

While the bit breaker is shown and described above as having a pair of stop members, it is contemplated that the bit breaker may have only one stop member or may have three or more stop members. Moreover, while the stop members are shown and described as being mounted for movement radially with respect to the opening, it is contemplated that they may be mounted for movement inwardly and outwardly with respect to the opening along other than a radial line.

In view of the above, it will be seen that the several objects of the invention are achieved and other advantageous results attained.

As various changes could be made in the above constructions without departing from the scope of the invention, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

What is claimed is:

1. A bit breaker adapted to be fitted in the Kelly drive of a drill rig for detachably securing a rotary drill bit to the Kelly drive to enable the latter to rotate the bit relative to a drill string having an internally threaded lower end portion in one direction to effect a threaded connection between the threaded pin of the bit and the string, and in the other direction to disconnect the bit from the string; said bit breaker comprising:

- a bottom engageable by the bottom of a bit for supporting the bit;
- a top having an opening therein through which the bit may be lowered into engagement with the bottom of the bit breaker and may be raised to remove the drill bit from the bit breaker; and
- means for selectively securing the bit in fixed annular position in said opening in the bit breaker comprising a stop member slidably mounted on the top of the bit breaker adjacent the opening therein for movement inwardly and outwardly relative to the opening between an extended position in which the stop member engages the side of the drill bit when in the opening for holding the drill bit against rotation relative to the bit breaker and a retracted position in which the stop member is spaced from the drill bit to enable the drill bit to be raised and lowered through the opening, and means for selectively locking the stop member in its extended

position, thereby preventing retraction of the stop member when the drill bit is rotated.

2. A bit breaker as set forth in claim 1 wherein the stop member has a generally U-shaped end engageable with the side of the bit, the recess in the engaging end of the stop member being adapted to receive a projecting portion on the side of the drill bit.

3. A drill breaker as set forth in claim 1 wherein said securing means comprises a pair of said stop members mounted on the top of the bit breaker at generally opposite sides of the opening in the top.

4. A bit breaker as set forth in claim 1 wherein the lock means comprises a fixed lock member secured to the top of the bit breaker laterally outwardly of the stop member, the fixed lock member being engageable by the stop member when in its retracted position, and a movable lock member adapted to be positioned between the fixed lock member and the stop member for holding the stop member in its extended position.

5. A bit breaker as set forth in claim 4 which is adapted to receive bits of different sizes within a range of sizes, the stop means being movable to a plurality of extended positions, one for each different bit size, and the lock means being adjustable so as to hold the stop means in the respective extended position for each bit.

6. A bit breaker as set forth in claim 5 wherein the movable lock member in its dimension as measured between its stop member and its fixed lock member engaging faces is adjustable so as to position the stop member at different distances from the fixed stop member and thus in different extended positions.

7. A bit breaker as set forth in claim 4 further comprising means for pivotally mounting the movable stop member for movement between a locking position in which the movable lock member is between the stop member and the fixed lock member, and an unlocking position in which it is spaced from the stop member.

8. A bit breaker as set forth in claim 7 wherein said pivotal mounting means comprises a slot and pivot pin arrangement.

9. A bit breaker as set forth in claim 1 wherein the stop member is slidably mounted in a track on the top of the bit breaker.

10. A bit breaker as set forth in claim 9 further comprises means for retaining the stop member in the track.

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