

Nozzle: in a passageway through which the drilling fluid exits a drill bit, the portion of that passageway which restricts the cross-section to control the flow of fluid.

Roller cone bit: a drilling bit made of two, three, or four cones, or cutters, that are mounted on extremely rugged bearings. The cones are typically conical or frustro-conical, but may also include some paraboloidal convexity. The surface of each cone is made up of rows of steel teeth or rows of tungsten carbide inserts.

Bit breaker: a device which can be attached to the rotary table to keep the drill bit from turning with respect to the rotary table when torque is applied to the joint between the bit and a stand of pipe.

None of the description in the present application should be read as implying that any particular element, step, or function is an essential element which must be included in the claim scope: THE SCOPE OF PATENTED SUBJECT MATTER IS DEFINED ONLY BY THE ALLOWED CLAIMS. Moreover, none of these claims are intended to invoke paragraph six of 35 USC section 112 unless the exact words "means for" are followed by a participle.

What is claimed is:

1. A bit breaker for connecting and disconnecting threaded connections comprising:

a base having at least one open side, and having a chuck opening portion, and having a pair of chocks extending into the chuck opening; and

a gate removably located against the open side of the base, and having a chock extending into the chuck opening.

2. The bit breaker of claim 1, further comprising: a pair of detachable connectors securing the gate to the base, one each on opposite ends of the gate.

3. The bit breaker of claim 1, further comprising a pivotal attachment securing one end of the gate to the base in rotational relationship.

4. The bit breaker of claim 1, further comprising a detachable connector securing the gate to the base on the end of the gate opposite to the pivotal attachment.

5. The bit breaker of claim 1, further comprising at least one handle attached to the base for lifting the bit breaker.

6. A bit breaker, comprising:

a base having at least one open side, and having a chuck opening portion, and having a pair of chocks extending into the chuck opening; and

a gate removably located against the open side of the base, and having a chock extending into the chuck opening;

wherein said base and said gate contain cutouts which reduce the weight of said bit breaker;

wherein said base has first, second, and third outer edges, said first and third outer edges being substantially parallel and said second outer edge being substantially parallel with an outer edge of said gate, when said gate is in a closed position.

7. The bit breaker of claim 6, further comprising a pair of detachable connectors securing the gate to the base, one each on opposite ends of the gate.

8. The bit breaker of claim 6, further comprising a pivotal attachment securing one end of the gate to the base in rotational relationship.

9. The bit breaker of claim 8, further comprising a detachable connector securing the gate to the base on the end of the gate opposite to the pivotal attachment.

10. The bit breaker of claim 6, further comprising at least one handle attached to the base for lifting the bit breaker.

11. A bit breaker, comprising:

a base having at least one open side, and having a chuck opening portion, and having a pair of chocks extending into the chuck opening; and

a gate removably located against the open side of the base, and having a chock extending into the chuck opening;

at least one handle attached to said base;

wherein said base has first, second, and third outer edges, said first and third outer edges being substantially parallel and said second outer edge being substantially parallel with an outer edge of said gate, when said gate is in a closed position;

wherein said chocks of said base and said gate are equidistant from each other when said gate is in a closed position.

12. The bit breaker of claim 11, further comprising a pair of detachable connectors securing the gate to the base, one each on opposite ends of the gate.

13. The bit breaker of claim 11, further comprising a pivotal attachment securing one end of the gate to the base in rotational relationship.

14. The bit breaker of claim 13, further comprising a detachable connector securing the gate to the base on the end of the gate opposite to the pivotal attachment.

15. A drilling system, comprising:

a drill string containing at least one section of pipe;

a drill bit comprising three breaking slots and a threaded connector for attachment to said drill string;

surface equipment capable of turning said drill bit in relation to said drill string; and

a bit breaker, attached to said surface equipment, for connecting and disconnecting threaded connections, said bit breaker comprising:

a base having at least one open side, and having a chuck opening portion, and having a pair of chocks extending into the chuck opening; and

a gate removably located against the open side of the base, and having a chock extending into the chuck opening.

16. A method for connecting a drill bit to a drill string member on a drilling rig, comprising the steps of:

placing a bit breaker having an open end and a pair of inwardly directed chocks onto a drill bit having three slots;

attaching a gate having an inwardly directed chock, across the open end of the bit breaker;

placing a drill string member onto the drill bit such that a lower tool joint connection of the drill string member is positioned for threaded connection to the tool joint connection of the bit breaker; and,

applying opposing torque between the bit breaker and the drill string member to connect the drill string member to the drill bit.

17. The method of claim 16, wherein the attaching step also engages said chock of said gate into one of said slots of said bit.

18. The method of claim 16, wherein the step of attaching a gate further comprises: pivoting said gate about a hinged connection between one end of said gate and one end of said bit breaker.