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J. A. FRANCIS

1,889,283

ROTARY JAR

Filed April 23, 1931

Fig. 1.

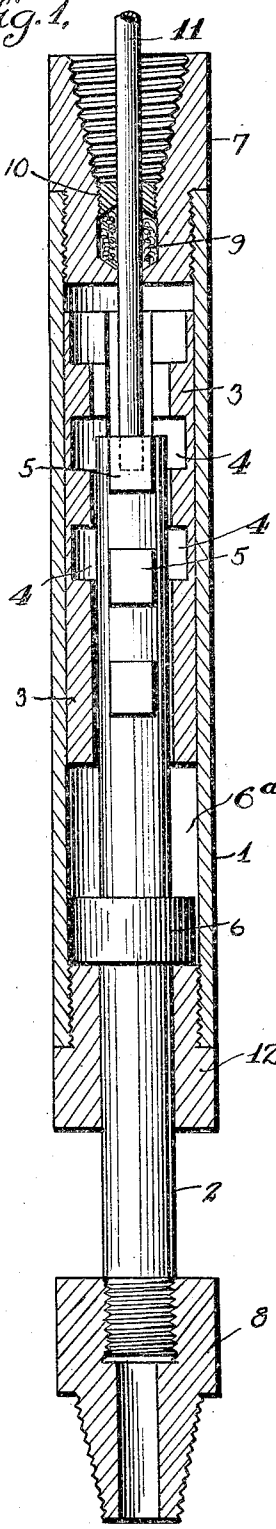


Fig. 2.

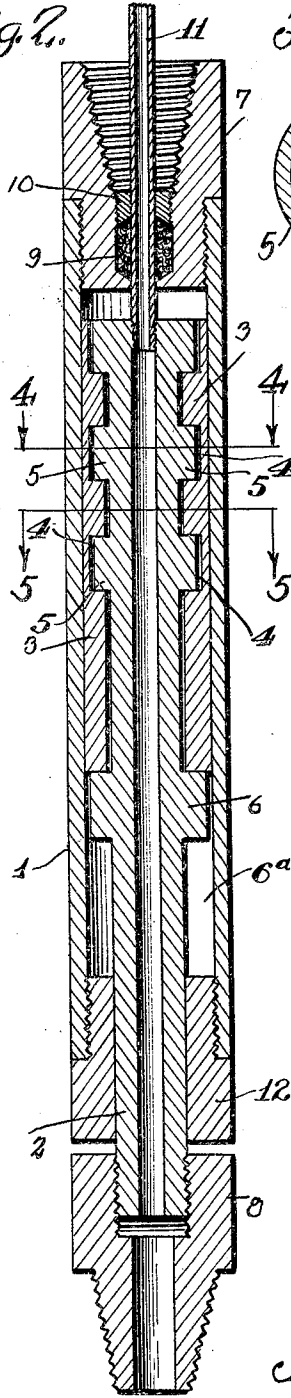


Fig. 4.

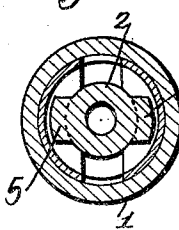


Fig. 5.

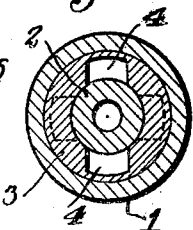
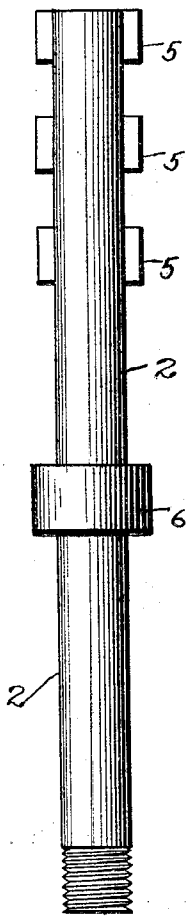


Fig. 3.

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ROTARY JAR

Application filed April 23, 1931. Serial No. 532,366.

This invention has relation to rotary jars for use in well drilling apparatus and has for its object the provision of a jar which may be placed in a string of drill pipe, to be available and brought into action when necessary to facilitate the loosening and dislodging of the bits, reamers and other parts of a drilling equipment.

The invention consists in the novel construction and combination of parts hereinafter specifically described and claimed.

In the accompanying drawing forming a part of this specification,

Figure 1 is a vertical central section of the jar with the mandrel and jar casing in unlocked position;

Figure 2 is a like section with the casing and mandrel interlocked;

Figure 3 is a side view of the mandrel;

Figure 4 is a horizontal section on the line 4—4 of Figure 2;

Figure 5 is a horizontal section on the line 5—5 of Figure 2.

In the drawing, the numeral 1 designates the usual jar casing with the upper tool connection 7 screwed thereon, and with the lower tool joint element 8 to which latter is attached the mandrel 2.

The casing 1 is provided with the liner 3, which consists of rings having diametrical notches 4.

The mandrel 2 is provided with the diametrically opposed rectangular projections 5 corresponding to the notches 4 of the liner 3, so that when casing and mandrel are in the relative positions shown in Figure 2, the casing with its liner and the mandrel are interlocked while, when they are in the relative position shown in Figure 1, they are unlocked and are relatively vertically movable. The liner 3 and the projections 5 are respectively located at the upper ends of the casing and mandrel.

The mandrel is also provided with the collar 6, at a suitable distance below the projections 5 leaving a space 6a between the lower portion of the liners and the plug 12 at the lower end of the casing 1.

The numeral 9 designates the stuffing box and 10 the stuffing box gland in the upper

plug. The numeral 11 designates the waste pipe of the equipment.

In action, the upper part of the jar, consisting of the casing with its liner and other attachments is lowered, until the lower end of the liner rests on the collar 6, which is a part of the mandrel. The jar is then rotated a quarter turn which brings the casing and mandrel into a locked position.

Tension is then applied to the drill pipe above the jar and the pipe rotated to the right which spaces the projections on the mandrel from the notches of the liner, thus unlocking them. This unlocking action together with the strain or tension on the drill pipe causes the jar element to bound upwardly until the collar on the mandrel is struck by the plug in the lower end of the casing, thus producing a jarring action to the tool which it is desired to loosen.

I claim:—

A rotary jar comprising an elongated tubular casing, a guide plug screwed into the lower end of said casing, a second guide plug screwed into the upper end of said casing, a tubular liner immovably fixed in said casing in spaced relation to said guide plugs, a mandrel extending through the first guide plug and into the bore of the liner, interlocking means on the mandrel and interior of the liner engageable and disengageable by rotative movement of the mandrel in the liner whereby the mandrel and liner may be held against relative reciprocation and permitted relative reciprocation respectively, and a collar on said mandrel between the first guide plug and the liner and movable by reciprocation of the mandrel to strike the plug and liner at respective ends of its movement.

In testimony whereof I affix my signature.

JOHN ARTHUR FRANCIS.