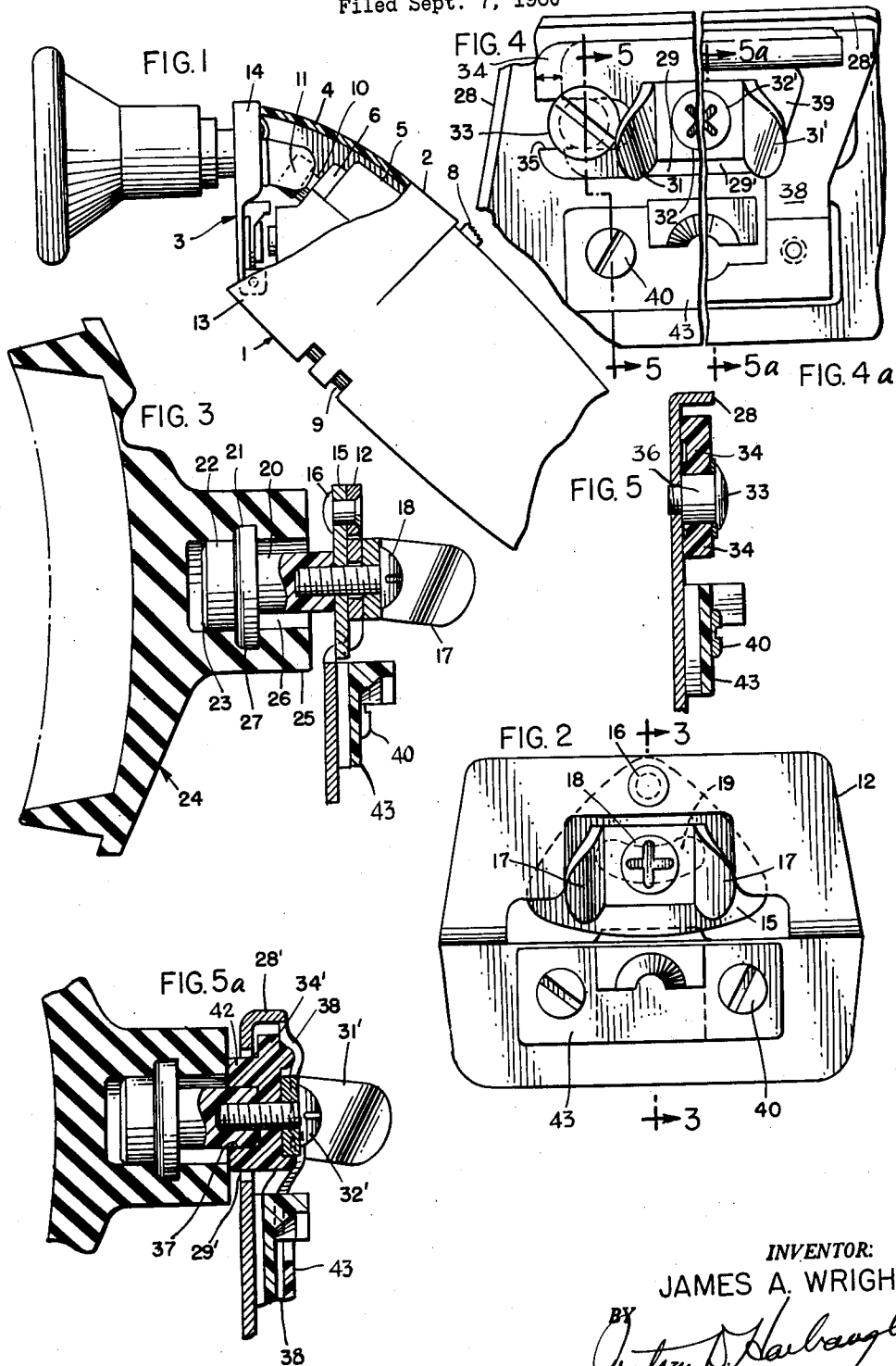
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DRIVE COUPLING ARRANGEMENT FOR MASSAGING DEVICES

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3,075,519 DRIVE COUPLING ARRANGEMENT FOR MASSAGING DEVICES

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This invention relates generally to electrically operated massaging devices and more particularly to an improved drive coupling mechanism for receipt of a plurality of differently contoured applicators which contact the skin.

It is often desirable in massaging devices to provide a suitable releasing means whereby differently contoured massaging applicators may be readily interchanged. It is well known that differently contoured massaging applicators are desirable and are utilized on different areas of the body to provide the most soothing massaging effect, such as a small shallow, cup-shaped applicator for the facial muscles, the resilient bristle applicator for the scalp or a broad flat applicator for the large back and leg muscles.

It is also desirable to not only have the applicators readily detachable from the driving means in such a manner that the driving means are shielded from the operator to prevent injury, but to provide a coupling mechanism which is compatible to the conventional clipper device now employed in the vast majority of barber and hair dressing shops.

It is therefore the primary object of this invention to provide a massaging device with an improved drive coupling mechanism and releasing means for removing and replacing an applicator with a minimum amount of effort.

A specific object of this invention is to provide a massaging device with an improved drive coupling mechanism which permits a smooth reciprocating motion to be transmitted to the body muscles in the plane of the skin through a releasable massager applicator.

Another object of this invention is to provide a massaging device with an improved detachable drive coupling mechanism adapted for interlocking engagement with an applicator.

A further object of this invention is to provide a massaging device having an improved releasable applicator which is resiliently held in operable position until a yieldable force of proper direction is applied thereto.

A still further object of this invention is to provide a plurality of applicators with standardized sockets to receive a drive connector and interlock therewith in such a manner that the applicator will be resiliently secured during a massaging operation.

With these objects and other features and advantages of the invention in mind, which will appear from the following description and claims taken in connection with the drawings, the invention consists in the novel construction, arrangement and the formation of the parts wherein:

FIG. 1 is a fragmentary partially sectioned view in side elevation of the massager to which this invention is applied;

FIG. 2 is an enlarged view in end elevation illustrating one embodiment of the driven elements of the coupling mechanism of this invention;

FIG. 3 is an enlarged partially sectioned view illustrating the coupling mechanism of this invention taken along the line 3-3 of FIG. 2;

FIG. 4 is a fragmentary enlarged view in end elevation illustrating the relationship of the driven elements of another embodiment of this invention with the alternate position of a sliding element shown by dash lines;

FIG. 4a is a fragmentary enlarged view in end elevation

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illustrating the relationship of the driven elements of another embodiment of this invention;

FIG. 5 is a fragmentary partially sectioned view taken along the line 5-5 of FIG. 4; and

FIG. 5a is a fragmentary partially sectioned view taken along the line 5a-5a of FIG. 4a.

Referring to the drawings, FIG. 1 illustrates a massaging device 1 to which this invention applies and includes a body portion 2 and a head portion 3. The body 2 has a casing 4 in which is housed a drive motor 5 which in turn is connected to a suitable gearing means 6. An electrical cord enters the lower end of the casing 4 to carry the electrical power to the motor 5 which is energized by an operating switch 8 mounted on a side of the casing. Cooling louvers 9 are suitably disposed along the sides of the casing to provide additional surface area for cooling purposes. The body, the casing and the drive means as just described may be of any suitable conventional structure which provides a rotary eccentric drive output.

Still referring to FIG. 1, an outwardly extending rotary drive shaft 10, driven by the gearing unit 6 has an eccentric drive shaft 11 secured on the extended end thereof which, as the shaft 10 rotates, provides an eccentric circular motion utilized to drive the head portion 3. A detailed explanation of the operation of the head 3 will follow.

Referring now to FIGS. 1, 2 and 3, the relationship of the driven elements of one embodiment of this invention is shown in detail. The head 3 comprises a cover 12 having the lower end thereof pivotally, but detachably secured to the casing 4 as indicated at a point 13. Edge portions 14 of the cover 12 are designed to overlap the end section of the casing 4 when the cover 12 is in the closed position. A swing bracket 15 is pivotally connected to the outer surface of cover 12 by a pivot pin 16 and a winged drive bracket 17 is secured in sliding relationship to the inner surface by a screw 18. The screw 18 extends through an arcuate slot 19 formed in the cover 12 and threadedlly engages a connector shaft 20. The connector 20, preferably formed from a suitable non-ferrous material such as a plastic or hardened rubber, provides a land 21 and an end portion 22. The land 21 has a diameter substantially greater than the connector shaft 20 and the end portion 22 provides a diameter substantially greater than the connector shaft 20 but smaller in diameter than land 21. The outer edge of the end portion 22 is beveled as at 23 to assist in guiding an applicator 24, to be explained later, onto the end portion 22 and land 21.

The applicator 24, preferably made from a hard, resilient material, has a cylindrical base section 25 in which there is a central opening 26 having an internal groove 27 machined therein. The opening 26 and the groove 27 correspond in contour with the end 22 and the land 21. The diameters of the opening 26 and the groove 27 are substantially less than the diameters of the end 22 and the land 21, thus making it readily apparent, that because of the difference in dimensions between the connector shaft 20 and the applicator 24, the two members will be resiliently secured when the applicator is in the operating position. The land 21 will snap into the groove 27 and serve as a holding means until a reversal force is applied to the applicator to disengage the land 21 from the groove 27. A skin contacting surface extends outwardly from the base section 25 which will vary, depending on the area of the body to be massaged and the effect desired.

As the eccentric 11 is driven by the shaft 10 it will in turn drive the applicator 24 by the moving action of the drive bracket 17, the wings of which are in continuous contact with the surface of the eccentric 11. As the drive bracket 17 is repositioned, its path of travel is con-

trolled by the arcuate slot 19 in the cover 12 and the amount of eccentricity of the eccentric 11.

FIGS. 4 and 5 illustrate another embodiment of this invention whereby the head portion 3 has a cover 28 provided with a substantially rectangular opening 29 passing therethrough. Similar to the previously described embodiment, an applicator is secured to a connector on the outer surface of the cover for horizontal reciprocating motion. A winged drive bracket 31 is in contact with an eccentric and is suitably secured by a screw member 32 to the connector in similar manner as connector 20 described above. A nylon slide bracket 34 is rigidly secured between the wing bracket 31 and the connector in sliding relationship with the inner surface of the cover 28 by the screw 32. The bracket 34 has slotted portions 35 at each extremity which engage spaced guide members 33, preferably a screw mounted in the cover 28. As readily seen in FIG. 5 the guide members 33 provide a smooth bearing surface 36 on which the slide bracket 34 is guided. The spacing of the guide members 33 is such that when one of the slots 35 bottoms on one of the guide members 33, the other guide member 33 is at the extreme end of the other slot. This relationship is readily shown by the dashed lines in FIG. 4. It is readily apparent that the eccentric rotary motion which drives the bracket 31 is changed to a horizontal reciprocating motion by the action of the slide bracket 34 held in guided relationship by the guide members 33. This motion is transmitted to the skin through the applicators which are in secured relationship with the drive bracket 31 and slide bracket 34.

Referring now to FIGS. 4a and 5a, another embodiment of this invention is illustrated which is of such similar structure as the embodiment shown in FIGS. 4 and 5, that like numerals with primes have been used to designate similar parts. The cover 28' has an opening 29' therethrough in which a slide bracket 34' is free to reciprocate. The slide bracket 34', preferably formed from a nylon material, has a boss 42 extending through the opening 29' to a point substantially past the outer surface of cover 28'. A centrally located opening 37 in the boss 36 receives the connector, similar to connector 20 previously described, on which an applicator is detachably secured. The slide bracket 34', in sliding relationship with the inner surface of the cover 28', is retained in position by a leaf spring 38, so designed in contour to provide a guiding surface as well as resilient retaining force. As viewed in FIG. 4a, the spring has a large central opening 39 through which a drive bracket 31', secured to the slide bracket 34' by a screw 32', is free to reciprocate. The drive bracket, as in the other embodiments, is in continued contact with an eccentric on the rotary shaft of the driving means.

Each of the described embodiments of this invention provides a clamp 43 secured to the lower portion of the cover by screw members 40. The embodiment illustrated in FIGS. 4a and 5a utilize the clamp 43 and screws 40 to retain the spring 38 by clamping the lower portion thereof therebetween.

In operation, the massaging applicators are easily interchanged by snapping or pressing them into engagement with the connector. Similarly, the head 3 is readily detachable from the driving mechanism by merely pivoting the head away from the body and disengage the pivot member from the clamp on the head.

To those skilled in the art, it is readily apparent that the present invention provides a coupling mechanism for a massaging device which is unique in structure and permits interchangeability of the individual applicators to be easily accomplished. Furthermore, the structure of the coupling mechanism permits other elements to be adapted thereto such as abrasive units, clippers, polishers, etc. It is also apparent that the formation and arrangement of the component parts has provided a simple, efficient but rugged mechanism to transmit an eccentric rotary motion

to a smooth reciprocating motion, whereby a massaging action may be induced in the plane of the skin.

While the present invention has been explained and described with reference to variously noted features and advantages, it will be understood nevertheless that numerous changes and modifications are susceptible of being incorporated without departing from the spirit or scope thereof. Accordingly, it is not intended to be limited by the particular language employed in the foregoing explanation nor by the illustrations in the accompanying drawings except as indicated in the appended claims.

What is claimed is:

1. In combination with a power driven massaging device including a rotating shaft, a coupling mechanism comprising a pivotal end cover plate detachably secured to the device, an opening formed in said cover plate, an eccentric secured to said rotating shaft, a swing bracket pivotally secured to the cover plate, a drive bracket in juxtaposition for contact with said eccentric, an applicator, a connector shaft interlocking with said applicator on an extended end thereof and a threaded bolt member extending through said opening rigidly securing said drive bracket to the inner surface of the swing bracket and the connector shaft to the outer surface of said swing bracket to transform the rotary motion of the eccentric to an arcuate oscillatory motion of the applicator.

2. In combination with a power driven massaging device including a rotating shaft, a coupling mechanism comprising a pivotal end cover plate detachably secured to the device, an opening formed in said cover plate, an eccentric secured to said rotating shaft, a swing bracket pivotally secured on the outer surface of the cover plate, a drive bracket, a pair of spaced apart angularly contoured wings integrally formed with said drive bracket and extending upwardly therefrom, said wings alternately in contact with said eccentric, an applicator, a connector shaft releasably retaining said applicator on one end thereof and a threaded bolt member extending through said opening rigidly securing said driven bracket and said connector shaft to the swing bracket in sandwich relationship to transform the motion of the rotating eccentric to an arcuate oscillatory motion of the applicator.

3. In combination with a power driven massaging device including a rotating shaft, a coupling mechanism comprising a cover plate detachably secured to the end of said device, a rectangular opening formed through the cover, an eccentric secured to said rotating shaft, a slide bracket having centrally disposed slots formed in opposing ends thereof, a pair of spaced apart guide members secured to said cover plate, said guide members received in sliding relationship in said slots of the slide bracket, a drive bracket in contact with said eccentric, an applicator, a connector shaft, a threaded bolt member securing said drive bracket to one side of the slide bracket and the connector shaft to the other side of the slide bracket, said connector shaft secured to said slide bracket in alignment with said rectangular opening for reciprocatory movement therein and means to secure the applicator to the connector shaft whereby said slide bracket and guide members received therewith convert the eccentric rotary motion of the eccentric to a horizontal linear reciprocatory motion of the applicator.

4. In combination with a power driven massaging device including a rotating shaft, a coupling mechanism comprising a pivotal end cover plate detachably secured to the device, an opening formed in said cover plate, an eccentric secured to said rotating shaft, a slide bracket, a contoured leaf spring having a central opening therethrough resiliently retaining said slide bracket in sliding relationship with the inner surface of said cover plate, a clamp member rigidly securing the lower portion of said leaf spring to the inner surface of the cover plate, said opening in the leaf spring in alignment with the opening through the cover plate, a drive bracket, a pair of spaced apart diverging wings integrally formed on said drive

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bracket extending upwardly therefrom, each of said wings alternately engaging said eccentric, a connector shaft having an applicator secured on an end thereof and a thread bolt member securing said drive bracket to one side of the slide bracket and the connector shaft to the other side of the drive bracket whereby the eccentric rotary motion of the eccentric is transformed to a horizontal reciprocating motion of the applicator.

5. In combination with an electrically operated massaging device including a rotating shaft, a coupling mechanism comprising an end cover plate having an arcuate slot formed therein, a swing bracket, means to pivotally secure the swing bracket to the outer surface of the cover plate, an eccentric on said rotating shaft, a drive bracket in contact with the eccentric, a connector shaft, means extending through said arcuate slot to rigidly secure the connector shaft with the swing bracket and the drive bracket, an applicator, and means to secure the applicator to the connector shaft whereby a smooth reciprocating arcuate massaging motion is induced to the skin by the action of the eccentric on the rotating shaft.

6. The invention as set forth in claim 5 wherein the

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means to pivotally secure the swing bracket to the outer surface of the cover plate comprises a pivot pin in the upper portion of the cover plate at a point coincident with the center used for scribing the arcuate slot therein.

7. The invention as set forth in claim 5 wherein the means extending through said arcuate slot to secure the connector shaft with the swing bracket and the drive bracket comprises a bolt member passing through the drive bracket, the arcuate slot, the swing bracket and threadably engaging the connector shaft.

8. The invention as set forth in claim 5 wherein the means to secure the applicator to the connector shaft comprises an enlarged land portion integrally formed on said connector shaft and a socket integrally formed in said applicator for receipt of said land portion to resiliently secure the applicator in position.

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