While the illustrated forms are shown to be dental implants, it will be understood that such structures, with porous metal or porous tantalum portions on an implant with a non-circular periphery or multi-root implant to restrict rotation in a bore, may be applied to implants used on other areas of a human body or animal, whether or not such an implant is to be inserted into bone.

Those skilled in the art will recognize that a wide variety of modifications, alterations, and combinations can be made with respect to the above described embodiments without departing from the spirit and scope of the invention, and that such modifications, alterations, and combinations are to be viewed as being within the ambit of the inventive concept.

What is claimed is:

1. A dental implant for replacement of a single natural tooth and insertion into a bore at the extraction site of the single natural tooth, the dental implant comprising:

a unitary body defining a coronal-apical axis and having a coronal main shaft portion, a plurality of distinct roots extending apically from the main shaft portion to a distal end, and the main shaft portion including a non-circular closed outer periphery to engage bone, the main shaft portion being shaped and sized to substantially conform to a circular bore in a jaw upon insertion into the bore, wherein the roots are integrally formed with and extending apically from the main shaft portion, wherein the closed outer periphery has a plurality of contiguously convexly curved portions interconnected to surround the coronal apical axis with each curved portion coronally aligning with a different one of the plurality of roots, and wherein each pair of adjacent curved portions of the plurality of curved portions intersects to form an elongated indent or groove that extends in a coronal-apical direction on the main portion; and

a porous tantalum portion disposed at least on the roots at the unitary body for engaging bone.

2. The dental implant of claim **1** wherein the roots are configured to resist a torsional force applied to the implant and about the coronal-apical axis.

3. The dental implant of claim **1** wherein the unitary body comprises a coronal to apical length and an intermediate portion relative to the coronal to apical length, and wherein the roots extend outward from the intermediate portion.

4. The dental implant of claim **1** wherein the plurality of roots generally extend in an apical direction.

5. The dental implant of claim **1** wherein at least one of the plurality of roots tapers inwardly as the root extends outwardly from the main shaft portion.

6. The dental implant of claim **1** wherein the plurality of distinct roots comprises between two and four roots.

7. The dental implant of claim **1** where the dental implant is configured to have the same number of roots as a natural tooth the dental implant replaces.

8. The dental implant of claim **1** wherein at least one of the roots is configured to have a cross-sectional dimension greater than a corresponding cross-sectional dimension of a bore in bone for receiving the root with a friction fit.

9. The dental implant of claim **1** wherein the porous tantalum portion is configured to grate bone pieces off of a sidewall of a bore in bone that receives the dental implant.

10. The dental implant of claim **1** wherein the porous tantalum portion is disposed at the main shaft portion.

11. The dental implant of claim **1** wherein the outer periphery is configured to have a cross-sectional dimension greater than a corresponding cross-sectional dimension of a bore in bone for receiving the implant with a frictional fit.

12. The dental implant of claim **1** wherein the porous tantalum portion is at least partially filled with a resorbable material.

13. An implant for replacement of a single natural tooth and insertion into a bore at the extraction site of the single natural tooth, the implant comprising:

a unitary body having a main shaft portion configured with a non-circular closed outer periphery for engaging bone and a plurality of distinct roots extending apically from the main shaft portion to a distal end, the main shaft portion being shaped and sized to substantially conform to a circular bore in a jaw upon insertion into the bore, wherein the roots are integrally formed with and extending apically from the main shaft portion;

a porous tantalum portion disposed at the unitary body for engaging bone within a bore on an animal or human body; and

wherein the unitary body generally defines a coronal-apical axis, and wherein the main shaft portion comprises a plurality of contiguous convexly curved portions interconnected to surround the coronal apical axis, wherein at least one pair of adjacent convexly curved portions intersect to form an elongated indent or groove that extends in a coronal-apical direction, and wherein the roots are configured to resist a torsional force applied to the implant and about the coronal-apical axis.

14. The implant of claim **13** is a dental implant.

15. The dental implant of claim **1** wherein the unitary body is non-threaded.

16. The implant of claim **13** wherein the unitary body is non-threaded.

17. A dental implant for replacement of a single natural tooth and insertion into a bore at the extraction site of the single natural tooth, the dental implant comprising:

a unitary, non-threaded body defining a coronal-apical axis and having a coronal main shaft portion, a plurality of distinct roots extending apically from the main shaft portion to a distal end, and the main shaft portion including a non-circular closed outer periphery to engage bone, the main shaft portion being shaped and sized to substantially conform to a circular bore in a jaw upon insertion into the bore, wherein the roots are integrally formed with and extending apically from the main shaft portion, the closed outer periphery has a plurality of contiguously convexly curved portions interconnected to surround the coronal apical axis with each curved portion coronally aligning with a different one of the plurality of roots, and each pair of adjacent curved portions of the plurality of curved portions intersects to form an elongated indent or groove that extends in a coronal-apical direction on the main shaft portion; and

a porous tantalum portion disposed at least on the roots for engaging bone.

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