AMENDED CLAIMS

[Claim 1]

A removable dental alignment device comprising an assembly of independent caps (12, 35) covering at least one tooth (20), the geometry of each cap (12, 35) being identical to the geometry of the at least one tooth (20) it covers, **characterized in that** the inner part of the caps (12, 35) comprises a fissure (14) for coupling to a fixing element (21, 24, 27) adhered to the tooth (20) and at least one outer element facilitating the passage of the dental arch (16) having a section to be chosen from circular, square and rectangular, wherein each cap (12) comprises a cuboid-shaped projection (13) comprising a prismatic base (17) that is wider than a perforated rectangular prism (18) resting on the prismatic base (17), such that the dental arch (16) passes through the perforated rectangular prism (18).

~~[Claim 2]~~

~~The removable dental alignment device according to claim 1, **characterized in that** each cap (12) comprises a cuboid-shaped projection (13) comprising a prismatic base (17) that is wider than a perforated rectangular prism (18) resting on the prismatic base (17), such that the dental arch (16) passes through the perforated rectangular prism (18).~~

~~[Claim 3]~~ [Claim 2]

The removable dental alignment device according to claim 1, **characterized in that** the caps (35) have marked thereon a straight protrusion (36) corresponding to the cutting line (7) on which there are adhered braces (32) or cuboids (13) with a prismatic base (17) and perforated rectangular prism (18) through the inner portion of which the dental arch (16) passes.

~~[Claim 4]~~ [Claim 3]

The removable dental alignment device according to claims 2 and 3, **characterized in that** the vertical-type fixing element (27) is adhered to the tooth and consists of:

- a projecting truncated sphere (28) the upper part of which is attached to the cervical area of the tooth (20),

- a coupling flap formed by an outer vertical rectangular cuboid (29) and a horizontal rectangular cuboid (30),

- a protective cylinder (31) crushed in the form of a pellet which is adhered to the tooth (20) the diameter of which is greater than the length of the vertical cuboid (29).

~~[Claim 5]~~ [Claim 4]

The removable dental alignment device according to claims 2 and 3, **characterized in that** the “turned”-type fixing element (21, 24) is adhered to the tooth and consists of a rectangular figure from the vertices of which there emerge projections (22, 25) tilted and oriented with a certain tangency to a half-sphere having an elliptical section (23, 26) located in the central part thereof and taking in each of these projections (22, 25), and in that the projections (22) form a clockwise rotation.

~~[Claim 6]~~ [Claim 5]

The removable dental alignment device according to claim 5, **characterized in that** the projections (25) form a counterclockwise rotation.

~~[Claim 7]~~ [Claim 6]

The removable dental alignment device according to claim ~~2~~ 1, **characterized in that** the cuboid-shaped projections (13) are located in the vestibular part of the caps (12).

~~[Claim 8]~~ [Claim 7]

The removable dental alignment device according to claim ~~2~~ 1, **characterized in that** the cuboid-shaped projections (13) are located in the lingual part of the caps (12).

~~[Claim 9]~~ [Claim 8]

A method for the production of a removable dental alignment device made from a mold of the denture of the patient, **characterized by** comprising the following steps:

- scanning the mold of the denture and virtually representing a virtual denture (1) through a set of digital data,

- producing a virtual denture (8) from the virtual denture (1) wherein:

  a. a horizontal virtual plane (6) cutting the virtual denture (1) on a cutting line (7) is chosen and represented,

b. the virtual cuboids (4) are chosen from a virtual library (2),

c. the chosen virtual cuboids (4) are placed on the cutting line (7) and their dimensions are modified according to the movement that must be applied on each tooth and following the placement technique based on balance, torques and angulations, with the aid of the virtual view of the positioning of the virtual cuboids (4) in relation to the virtual cutting line (7),

d. the virtual half-spheres (5) representative of virtual fixing elements having different dimensions and geometries are chosen from a virtual library (3) and modified,

e. the virtual half-spheres (5) are placed on the virtual denture (1),

f. a computer file with the geometric characteristics of the virtual denture (8), the cutting line (7), the assembly of virtual cuboid projections (10) having different dimensions and half-spherical projections (11) is produced,

- printing the model of the teeth or printed denture (9) of the patient with the cuboids (10) and half-spheres (11) with a 3D printer,

- stamping the caps (12) on the printed denture (9), which includes the shape of the teeth, the cuboid projections (13) and the notches (14),

- opening in the cuboid projections (13) the gap for the passage of the dental arch (16) using specific drills and a micromotor or by inserting a hot rectangular arch,

- adhering the fixing elements (21, 24, and 27) to the corresponding teeth (20).

~~[Claim 10]~~ [Claim 9]

The method for the production of a removable dental alignment device according to claim 9, **characterized by** positioning the cuboid projections (4) in the vestibular part of the cutting line (7) and the half-spheres (5) in the lingual part of the virtual denture (1).

~~[Claim 11]~~ [Claim 10]

The method for the production of a removable dental alignment device according to claim 9, **characterized by** positioning the cuboid projections (4) in the lingual part of the cutting line (7) and the half-spheres (5) in the vestibular part of the virtual denture (1).

~~[Claim 12]~~ [Claim 11]

The method for the production of a removable dental alignment device according to claim 9, **characterized in that** on the virtual representation of the denture of the patient:

a. a horizontal virtual plane (6) cutting the virtual denture (1) on a cutting line (7) is chosen and represented,

b. the virtual half-spheres (5) are chosen from a virtual library (3) and modified,

c. the virtual half-spheres (5) are placed on the virtual denture (1),

and **in that** a computer file with the geometric characteristics of the virtual denture (8), the cutting line (7), and half-spherical projections (11) is produced and a 3D printout of the printed denture (33) of the patient is made with a protrusion (34) on which the stamping of the caps (35) is performed, including a protrusion (36) corresponding to the cutting line (7), and **in that** the braces (32) or cuboid projections are manually adhered on the protrusion (36) of each cap.

~~[Claim 13]~~ [Claim 12]

The method for the production of a removable dental alignment device according to claim 12, **characterized by** printing the cutting line (7) in the lingual part and the half-spheres (5) in the vestibular part.

~~[Claim 14]~~ [Claim 13]

The method for the production of a removable dental alignment device according to claim 12, **characterized by** printing the cutting line (7) in the vestibular part and the half-spheres (5) in the lingual part.

~~[Claim 15]~~ [Claim 14]

The method for the production of a removable dental alignment device according to

claim 9, **characterized in that** after producing the digital file with the data of the virtual denture (8), the caps are virtually reproduced on the virtual denture (8) with a volume between 0.5 and 1.5 millimeters, producing a file with the digital data of the cap including the recess for the fixing element and cuboid projection, and **in that** this file is printed using the 3D printing technology.

~~[Claim 16]~~ [Claim 15]

The method for the production of a removable dental alignment device according to claim 15, **characterized in that** the 3D printing of the caps is done with an acrylic, ceramic or zirconium material.

~~[Claim 17]~~ [Claim 16]

The method for the production of a removable dental alignment device according to claims 9, 12 and 15, **characterized by**:

- defining and adapting each fixing element on the virtual denture (1) from a virtual library of fixing elements,

- producing a computer file with the digital data of the fixing element,

- printing the file digital with a 3D printing method producing the final fixing elements (21, 24, and 27).

~~[Claim 18]~~ [Claim 17]

The method for the production of a removable dental alignment device according to claims 9 and 12, **characterized in that** the stamping of the cap (12, 35) is done using a thermo-molding plate between 0.5 and 1.5 millimeters.