

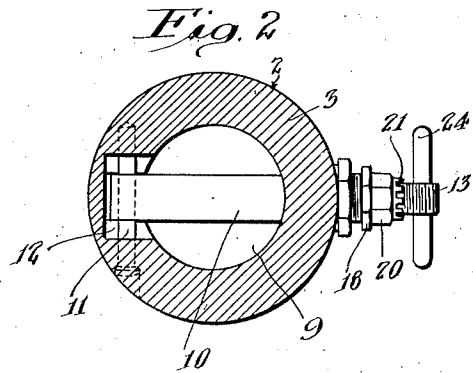
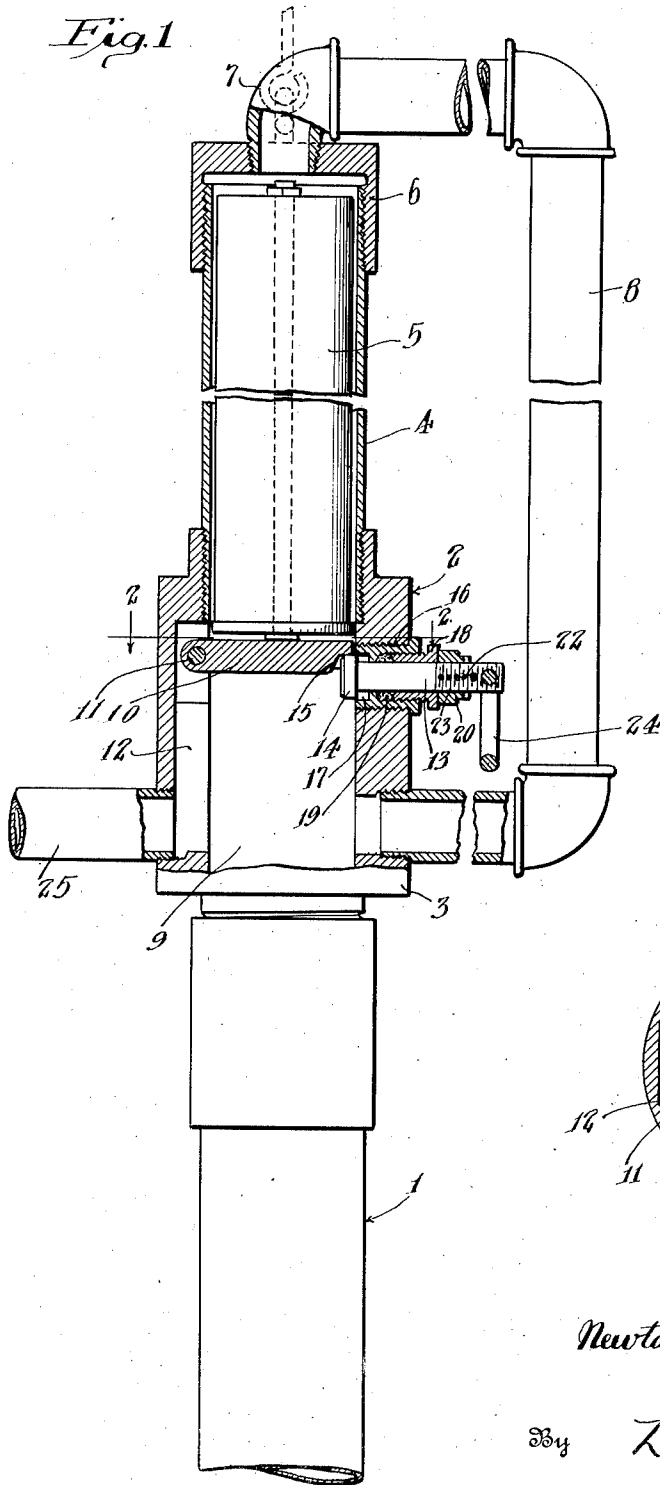
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CEMENTING HEAD

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UNITED STATES PATENT OFFICE

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CEMENTING HEAD

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This invention relates to well-drilling apparatus and particularly to such apparatus when used for drilling deep wells such as oil wells. In the drilling of these wells, it is frequently necessary to "cement off" water which is encountered at a depth in the well, and in some processes a plug is employed that is inserted in the well casing to separate the cement from the mud or slush ahead and behind it. When such a plug is used it is placed in the casing head or above the casing head and is supported usually on a transverse bar that is thrust through the wall of the casing head. When it is desired to release the plug to permit it to descend into the casing, this bar is withdrawn. The plug is heavy and it frequently happens that the bar becomes bent, and, taking it altogether, this method of supporting the plug has been found unsatisfactory. The general object of this invention is to provide simple means for supporting such a plug at a casing head, and which can be readily released at will to permit the plug to descend. A further object of the invention is to construct this means in such a way that no openings will be left in the casing head after the plug has been permitted to descend, through which cement could pass.

Further objects of the invention will appear hereinafter.

In the drawing:

Figure 1 is a side elevation showing the upper portion of a well casing with a casing head embodying my improvement shown in vertical section, certain parts being broken away, and the operating valves omitted.

Figure 2 is a horizontal cross-section taken on the line 2—2 of Figure 1.

In practicing the invention the casing head is, of course, constructed with means for receiving the cementing plug and has a chamber below the position of the plug.

According to my invention I provide a movable latch in this chamber for supporting the plug and I provide means on the exterior of the casing for operating the latch to cause it to move away from the plug, thereby permitting the plug to descend into the casing.

In the embodiment of the invention described herein, 1 represents the upper end of the casing to which a casing head 2 is secured. The casing head 2 includes a lower body portion 3 which is preferably a casting, and also includes an upper section 4 which may be in the form of a tube screwed into the upper end of the body 3. This part 4 provides a chamber to receive the cementing plug 5.

The upper end of the tube 4 may carry a head 6 secured to it by a thread connection and provided with an elbow 7 for attachment to a pipe connection 8 leading up from the side of the body 3. The body 2 is of course hollow so that it presents a chamber 9 on its interior. In this chamber I mount a latch 10 which is preferably in the form of a bar supported on a pivot pin or bolt 11 mounted in the wall of the casing. At this point the wall of the body 3 is preferably mounted in the wall of the casing. At this point the wall of the body 3 is preferably provided with a recess 12 to receive the bar 10 when it swings down on its pivot, from its horizontal position.

In the wall of the body opposite the pivot pin 11 I provide means movable independently of the latch bar, and constructed to engage the latch bar 10 to support the same so that the bar can support the plug above it. This means is in the form of a bolt or plunger 13 mounted to slide longitudinally in the wall of the casing, and the inner end of this plunger 13 may have an enlarged head 14 that is adapted to engage in a socket 15 on the under side of the latch bar 10 at its free end.

In order to insure that the plunger 13 will be pressure-tight in the wall of the casing head and in order to provide for the withdrawal of the head 14 from the path of the latch 10, I prefer to provide a bushing 16 in the wall, the said bushing being provided with a socket or chamber 17 at its inner end of sufficient depth to receive the head 14 when it is pulled out from under the latch. This stuffing box may be provided with a gland 18 that screws into the bushing against soft packing 19.

The outer end of the plunger 13 is provided with screw threads to receive a nut 20, the inner face of which seats against the outer end of the gland 18, thereby operating as a stop to limit the inward movement of the plunger. The nut 20 may be in the form of a crown-nut with radial slots 21 to receive a cross-pin 22 that holds the nut in any adjusted position. The end of the plunger is provided with a plurality of openings 23 any one of which may receive the cross-pin.

The end of the plunger 13 is provided with a ring or clevis 24 which can be seized in one's hand when the plunger is to be pulled out.

Opposite the point of connection of the pipe 8 to the body 3 a supply pipe 25 is connected for enabling slush or cement to be pumped into the casing.

In using the apparatus the slush or mud would be pumped down into the casing 1. Before attaching the upper section 4, a bottom plug similar to plug 5 is dropped into the casing, and the upper section 4 is then attached carrying the plug 5. The well is then cemented and the latch plunger 13 is then pulled to release the plug 5. When the time arrives to do the cementing the latch plunger or bolt 13 would be pulled outwardly so as to permit the latch bar 10 to fall down into its recess 12, thereby permitting the plug 5 to descend into the casing, after which the cement would be forced down on top of the plug.

What I claim is:

1. A casing head having means for receiving a cementing plug and having a chamber below said means, with a latch in said chamber pivotally mounted on one side of the chamber for supporting the plug, and means for operating said latch to permit the same to move away from the plug to permit the same to descend.

2. A casing head having means for receiving a cementing plug and having a chamber below said means, with a movable latch mounted in said chamber for supporting the plug and movable in the chamber away from the plug to permit the same to descend, and means movable independently of the latch, and movably mounted in the wall of the casing for releasing said latch.

3. A casing head having means for receiving a cementing plug and having a chamber below said means, with a movable latch in said chamber for supporting the plug, and means movable independently of the latch for releasing said latch to permit the same to move out of the path of the plug.

4. A casing head having a body with an extension above the same to receive a cementing plug, a latch pivotally mounted in said body and extending transversely therein to support the cementing plug from the under side, and hand actuated means for support-

ing the latch and movable to release the latch to permit the plug to descend.

5. A casing head having a body with an extension above the same to receive a cementing plug, a latch pivotally mounted in the wall of said body, means mounted in the wall of said body opposite the pivot of the latch for supporting the end of the latch under the plug, with means on the exterior of the casing head for moving said last named means to permit the latch to descend.

Signed at Los Angeles, California, this 11th day of September, 1928.

NEWTON W. WICKERSHAM.