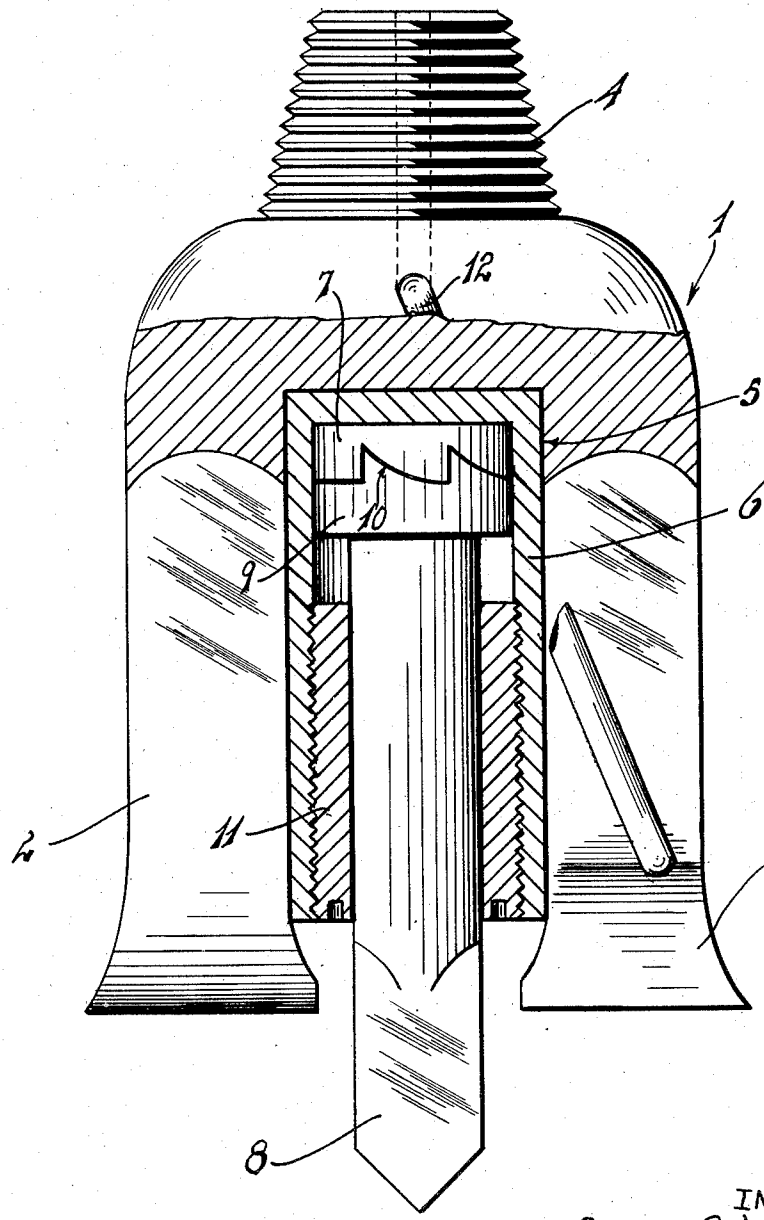
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DRILL BIT

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DRILL BIT

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This invention relates to a drilling bit, particularly useful in the drilling of wells by the rotary process. Our invention is an improvement upon the fish tail and the bladed type of bits, and the prime object of our invention is to provide a means whereby the bit is moved up and down a slight amount during its rotation.

A further object is to provide a bit of the character stated which will cut more rapidly than bits heretofore in use, which is simple in construction and inexpensive to manufacture.

Other objects, advantages and features of invention may appear from the accompanying drawing, the subjoined detailed description and the appended claims.

In the drawing:

The figure in the drawing is a side elevation of a bit involving our invention, but with parts broken away to show interior construction.

Referring more particularly to the drawing, the numeral 1 indicates the body of a bit preferably of the bladed type, the body being provided with a plurality of cutting blades 2—3 thereon. A threaded pin 4 rises from the body 1 for the purpose of attachment between the bit and the drill pipe. A central recess 5 is provided in the body 1, and a sleeve 6 is securely fastened to this recess.

A multi-stepped cam plate 7 is securely fastened in the sleeve 6 at the top thereof. A pilot blade 8 extends into the sleeve 6 and is provided with a head 9 on the top thereof, which head accurately fits the inner bore of the sleeve 6. The head 9 is provided with an upper cammed surface 10 which fits against the cam plate 7, for a purpose to be further described.

A nut 11 is screwed into the bottom of the sleeve 6 for the purpose of limiting the downward movement of the blade 8. A circulation pipe 12 extends to each of the blades 2—3 for the purpose of lubricating the bit, removing the cuttings, etc. The pipe 12 may be replaced by a duct thru the body of the bit, but the details of the water courses form no part of this invention.

In operation the bit is lowered into the hole and the pilot blade 8 first moves into the formation. There is a certain resistance, but it forms against the blade 8 which tends to hold said blade stationary, therefore the continued rotation of the drill pipe will cause the cam plate 7 to ride over the cams 10 on the head 9, thus raising and lowering the body 1 of the bit and imparting a striking action to the bit as it rotates and cuts. The weight of the drill pipe is sufficient to cause the body 1 to drop off of the cams 10 and will strike the blades 2—3 sharply into the formation.

Having described our invention, we claim:

1. A rotary drilling bit, comprising a body, a plurality of blades on said body, a pilot blade extending below said first named blades, and means between said pilot blade and said body whereby the body is raised and lowered during the rotation of the bit.

2. A rotary bit comprising a body, a plurality of blades on said body, a pilot blade extending below said first named blades, a cam plate in said body, a head on said pilot blade, cammed surfaces on said head adapted to co-operate with said cam plate, whereby the body is raised and lowered during the rotation of the bit.

3. A rotary drilling bit comprising a body, a plurality of blades depending from said body, a pilot blade depending below said first named blades, a cam plate in said body, a head on said pilot blade, cammed surfaces on said head adapted to co-operate with the cam plate and a nut screwed into said body to limit the outward movement of said pilot blade.

4. A rotary drilling bit comprising a body, a plurality of blades depending from said body, a pilot blade depending below said first named blades, a cam plate in said body, a head on said pilot blade, cammed surfaces on said head adapted to co-operate with the cam plate and a nut screwed into said body to limit the outward movement of said pilot blade and circulation pipes on said body extending to each of said first named blades.

5. A rotary drilling bit comprising a body, a plurality of blades depending from said body, a pilot blade depending below said first named blades, a sleeve secured in the body, a cam plate secured in the sleeve, a head on said pilot blade, said head being adapted

to fit into said sleeve, cammed surfaces on said head adapted to co-operate with said cam plate, and a nut screwed into the sleeve whereby the outward movement of said pilot blade is limited.

6. A rotary drilling bit comprising a body, a plurality of blades on said body, a pilot blade extending below said first named blades, and means between said pilot blade and said body whereby a jar is imparted to the body during the rotation of the bit.

In testimony whereof we affix our signatures.

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