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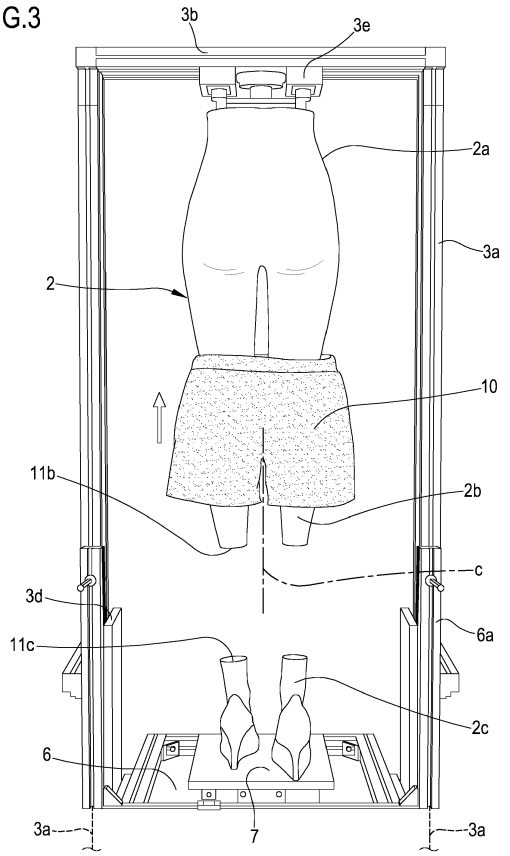
(54) SYSTEM FOR CAPTURING IMAGES OF A GARMENT WORN ON A DUMMY

(57) Process for dressing rapidly a dummy (2) for photos belonging to a system for capturing images of a garment (10) fitted on a dummy, the system comprising at least one dummy (2) for photos, comprising at least one tridimensional representation of the lower portion of a human figure, said lower portion comprising at least hips (2a), legs (2b; 22b; 32b; 42b), ankles and feet (2c; 22c; 32c; 42c), and a supporting structure (3) adapted to sustain said at least one dummy (2), the process comprising in succession the steps of:
a) arranging said feet (2c; 22c; 32c; 42c) in a first fitting position,
b) fitting said garment on said dummy (C) by sliding said garment (10) on said dummy (2) along a fitting direction (C) substantially aligned with the main extension direction of said at least one leg, in the way running from the lower end of said at least one leg (2b; 22b; 32b; 42b) to the respective hip (2a);
c) arranging said feet (2c; 22c; 32c; 42c) in a second pose position, wherein said at least one foot (2c; 22c; 32c; 42c) is arranged along a main extension direction not aligned with said fitting direction (C);

FIG.3



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Description

FIELD OF THE INVENTION

[0001] The present invention concerns the field of dummies, and in particular the field of dummies to make photos of clothes.

[0002] These dummies for photos, in addition to reproduce as faithfully as possible the features of the human body, have the main peculiarity of being shaped to be able to be "dressed" and "undressed" with common clothes in such a way as to allow taking substantially realistic photos. For this reason, dummies for photos are not required to reproduce a whole human figure, but they must be stably arranged in the shape, or position, desired by the photographer.

KNOWN BACKGROUND ART

[0003] In fact it is known that, in order to create catalogs, and in particular to promote clothes intended to be sold on-line through so-called e-commerce sites, it is necessary to take a significant number of photos of several clothes so as to show clients what is available for sale.

[0004] Typically, in order to obtain a large number of photos in standard poses, it is common practice that clothes are fitted onto common dummies, typically the dummies used in shops, thereby being able to take photos of the articles thereon.

[0005] Not always the result of taking photos of articles on traditional dummies is aesthetically appealing, and considerable time is required to dress and handle the dummies.

[0006] In particular, according to the known art, during the dressing operations of the dummy, a first operator releases the dummy from its support and lifts the latter by keeping it in a position lifted from ground. One or more garments are fitted on the dummy from the bottom, i.e. in a foot-head direction, by a second operator. Even if the skill of a single operator was sufficient, it would still be to the disadvantage of the time required for the dressing/undressing operation.

[0007] In more detail, the second operator firstly fits the garment or a part thereof, on the feet of the dummy, which are arranged in a "pose" position, i.e. with the foot substantially angled with respect to the respective legs, and then rotates such garment in order to proceed with the fitting operation of the same along the legs of the dummy.

[0008] Subsequently, the first operator lowers the dummy and places it on its own support.

[0009] Alternatively, in the case where the legs of the dummy are separable from the body, in a first dressing step the legs are released from the body. Subsequently, a garment is fitted individually on the legs of the dummy, which are then constrained again on the body of the dummy, while they are still wearing the garment.

[0010] The length of these operations results in low productivity of the shooting operations.

[0011] In order to obtain more realistic photos and reduce the dressing/undressing times, it is known in the art to fit garments to be photographed directly on the body of one or more models.

[0012] The cost of the models, in addition to the high time required for preparing and taking photos, makes this system very expensive and not productive enough.

[0013] It is an object of the present invention to solve the above listed problems of the known art.

[0014] In particular, it is an object of the present invention to provide a process that allows to speed up the fitting operations of the clothes onto a dummy for photos, such as for example a so-called "bottom" dummy, i.e. only comprising the lower portion of a human figure.

[0015] It is a further object of the present invention to provide a process that allows a dummy to be nimbly and easily handled.

SUMMARY OF THE INVENTION

[0016] These and other objects are achieved by a process for dressing rapidly the dummy according to the appended independent claim.

[0017] Preferred aspects of the present invention are listed in the dependent claims.

[0018] In particular, according to the invention, a system for capturing images of a garment fitted on a dummy, comprises:

- at least one dummy for photos comprising at least one tridimensional representation of the lower portion of a human figure, comprising in its turn at least hips, legs, ankles and feet,
- a supporting structure adapted to sustain such dummy, wherein preferably said supporting structure does not interfere with the garment fitting onto the same dummy for photos and, more preferably, this supporting structure sustains the dummy on the upper part thereof;
- means for acquiring images.

[0019] Advantageously, at least one of the feet of the dummy and the respective leg are movable with respect to each other at least between:

- a first fitting position, wherein the garment can slide on said dummy along a fitting direction substantially aligned with the main extension direction of said leg, in the way running from the lower end of the leg to the respective hip, and wherein, preferably, a maneuvering space for fitting the garment from bottom to top is created below said at least one leg and/or at least one of said feet;
- a second "pose" position, wherein the foot is arranged along a main extension direction not aligned with the afore said fitting direction.

[0020] In other words, the system for capturing images of the present invention provides for a supporting structure sustaining the dummy preferably on the upper part thereof, and for arranging at least one foot and preferably both feet of the dummy itself in such a condition so as to not prevent the garment, for example a pair of trousers, from being fitted from the bottom along the dummy itself, preferably further leaving a maneuvering space between the point of the dummy where the garment starts to be fitted and the surface, or the surfaces, of other underlying components, that is, for example, between the lower end of the afore said foot and a corresponding lower bearing plane or between the lower end of the dummy's leg and the respective foot, in order to allow the garment fitting from bottom to top so as to facilitate the fitting of the garment onto the dummy, preferably carried out by an operator.

[0021] Therefore, the first part of the dummy met by the garment as the garment is fitted is substantially aligned with the fitting direction, which is in its turn aligned with the main extension direction of the legs or at least with the main extension direction of one leg.

[0022] According to a first aspect of the invention, such a condition, corresponding to the aforesaid fitting position, is obtained by making removable the feet of the dummy from the legs thereof.

[0023] It should be noted that the word "foot" has to be broadly considered as the lower end portion of the figure of the dummy. For this reason, the "foot" movable with respect to the leg of the dummy may also include part of the ankle and/or part of the calf, and may not be limited by the definition of "foot" provided in textbooks on anatomy. Similarly, it is possible that only a portion of the anatomical foot is movable with respect to the leg. Also in this case, such foot portion falls within the above provided definition of "foot".

[0024] According to a different aspect of the present invention, this fitting condition is obtained by making the feet of the dummy rotatable with respect to the legs of the dummy itself and, in particular, so as to allow the feet to be rotated in order to be arranged substantially aligned with the fitting direction, i.e. with the main extension direction of at least one of the legs of the dummy.

[0025] Therefore, while the garment is fitted, it can be slid on the dummy from a leg area having reduced section, for example the area between the ankles and the larger calf section, and having main extension direction aligned with the mentioned fitting direction.

[0026] According to another different aspect of the present invention, the foot can be composed of two or more portions movable with respect to each other, for example in a telescopic way, thereby being able to reduce the greatest dimension of the foot itself. It should be noted that "main extension direction" of an element means herein the direction in which such element has largest size. For example, considering a foot, this direction substantially connects the tip of the foot with the heel whereas, considering a leg, this direction substantially connects the ankle to the hip.

[0027] It is noted that, according to a preferred aspect of the present invention, due to a supporting structure shaped to sustain the dummy at least on the upper portion thereof, the dummy is preferably held in a lifted position thereby making the fitting operations easier.

[0028] Thanks to the present invention in general the dummy has, at least in the part thereof first meeting a garment during the fitting operation, a main extension direction substantially straight or anyway with a very high radius of curvature.

[0029] According to another aspect of the present invention, the dummy has a movement mechanism for reversibly moving at least one hip, or hip portion, in a direction transverse to the fitting direction or anyway transverse to the main extension direction of the legs.

[0030] Also in this case, the "hip" definition is to be considered in the broad sense, and is intended to generically indicate a portion of the dummy placed in proximity of, or in line with, the dummy's hip as defined in the textbooks on anatomy.

[0031] Thanks to this, it is possible to reduce the side dimensions of the dummy, in order to further facilitate the fitting of the garment thereon.

BRIEF DESCRIPTION OF THE FIGURES

[0032] Hereinafter, referring to the appended figures, some exemplary and non-limiting embodiments of the present invention will be described, wherein:

- figure 1 is a front view of a system for capturing images of a garment according to the present invention, where the dummy is rotated so as to show its rear portion;
- figure 2 is a front view of the system according to figure 1, wherein the feet of the dummy are separated from the legs of the dummy itself;
- figures 3 and 4 are two views showing two subsequent dressing steps of a dummy according to figure 1;
- figure 5 is a view of the device of figure 1, wherein a dummy is arranged in a three-quarter view;
- figures 6, 7 and 8 are schematic representations of three possible alternative embodiments of the present invention.

DETAILED DESCRIPTION OF SOME EMBODIMENTS OF THE INVENTION

[0033] It should be noted, as a premise, that the dummy for photos used in the figures is part of a human figure with feminine features, but it is clear that a version with masculine features as well as for boys and girls, and possibly full-length or at most without the head, therefore with sizes and features which may represent a specific category of human being, can also be used without departing from the protection scope required herein.

[0034] It should also be noted that this dummy which this patent is related to, is a dummy for photos, i.e. adapted to be dressed or undressed usually by a human operator, so that it can be photographed in several poses in order to obtain reproductions, as natural or realistic as possible, of the dress worn by the dummy.

[0035] In particular, this dummy for photos is shaped such that the garments of its lower area to be photographed, i.e. basically legs and hips, are allowed to be fitted from bottom to top and that, during the photo shoots, these garments are fitted by this dummy in a realistic way.

[0036] Referring to the attached figures 1 - 5, a system 1 for capturing images of a garment fitted on a dummy for photos, according to the present invention, comprises a dummy 2, a supporting structure 3 and means for acquiring images. Typically, these means for acquiring images are cameras, not depicted herein. Preferably, but not necessarily, the system comprises setting and lighting means, well known to the person skilled in the art.

[0037] As known, the dummy 2 is a tridimensional representation of at least part of the human body and, in the present invention, is a tridimensional representation of at least the lower portion of the human body, comprising feet, ankles, legs and hips. Clearly, this dummy 2 is provided with a supporting structure 3 at most composed of a simple base allowing the dummy 2 itself to statically remain in an upright position.

[0038] According to a particular aspect of the present invention, the supporting structure 3 of the system herein depicted is a supporting structure shaped to sustain the dummy 2 at least on the upper portion thereof, mainly in order to lift and lower at least one portion of the dummy 2, and has at least one side support 3a and at least one upper support 3b. In the embodiment of the present invention shown herein, there are two side supports 3a and an upper support 3b. A single side support 3a will be described later, since the two elements are identical to one another.

[0039] In use, the side support 3a of the embodiment shown herein is substantially vertically arranged.

[0040] Preferably, as better explained below, the supporting structure 3 comprises means for rotating around an axis, for example a vertical one, and/or at least vertically translating the dummy 2 or at least a portion of the dummy 2.

[0041] The structure 3 preferably allows to sustain the dummy 2, to keep it in a position lifted with respect to the ground while one or more garments 10 are fitted onto the dummy 2, and to hold the dummy 2 itself in a stable and repetitive position during the steps of taking photos of the garments 10.

[0042] It should be noted that, as will be apparent hereinafter, at least one portion of the dummy 2 is lifted, translated or rotated by means of the structure 3 with the purpose of defining, between the lower end of the lifted portion of the dummy 2 and the surface, or surfaces, of other underlying elements (for example, as will be seen, a supporting base or at least one of the feet of the dummy), a maneuvering space of such dimensions as to allow a suitable garment to be fitted on the dummy 2 from said maneuvering space, and thus from bottom to top ("bottom-up fitting"), preferably by a human operator.

[0043] Typically, the side support 3a is constrained at its bottom to a base 3c preferably movable with respect to the ground 4 but having fastening, anchoring and reference systems which are able to ensure a repetitive positioning/alignment with respect to the shooting devices.

[0044] The lower portion of the side supports 3a and the base 3c are schematically shown in figure 1 so as to provide an enlarged view of the other details of the present invention. Therefore, the length of the side supports 3a is greater than what shown in broken and schematic view. In the embodiment of the present invention shown herein, the side support 3a is substantially rod-shaped.

[0045] The base 3c is shaped so as to guarantee the lateral stability of the supporting structure 3 and, as mentioned, preferably has movement means 5 for the movement with respect to the ground 4. In more details, the base 3c allows the support 3 to be moved while providing the support 3 with a stable support, i. e. preventing it from falling during the movement thereof.

[0046] The upper support 3b is constrained at its top to the side support 3a.

[0047] The upper support 3b has hooking means 3e for constraining the dummy 2 to the structure 3. Preferably the hooking means 3e comprise at least one element rotatable with respect to the structure 3 in order to allow the dummy 2 to rotate with respect to the supporting structure 3.

[0048] However it is clear that, according to the present invention, different shapes of the supporting structure 3 can be used.

[0049] For example, planar and elongated elements could be used as side supports and/or as upper support. Additionally, the side supports can be tilted relative to one another. Furthermore, an embodiment of the present invention in which there is a single upper support and a single side support is not to be excluded. The use of a plurality of side supports is also contemplated.

[0050] In a further embodiment of the present invention, the side supports and the upper support may be joined into a single curved element, for example shaped as an inverted U.

[0051] Additionally, the dummy 2 could be directly sustained by one or more side supports, without an upper support.

[0052] In general, the structure 3 sustains the upper part of the dummy 2, i.e. it is preferably constrained to the dummy 2 at the upper portion thereof.

[0053] It can be clearly seen that "upper" is referred to the orientation of the dummy 2 when in operative condition.

[0054] In the present embodiment of the present invention, the structure 3 sustains the dummy 2 at a portion

or surface located above (or at) the hips 2a of the dummy 2, although other geometries are possible. For example, in variations of the present invention, the structure 3 can sustain the dummy by the bust or by the head of the dummy itself.

[0055] In particular, in the present embodiment of the present invention, the dummy 2 can be caused to rotate around a rotation axis R arranged so as to be substantially parallel to the legs 2b or to the side support 3. In general, preferably the dummy 2 rotates around a rotation axis R substantially vertically arranged when the dummy 2 is in operative condition.

[0056] According to an embodiment of the present invention, this rotation is limited to 180°. In particular, limit elements may limit the rotation of the dummy 2 so as to arrange it in two positions, i.e. frontal and rearward, typically used to take a photo of a dress fitted on the dummy itself.

[0057] For this reason, preferably, these limit elements allow to limit the rotation of the dummy to two angular positions spaced with respect to each other by 180°.

[0058] In alternative embodiments of the present invention, the dummy 2 rotates by 360° around the rotation axis R.

[0059] Preferably, in this case there is at least one stable position of the dummy 2 during its rotation, typically at least two positions. Similarly to what described above, a dummy 2 rotatable by 360 ° with respect to the supporting structure 3 can be preferably stably positioned in at least two angular positions arranged at 180° degrees from each other, so as to allow a front shot of the garment 10 and a rear shot of the garment 10 to be taken.

[0060] Further stable positions are possible, for example to allow taking photos of the garment on a human figure in a three-quarter position, as shown in figure 5.

[0061] In order to define the stable angular positions for the rotation of the dummy 2, various means can be used, such as cam systems.

[0062] In the embodiment of the present invention shown herein, as mentioned, the dummy 2 is a so-called "bottom dummy", i.e. a dummy only comprising the lower portion of a human figure. As mentioned, any other dummy for photos representing a full or partial human figure is to be considered as falling within the required protection scope.

[0063] In particular, referring to figures, hips 2a, legs 2b and feet 2c, with the respective ankles (not particularly depicted here) can be identified.

[0064] As revealed, feet 2c can be moved, or otherwise handled, so as to not hinder the fitting operation of a garment 10 in the direction of the respective legs and/or the respective hips, i.e. from bottom to top, that is to say by allowing a garment 10 to be fitted substantially along the main extension direction of the legs 2b of the dummy 2 in the way running from the ankles, or anyway from the lower end of the legs 2b, to the hips 2a.

[0065] In other words, according to the present invention, the feet 2c of the dummy 2 are arranged in such a fitting position that the main extension direction of at least the portion of the dummy 2 adapted to be first inserted into a garment 10 is substantially aligned with the fitting direction C shown in figure 3.

[0066] For this purpose, according to an embodiment of the present invention, the feet 2c are removable, although in a reversible manner, from the legs 2b of the dummy 2, i.e. they are selectively separable from, and joinable to, the related legs 2b.

[0067] Preferably, when the feet 2c are in the removed position, between them and the end portions of the legs 2b a maneuvering space is created which allows the garment, which is intended to dress the dummy 2 and then to be photographed, to be easily fitted from the free ends of the legs 2b through the operator, usually human.

[0068] Preferably, the feet 2c are selectively separable from the legs 2b at, or next to, the ankle of the foot 2c itself, or anyway at a portion of the dummy 2 comprised between the ankle and the calf of the dummy 2 itself. That is, at least one of the feet 2c of the dummy 2 is separated from the respective leg 2b preferably at, or next to, the ankle by a coupling surface defining, on the stumps of the foot 2c and the respective leg 2b, two substantially complementary surfaces which can be coupled to one another.

[0069] In particular, each foot 2c has a coupling surface 11c adapted to cooperate with a coupling surface 11b of the respective leg 2b. These coupling surfaces 11c, 11b are complementary to each other so that, once they are arranged to face each other, the foot 2c and the leg 2b may represent a human figure substantially seamless or anyway with light discontinuities.

[0070] In the latter arrangement, herein referred as "pose position", as will be better seen below, the arrangement taken by the feet 2c is substantially incident or substantially orthogonal to the main extension direction of the respective legs 2b.

[0071] The coupling surfaces 11c, 11b are preferably shaped so as to not create sharp edges on the leg portion remaining integral with the dummy.

[0072] In this way, it is possible to prevent the dummy from being damaged at such angles that could be subject to high stresses during the dressing and undressing operations of the dummy 2.

[0073] Moreover, these sharp edges could be dangerous for the personnel employed in dressing and undressing the dummy 2.

[0074] Additionally, a concave shape of the surface 11b of the leg 2b and a convex shape of the surface 11c of the foot 2c allow to ensure a good centering between foot 2c and leg 22b during the steps in which the two elements get closer.

[0075] Again, it should be noted that this coupling allows the foot 2c, in its "pose" position constrained to the respective leg 2b, to remain in a stable position, i.e. fixed, although reversibly, with respect to the leg 2b, so as to ensure the required stability of the dummy during the photo shooting thereof.

[0076] Finally, such a coupling allows to obtain a shape coupling between the two elements thereby allowing, or facilitating, the feet 2c and legs 2b to be held in the constrained position also if they are separated from the supporting structure 3, for example in case they are placed on the ground 4, for example by means of the base 6, in turn released from the supporting structure 3.

[0077] However, it cannot be excluded that in an alternative embodiment of the present invention, not shown in figures, the surfaces 11c, 11b can be flat.

[0078] It should be noted that the separated feet can be coupled to the respective legs of the dummy 2 according to any known technique, for example by means of magnets or interlocking joints, without thereby falling outside the present invention.

[0079] In particular in the case where, in alternative embodiments of the present invention, the feet 2c are separable from the legs 2b of the dummy 2 as well as from the supporting structure 3 and/or from the base 6, then means for stably hooking the feet 2c to the legs 2b can be provided. For example, on the feet 2c there can be magnets adapted to cooperate with a metal portion of the legs 2b, or vice versa. Alternatively, on the feet 2c a male pin can be provided and adapted to be constrained by shape coupling inside a respective female seat of the legs 2c, or vice versa.

[0080] It should be noted that, according to a peculiar aspect of the invention, the feet 2c are integral with a base 6, which may be translatable and/or even rotatable, with respect to the supporting structure 3.

[0081] In particular, in the shown embodiment, the base 6 is both vertically and horizontally translatable with respect to the supporting structure 3. However, alternative embodiments able to translate and/or rotate in a single direction with respect to the supporting structure 3 are possible, with the purpose of creating the required maneuvering space between the "feet" 2c and the legs 2b in order as to make possible and easy to dress/undress the dummy 2.

[0082] In the embodiment of the present invention shown in figures, the feet 2c reversibly separated from the respective legs 2b are fixed to the base 6 which has at least one longitudinal element 6a slidingly constrained on a respective side support 3a of the structure 3. It is therefore possible to selectively arrange the feet 2c between the mentioned fitting and pose positions by sliding the longitudinal element 6a with respect to the structure 3.

[0083] Preferably, the supporting structure 3 comprises one or more guides 3d, which are preferably integral with the side supports 3a and lead the travel of the longitudinal element 6a with respect to the side support 3a, or vice versa. Further stops, not shown, can be provided that allow stopping the travel of the longitudinal element 6a with respect to the side supports 3a thereby defining a space, or clearance, between the stumps respectively of the feet 2c and legs 2b sufficient to allow the garment 10 to be inserted and then fitted on the same legs 2b, along the afore said fitting direction C.

[0084] In particular, in present embodiment of the present invention, the fitting position corresponds to a position in which the feet 2c are moved away from the legs 2b, as shown in figures 2 and 3, so as to define a proper maneuvering space between the feet 2c and the end of the legs 2b which allows the garment 10 to be easily fitted on the dummy 2.

[0085] Therefore, as better explained below referring to figure 3, during the fitting operation a garment 10 firstly meets the portion of the dummy between calf and foot and, in general, a portion of the dummy having the main extension direction substantially aligned with the fitting direction C, which direction is substantially vertically directed from the legs 2b towards the hips 2a.

[0086] On the other hand, as mentioned, the second pose position is obtained by placing the feet at the legs 2b of the dummy, as in figures 1 and 4, so as to form a substantially continuous human figure - or a part thereof, as in this "bottom" dummy- adapted for taking a photo.

[0087] In this position the feet 2c are not aligned with respect to the fitting direction or, more generally, are substantially tilted with respect to the legs 2b, in the "pose position", i.e. a - stable - position compatible with the normal behavior of a person during the use of a garment typically in an upright position, and in particular during the acquisition of photographic images in a related studio.

[0088] Preferably, appropriate mechanisms, not shown, allow to stably keep the feet 2c in the two above described positions, and possibly also in some intermediate positions. In particular, in the embodiment of the present invention shown in the figures, the fitting position and the pose position correspond to the two limit elements of the longitudinal element 6a with respect to the side support 3a.

[0089] Additionally, in an alternative embodiment of the present invention, a longitudinal element 6a and the respective side support 3a are provided with openings that, once aligned, can serve as a seat for a respective pin, which allows the relative translation of the two elements with respect to one another to be blocked at intermediate positions between the two mentioned limit elements.

[0090] Preferably, the feet 2c, instead of being directly arranged on the base 6, are arranged on a bearing plane 7 which is integrally constrained, at least in vertical translation, to the base 6.

[0091] In particular, the bearing plane 7 can be rotatably mounted with respect to the base 6. Thanks to this, at least in the pose position the feet 2c can follow the possible rotation of the dummy 2 around the rotation axis R.

[0092] Preferably, the dummy 2 and in particular the upper portion of the dummy 2, can also be rotated independently of the bearing plane 7 and therefore the feet 2c. Thanks to this, when the feet 2c are in the fitting position, i.e. separated from the respective legs 2b in the embodiment of the present invention shown herein, the upper portion of the dummy 2 can be rotated independ-

ently of the foot 2c, which are therefore able to remain integral with the base 6 or with the bearing plane 7, if any.

[0093] According to a particular embodiment of the present invention, the bearing plane 7 can also be used to sustain the dummy 2 in a substantially vertical position, if the latter is released from the supporting structure 3, for example to place the dummy on the ground.

[0094] Feet 2c movable with respect to legs 2b and hips 2a of a dummy 2, and integral with a supporting structure 3, have been described in the present embodiment of the present invention.

[0095] Clearly, the purpose of the present invention comprises an embodiment providing for the displacement and/or rotation, and in particular the lifting, of the legs of a dummy with respect to feet that are substantially fixed and integral with a supporting structure, or alternatively an embodiment providing for the translation and/or rotation both of the feet and the movable legs, at least in a direction in which they move away from and closer to each other. Of course, even in these cases, this displacement (for example a lifting) and/or rotation of the legs relative to the respective feet of a dummy for photos is intended to create the above-mentioned maneuvering space so that the garment to be photographed can be fitted on the dummy from bottom to top (bottom-up fitting). For example, the feet 2c could be moved away from the legs 2b in a horizontal direction, i.e. in a direction orthogonal to the rotation axis R of the dummy 2.

[0096] Furthermore, at least the legs 2b may be inclined with respect to the rotation axis R, so as to move away from the feet 2c and ensure ease to fitting operations of the garment 10 on the dummy 2.

[0097] In alternative embodiments of the present invention, the foot can be moved so as to allow a garment to be fitted without separating the foot from the legs.

[0098] For example, in the embodiment of the present invention outlined in Figure 6, the foot 22c is constrained in articulated way, preferably at least rotatable with respect to the leg 22b, for example through one or more hinges 9, or pins, for example placed at the ankle and preferably having an axis substantially orthogonal to the main extension direction of the respective leg 22b.

[0099] In this embodiment, the foot 22c can therefore be arranged in a first position substantial aligned with the fitting direction C, or at least with the lower portion of the leg 22b. In the embodiment of the present invention outlined in Figure 6, this condition is obtained by a counterclockwise rotation.

[0100] This alignment position allows the previously mentioned "fitting position" to be achieved.

[0101] It should be noted that this fitting position is associated with the formation, below the lower end of the foot substantially aligned with the fitting direction C, of a maneuvering space allowing a human operator, usually, to fit the garment to be photographed on the dummy 2 from bottom to top (bottom-up fitting).

[0102] In fact, in this condition, the portion of the dummy that first meets a garment during the fitting operation is the foot 22c, which is in a position substantially aligned with the fitting direction C, so as to facilitate, and not to prevent, the fitting operation itself. Moreover, the foot 22c can be arranged as not aligned with the fitting direction, i.e. counterclockwise rotated in figure 5, so as to take the previously defined "pose position".

[0103] In this pose position, the rotation constraint of the foot 22c of this embodiment of the dummy 2 must allow the foot 22c to be stabilized and possibly fixed, although reversibly, to the respective leg 22b so that the dummy 2 can be stabilized for its photo shooting.

[0104] A dummy provided with legs 22b and feet 22c according to the present embodiment of the present invention can be arranged on a supporting structure 3 similar to that shown in the embodiments of Figure 1. Preferably, unlike the supporting structure 3 of figures 1 - 5, the base 6 is constrained only to the bearing plane 7, which can be separated and translated with respect to the feet 22c. In particular, in the fitting position, the plane 7 can be arranged in a position away from the feet 2c, at such a distance to allow them to rotate and to allow a garment 10 to be comfortably fitted, thereby leaving enough maneuvering space for an operator.

[0105] At the end of the fitting operation of the garment 10, after rotating the feet 22c in the pose position, the plane 7 can be moved closer to the feet 22c.

[0106] Alternatively, the base 6 may be absent.

[0107] Other embodiments of the present invention, not shown, are possible for a dummy according to the present invention, in order to allow obtaining the above-mentioned fitting and pose positions. For example, in the embodiment of Figure 7, the foot 32c can be translated with respect to the body of the dummy to obtain the fitting position. As revealed, in this embodiment the "foot" coincides with a portion of the anatomical foot. Also in this case a maneuvering space is formed to allow the garment to be fitted on the dummy from bottom to top.

[0108] Alternatively, the foot can be made in a telescopic manner, whereby the tip of the foot may slip relative to the body of the foot in the direction of the heel, if necessary, so as to ensure a reduced transverse dimension with respect to the fitting direction of a garment. The creation of a maneuvering space below the retracted foot of the dummy allows the garment to be fitted on the dummy from bottom to top.

[0109] On the other hand, in a pose position, the tip of the foot could translate in a direction away from the heel, so as to provide the shape of the foot with continuity and realism. Also in this case, the pose position provides that the foot can keep this arrangement in a stable but reversible way.

[0110] Other embodiments in which the legs of the dummy move away from the foot, which is substantially fixed, are not excluded.

[0111] For example, in the embodiment of figure 8, the legs 42b of the dummy can swing with respect to the foot 42c. In particular, the legs 42b may be constrained in an articulated way to the body of the dummy (not shown),

or the entire dummy may be swingable with respect to the foot 42c.

[0112] In addition, although the herein described dummies 2 are provided with feet 2c, 22c, 32c, 42c both available in the afore said fitting position, i.e. substantially aligned with the main extension direction of the respective legs 2b, 22b, 32b, 42b, also a dummy for photos, namely suitable to be used in a system for capturing images of a garment fitted thereon, having only one foot that can be aligned along the main extension direction of the respective leg, for example because it can be selectively separated and joined or conveniently rotated around a pin substantially orthogonal to that main extension direction of the leg and then returned in the pose position, because the other foot may not be present at all or may be fixedly arranged in a position that is simultaneously suitable for the pose and the fitting operation of the garment, still falls within the present invention.

[0113] According to a further embodiment of the present invention, at least one portion 8 of the hips 2a can be translated with respect to the dummy, preferably in a direction transverse to the fitting direction C, more preferably orthogonal thereto.

[0114] It is possible to see this embodiment of the present invention applied to the embodiment shown herein in figure 1 but, as the person skilled in the art can easily understand, it can be applied as well to various embodiments of the present invention, for example those shown in figures 6 - 8.

[0115] The portion 8 can be translated at least between a position, in which it is at least partially inserted within the dummy 2, and a position substantially aligned with the outer surface of the dummy 2.

[0116] In the inserting position, the portion 8 allows to provide the hips 2a of the dummy 2 with reduced side dimensions, thereby facilitating the fitting operation of the garment 10.

[0117] When the portion 8 is in the substantially aligned position, it is able to ensure a substantial continuity to the figure of the dummy 2, and in particular to the outer surface of the human figure represented by the dummy 2.

[0118] In an alternative embodiment, the portion 8 is made of elastic, or anyway deformable, material so as to be compressed towards the rotation axis R in order to reduce its overall dimensions.

[0119] Alternatively, the portion 8 can be simultaneously translatable and deformable.

[0120] "Bottom" dummies, i.e. dummies only representing the lower portion of a human figure, have been described so far. However, as will be apparent to the person skilled in the art, the present invention can also apply to dummies that represent the entire human figure, or in any case a portion of the bust of a human figure.

[0121] Referring to figures, a process for fitting a garment 10 along a dummy 2 according to the present invention is now briefly introduced.

[0122] In the initial condition, a dummy 2 for photos is arranged on the supporting structure 3.

[0123] Subsequently, the feet of the dummy 2 are arranged in the fitting position, so as to allow a simple dressing of the dummy 2 itself.

[0124] Therefore, referring to figure 2, in a first embodiment of the present invention the feet 2c are moved away from the legs 2b by a distance such to define a maneuvering space allowing and facilitating a garment to be fitted on the dummy 2 from bottom to top.

[0125] In figure 2, this movement away takes place in a direction parallel to the rotation axis R.

[0126] Embodiments in which this movement away takes place along a direction orthogonal to the axis of rotation R, or anyway angled with respect to the axis itself, are possible. Referring to Figures 6 - 8, in general, in this step the feet 22c, 32c and 42c and/or the respective legs 22b, 32b, 42b are moved so as to achieve the fitting position, simultaneously defining the related maneuvering space, in order to allow a garment to be fitted along the legs themselves, from bottom to top.

[0127] In the following, with reference to Figure 3, a garment 10 is inserted along a fitting direction C typically parallel to at least one portion of the leg 2b, in the way running from the legs 2b to the hips 2a.

[0128] In this step, since the feet 2b, 22b, 32b, 42b are arranged in fitting position, nothing hinders the sliding of the garment around the dummy 2 along the fitting direction C, i.e. the insertion of the dummy within the garment 10.

[0129] In an embodiment of the present invention, during the fitting operation at least one portion 8 of one (or more) of the hips 2a can be displaced transversely with respect to the fitting direction, in order to reduce the transverse dimension of the hips themselves, thereby further facilitating the fitting operation.

[0130] Once the fitting operation is finished, the feet and legs can be arranged in a pose position, i.e. in a natural position for a human figure, thereby allowing to take a realistic photo.

[0131] In the embodiment of the present invention of figures 1 - 5, the feet 2c are brought at the legs 2b after having being moved closer thereto.

[0132] In the embodiment of figure 6, the feet 22c are rotated to a pose position, i.e. counterclockwise in figure.

[0133] In the embodiment of figure 7, the foot 32c is translated to the pose position, i.e. to the left in figure.

[0134] In the embodiment of Figure 8, the legs 42b are moved closer to the respective feet 42c, i.e. rotated clockwise in figure.

[0135] In general, the foot is brought at the respective leg, not aligned with respect to the fitting direction C, or anyway with respect to the leg itself.

[0136] The undressing operations are opposite with respect to the fitting operation.

[0137] In general, at the end of the fitting operations of one or more garments 10, it is possible to take realistic photos thereof.

[0138] In particular, during the shooting step or anyway in acquiring images of the garment 10 fitted on the dummy

2, it is possible to keep the dummy 2 constrained to the supporting structure 3 or to release it therefrom and place the dummy 2 on the ground, preferably thanks to the bearing plane 7.

[0139] In more details, if the dummy 2 is always constrained to the supporting structure 3, or at least remains constrained thereto during the fitting step and the step of acquiring an image, the structure can be transported in manual or automatic way (for example by mounting the supporting structures along a movable path, such as a conveyor belt or a rail) among different stations.

[0140] In particular, a structure 3 carrying a dummy 2 according to the present invention can be moved between a first dressing station, where one or more garments 10 can be applied to the dummy 2 according to the previous description, and an image acquisition station, where one or more photos or images (or possibly videos) of the garment 10 fitted on the dummy 2 can be captured. Subsequently the structure 3 can be moved, either manually or automatically, to an undressing station, wherein the dummy 2 is stripped of the garment 10 (or the garments 10), to then be again moved towards the dressing station. It is possible that the dressing station corresponds with the undressing station.

[0141] In addition, one (or more) supporting structures 3 substantially fixed with respect to the ground may be used, on which the garment 10 can be fitted and removed, while the image acquisition can be carried out at a different station, having the dummy 2 released from the supporting structure and kept standing by means of the bearing plane 7, for example.

Claims

1. Process for dressing rapidly a dummy (2) for photos belonging to a system for capturing images of a garment (10) fitted on a dummy, the system comprising:

   - at least one dummy (2) for photos, comprising at least one tridimensional representation of the lower portion of a human figure, said lower portion comprising at least hips (2a), legs (2b; 22b; 32b; 42b), ankles and feet (2c; 22c; 32c; 42c),
   - a supporting structure (3) adapted to sustain said at least one dummy (2);
   - means for acquiring images;

   wherein at least one of said feet (2c; 22c; 32c; 42c) of said at least one dummy (2) and said at least one leg (2b; 22b; 32b; 42b) are reciprocally movable at least between:

   - a first fitting position, wherein the garment can slide on said dummy (2) along a fitting direction (C) substantially aligned with the main extension direction of said at least one leg (2b; 22b; 32b; 42b), in the way running from the lower end of said at least one leg (2b; 22b; 32b; 42b) to the respective hip (2a);
   - a second pose position, wherein said at least one foot (2c; 22c; 32c; 42c) is arranged along a main extension direction not aligned with said fitting direction (C);

   the process comprising in succession the steps of:

   a) arranging said feet (2c; 22c; 32c; 42c) in said first fitting position;
   b) fitting said garment on said dummy (C) by sliding said garment (10) on said dummy (2) along a fitting direction (C) substantially aligned with the main extension direction of said at least one leg, in the way running from the lower end of said at least one leg (2b; 22b; 32b; 42b) to the respective hip (2a);
   c) arranging said feet (2c; 22c; 32c; 42c) in said second pose position.

2. Process according to claim 1, wherein the feet are rotatable with respect to the respective legs, at least between said first fitting position in which each of said feet is substantially aligned with the main extension direction of the relative leg and said second pose position in which each of said feet is incident or orthogonal to the main extension direction of the respective leg, **characterized in that** said step a) comprises the step of rotating said feet to said first fitting position, and said step c) comprises the step of rotating said feet to said second pose position.

3. Process according to claim 1, wherein the feet are selectively separable from, and joinable to the respective legs, said first fitting position being reached when each of said feet is separated from the respective leg and said second pose position is reached when each of said feet is joined to the respective leg, **characterized in that** said step a) comprises the step of moving said feet away from said legs and said step c) comprises the step of moving said feet closer to said legs.

4. Process according to one or more of the preceding claims, wherein at least part of said dummy is translated and/or rotated with respect to said supporting structure.

5. Process according to one or more of the preceding claims, wherein said dummy comprises a movement mechanism to move at least one portion of said hips, in a direction substantially orthogonal to said legs and/or said fitting direction.

FIG.1

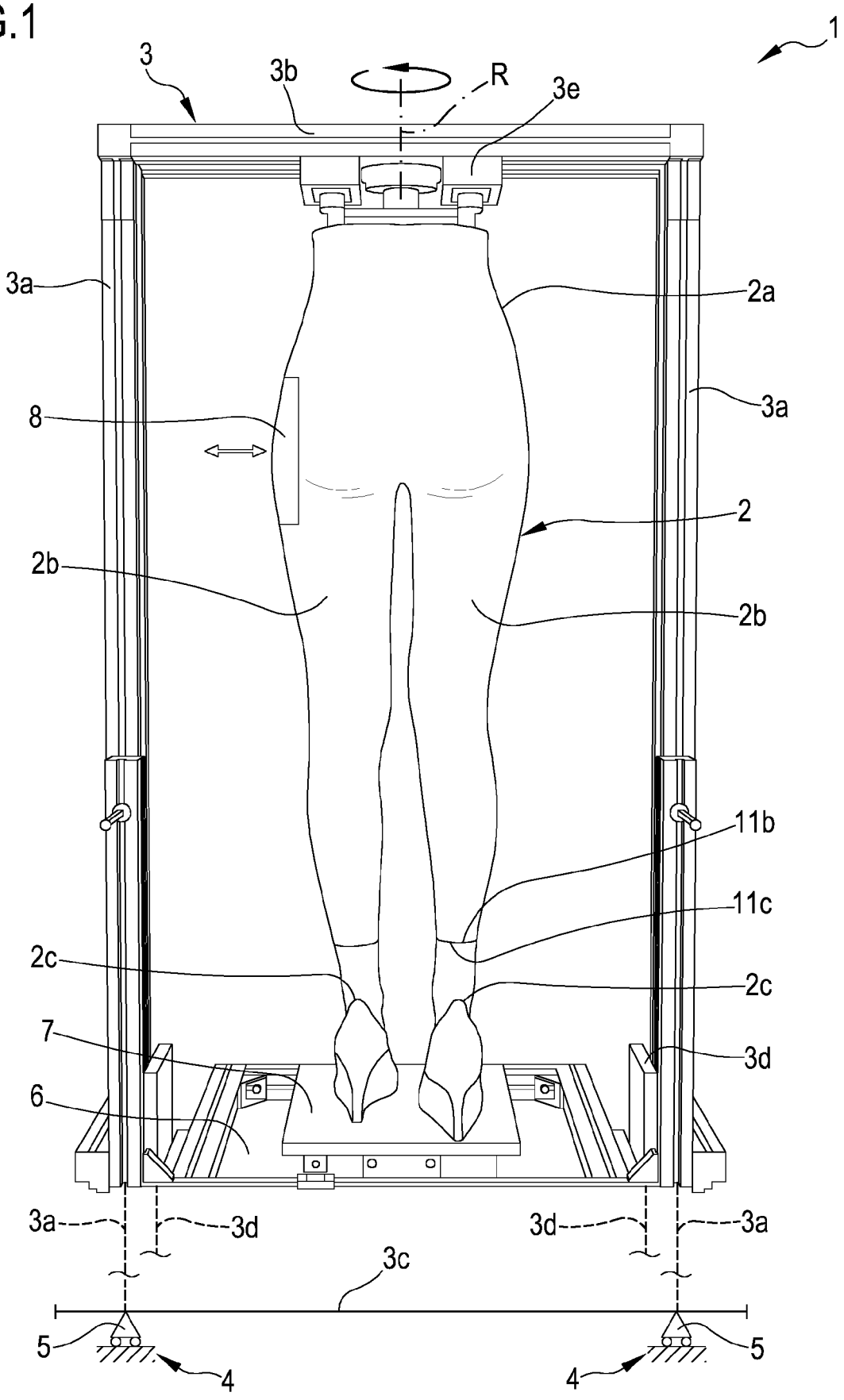


FIG.2

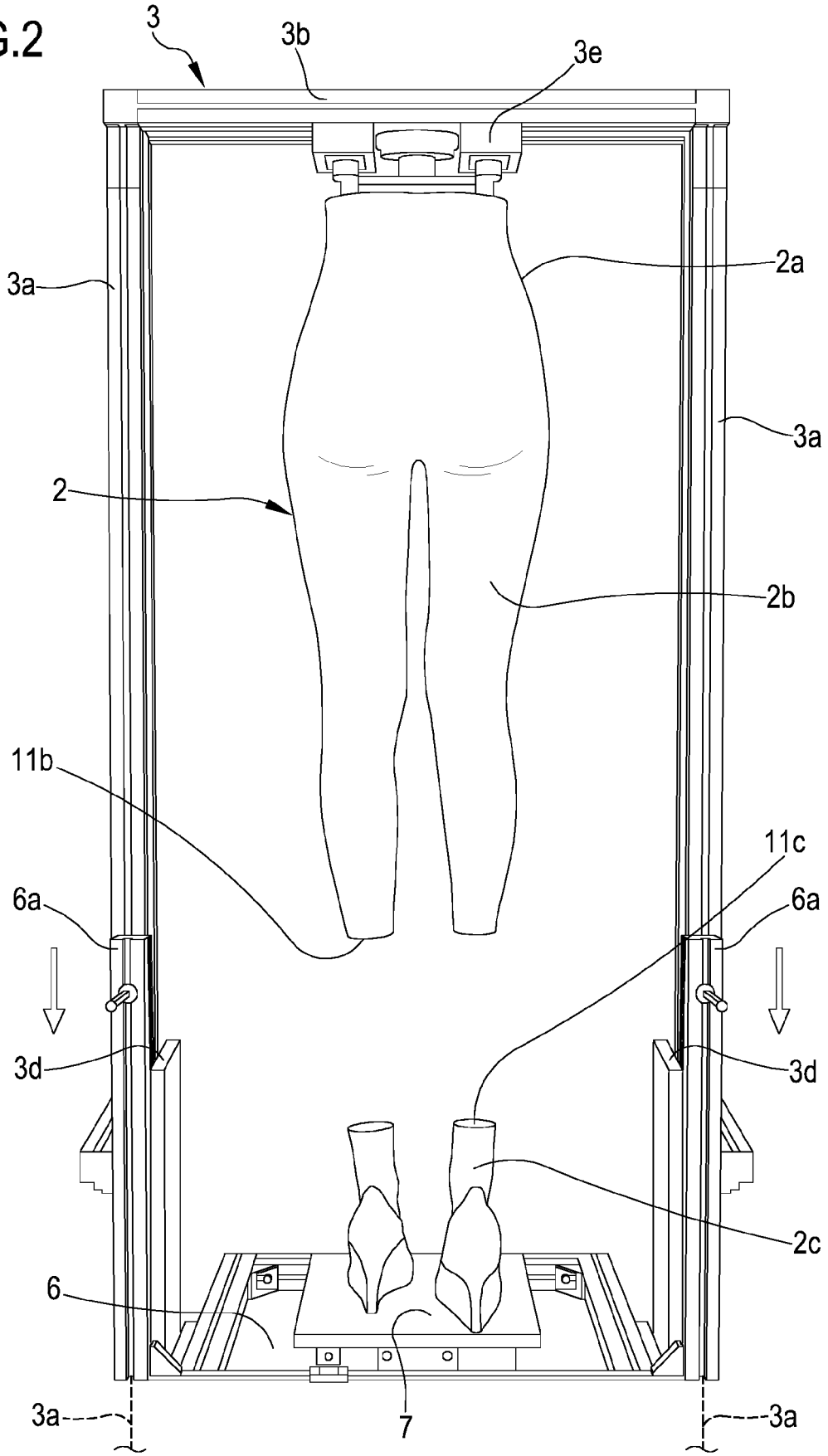


FIG.3

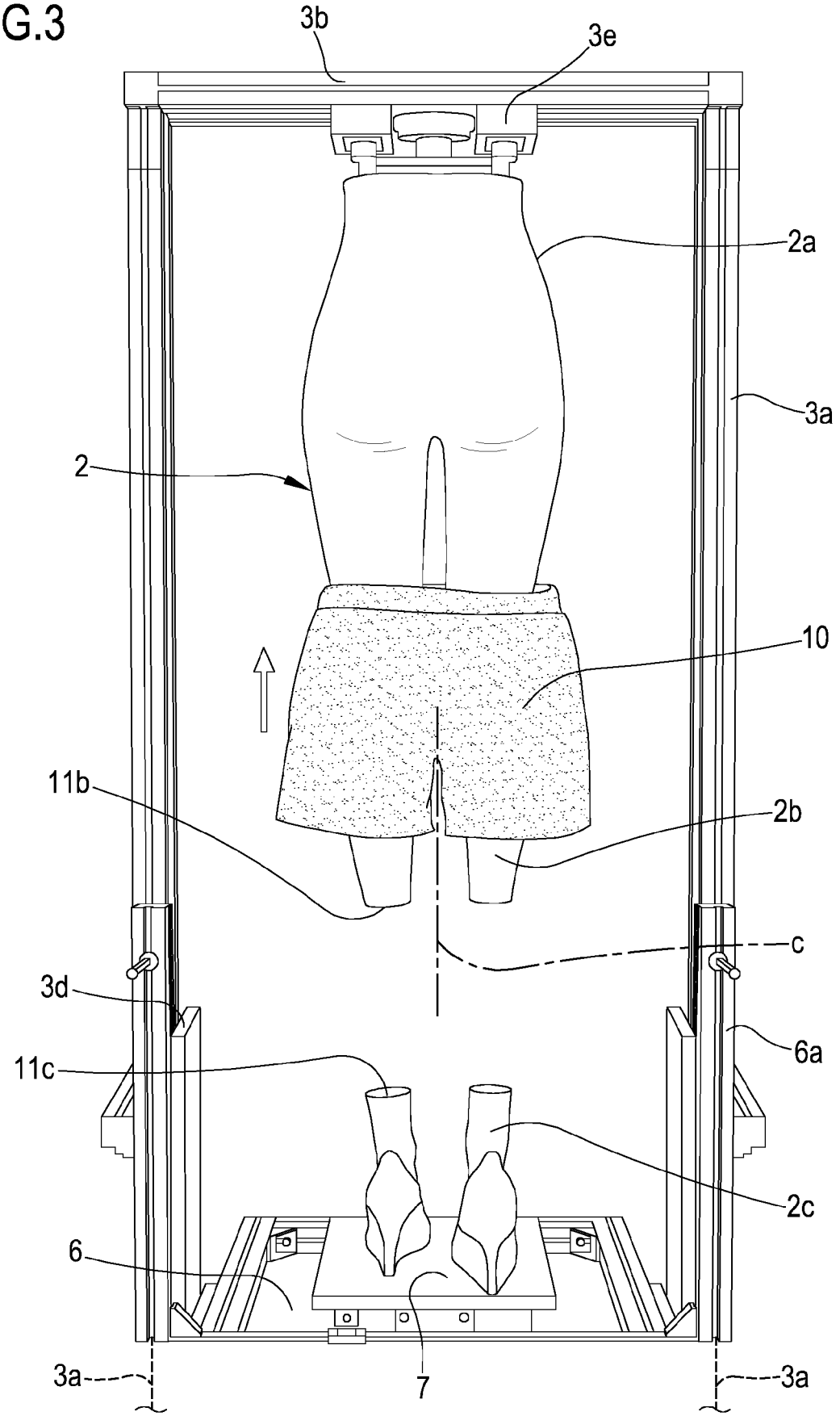


FIG.4

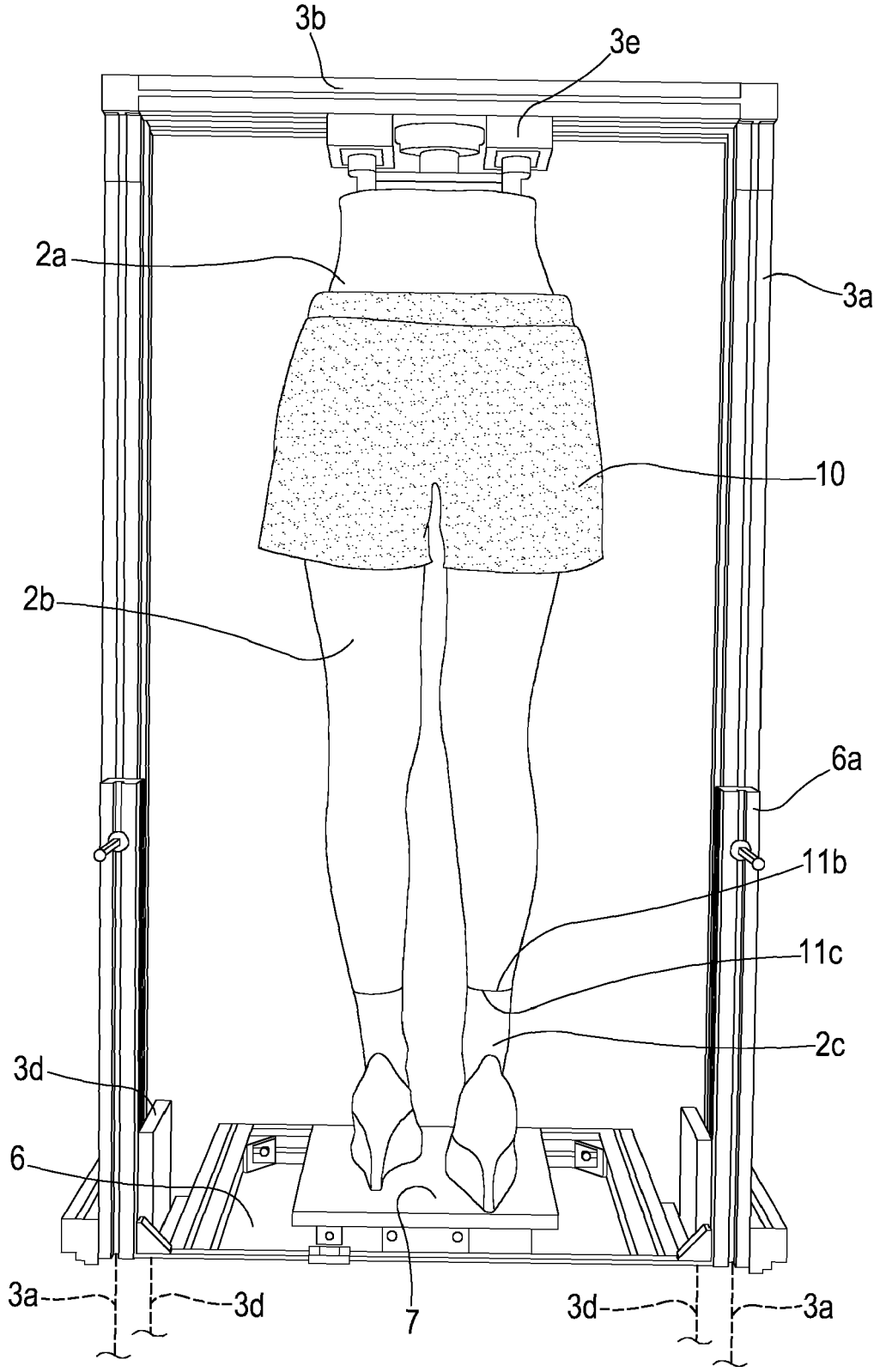
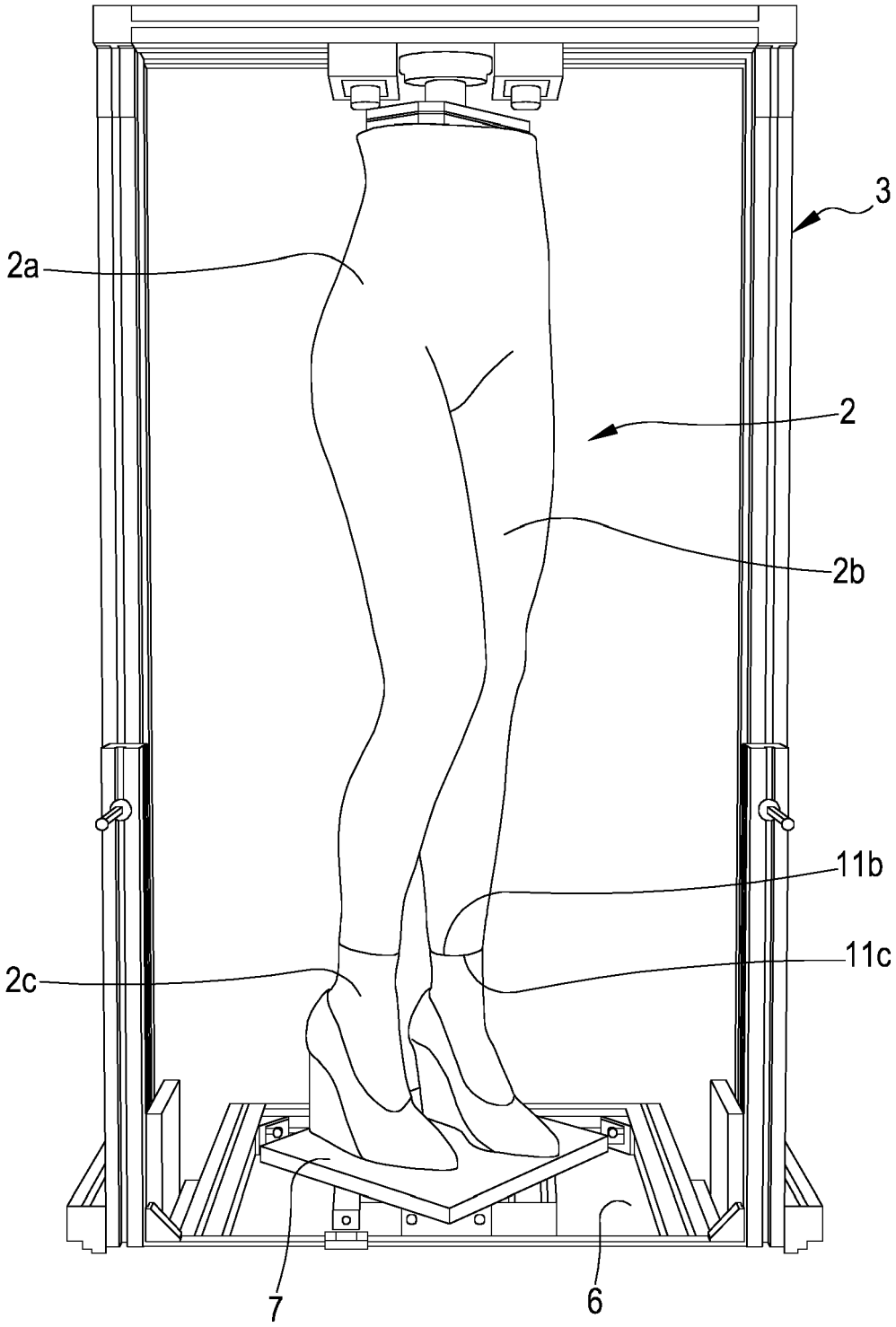


FIG.5



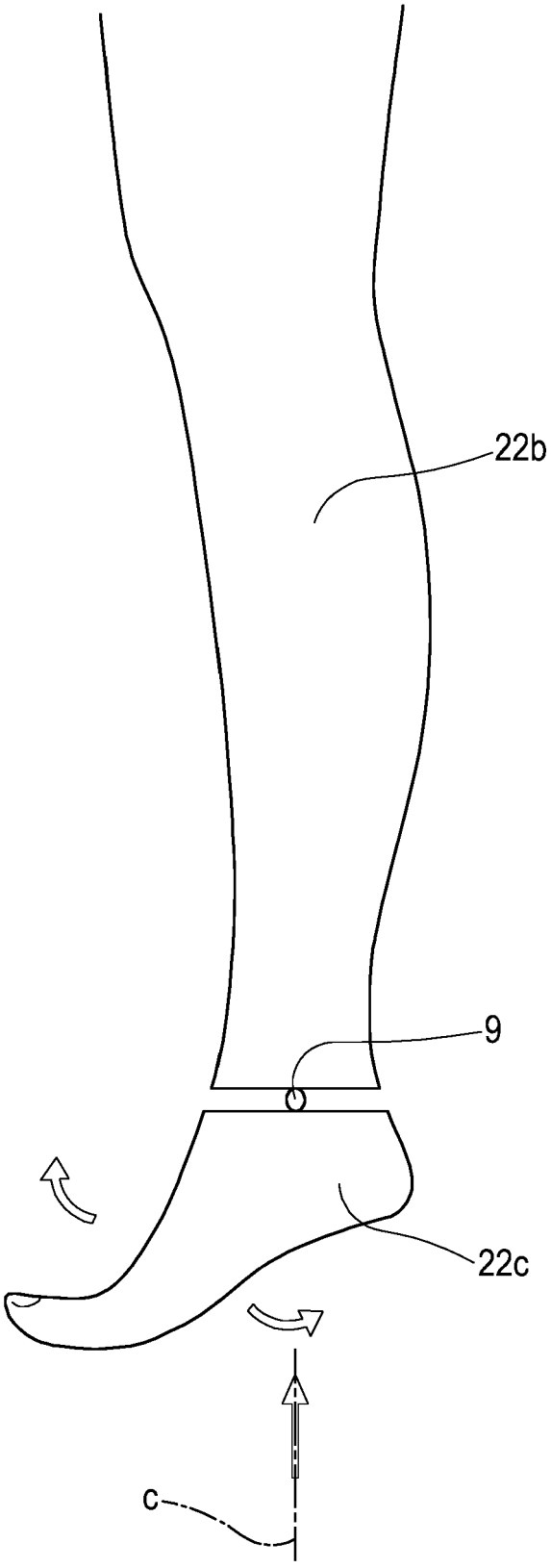


FIG.6

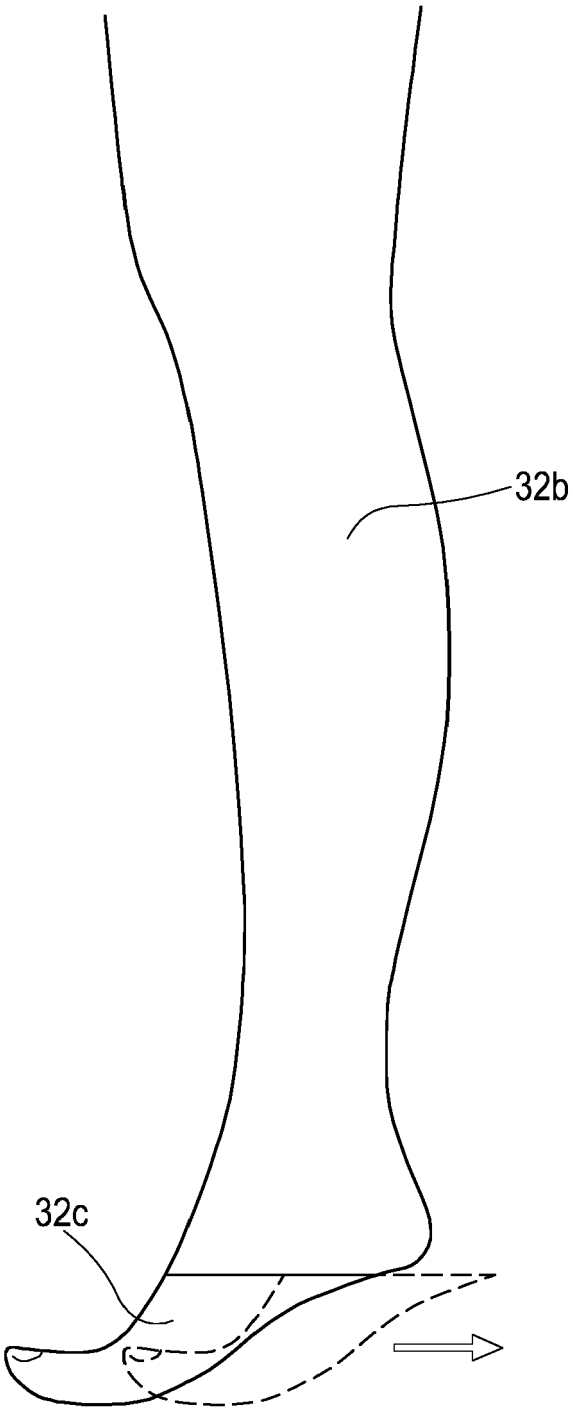


FIG.7

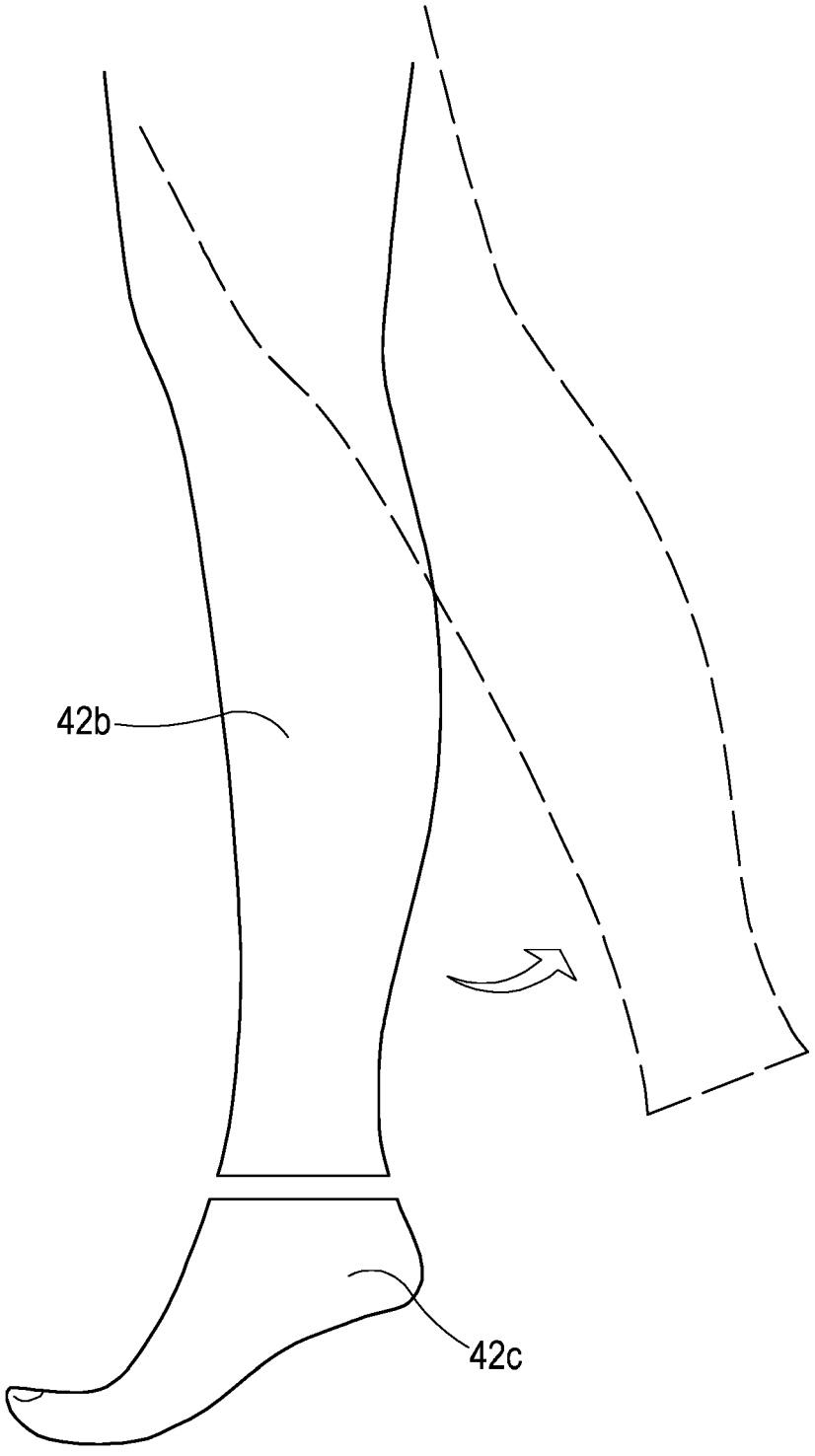


FIG.8

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EUROPEAN SEARCH REPORT

Application Number
EP 19 21 3199

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	DE 201 10 114 U1 (ASATSU DEUTSCHLAND GMBH) 31 October 2001 (2001-10-31) * figures 1-4 * -----	1-5	INV. A47F8/00
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TECHNICAL FIELDS SEARCHED (IPC)

A47F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	25 February 2020	Linden, Stefan

CATEGORY OF CITED DOCUMENTS

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25-02-2020

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