

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
14 June 2007 (14.06.2007)

PCT

(10) International Publication Number
WO 2007/066367 A2

(51) International Patent Classification:
A61F 5/01 (2006.01)

(21) International Application Number:
PCT/IT2006/000672

(22) International Filing Date:
20 September 2006 (20.09.2006)

(25) Filing Language: Italian

(26) Publication Language: English

(30) Priority Data:
VR2005A000153 6 December 2005 (06.12.2005) IT

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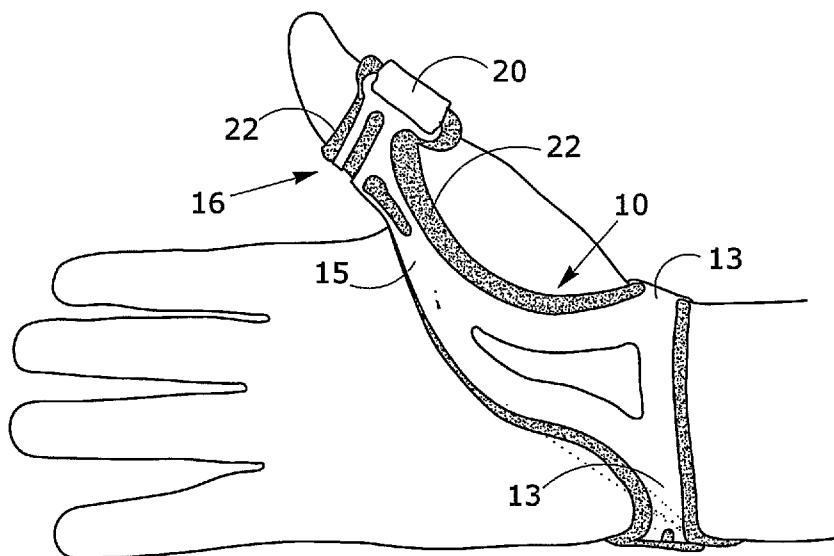
(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ,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

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:
— without international search report and to be republished upon receipt of that report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: ORTHOPEDIC SUPPORT OR ORTHESIS FOR THE HAND, IN PARTICULAR FOR THE THUMB



(57) Abstract: An orthopedic support (10) or orthosis for the hand, which allows restraint of the thumb on a hand that must be immobilized for example following injury, spraining, dislocation or similar. This support consists of a rigid support (11), made from metal and is substantially "Y" shaped, this rigid support (11) presenting at least two side branches (12, 13) and one central elongated branch (15), these side and central branches presenting housings for the insertion of straps (19) designed to secure the orthosis to the wrist and at least one finger on the hand; the head (16) of the central elongated branch (15) is substantially "T" shaped and its two ends are fitted with slots (17, 18) for the insertion of another strap (20) for the thumb to be restrained.

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"ORTHOPEDIC SUPPORT OR ORTHESIS FOR THE HAND, IN PARTICULAR FOR THE THUMB"

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TECHNICAL FIELD

This invention concerns an orthopedic support, or orthosis, for the hand, which allows restraint of a hand that must be immobilized, for example following injury, 10
spraining, dislocation or the like.

More specifically, this invention refers to an orthopedic support for the hand which, with respect to known solutions, has the advantage of being perfectly flexible and therefore adaptable to various situations 15
and conditions in which it is used, as well as being easy to construct and therefore reproducible with very limited costs.

The support according to the invention substantially consists of a fixed type orthosis for the thumb or, if 20
necessary and after appropriate adaptation, for other fingers.

This invention can be applied in the production sector of orthopedic products and braces mainly used in conservative, post-traumatic, rehabilitation and post- 25
operative therapy.

BACKGROUND ART

It is known that numerous injuries and sprains can affect the hand or the fingers and that the treatment and 30
rehabilitation methods are also numerous.

As far as the fingers are concerned, it is also

known that the most traumatic and therefore the most problematic events from the point of view of reconstruction and rehabilitation are fractures, dislocation of the thumb, arthrosis or tendonitis of the thumb, metacarpophalangeal sprains, the after-effects of fractures and of trapeziometacarpal arthrodesia and of thumb surgery, above all, in cases of rheumatic disorders and degenerative processes or of atonicity.

10 In these and in other no less problematic cases fixed or partially fixed thumb orthoses are used, with, for example, a plastic or polished polypropylene structure that may also be equipped with a wrist closing strap and a possibly an elasticated cotton protective cover to be put on before fitting the orthosis.

15 In other cases, orthoses made from a rigid structure are used, fitted with a pouch in correspondence with the thumb to accommodate an insert that can be modeled after hot water has been inserted in the pouch, using models that respect particular individual requirements.

20 The orthosis can consist of a rear splint to block the wrist and a heat-adaptable part, contained in a pouch, to immobilize the thumb.

25 The most common form of orthosis consists of a rigid enclosure, splinted in correspondence with the thumb, which stabilizes the carpometacarpal and metacarpophalangeal joint.

30 The types of orthosis described above allow the wrist and the thumb to be immobilized in a functional position, also in cases of sprains, tendonitis and radial nerve paralysis.

A first problem encountered with the use of

traditional orthoses concerns the fact that once the position of the thumb with respect to the wrist has been set, it is generally no longer possible to change this as the structure is rigid and non-deformable.

5 Another problem concerns the difficulty in constructing orthoses for the wrist-thumb, which are on one hand resistant to stress and on the other are malleable, so they can adapt to the various and varying conditions that can be encountered as therapy proceeds.

10 It has also been found that the majority of traditional orthoses are the standardized type and do not adapt to the various problems of the thumb so that once their use in a certain condition has ended it is not possible to use them again for other conditions,
15 especially if they are heat-adaptable type orthoses.

This involves considerable wastage of materials and means, affecting production costs and consequently the retail price.

20 **DESCRIPTION OF THE INVENTION**

This invention proposes to provide an orthopedic support for the hand, which makes it possible to restrain the thumb with respect to the wrist and which is able to eliminate or at least reduce the problems described
25 above.

In particular, the orthosis according to the invention proposes to resolve the problems caused by the limited or non-existent flexibility of the traditional systems of thumb restraint used so far.

30 The invention also proposes to provide an orthosis for the thumb-wrist that is easy to produce so as to be

economically advantageous as well as extremely efficient from the point of view of safety and stability. At the same time it is very light and extremely limited in size, being minimally invasive as it is fixed to the wrist and the thumb, thus limiting its size and the surface area covered.

This is achieved by means of an orthosis for the thumb with the features described in the main claim.

The dependent claims describe advantageous embodiments of the invention.

The proposed aims are achieved, according to the invention, by an orthosis which consists of a substantially metal structure, shaped so that it can be fitted on the lower part of the wrist, extending first along the initial part of the palm and then towards the thumb.

The metal structure is covered with at least one inner layer of fabric or soft cloth and presenting a series of slots arranged so as to accommodate Velcro or similar types of restraining straps.

The orthosis according to the invention thus foresees that the size of the structure allows it to be easily positioned, first on the wrist and then on the thumb.

Once positioned as described above, the orthosis can be secured by means of the Velcro straps it is fitted with.

DESCRIPTION OF THE DRAWINGS

Other features and advantages of the invention will become evident on reading the following description of

one embodiment of the invention, given as a non-binding example, with the help of the accompanying drawings in which:

- 5 - figure 1 represents a schematic and prospective view of a hand in the open position, on which the orthosis according to the invention has been fitted;
- figure 2 is a schematic plan view of the covered side of the orthosis according to the invention;
- 10 - figure 3 is a schematic view of the orthosis according to the invention in the open position.

DESCRIPTION OF ONE EMBODIMENT OF THE INVENTION

The orthosis according to the invention, mainly but not exclusively used in the orthopedic sector for
15 blocking and anatomically supporting the thumb in a correct position, is indicated overall with the reference number 10 and substantially consists of a rigid support 11, made from metal and being substantially "Y" shaped.

The rigid support 11 has two branches 12 and 13
20 whose ends present an elongated slot 14 at right angles to the axis of the branches.

The central branch of the structure indicated with
15 presents a substantially "T" shaped head 16 whose ends present slots 17 and 18 .

25 The central branch 15 of the structure is shaped to follow the anatomical form of the hand, extending along the palm towards the inner side of the thumb.

The orthosis is therefore shaped to follow the hand anatomically and restrain the thumb in the correct
30 position, while the section 15 connected to the wrist section holds the thumb in its anatomical position.

The slots 14 are designed to accommodate a strap 19 which allows the piece to be fixed to the user's wrist, while the slots 17 and 18 allow the insertion of another velcro strap 20 designed to restrain the thumb to the
5 branch 15 of the orthosis.

Each of the straps 19 and 20 is fitted with opening and adjustment means, for example the Velcro type or other type of adjustment fastening.

The described structure is covered internally with a
10 covering 21 made from soft cloth or velvet, shaped to correspond to the metal structure on which it is applied, with the addition of a raised border 22.

The orthosis 11, made from metal or sufficiently rigid and resistant material to adhere to and compress
15 the hand correctly and anatomically starting from the wrist and extending as far as the tip of the thumb, has an elongated and curvilinear shape in accordance with the anatomical shape of the hand.

To use the orthosis according to the invention it is
20 therefore sufficient to apply it to the inner part of the wrist in correspondence with the palm, fitting the two sectors 12 and 13 around the wrist and the central section 15 on the inner part of the thumb.

The strap 19 is then secured around the wrist and
25 the strap 20 around the end of the thumb so that the thumb is completely blocked with respect to the wrist.

The orthosis according to the invention has the advantage of covering only a small surface of the hand and, due to the flexibility and malleability of the metal
30 from which it is made, of being adaptable to the position that the thumb should have with respect to the rest of

the hand and the wrist.

According to other embodiments, the orthosis according to the invention can also be constructed for the restraint or blocking of other fingers, by
5 constructing frame models that, instead of extending laterally towards the thumb, extend in a straight line from the wrist to restrain other fingers, such as the index finger, the ring finger, the middle finger or the little finger.

10 Finally, the orthosis can be constructed with multiple supports to restrain more than one finger at the same time.

The orthosis according to the invention can also naturally be constructed in various sizes for different
15 sized hands.

The invention is described above with reference to a preferred embodiment. It is nevertheless clear that the invention is susceptible to numerous variations that lie within its scope, within the framework of technical
20 equivalents.

CLAIMS

1. An orthopedic support (10) or orthosis for the hand,
which allows restraint of the thumb on a hand that
5 must be immobilized for example following injury,
spraining, dislocation or similar, characterized in
that it consists of a rigid support (11), made from
metal and is substantially "Y" shaped, this rigid
support (11) presenting at least two side branches
10 (12, 13) and one central elongated branch (15), these
side and central branches presenting housings for the
insertion of straps (19) designed to secure the
orthosis to the wrist and at least one finger on the
hand, and in which the head (16) of the central
15 elongated branch (15) is substantially "T" shaped and
its two ends are fitted with slots (17, 18) for the
insertion of another strap (20) for the thumb to be
restrained.
- 20 2. An orthopedic support (10) or orthosis for the hand
according to the foregoing claim, characterized in
that the housings consist of elongated slots (14) at
right angles to the axis of the two branches (12, 13).
- 25 3. An orthopedic support (10) or orthosis for the hand
according to either of the foregoing claims,
characterized in that the central branch (15) of the
structure is shaped and bent to follow the anatomical
form of the hand, extending along the palm and the
30 inner side of at least one finger, in particular the
thumb.

4. An orthopedic support (10) or orthosis for the hand according to any of the foregoing claims, characterized in that it is shaped to restrain at least one finger, in particular the thumb, in its correct position, while the section (15) connected to the wrist acts as a support in restraining the finger in its anatomical position.
- 5
- 10 5. An orthopedic support (10) or orthosis for the hand according to any of the foregoing claims, characterized in that the slots (14) are designed to accommodate a strap (19) for fixing the orthosis to the wrist, while the slots (17, 18) allow the fixing of another velcro strap (20) designed to restrain at least one finger to the central section (15) of the orthosis.
- 15
6. An orthopedic support (10) or orthosis for the hand according to any of the foregoing claims, characterized in that each of the straps (19, 20) is fitted with opening and adjustment means, for example the Velcro type or other type of adjustment fastening.
- 20
- 25 7. An orthopedic support (10) or orthosis for the hand according to any of the foregoing claims, characterized in that the structure is covered internally with a covering (21) made from soft cloth or velvet, shaped to correspond to the metal structure on which it is applied, with the addition of a raised border (22).
- 30

8. An orthopedic support (10) or orthosis for the hand according to any of the foregoing claims, characterized in that the frame is made from metal or sufficiently rigid and resistant material to adhere to and compress the hand correctly and anatomically starting from the wrist and extending as far as the tip of the thumb, has an elongated and curvilinear shape in accordance with the anatomical shape of the hand.
9. An orthopedic support (10) or orthosis for the hand according to any of the foregoing claims, characterized in that it can be modeled according to the shape of the hand and of the fingers to be restrained and in that the modeling determines a stable and firm positioning of the hand.
10. An orthopedic support (10) or orthosis for the hand according to any of the foregoing claims, characterized in that it can be constructed to restrain any finger, simply by constructing frame models that extend in the direction of the finger to be restrained.
11. An orthopedic support (10) or orthosis for the hand according to any of the foregoing claims, characterized in that it can be constructed with multiple supports in order to restrain more than one finger at the same time.

