WHAT IS CLAIMED IS:

1. A casing bit, comprising:

a mandrel, and

a bit body bonded to the mandrel, the bit body having an inner surface and an outer surface opposite the inner surface, the bit body consisting essentially of a matrix material of crystalline tungsten and a binder material.

2. The casing bit of claim 1 wherein the bit body includes at least one blade.

3. The casing bit of claim 2 wherein the blade includes at least one channel having a channel depth less than a thickness of the blade.

4. The casing bit of claim 3 wherein the at least one channel is a blade channel radially following the blade.

5. The casing bit of claim 3 wherein the blade includes a plurality of cutters, each cutter being bonded to the blade.

6. The casing bit of claim 5 wherein each cutter is a polycrystalline diamond cutter.

7. The casing bit of claim 5 wherein each cutter comprises a diamond table mounted to a substrate of a first material.

8. The casing bit of claim 5 wherein the blade further includes a plurality of cutter channels, each cutter channel running circumferentially and having a depth less than the blade thickness.

9. The casing bit of claim 8 wherein the blade further comprises a plurality of cutter backup structures, and wherein one of the cutter channels is formed between adjacent ones of the cutter backup structures.

10. The casing bit of claim 8 further including a cap mounted to the substrate of the first material, wherein the cap at least partially overlies, but is not attached to, the diamond table.

11. The casing bit of claim 10 wherein the cap is made of or tipped with tungsten carbide.

12. The casing bit of claim 1 further including a plurality of blind openings formed in either the inner surface or the outer surface.

13. The casing bit of claim 1 wherein the binder material comprises brass.

14. The casing bit of claim 13 wherein the binder material comprises a nickel-brass alloy.

15. The casing bit of claim 1 wherein the inner surface includes a plurality of non-axisymmetric regions defined by raised portions of the inner surface.

16. The casing bit of claim 15 wherein the raised portions comprise a raised boss structure or a raised land structure.

17. The casing bit of claim 16 wherein the inner surface is configured such that during a drill out operation, drill out forces on the inner surface are first received by the raised boss structure or the raised land structure.

18. A casing end tool, comprising:

a tool body bonded to a mandrel, the tool body including a face portion having an inner surface, the face portion comprising a crystalline tungsten matrix material.

19. The tool of claim 18 wherein the tool body includes a plurality of blades.

20. The tool of claim 18 wherein the inner surface includes a plurality of non-axisymmetric regions defined by raised portions of the inner surface.

21. The tool of claim 20 wherein the raised portions comprise a raised boss structure or a raised land structure.

22. The tool of claim 21 wherein the inner surface is configured such that during a drill out operation, drill out forces on the inner surface are first received by the raised boss structure or the raised land structure.

23. The tool of claim 18 further including a plurality of blades, each blade supporting a plurality of cutter elements and further including at least one cutter channel having a depth less than a thickness of the blade.

24. The tool of claim 23 wherein one of the blades further comprises a plurality of cutter backup structures, and wherein the cutter channel is formed between adjacent ones of the cutter backup structures.

25. The tool of claim 18 wherein the tool is one of a casing bit or a casing reamer.

26. A casing end tool, comprising:

a body bonded to a mandrel, the body having a plurality of blades, each blade having at least one channel having a channel depth less than a thickness of the blade.

27. The tool of claim 26 wherein each blade supports a plurality of cutter elements, and the at least one channel running circumferentially along the blade.

28. The tool of claim 26 wherein the body includes an inner surface and an outer surface opposite the inner surface, the inner surface having a non-axisymmetric region being defined by a raised region of the inner surface.

29. The tool of claim 26 wherein the raised region comprises a raised boss or raised land structure.

30. The tool of claim 26 wherein the body further comprises:

a wall defining an inner surface and an outer surface opposite the inner surface; and

a plurality of ports formed through the inner surface and the outer surface, each port having a surrounding thicker region of the wall interior to the bit body.

31. The tool of claim 30 further including a port sleeve for each port, the port sleeve extending above the surrounding thicker region.

32. The tool of claim 26 wherein the at least one channel is a blade channel radially following the blade.

33. The tool of claim 26 wherein the body includes a face portion formed of a crystalline tungsten matrix material.

WHAT IS CLAIMED IS:

1. A casing bit, comprising:

a mandrel;

a bit body bonded to the mandrel, the bit body having an inner surface and an outer surface opposite the inner surface, the bit body consisting essentially of a matrix material of crystalline tungsten and a binder material; and

wherein the bit body includes at least one blade and the blade includes at least one channel having a channel depth less than a thickness of the blade.

2. The casing bit of claim 1 wherein the at least one channel is a blade channel radially following the blade.

3. The casing bit of claim 1 wherein the blade includes a plurality of cutters, each cutter being bonded to the blade.

4. The casing bit of claim 3 wherein each cutter is a polycrystalline diamond cutter.

5. The casing bit of claim 3 wherein each cutter comprises a diamond table mounted to a substrate of a first material.

6. The casing bit of claim 3 wherein the blade further includes a plurality of cutter channels, each cutter channel running circumferentially and having a depth less than the blade thickness.

7. The casing bit of claim 6 wherein the blade further comprises a plurality of cutter backup structures, and wherein one of the cutter channels is formed between adjacent ones of the cutter backup structures.

8. The casing bit of claim 6 further including a cap mounted to the substrate of the first material, wherein the cap at least partially overlies, but is not attached to, the diamond table.

9. The casing bit of claim 8 wherein the cap is made of or tipped with tungsten carbide.

10. The casing bit of claim 1 further including a plurality of blind openings formed in either the inner surface or the outer surface.

11. The casing bit of claim 1 wherein the binder material comprises brass.

12. The casing bit of claim 11 wherein the binder material comprises a nickel-brass alloy.

13. The casing bit of claim 1 wherein the inner surface includes a plurality of non-axisymmetric regions defined by raised portions of the inner surface.

14. The casing bit of claim 13 wherein the raised portions comprise a raised boss structure or a raised land structure.

15. The casing bit of claim 14 wherein the inner surface is configured such that during a drill out operation, drill out forces on the inner surface are first received by the raised boss structure or the raised land structure.

16. A casing end tool, comprising:

a tool body bonded to a mandrel, the tool body including a face portion having an inner surface, the face portion comprising a crystalline tungsten matrix material; and

a plurality of blades, each blade supporting a plurality of cutter elements and further including at least one cutter channel having a depth less than a thickness of the blade.

17. The tool of claim 16 wherein the tool body includes a plurality of blades.

18. The tool of claim 16 wherein the inner surface includes a plurality of non-axisymmetric regions defined by raised portions of the inner surface.

19. The tool of claim 18 wherein the raised portions comprise a raised boss structure or a raised land structure.

20. The tool of claim 19 wherein the inner surface is configured such that during a drill out operation, drill out forces on the inner surface are first received by the raised boss structure or the raised land structure.

21. The tool of claim 16 wherein one of the blades further comprises a plurality of cutter backup structures, and wherein the cutter channel is formed between adjacent ones of the cutter backup structures.

22. The tool of claim 16 wherein the tool is one of a casing bit or a casing reamer.

23. A casing end tool, comprising:

a body bonded to a mandrel, the body having a plurality of blades, each blade having at least one channel having a channel depth less than a thickness of the blade.

24. The tool of claim 23 wherein each blade supports a plurality of cutter elements, and the at least one channel running circumferentially along the blade.

25. The tool of claim 23 wherein the body includes an inner surface and an outer surface opposite the inner surface, the inner surface having a non-axisymmetric region being defined by a raised region of the inner surface.

26. The tool of claim 23 wherein the raised region comprises a raised boss or raised land structure.

27. The tool of claim 23 wherein the body further comprises:

a wall defining an inner surface and an outer surface opposite the inner surface; and

a plurality of ports formed through the inner surface and the outer surface, each port having a surrounding thicker region of the wall interior to the bit body.

28. The tool of claim 27 further including a port sleeve for each port, the port sleeve extending above the surrounding thicker region.

29. The tool of claim 23 wherein the at least one channel is a blade channel radially following the blade.

30. The tool of claim 23 wherein the body includes a face portion formed of a crystalline tungsten matrix material.