Jan. 28, 1958 A. J. HATCHER 2,821,362

EXTENSIBLE WHIPSTOCK

Filed July 26, 1955

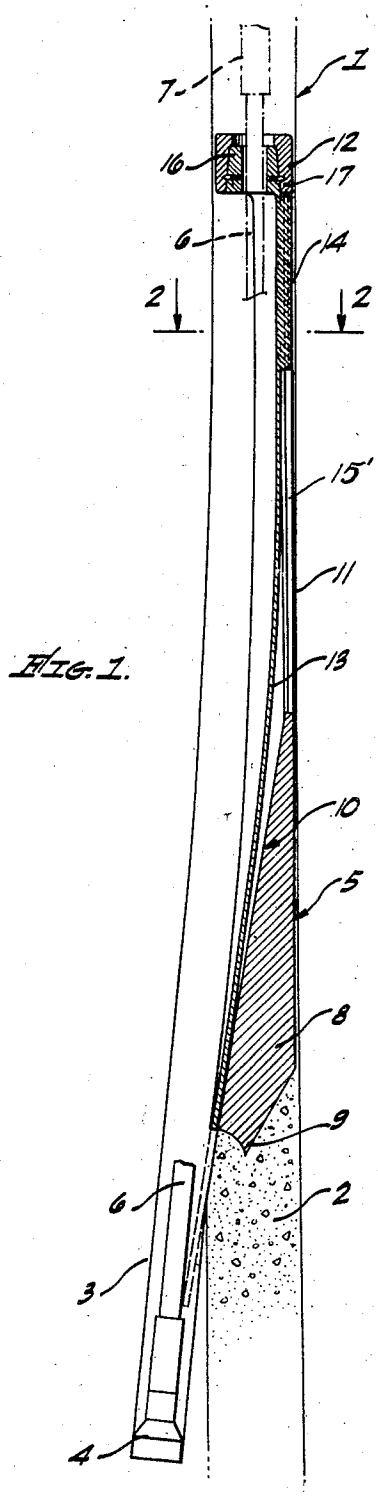
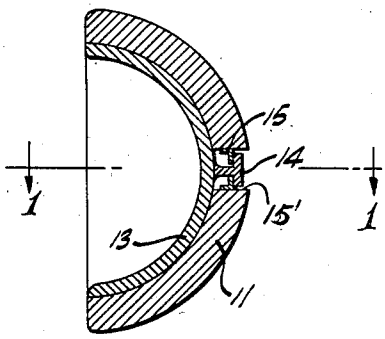



FIG. 1.

FIG. 2.



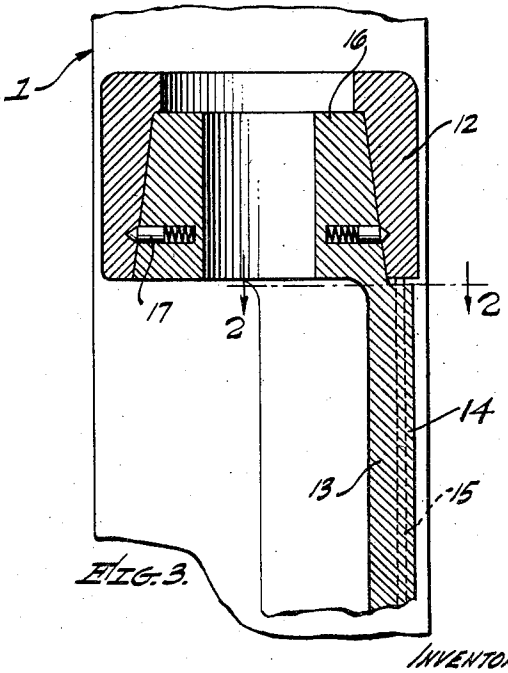




FIG. 3.

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# EXTENSIBLE WHIPSTOCK

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Application July 26, 1955, Serial No. 524,428

4 Claims. (Cl. 255—1.6)

This invention relates to a whipstock which is used in oil and gas wells for the purpose of deflecting a bit in the well bore, for the purpose of either straightening that bore or to direct the bit at an angle therefrom, so that a productive area adjacent to the well bore may be penetrated. This invention also relates to a whipstock in which the drilling bit is guided for a greater distance than is possible in whipstocks heretofore in use.

An object of my invention is to provide a whipstock with an extensible surface, said surface continuing the angular surface presented by the main whipstock body so that the drilling bit will be guided and directed for a greater distance.

Another object of my invention is to provide a novel extensible whipstock of the character stated, in which a plate is slidably mounted on the whipstock and is movable downwardly when engaged by a projection or collar on the drill pipe.

Still another object of my invention is to provide a novel extensible whipstock of the character stated, in which the movable or adjustable plate thereon can be extended in one direction of movement of the drill pipe and can be retrieved from the oil well on upward movement of the drill pipe, together with the main body of the whipstock.

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

In the drawing:

Figure 1 is a longitudinal sectional view of my whipstock positioned within the bore of a well.

Figure 2 is an enlarged sectional view taken on line 2—2 of Figure 1.

Figure 3 is a fragmentary longitudinal sectional view of the upper or collar portion of my whipstock.

Referring more particularly to the drawing, the numeral 1 indicates the bore of a well, such as an oil well, and the formation or undrilled part of the bore is represented at 2. When a whipstock is used it is necessary to deflect the bore 1 from its vertical direction, as shown at 3. For this purpose the bit 4 is directed at an angle from the bore 1 by means of the whipstock 5 which is positioned immediately above the formation 2, or the bottom of the hole. The bit 4 is mounted on the lower end of the drill pipe 6 and this drill pipe has collars 7 thereon spaced at regular intervals for the purpose of connecting or coupling the various sections of the drill pipe. The whipstock 5 includes a lower body 8 which is formed with a sharp point or edge 9 which is embedded in the formation 2 to hold the whipstock body 8 against rotation. A tapered or inclined surface 10 is formed on one side of the body and is also arcuate in cross section, and this inclined surface extends from the bottom of the body 8 to an upwardly projecting stem portion 11. The stem portion 11 of the body 8 extends upwardly to and is preferably integral with a collar 12 which is positioned at the upper end thereof. The stem portion 11 is arcuate in cross section to conform in shape to the surface 10.



As thus far described the whipstock is usual and well known and is particularly shown and described in Patent No. 1,970,761, August 21, 1934. In order that the bearing surface of the whipstock may be extended so that the bit 4 will be guided for a greater distance, I provide an extension plate 13 which extends from top to bottom of the whipstock 1 and normally lies against the inclined surface 10. The plate 13 is preferably arcuate in cross-section, conforming to the shape of the arcuate stem portion 11, as well as the arcuate shape of the inclined surface 10. The plate 13 is provided with a guide strip 14 which fits in an appropriate rail 15 on the neck 11. The rail 15 is mounted in a vertical slot 15' in the stem 11. This slot extends from the collar 12 to the top of the body 8 so that the plate 13 may have a very appreciable vertical movement and can be projected a substantial distance below the bottom edge of the whipstock body 8. Thus the plate 13 will be guided in its vertical movement from extended to retracted position, as will be subsequently described.

The plate 13 is provided with a ring 16 at its upper end and this ring is seated within the collar 12. The ring 16 is held within the collar 12 by suitable latches or spring detents 17. The ring 16 is of such diameter that the coupling 7 on the drill pipe 6 will engage the ring as the bit 4 moves downwardly, so that the plate 13 will project below the lower edge of the body 8, thus acting as a further or additional guide for the bit 4 and more effectively directing the bit in the desired direction. When the whipstock is to be removed from the well the bit 4 will engage the ring 16, returning that ring to its position within the collar 12, and in turn this collar and the whipstock 1 will be picked up and thus the entire structure can be removed from the well after it has been used. The same procedure is used in lowering the tool into the well, that is, the entire structure is supported on the bit 4 and is thus lowered into the well until bottom is reached. The distance from the bit 4 to the coupling 7 is such that the bit will be started on its angular direction by the angular surface 10, and thereafter the plate 13 is released and is pushed downwardly, together with the bit 4, to more effectively guide that bit.

Having described my invention, I claim:

1. An extensible whipstock comprising an elongated body, a collar on the upper end of said body, said body having a longitudinally extending and tapered deflecting surface thereon, a flexible plate resting on the body and extending longitudinally thereof from below said collar to the lower edge of said body, means slidably coupling the plate to the body, said plate resting on the tapered deflecting surface of said body, a ring on the upper end of said plate, said ring being seated in said collar in one position of the plate, and a releasable latch means coupling said ring to the collar, said latch means being releasable to permit said plate to slide and project an appreciable distance below the lower edge of the body.

2. An extensible whipstock comprising an elongated body, a collar on the upper end of said body, said body having a longitudinally extending and tapered deflecting surface thereon, a flexible plate resting on the body and extending longitudinally thereof from below said collar to the lower edge of said body, means slidably coupling the plate to the body, said means including a rail on the plate, and track means on the body engageable by the rail, said plate resting on the tapered deflecting surface of said body, a ring on the upper end of said plate, said ring being seated in said collar in one position of the plate, and a releasable latch means coupling said ring to the collar, said latch means being releasable to permit said plate to slide and project an appreciable distance below the lower edge of the body.

3. An extensible whipstock comprising an elongated

body, a collar on the upper end of said body, said body having a longitudinally extending and tapered deflecting surface thereon, a flexible plate resting on the body and extending longitudinally thereof from below said collar to the lower edge of said body, means slidably coupling the plate to the body including a rail projecting from said plate, said body having a longitudinally extending slot formed therein into which said rail extends, said plate resting on the tapered deflecting surface of said body, a ring on the upper end of said plate, said ring being seated in said collar in one position of the plate, and a releasable latch means coupling said ring to the collar, said latch means being releasable to permit said plate to slide and project an appreciable distance below the lower edge of the body.

4. An extensible whipstock comprising a body, a collar at the upper end of said body, said body having a longitudinally extending tapered deflecting surface thereon, the deflecting surface of said body being substantially concave in shape, a flexible plate resting on the deflecting surface of the body and extending longitudinally thereof from said collar to the lower edge thereof, means slidably coupling the plate to the body, a ring on the upper end of said plate, said ring being seated in said collar in one position of the plate, and a releasable latch means coupling said plate to the collar, said latch means being releasable to permit said plate to slide and project an appreciable distance below the lower edge of the body.



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