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BELL SOCKET SPEAR

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This invention relates to a bell socket adapted for removing a hollow tubular member or casing from a well, and comprises a socket adapted for engaging over said tubular member with interiorly supported means automatically adjustable for entering said tubular member and automatically gripping the same upon an upward movement of the socket.

The invention consists of the novel structure hereinafter described and more particularly pointed out and defined in the appended claims.

In the accompanying drawings which illustrate a preferred embodiment of this invention and in which similar reference numerals refer to similar features in the different views—

Fig. 1 is a vertical section through the bell socket illustrating the parts in one position.

Fig. 2 is a section similar to Fig. 1 illustrating the parts in a different position with the spear head shown in section.

Fig. 3 is a section upon the line 3—3 of Fig. 2.

As shown on the drawings:

In the present embodiment of this invention there is shown a cylindrical socket 1 having a sloping lower end which is interiorly beveled to provide a wedging edge which is adapted to readily engage over a tubular member such as the hollow cylindrical casing 2 which may be a split or damaged well casing that it is desired to withdraw. The upper end of said socket is provided with a cylindrical opening for receiving a supporting shank 3 having an enlarged collar 4 that fits in an enlargement in the said cylindrical opening and engages an annular shoulder 5 at the upper end of said enlargement for supporting the socket.

An additional supporting means in the form of a pin 6 extends through the socket and through the shank 3. The shank 3 extends within the socket 1 where it is tapered downwardly and outwardly and is provided with a spear head 7 at its lower end which serves to center the socket with respect to the tubular casing that is being withdrawn from the well, and maintains the same centered when withdrawn.

It will be noted from the drawing that despite the fact the lower end of the socket is cut on a slant, the entire bevel on this end of the socket extends upwardly on the inside of the device to a horizontal plane, or in other words, to a plane disposed at substantially right angles to the vertical axis of the tool. This results in the bevel extending upwardly unequal distances from the slanting end with the longest bevel on the side of the socket terminating in the lowest extremity of the slanting end, and the shortest bevel on the diametrically opposite side or highest extremity of the slanting end. Therefore, it might be properly said that the lowest extremity of this end of the socket has a relatively long bevel of a slight incline which gradually decreases in length, in a circumferential direction, from the side of this lowermost extremity to a relatively short and steep bevel on the diametrically opposite side or highest extremity.

This bevel in reality comprises what may be termed a rotary wedging surface, for when the lowermost extremity of the socket engages the fish or object to be removed from a well, it will, upon rotation, gradually wedge the object into axial alignment with the socket or guide tube 1. In fact, I find that with this tool, it is possible to wedge the upper end of a slanting tool, such as a bit, in the bottom of a well, back into the vertical so that the bit may be engaged by suitable gripping means for enabling the removal of the bit of fish from the well.

Of course it is understood that although I have disclosed this guide tube in connection with one particular type of gripping means, still the invention is not to be thus limited, for obviously my guide tube can be used in connection with other forms of fish-catching tools without deviating from the scope and spirit of the invention, and hence the invention should only be limited in so far as defined by the scope of the appended claims.

The shank 3 is of polygonal form intermediate the spear head 7 and collar 4. This polygonal section of the shank as shown in the present instance, is of square cross section and has upwardly converging sides provided with dovetail grooves, as clearly shown in Fig. 3. Gripping members in the form of metal blocks 8 having dovetail tenons fitting the dovetail grooves in the shank are slidably located upon the sides of the polygonal section.

The exterior surface of these blocks are serrated or provided with upwardly extending teeth which are adapted to grip and...
pierce the casing or member to be withdrawn as shown in Fig. 1.

In the use of this bell socket, it is lowered into the well containing the tubular member that it is desired to withdraw, the lower bevelled end will engage over such tubular member while the spear head 7 will enter the tubular member. In descending, the gripping blocks 8 may rest upon the upper surface of the spear head. In such position they will be expanded over such an area that they cannot enter the tubular member. So as the socket descends these gripping members will strike the top of the tubular member and be arrested thereby while the socket and spear descend. When the socket and spear have descended a sufficient extent, the blocks 8 will have been forced upward and contracted so as to enter the tubular member as shown in Fig. 1. The socket may then descend, if desirable, until its upper closed end strikes the top of the tubular member. Upon the upward movement of the socket the teeth on the blocks 8 will bite into the wall of the casing and thus retard the upward movement of the blocks 8. This retardation will cause the wedge shaped shank section to slip relatively to the blocks and automatically spread or expand the same, so that the same will bite more firmly into the casing. Continued upward movement of the shank will then continue to spread the blocks 8 until the upper end of the tubular member is expanded against the interior wall of the socket as shown in Fig. 1, with the teeth on the blocks 8 firmly imbedded in the tubular member. In other words, the tubular member is tightly gripped between the moveable serrated blocks and the socket and may be withdrawn from the well as is obvious.

It is characteristic of this invention that the gripping members 8 are automatically contracted so that the same can enter the tubular member that it is desired to withdraw and automatically expanded so as to grip the tubular member against the socket whereby a very strong hold is secured upon the same.

I am aware that numerous details of construction may be varied through a wide range without departing from the principles of this invention, and I therefore do not purport limiting the patent granted otherwise than necessitated by the prior art.

I claim as my invention:
1. In a fishing tool of the type described, a guide comprising a substantially cylindrical tubular portion having its lower end cut on a slant, said slanting end of said portion being provided with a bevel which is of slight incline on the side of the tubular portion terminating in the lowermost extremity of the slanting end and which gradually decreases in length, in a circumferential direction to a relatively short and steep bevel on the opposite side or highest point of said slanting end.
2. In a fishing tool of the type described, a guide tube comprising a substantially tubular portion having its lower end cut on a slant and being beveled upwardly on the inside from said end in such a manner as to form a rotary wedging surface which upon engaging with an object, will, upon rotation of said guide tube, gradually wedge said object into axial alignment with said tube.

In testimony whereof I have hereunto subscribed my name.

FRANK J. HINDERLITER.