March 1, 1927. C. A. RASMUSSEN 1,619,268

CASING WEDGE

Filed Feb. 12, 1925

Fig. 1.

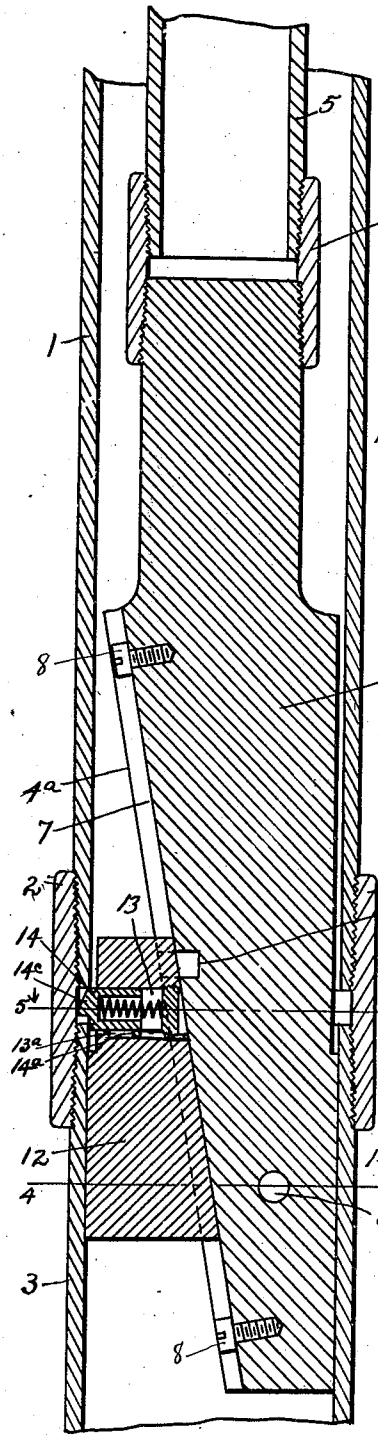


Fig. 2.

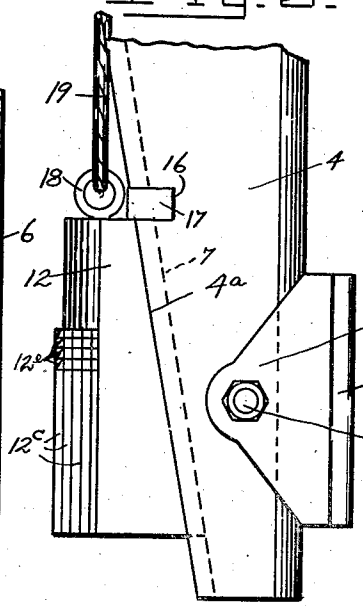


Fig. 3.

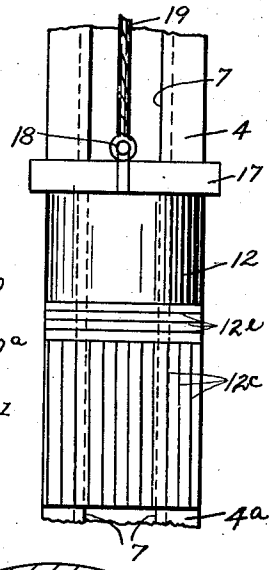


Fig. 4.

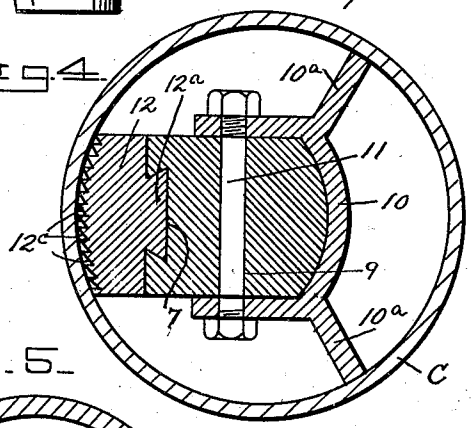
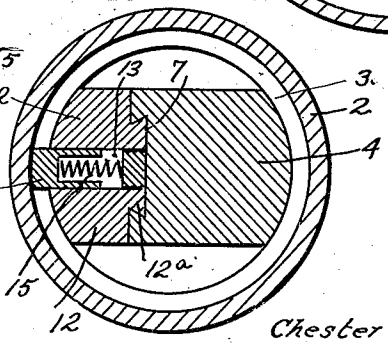


Fig. 5.



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UNITED STATES PATENT OFFICE.

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CASING WEDGE.

Application filed February 12, 1925. Serial No. 8,638.

My invention relates to casing wedges of the type intended to be put down into a casing and manipulated to hold one section of a well casing while another section is being unscrewed therefrom. It is necessary at times in putting well casing down into a well and connecting it up section to section, to remove a section for the purpose of cutting it. Frequently it is difficult to disconnect the particular section to be removed from the next section, or to disconnect the section which is to be removed from the coupling which connects it to the next section, for it is desirable to leave the coupling on the upper end of the section remaining in the well and from which the section to be removed is unscrewed.

Among the salient objects of my invention are to provide a device which can be put down into a well casing and when it reaches the joint at which the disconnection is to be made it can be manipulated so as to interlock to the coupling or the upper end of the lower section of casing in such a way that it can be held while the upper section is unscrewed; to provide a device of simple construction with means for adapting it to casings of various sizes, thus making a device capable of use in more than one size of casing; to provide in a device of the character referred to means for causing the release of the holding or gripping jaw when the device has reached the joint, whereby said device will interlock with the lower section of casing and hold it and the coupling against turning while the upper section is being removed; to provide means for releasing the gripping jaw even though the two sections of casing are screwed into the coupling until their ends meet; and, in general, to provide a simple, practical and economical casing wedge which can be used in various sizes of casings.

In order to fully explain my invention, I have illustrated one embodiment thereof on the accompanying sheet of drawings for descriptive purposes, which I will now describe. In the drawings,—

Figure 1 is a longitudinal sectional view of a well casing with my device shown therein, at the joint, said device being also shown in longitudinal section;

Figure 2 is a side elevation of my device, showing means for attaching a cable to the gripping jaw;

Figure 3 is a front view of the same structure or embodiment of the invention.

Figure 4 is a cross sectional view at the position of line 4—4 of Fig. 1, but showing the device in a larger casing than is shown in Fig. 1 and showing the extension in use for adapting the device for larger casings; and

Figure 5 is a cross sectional view taken on line 5—5 of Fig. 1.

Referring now in detail to the drawings, 1 designates an upper section of casing which it is desired to unscrew from the coupling 2, connecting it with a lower section of casing 3.

The device as shown for illustrative and descriptive purposes, comprises a body 4, having a shank for connecting it to a drill casing, 5, as by means of a coupling 6. The lower end of said body is shown of tapering form, as at 4^a, with a dove-tail channel formed in its face, as indicated at 7. Near the upper end and near the lower end of said channel are two stop screws, as 8, 8. Said body is also provided with a hole, 9, for the purpose of attaching thereto a body extension, designated 10, and shown in Fig. 4, and also in Fig. 2, said body extension being connected by means of a bolt, 11, and having the flaring wing portions, 10^a, 10^a, which bear against the inside of the casing C, when said device is used in a larger casing than shown in Figs. 1 and 5. Body extensions of various sizes can be used with the device, as will be clearly understood from the showing and this need not be further described.

I will next describe the wedge, or gripping element and indicate how it functions. This comprises a body 12, having a dove-tailing extension, 12^a, adopted to fit and slide in the dove-tail channel 7, formed in the face of the body 4, as clearly indicated in Figs. 1, 4, and 5. Said wedge is provided with a bore, 13, with a channel-way at one side thereof, designated 13^a. A latch element, 14, having the spring, 15, is mounted in said bore, 13, said latch element having the stud, 14^a, sliding in the channel-way to prevent said latch element from turning, as will be clear from the drawing. The outer end of said latch element is provided with the tapering latch end, 14^c, the taper being up so

that when said device is moved upwardly and said latch element is out, it will not catch. This latch element is intended to be held in by the side of the casing as the device is let down in the casing until it comes to the space between the ends of the casing, in the coupling, as shown, whereupon it is moved out into said space by its spring, in the manner indicated in Figs. 1 and 5.

The outer face of the wedge or gripping element 12, is rounded to conform to the inside of a well casing, and is provided with the teeth, 12^c, arranged circumferentially thereof, as indicated in Fig. 4, whereby said teeth bite into the casing when an attempt is made to turn the device or the casing in one direction, as indicated by the arrow, Fig. 4, and prevent such turning. Said wedge element 12 is also provided with a series of teeth arranged to bite into the inside of the well casing on the downward movement of said wedge element, thus holding it from moving downwardly after it is in engagement with the casing and should hold its place. These teeth are shown at 12^e, Figs. 2 and 3, and arranged at the upper ends of the other teeth, 12^c, as shown.

In the face of the body 4, is also provided a transverse channel, 16, in which can be placed a small piece of wood, 17, as shown in Figs. 2 and 3, for the purpose of holding the wedge element 12, down until the device has been let down into the well casing to the place where it is to be released. Wood is used for this for the reason that when the device has reached its place of operation and the wedge element 12 has engaged with the well casing, said piece of wood can be sheared off as the body 4 is moved downwardly under pressure to force the wedge element into the casing for holding the same. It prevents the wedge element from moving upwardly on the tapering face of the body 4 until the device has been let down the proper distance into the casing.

In Figs. 2 and 3, I have shown the wedge element 12, provided in its upper end with an eye-bolt, 18, to which is attached a cable, 19, extending to the top of the well. This is provided for use when the casing sections are screwed together in a coupling so close that no space is left between the meeting ends of the casing, within the coupling. The spring latch 14 is then removed and the cable is used to hold the wedge element 12 when it reaches the upper end of the lower casing 3, while the body 4 is moved downwardly, thus forcing the wedge element 12 into the casing and gripping the same sufficiently that it can be held while the upper casing 1 is unscrewed from the coupling 2. It will be understood that the wedging action in the upper end of the lower casing 3, within the coupling, 2, also crowds the end of the casing 3 in such a manner that it binds more firmly in the coupling and said coupling is held against turning while the upper casing 1 is turned and disconnected from the coupling. When the body member 4 is pulled upwardly, it will be clear that the wedge element is released and as it moves down on the tapered end of the body, it is free to move out of the casing with the body 4, the stop screw 8 preventing it from disconnection from the lower end of the body 4.

Thus I have provided a simple, practical and efficient casing wedge, and while I have shown and described in detail one structure which embodies the invention, I am aware that many changes can be made in the details without departing from the spirit of the invention and I do not, therefore, limit the invention to the showing made, except as I may be limited by the hereto appended claims.

I claim:

1. In a casing wedge of the character referred to, in combination with a drill casing, a body member connected to the lower end thereof, said body having a tapering face and its opposite face adapted to fit the inside of a casing, a gripping element having one tapering face with interfitting and sliding connection on the tapering face of said body member and having its opposite face adapted to fit the inside of a casing at the opposite side thereof, stop elements to limit the relative movement of said gripping element on said body member, and a spring pressed plunger set in said gripping element and adapted to be pressed outwardly against the side of said casing to engage with the upper end of a casing section to hold said gripping element, whereupon the movement of said drill casing and said body downwardly wedges said body and said gripping element in said casing, for the purpose referred to.

2. In a device of the character referred to, in combination, a body member adapted to be connected to the end of a drill casing, said body member having one face adapted to fit the inside of a well casing and its other face tapering, a gripping element having its outer face adapted to fit the inside of a well casing and its other face tapering, interfitting, sliding connecting means between the tapering faces of said body member and said gripping element, a spring pressed plunger set in said gripping element and normally moved outwardly endwise to engage the upper end of a well casing to stop said gripping element, and means for temporarily holding said body member and said gripping element together while being placed down in a well casing, substantially as described.

3. In a device of the character referred to, in combination, a body, a wedge element thereon and movable relative thereto, body extension means for adapting said body to

casings of different diameters, and means carried by said wedge element for holding it during a relative movement of said body, whereby to force said wedge element into biting engagement with said casing.

4. In a device of the character referred to, in combination, a body having a tapering portion, a wedge element moving thereon and connected therewith, a body extension member detachably connected with said body to adapt it to larger casing, means carried by said wedge element and adapted to interlock with said well casing whereby said wedge element is stopped and said body moves relative thereto and forces said wedge element into biting engagement with said casing.

5. In a casing wedge, in combination, a body having a tapering portion provided with a dove-tail channel therein, a wedge element having an interfitting part and sliding on said tapering portion, a spring latch element carried by said wedging element and adapted to catch on the well casing into which said device is lowered and to hold said wedge element, whereby said body moves relative thereto and forces said wedge element outwardly into biting engagement with said casing, and body extension means for adapting said device for different sizes of casing.

Signed at Los Angeles, Los Angeles County, California, this 6th day of January, 1925.

CHESTER A. RASMUSSEN.