April 7, 1942. J. C. FORTUNE ET AL 2,279,118

LIFTING PLUG AND WRENCH THEREFOR

Filed Feb. 19, 1940

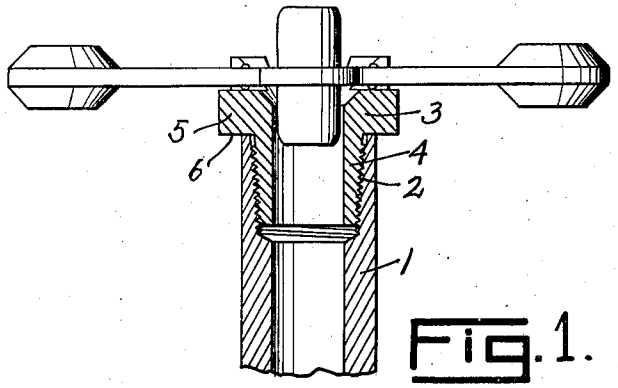


Fig. 1.

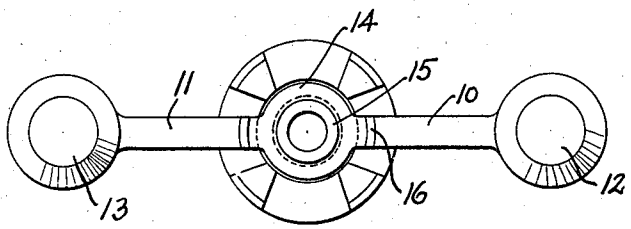


Fig. 2.

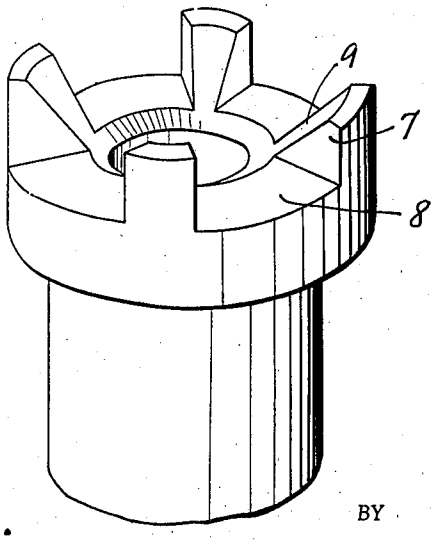


Fig. 3.

James C. Fortune
Robinson W. Brown.
INVENTOR.
BY J. Vincent Martin
and
Ralph R. Browning.
ATTORNEYS

Patented Apr. 7, 1942

2,279,118

UNITED STATES PATENT OFFICE

2,279,118

LIFTING PLUG AND WRENCH THEREFOR

James C. Fortune and Robinson W. Brown, Houston, Tex., assignors to Reed Roller Bit Company, Houston, Tex., a corporation of Texas

Application February 19, 1940, Serial No. 319,576

2 Claims. (Cl. 255—35)

This invention relates to a device adapted to be used in handling pipe and has for its general object the provision of a means for use with external flush pipe for lifting the same, together with a means for securing it to and removing it from such pipe.

The particular pipe to which this invention is applicable is known as flush joint drill pipe. It is used in making up drill stems which are free from projecting collars or tool joints of larger diameter than the drill pipe itself.

In handling ordinary drill pipe or other pipe having collars or joints of larger diameter than the pipe itself, it is customary to lift the pipe by means of a so-called elevator or split collar which is secured around the pipe below such a collar or joint and then lifted into engagement with the collar or joint. The pipe may then be lifted by means of such elevator.

When flush joint pipe is used, there is of course no shoulder against which such an elevator can operate and it is necessary in lifting the pipe either to employ a device having gripping teeth which dig into the metal of the pipe itself or to provide some member which may be secured to the upper end of the pipe and which will project laterally beyond the outer contour of the pipe to provide a lifting shoulder against which the elevator may engage. The use of gripping dogs or slips is detrimental to the pipe in that it mars the surface of the pipe and is for that reason undesirable. The use of lifting plugs or members to be attached to the upper end of the pipe to provide a shoulder for engagement by the elevator is undesirable because of the time and effort required in securing such plugs to and removing them from the pipe.

It is, therefore, a more specific object of this invention to provide a lifting plug which may be easily and quickly attached to or removed from a pipe and to provide a means for use in such attachment or removal.

A further object of this invention is to provide a means for the purpose set forth which is simple in construction and easily and cheaply manufactured.

Another object of this invention is to provide a device of the type set forth which will not wear substantially in use and which will for that reason have a long life.

Other objects and advantages of this invention will become apparent from the following description wherein is set forth one embodiment thereof.

In the drawing:

Fig. 1 is a view illustrating in longitudinal cross section the upper end of section of pipe having a lifting device constructed in accordance with this invention secured thereto and showing in elevation the means for attaching and removing such lifting device.

Fig. 2 is a top plan view of the device illustrated in Fig. 1.

Fig. 3 is a view in enlarged perspective illustrating the lifting device shown in Fig. 1 secured to the upper end of section of pipe.

In the drawing the numeral 1 indicates the upper end of section of conventional flush joint drill pipe. As illustrated, this section is provided with an internally threaded zone 2 at its upper end. In accordance with this invention there is provided a plug 3 which in the present instance has an externally threaded pin portion 4 adapted to engage with the threads 2 on the drill pipe. This member also has a laterally projecting flange 5 providing a downwardly facing shoulder 6 adapted to receive an elevator in a well known manner.

In order to avoid the necessity for the use of tongs or the like in securing this plug to and removing it from the drill pipe, the plug is provided with projections 7 on its upper end. In this instance these projections are four in number although it will be appreciated that various numbers of projections may be employed. These projections are separated by open spaces 8 and on their inner surfaces they are tapered as shown at 9. The member employed in securing the lifting plug just described to a drill pipe and in removing it therefrom consists of an elongated member providing arms 10 and 11 having weights 12 and 13 at their outer ends. Midway between the weights 12 and 13 is a circular enlargement 14 in which is mounted a guide element extending both upwardly and downwardly from the enlargement 14.

The arms 10 and 11 are preferably of somewhat less width than the openings 8 between the projections 7 and are adapted to enter between said projections as shown in Figs. 1 and 2. In order to reduce the possible friction in the contact between these arms and the upper surface of the plug in the openings 8, the arms are provided with small projections 16, which rest on these surfaces.

The tool just described is reversible and may be used either side up. The arms 10 and 11 together with the weights 12 and 13 may be used as handles. It will readily be seen that in securing plug 3 to a section of pipe, the plug will

be placed in the upper end of the section of pipe by hand and rotated to start the threads. The tool just described may then be placed in position as shown in Fig. 1 and rotated to tighten the plug 3. When the plug stops rotating due to the full engagement of the threads, the threads may be tightly engaged by rotating the tool backward a distance equal to the width of the openings 8 and then rotating it forward again with a hammering action. The tool may then be readily lifted out and the elevator employed in the usual manner.

The plugs 3 may be removed by simply reversing the operation just described. The wrench or removing tool is placed in position shown in Figures 1 and 2 and oscillated as just described to provide a hammering action for loosening the plug. It may thus be readily loosened and removed, whereupon it will be stacked until again needed.

It will be seen that the guide 15 will act with the tapered inner surfaces 9 of the projections 7 in facilitating the placing of the tool upon the plug and that thereafter this guide will retain the tool in proper position for its operation during the insertion or removal of the plug.

It will be appreciated that this invention is not limited to the use of a plug having a male or external thread such as that shown in the drawing, but that this invention relates particularly to the construction of the plug and the tool for attaching and removing it whereby the plug may be easily and quickly attached and removed. The term plug as used in this application and in the accompanying claims is therefore to be understood as referring to any member whether employing a male connection or a female connection which may be secured to the upper end of a section of pipe for use in lifting same.

From the foregoing it will be seen that a means has been provided whereby all the objects and advantages sought by this invention may be obtained.

Having described our invention we claim:

1. In combination, a lifting plug having upstanding projections on its head and an opening through its center between said projections and longitudinally of said plug, and means for turning said plug to attach or remove the same comprising a bar of a size to fit between said projections, and a guide carried by said bar and projecting from the opposite sides thereof at substantially right angles to said bar and adapted to extend into said opening to maintain said bar in proper position with respect to said plug, so that said bar may be used either side up on said plug.

2. A device for attaching and removing a lifting plug comprising a bar having spaced, weighted portions and an intermediate part adapted to fit a part of said lifting plug, and a guide on said intermediate part and projecting in opposite direction therefrom to engage a part of said plug and maintain said bar in proper position thereon, whereby said bar may be engaged with the said plug with either portion of said guide engaging said plug.

JAMES C. FORTUNE.
ROBINSON W. BROWN.