

4. The method for remanufacturing a rock drill bit described in claim 3, wherein the cone assembly bit body mating surface and the bit body attachment surface are attached together by electron beam welding.

5. The method for remanufacturing a rock drill bit described in claim 1, wherein the bit includes three cones mounted thereon.

6. The method for remanufacturing a rock drill bit described in claim 1, further including the step of aligning the axis of the cones relative to the central axis of rotation of the bit body.

7. The method for remanufacturing a rock drill bit described in claim 1, wherein the cone assemblies are attached to the bit body attachment surface by electron beam welding.

8. A method for remanufacturing a used rotary rock drill bit having a bit body with leg extensions supporting journals on which are rotatably mounted at least two cones including cutting elements, including the steps of:

- (a) forming a plurality of saddle bores to separate said leg extensions, journals and cones from the bit body to form a plurality of bit body attachment surfaces, each surface being substantially coaxial with the axis of rotation of a cone, and discarding said leg extensions, journals and cones;
- (b) forming at least two cone support assemblies, including leg extensions, journals and cones, from new materials;
- (c) attaching the cutting element-containing cone assemblies to the bit body to form a remanufactured drill bit;
- (d) removing the reusable cutting elements from the cones; and
- (e) attaching the reusable cutting elements recovered in step (a) to the cones formed in step (b), adding

new cutting elements as required to provide each cone with a full complement of cutting elements.

9. The method for remanufacturing a rock drill bit described in claim 8, further including the step of machining each of said plurality of coaxial bit body attachment surfaces.

10. The method for remanufacturing a rock drill bit described in claim 9, wherein said cone support assemblies formed from new material have formed thereon a curved bit body mating surface corresponding to a bit body attachment surface, the radius of curvature of each said mating surface corresponding to the radius of curvature of each said attachment surface.

11. The method for remanufacturing a rock drill bit described in claim 10, wherein the bore engaging surface of each cone assembly is fitted to a corresponding curved bore in the bit body and attached thereto by electron beam welding.

12. The method for remanufacturing a rock drill bit described in claim 11, wherein the orientation of each curved bore formed in the bit body causes the cones to be correctly aligned when the cone assemblies are attached to the bit body.

13. The method for remanufacturing a rock drill bit described in claim 10, wherein each cone assembly is attached to a curved bore by electron beam welding.

14. The method for remanufacturing a rock drill bit described in claim 10, wherein the orientation of each saddle bore formed in the bit body causes the cones to be correctly aligned when all the cone assemblies are attached to the bit body attachment surfaces.

15. The method for remanufacturing a rock drill bit described in claim 8, wherein the bit includes three cones mounted thereon.

\* \* \* \* \*

40

45

50

55

60

65