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(54) **DEPILATING APPARATUS WITH A DEPILATING TAPE**

ENTHAARUNGSVORRICHTUNG MIT EINEM ENTHAARUNGSBAND

APPAREIL DE DEPILATION COMPORTANT UNE BANDE DEPILATOIRE

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## Description

**[0001]** The invention relates to a depilating apparatus with a housing, which housing is provided and designed to accommodate a supply of a depilating tape, which depilating tape can be pulled away from the supply and can then be applied to the skin of a person, and which depilating tape, after application to the skin of a person, adheres to the skin along an application length, and with application means for applying the depilating tape to the skin of a person, and with an opening in the housing, which opening is provided and designed for passing the depilating tape through to the skin of a person, and with determination means for determining the application length along which the depilating tape adheres to the skin of a person.

**[0002]** A depilating apparatus of the generic type cited in the first paragraph above is known from patent document EP 0 738 482 B1. The known apparatus is equipped with a rectangular and largely cuboidal housing, which, on a side running transversely in relation to the longitudinal direction of the housing, has an opening for passing through the heated depilating tape to the skin of a person, and which is equipped with a chassis that can be adjusted in the housing in parallel with the longitudinal direction of the housing, on which chassis a supply reel for the depilating tape and a wind-up reel for the depilating tape are rotatably mounted and on which chassis, in addition, a block-shaped heating device is arranged, with the aid of which the depilating tape can be heated and which simultaneously forms the application means for applying the heated depilating tape to the skin of a person and the determination means for determining the length of the application length. With the aid of the chassis, the heating device used as the application means and determination means can be brought into the area of the opening in the housing, as a result of which, with the aid of the heating device, which is equipped with a press-on surface for pressing the heated depilating tape onto the skin of a person, a section of the depilating tape essentially corresponding to the size of the press-on surface can be pressed onto the skin of a person and, in this manner, can be brought into an adhesive connection with the skin of a person. The depilating tape that has been brought into an active connection with the skin of a person, having previously been heated with the aid of the heating device, wherein the depilating wax provided on the depilating tape has been heated so that the depilating wax has softened and therefore was able to enclose hair, cools during the adhesion to the skin of a person, wherein a cooling of the depilating wax occurs, with the result that a retention of the enclosed hair on the depilating tape takes place with the aid of the depilating wax. Once cooling is sufficient, the depilating tape, including the hair retained on the depilating tape with the aid of the depilating wax, is pulled away from the skin of the person as quickly as possible, i.e. with a jerking movement, as a result of which the removal of the retained hair from the skin of the person

occurs.

**[0003]** In the known apparatus, the design of the press-on surface of the heating device used as the application means and determination means determines the length of the application length along which the depilating tape adheres to the skin of a person. By virtue of the fact that the heating device simultaneously forms the determination means for determining the length of the application length, along which application length the depilating tape adheres to the skin of a person, and that the heating device has a press-on surface that is of a fixed specification in terms of its size, the situation exists in the case of the known depilating apparatus that only one single length of the application length can be realized. This results in the known depilating apparatus having to be brought into an active connection multiple times in succession with adjacent skin areas of the skin of a person in order to depilate larger skin areas, wherein, on each removal procedure of the cooled depilating tape from the skin of a person, a sensation of pain occurs, which is unpleasant and disadvantageous for the person using the known depilating apparatus. This also gives rise to relatively long depilating procedures.

**[0004]** WO-A-00/72721 discloses a depilating apparatus of the generic type cited in the first paragraph that has similar disadvantages as the known apparatus described before. The apparatus according to WO-A-00/72721 uses a depilating tape comprising an electrically conductive layer and a depilating wax disposed on the conductive layer. In operation the tape is to be positioned on an elongate slightly curved application zone and is to be clamped against a first electrical contact near a first end of the application zone and against a second electrical contact near a second end of the application zone. By feeding an electrical current to one of the electrical contacts, the wax present on the portion of the tape between the two electrical contacts will be heated by the electrical current flowing through the tape and will be melted, so that this portion adheres to the hairs on the skin below said portion. Accordingly in this known apparatus the application length along which the depilating tape adheres to the skin is determined by the distance between the two electrical contacts and has a contact value.

**[0005]** It is an object of the invention to prevent the above-mentioned disadvantageous situation and to realize an improved depilating apparatus.

**[0006]** To achieve the above-mentioned object, the depilating apparatus in accordance with the invention may be characterized in the manner stated below, namely:

**[0007]** A depilating apparatus with a housing, which housing is designed to accommodate a supply of a depilating tape, which depilating tape can be pulled away from the supply and can then be applied to the skin of a person, and which depilating tape, after application to the skin of a person, adheres to the skin along an application length, and with application means for applying the depilating tape to the skin of a person, and with an

opening in the housing, which opening is provided and designed for passing the depilating tape through to the skin of a person, and with determination means for determining the application length along which the depilating tape adheres to the skin of a person, wherein the determination means are designed to determine different application lengths as desired.

**[0008]** Through the provision of the features in accordance with the invention, the opportunity is created, in a simple manner and with only a small additional outlay, for a multiplicity of different application lengths to be realized with a depilating apparatus in accordance with the invention, rather than just one single application length, so that each section of skin to be depilated of a particular length can be depilated with one single depilating procedure, wherein the application length is selected by the particular user to correspond with the length of the section of skin to be depilated. This gives rise to the great advantage that a section of skin to be depilated of a relatively great length no longer has to be depilated with multiple successive depilating procedures, but can be depilated with one single depilating procedure, which gives rise to the advantage that the user experiences a sensation of pain only during this one depilating procedure, wherein this sensation of pain, which occurs when removing the depilating tape adhering to the skin of the user over a relatively long application length, advantageously is not higher than when removing a depilating tape adhering to the skin of the user along only a relatively short application length because - as has been established in test investigations - the sensation of pain perceived by a person is independent of the application length. In a depilating apparatus in accordance with the invention, the further advantage is achieved that a total depilating procedure, e.g. the depilation of a leg, can be undertaken considerably more quickly than is possible with a known depilating apparatus. A further advantage with a depilating apparatus in accordance with the invention consists in the fact that, by virtue of the application of the depilating tape to the skin of a person along relatively long application lengths, a relatively long enclosure time for enclosing hair with the depilating wax on the depilating tape can be achieved in many cases, which is advantageous in respect of good depilating results.

**[0009]** In a depilating apparatus in accordance with the invention, the determination means for determining different application lengths as desired may be in the form of, for instance, two application rollers provided at a distance from each other, with which two application rollers the application length can be determined, wherein means for changing the distance between the two application rollers are provided so that, by changing the distance between the two application rollers, the application length can be changed by the user of an apparatus of this kind if so desired. In respect of an especially simple design, it has proved advantageous, however, if the features as claimed in claim 2 are also provided in a depilating apparatus in accordance with the invention. An especially

simple, operationally reliable design can be achieved in this manner. A design of this kind has proved extremely advantageous in respect of the simplest possible operation. In a depilating apparatus in accordance with the invention, the control button may take the form of a push button, wherein, with the push button in its first position as accomplished by pushing it, the blocking means assumes the release position, and wherein, with the push button in its second position as accomplished by not pushing it, the blocking means assumes the blocking position. It is, however, also extremely advantageous if the control button takes the form of a sliding button that can be slid between two positions, which sliding button is held in each of its two positions by a latching means. In a depilating apparatus in accordance with the invention, a design may also be realized, however, in which the blocking means can be controlled with the aid of the application means in that, through the pressing of the application means onto the skin, the blocking means is shifted into its release position.

**[0010]** In a depilating apparatus in accordance with the invention, it has further proved extremely advantageous if, in addition, the features as claimed in claim 3 are provided. In this manner, an especially simple, readily performed application of the depilating tape to the skin of a person is ensured. The application means may, however, also be realized in the form of a hoop or spatula or multiple adjacent coaxial disks.

**[0011]** In a depilating apparatus as described in the paragraph above, it has proved extremely advantageous if, in addition, the measures as claimed in claim 4 are provided. As a result, a detachment of the used depilating tape is also enabled with the aid of the depilating apparatus itself, which is advantageous in respect of simple handling. It should be mentioned, however, that the detachment of used depilating tape may also be undertaken with a cutting device that is separate from the depilating apparatus, for instance with a pair of scissors or a blade.

**[0012]** In a depilating apparatus in accordance with the invention, it has further proved extremely advantageous if, in addition, the features as claimed in claim 5 are provided. This is an advantage in respect of a simple introduction of a depilating tape into the depilating apparatus. Furthermore, this is advantageous in respect of a satisfactory operating mode of the blocking means. Instead of a supply reel, however, a supply of depilating tape may also be provided in the form of a stack formed by zigzag folding of the depilating tape in a depilating apparatus in accordance with the invention.

**[0013]** In a depilating apparatus as described in the paragraph above, it has proved extremely advantageous if, in addition, the features as claimed in claim 6 are provided. As a result, a design is obtained in which a detachment of used depilating tape after each depilating procedure is unnecessary, which is advantageous in respect of simple handling.

**[0014]** In a depilating apparatus as described in the paragraph above, it has proved extremely advantageous

if, in addition, the features as claimed in claim 7 are provided. With a design of this kind, it is advantageously achieved that the pull-off force and the pull-off speed with which a depilating tape is pulled away from the skin of a person are determined by the motor torque and therefore constant pull-off conditions are ensured in virtually all operational situations.

**[0015]** In a depilating apparatus as described in the paragraph above, it has proved extremely advantageous if, in addition, the features as claimed in claim 8 are provided. With a design of this kind, it is advantageously achieved that the flux of force between the motor and the wind-up reel can be interrupted so that the wind-up reel can be caused to rotate independently of the motor, and that therefore, when the depilating tape is applied to the skin of a person, the used depilating tape can be pulled off the wind-up reel again, which advantageously results in a saving in depilating tape.

**[0016]** In a depilating apparatus as described in the paragraph above, it has proved extremely advantageous if, in addition, the features as claimed in claim 9 are provided. With a design of this kind, it is advantageously achieved that the interruption of the drive connection is enabled in an extremely reliable and simple manner.

**[0017]** The above-mentioned aspects and further aspects of the invention are explained below.

**[0018]** The invention will be further described with reference to examples of embodiments shown in the drawings, to which, however, the invention is not restricted.

Fig. 1 shows, in schematic form, in a section along line I - I in Fig. 2, a depilating apparatus in accordance with a first embodiment example of the invention.

Fig. 2 shows, in schematic form, in a section along line II - II in Fig. 1, the depilating apparatus in accordance with Fig. 1.

Fig. 3 shows, in schematic form, in a section along line III - III in Fig. 4, a depilating apparatus in accordance with a second embodiment example of the invention.

Fig. 4 shows, in schematic form, in a section along line IV - IV in Fig. 3, the depilating apparatus in accordance with Fig. 3.

**[0019]** Figs. 1 and 2 show a depilating apparatus 1, which is a so-called wax depilating apparatus, and with which hair can be removed from the skin of a person using wax.

**[0020]** Depilating apparatus 1 is equipped with a housing 2, which is held in one hand when operating the depilating apparatus 1. Housing 2 is equipped with a front wall 3, angled in two places, a rear wall 4, a first sidewall 5, a second sidewall 6 and a top wall 7. In a bottom area 8 of housing 2, depilating apparatus 1 is provided with an opening 9, the purpose of which will be discussed in greater detail below. Housing 2 is designed to accommodate a supply 10 of a depilating tape 11.

**[0021]** In depilating apparatus 1, the supply 10 of de-

pilating tape 11 is wound to form a supply spool 10, wound onto a supply reel 12, so that the supply spool 10 forms the supply 10. When the entire supply 10 of a supply reel 12 has been used up, the empty supply reel 12 is removed from the housing 2 and a new supply reel 12 with a full supply spool 10 is inserted into the housing 2. Depilating tape 11 has a front side 13 and a rear side 14. On the front side 13, the depilating tape 11 is equipped with a wax layer, which cannot be seen in Figs. 1 and 2. Depilating tape 11 can be pulled away from the supply spool 10 and can then be heated and then applied to the skin of a person. After being applied to the skin of a person, depilating tape 11 adheres to the skin of a person along an application length L, which is shown schematically in Fig. 1. Depilating tape 11 can subsequently be pulled away from the skin of a person, wherein, during this pulling away, hair is removed from the skin of a person by pulling or tearing the hair out.

**[0022]** The supply reel 12 is equipped with a hub 15, which is rotatably mounted with the aid of sidewalls 5 and 6, and a first reel flange 16 and a second reel flange 17, which two reel flanges 16 and 17 are connected to hub 15 with rotational resistance. Supply reel 12 is further equipped with a reel toothed-wheel 18, connected to the second reel flange coaxially and with rotational resistance, and an endless-belt wheel 19, connected to the reel toothed-wheel 18 coaxially and with rotational resistance, around which an endless belt 20 is arranged.

**[0023]** A protection-tape wind-up reel 21 can be driven in rotation, in a manner that is not described in greater detail, with the aid of the endless belt 20. A protection tape 22, indicated with a dotted line in Fig. 1, can be wound onto protection-tape wind-up reel 21. With depilating tape 11 wound onto supply spool 10, protection tape 22 is provided for the purpose of covering the wax layer adjoining the front side 13 of depilating tape 11, and, when depilating tape 11 is pulled away from the supply spool 10, can be separated from the wax layer and wound onto the protection-tape wind-up reel 21.

**[0024]** In its housing 2, depilating apparatus 1 contains a heating device 25. Heating device 25 is equipped with heating means 26, which is shown schematically, and a heating panel 27, which can be heated up with the aid of heating means 26, along which heating panel 27 the depilating tape 11 is arranged, so that the depilating tape 11, pulled away from the supply spool 10 and passing heating device 25, can be heated with the aid of heating panel 27 in order to heat the wax layer adjoining the depilating tape 11 on its front side 13. To supply the heating means 26 with electrical power, a supply circuit 28, which is indicated schematically and is conductively connected to heating means 26, is provided in housing 2.

**[0025]** In depilating apparatus 1, heating device 25 is mounted so as to be adjustable. To this end, a support 30, mounted to swivel around axle 29, is provided for heating device 25. Axle 29 is mounted in the two sidewalls 5 and 6. Support 30 is essentially U-shaped and is equipped with two support arms 31 and 32 and a support web 33

connecting the two support arms 31 and 32 to each other. A holding arm 34 is connected in one piece to carrier web 33. Further connected to carrier web 33 is heating panel 27. Heating means 26 is retained between holding arm 34 and heating panel 27. Protruding from holding arm 34 is a control lug 35, the function of which will be described in greater detail below. Protruding from heating panel 27 in the area of the free end 36 of heating panel 27 is a control arm 37, to which is connected one end of a tension spring 38, the other end of which is connected to the rear wall 4 of housing 2.

**[0026]** With the aid of heating device 25, the depilating tape 11, pulled away from the supply 10, i.e. from the supply spool 10, can be heated in sections. By heating in this way, the wax layer adjoining depilating tape 11 is softened, so the wax layer assumes a consistency such that the heated wax can enclose hair on the skin of a person.

**[0027]** Depilating apparatus 1 is further equipped with application means 40 for applying the heated depilating tape 11 to the skin of a person. The application means 40 in the present case takes the form of an application roller 40. The depilating tape 11 is arranged around the application roller 40 in a direction leading from front wall 3 to rear wall 4 of housing 2, which is opposite to the direction of the forward motion of depilating apparatus 1 when depilating apparatus 1 is in operation. The direction of forward motion of depilating apparatus 1 when depilating apparatus 1 is in operation is indicated in Fig. 1 with an arrow 41. Application roller 40 is arranged in the area of opening 9 of housing 2 and is rotatably mounted on axle 29. Opening 9 is thereby provided and designed so that the heated depilating tape 11 can be passed through to the skin of a person.

**[0028]** Interacting with application roller 40, with depilating tape 11 inserted in between, is a press-on roller 42, which press-on roller 42 ensures that the depilating tape 11 presses gently against application roller 40. Press-on roller 42 also ensures that, following detachment of a used depilating tape 11, the section of depilating tape 11 that has already passed application roller 40 and press-on roller 42 cannot, in an undesired manner, enter the interior of housing 2 of depilating apparatus 1.

**[0029]** Depilating apparatus 1 is further equipped with a cutting device 43, which is arranged adjacent to application roller 40 and which is provided for cutting off depilating tape 11 in an area of depilating tape 11, which area of depilating tape 11 has already passed application roller 40. Cutting device 43 comprises a cutting tool 44, which is provided and designed for cutting off a used depilating tape 11. After a used depilating tape 11 has been cut off, a short piece of depilating tape 11 is located in the area of application roller 40 outside of housing 2 of depilating apparatus 1.

**[0030]** At the start of the depilating procedure, application roller 40, with the short piece of depilating tape 11 inserted in between, is placed on the skin of a person. Subsequently, depilating apparatus 1, and consequently

application roller 40 also, is moved over the skin of the person in the direction of arrow 41, as a result of which depilating tape 11 is pulled away from supply reel 12 and heated with the aid of heating device 25, and as a result of which the heated depilating tape 11 is applied to the skin of a person so that, following such an application of depilating tape 11 to the skin of a person, i.e. when depilating apparatus 1 is no longer moved forward in the direction of arrow 41, depilating tape 11 adheres to the skin of a person along a length of application length L as determined in this case.

**[0031]** Provided in depilating apparatus 1 are determination means 45, which are provided and designed for determining the application length L along which depilating tape 11 adheres to the skin of a person. The design of the determination means 45 is hereby undertaken in such a way that the determination means 45 are designed to determine different application lengths L as desired.

**[0032]** In depilating apparatus 1, determination means 45 is equipped with a hand-operated control button 46 and with blocking means 47 which interacts with control button 46 on the one hand and with the supply 10, i.e. the supply spool 10, on the other. Control button 46 is designed as a sliding button 46, which can be shifted between a first position shown in Fig. 1 and a second position not shown in Fig. 1, wherein control button 46 can be moved in the direction of an arrow 48, from its first position shown in Fig. 1 into its second position. Control button 46 is equipped with a button head 49 and a button slider 50. Provided on button slider 50 is a control link 51, which is provided and designed to interact with control lug 35 of support 30. As already mentioned, control button 46 interacts with blocking means 47. This takes place via control link 51 and control lug 35 and support 30 for heating device 25 and heating panel 27 and control arm 37 and via a control connection 52, indicated in Figs. 1 and 2 only schematically with a broken line, which control connection 52 interacts directly with blocking means 47. In the present case, blocking means 47 is essentially formed by an L-shaped, swivel-mounted blocking lever 47. The control connection 52 acts on a first end 53 of blocking lever 47. With its second end 54, blocking lever 47 interacts with the toothing of reel toothed-wheel 18. The design hereby is such that, with control button 46 in its first position as shown in Fig. 1, blocking lever 47 assumes a release position that enables a pulling away of depilating tape 11 from supply spool 10, and that, with control button 46 in its second position, not shown in Fig. 1, blocking lever 47 assumes a blocking position blocking any pulling away of depilating tape 11 from supply coil 10.

**[0033]** When depilating apparatus 1 is not in use, control button 46 of determination means 45 is in its second position, which is not shown in Fig. 1. Control link 51 hereby releases the control lug 35 of support 30, so that tension spring 38 retains support 30 in a home position not shown in Fig. 1, in which heating panel 27 is essentially shifted out of the transport path of depilating tape 11. It is further ensured, via control arm 37 and control

connection 52, that blocking lever 47 assumes its blocking position, blocking any pulling away of depilating tape 11 from supply spool 10. It is further ensured, with the aid of control button 46, that supply circuit 28 is switched off and therefore no supply of power to heating means 26 takes place.

**[0034]** When a user of depilating apparatus 1 wishes to put depilating apparatus 1 into operation, i.e. wishes to undertake a depilating procedure, the user takes depilating apparatus 1 in his/her hand and pushes control button 46 of determination means 45 counter to the direction of arrow 48 into its first position, as shown in Fig. 1. As a result, supply circuit 28 is switched on with the aid of control button 46, so that heating means 26 is supplied with power and, as a result, heating panel 27 is heated. Through the moving of control button 46 into its first position, control lug 35 is also actuated via control link 51, which results in support 30 for heating device 25 being swiveled counter to the force of tension spring 38 into the position shown in Fig. 1. As a result, heating panel 27 comes into active connection with depilating tape 11, so that good heating of depilating tape 11 takes place. Via control arm 37 and control connection 52, blocking lever 47 is also swiveled so that blocking lever 47 subsequently assumes its release position, allowing depilating tape 11 to be pulled off from supply spool 12. If the user now places depilating apparatus 1 with application roller 40 on his/her skin or on the skin of another person, with the short piece of depilating tape 11 located in the area of application roller 40 outside of housing 2 inserted in between, and subsequently moves depilating apparatus 1 forward along the skin in the direction of arrow 41, wherein application roller 40 presses depilating tape 11 against the skin, this results in the depilating tape 11, which has been heated with the aid of heating device 25, being applied to the skin with the aid of application roller 40. This application takes place as long as determined with the aid of determination means 45 of depilating apparatus 1, which means, in other words, that this application takes place as long as control button 46 of determination means 45 remains in its first position. When the desired application length L has been reached, the user of depilating apparatus 1 moves control button 46 of determination means 45 in the direction of arrow 48 from the first position of control button 46, as shown in Fig. 1, into its second position, which is not shown in Fig. 1. This has the result that control link 51 releases control lug 35, and therefore support 30 is swiveled, with the force of tension spring 38, out of its operational position, as shown in Fig. 1, into its home position, which is not shown, as a result of which blocking lever 47 is swiveled, via control arm 37 and control connection 52 of blocking lever 47, into its blocking position, in which blocking position the blocking lever 47 blocks any pulling away of depilating tape 11 from supply spool 10. The electrical supply of heating means 26 of heating device 25 is also terminated. Therefore, no more depilating tape 11 can be heated, and neither can any more depilating

tape 11 be applied to the skin.

**[0035]** During the application of the heated depilating tape 11 to the skin of a person, the softened wax encloses the hair present in the area of the skin. The depilating tape 11 applied to the skin subsequently cools. Following cooling of depilating tape 11, the depilating tape 11 previously applied to the skin along application length L is torn away from the skin by the user of depilating apparatus 1 with the aid of depilating apparatus 1, which is possible because supply spool 10 is secured against rotation with the aid of blocking lever 47. Following the tearing away or rapid pulling off of used depilating tape 11 from the skin, the user of depilating apparatus 1 operates cutting device 43, as a result of which the used depilating tape 11 is detached. Depilating apparatus 1 is then available for the next depilating procedure.

**[0036]** With regard to depilating apparatus 1 in accordance with Figs. 1 and 2, it should also be mentioned that, in a modification to this depilating apparatus 1, application roller 40 and, if applicable, press-on roller 42, may also be of a heatable design in order that depilating tape 11 can be subjected to an additional heating process immediately before the application to the skin of a person.

**[0037]** Figs. 3 and 4 show a further depilating apparatus 1. The depilating apparatus 1 in accordance with Figs. 3 and 4 is, in part, of a similar design to the depilating apparatus 1 in accordance with Figs. 1 and 2, for which reason only the features that differ from depilating apparatus 1 in accordance with Figs. 1 and 2 will be described in detail below.

**[0038]** In depilating apparatus 1 in accordance with Figs. 3 and 4, control button 46 of determination means 45 is provided in the area of second sidewall 6. Control button 46 hereby interacts directly with blocking lever 47 in a manner not described in greater detail. Control button 46 is shown in Fig. 4 in its second position, in which blocking lever 47 assumes its blocking position, blocking any pulling away of depilating tape 11 from supply reel 10. Control button 46 can be shifted, counter to the direction of arrow 48, out of its second position, as shown in Fig. 4, into its first position, which is not shown in Fig. 4, wherein, with control button 46 located in its first position, blocking lever 47 assumes its release position, enabling a pulling-away of depilating tape 11 from supply spool 10. In the depilating apparatus 1 in accordance with Figs. 3 and 4, supply circuit 28 for heating means 26 of heating device 25 can also be switched on and off with the aid of control button 46. Heating device 25 is mounted in housing 2 so as to be stationary in the depilating apparatus 1 in accordance with Figs. 3 and 4.

**[0039]** In depilating apparatus 1 in accordance with Figs. 3 and 4, press-on roller 42 is arranged opposite heating panel 27 of heating device 25.

**[0040]** One important difference concerning the depilating apparatus 1 in accordance with Figs. 3 and 4 as compared with the depilating apparatus 1 in accordance with Figs. 1 and 2 consists in the fact that, in the case of the depilating apparatus 1 in accordance with Figs. 3 and

4, a wind-up reel 60 is provided in addition to supply reel 12. Wind-up reel 60 is provided and designed for winding up depilating tape 11 that was previously adhering to the skin of a person. Wind-up reel 60 is equipped with a hub 61 and a first reel flange 62 and a second reel flange 63. Connected to second reel flange 63 coaxially and with rotational resistance is a reel toothed-wheel 64. Rotatably mounted on a sleeve-shaped extension 65 of reel toothed-wheel 64 is a drive toothed-wheel 66. Provided between drive toothed-wheel 66 and reel toothed-wheel 64 is a single-direction coupling not shown in Fig. 4. With the aid of the single-direction coupling, a transmission of force or torque can be undertaken if drive toothed-wheel 66 is operated in accordance with the arrow 67 represented by a solid line in Fig. 3. If, conversely, drive toothed-wheel 66 is operated in accordance with the arrow 68 represented by a broken line in Fig. 3, no force or torque transmission takes place from drive toothed-wheel 66 to reel toothed-wheel 64 or, as a result, to wind-up reel 60.

**[0041]** Depilating apparatus 1 in accordance with Figs. 3 and 4 is equipped with a motor 69 accommodated in housing 2. Motor 69 is equipped with a motor shaft 70, on which a first toothed wheel 71 sits with rotational resistance. Engaging in first toothed wheel 71 is a second toothed wheel 72 which is rotatably mounted with the aid of an axle 73 protruding from second sidewall 6. Second toothed wheel 72 engages with drive toothed-wheel 66. A drive connection 74, comprising the motor shaft 70 and the first toothed wheel 71 and the second toothed wheel 72 and the drive toothed-wheel 66 and the (not shown) single-direction coupling and the reel toothed-wheel 64, is thereby provided between motor 69 and wind-up reel 60. In this manner, wind-up reel 60 can be rotatably operated with the aid of motor 69 to wind up depilating tape 11 which was previously adhering to the skin of a person. The drive connection 74 between motor 69 and wind-up reel 60 can hereby be interrupted using the single-direction coupling between drive toothed-wheel 66 and reel toothed-wheel 64. To interrupt drive connection 74, means suitable for the purpose are provided, in this case constituting the hand-operated control button 46, through actuation of which drive means 74 can be interrupted. With the aid of control button 46, motor 69 can be switched on if control button 46 is moved from its first position, which is not shown in Fig. 4, in the direction of arrow 48 into its second position as shown in Fig. 4, wherein motor 69 is then operated to drive wind-up reel 60. If, conversely, control button 46 is moved from its second position as shown in Fig. 4 counter to the direction of arrow 48 into its first position, which is not shown in Fig. 4, and remains in its first position, motor 69 is switched off and, using the braking effect of motor 69, first toothed wheel 71 and second toothed wheel 72 and drive toothed-wheel 66 are secured against rotation, wherein, however, by virtue of the effect of the single-direction coupling provided between drive toothed-wheel 66 and reel toothed-wheel 64, reel toothed-wheel 64 can

be operated in the direction of arrow 68 by pulling off the depilating tape 11 that was previously already wound onto wind-up reel 60, which means, in other words, that a depilating tape 11 that has already been wound onto wind-up reel 60 can again be unwound from wind-up reel 60.

**[0042]** In order to undertake a depilating procedure with depilating apparatus 1 in accordance with Figs. 3 and 4, control button 46 is moved out of its second position as shown in Fig. 4 counter to the direction of arrow 48 into its first position, which is not shown in Fig. 4, as a result of which blocking lever 47 is swiveled into its release position, releasing supply reel 12, and heating device 25 is supplied with power and motor 69 remains switched off. Application roller 40 is then placed on the skin of a person in the area of point A as shown in Fig. 3. Depilating apparatus 1 is then moved forward along the skin in the direction of arrow 41, wherein depilating tape 11, which has been heated with the aid of heating device 25, is applied to the skin with the aid of application roller 40. Simultaneously, depilating tape 11 that had already been applied to the skin, a section of which is designated 11U in Fig. 3, is again unwound from wind-up reel 60 in accordance with arrow 68. As soon as depilating tape 11 has been applied to the skin over application length L for the desired length, the forward movement of depilating apparatus 1 along arrow 41 is terminated. Control button 46 is then moved in the direction of arrow 48 from its first position, which is not shown in Fig. 4, into its second position as shown in Fig. 4, as a result of which blocking lever 47 is swiveled into its blocking position, thereby blocking supply reel 12, and heating device 25 is no longer supplied with power, and motor 69 is switched on. This causes wind-up reel 60 to be operated suddenly and at a relatively high speed, which results in the depilating tape 11 previously applied to the skin being pulled away from the skin of a person with a jerking movement, thereby pulling hair out of the skin of a person.

**[0043]** With depilating apparatus 1 in accordance with Figs. 1 and 2 and in accordance with Figs. 3 and 4, the important advantage is obtained that different lengths of application length L can be realized as desired. In depilating apparatus 1 in accordance with Figs. 3 and 4, in particular, the further important advantage is obtained that the pulling-off of the depilating tape 11 applied to the skin of a person takes place, at least for the greater part, at an acute pull-off angle which exists between the depilating tape 11 applied to the skin and the section of depilating tape 11 U running from the skin to wind-up reel 60. A sharp pull-off angle of this kind is a positive parameter in respect of achieving good depilating results, i.e. good hair removal results.

**[0044]** The depilating apparatus 1 described above uses so-called hot-wax tapes, which have to be heated before being applied to the skin. The measures in accordance with the invention could, however, also be introduced in depilating appliances for so-called cold-wax tape, which cold-wax tape does not have to be heated,

so this kind of depilating apparatus can operate without the need for a heating device.

[0045] The depilating apparatus 1 described above uses reels with flanges and with a reel hub with a circular cross-section. However, reels without flanges and with different hub cross-sections, e.g. with an elliptical or polygonal cross-section, may also be used.

## Claims

1. A depilating apparatus (1) with a housing (2), which housing (2) is designed to accommodate a supply (10) of a depilating tape (11), which depilating tape (11) can be pulled away from the supply (10) and can then be applied to the skin of a person, and which depilating tape (11), after application to the skin of a person, adheres to the skin along an application length (L), and with application means (40) for applying the depilating tape (11) to the skin of a person, and with an opening (9) in the housing (2), which opening (9) is provided and designed for passing the depilating tape (11) through to the skin of a person, and with determination means (45) for determining the application length (L) along which the depilating tape (11) adheres to the skin of a person, **characterized in that** the determination means (45) are designed to determine different application lengths (L) as desired.
2. A depilating apparatus (1) as claimed in claim 1, wherein the determination means (45) are equipped with a hand-operated control button (46) and with a blocking means (47) which interacts with the control button (46) on the one hand and with the supply (10) on the other, which control button (46) can be moved between a first position and a second position, and wherein, with the control button (46) in its first position, the blocking means (47) assumes a release position that enables a pulling away of depilating tape (11) from the supply (10), and wherein, with the control button (46) in its second position, the blocking means (47) assumes a blocking position blocking any pulling away of depilating tape (11) from the supply (10).
3. A depilating apparatus (1) as claimed in claim 1, wherein the application means (40) comprise an application roller (40) which is arranged in the area of the opening (9) of the housing (2).
4. A depilating apparatus (1) as claimed in claim 3, wherein a cutting device (43) is provided, which cutting device (43) is arranged adjacent to the application roller (40) and is designed for cutting off the depilating tape (11) in an area of depilating tape (11), which area of depilating tape (11) has already

passed the application roller (40).

5. A depilating apparatus (1) as claimed in claim 2, wherein the supply (10) of depilating tape (11) is wound so as to form a supply spool (10) wound onto a supply reel (12), and wherein the blocking means (47) interacts with the supply reel (12).
6. A depilating apparatus (1) as claimed in claim 5, wherein, in addition to the supply reel (12), a wind-up reel (60) is provided, which wind-up reel (60) is provided and designed for winding up depilating tape (11) that was previously adhering to the skin of a person.
7. A depilating apparatus (1) as claimed in claim 6, wherein a motor (69), accommodated in the housing (2), is provided, and wherein a drive connection (74) is provided between the motor (69) and the wind-up reel (60), so that the wind-up reel (60) can be rotatably operated with the aid of the motor (69) to wind up depilating tape (11) which was previously adhering to the skin of a person.
8. A depilating apparatus (1) as claimed in claim 7, wherein an interruptable drive connection (74) is provided as the drive connection (74) between the motor and the wind-up reel, and wherein means for interrupting the drive connection (74) are provided.
9. A depilating apparatus (1) as claimed in claim 8, wherein the means for interrupting the drive connection (74) comprise a hand-operated control button (46), through the actuation of which the drive means (74) can be interrupted.

## Patentansprüche

1. Epiliergerät (1) mit einem Gehäuse (2), welches Gehäuse (2) zum Aufnehmen eines Vorrats (10) an einem Epilierband (11) ausgebildet ist, welches Epilierband (11) von dem Vorrat (10) wegziehbar ist und danach auf die Haut eines Menschen aufgebracht werden kann und welches Epilierband (11) nach dem Aufbringen auf die Haut eines Menschen entlang einer Aufbringungs-länge (L) an der Haut haftet und, mit Aufbringungsmitteln (40) zum Aufbringen des Epilierbandes (11) auf die Haut eines Menschen und mit einer Öffnung (9) in dem Gehäuse (2), welche Öffnung (9) zum Hindurchführen des Epilierbandes (11) zu der Haut eines Menschen vorgesehen und ausgebildet ist, und mit Festlegungsmitteln (45) zum Festlegen der Auf-



bringungslänge (L), entlang der das Epilierband (11) an der Haut eines Menschen haftet, **dadurch gekennzeichnet, dass** die Festlegungsmittel (45) zum Festlegen von wahlweise unterschiedlichen Aufbringungslängen (L) ausgebildet sind.

2. Epiliergerät (1) nach Anspruch 1, wobei die Festlegungsmittel (45) mit einer mit der Hand betätigbaren Steuertaste (46) und einem mit der Steuertaste (46) einerseits und mit dem Vorrat (10) andererseits zusammenwirkenden Blockiermittel (47) ausgerüstet sind, welche Steuertaste (46) zwischen einer ersten Position und einer zweiten Position bewegt werden kann, und wobei bei in ihrer ersten Position befindlicher Steuertaste (46) das Blockiermittel (47) eine ein Wegziehen von Epilierband (11) von dem Vorrat (10) erlaubende Freigabeposition einnimmt und wobei bei in ihrer zweiten Position befindlicher Steuertaste (46) das Blockiermittel (47) eine ein Wegziehen von Epilierband (11) von dem Vorrat (10) blockierende Blockierposition einnimmt.
3. Epiliergerät (1) nach Anspruch 1, wobei die Aufbringungsmittel (40) eine Aufbringungswalze (40) umfassen, die in dem Bereich der Öffnung (9) des Gehäuses (2) angeordnet ist.
4. Epiliergerät (1) nach Anspruch 3, wobei eine Schneideinrichtung (43) vorgesehen ist, welche Schneideinrichtung (43) benachbart zu der Aufbringungswalze (40) angeordnet ist und zum Abschneiden des Epilierbandes (11) in einem Bereich des Epilierbandes (11) vorgesehen ist, welcher Bereich des Epilierbandes (11) die Aufbringungswalze (40) bereits passiert hat.
5. Epiliergerät (1) nach Anspruch 2, wobei der Vorrat (10) an Epilierband (11) zu einem auf eine Vorratsspule (12) aufgewickelten Vorratswickel (10) aufgewickelt ist und wobei das Blockiermittel (47) mit der Vorratsspule (12) zusammenwirkt.
6. Epiliergerät (1) nach Anspruch 5, wobei zusätzlich zu der Vorratsspule (12) eine Aufwickelspule (60) vorgesehen ist, welche Aufwickelspule (60) zum Aufwickeln von Epilierband (11), das zuvor auf der Haut eines Menschen haftete, vorgesehen und ausgebildet ist.
7. Epiliergerät (1) nach Anspruch 6, wobei ein in dem Gehäuse (2) untergebrachter Motor (69) vorgesehen ist und wobei zwischen dem Motor (69) und der Aufwickelspule (60) eine Antriebsverbindung (74) vorgesehen ist, so dass die Aufwickelspule (60) mit Hilfe des Mo-

tors (69) zum Aufwickeln von Epilierband (11), das zuvor auf der Haut eines Menschen haftete, rotierend antreibbar ist.

8. Epiliergerät (1) nach Anspruch 7, wobei als Antriebsverbindung (74) zwischen dem Motor und der Aufwickelspule eine unterbrechbare Antriebsverbindung (74) vorgesehen ist und wobei Mittel zum Unterbrechen der Antriebsverbindung (74) vorgesehen sind.
9. Epiliergerät (1) nach Anspruch 8, wobei die Mittel zum Unterbrechen der Antriebsverbindung (74) eine mit der Hand betätigbare Steuertaste (46) aufweisen, durch deren Betätigung die Antriebsmittel (74) unterbrechbar sind.

## Revendications

1. Appareil dépilatoire (1) comprenant :

un boîtier (2), lequel boîtier (2) est destiné à recevoir un approvisionnement (10) en bande dépilatoire (11), laquelle bande dépilatoire (11) peut être retirée de l'approvisionnement (10) et peut ensuite être appliquée sur la peau d'une personne, et laquelle bande dépilatoire (11), après l'application sur la peau d'une personne, adhère à la peau sur une longueur d'application (L), et des moyens d'application (40) pour appliquer la bande dépilatoire (11) sur la peau d'une personne, et une ouverture (9) dans le boîtier (2), laquelle ouverture (9) est prévue et conçue pour laisser passer la bande dépilatoire (11) jusqu'à la peau d'une personne, et des moyens de détermination (45) pour déterminer la longueur d'application (L) sur laquelle la bande dépilatoire (11) adhère à la peau d'une personne,

**caractérisé en ce que** les moyens de détermination (45) sont conçus pour déterminer différentes longueurs d'application (L) souhaitées.

2. Appareil dépilatoire (1) selon la revendication 1, dans lequel les moyens de détermination (45) sont équipés d'un bouton de commande (46) actionné à la main et d'un moyen de blocage (47) qui interagit avec le bouton de commande (46), d'une part, et avec l'approvisionnement (10), d'autre part, lequel bouton de commande (46) peut être déplacé entre une première position et une seconde position, dans lequel, lorsque le bouton de commande (46) est dans sa première position, le moyen de blocage (47) adopte une position de libération qui permet de

retirer de la bande dépilatoire (11) de l'approvisionnement (10), et

dans lequel, lorsque le bouton de commande (46) est dans sa seconde position, le moyen de blocage (47) adopte une position de blocage qui bloque tout retrait de bande dépilatoire (11) de l'approvisionnement (10). 5

3. Appareil dépilatoire (1) selon la revendication 1, dans lequel les moyens d'application (40) comprennent un rouleau d'application (40) qui est agencé dans la zone de l'ouverture (9) du boîtier (2). 10

4. Appareil dépilatoire (1) selon la revendication 3, dans lequel un dispositif de coupe (43) est aménagé, lequel dispositif de coupe (43) est agencé de manière adjacente au rouleau d'application (40) et est conçu pour couper la bande dépilatoire (11) dans une zone de la bande dépilatoire (11), laquelle zone de la bande dépilatoire est déjà passée par le rouleau d'application (40). 15 20

5. Appareil dépilatoire (1) selon la revendication 2, dans lequel l'approvisionnement (10) de la bande dépilatoire (11) est enroulé de manière à former un rouleau d'approvisionnement (10) enroulé sur une bobine d'approvisionnement (12), et dans lequel le moyen de blocage (47) interagit avec la bobine d'approvisionnement (12). 25

6. Appareil dépilatoire (1) selon la revendication 5, dans lequel, en plus de la bobine d'approvisionnement (12), il est prévu une bobine d'enroulement (60), laquelle bobine d'enroulement (60) est prévue et conçue pour enrouler la bande dépilatoire (11) qui adhérerait précédemment à la peau d'une personne. 30 35

7. Appareil dépilatoire (1) selon la revendication 6, dans lequel il est prévu un moteur (69) logé dans le boîtier (2), et dans lequel une connexion d'entraînement (74) est aménagée entre le moteur (69) et la bobine d'enroulement (60), de sorte que la bobine d'enroulement (60) puisse être entraînée en rotation à l'aide du moteur (69) pour enrouler la bande dépilatoire (11) qui adhérerait précédemment à la peau d'une personne. 40 45

8. Appareil dépilatoire (1) selon la revendication 7, dans lequel il est prévu une connexion d'entraînement (74) susceptible d'être interrompue comme connexion d'entraînement (74) entre le moteur et la bobine d'enroulement, et dans lequel il est prévu des moyens pour interrompre la connexion d'entraînement (74). 50

9. Appareil dépilatoire (1) selon la revendication 8, dans lequel les moyens pour interrompre la connexion d'entraînement (74) comprennent un bouton 55

de commande (46) actionné à la main, dont l'actionnement permet d'interrompre le moyen d'entraînement (74).

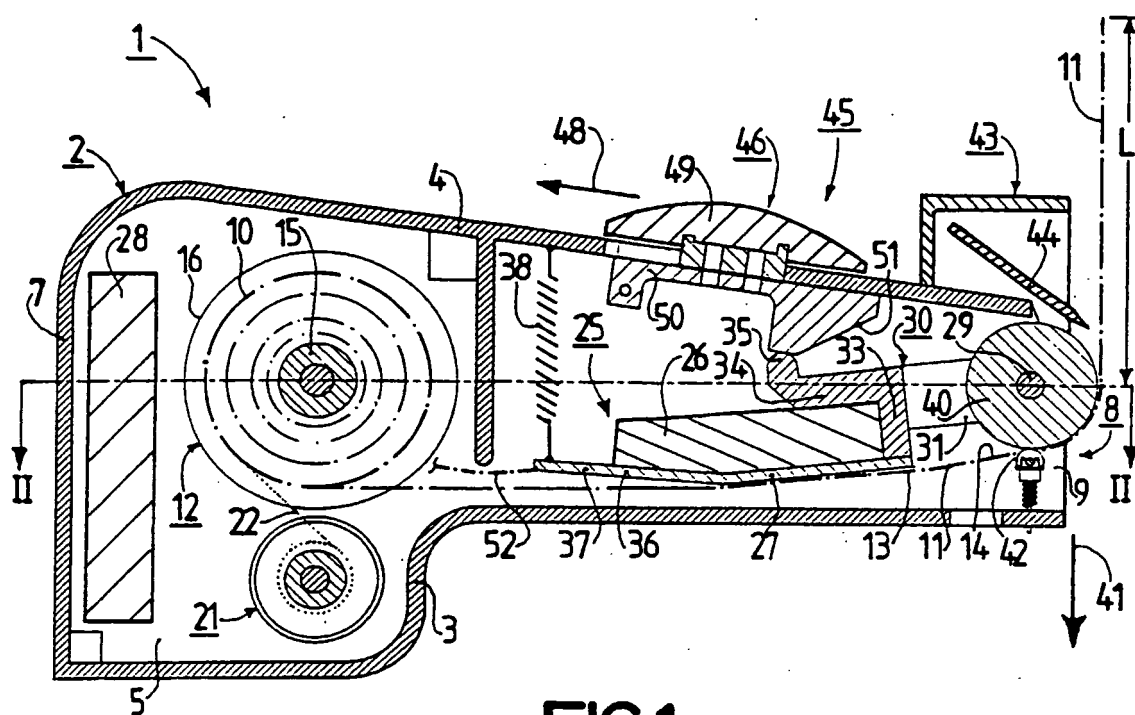


FIG.1

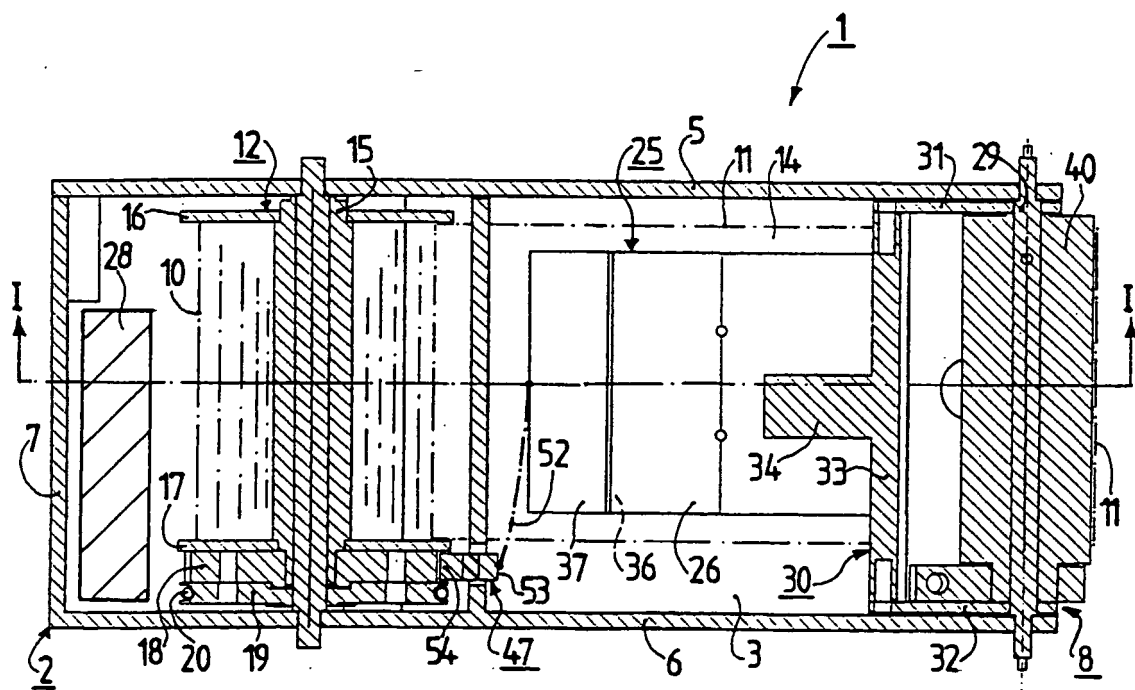
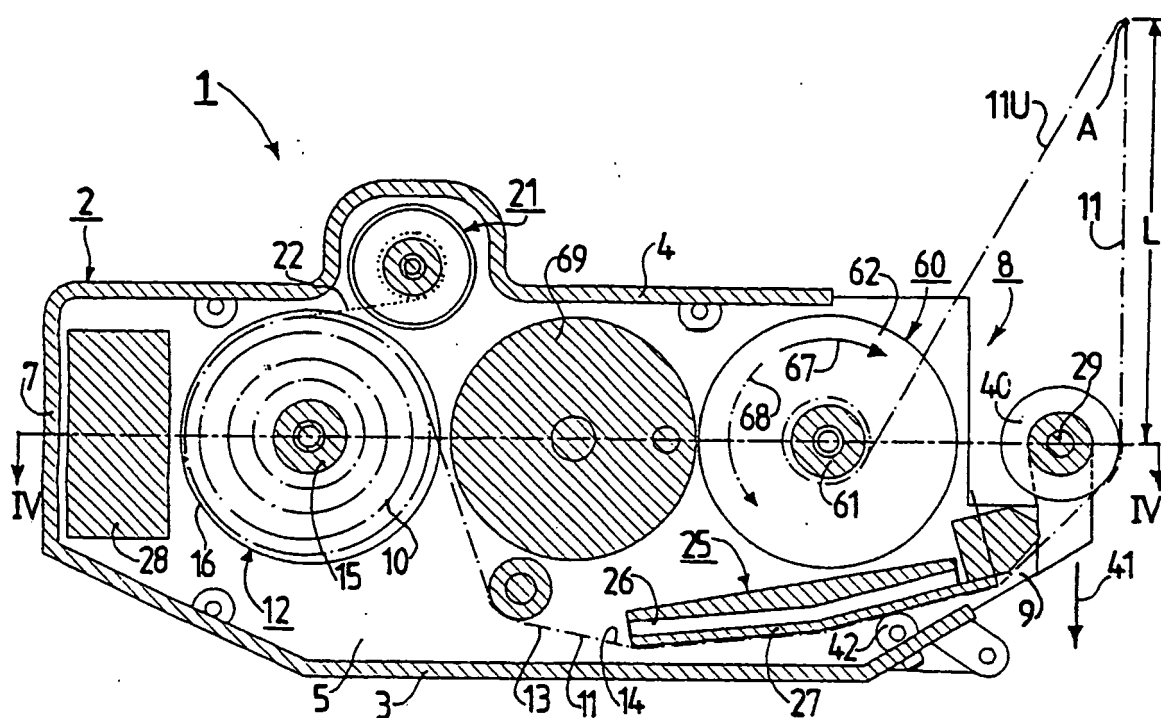
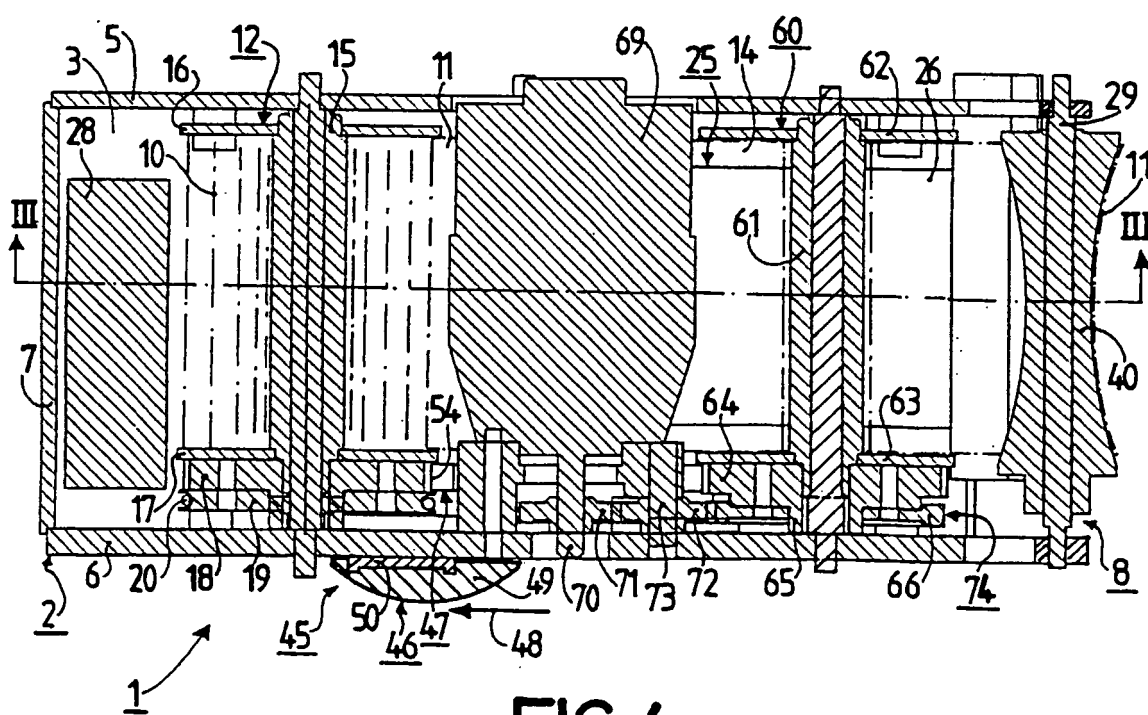


FIG.2



**FIG.3**



**FIG.4**

**REFERENCES CITED IN THE DESCRIPTION**

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