



- (51) **International Patent Classification:**  
*A45D 26/00* (2006.01) *A46B 13/02* (2006.01)  
*A46B 13/00* (2006.01)
- (21) **International Application Number:**  
PCT/IB2012/053714
- (22) **International Filing Date:**  
20 July 2012 (20.07.2012)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**  
11006049.8 23 July 2011 (23.07.2011) EP
- (71) **Applicant (for all designated States except US):** **BRAUN GMBH** [DE/DE]; Frankfurter Strasse 145, 61476 Kronberg-Taunus (DE).
- (72) **Inventors; and**
- (75) **Inventors/Applicants (for US only):** **SANCHEZ-MARTINEZ, Pedro** [ES/DE]; Erlenweg 1, 61476 Kronberg (DE). **BRUECKNER, Andreas** [DE/DE]; Cre-

vennastrasse 4, 97072 Wuerzburg (DE). **WALENZYK, Thomas** [DE/DE]; Sittigstrasse 29, 65830 Kriftel (DE).

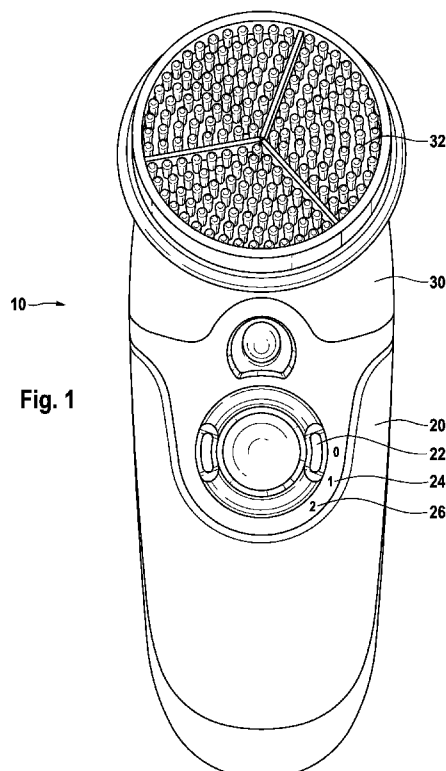
- (74) **Common Representative:** **BRAUN GMBH**; c/o Timothy B. Guffey, The Procter & Gamble Company, Global Patent Services, 299 East Sixth Street, Sycamore Building, 4th Floor Cincinnati, Ohio 45202 (US).

- (81) **Designated States (unless otherwise indicated, for every kind of national protection available):** AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

- (84) **Designated States (unless otherwise indicated, for every kind of regional protection available):** ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ,

[Continued on next page]

- (54) **Title:** SKIN TREATMENT DEVICE



(57) **Abstract:** The present invention concerns a skin treatment device for professional and private use. In particular the present invention concerns a skin treatment device comprising a drive unit (20) and a first attachment (30) and a second attachment (40), the first attachment comprising (30) a brush, the second attachment comprising an epilation or a depilation unit, wherein the first attachment comprises a gear box and the second attachment comprises a gear box and the gear box comprises by the second attachment provides a gear reduction of at least 1.25 to 4. In a further aspect the invention concern a method of using such a device for treating the human skin.



UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

**Published:**

— *with international search report (Art. 21(3))*

## SKIN TREATMENT DEVICE

### FIELD OF THE INVENTION

The present invention concerns a skin treatment device for professional and private use. The device is used for achieving cosmetic or well-being benefits, for example it can be used to have a massage effect or for cleansing and refreshing the skin or for applying a cosmetic composition.

### BACKGROUND OF THE INVENTION

A wide variety of cosmetic moisturizing and other agents is available to meet the interest in having a clean healthy and good-looking skin and face. Relative to these offers of the cosmetic industry, the use of skin care appliances and devices is slightly more limited, but many efforts have also been made in this field.

U.S. patent 2,714,788 discloses a device for removing hair which comprises an electric motor, a holder for an abrasive pad and an abrasive pad. This device is ment to remove hairs from the skin of, for example, the legs by means of abrasion.

EP 1 429 670 A2 discloses an ultrasonic cleaner comprising a handle and a brush positioned at the proximal end off the handle. The cleaner further comprises an ultrasonic vibrator operably attached to the brush. A battery positioned within the hollow interior of the handle provides power to the ultrasonic vibrator. Ultrasonic vibration is transmitted from the vibrator through the brush and to its bristles. The cleaner can hence be used for skin cleaning.

WO 2010/100527 A1 discloses an appliance for facial care. The facial appliance comprises a tubular body and axially extending from the tubular body a so-called facial puck. This facial puck comprises a facial implement rotatable about a shaft and a sub assembly linked to the shaft. This sub assembly includes a spinner journaled for rotation about an axis extending from the tubular body. The spinner comprises opposing, radially extending, resiliently biased release fingers. These release fingers removably mount the applicator implement (e.g. the facial

implement) for rotation with the spinner. The spinner is mounted to the main gear by slip bearings.

It is an objective of the present invention to provide a versatile skin treatment device. The skin treatment device should be suitable for use with one or several implements, the use should be intuitive and it should be safe. Further the skin treatment device should provide gentle, but effective hair removal adapted to personal preference and skin type.

### SUMMARY OF THE INVENTION

The present invention concerns a skin treatment device for professional and private use. In particular the present invention concerns a skin treatment device comprising a drive unit (20) and a first attachment and a second attachment, the first attachment comprising a brush, the second attachment comprising an epilation or a depilation unit, wherein the first attachment comprises a gear box and the second attachment comprises a gear box and the gear box comprises by the second attachment provides a gear reduction of at least 1.25 to 4. In a further aspect the invention concern a method of using such a device for treating the human skin.

### BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 shows a plain view onto a skin treatment device according to the present invention comprising a first attachment.

Fig. 2 shows a side view of the skin treatment device of Fig. 1.

Fig.3 shows a plain view onto a skin treatment device according to the present invention comprising a second attachment.

Fig.4 shows a partially cutaway side view of the skin treatment device comprising the first attachment.

## DETAILED DESCRIPTION OF THE INVENTION

The skin treatment device comprises a drive unit and a first and a second attachment. The skin treatment device may also be provided as a kit with two, three or more attachments. At a given time one attachment can be used with the drive unit. Additionally or alternatively, the drive unit may also be adapted to operate two or more attachments at the same time. However, a drive unit which can operate one attachment at the time has been found useful. The attachment therefore can be removably mounted to the drive unit. The drive unit can be hand operated or motor operated. Often the drive unit is operated by an electric motor. This electric motor can be operated by a battery, for example a rechargeable battery. Drive units needing a cable for contact with the power supply while being operated can also be useful.

The first attachment can comprise a skin treatment implement or element, for example in the form of a brush and can comprise an output element. Alternatively the output element, for example in the form of a gear box, can also be part of the drive unit. Alternatively or additionally a further gear box or a force transmission element can be comprised by the drive unit.

The second attachment can be a depilation or epilation attachment. A depilation attachment is used to remove hair from the skin surface by cutting the hair slightly above and typically closely to the skin surface. This can also be referred to as shaving. The depilation can hence be undertaken in a wet shaving process, preferably using a blade cartridge comprising two, three, four or more blades. Alternatively, the depilation process can be an electric shaving process where typically a moving block of blades is moved relative to a foil, which comprises openings for hairs. Another useful embodiment of the present invention comprises a first attachment in the form of an epilation attachment. In an epilation process hair is pulled and then plucked from the skin. Hence, the whole hair is removed from the skin. Both processes and particularly the epilation process induce a certain stress to the treated skin area. The process can be rendered more efficient, for example in the case of an epilation process by increasing epilation speed or the number of plucking tweezers or the like. However, such approaches to increase efficiency are often associated with exposing the skin to more stress and sometimes inducing an increased sensation of pain. Hence, there is a continued need for providing a gentle but efficient process.

It has been found, that the skin treatment device when used with the first attachment is of considerable benefit. The treatment of the skin with the brush, can give a certain massaging and cleansing effect. The appearance of the skin can be overall improved. Beyond this, the first attachment can enhance the benefits of the skin treatment device when used with (widely used) second attachment. Surprisingly, it has been found that the hair removal in particular by epilation process is more efficient, when the skin is treated using the second attachment before the first attachment is used. While these effects are not fully understood yet, it could be, that surface skin particles are removed by the second attachment, and that thereby the access to hair is increased. Hence, the hair removal by the first attachment is made more efficient.

It has been found that this effect is particularly pronounced if the rotational speed of the first attachment is adapted accordingly. For a given drive unit useful for use with a second attachment, in particular an epilation attachment, it is useful that the second attachment comprises a gear box and that the gear box comprised by the first attachment provides a gear reduction of at least 1.25 to 10. Values of 1.25 to 5 or 1.25 to 4 or 1.5 to 3 have also been found useful. A gear reduction leads to a reduction of the rotational speed of the brush relative to the rotational speed from an output shaft. Hence, the brush turn slower than the output shaft.

Where the first attachment comprises a gear box providing a first gear reduction and the second attachment comprises a gear box providing a second gear reduction, the first gear reduction should be greater than the second gear reduction by a factor of 1 to 5 or 2 to 3.

In a further aspect it has been found useful that the brush head comprised by the first attachment has an average diameter of a certain range. If the brush is of circular form, the average diameter is a standard diameter. If the brush is of non-circular form, the average diameter is the diameter of a circular brush of the same area than the actually used non-circular brush. An average diameter in the range of 1 cm to 7 cm or 3 cm to 5 cm have been found useful. Such a diameter allows to easily use the skin treatment device and applying the right amount of force onto the skin when the device is hold in the user's hands. It has also been found that the device is efficient and yet gentle enough if the ratio of the gear reduction and the centimeter value of the average diameter is from 1 to 2. For example, a gear reduction of 2 is useful for a brush with an average diameter of 4 centimeters, hence, having a centimeter value of 4. This also allows to provide a drive unit which can be battery operated and still provides sufficient force for an efficient skin

treatment process. Choosing an appropriate gear reduction will also assist in preventing damage from the drive unit. By manipulating the first attachment manually, a not too high amount of force should be transmitted to the drive unit. A gear reduction as described is of assistance in this context.

Further, to protect the drive unit and the gear box, a disengagement mechanism can be provided. Such a disengagement mechanism for the first attachment can lead to the disengagement of the chassis carrying the skin treatment element, for example the brush and a rotary support element supporting the chassis and being coupled to the gear box and thereby the drive unit. It is useful to provide such a disengagement mechanism by providing the following: a drive unit comprising an output element, for example a gear box, and a rotary support element, the rotary support element comprising protrusions, the attachment comprising a skin treatment element and a chassis for the skin treatment element, the chassis comprising a multitude of recesses to cooperate with the protrusions of the rotary support element of the drive unit, wherein the chassis can be supported by the rotary support element and, wherein the protrusions can be brought into an engagement position with the recesses and, while the chassis is supported by the rotary support element, into a disengagement position with the recesses. It is useful that the recesses form a toothed ring. Many recesses in close neighborhood can be thereby offered. It is useful to provide the protrusions in the form of latches, for example spring loaded latches.

It is equally useful to couple the first attachment to the drive unit via an eccentric. This provides an efficient way of driving the first attachment.

A useful gear reduction for the first attachment can be achieved by providing the following: a first attachment which comprises a drive shaft for the transmission of a rotary movement from the drive unit to the drive axis, the drive shaft being linked to a sprocket, the sprocket engaging with a crown gear wheel and crown gear wheel being linked to the drive axis.

In the context of the present invention, it has been found that a method for treating human skin, the method comprising the following steps is useful:

- Treating the skin with an oscillating brush using a skin treatment device comprising a drive unit and a first attachment, the first attachment comprising the brush

- Removing body hair from the skin using a skin treatment device comprising the drive unit and a second attachment, the second attachment comprising an epilation or a depilation unit
- wherein the drive unit can operate at a first preset speed and the preset speed is used in both steps.

The method can be used in different sequences. For example, body hair can be first removed from the skin, and then in a subsequent step the skin can be treated with an oscillating brush. This method does not increase the efficiency of the hair removal process, however, it can have a massaging and soothing benefit. The soothing effect can be enhanced, if the method comprises a further step of applying a lotion to the skin or to the brush.

Alternatively, the treating of the skin with the oscillating brush can be carried out before removing body hair from the skin. This sequence of step has been found to increase the efficiency of the body hair removal. In one effective process, the treating the skin with the brush is carried out 24 to 72 hours before removing the body hair from the skin. The brushing process is assumed to prepare the skin for the hair removal process. As explained, the removal of surface skin particles can play a role for achieving this benefit. In this brushing step a certain amount of stress is induced on the skin. Waiting 24 to 72 hours before applying another skin treatment step, allows the skin to recover. Alternatively, the treating of the skin with the oscillating brush is carried out 60 to 1 minutes before removing body hair from the skin. While potentially accepting, that the skin is thereby exposed to a slightly increased stress, this timing of the two processes allows to carry out both steps in essentially one session, typically in one place, for example the bathroom, and hence to have a time efficient hair removal routine. In both cases, the pretreatment of the skin by brushing will noticeably increase the efficiency of the hair removal process, particularly, but not only, if an epilation process is used. There is a particular benefit in using a first and a second attachment with the gear reduction ratios as given above.

It is particularly beneficial, to use one and the same drive unit with the first and the second attachment. In particular if the drive unit allows four different speed settings, for example a first (slower) and a second (faster) speed. Different users will typically select a speed level according to their personal preferences. These preferences can be influenced by skin type. For example, a user with a more sensitive skin will often use the slower speed setting. The user can then use the



first and the second attachment with the same drive unit and with the same personal speed setting. If, for example, a slow speed is used, the both process steps will be relatively gentle as preferred by this particular user. The gear reduction level of the second attachment relative to the first attachment can be chosen to accommodate typical user habits, such that most users can reapply their personal speed setting in both process steps.

Fig. 1 shows a skin treatment device 10 comprising a first attachment with its essential elements according to the present invention. The device 10 comprises a drive unit 20. The drive unit will comprise a motor which will typically provide a rotational or vibrational movement to some output device. The motor will typically be an electrical motor which can be battery operated, preferably by a rechargeable battery. The drive unit 20 will comprise a switch 22, for turning the unit on or off and/or making other selections of an operation mode. The switch 22 allows to select a first operation speed by turning it to position 24 and allows to select a second operation speed by turning it to position 26.

An attachment 30 can be connected to the drive unit 20. A variety of suitable connectors are well-known, often a positive fitting is useful. Other attachments can be connected to the drive unit, for example attachment 30 can serve as a first attachment, and a further attachment can serve as a second or third attachment, which can also be connected to the same drive unit 20. The attachment 30 as shown comprises a brush 32. The term brush is used herein broadly, to denote an implement, which can comprise conventional bristles of a variety of materials, as known from other areas. The brush can also comprise rubber implements, which could have bristle form or which could also have the form of bars or ligaments. The brush 32 will typically have a circular outer shape, but could also have other shapes.

Fig. 2 shows the same device 20 in a side view. From the side view it is clear that the main axis of the drive unit and the rotational axis of the brush 32 are tilted towards each other. Angles in the range of 90° to 135° and 100° to 120° have been found useful for convenient and effective handling. In this side view it can be readily seen, that the attachment 30 comprises a gear box 60, onto which the brush 32 with the brush chassis 34 is mounted. The gear box 60 is connected to the brush chassis 34 via a rotary support element 50, which is only visible in this view as a ring like structure connection brush chassis 34 to gear box 60.

Fig. 3 shows a skin treatment device 10 comprising a second attachment with its essential elements according to the present invention. The second attachment is an epilation attachment 40. The epilation attachment 40 comprises an epilation cylinder 42. The epilation cylinder 42 can be brought in contact with the skin. The epilation cylinder 42 rotates about his main axis (which in Fig. 3 lies in the horizontal direction). The rotation is induces by the drive unit 20, which has been described before. The epilation cylinder 42 is provided with tweezers which can pull and pluck out hair. For an easier guidance of the device and also for achieving a certain reduction of a subjective sensation of pain, skin contact rollers 46 are provided. These rollers can provide an additional massage function. Hence, the present invention generally also concerns a skin treatment device 10 comprising a drive unit 20 and a first attachment 30 and a second attachment 40, the first attachment comprising 30 a brush or a skin treatment implement rotation about an axis generally vertical to the skin surface and the second attachment 40 comprising skin contact rollers 46 rotating about an axis parallel to the skin surface.

Fig.4 shows a partially cutaway side view of the skin treatment device 10 comprising the second attachment. In this view details of the gear box 60 can be easily understood. Power from the drive unit 20 is transmitted to the (incoming) drive shaft 64. Onto the drive shaft a sprocket 66 is mounted. For corporation with this sprocket a crown gear wheel 68 is provided. The crown gear wheel 68 sits on a drive axis 70. This axis is tilted at an angle of about  $110^\circ$  relative to drive shaft 64. Angles in the range of  $90^\circ$  to  $135^\circ$  and  $100^\circ$  to  $120^\circ$  have been found useful for convenient and effective handling. Overall, hence, an angular gear is provided which serves as a two stage speed reduction unit. The gear (or speed) reduction can be by a factor of 1.25 to 10. Values of 1.25 to 5 or 1.25 to 4 or 1.5 to 3 have also been found useful. It is also apparent that this robust construction easily fits into the outer shape of the gear box 60.

The drive axis 70 is parallel (as seen in this side view) to a central support axis 72. The central support axis 72 is not a driven axis. Hence the central support axis 72 provides rotary support for the rotary support element 50. Hence, the rotary support element 50 has one degree of freedom, which is the freedom to move about the support axis 72.

The rotary support element 50 comprises a rotary plate 52 onto which latches 54 are mounted. The latches 54 are spring loaded by spring elements 56. Further a support plate 58 is mounted onto rotary plate 52. The support plate 58 provides support to a skin treatment element (not

shown). A rotary oscillation movement can be provided to the rotary support element 50. This movement is transmitted by drive axis 70. The drive axis carries an eccentric 74. This eccentric 74 comprises an eccentric wheel 76, which carries an eccentric pin 78. The pin 78 can then cooperate with a slot (not shown here) in the rotary plate 52.

The dimensions and values disclosed herein are not to be understood as being strictly limited to the exact numerical values recited. Instead, unless otherwise specified, each such dimension is intended to mean both the recited value and a functionally equivalent range surrounding that value. For example, a dimension disclosed as “40 mm” is intended to mean “about 40 mm.”

## CLAIMS

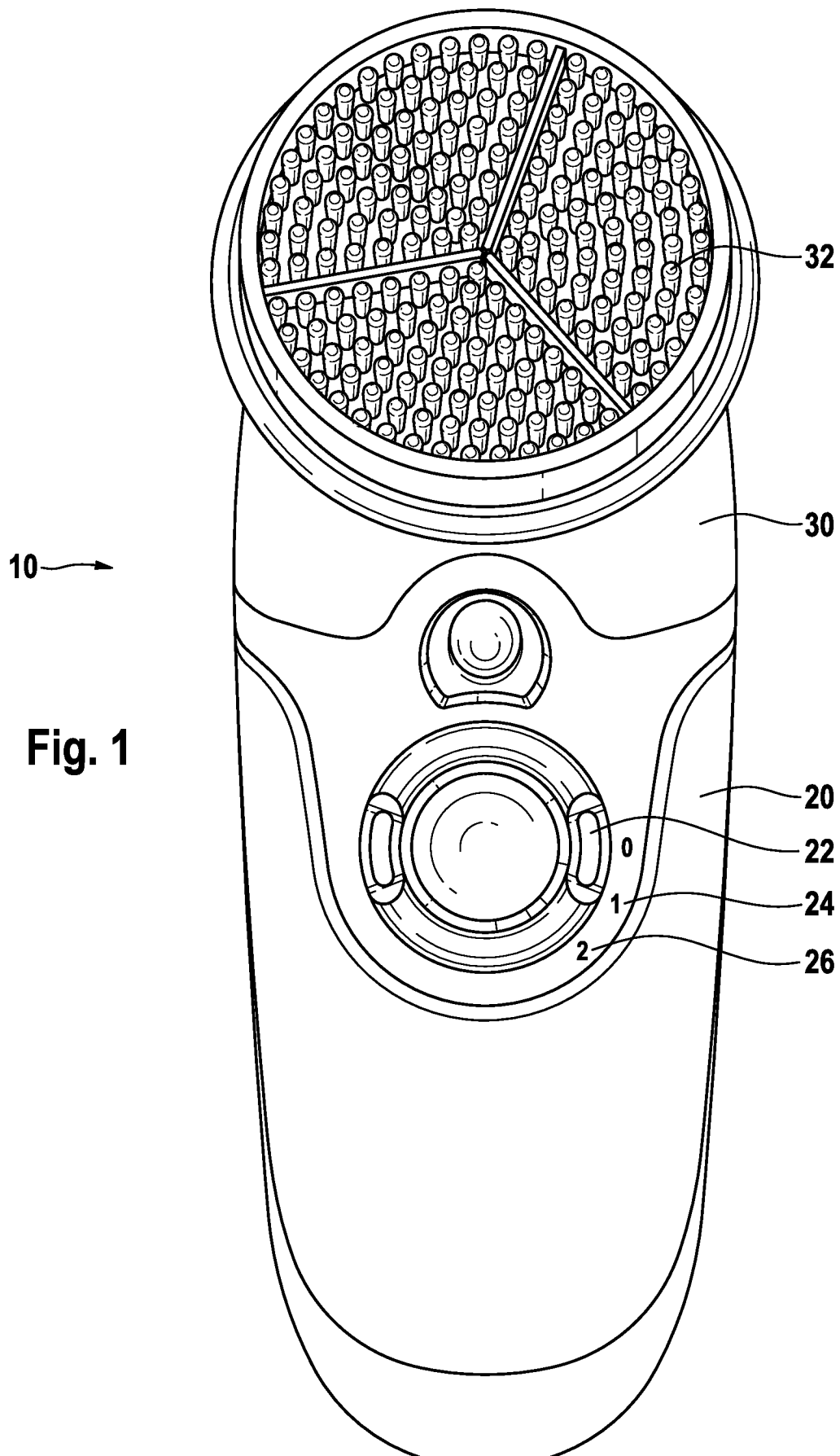
What is claimed is:

1. A skin treatment device (10) comprising a drive unit (20) and a first attachment (30) and a second attachment (40), the first attachment comprising (30) a brush, the second attachment (40) comprising an epilation or a depilation unit, wherein the first attachment comprises a gear box and the second attachment comprises a gear box and the gear box comprised by the second attachment provides a gear reduction of at least 1.25 to 4.
2. A skin treatment device (10) according to claim 2, wherein the brush comprises a brush head and the brush head comprises an average diameter, the average diameter being from 1 cm to 5 cm.
3. A skin treatment device (10) according to claim 2, wherein the ratio of the gear reduction and the centimeter value of the average diameter is from 2 to 3.
4. A skin treatment device (10) according to anyone of the preceding claims, wherein the first attachment is coupled to the drive unit via an eccentric.
5. A skin treatment device (10) according to anyone of the preceding claims, wherein the skin treatment device (10) comprises a drive unit (20) and an attachment (30), the drive unit (20) comprising an output element (60) and a rotary support element (50), the rotary support element (50) comprising protrusions, the attachment (30) comprising a skin treatment element (32) and a chassis (34) for the skin treatment element (32), the chassis comprising a multitude of recesses to cooperate with the protrusions of the rotary support element (50) of the drive unit, wherein the chassis (34) can be supported by the rotary support element (50) and, wherein the protrusions can be brought into an engagement position with the recesses and, while the chassis (34) is supported by the rotary support element (50), into a disengagement position with the recesses.
6. A skin treatment device (10) according to anyone of the preceding claims, wherein the recesses form a toothed ring.
7. A skin treatment device (10) according to anyone of the preceding claims, wherein the protrusions are provided in the form a latches (54).

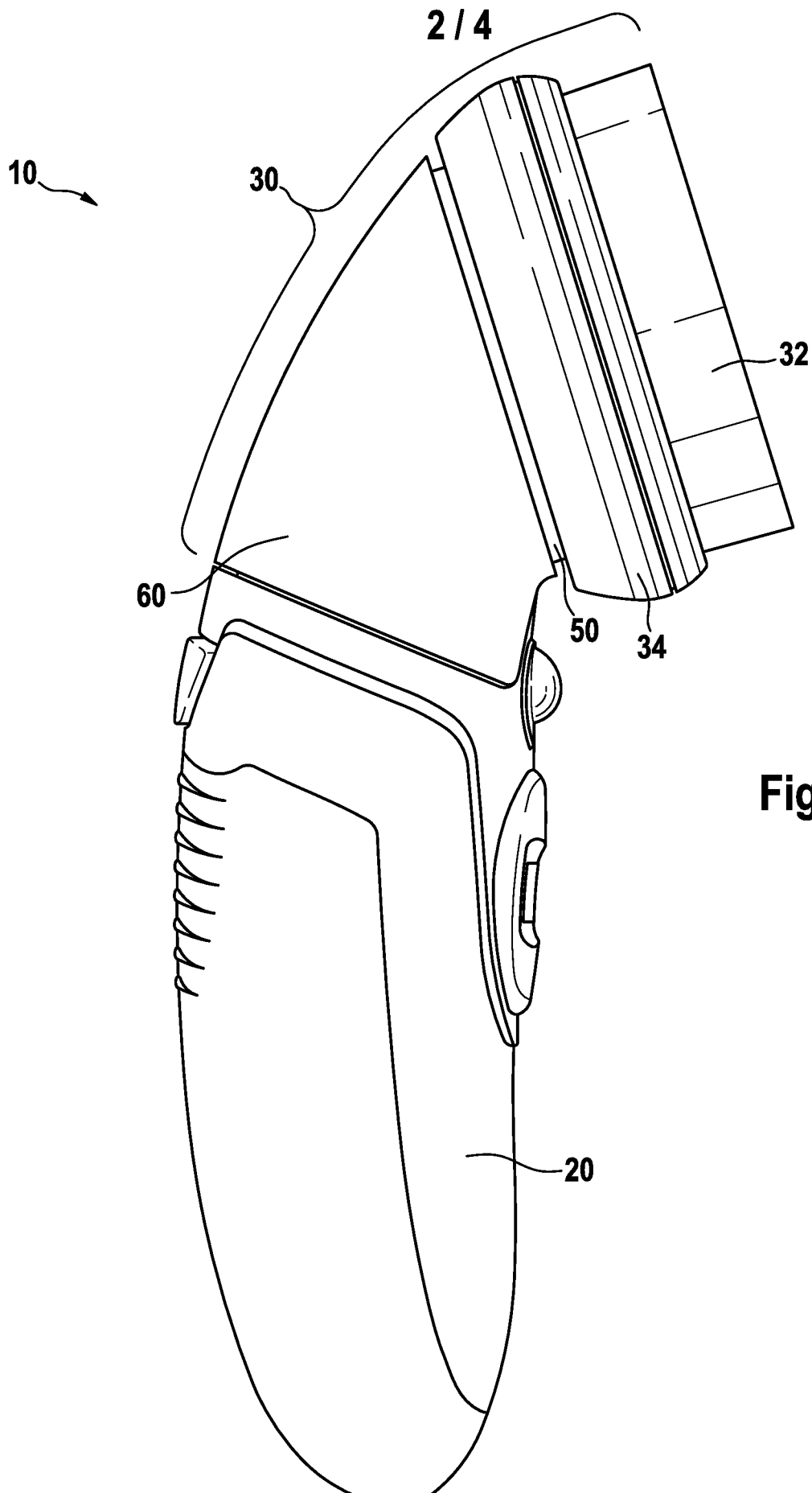
8. A skin treatment device (10) according to anyone of the preceding claims, comprising a first attachment (30) which comprises a drive shaft (62) for the transmission of a rotary movement from the drive unit (20) to the drive axis (70), the drive shaft (62) being linked to a sprocket (66), the sprocket (66) engaging with a crown gear wheel (68) and crown gear wheel (68) being linked to the drive axis (70).
9. A method for treating human skin, the method comprising the following steps:
  - Treating the skin with an oscillating brush using a skin treatment device comprising a drive unit and a first attachment, the first attachment comprising the brush
  - Removing body hair from the skin using a skin treatment device comprising the drive unit and a second attachment, the second attachment comprising an epilation or a depilation unitand wherein the drive unit can operate at a first preset speed and the preset speed is used in both steps.
10. The method of the preceding claim, wherein further a second preset speed is available.
11. The method of any one of the preceding claims, wherein the treating the skin with an oscillating brush is carried out 24 to 72 hours before the removing body hair from the skin.
12. The method of any one of the preceding claims, wherein the treating the skin with an oscillating brush is carried out 60 minutes to 1 minute before the removing body hair from the skin.
13. The method of any one of the preceding claims, wherein the first attachment comprises a gear box and the second attachment comprises a gear box and the gear box comprises by the second attachment provides a gear reduction of at least 1 to 2.5.
14. A kit comprising a drive unit (10), a first attachment (30) and an second attachment, the first attachment comprising (30) a brush, the second attachment comprising an epilation or a depilation unit, wherein the first attachment comprises a gear box and the second attachment comprises a gear box and the gear box comprises by the second attachment provides a gear reduction of at least 1 to 2.5.

Z8599Q

1 / 4



Z8599Q

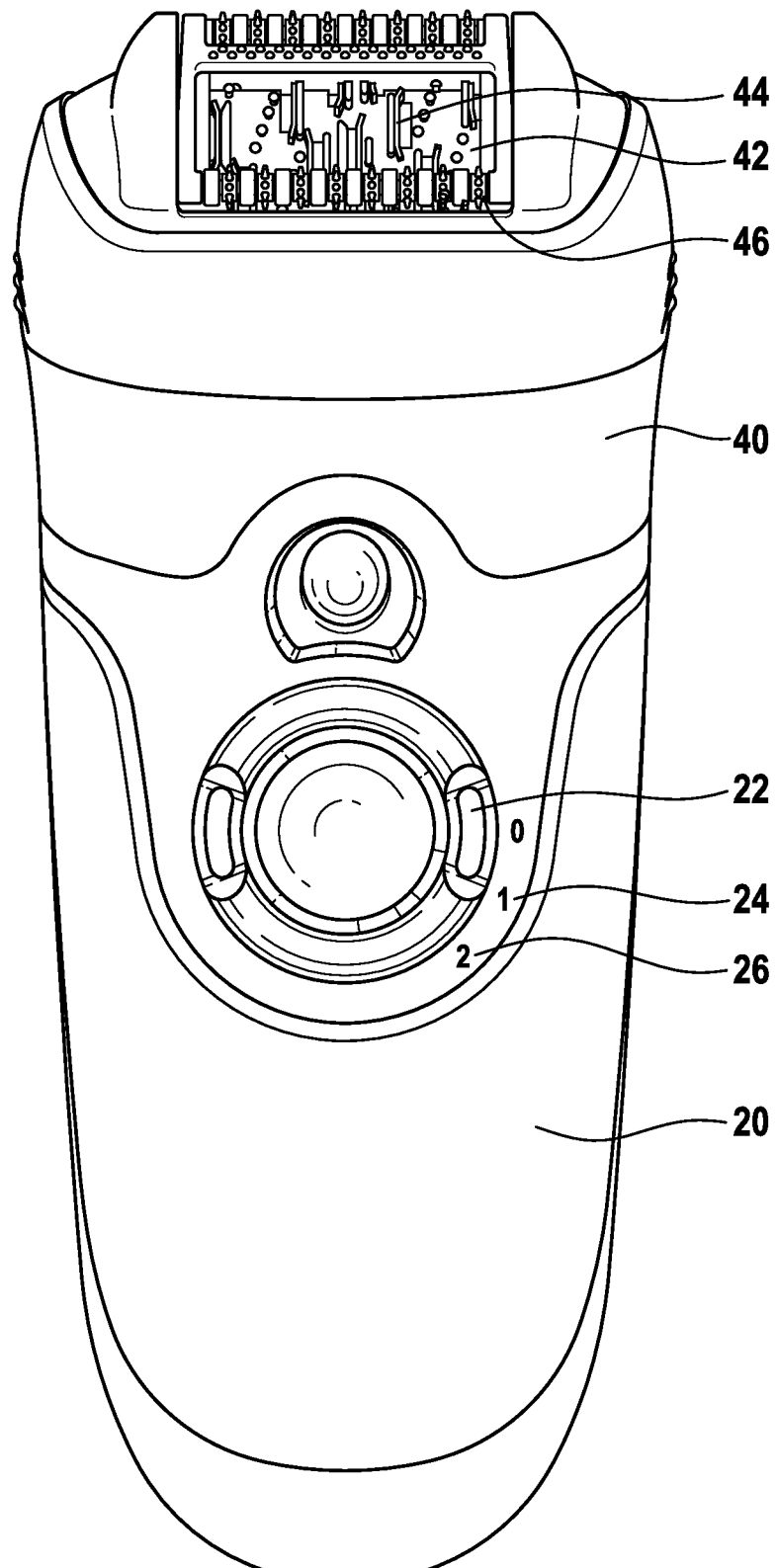


**Fig. 2**

Z8599Q

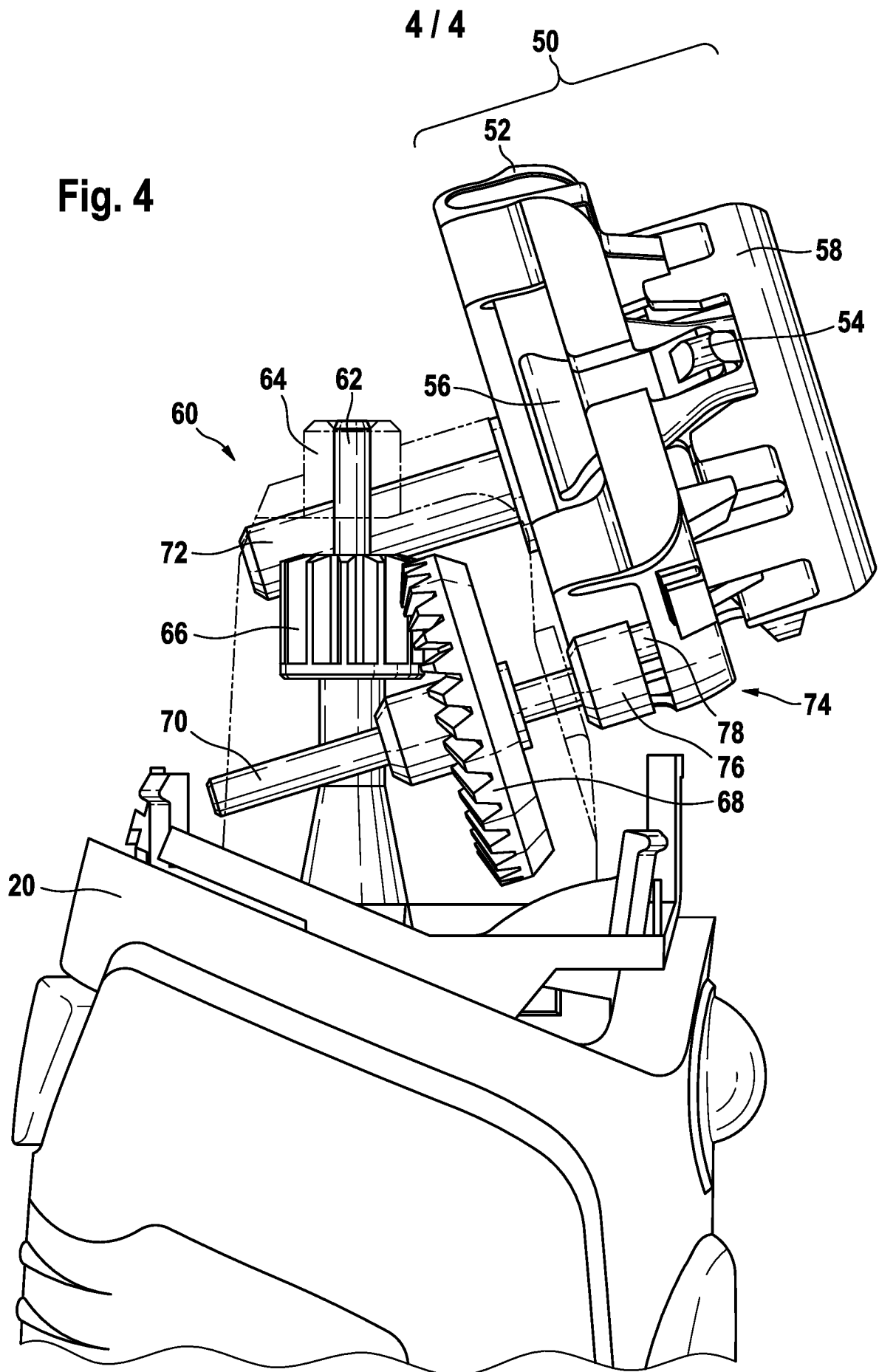
3 / 4

Fig. 3





Z8599Q



## INTERNATIONAL SEARCH REPORT

International application No  
PCT/IB2012/053714

A. CLASSIFICATION OF SUBJECT MATTER  
INV. A45D26/00 A46B13/00 A46B13/02  
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
A45D A46B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-Internal

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2011/067761 A1 (SYNERON MEDICAL LTD [IL]; ECKHOUSE SHIMON [IL]; KUTSCHER TUVIA DROR [I] 9 June 2011 (2011-06-09) abstract paragraphs [0053], [0084] - [0092] -----	1-14
A	WO 2009/104124 A2 (KONINKL PHILIPS ELECTRONICS NV [NL]; KINDERMANN SEBASTIAN A [AT]; MUEL) 27 August 2009 (2009-08-27) abstract -----	1,9,14
A	US 2 714 788 A (DI GIOVANNA TIGELLIA CISCO) 9 August 1955 (1955-08-09) cited in the application the whole document -----	1,9,14



Further documents are listed in the continuation of Box C.



See patent family annex.

## \* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

8 November 2012

Date of mailing of the international search report

14/11/2012

Name and mailing address of the ISA/

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040,  
Fax: (+31-70) 340-3016

Authorized officer

Nicolás, Carlos

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/IB2012/053714

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2011067761 A1	09-06-2011	AU 2010325682 A1 CN 102762154 A EP 2506773 A1 WO 2011067761 A1	26-07-2012 31-10-2012 10-10-2012 09-06-2011
WO 2009104124 A2	27-08-2009	AT 531290 T CN 101848659 A EP 2247214 A2 ES 2376704 T3 JP 2011512221 A RU 2010117174 A US 2010262163 A1 WO 2009104124 A2	15-11-2011 29-09-2010 10-11-2010 16-03-2012 21-04-2011 10-11-2011 14-10-2010 27-08-2009
US 2714788 A	09-08-1955	NONE	