CLAIMS

1. Endodontic instrument for preparing a patient's tooth, in particular, an instrument for cleaning the root canal that follows the natural geometry of said canal, the said instrument being made of a shape memory material having a first static state and a second dynamic state, the said first static state corresponding to a substantially straight geometry to facilitate the instrument being inserted partially into said root canal and the said second dynamic state corresponding to a structured geometry, in which it is the said endodontic instrument being set rotating to clean the said root canal following its natural geometry, the said instrument having a rigid tip arranged to be mounted on a rotating support and a working sector arranged to be engaged in said root canal, wherein, when the instrument is in its dynamic state, the said working sector consists of a first substantially straight active segment and a second active segment disposed as an extension of the first straight active segment, the said second active segment having a free end tip, the said second active segment having a single curved shape extending from a point of connection to the first straight active segment and the free end tip, the said second active segment having a single sagitta (d) being located at the free end of the working section, wherein the sagitta (d) has a distance from a summit S of an arc to a line connecting two ends M and N, the shape memory material being a shape memory metal alloy in which the transition from the martensitic phase to the austenitic phase occurs naturally at a body temperature between 32ºC and 37°C, the instrument being in its dynamic state at this temperature characterized in that said curved shape of said second active segment corresponds to a circular arc, which allows said second active segment to act as a whip that brushes against the walls of the root canal and removes the soft portions by cleaning the walls of the root canal without cutting into, by milling, the dentin.

2. Endodontic instruments as in claim 1, characterized in that, when the instrument is in its dynamic state, the said free end tip has a structured geometrical shape.

3. Endodontic instrument as in claim 2, characterized in that, when the instrument is in its dynamic state, the said free end tip is a bevelled tip.

4. Endodontic instrument as in claim 3, characterised in that when the instrument is in its dynamic state, said bevel is angled between 30º and 60º and preferably equal to 45º.

5. Endodontic instrument as in claim 1, characterized in that, when the instrument is in its dynamic state, said free end tip is a swallow-tail-shaped tip.

6. Endodontic instrument as in claim 5, characterised in that the said swallow-tail shaped tip has an angle of opening of between 60º and 30º, and preferably close to 45º.

7. Endodontic instrument as in claim 1, characterised in that, when the instrument is in its dynamic state, the said free end tip is a flared tip.

8. Endodontic instrument as in claim 7, characterised in that when the instrument is in its dynamic state, the flared tip has an enlargement defined by a radius of curvature (R1).

9. Endodontic instrument as in claim 7, characterised in that, when the instrument is in its dynamic state, the enlargement is defined by an angle substantially between 120º and 150º.

10. Endodontic instrument as in claim 1, characterised in that it is made of a shape memory metal alloy in which the transition from the martensitic phase to the austenitic phase can be made by increasing the temperature by injecting a hot liquid.

11. Endodontic instrument as in claim 1, characterised in that it is made of a metal alloy which has super-elasticity properties acquired through being heat-treated.

12. Endodontic instrument as in claim 1, characterised in that it is made of a shape memory metal alloy in which the transition from the martensitic phase to the austenitic phase is made by applying ultrasound induced vibrations.