Dec. 3, 1940. M. D. CARLETON 2,223,600

BIT BREAKER

Filed Oct. 12, 1939

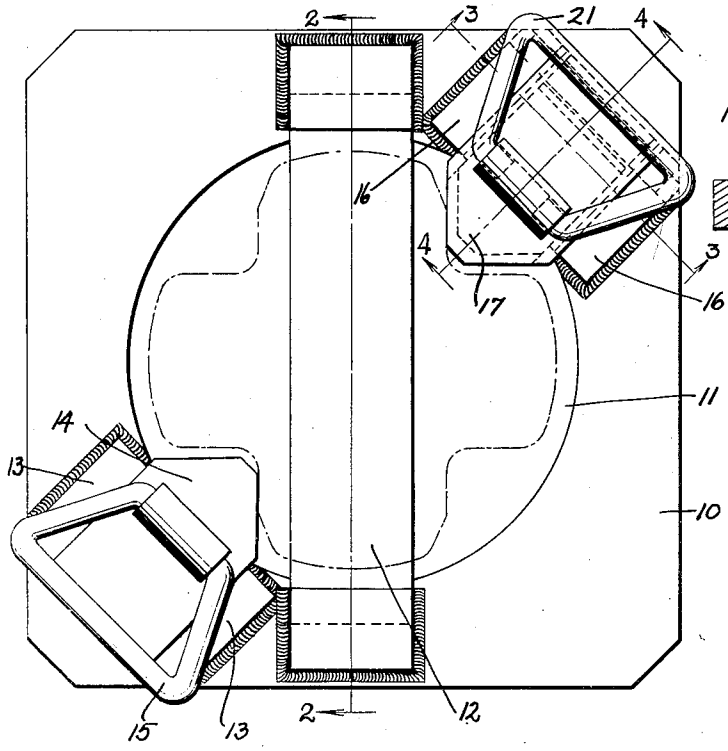


Fig. 1.

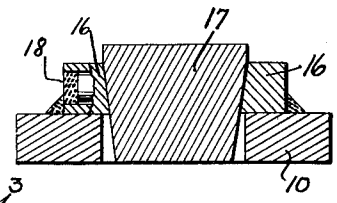


Fig. 3.

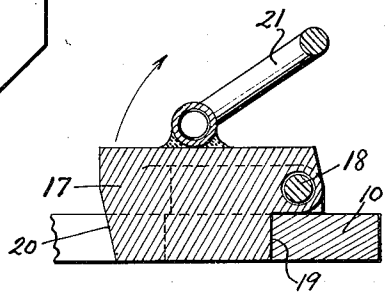


Fig. 4.

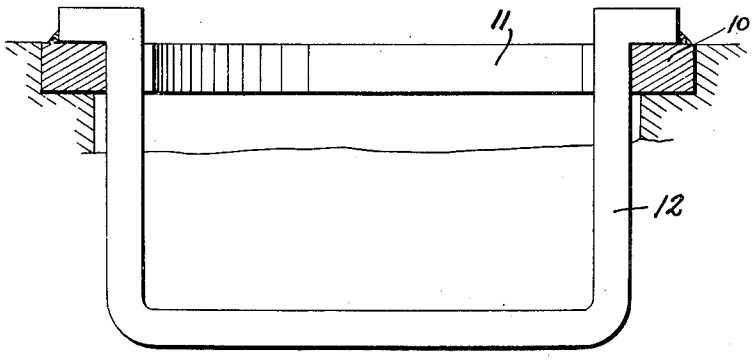


Fig. 2.

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BIT BREAKER

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Application October 12, 1939, Serial No. 299,091

5 Claims. (Cl. 255—1)

This invention relates to bit breakers, for use in rotary oil well drilling in removing rotary bits from drill collars.

In this art, when a drill bit is pulled out of the hole to be changed, some means must be provided for holding the bit while the threaded coupling or drill collar which attaches it to the drill string is broken out and unscrewed. For this purpose an auxiliary bit-holding device is utilized which fits in the rotary table and supports the bit, at the same time holding it from rotation with respect to the rotary table. Heretofore such devices have taken the form of breakout plates so designed that they received and engaged the bits at about the level of their cutters or cutting portions.

It is an object of this invention to provide a breakout plate which will engage the shank of the bit above its cutting portions and thus avoid injury to the cutting portions of the bits.

Another object is to provide such a bit breakout plate which will receive the lower large diameter cutting portions of a bit while the plate is supported by the rotary table, and which has parts that may then be brought into engagement with the smaller shank portion of the bit to hold it from rotation or to rotate it.

Further objects and features will become evident from the following disclosure when taken in connection with the accompanying drawing in which—

Fig. 1 is a plan view of the device;

Fig. 2 is a cross-section taken along line 2—2 of Fig. 1;

Fig. 3 is a cross-section taken along line 3—3 of Fig. 1; and

Fig. 4 is a cross-section taken along line 4—4 of Fig. 1.

Referring to the drawing in detail, a plate 10, shaped to fit a rotary table, has an aperture 11 formed therein, of a size to receive a drill bit. Welded to the top of the plate, and depending below the aperture, is a U-shaped bar 12 adapted to support the end of the bit, shown in broken lines in Fig. 1.

Welded to the plate 10 on one side by means of rectangular members 13, 13 is projecting lug 14, shaped to engage one of the channels in the side of the bit. A handle 15 is pivoted to this lug for lifting and handling plate 10.

On the other side of the aperture 11, another pair of members 16, 16 are welded onto the plate 10, and carry between them a lug 17 hinged at its rear end to the members by a pin 18 securely welded between the members. This lug is of a thickness to extend downward to the bottom of the plate 10, and is shaped to fit into a gap 19 in the plate and its rear end shaped as shown in Fig. 4 to rest on the plate in horizontal position. The forward end of the lug 17 is beveled downwardly as shown at 20 in Fig. 4 to permit the lug to be more easily pushed downwardly when a bit is in the breaker. There is also a handle 21 on this lug to pull the lug out of engagement with a bit for removal, and also to cooperate with handle 15 in lifting the breaker.

In operation, the bit is raised clear of the rotary table and the bit breaker is lifted by the handles 15 and 21 and fitted into the top of the table. The bit is then lowered until it rests on the bar 12 with its cutting portions of relatively large diameter below the plate, and the lug 17 is pushed down until it is horizontal and fits into one of the channels of the relatively small shank of the bit, and cooperates with lug 14 to hold the bit from rotation with respect to the rotary table. Then, after the drill collar is unscrewed from the bit, the lug 17 may be raised and the bit removed from the device.

Although a preferred embodiment is disclosed above, I do not wish to be limited thereto, but only by the scope of the appended claims.

I claim:

1. In a bit breaker, a plate, an aperture in said plate of a size to receive the cutting portions of a drill bit, bit supporting means on said plate for supporting a bit in said aperture movable bit engaging means on the side of said aperture movable to engage the shank portion of a drill bit, and means for moving said bit engaging means into and out of engagement with the shank of a bit.

2. In a bit breaker, a plate, an aperture in said plate of a size to receive the cutting portions of a drill bit, bit supporting means below said aperture, fixed bit engaging means on one side of said aperture adapted to engage the shank portion of a drill bit, movable bit engaging means on the other side of said aperture adapted to engage the opposite side of the shank portion of a drill bit, and means for moving said last-mentioned means into and out of engagement with the shank of a bit.

3. In a bit breaker, a plate, an aperture in said plate of a size to receive the cutting portion of a drill bit, bit supporting means below said aperture, a fixed shank engaging lug on one side of said aperture, a hinged shank engaging lug on the other side of said aperture, and means for

moving said hinged lug into and out of horizontal position for engaging the shank of a bit.

4. In a bit breaker, a plate, an aperture in said plate of a size to receive the cutting portion of a drill bit, a U-shaped bar under said aperture for supporting a bit, a fixed lug on one side of the aperture for engaging the shank of a bit, a hinged lug on the other side of the aperture for engaging the shank of a bit, and a handle for moving said last-named lug into and out of horizontal, bit-engaging position.

5. In a bit breaker, a plate, an aperture in said plate of a size to receive the cutting portion of a drill bit, a depending U-shaped bar below the aperture for supporting a bit, a fixed bit engaging lug on top of the plate and extending into said aperture, two spaced members on top of the plate on the other side of the aperture, a lug hinged in said members and extending into said aperture, said last-mentioned lug being of such a thickness that, when in horizontal position, it extends downward as far as the bottom of said plate, said plate having a gap therein for receiving this lug, said lug having a beveled portion on its lower end remote from its hinged mounting for facilitating its engagement with the side of a bit, and means for raising this lug out of horizontal position.

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