Office de la Propriété Intellectuelle du Canada
Un organisme d'Industrie Canada

Canadian Intellectual Property Office
An agency of Industry Canada

CA 2240276 C 2007/03/27

(11)(21) 2 240 276

(12) BREVET CANADIEN
CANADIAN PATENT

(13) C

(86) Date de dépôt PCT/PCT Filing Date: 1997/10/30
(87) Date publication PCT/PCT Publication Date: 1998/05/14
(45) Date de délivrance/Issue Date: 2007/03/27
(85) Entrée phase nationale/National Entry: 1998/06/09
(86) N° demande PCT/PCT Application No.: GB 1997/002982
(87) N° publication PCT/PCT Publication No.: 1998/020474
(30) Priorité/Priority: 1996/11/01 (GB9622770.7)

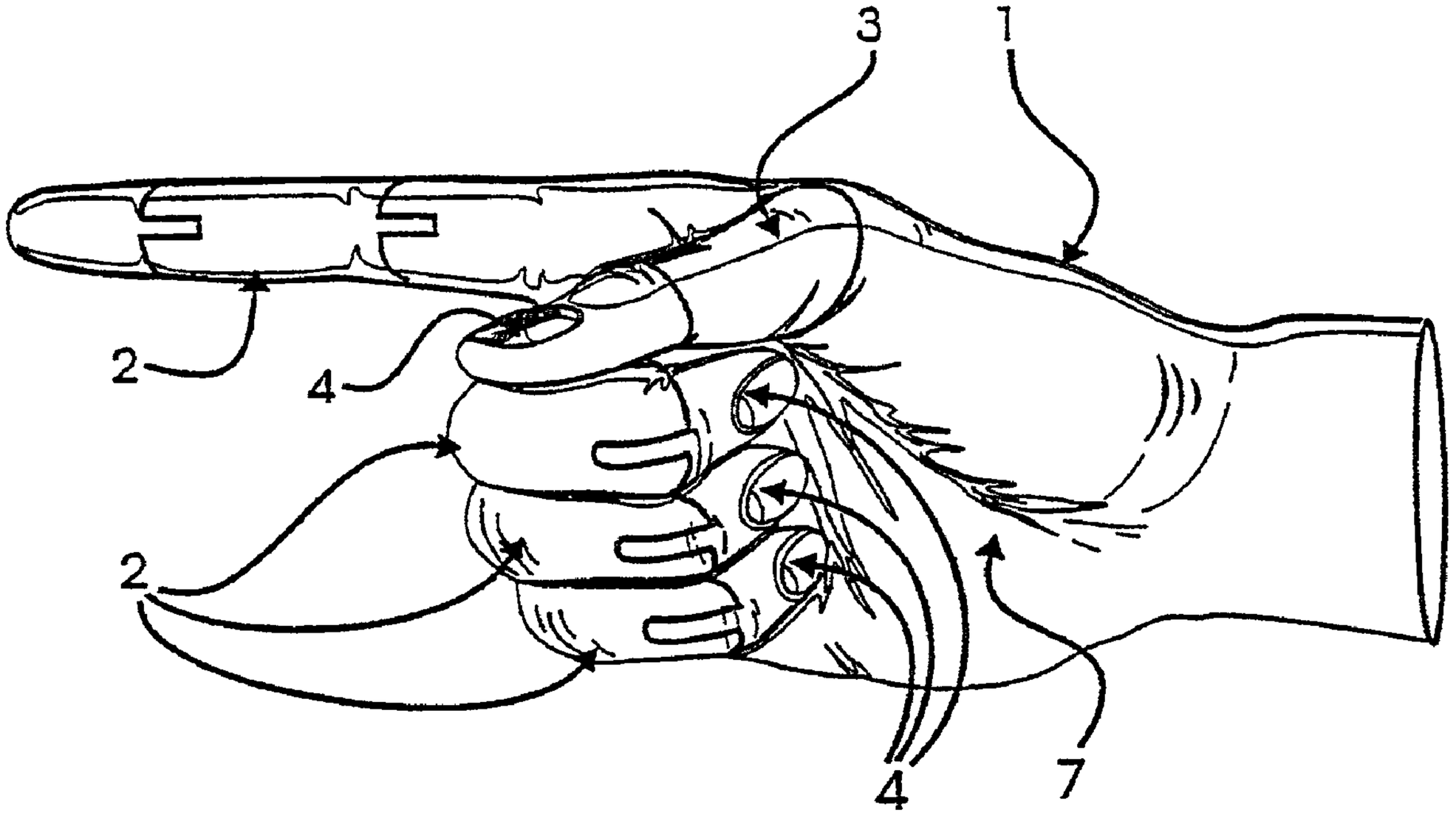
(51) Cl.Int./Int.Cl. *G09B 23/34* (2006.01), *G09B 19/00* (2006.01), *G09B 23/30* (2006.01)

(72) Inventeurs/Inventors:
GRACE, JOHN, GB;
SIMMONS, DAVID, GB

(73) Propriétaires/Owners:
GRACE, JOHN, GB;
SIMMONS, DAVID, GB

(74) Agent: BORDEN LADNER GERVAIS LLP

(54) Titre : APPAREIL D'INITIATION AUX SOINS DES ONGLES
(54) Title: NAIL TREATMENT TRAINING DEVICE



(57) Abrégé/Abstract:
A device for use in training in the treatment of finger or toe nails, comprises an artificial digit (2) having a nail (4) removably mounted thereon. The nail may be attached by a screw (18), a ratchet arrangement, or by embedding it in a resilient layer on the surface of the digit.

PCT

WORLD INTELLECTUAL PROPERTY ORGANIZATION
International Bureau

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 6 :
G09B 23/32, 19/00

A1

(11) International Publication Number: WO 98/20474

(43) International Publication Date: 14 May 1998 (14.05.98)

(21) International Application Number: PCT/GB97/02982

(22) International Filing Date: 30 October 1997 (30.10.97)

(30) Priority Data:
9622770.7 1 November 1996 (01.11.96) GB

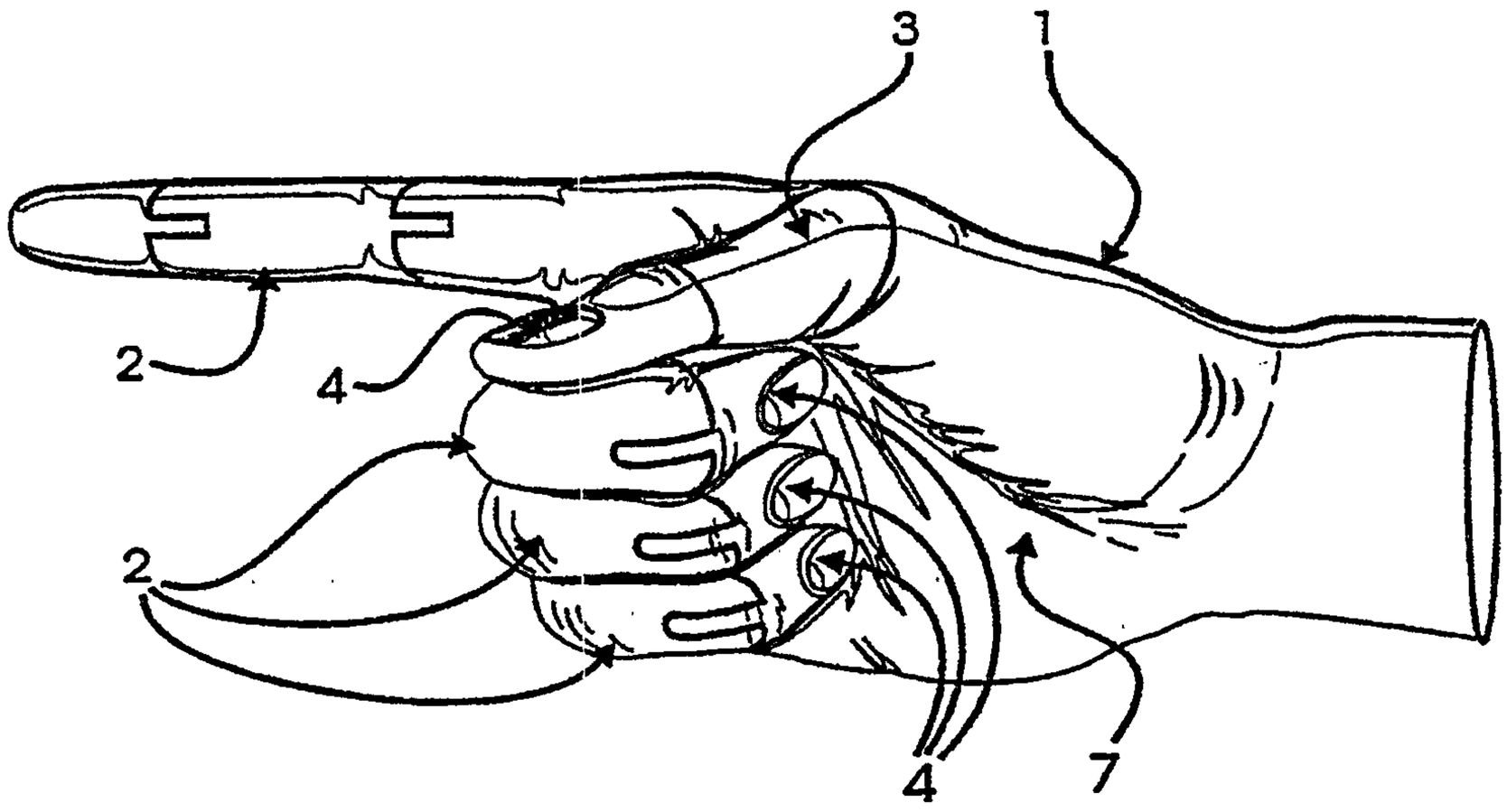
(71)(72) Applicants and Inventors: GRACE, John [GB/GB]; 113 Lodge Lane, Grays, Essex RM17 5SF (GB). SIMMONS, David [GB/GB]; Peacocks Farm, Wickhambrook, Newmarket, Suffolk CB8 8PX (GB).

(74) Agent: ELSWORTH, Dominic, Stephen; Loven & Co., Quantum House, 30 Tentercroft Street, Lincoln LN5 7DB (GB).

(81) Designated States: AM, AT, AU, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, ID, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LT, LU, LV, MD, MG, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TT, UA, UG, US, UZ, VN, ARIPO patent (GH, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).

Published
With international search report.

(54) Title: NAIL TREATMENT TRAINING DEVICE



(57) Abstract

A device for use in training in the treatment of finger or toe nails, comprises an artificial digit (2) having a nail (4) removably mounted thereon. The nail may be attached by a screw (18), a ratchet arrangement, or by embedding it in a resilient layer on the surface of the digit.

NAIL TREATMENT TRAINING DEVICE

Field of the Invention

This invention relates to a device for use in training in the treatment of finger nails or toe nails, for example in the application of false nails.

Background to the Invention

The application of false nails is an established cosmetic procedure involving attaching the false nails by means of adhesive to the natural nail, and then shaping the false nail to give the effect of perfectly manicured natural nails. A high degree of skill is required in applying and shaping a set of nails quickly and safely while achieving a satisfactory appearance. The adhesives used in attaching the false nails can cause discomfort if allowed to contact bare skin, while excessive abrasion in the preparation of the natural nail to receive the false nail can result in exposure of the underlying nail bed, causing the customer pain, even before contact by the adhesive. It can therefore take many weeks of training before an operator becomes suitably proficient, particularly since the risk of damage to the customer by an unskilled operator deters volunteers from assisting in training.

The use of mannequin hands has not hereinbefore proved useful in assisting in training of operators, since it is impossible with a solid hand to simulate the typical feel of a natural hand and the variety of different types of natural nail and shapes and sizes of finger which might be encountered in practice. Some natural nails are readily accessible, while others may be recessed deeply in the surrounding flesh. The trainee must learn to handle all types of finger safely without risk of damage to surrounding flesh or to the nail bed. While articulated fingers, for example as found in the wooden hands used as artists' models, may help to simulate the feel of the natural hand, such models do not usually include nails, or have a correct fleshy feel.

Summary of the Invention

According to a broad aspect of the invention, there is provided a device for use in training in the treatment of finger or toe nails, including an artificial digit having a nail removably mounted thereon.

In one preferred embodiment, the device includes a hand or foot having five of said artificial digits. The digits may be articulatedly joined to a main or palm section of the hand or foot, and the digits may be provided with articulated joints between the segments thereof. The joints are preferably arranged to permit a degree of twisting of one segment of the digit relative to another, and more preferably the degree of twisting is such as to permit each digit to twist relative to the main section by up to 30 degrees.

The tip of the digit on which the nail is mounted may be detachably connected to the remainder of the digit so as to be replaceable.

In another preferred embodiment of the invention, at least the tip of the digit is provided with a resiliently compressible surface, the nail being adjustably mounted whereby the nail may be positioned at a selected height relative to the surface. The resiliently compressible surface may be provided by way of a replaceable surface layer on a rigid, or less compressible, substrate. Preferably, the resilient material will be chosen to have, as nearly as possible, the same consistency, feel and properties as natural flesh.

The nail may be attached to the tip of the digit by an attachment device, for example, a screw attachment, for example by providing the nail on the underside thereof with a threaded socket into which a screw is engaged through a hole through the digit tip, thereby securing the nail in such a manner that the compression of the nail in the resilient layer may be adjusted to simulate different types of finger, for example more or less fleshy fingers and nails more or less deeply bedded in the flesh. Alternatively, the nail may be provided on the underside thereof with ratchet means engageable in an aperture in the digit tip whereby the nail may be positioned at a predetermined height relative the to the surface. Longitudinal adjustment of the nail relative to the digit may be provided for.

In yet another preferred embodiment, the nail is mounted on a resilient sheath engageable over the tip of the digit, the sheath simulating skin and the compressible surface of the flesh of the digit.

Resilient surface layers of different thicknesses may be used to simulate different degrees of fleshiness of the digits.

Different sizes and shapes of nails may be fitted selectively to provide the trainee with experience of a wide range of different nail types. These nails may be, for example, large or small, symmetrical or asymmetrical.

In a still further embodiment of the invention, the tip is provided with a resilient recess into which the nail is pressed.

The hand or foot is suitably mounted on a stand in such a manner as to permit a range of movements which simulates the typical movements of a natural hand or foot during treatment. This may be achieved by, for example, ball-and-socket mountings, sliding mountings or the like.

The device of the invention provides an accurate representation of a client's hand, with nails which can be adjusted to simulate those likely to be encountered by the operator in every day practice, so that the operator can be rapidly trained to best practice without dependence on volunteers and without risk of damage to clients' hands.

After use, the resilient surface layer and the nail will typically be removed from the digit tip and replaced with fresh materials for the next training exercise.

It will be appreciated that both left and right hands (or indeed feet) canbe used to give the trainee the most realistic training.

Brief Description of the Drawings

Preferred embodiments of the invention will now be described in detail by way of example only with reference to the drawings, which illustrate exemplary embodiments of the different aspects of the invention:

Figure 1 is a perspective view of a training hand, illustrating the arrangement of the finger joints;

Figures 2a and 2b are respectively top plan and side elevational views of one of the fingers of the hand of Figure 1;

Figures 3a and 3b are corresponding exploded views of the finger of Figures 2a and 2b;

Figure 4 is a perspective view of the hand of Figure 1 when mounted for use;

Figures 5a and 5b are views of two finger tips showing the range of different types which have to be accommodated by a device in accordance with the invention;

Figure 6 is an exploded perspective view of a finger tip from a device in accordance with the invention;

Figure 7 is a cross-sectional view of the finger tip of Figure 6 when assembled, showing simulation of a nail with a shallow seat;

Figure 8 is a view corresponding to that of Figure 7, but simulating a nail with a deep seat;

Figures 9a to 9e are cross-sectional views of the end of the finger tip of Figure 6, when assembled, showing the effects of progressively increasing the thickness of the resilient surface layer simulating the skin;

Figures 10a and 10b are top plan views of the finger tip showing the variability of the positioning of the nail which can be achieved; and

Figure 11 is a longitudinal cross-sectional view of the finger tip showing one manner in which the variability can be achieved.

Detailed Description of the Illustrated Embodiments

Referring first to Figure 1, the hand 1 is designed to simulate as closely as possible the movement, flexibility and feel of a natural hand, and is provided with low jointed fingers 2 and a thumb 3 which arranged to have the same range and directions of movement of a natural hand. Each finger 2 has a tip portion in which is removably mounted a nail 4, as will be further described hereinafter. Figures 2 and 3 illustrate the construction of the finger joints. It will be seen that each finger section 2a, 2b, 2c is linked to the next by means of a simple rotary joint incorporating a jointing ligament 5 which is formed of a relatively stiff material permitting rotation substantially only in a single plane. A third ligament 6 (the second in the case of the thumb) joins the finger to the palm (7, Fig 1) of the hand 1, and is formed of a more flexible material, such as polyethylene, permitting a degree of rotation of the finger around the longitudinal axis thereof. A total rotation of about 30 degrees is sufficient to simulate that available in a typical natural finger. The finger tip 2a is of reduced thickness over the greater part of its length to accommodate a surface layer of a resilient material, will be further described hereinafter.

A slot 8 therethrough is provided for the fitting of the finger nail, also as described further hereinafter.

Figure 4 illustrates the mounting of the hand 1 for use in training. The hand 1 is mounted on a shaft 9, on which is slidably mounted in turn the ball of a balland-socket joint 11, the socket 12 of the joint 11 being provided on a stand 13 whichcan be attached to a horizontal surface by means of its flat base 14. The arrangement illustrated permits the hand four degrees of freedom of movement, as illustrated by the curved arrows in Figure 4, namely vertical rotation, forwards and backwards movement, horizontal rotation about the stand 13, and axial rotation about the shaft 9. This provides a good simulation of the movement of the hand of the client, in practice.

Figures 5a and 5b illustrate the use of the different sizes of nail likely to be encountered by the operator in practice. The finger tip shown in Figure 5a has a relatively large nail fitted thereto, while that shown in Figure 5b is at the other extreme of the range, having a relatively small nail. It is also possible to replace the finger tip with a larger or smaller sized finger tip to simulate any tip within the extremes of the ranges likely to be encountered, in practice. However, variations in fleshiness will typically be achieved by replacing the resilient surface layer (skin) with a thicker or thinner material as desired.

Figure 6 illustrates one preferred construction of the finger tip 2a, having both a replaceable nail 4 and a replaceable underlying surface layer or skin 15 which is formed of a resilient expanded plastics or rubber material, suitably with a layer of adhesive thereon to permit attachment of the skin to the finger tip 2a. The skin 15 is preformed with a segmented shape such that it can be folded over the finger tip, following the shape thereof in such a manner that the segments closely abut to form a continuous layer with neither overlapping portions nor gaps between the segments. The skin 15 can have any of a range of different thicknesses to simulate different types of finger and nail bed. A slot 16 in the skin 1 5 corresponds in size and position to the slot 8 in the finger tip 2a. The nail 4 is suitably formed of a plastics material which has similar mechanical properties and feel to a natural nail, for example acrylonitrile butadiene styrene (ABS). A rectangular section socket member 17 extends from the underside of the nail 4, the member 17 having a width such as to provide a sliding fit in the slot 8, but having a length which is less than that of the slot, so as to permit longitudinal adjustment of the nail relative to the finger tip. A

screw 18 engages in a threaded socket 19 (Figs 7 and 8) in the member 17 to secure the nail in place, and to permit vertical adjustment in the slot 8 so as to vary the degree of embedding in the underlying skin, as may be seen from Figures 7 and 8. Figure 7 shows the simulation of a shallow seating of nail 4 in a relatively thick skin layer 15, while Figure 8 shows that, by screwing the nail down further, a deep seat can be simulated. Figures 9a to 9e show the effect of varying the thickness of the skin 15 to achieve different types of finger tip, from a firm, thin finger tip with a shallowly-seated nail in Figure 9a to a relatively fleshy finger tip with a deeply-seated nail, as shown in Figure 9e.

The greater length of the slot 8 when compared to that of the member 17 permits longitudinal adjustment, as illustrated in Figures 10a and 10b. Figure 10a shows a finger tip where the nail 4 is seated rearwardly so as to lie wholly within the finger tip area, in plan, while in Figure 10b, the nail 4 is seated forwardly to its fullest extent, so as to project forwardly of the finger tip. Figure 11 is a sectional side elevation illustrating the way in which the longitudinal adjustment is achieved.

While devices in accordance with the invention are usable for training in a range of nail treatments, both for finger and toe nails, they are particularly suited to the training of artificial nail technicians, since the removable nails permit the simulation of a wide range of natural, for example, chewed or split nails, to which artificial nails are to be attached, and then shaped to suit the fingers of the client. The techniques involved in preparing the natural nail to receive the artificial nail, and then in the subsequent shaping and finishing of the artificial nail, carry a risk of damage to the finger of the client if not carried out with sufficient care. The removable skin layer on the finger will immediately reveal if such care has not been exercised by the trainee.

CLAIMS:

1. A nail training device, comprising:

at least one artificial digit tip;

a resilient layer covering at least a portion of the at least one artificial digit tip;

a nail, the nail simulating a natural nail; and

a mounting mechanism for removably mounting the nail on the resilient layer of the at least one artificial digit tip, wherein

the resilient layer is compressible and the mounting mechanism is operable to permit a depth to which the nail is embedded into the resilient layer to be selectively varied.

2. The nail training device as set forth in claim 1, wherein a junction is formed between an edge of the nail and the resilient layer when the nail is embedded into the resilient layer.

3. A nail treatment training device, comprising an artificial nail removably mounted against an artificial digit tip and having an edge which is seated against the artificial digit tip to define the junction between the nail and the digit.

4. A training device according to claim 3, wherein at least part of the digit tip is formed from a resiliently compressible material to simulate a natural digit tip.

5. The training device according to claims 3 or 4, wherein the mounting of the artificial nail permits adjustment of the depth to which the edge is seated in the digit tip.

6. The training device according to claim 3 or 5, wherein the mounting of the artificial nail permits longitudinal adjustment of the nail relative to the digit tip.

7. The training device according to claim 6, wherein at least part of the digit tip is formed from a resiliently compressible material to simulate a natural digit tip.

8. The training device according to claim 3, wherein the digit tip defines a resilient recess in which the nail is mounted.

9. The training device according to any one of claims 1 to 8, wherein the artificial digit tip comprises a replaceable surface layer carried by a substrate.

10. The training device according to claim 9, wherein the replaceable surface layer is a segmented preformed skin folded over and attached to the substrate.

11. The training device according to claim 9, wherein the replaceable surface layer is a resilient sheath engaged over the substrate.

12. The training device according to claim 9, wherein the nail is secured to a member which extends through the replaceable surface layer and is attached to the substrate.

13. The training device according to claim 12, wherein the member is attached to the substrate by a device which permits adjustment of the depth to which the edge is seated in the replaceable surface layer.

14. The training device according to claim 13, wherein the device comprises a threaded connection acting between the member and the substrate.

15. The training device according to claim 13, wherein the device comprises a ratchet means operable between the member and the substrate.

16. A nail treatment training device comprising an artificial hand or foot defining five digits, each digit having its tip provided with an artificial nail in accordance with any one of claims 5 to 15.

17. The device according to claim 16, wherein each artificial digit tip is detachably connected to an adjacent section of the digit.

18. The device according to claim 17, wherein each digit comprises three segments having articulating joints which permit relative twisting of the segments.

19. The device according to claim 18, wherein the articulated joints are arranged to allow each digit tip to twist up to 30 degrees relative to the main section of the hand or foot.

Fig 1

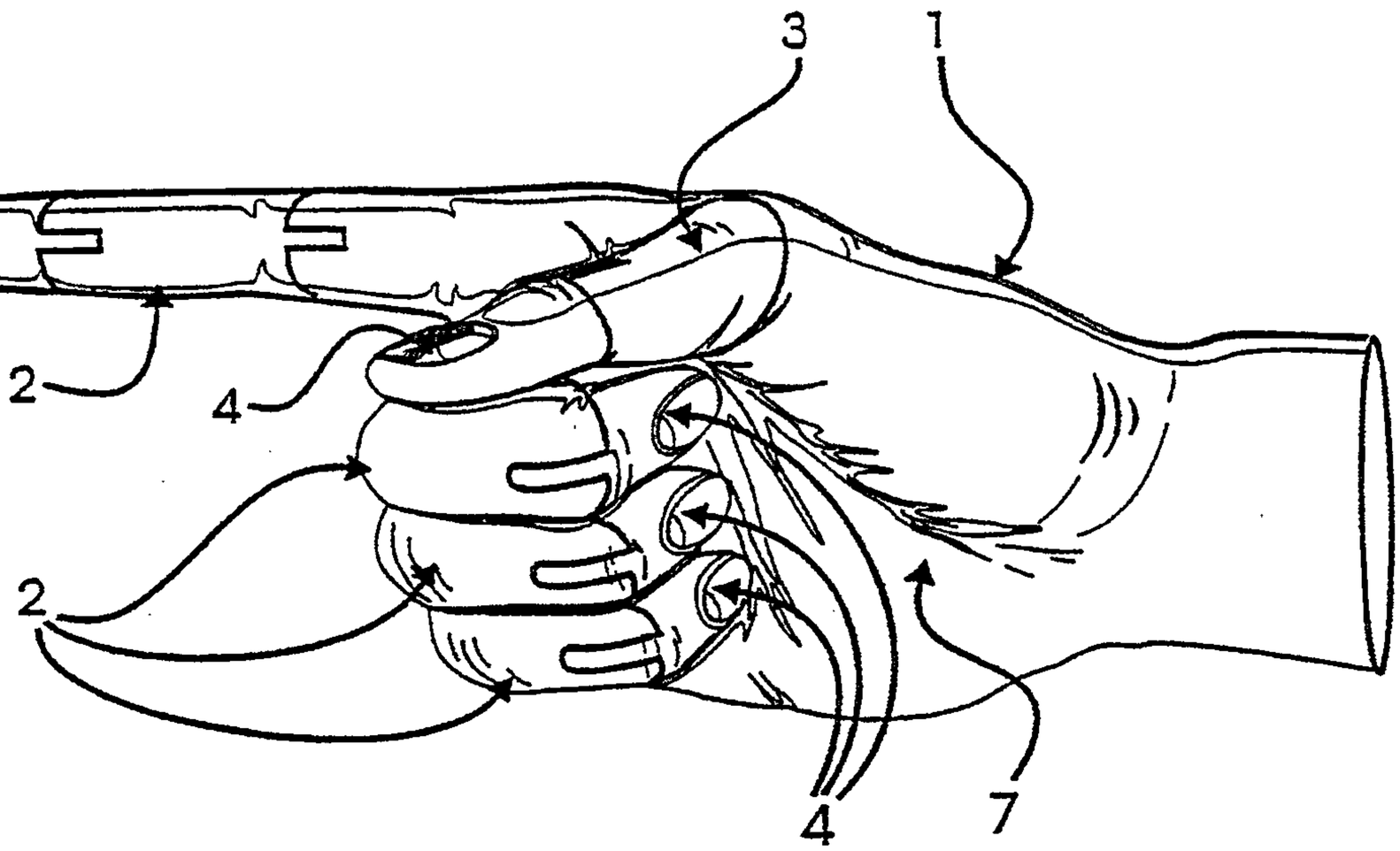


Fig 2a

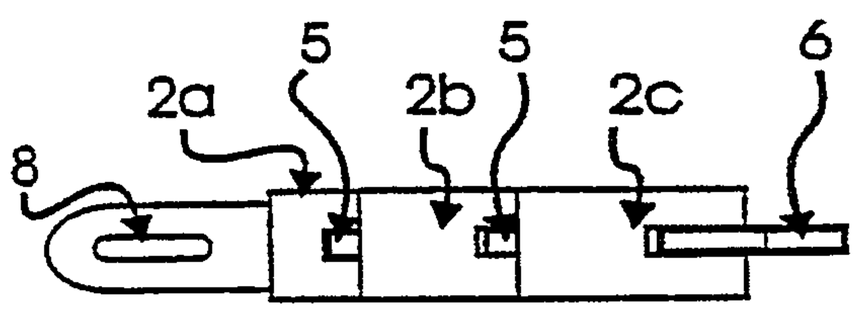


Fig 2b

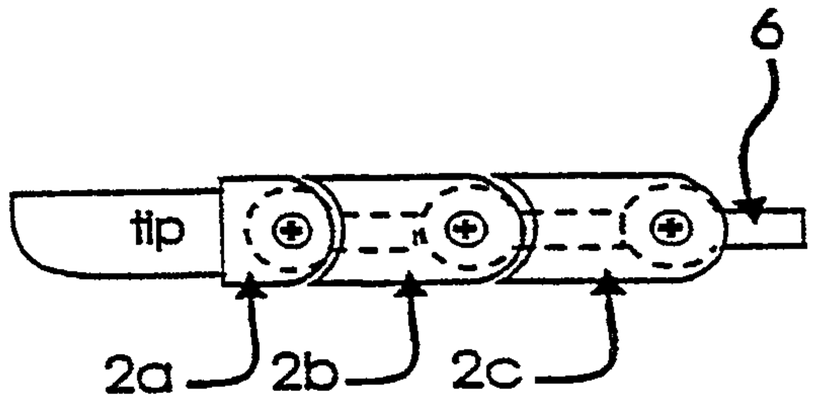


Fig 3a

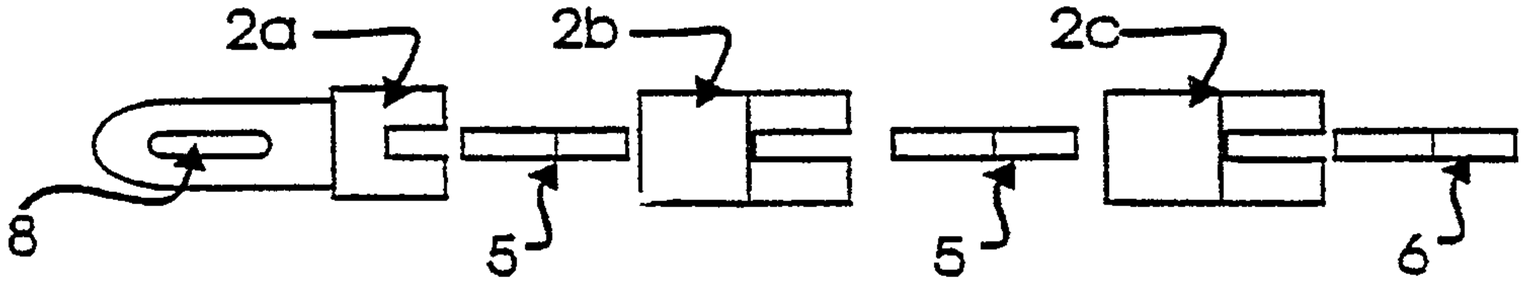


Fig 3b

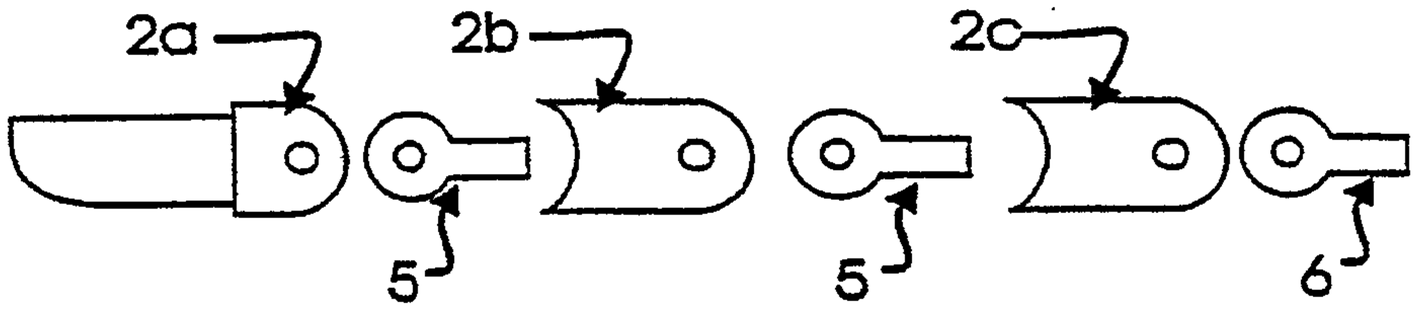


Fig 4

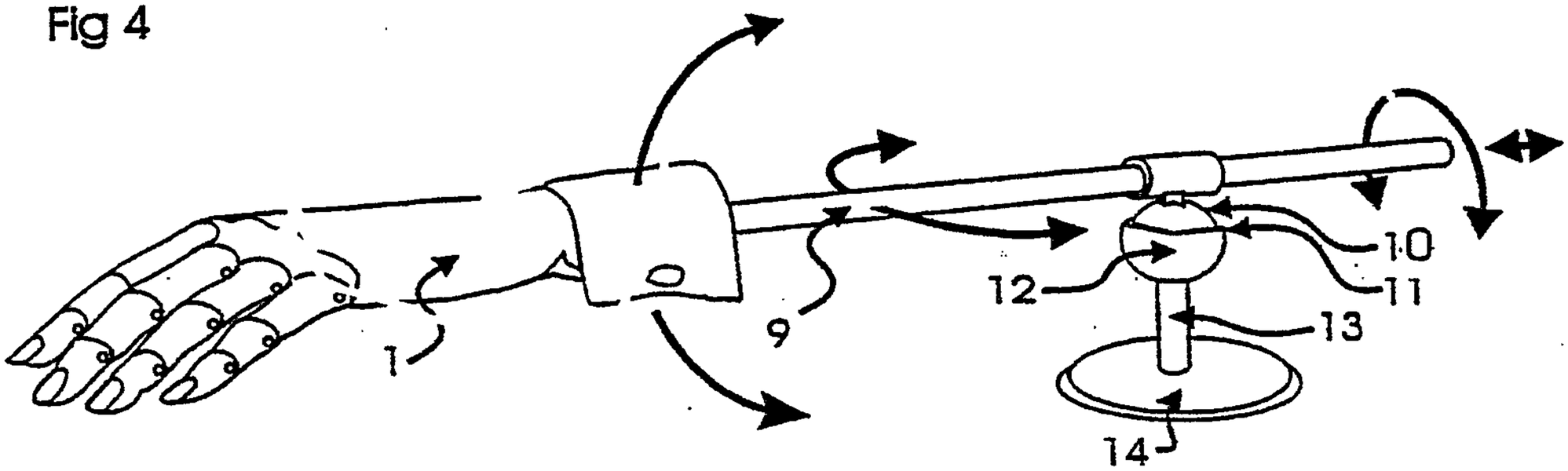


Fig 5a

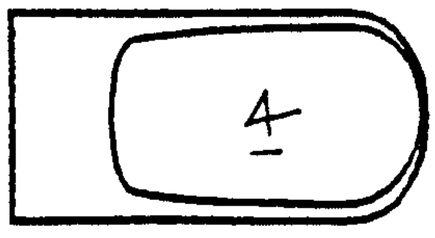


Fig 5b

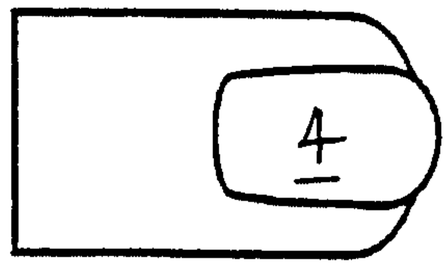


Fig 6

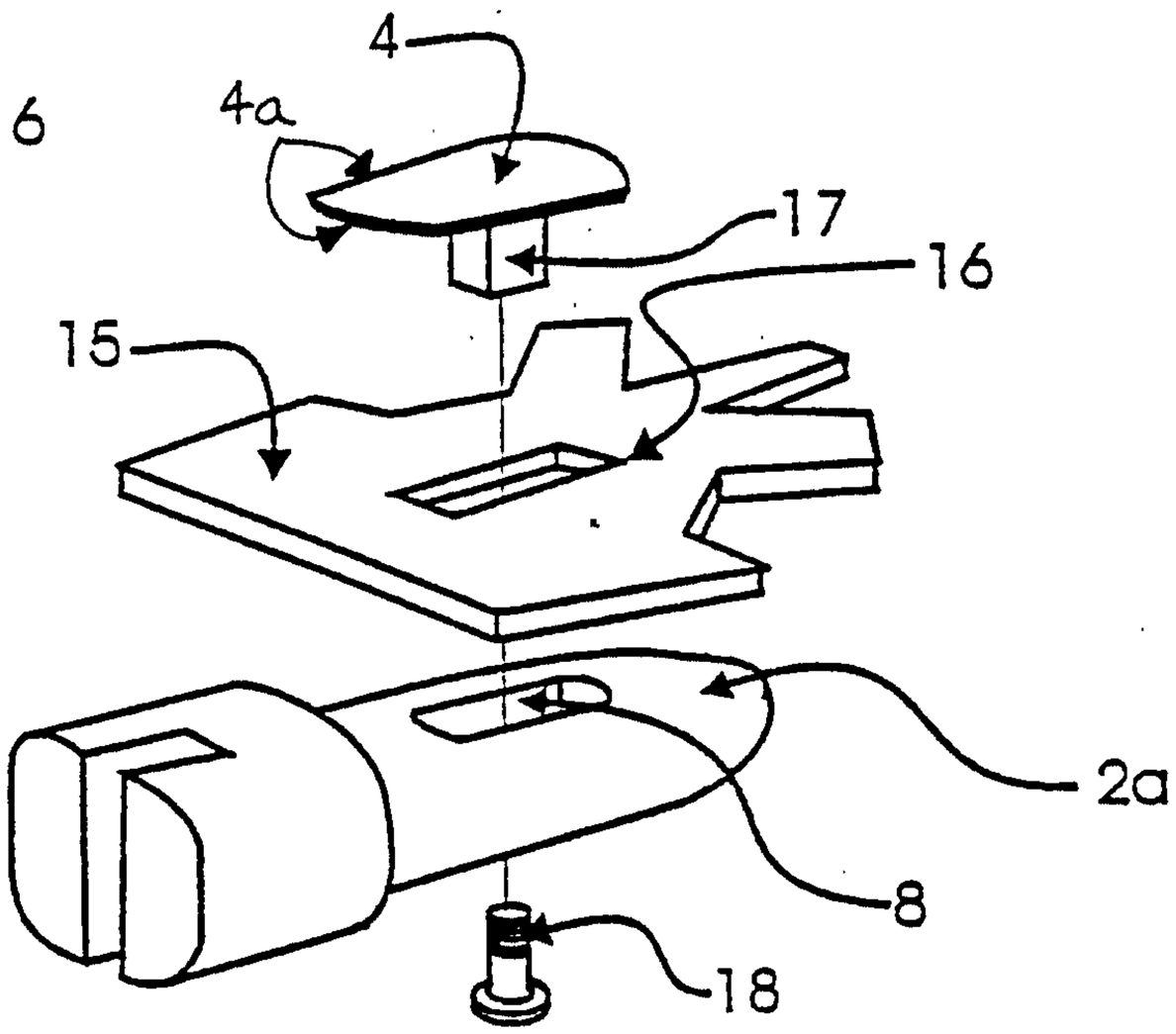


Fig 7

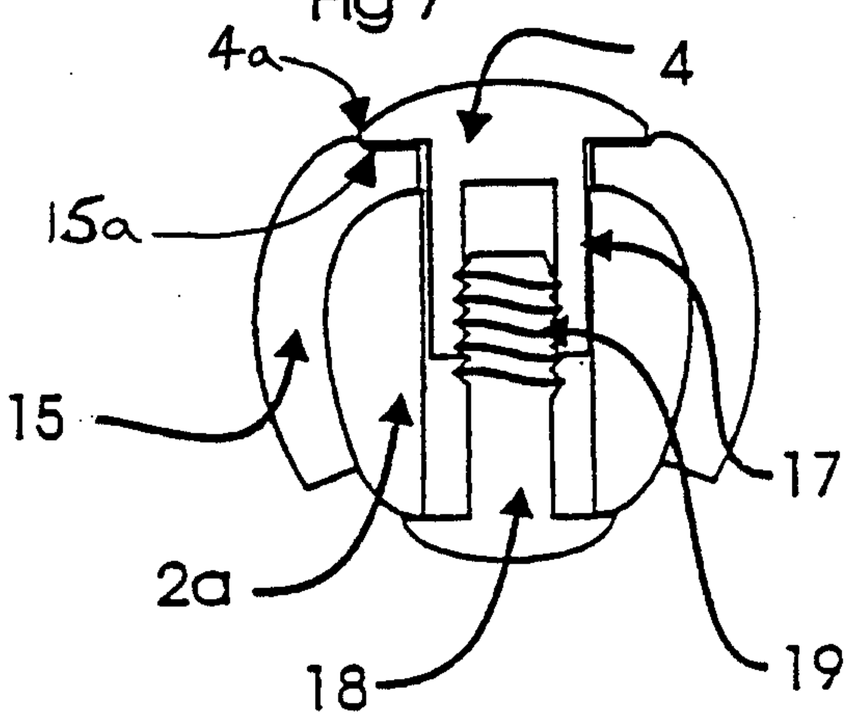
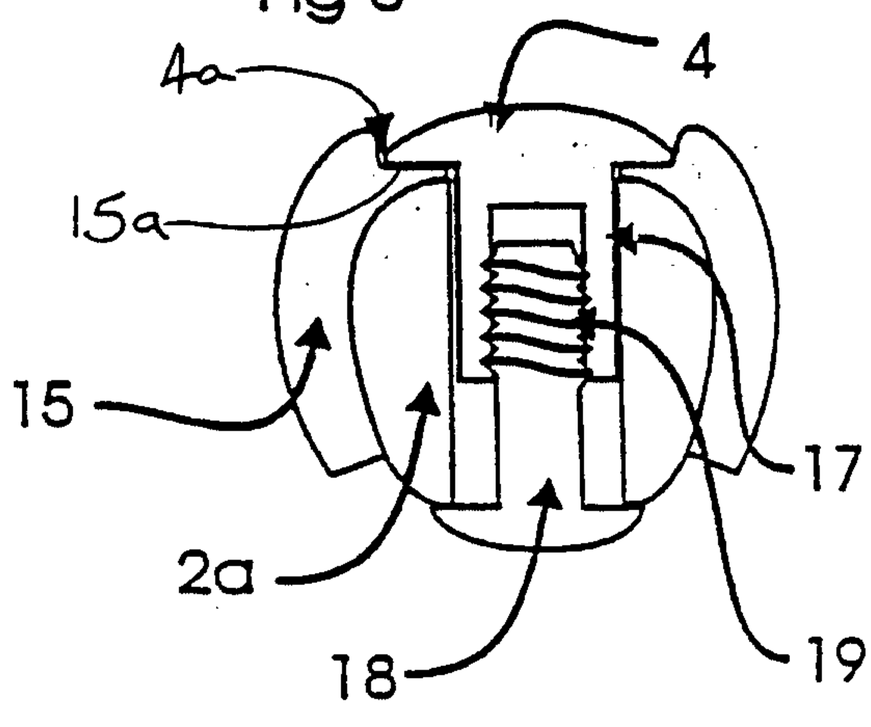


Fig 8



AMENDED SHEET

Fig 9

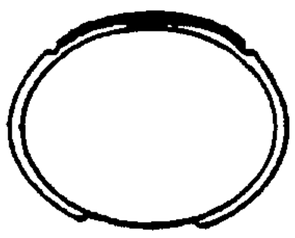


Fig 9a

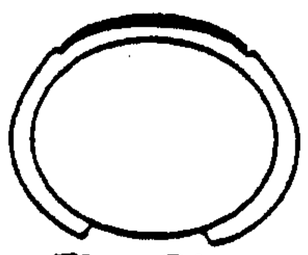


Fig 9b

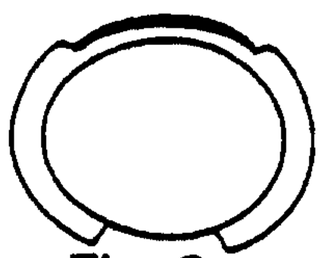


Fig 9c

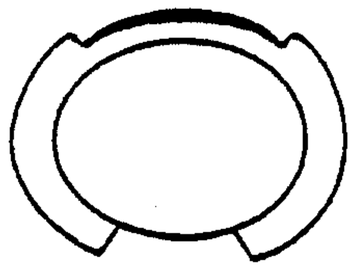


Fig 9d

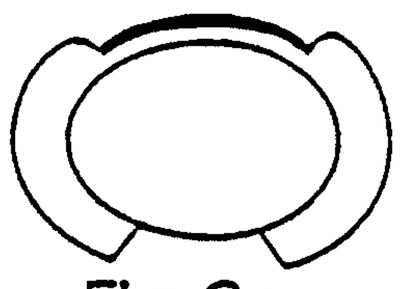


Fig 9e

Fig 10a

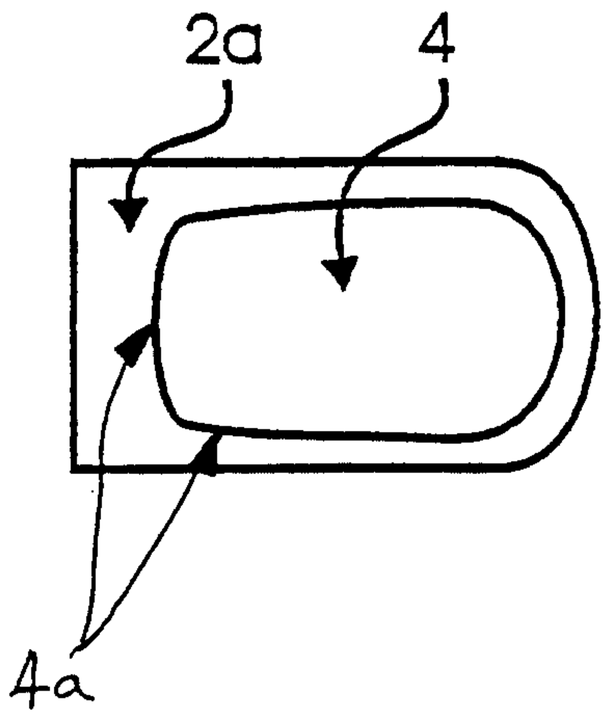


Fig 10b

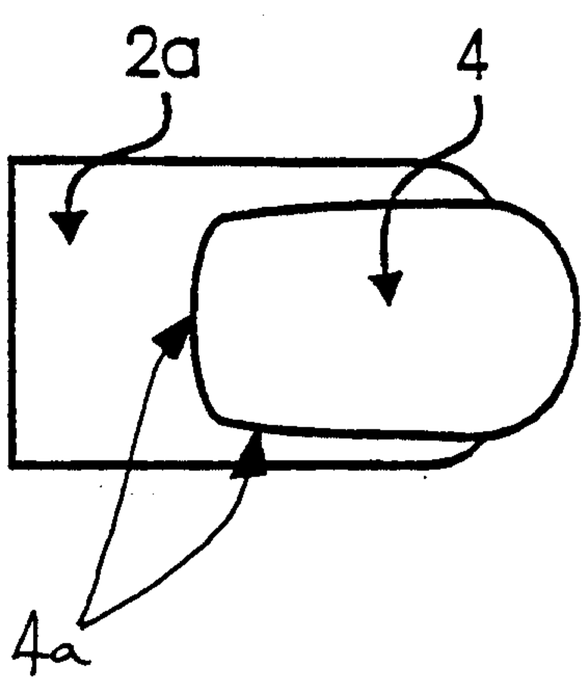
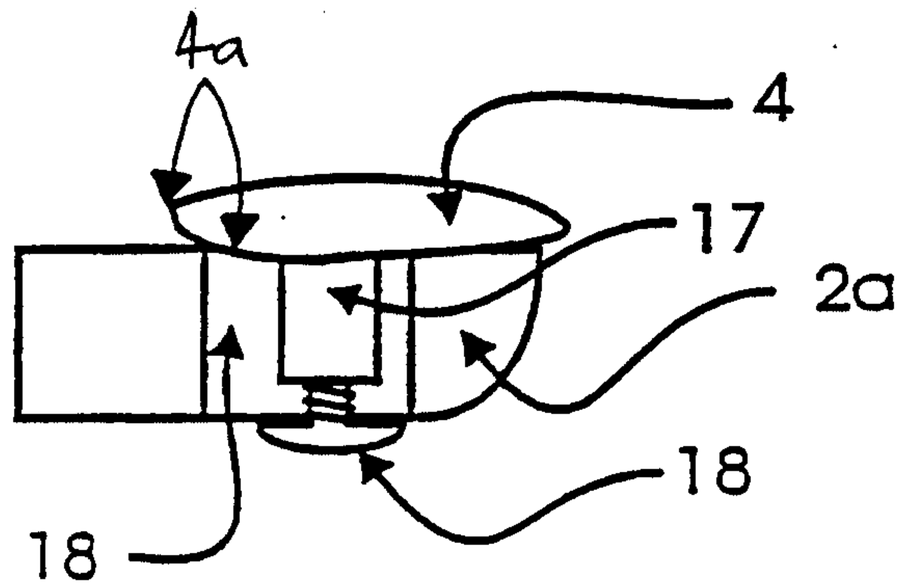
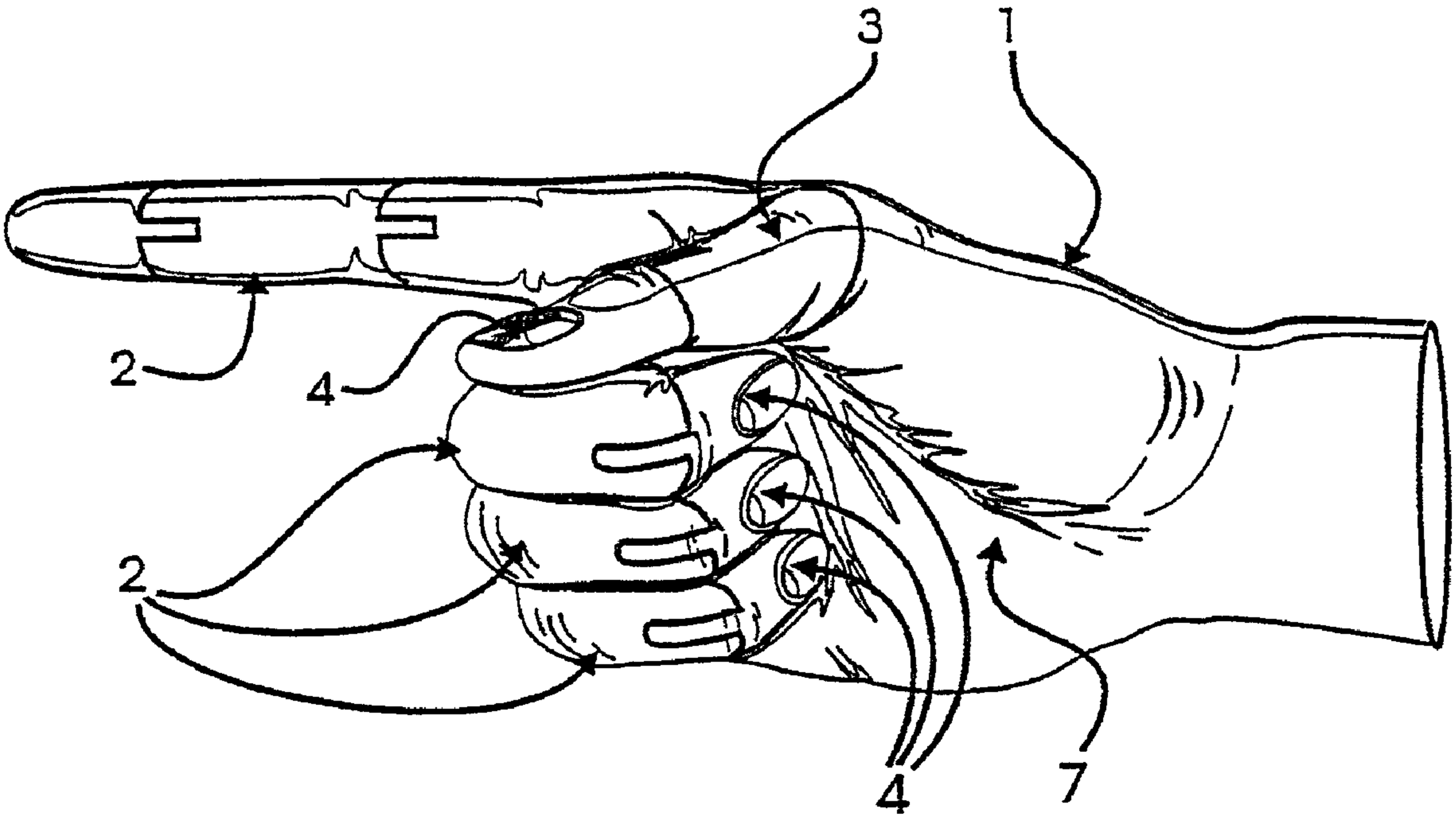


Fig 11




3
1
2
4
2
4
7