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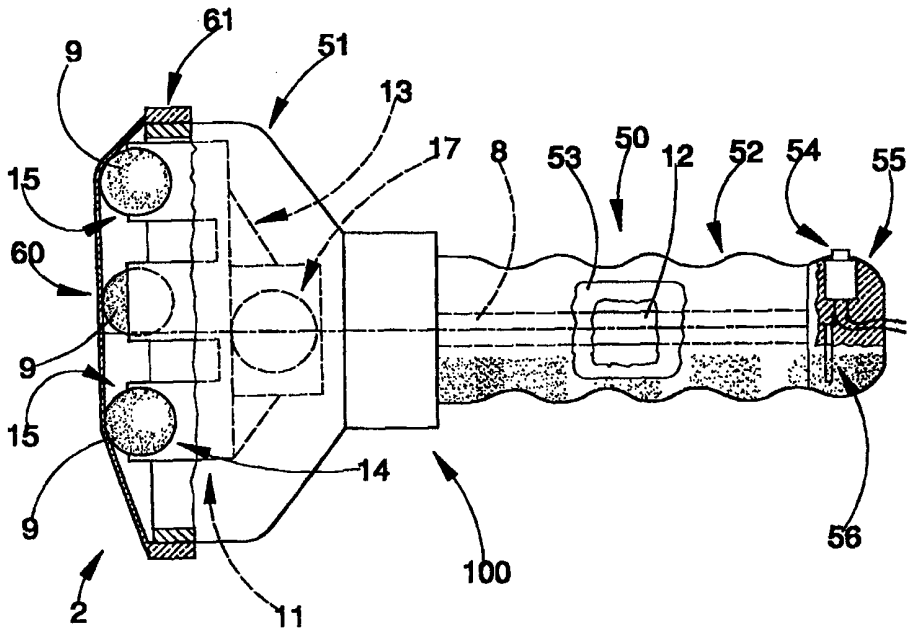

(57) Abstract

An apparatus (1; 100) for the massage of the human body comprises at least a massaging element (2) motorised by related motorising means (53; 6; 7, 23, 10) which is able to rotate around an axis (8) of rotation transverse to the surface to be massaged and is provided with at least a pressure surface (9), rolling, offset with respect to the axis of rotation (8), which applies a contact pressure to the surface of the body to be massaged and which, in correspondence with the rotation of the massaging element (2), describes a revolution trajectory around said axis of rotation (8).

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Description

Apparatus for superficial or deep massage of the human body

Technical Field

The present invention relates in general to an apparatus for the superficial or deep massage of the human body which in an embodiment finds advantageous use as a portable apparatus and in a different embodiment can be associated to a back support structure, such as the back rest of an armchair.

The aim of the invention is to reproduce mechanically and automatically a known massaging technique that is manually practised by the better qualified physiotherapists, entailing the massage of the body through the application of an intense pressure with the balls of the fingers, accompanied with a simultaneous rotatory motion of the hands.

The apparatus allows the autonomous application of this massaging technique to the various parts of one's own body, stimulating them superficially or deeply, depending on specific personal needs.

In accordance with the invention, this aim is attained by an apparatus for the massage of the human body which, in a portable embodiment, is characterised in that it comprises at least one massaging element motorised by related motorising means, element which is able to rotate around an axis of rotation transverse to the surface to be massaged and is provided with at least one pressure surface, rolling, offset with respect to the axis of rotation, which applies a contact pressure to the surface of the body to be massaged and which, in correspondence with the rotation of said one or each massaging element, describes a revolution trajectory around said axis of rotation.

The apparatus comprises a container body so shaped as to allow an easy manual grip of the apparatus which can be pressed against the part to be massaged and moved tangentially thereto in order to allow the implementation of diversified massaging programs, personalised by the user him/herself.

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In the case wherein the massaging element, or each massaging element, is provided with multiple support elements sustaining the pressure surfaces at different distances from the rotation axis, by virtue of the superposition of the various trajectories of the pressure surfaces, the apparatus allows to massage in a highly uniform manner even areas of the human body with much broader surfaces.

In addition to the aforesaid functional advantages, the invention has numerous productive advantages, such as that of being of a rather simple design, allowing for industrial manufacturing without requiring large investments: it is possible to assemble it, check it and test it very rapidly to the benefit of a rather modest selling price.

Lastly, the portability of the apparatus favoured by its very reduced dimensions and by its capability for autonomous battery-provided power supply, make the apparatus advantageously usable in a wide variety of personal situations thereby extending its field of utilisation outside physiotherapy centres and/or aesthetic treatment centres.

A second embodiment of the apparatus, usable in particular for massaging the back, provides for associating the apparatus to an armchair back rest.

For back massages, armchairs are known in the furniture business, whose back rests incorporate, internally to the related support structure, automatic massage apparatuses.

The invention concerns more specifically a massage apparatus which, in accordance with the preamble to claim 30, comprises massaging elements, motorised by first motorising means and borne by a carriage, which is movable in a guided manner along a support structure upon the activation of second motorising means.

Background Art

A first known type of such an apparatus uses, as a massaging element, a series of rollers set side by side at a small mutual distance and positioned on a plurality of parallel rows. The rollers are collectively connected to a plate with the interposition

of springs so as to rotate around their own axes of rotation parallel to the user's back. The plate is rigidly connected to a motorised lead screw, whose activation allows to translate the plate itself along the back rest structure, upon suitable command imparted by the user.

As a consequence of the fact that the translation motion of the carriage is forcedly rectilinear, the adaptability of the rollers to the user's back is entrusted solely to the elastic excursion allowed by the spring. Therefore, the apparatus has a limited capability of adapting itself in a correct and precise manner to the natural curvature of the back imposed by the profile of the spine. The massage provided by this apparatus can thus be rather imprecise and in any case not wholly uniform on the totality of the surface to be massaged.

A second type of known apparatus uses, as the massaging element, two or more rubberised wheels, of sizeable diameter, which are mounted on a carriage with horizontal axes of rotation, substantially parallel to the user's back. The wheels are mounted on their axes in such a way as to oscillate by a certain angle contained in a plane passing through their axis of rotation. The carriage is supported, by means of articulated levers, by a plate which in turn is able to translate along the structure of the back rest by means of a motorised lead screw.

Such an apparatus has several drawbacks. Since the wheels run parallel to the spine, the massage is always exerted in the same points of the back, with a contact that is rather rigid: this may render the massage unpleasant at times and not wholly effective. Moreover, since the wheels turn inclined, oscillating with respect to their own axis of rotation, the massage takes place with a pinching action that is not always enjoyable to the user.

Another drawback can be noted in the fact that the wheels continuously rub on the fabric covering the back rest, with high friction, causing a rather rapid wear of the armchair upholstery.

Additional drawbacks can moreover be noted in a high constructive complexity of the apparatus, implying complex assembly operations which bear heavily on the

cost of manufacture. Another drawback can lastly be noted in the large dimensions of the apparatus which, correspondingly, also implies large armchair back rest dimensions.

Disclosure of Invention

The aim of the present invention therefore is to eliminate the aforementioned drawbacks by means of an apparatus able to produce a lumbar, dorsal, cervical massage that is uniform over the entire back, massage which in particular is of the type performed by an experienced physiotherapist who, with the balls of the fingers, manually imparts a pressure on the areas to the side of the spine, simultaneously effecting the massage with a rotatory motion of his/her hands.

In accordance with the invention, this aim is attained by an apparatus wherein each massaging element is able to rotate around an axis of rotation transverse to the surface to be massaged and is provided with one or more pressure surfaces, offset with respect to the axis of rotation, which, in correspondence with the rotation of the massaging element, effect a revolution around said axis of rotation.

Since the guide whereon the carriage slides is shaped according to the curvature of the spine of a user of average height, the simultaneous translation of the carriage along the guide allows harmoniously to follow the anatomy of the back, allowing to massage effectively and uniformly all its various characteristic areas.

By placing on the same carriage (or even on two distinct and separate carriages) two independently motorised massaging elements, it is possible simultaneously to massage two areas of the back positioned at different levels with respect to the development of the spine. The apparatus therefore allows to realise veritable massage programs, diversified and able to be personalised by the user according to his/her own specific requirements.

In the case wherein the massaging element, or each massaging element, is provided with multiple support elements which sustain the pressure surfaces at different distances from the axis of rotation, the apparatus allows to massage in a

highly uniform manner areas of the human body whose surface is much greater than that allowed by prior art apparatuses.

In addition to the aforesaid ergonomic advantages, the invention has numerous productive advantages, such as that of having a simple design, which allows its industrial manufacture without requiring large investments: it is possible to assemble, check it and test it very rapidly.

The low cost of manufacture allows the additional advantage of having a product with a reduced sale price.

Lastly, since the apparatus also has very limited dimensions, it can be employed beneficially also in technical sectors differing from those for which it was initially envisioned, capable as it is of being applied, by way of non limiting indication, also to arm chairs, sofas, furnishing beds, even to aircraft seats, office chairs, auto vehicle seats, including automobile seats, and lastly also to orthopaedic beds, hospital beds, physiotherapy beds and/or for aesthetic treatments.

The technical features of the invention, according to the aforesaid aims, can clearly be seen from the content of the claims reported below and its advantages will become more readily apparent in the detailed description that follows, made with reference to the accompanying drawings, which represent an embodiment provided purely by way of non limiting example.

Description of the Drawings

- Figure 1 is an overall view of a portable massage apparatus, realised in accordance with the invention and shown in a first embodiment;
- Figure 2 is an overall view of a portable apparatus according to the invention shown in a second embodiment, alternative to that of Figure 1;
- Figures 3A, 3B and 3C respectively show three alternative constructive solutions of some details of the apparatus as per the previous Figures.
- Figures 4 is an overall front perspective view of an armchair back rest structure incorporating the apparatus according to the invention;

- Figure 5 is a partial perspective view of the structure as per the previous Figure 1 seen from the rear;
- Figures 6A, 6B, 6C respectively show three alternative constructive solutions of a detail of the apparatus;
- Figure 6D shows in enlarged scale a constructive detail of Figure 6C.

Description of the Illustrative Embodiment

In accordance with Figures 1, 2, 3A, 3B and 3C of the accompanying drawings, the number 100 indicates in its entirety a first portable massaging apparatus for the execution of superficial or deep massages on numerous areas of the human body such as the lumbar area, the abdominal, chest, dorsal or cervical area.

The apparatus 100 essentially comprises (Figures 1 and 2) a massaging element 2 contained inside a container body 60,51,52 which can be gripped manually by the user.

The massaging element 2 is driven by related driving means 53 and it comprises in particular a support element 11 connected to a motorised shaft 12 (Figures 3A-3C) which rotates around its own axis of rotation 8 oriented transversely with respect to the surface to be massaged. The support element 11 is preferably provided with four seats 14 which house and hold within them, in rolling coupling condition, spherical bodies 15. The latter project in overhang from the respective seat 14 and protrude outwards with a part of their contour surface 16 having the shape of a spherical cap; cap, whose surface is herein defined pressure surface 9, which allows to impart a massaging pressure on the area of the body that the user of the apparatus intends to subject to the massage.

The support element 11 is embodied in particular by a plate 13 of suitable material and thickness, having a shape, for instance quadrangular, so designed as to support, in proximity to its own vertices, the seats 14 housing the massaging bodies 15; seats which may present different conformations, to be used in mutually alternative fashion.

In a first embodiment of the support element 11 (Figure 3A) the seats 14 are constituted by tubular cylindrical elements which project from the plate 13 and internally withhold caps 24, each supporting a spherical body 15 and being elastically contrasted by a spring 25, housed in the seat 14. The caps 24 are introduced in the seats 14 by thrust forcing which causes the side walls of the seats 14 to yield elastically and which allows to lock and stably retain the spherical body 15 in the seat 14, by geometric interference, after the spontaneous elastic snap-back of the walls to their original configuration.

The seats 14 are positioned at mutually different distances from the axis 8 of rotation of the shaft 12, thereby locating the pressure surfaces 9 at correspondingly different distances.

Between the support element 11 and the motorised shaft 12 are positioned generalised motion transmission means 17 which, in the case at hand, are embodied by an actual rigid mechanical connection comprising a threaded junction between a pin 26 at the end of the shaft 12 and a corresponding coupling hole 27 borne by the support element 11.

By virtue of the aforesaid transmission means 17, during the rotation of the massaging element 2, consequent to the rotation of the shaft 12, a corresponding rotation of the support element 11 is produced, allowing each of the pressure surfaces 9 to describe its own circular trajectory, completing a revolution around the axis 8 of rotation.

Since the pressure surfaces 9 are differently offset with respect to the axis 8 of rotation, the massaging surface defined by the overall revolution of the rolling bodies 15 has the shape of an annulus. It is therefore clear that, adopting for the support elements 11 geometric proportions diversified in the number of pressure surfaces 9 and/or in their distance from the axis 8 of rotation, massage surfaces with more or less ample extension can be obtained. Such a characteristic advantageously allows, in addition to the possibility of executing a massage with uniform pressure, exerted on an extended surface area of the human body, also to differentiate the performance

of the apparatus 100 by modulating them according to particular uses, envisioned for instance during the construction of the apparatus 100.

The solution of Figure 3A allows the rolling bodies 15 to exert an elastically dampened contact pressure which is particularly advantageous especially when the massage is to involve an area of the body characterised by a high variability of its local curvature. Whenever it is necessary or desirable, for instance for certain therapeutic implications, to effect instead a more energetic massage, concentrated on certain specific areas, such as those prescribed for acupuncture, a second embodiment of the massaging element 2, shown in Figure 3B, can be obtained depriving the support element 11 of the springs 25 that contrast the caps 24. Such an embodiment also allows to obtain massaging elements 2 with less sizeable and more economical construction.

Figure 3C shows a third, additional, example of construction of the massaging element 2, wherein the seats 14 of the support element 11 have internally hollow spherical shape and house within them the related rolling bodies 15. This example of constructive solution is advantageously simple to execute and has minimal dimensions, with respect to the axis of rotation 8 of the motorised shaft 12.

The support element 11 can be realised both in rigid configuration, similar to the embodiment of Figure 3B, and in a configuration able to be oriented, capable of rendering the support element 11 spontaneously adaptable to the surface of the body to be massaged.

From the observation of Figure 3B, it is readily apparent that in the case at hand the capability to be oriented can be obtained in several different ways, among them for instance a preferable way provides for the interposition between the shaft 12 and the support element 11 of an organ 34 made of elastically yielding material (such as a spring, an elastic body, or a steel rope with braided strands), organ 34 that participates in the concrete realisation of a possible additional embodiment of the aforesaid transmission means 17.

The capability of the support element 11 to be oriented is obtainable in

particular also by including in the motion transmission means a joint 17 capable of being oriented, homokinetic, interposed between the support element 11 and the motorised shaft 12.

The joint 17 more in particular comprises a spherical motor body 18, which is integrally borne at an end of the motorised shaft 12 and is provided with at least one groove 19 (Figure 6D) oriented longitudinally with respect to the axis 8; and it comprises a rolling body 20 which is contained partly in the groove 19 and partly in a seat 21 of the support element 11. The rolling body 20 and the groove 19 free to move one with respect to the other and longitudinally to the groove 19 allow the oscillating orientation of the support element 11 with respect to the motorised shaft 12, with freely variable angles contained in a diametral plane passing through the groove 19 and also containing the axis of rotation 8 of the shaft. The support element 11 and the shaft 12 are instead mutually rigidly integral with respect to their joint rotation around the axis 8.

In regard to the container body of the massaging element 2, from Figure 1 it is possible to note that said container body essentially comprises a grip 52, a case 51 and a wall 60 made of yielding material, mutually connected.

The container body comprises a grip 52 which houses within it the motorised shaft 12 letting an end thereof project outside, end whereto is fastened each massaging element 2. The case 51 is made of rigid, metallic or plastic, material, and it presents an encompassing shape which peripherally surrounds the massaging element - or elements - 2 of the massage; and it is associated to the grip 52, preferably by means of threaded connection, in a condition of mutual alignment therewith (Figure 1); or, in the constructive variation shown in Figure 2, in an angled condition, preferably by 90°, with respect to the grip 52.

The wall 60 is made of yielding material, preferably rubber, and by means of a threaded sleeve 61 is fastened to the profile of the case 51 in a surrounding area proximate to the massaging element 2. The wall 60 is integrated with the case 51 and covers in particular the pressure surface 9 of each massaging element 2 interposing

itself between the latter and the surface of the body to be massaged thereby distributing the pressure load over a greater surface of the body.

This feature is more appreciable in the case of a relatively superficial massage, as required for instance for treating cellulite or stimulating the user's superficial circulatory system. If instead a deeper and/or more localised and punctual massage is preferable, the wall 60 can obviously be removed easily from the apparatus 100.

The apparatus 100 comprises means 54 for commanding the massaging element 2 so designed as to maintain each massaging element 2 active only in the presence of a precise intention of the user that is manifested through the constant maintenance of the command by the user: releasing the command, albeit temporarily, causes the massaging element 2 to stop.

It the driving means 53 is electrically activated, the command means can be advantageously realised by a monostable switch 54 positioned on the activating circuit 56 which provides the electrical power supply to the driving means 53. The switch 54 can advantageously be located on an end 55 of the grip 52, in such a position that its manual activation is easy whilst gripping the apparatus 100.

According to a preferable embodiment, the means for driving the massaging element 2 comprises an epicyclic gearmotor 53 which is easily housed inside the grip 52.

For greater autonomy of use and movement of the portable apparatus 100, the driving means 53 can also be powered by an electrical battery.

If the case 51 and the grip 52 are mutually collected in line, the connection of the epicyclic gearmotor 53 to the motorised shaft 12 of the massaging element 2 can be direct, as shown in Figure 1.

If the case 51 and the grip 52 are instead mutually angled, the apparatus 100 comprises a mechanical transmission 57,58,59 interposed between the driving means 53 and the motorised shaft 12 which is directly connected with the massaging element 2.

The mechanical transmission is realised in particular by a shaft 57 coupled to

the epicyclic gearmotor 53 and connected to the shaft 12 of the massaging element by an interposed angular transmission comprising in turn a pair of bevel gears 58,59 mutually enmeshing, individually keyed on to respective shafts 57,12.

In use, the operation of the apparatus 100 can be clearly understood from the structural description above and from the related figures and it requires no additional detailed explanations.

The apparatus 100 thus conceived fully attains the aforementioned aims and allows to have available a personal massage apparatus, of versatile employment and considerable constructive simplicity which makes its manufacture quite economical.

In accordance with the figures of the accompanying drawings 4,5,6A,6B,6C,6D the number 1 indicates in its entirety an apparatus, for massaging the lumbar, dorsal and cervical area of the back of the human body, capable of being inserted in a support structure 5 embodied in particular by a back rest frame of an armchair, whereto in the remainder of the description reference shall be made in an indicative, but not limiting, manner.

The apparatus 1 essentially comprises two massaging elements 2 independently motorised by first motorising means 6 and borne by a carriage 3 which is slidingly movable along guides 4 of the support structure 5 upon the activation of second motorising means 7,23,10.

Each of the massaging elements 2 comprises in particular a support element 11 which is connected to a motorised shaft 12 (Figures 6A-6D9, rotating around its own axis of rotation and transversely oriented with respect to the surface to be massaged; shaft 12 which is driven by its own independent motor 6 (only one of the motors is shown in Figure 2 the better to highlight other details of the invention) which realises in particular the aforesaid first motorising means.

The support element 11 is preferably provided with four seats 14 which house and hold within them, in a condition of rolling coupling, spherical bodies 15. The latter project in overhang from the respective seat 14 and protrude outwards with a part of their contour surface 16 having the shape of a spherical cap: cap, whose

surface is here defined pressure surface 9, which allows to exert a massaging pressure on the back of the user.

The support element 11 is realised in particular by a plate 13 of suitable material and thickness, with a shape, for instance quadrangular, designed in such a way as to support in proximity with its own vertices the seats 14 housing the massaging bodies 15; seats 14 which may present different conformations, to be used in mutually alternative fashion.

In a first embodiment of the support element 11 (Figure 6A) the seats 14 are constituted by tubular cylindrical elements which project from the plate 13 and internally withhold caps 24, each supporting a spherical body 15 and being elastically contrasted by a spring 25, housed in the seat 14. The caps 24 are introduced in the seats 14 by thrust forcing which causes the side walls of the seats 14 to yield elastically and which allows to lock and stably retain the spherical body 15 in the seat 14, by geometric interference, after the spontaneous elastic snap-back of the walls to their original configuration.

The seats 14 are positioned at different mutual distances from the axis 8 of rotation of the shaft 12, thereby locating the pressure surfaces 9 at correspondingly different distances.

Between the support element 11 and the motorised shaft 12 are positioned generalised motion transmission means 17 which, in the case at hand, are embodied by an actual rigid mechanical connection comprising a threaded connection between a pin 26 at the end of the shaft 12 and a corresponding coupling hole 27 borne by the support element 11.

By virtue of the aforesaid transmission means 17, during the rotation of the massaging element 2, consequent to the rotation of the shaft 12, a corresponding rotation of the support element 11 is produced, allowing each of the pressure surfaces 9 to describe its own circular trajectory, completing a revolution around the axis 8 of rotation.

Since the pressure surfaces 9 are differently offset with respect to the axis 8 of

rotation, the massaging surface defined by the overall revolution of the rolling bodies 15 has the shape of an annulus. It is therefore clear that, adopting for the support elements 11 geometric proportions diversified in the number of pressure surfaces 9 and/or in their distance from the axis 8 of rotation, massage surfaces with more or less ample extension can be obtained. Such a characteristic advantageously allows, in addition to the possibility of executing a massage with uniform pressure, exerted on an extended surface area of the human body, also to differentiate the performance of the apparatus 1 by modulating them according to particular uses, envisioned for instance during the construction of the apparatus 1.

The solution of Figure 6A allows the rolling bodies 15 to exert an elastically dampened contact pressure which is particularly advantageous especially when the massage is to involve an area of the body characterised by a high variability of its local curvature. Whenever it is necessary or desirable, for instance for certain therapeutic implications, to effect instead a more energetic massage, concentrated on certain specific areas, such as those envisioned for acupuncture, a second embodiment of the massaging element 2, shown in Figure 3B, can be obtained depriving the support element 11 of the springs 25 that contrast the caps 24. Such an embodiment also allows to obtain massaging elements 2 with less sizeable and more economical construction.

Figure 6C shows a third, additional, example of construction of the massaging element 2, wherein the seats 14 of the support element 11 have internally hollow spherical shape and house within them the related rolling bodies 15, in a of constructive solution that is simple to execute and has minimal dimensions, with respect to the axis of rotation 8 of the motorised shaft 12.

The support element 11 can be realised both in rigid configuration, similar to the embodiment of Figure 6B, and in a configuration able to be oriented, capable of rendering the support element 11 spontaneously adaptable to the surface of the body to be massaged.

From the observation of Figure 3B, it is readily apparent that in the case at

hand the capability to be oriented can be obtained in several different ways, among them for instance a preferable way provides for the interposition between the shaft 12 and the support element 11 of an organ 34 made of elastically yielding material (such as a spring, an elastic body, or a steel rope with braided strands), organ 34 that participates in the concrete realisation of a possible additional embodiment of the aforesaid transmission means 17.

Such a feature is obtained in particular through motion transmission means comprising a joint 17 capable of being oriented, homokinetic, interposed between the support element 11 and the motorised shaft 12.

The joint 17 more in particular comprises a spherical motor body 18, which is integrally borne at an end of the motorised shaft 12 and is provided with at least one groove 19 (Figure 6D) oriented longitudinally with respect to the axis 8; and it comprises a rolling body 20 which is contained partly in the groove 19 and partly in a seat 21 of the support element 11. The rolling body 20 is free to move along the groove 19 and it allows the oscillating orientation of the support element 11 with respect to the motorised shaft 12, with freely variable angles contained in a diametral plane passing through the groove 19 and containing the axis of rotation 8 of the shaft. The support element 11 and the shaft 12 are instead mutually rigidly integral with respect to their joint rotation around the axis 8.

In regard to the carriage 3, from Figure 1 it can be observed that it contains in particular a rectangular flat plate 28 provided with four pads 29 positioned in correspondence with its vertices. The flat plate 28 supports the massaging elements 2 together with the related first motorising means 6. The pads 29, which are made of anti-friction material, have cylindrical shape and project from the flat plate 28 rotating on related pins having axes 30 of rotation parallel to the plane whereon the flat plate 28 lies. The pads 29 are traversed by a through diametral notch 31, which engages them in pairs on said guides 4 bilateral to the carriage 3. The guides 4 are curvilinear; they are shaped in such a way as to reproduce the curvature of a person of average height; and they are in turn welded to parallel uprights 32 which,

connected at their ends by horizontal crosspieces 33, delimit in mutual combination a frame of the support structure 5 of the armchair back rest.

The apparatus 1 further comprises a lead screw 10 connected to the crosspieces 33 of the frame whereon is engaged, by means of a corresponding threaded screw nut, a tugging element 22 connected to the carriage 3 by means of a pair of parallel connecting rods 22 having their respective opposite articulated ends connected on one side with the flat plate 28 and on the other with the tugging element 23.

The lead screw 10, the tugging element 23 and a motor 7, located in proximity to the lower crosspiece of Figure 2, which causes the rotation of the lead screw 10, constitute the aforementioned second motorising means which allow the carriage 3 to translate along the support structure 5 of the back rest moving along the guides 4 correspondingly to the anatomy of the person.

The structure of the carriage 3 described above allows to obtain an apparatus 1 of extreme constructive simplicity, easy to assemble, and highly reliable. This can be easily understood by observing from Figure 1 that the carriage 3 can be mounted in the guides 4 by inserting the diametral notches 31 in the guides 4, whose top ends 35 are positioned at a suitable distance from the upper crosspiece 33 of the frame to allow the insertion of the pads 29.

In use, the operation of the apparatus 1 is easily understood by observing the at the user, by activating through an appropriate push-button panel (not shown) and in a mutually independent fashion the motor of the screw and the motors 6 of the massaging element 2, drives the carriage 3 and the massaging elements 2 positioning them in correspondence with the areas to be massaged; areas that can obviously be chosen both so as to be transversely symmetrical to the spine, and longitudinally differentiated with respect thereto; all this being allowed by the differently eccentric location of the pressure surfaces 9 of the support elements 11.

The apparatus 1, 100 thus conceived fully attains the aims stated above and it can be subject to numerous modifications and variations, without thereby departing from the scope of the inventive concept, and numerous alternative choices are

possible for the materials employed; in addition, all the details of the invention can be replaced with technically equivalent elements. By way of example, a possible variation devised to allow a greater amplification of the distance between the two massaging element 2 longitudinally to the spine, can be conceived by positioning on a same back rest structure 5 two carriages 3 set side by side, mutually independent and autonomously guide, and each individually supporting its own single massaging element 2.

Claims

1. Apparatus (100) for massaging the human body, characterised in that it comprises at least a massaging element (2) motorised by related motorising means (53) which is able to rotate around an axis (8) of rotation transverse to the surface to be massaged and is provided with at least one pressure surface (9), rolling, offset with respect to the axis (8) of rotation, which applies a contact pressure to the surface of the body to be massaged and which, in correspondence with the rotation of the massaging element (2) describes a revolution trajectory around said axis (8) of rotation.

2. Apparatus, according to claim 1, characterised in that it is realised in portable form.

3. Apparatus, according to claim 2, characterised in that said one or each massaging element (2) comprises a support element (11) which sustains said one or each pressure surface (9); a motorised shaft (12) rotating around said axis (8) of rotation; and motion transmission means (17) which are interposed between the support element (11) and the motorised shaft (12) and are devised to allow said one or each pressure surface (9) to orient itself correspondingly adapting to the surface of the body to be massaged.

4. Apparatus, according to claim 3, characterised in that said support element (11) comprises a plate (13) wherefrom said one or each pressure surface (9) projects in overhang towards the surface of the body to be massaged.

5. Apparatus, according to any one of the previous claims, characterised in that said one or each pressure surface (9) has the shape of a spherical cap.

6. Apparatus, according to claim 5, characterised in that it comprises at least a seat (14), borne by the support element (11), and a body (15) having contour surface (16) incorporating the pressure surface (9), which body is held in the seat (14) in a condition of rolling coupling.

7. Apparatus, according to claim 6, characterised in that said one or each seat (14) has internally hollow cylindrical shape and houses, in said shape, the rolling body (15).

8. Apparatus, according to claim 6, characterised in that said one or each seat (14) has spherical shape internally hollow and houses within said shape the rolling body (15).

9. Apparatus, according to one of the previous claims from 6 to 8, characterised in that it comprises an elastic element (25) whereon the pressure surface (9) bears.

10. Apparatus, according to one of the previous claims from 3 to 6, characterised in that the motion transmission means comprise a joint (17) interposed between the support element (11) and the motorised shaft (12).

11. Apparatus, according to claim 10, characterised in that the joint (17) is capable of being oriented.

12. Apparatus, according to claim 10 or 11, characterised in that the joint (17) is homokinetic.

13. Apparatus, according to one of the claims 10, 11 or 12 characterised in that the joint (17) comprises a motor body (18), which is integrally borne at an end of the motorised shaft (12) and is provided with at least a groove (19) oriented

longitudinally with respect to the axis (8); at least one rolling body (20) which is partly contained in the groove (19) and partly in a seat (21) of the support element (11), the rolling body (20) being free to move along the groove (19) thereby allowing the orientation of the support element (11) with respect to the motorised shaft (12) while rendering instead integral the support element (11) and the shaft (12) with respect to rotation around the axis (8).

14. Apparatus, according to any one of the previous claims, characterised in that said support element (11) supports at least two said pressure surfaces (9).

15. Apparatus, according to any one of the previous claims, characterised in that said pressure surfaces (9) are positioned at different mutual distances from the axis (8) of rotation of the support element (11).

16. Apparatus, according to claim 11, characterised in that the motion transmission means comprise an organ (34) made of elastically yielding material interposed between the shaft (12) and the support element (11).

17. Apparatus, according to any one of the previous claims, characterised in that it comprises a container body (50, 51, 52) for manually gripping the apparatus (1).

18. Apparatus, according to claim 17, characterised in that said container body comprises a grip (52) which internally houses the motorised shaft (12) letting an end thereof project externally, end whereto is fastened said one or each massaging element (2).

19. Apparatus, according to claim 17, characterised in that said container body comprises a case (51) which is associated to said grip (52) and presents encompassing shape which surrounds peripherally said one or each massaging

element (2).

20. Apparatus, according to claim 17, characterised in that said case (51) and said grip (52) are mutually aligned.

21. Apparatus, according to claim 17, characterised in that said case (51) and said grip (52) are mutually angled.

22. Apparatus, according to one of the claims from 19 to 21, characterised in that the container body comprises a wall (60) made of yielding material fastened to the contour of the case (51) which covers said one or each massaging element (2) and is interposed between it and the surface to be massaged.

23. Apparatus, according to any one of the previous claims, characterised in that it comprises means (54) for controlling the massaging element (2) so devised at to maintain active said one or each massaging element (2) only in the presence of a command maintained constantly by the user, the release of the command determining the arrest of the massaging element (2).

24. Apparatus, according to claim 23, wherein the motorising means (53) is associated to an electrical activating circuit (56), characterised in that the control means comprise a monostable switch (54) positioned on the activating circuit (56) of the motorising means (53).

25. Apparatus, according to any one of the previous claims, characterised in that the motorising means of said one or each massaging element (2) comprises an epicyclic gearmotor (53).

26. Apparatus, according to claims 17 and 25, characterised in that the epicyclic gearmotor (53) is housed within said grip (52).

27. Apparatus, according to any one of the previous claims, characterised in that said motorising means (53) is powered by an electric battery.

28. Apparatus, according to one of the claims from 3 to 27, characterised in that it comprises a mechanical transmission (57,58,59) interposed between the motorising means (23) and the motorised shaft (12) of said one or each massaging element (9).

29. Apparatus, according to claim 28, characterised in that the mechanical transmission comprises a drive shaft (57) and an angular transmission (58,59) associated to the shaft (12) of said one or each massaging element.

30. An apparatus for the massage of the human body comprising at least a massaging element (2), motorised by first motorising means (6) and borne by a carriage (3) which is movable in a guide (4) along a support structure (5) upon activation of second motorising means (7,23,10), characterised in that said one or each massaging element (2) is able to rotate around an axis (8) of rotation transverse to the surface to be massaged and is provided with at least one pressure surface (9), offset with respect to the axis (8) of rotation, which, in correspondence with the rotation of the massaging element (2), performs a revolution around said axis (8) of rotation.

31. Apparatus, according to claim 30, characterised in that said one or each massaging element (2) comprises a support element (11) which sustains said one or each pressure surface (9); a motorised shaft (12) rotating around said axis (9) of rotation; and motion transmission means (17;32) which are interposed between the support element (11) and the motorised shaft (12) and are devised to allow said one or each pressure surface (9) to be oriented adapting correspondingly to the surface of the body to be massaged.

32. Apparatus, according to claim 31, characterised in that said support element (11)

comprises a plate (13) wherefrom said one or each pressure surface (9) projects in overhang towards the surface of the body to be massaged.

33. Apparatus, according to any one of the previous claims, characterised in that said one or each pressure surface (9) has the shape of a spherical cap.

34. Apparatus, according to claim 33, characterised in that it comprises at least one seat (14), borne by the support element (11), and a body (15) whose contour surface (16) incorporates the pressure surface (9), which is held in the seat (11) in a rolling coupling condition.

35. Apparatus, according to claim 33, characterised in that said one or each seat (14) has internally hollow cylindrical shape and houses, within said shape the rolling body (15).

36. Apparatus, according to claim 33, characterised in that said one or each seat (14) has internally hollow spherical shape and houses, within said shape the rolling body (15).

37. Apparatus, according to one of the previous claims from 33 to 36, characterised in that it comprises an elastic element (25) whereon the pressure surface (9) bears.

38. Apparatus, according to one of the previous claims from 31 to 34, characterised in that the motion transmission means comprise a joint (17) interposed between the support element (11) and the motorised shaft (12).

39. Apparatus, according to claim 34, characterised in that the joint (17) is capable of being oriented.

40. Apparatus, according to claim 39, characterised in that the joint (17) is homokinetic.

41. Apparatus, according to claim 39, characterised in that the joint (17) comprises a motor body (18), which is integrally borne at one end of the motorised joint (12) and is provided with at least one groove (19) oriented longitudinally with respect to the axis (8); at least a rolling body (20) which is partly contained in the groove (19) and partly in a seat (21) of the support element (11), the rolling body (20) being free to move along the groove (19) thereby allowing the orientation of the support element (11) with respect to the motorised shaft (12) while making instead integral the support element (11) and the shaft (12) with respect to rotation around the axis (8).

42. Apparatus, according to one of the previous claims, characterised in that it comprises two said massaging elements (2) mounted on the same said carriage (3).

43. Apparatus, according to one of the previous claims, characterised in that it comprises two said massaging elements (2) mounted each on its own distinct carriage (3).

44. Apparatus, according to any one of the previous claims, characterised in that said support element (11) sustains at least two said pressure surfaces (9).

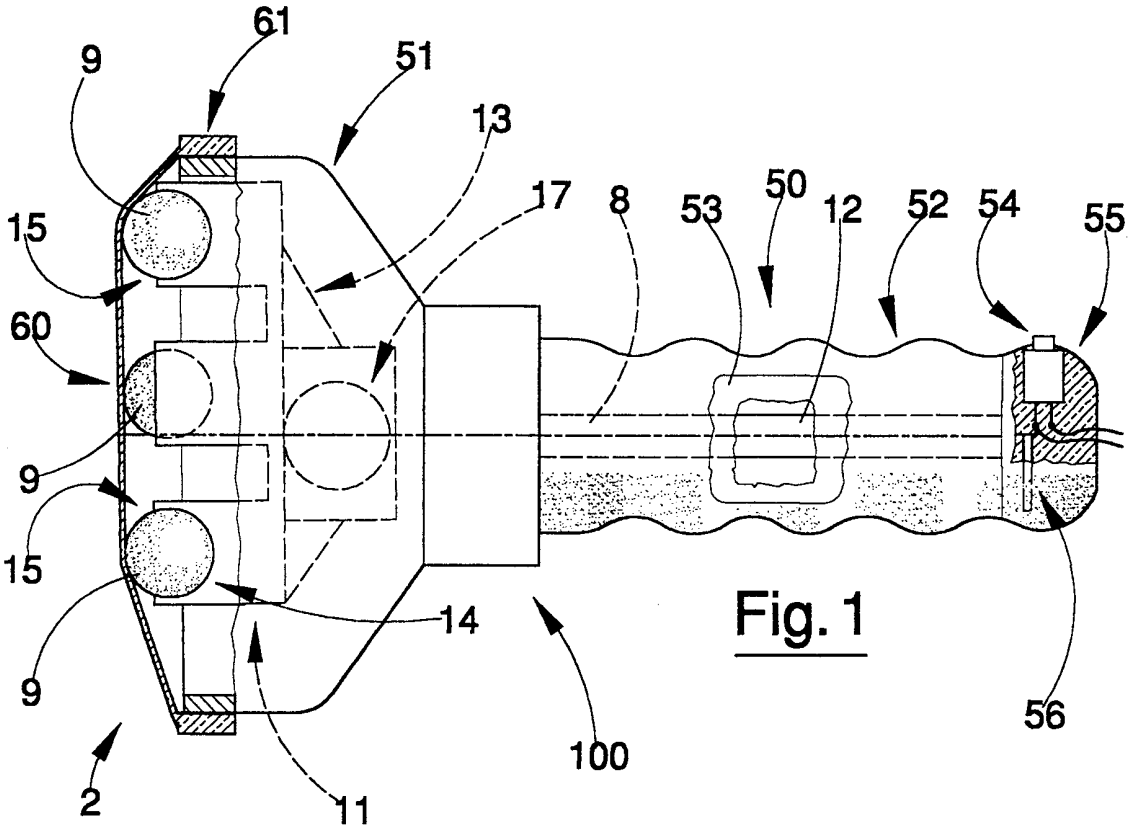
45. Apparatus, according to any one of the previous claims, characterised in that said pressure surfaces (9) are positioned at mutually different differences from the axis (8) of rotation of the support element (11).

46. Apparatus, according to claim 30, characterised in that said carriage (3) is connected to the second motorising means through at least a connecting rod (22)

whose articulated ends are connected respectively to the carriage (3) and to an element (23) for tugging the carriage (3) along the support structure (5).

47. Apparatus, according to one of the previous claims, characterised in that the guide (14) is shaped correspondingly to the curvature of a user's spine.

48. Apparatus, according to claim 44, characterised in that said guide (14) is shaped according to the curvature of the spine of a person of average height.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9
51
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17
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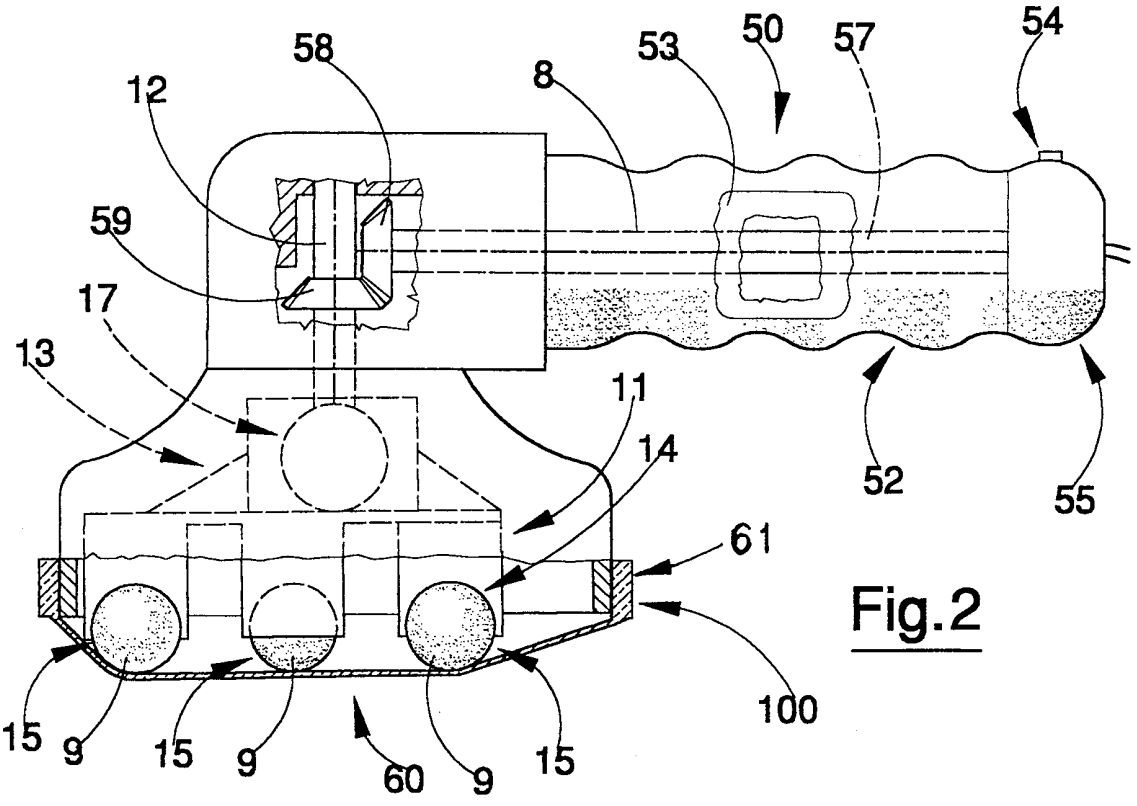
11

Fig. 1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8
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60
9
15

Fig.2

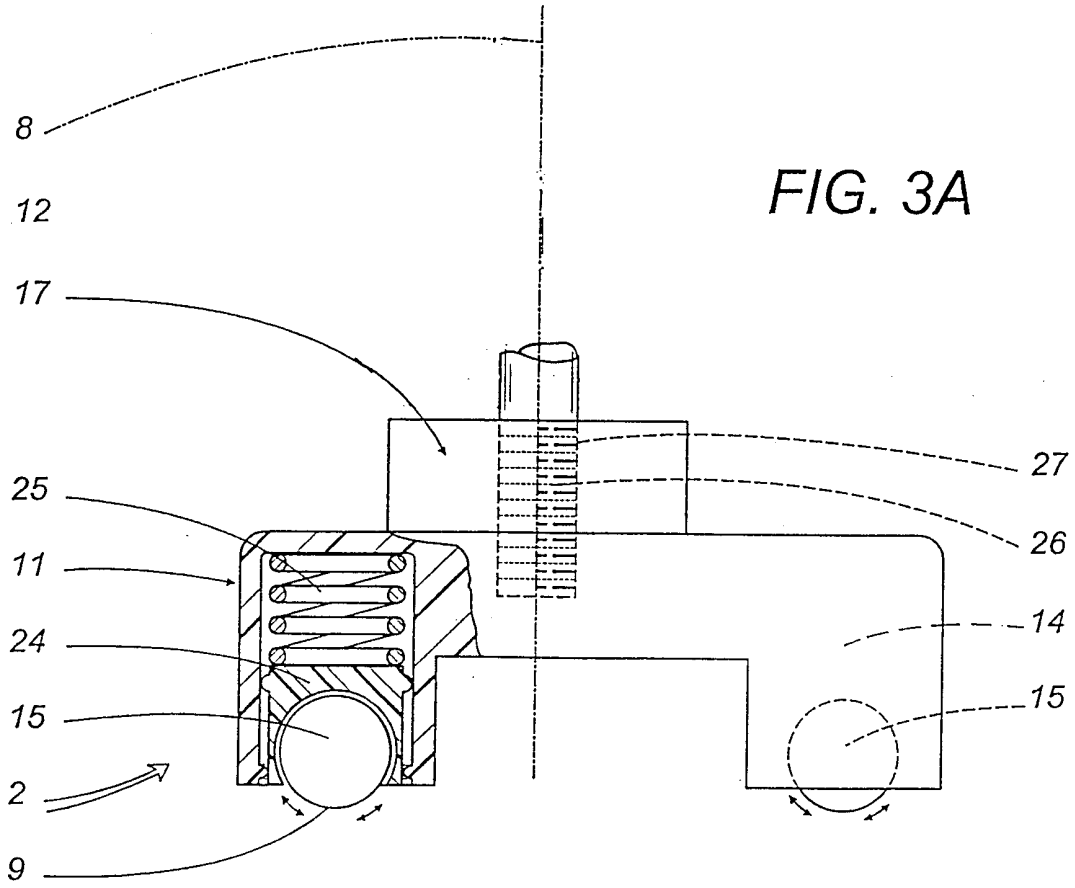

FIG. 3A

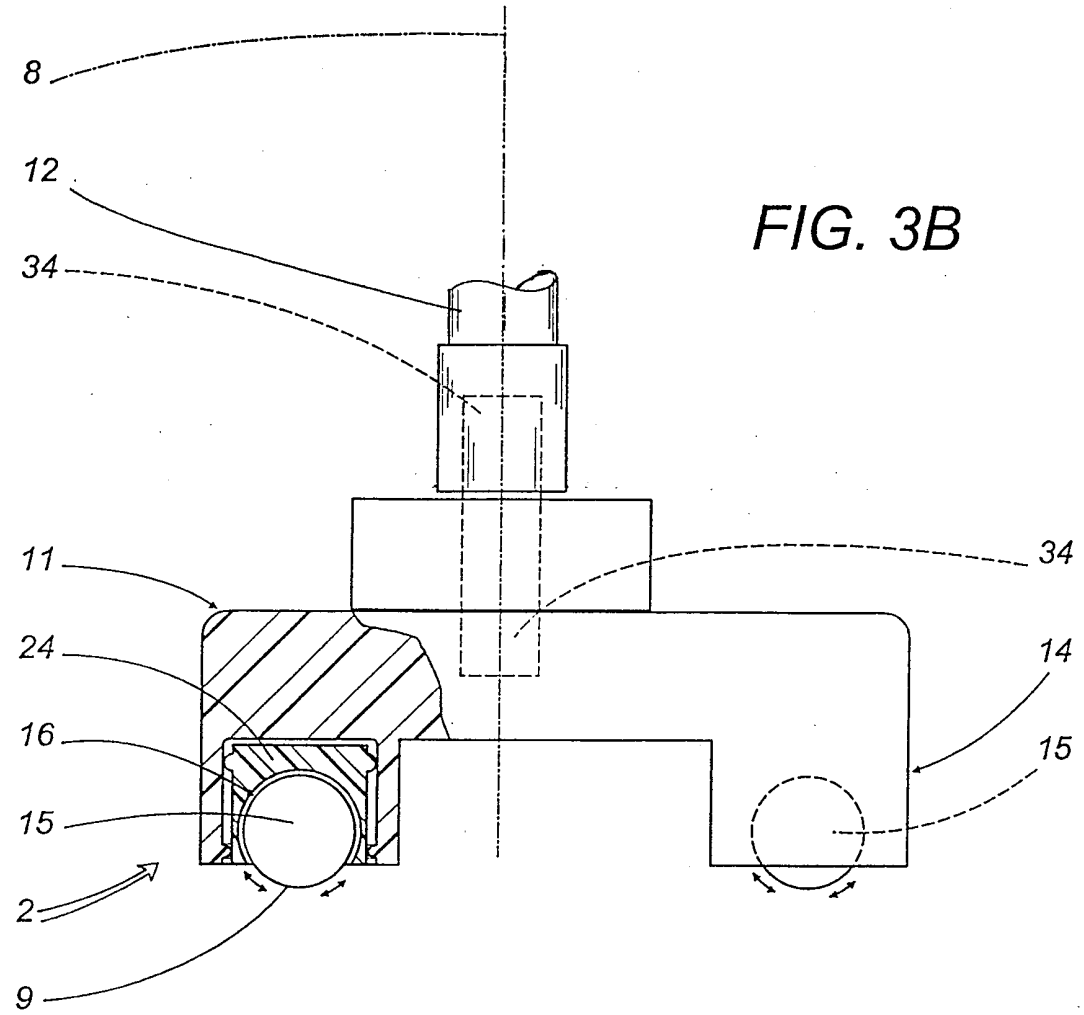

FIG. 3B

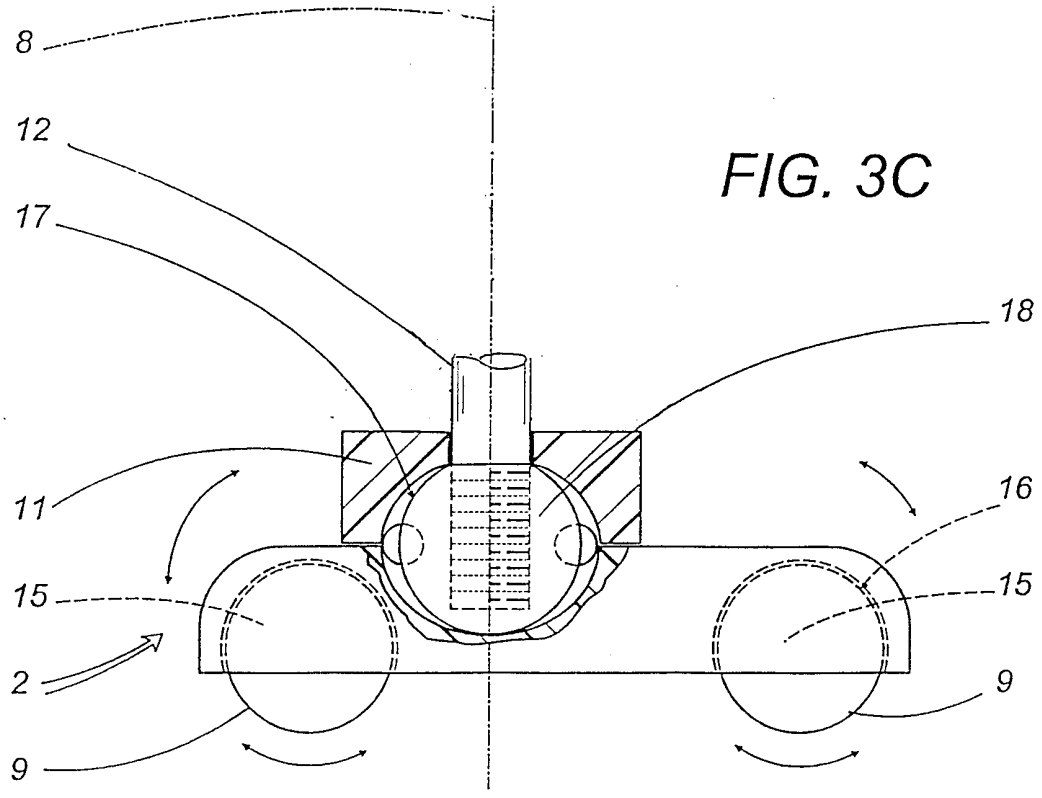

FIG. 3C

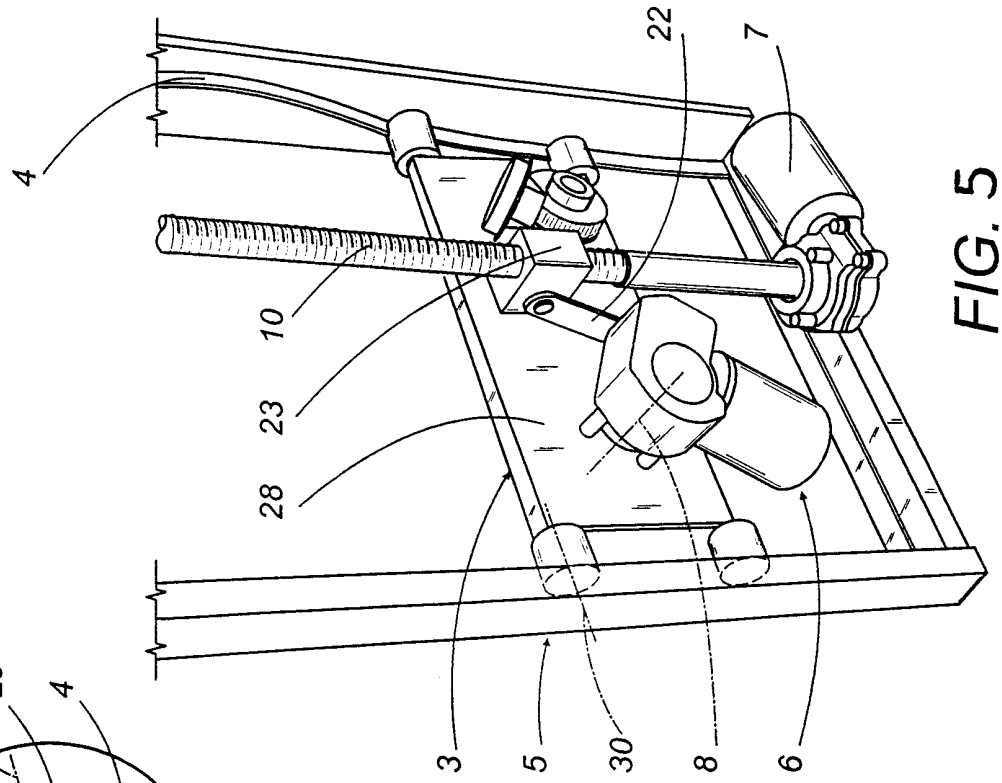

FIG. 5

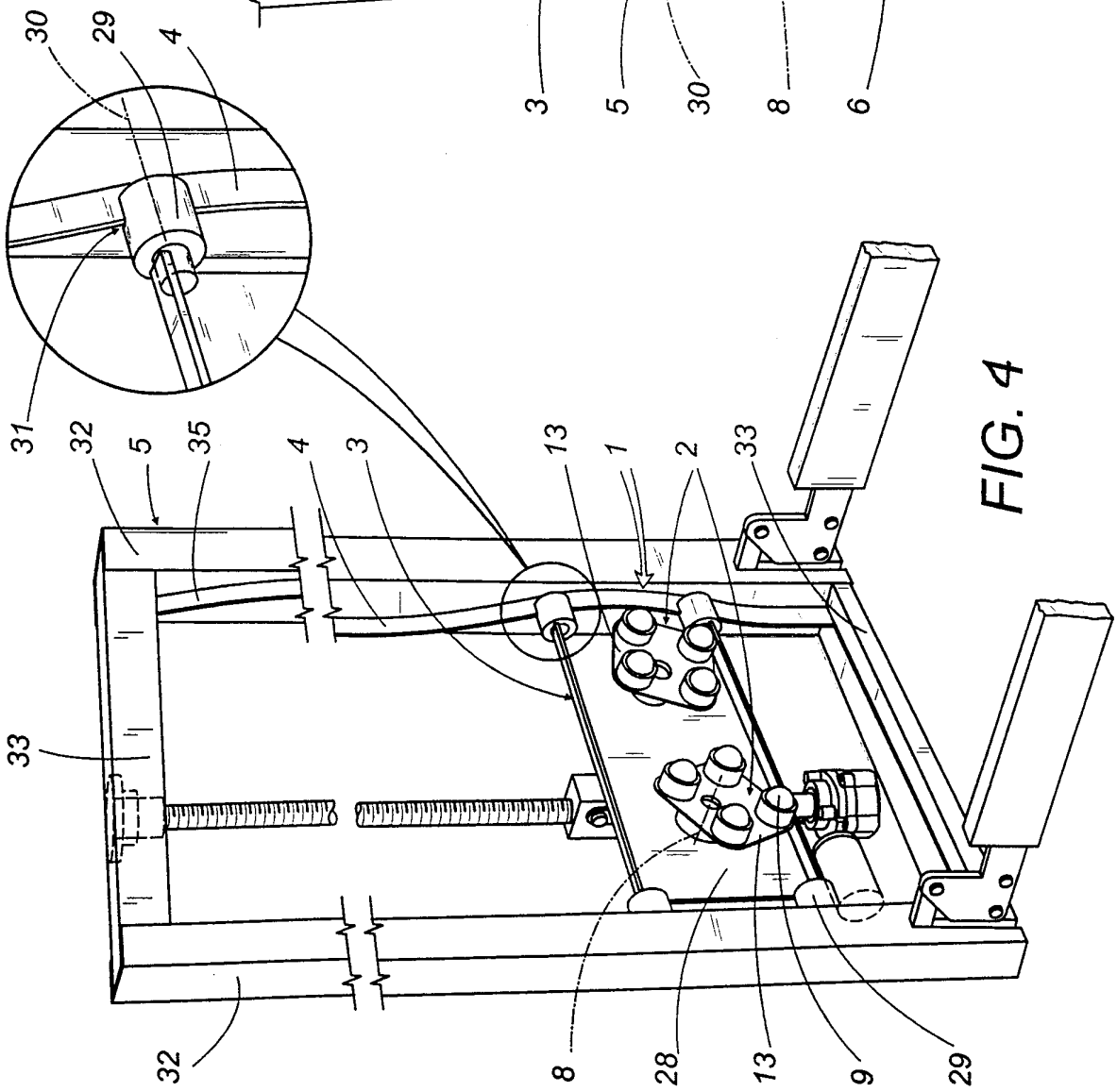

FIG. 4

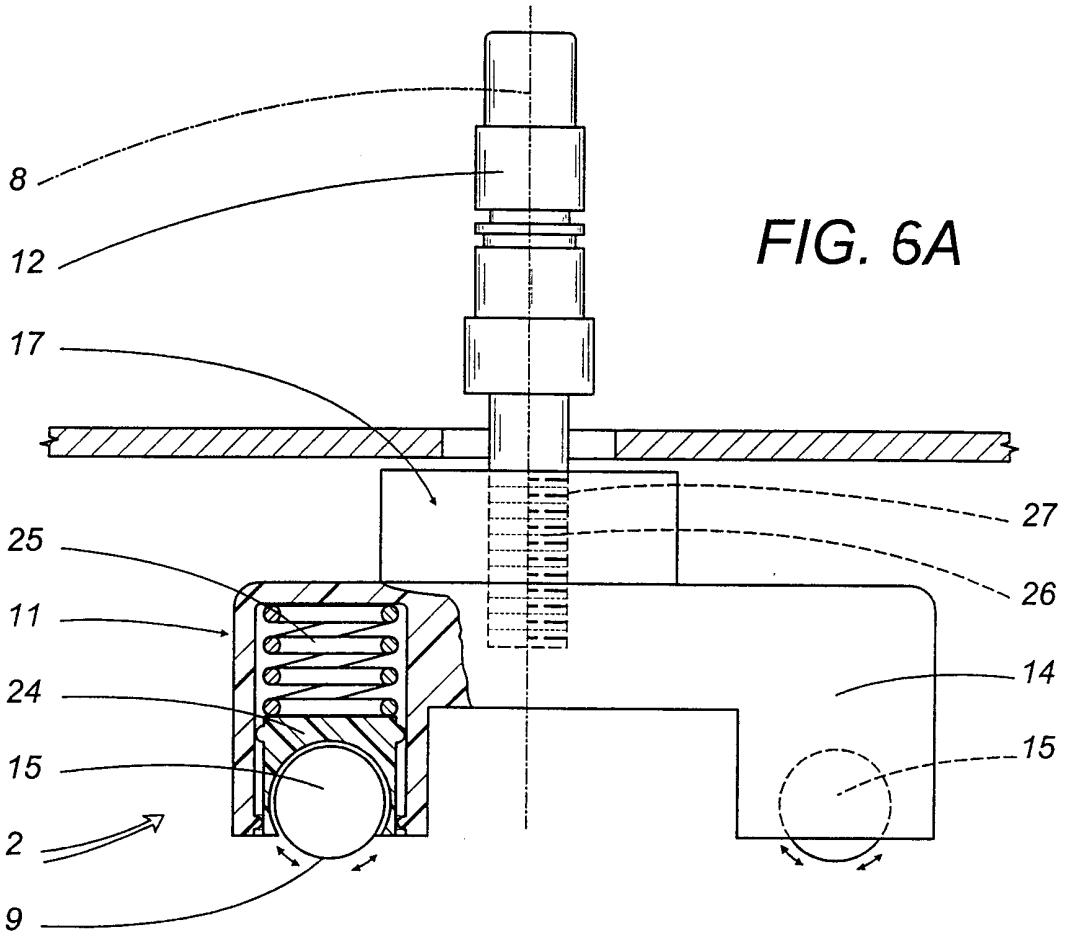

FIG. 6A

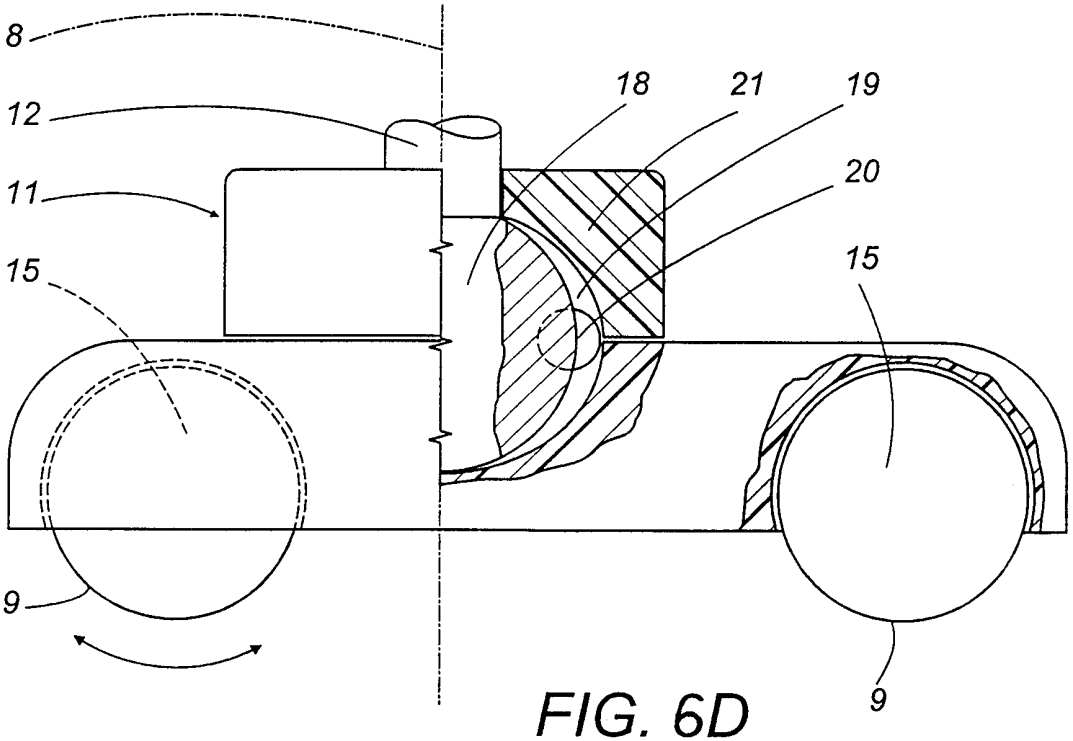

FIG. 6D

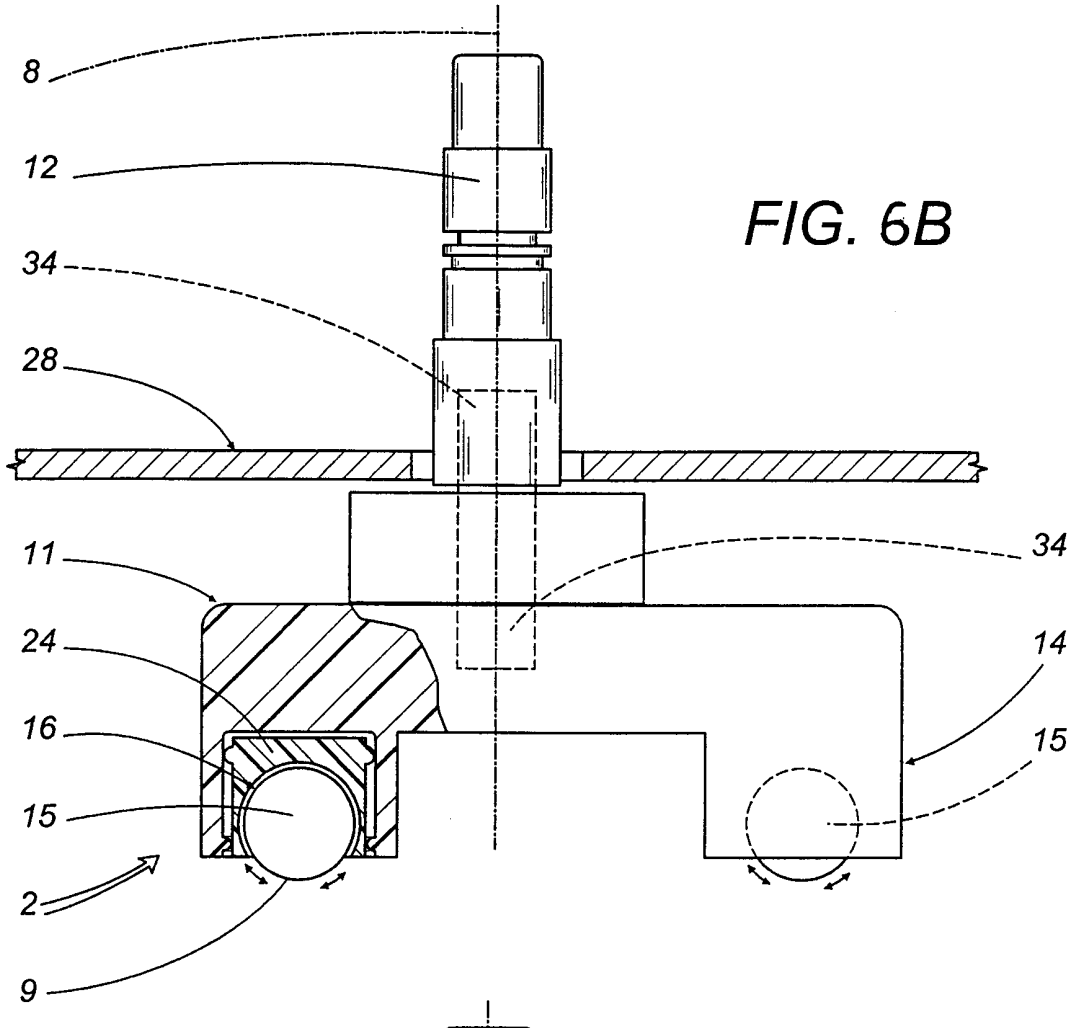

FIG. 6B

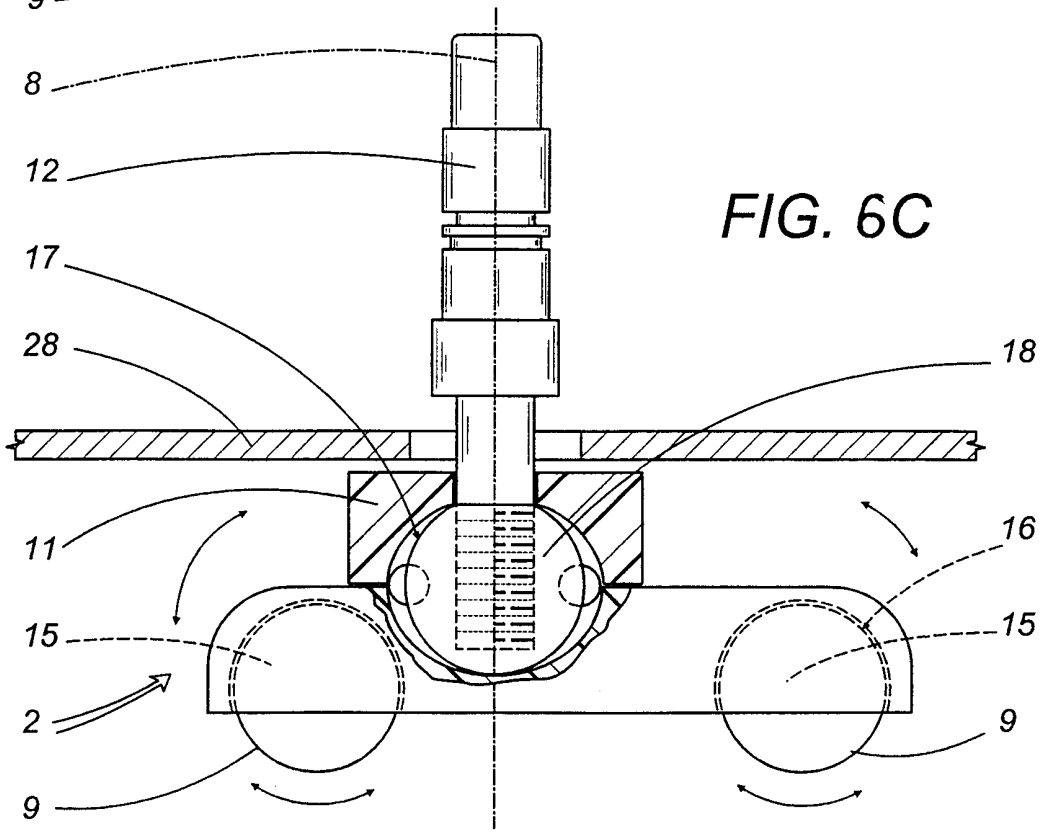

FIG. 6C

INTERNATIONAL SEARCH REPORT

Int ional Application No
PCT/IB 99/00894

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 A61H15/00

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

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 6 A61H

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

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4 454 867 A (SWANSON) 19 June 1984 (1984-06-19)	1,14,15, 28, 30-32, 38-40, 42,44,45
Y	column 2, line 60 - column 4, line 9; figures	33-37, 43,47,48

X	DE 22 38 563 B (FA. HEINRICH SCHÄFER) 20 September 1973 (1973-09-20)	1-6,8, 10-12, 14, 16-18, 25,26,28
Y	column 2, line 68 - column 4, line 6; figures	33,34,36

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[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

° Special categories of cited documents :

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

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

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

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

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

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
19 August 1999	26/08/1999

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Jones, T

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INTERNATIONAL SEARCH REPORT

Int 'ional Application No
PCT/IB 99/00894

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

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Y	page 1, line 20 - line 69; figures	35,37
Y	US 5 233 973 A (GILL ET AL.) 10 August 1993 (1993-08-10) column 3, line 30 - line 61; figures 1,2	43,47,48
A	US 5 385 531 A (JOVER) 31 January 1995 (1995-01-31) column 1, line 29 - line 38	48
X	WO 92 16178 A (SARATOVSKOE PROIZVODSTVENNOE OBIEDINENIE IMENI SERGO ORDZHONIKIDZE) 1 October 1992 (1992-10-01)	1-4, 10-12,14
A	abstract; figures	13
X	GB 2 286 969 A (FINE PROJECTS LIMITED) 6 September 1995 (1995-09-06) abstract; figures	1-4, 10-12, 14, 16-20, 22,25, 26,28
X	EP 0 714 650 A (FRAJDENRAJCH) 5 June 1996 (1996-06-05) abstract; figures	1-3, 10-12, 14, 16-19, 21,25, 26,28,29
X	US 5 685 827 A (SHIMIZU) 11 November 1997 (1997-11-11) column 4, line 50 - line 53; figures	1,2,5,7, 8,25,26
X	US 3 095 874 A (FRAJDENRAJCH) 2 July 1963 (1963-07-02) column 2, line 6 - line 31; claim 1; figures	1,2,14, 15,25-29

1

INTERNATIONAL SEARCH REPORT

nformation on patent family members

Inte onal Application No
PCT/IB 99/00894

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