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(71) Applicant: **Pozzi, Alessandro Teresio**
20811 Cesano Maderno (Monza Brianza) (IT)

(72) Inventor: **Pozzi, Alessandro Teresio**
20811 Cesano Maderno (Monza Brianza) (IT)

(74) Representative: **Lunati & Mazzoni S.r.L.**
Via Carlo Pisacane, 36
20129 Milano (IT)

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(54) **IMPROVED SPORT EQUIPMENT**

(57) An improved sports equipment (1) is provided for, comprising a board (2) suitable to support an athlete during the performance of a sport; a magnetic attachment (4) suitable to constrain a foot of said athlete to the board (2).

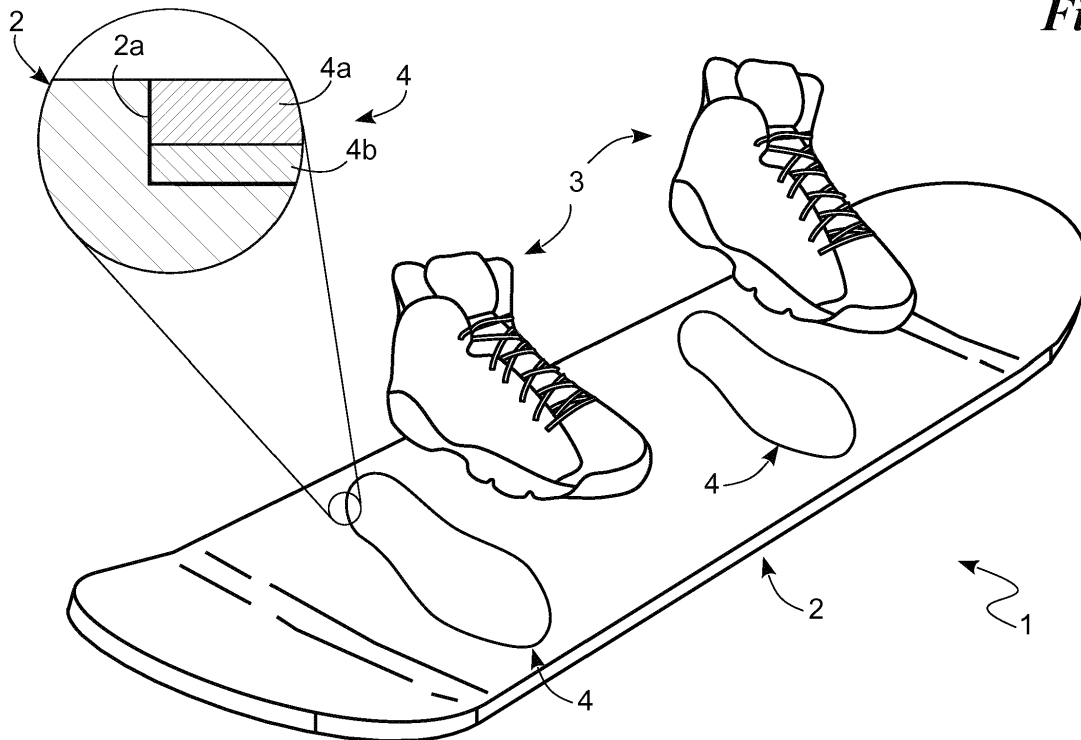


Fig. 1

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Description

[0001] The present invention relates to an improved sports equipment of the type as recited in the preamble of Claim 1.

[0002] To be precise, the invention relates to a particular board suitable to be used for the performance of snowboarding, skimboarding, skateboarding, skiing, kite-surfing or other sports the performance of which requires the athlete to be on of a board.

[0003] As is known, the performance of the above sports requires the use of a specific sports equipment which comprises, mainly, a board, two shoes and two attachments each of which constraining a foot and, to be precise, the shoe to the board.

[0004] The basic elements of such equipment are to be identified in the attachments which must stably constrain the shoe to the board during the activity and at the same time immediately release the shoe during a fall or other dangerous situation which could damage the athlete's joints.

[0005] The attachments comprise a heel pad, a toe cap and an insole constraining the attachment to the board and on which the heel pad and the toe cap mutually translate to adapt the size and position of the attachment to the shoe.

[0006] The toe cap is, in most cases, shaped as a "V" so as to accommodate the tip of the shoe, while the heel pad has a manual release hook by means of which to control the attachment or the release of the shoe from the attachment.

[0007] In addition, the "V" portion of the toe cap is composed of two separate elements hinged to the insole so as to rotate and move away from the shoe releasing it from the board; and of adjustable preload springs able to control the closure of said elements and, thus allow the rotational distancing of said elements only when there is a force/moment acting on them which is greater than the preload.

[0008] The prior art mentioned above has several significant drawbacks.

[0009] A first drawback is the fact that the known sports equipment requires complex blocking operations of the shoe to the attachment.

[0010] This aspect is determined by the adjustment of the attachment and, in particular, of the relative position between the toe cap and heel pad which must be adapted to the shoe and, thus to the specific foot of the athlete.

[0011] This complexity is also produced by the adjustment of the springs which, being a compromise between the need for a stable connection of the shoe to the board and its release in the case of fall, is extremely complex and almost never optimal. Another drawback is that the adjustments described above, based on the weight, size and other characteristics of the athlete, need to be repeated whenever a new athlete wishes to use the sports equipment.

[0012] This drawback is increased by the fact that the

athlete, for example in the case of a snowboard or ski, makes the adjustments and the connection of the shoe to the board while wearing gloves, which further complicates such operations.

5 **[0013]** Another drawback is the complexity of construction and, thus the high cost of the attachments and thus of the sports equipment currently on the market.

[0014] In this situation the technical purpose of the present invention is to devise an improved sports equipment able to substantially overcome the drawbacks mentioned.

10 **[0015]** Within the sphere of said technical purpose one important aim of the invention is to have sports equipment which is simple to make and inexpensive.

15 **[0016]** Another important aim of the invention is to make a sports equipment which is easy to adapt to the specific needs of an athlete.

[0017] The technical purpose and specified aims are achieved by an improved sports equipment according to the appended Claim 1.

20 **[0018]** Preferred embodiments are evident from the dependent claims.

[0019] The characteristics and advantages of the invention are clearly evident from the detailed description below of a preferred embodiment thereof, with reference to the appended **Fig. 1** which shows the improved sports equipment according to the invention.

25 **[0020]** With reference to the Figures mentioned, the improved sports equipment according to the invention is globally denoted by reference numeral **1**.

30 **[0021]** It is utilisable for sports such as, for example, skiing, kite surfing, skateboarding, snowboarding (**Fig. 1**), skimboarding or wakeskating and the like, and comprises at least one board **2** suitable to support an athlete; one or more shoes **3**, appropriately two, each suitable to contain a foot of the athlete; and at least one attachment **4** suitable to constrain an athlete's foot and, in particular, a shoe **3** to the board **2**.

35 **[0022]** The preferred applications are for sports in which joining means between the shoe and the board are not generally provided, such as more in detail wakeskating, which provides for use of the board on water.

40 **[0023]** In particular, in the case of sports equipment **1** for snowboarding, skimboarding, skateboarding, kite-surfing, wakeboarding, wakeskating, windsurfing or other similar sports, it has a single board **2** and, appropriately, two attachments **4** suitable to constrain the shoes **3** and thus the athlete's feet near the ends of the board **2**, as illustrated in **Fig. 1**.

45 **[0024]** Alternatively, in the case of equipment **1** for skiing or similar sports, the sports equipment **1** comprises two boards **2** each having a single attachment **4** suitable to constrain a shoe **3** to the board **2**.

50 **[0025]** The board **2** comprises at least one housing **2a** suitable to house the attachment **4** at least partially, limiting the portion of attachment **4** protruding from the board **2**. Preferably, the housing **2a** is practically complementary to the attachment **4** so that the attachment portion **4**

protruding from the board 2 is practically null and, therefore, the attachment 4 is arranged flush with the board, as shown in the enlargement in cross-section in Fig. 1.

[0026] The attachment 4 is of the magnetic type, i.e. able to constrain the shoe 3 to the board 2 exerting on said shoe 3 an attractive force of the magnetic type.

[0027] It therefore comprises at least one magnet **4a** while the shoe 3, as described below, is at least partially made of ferromagnetic material or other material suitable to magnetise itself under the action of the magnetic field exerted by the magnet 4a.

[0028] In particular, the attachment 4 comprises two magnetic zones **4c**, one suitable to engage in the vicinity of the tip of the shoe 3, in more detail between the metatarsal and proximal phalanges, and one at the heel. Said zones are preferably approximately circular with a diameter between 5 cm and 9 cm.

[0029] Each magnetic zone comprises at least one magnet 4a.

[0030] In particular, a single magnet 4a (Fig. 2a) can be arranged or a plurality of magnets, in particular four (Fig. 2b). Each magnetic zone 4c has a magnet 4a, or magnets, which preferably exert a total force of attraction between 48N and 52N on a ferromagnetic material.

[0031] The magnets 4a are preferably so-called neodymium magnets, in particular in an alloy of boron, iron and neodymium known as being strongly magnetic. They preferably have a height between 8 mm and 15 mm and a diameter between 5 cm and 7 cm, for the single magnet solution and between 1.5 cm and 3.5 cm, for the 8 magnet solution.

[0032] The magnets 4a preferably also have a coating, such as a lacquering, of a height of less than 2mm and suitably non-ferromagnetic.

[0033] Additionally to the magnet 4a, the attachment 4 may comprise connection means **4b** (magnification in Fig. 1) suitable to make the attachment 4 integral with the board 2 and, therefore, comprising screws or, preferably, an adhesive layer.

[0034] In this sense the magnet 4a can be directly integrated in the structure of the board 2 which is generally in polymer-coated materials and in particular in resins or directly in said polymers or resins usually constituting the matrix of a composite material.

[0035] The shoe 3 is identifiable in a boot or other similar footwear able to ensure optimum adhesion of said shoe 3 to the foot, the heel and the tibia of the athlete. Preferably it is for wakeskating and is therefore substantially a classic sneaker.

[0036] It also comprises on the sole at least one ferromagnetic body **3a** suitable to attach itself to the attachment 4 by magnetic attraction. Preferably, the shoe 3 has two ferromagnetic bodies 3a, one proximal to the tip and one at the heel.

[0037] The ferromagnetic body 3a is made of magnetite, iron, cobalt, nickel, or other ferromagnetic material able to magnetize itself under the action of the magnetic field emitted by the magnet 4a.

[0038] In particular, the ferromagnetic body 3a defines two ferromagnetic areas **3b**, one positioned in the proximity of the tip of the shoe 3, in more detail between the metatarsal and proximal phalanges, and one at the heel.

[0039] The ferromagnetic areas 3b may be disc-shaped (Fig. 3a), with a diameter preferably between 5 cm and 9 cm, to facilitate and speed up the application of the same but allowing the reduction of sharp angles which create a greater increase of wear points of the sole. The rounded shape of the disc permits a positioning in the two support points of the foot in a non-perceptible manner. Said zones are preferably approximately circular.

[0040] In a second alternative, in particular in the ferromagnetic area 3b in correspondence with the metatarsal and proximal phalanges, the ferromagnetic areas 3b comprise rectangular plates extending parallel in the direction perpendicular to the main direction of extension of the shoe, with a space between one and the other of more than 1.5 mm. This structure creates a flexible and perfectly ergonomic "vertebra" with the sole of the foot (Fig. 3b)

[0041] The ferrous material preferably has a thickness of more than 3 mm and between 3 mm and 5 mm.

[0042] The ferrous material may be of a different shape to facilitate the movements and the twisting and bending of the foot. The most optimal options were obtained with the following shapes.

[0043] The ferrous material, for optimisation with the attachment of the board, should be placed in the heel at 12 cm from the tip of the shoe, centre-centre.

[0044] The attachment of the plates may be performed mechanically with the aid of self-locking screws and bolts that anchor it to the insole, or directly vulcanized in the rubber of the sole, or by combining the two previous systems together.

[0045] The upper of the shoe should preferably be made of fabric or perforated to allow water to exit more quickly. It preferably has a sole without a heel for optimal use. The fastenings should be preferably be laces with tie both to facilitate opening and closing even when wet, and to correctly enclose the foot increasing agility in the various manoeuvres of the rider.

[0046] The functioning of an improved sports equipment, described above in a structural sense, is as follows.

[0047] First the athlete puts on the shoes 3 only and goes to where the sports activity is performed, such as a ski slope.

[0048] At this point he places the board 2 on the ground and stands on it placing his feet and thus the shoes 3 over the attachments 4.

[0049] In particular, when the shoes 3 approach the attachments 4, the ferromagnetic bodies 3a are stimulated by the magnetic field emitted by the attachments 4 and, consequently, are firmly constrained to the attachments 4 and, consequently, to the board 2.

[0050] The invention achieves important advantages.

[0051] A first important advantage is the simplicity of

anchorage of the shoe 2 to the attachments 3.

[0052] In fact, conversely to the prior sports equipment where complicated operations were necessary, the sports equipment 1 achieves the constraint to the board 2 simply by placing the shoes 3 on the board.

[0053] Such simplicity of constraint is further guaranteed by the absence of the need to perform the complicated and laborious operations needed in the prior sports equipment to adapt the attachment to the size of the shoe and, therefore, the athlete.

[0054] One important advantage is that the sports equipment 1, being devoid of the complicated attachments of the prior art, is simple to make.

[0055] Another advantage is the fact that the shoe 3, when distanced from the magnets 4, is not able to attract objects magnetically. As a result, the athlete can walk without the risk of objects sticking to the shoe 3 preventing its proper constraint to the attachments 4.

[0056] A further advantage is that the equipment 1 does not require complicated operations to adjust the force of constraint of the attachments and, consequently, ensures optimal protection from sprains or other joint problems irrespective of the characteristics of the athlete.

[0057] Another advantage of no less importance is the presence of the housing 2a which, containing the attachment 4 practically entirely, makes it possible to have a smooth board 2 and of high aesthetic value.

[0058] The invention is susceptible to variation within the inventive concept. All the elements as described and claimed herein may be replaced with equivalent elements and the scope of the invention includes all other details, materials, shapes and dimensions.

Claims

1. Improved sports equipment (1) comprising

- at least one board (2) suitable to support an athlete during the performance of a sport;
- at least one attachment (4) suitable to constrain a foot of said athlete to said board (2);
- **characterised in that**
- said at least one attachment (4) comprises at least one magnet (4a) integrated in said board (2).

2. Improved sports equipment (1) according to the previous claim, wherein said attachment (4) comprises two magnetic zones (4c) one suitable to engage in proximity of the tip of the shoe (3) and one at the heel.

3. Improved sports equipment (1) according to the previous claim, wherein said magnetic zone (4c) suitable to engage in the vicinity of the tip of the shoe (3) is suitable to engage between the metatarsal and proximal phalanges.

4. Improved sports equipment (1) according to claim 2 or 3, wherein said magnetic zones (4c) are preferably approximately circular with a diameter between 5 cm and 9 cm.

5. Improved sports equipment (1) according to one or more of the claims 2 - 4, wherein said magnetic zones (4c) have said magnets (4a) which exert a total force of attraction between 48 N and 52 N on a ferromagnetic material.

6. Improved sports equipment (1) according to one or more of the claims 2 - 5, wherein said magnetic zones (4c) each comprise only one magnet (4a).

7. Improved sports equipment (1) according to one or more of the claims 2 - 5, wherein said magnetic zones (4c) each comprise four magnets (4a).

8. Improved sports equipment (1) according to the previous claim wherein said at least one magnet (4a) is a neodymium magnet.

9. Improved sports equipment (1) comprising at least one board (2) suitable to support an athlete during the performance of a sport; at least one attachment (4) suitable to constrain a foot of said athlete to said board (2); at least one shoe (3) suitable to receive said foot and to be constrained by said attachment (4) to said board (2); and wherein said at least one shoe (3) comprises at least one ferromagnetic body (3a) suitable to be constrained by magnetic attraction to said attachment (4).

10. Improved sports equipment (1) according to the previous claim, wherein said at least one ferromagnetic body (3a) defines two ferromagnetic areas (3b) one suitable to engage in proximity with the tip of the shoe (3) and one at the heel.

11. Improved sports equipment (1) according to the previous claim, wherein said ferromagnetic area (3b) suitable to engage in the vicinity of the tip of the shoe (3) is suitable to engage in between the metatarsal and proximal phalanges.

12. Improved sports equipment (1) according to claim 10 or 11, wherein said ferromagnetic areas (3b) are preferably approximately circular with a diameter between 5 cm and 9 cm.

13. Improved sports equipment (1) according to claim 10 or 11, wherein, in said ferromagnetic area (3b) at the metatarsal and the proximal phalanges, the ferromagnetic areas (3b) comprise rectangular plates extending parallel along the direction perpendicular to the main direction of extension of the shoe.

14. Improved sports equipment (1) according to one or more of the previous claims, wherein said board (2) is a wakeboard.

15. Improved sports equipment (1) according to one or more of the previous claim wherein said board (2) is a wakeskate board.

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Fig. 1

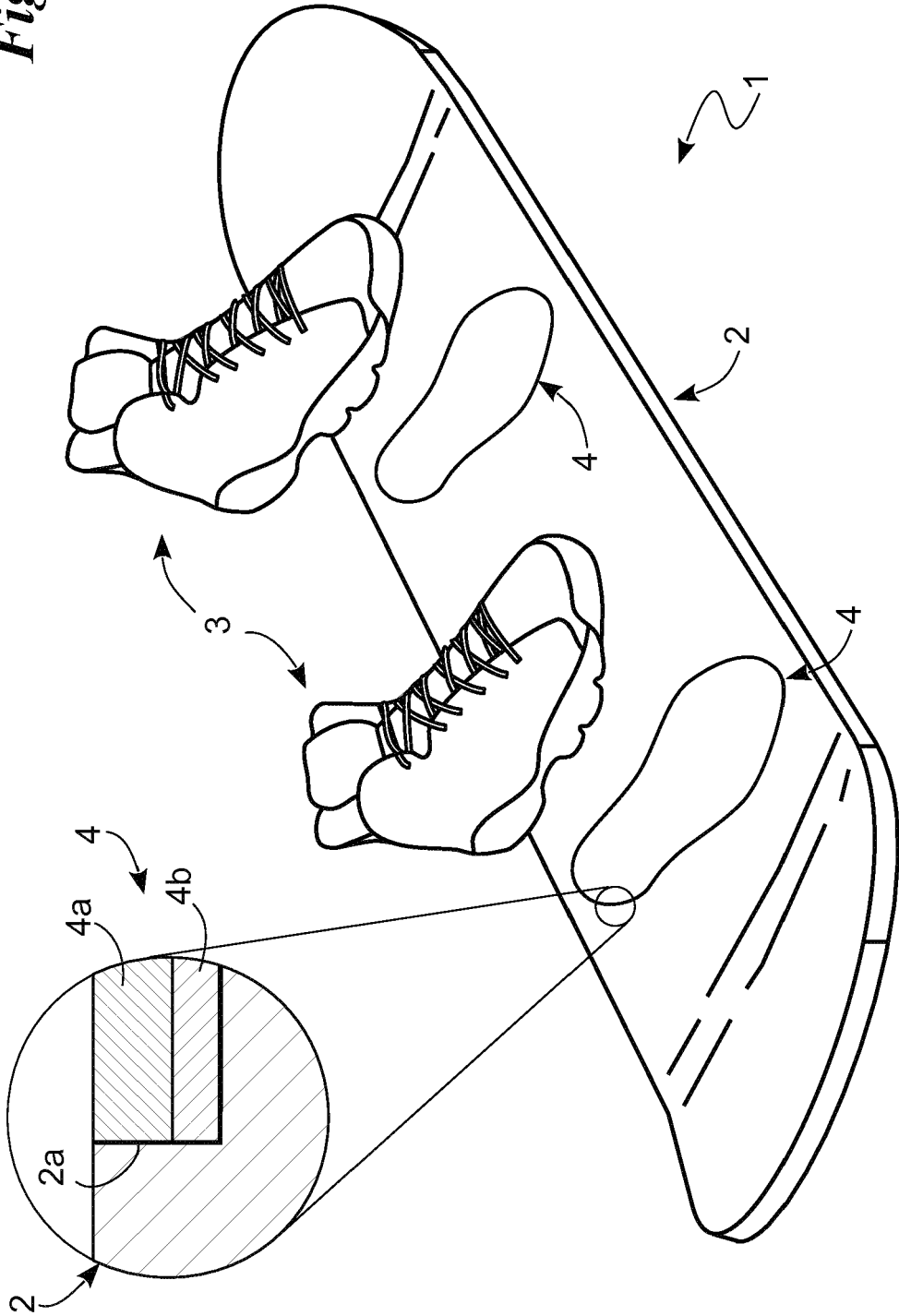


Fig. 3b

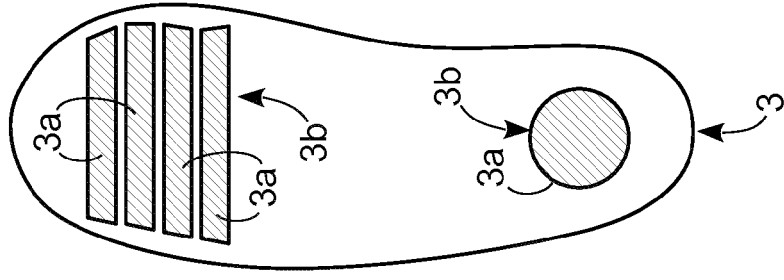


Fig. 3a

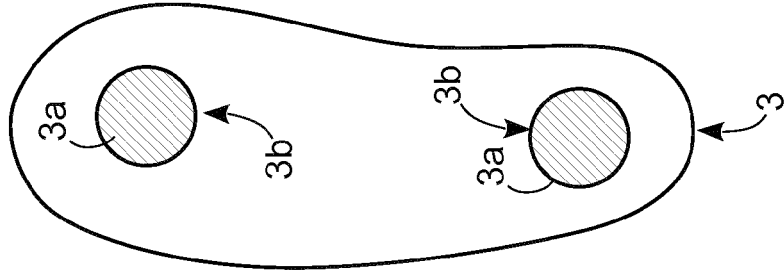


Fig. 2b

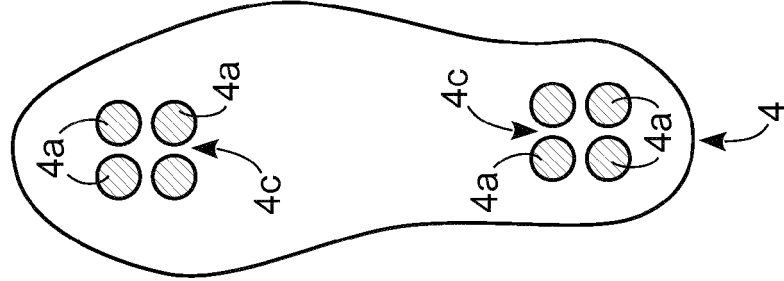
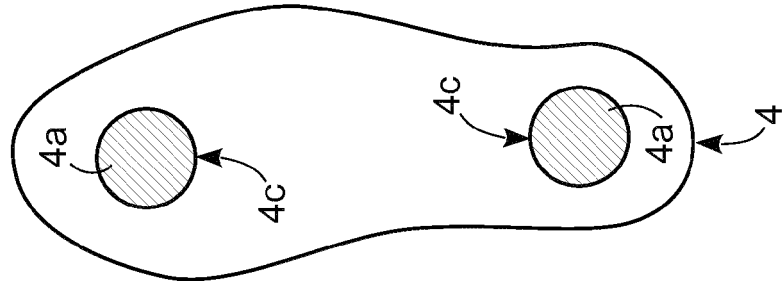


Fig. 2a





EUROPEAN SEARCH REPORT

Application Number
EP 15 15 7223

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The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 1 July 2015	Examiner Vesin, Stéphane
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**ANNEX TO THE EUROPEAN SEARCH REPORT
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