Jan. 22, 1924. 1,481,378

G. F. LE BUS

SLIP

Filed April 30, 1923 2 Sheets-Sheet 1

Fig. 1.

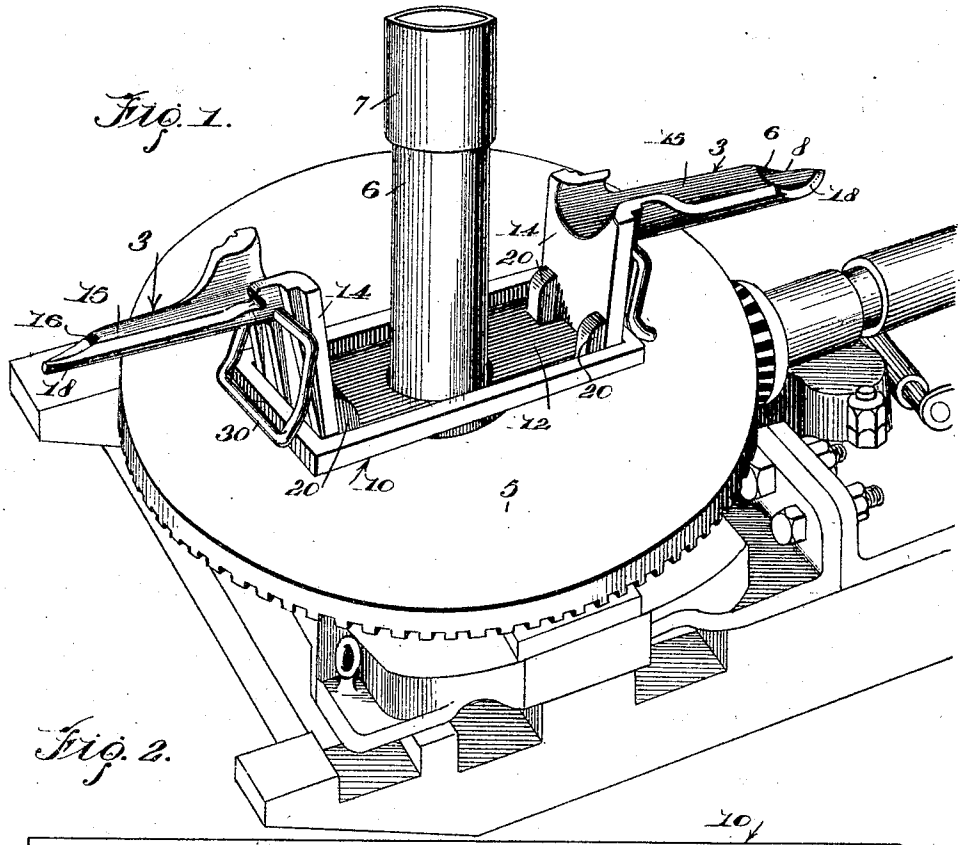
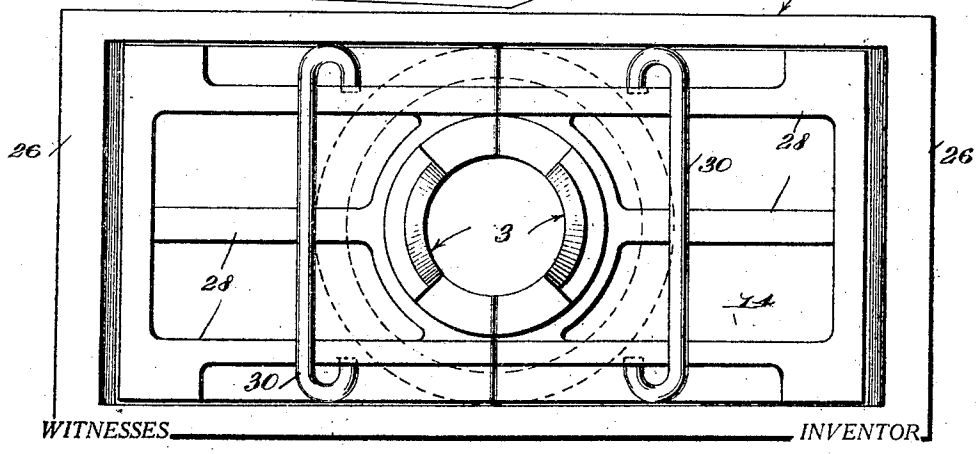


Fig. 2.



WITNESSES INVENTOR

M. Fowler

L. L. Quesada

G. F. LeBus

BY Munn & Co.

ATTORNEYS

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Fig. 3.

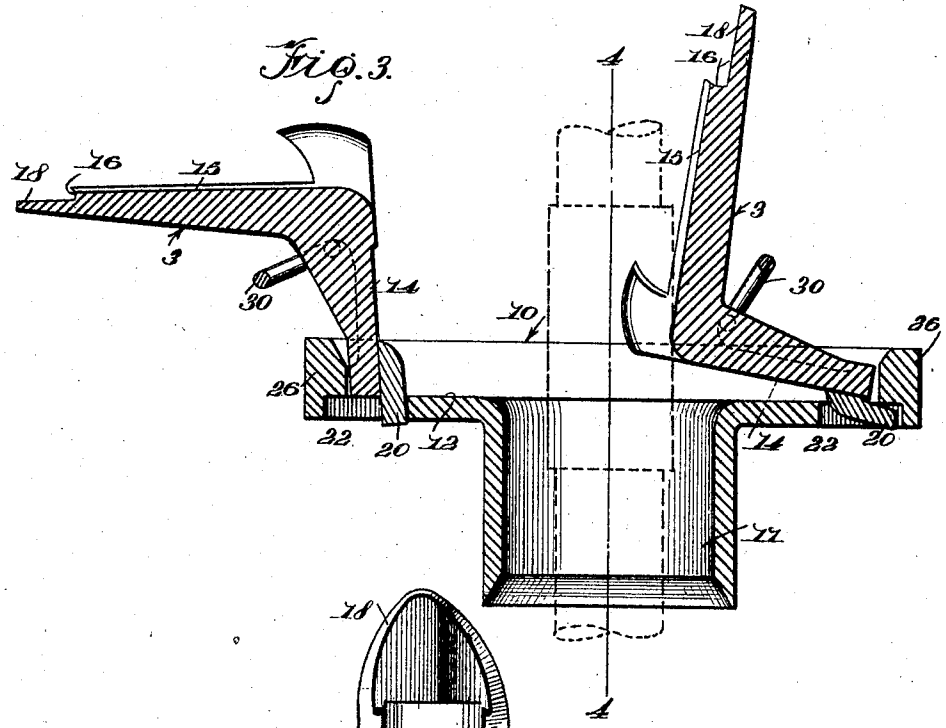
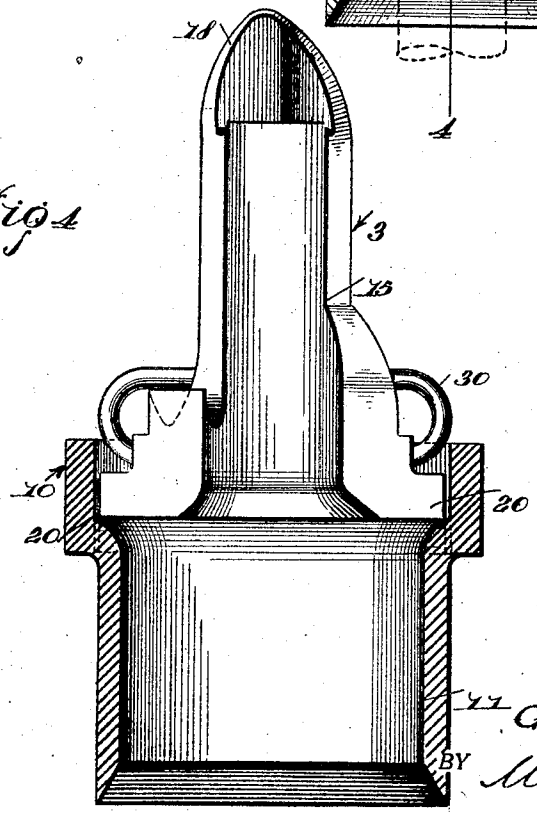


Fig. 4



WITNESSES

M. Fowler

L. B. Puccoda

INVENTOR

G. F. LeBus.

BY Munn & Co.

ATTORNEYS

Patented Jan. 22, 1924. 1,481,378

UNITED STATES PATENT OFFICE.

GEORGE F. LE BUS, OF ELECTRA, TEXAS.

SLIP.

Application filed April 30, 1923. Serial No. 635,807.

To all whom it may concern:

Be it known that I, GEORGE F. LE BUS, a citizen of the United States, and resident of Electra, in the county of Wichita and State of Texas, have invented certain new and useful Improvements in Slips, of which the following is a specification.

This invention relates to slips especially adapted for use in oil well operations.

The invention forming the subject matter of this application aims to provide a toothless slip embodying a pair of swingingly supported tool joint engaging members which contact with the under side of the tool joint and thereby securely hold the string of pipe or the like in position, and which are swung outwardly solely by the tool joint when a string of pipe is raised so that the work of the attendants is reduced to a minimum.

A further object is to provide a toothless slip which may be conveniently applied and which will work efficiently in conjunction with the elevators and the stationary and movable tongues.

A further object of the invention is to provide a toothless slip having pipe contact members which may be conveniently thrown out of the way when it is desired to change the bit or perform other operations incident to the drilling of a well.

Also the invention forming the subject matter of this application aims to provide a toothless slip which will not damage the drill stem or pipe, which is of highly simplified construction and comparatively cheap to manufacture.

Other objects and advantages will be apparent during the course of the following description.

In the accompanying drawings, forming a part of this application and in which like numerals are employed to designate like parts throughout the same,

Figure 1 is a perspective of a slip constructed in accordance with this invention and mounted upon a drilling rotary.

Figure 2 is a plan view of the slip.

Figure 3 is a vertical sectional view through the apparatus, and

Figure 4 is a vertical transverse section taken on line 4—4 of Figure 3.

Referring to the accompanying drawings, wherein for the purpose of illustration is shown a preferred embodiment of the invention the numeral 5 designates a drilling rotary through which the drill pipe 6 is extended. As is well known the drill pipe 6 consists of a plurality of lengths of pipe joined by couplings or joints 7, the ends of which are utilized as shoulders for engagement by the elevators and slips, all of which is old and well known in the art.

The invention forming the subject matter of this application is in the nature of a toothless slip by means of which the string of pipe may be held against downward movement during the engagement of the elevators or of the tongues with the pipe joint and it will be seen that the invention consists of a rectangular holder 10 mounted upon the drilling rotary and having a depending tubular portion 11 which extends into the drilling rotary. Figure 3 illustrates that the bottom wall 12 of the holder 10 constitutes a supporting means for the slips designated generally by the numeral 3.

Each slip is more or less L-shaped in side elevation and is provided with a flat base portion 14 and with an upstanding transversely curved portion 15. The base portion 14 lies flatly in contact with the bottom wall 12 while the transversely curved upstanding portion 15 lies at the side of the string of pipe so that the shoulder 16 of the same may be flatly engaged with the lower end of the tool joint 7.

It might be pointed out that the slips 15 are tapered as indicated at 18 above the shoulders 16 so as to be freely received within the elevators and this construction permits the elevators to be engaged with the tool joint between the slips.

When the tool joint is resting flatly on the arcuate shoulders 16 the weight of the pipe is borne entirely by the slips and as the inner sides of the upstanding portions 15 are more or less smooth no damage to the pipe is done. Furthermore, the pinching of the threads at the tool joint is overcome.

The base portions 14 are swingingly though detachably connected to the base or holder 10 by means of pairs of lugs 20 which extend through openings 22 in the end portions of the holder. Figure 3 illustrates that when the slips are swung outwardly the lugs 20 at the corners of the base portion will engage the end walls of the openings 22 and thereby limit the outward swinging movement of the slips. Also the outer sides of the base portion 14 will contact with the end walls 26 of the holder so the outward swinging movement of the slips is limited.

However, this connection between the slips and the holder will not in any way interfere with the disconnection of these slips from the holder at any time desired.

Suitable reinforcing ribs 28 may be formed on the upper side of the base portions 14 and joined with the upstanding portions 15 so as to strengthen and reinforce the same.

When lowering the drill pipe the slips may be swung outwardly by hand in which case the operator engages the bails 30 joined with the ribs 28. It will be seen that the slips may be conveniently swung beyond the vertical center and will remain in this position until moved back to their operative positions as illustrated in Figure 2.

In use the holder 10 is arranged upon the drilling rotary as illustrated in Figure 2 and the slips are swung into engagement with opposite sides of the pipe so that the shoulders 16 will be engaged with the under side of the tool joint 7. In case the pipe is being lowered the slips may be swung outwardly and then returned to their operative positions as soon as the tool joint passes. As previously stated the tapered portions 18 permit the elevator to completely surround the slips so that the shoulders 16 will be engaged with the tool joint at the same time the elevator is engaged with the joint.

In case the pipe is being elevated the engagement of the tool joint with the lower portions of the slips will swing the slips outwardly to a limited extent and as soon as the tool joint has passed, the slips will swing inwardly and thereby prevent the return of the pipe, all of which is accomplished without the employment of teeth on the inner sides of the slips. Furthermore, this return movement of the slips is entirely automatic and without attention on the part of the operators.

In use the improved slips are safe and positive in their mechanical action thereby eliminating the danger incident to a possible mistake on the part of the operator.

With reference to the foregoing description taken in connection with the accompanying drawings it is believed to be obvious that the use of this invention in connection with the elevators of the type shown in application Serial No. 582,326 filed August 16, 1922 will be apparent.

Having thus described the invention, what is claimed is:—

1. A slip for oil well operations comprising a holder, and L-shaped slips having base portions swingingly and detachably connected to the holder and having shoulders to engage and support a tool joint.

2. An apparatus of the character specified comprising a holder adapted to be mounted upon a drilling rotary and having a recess, L-shaped slips having base portions flatly mounted in said recess and having upstanding portions provided with means to engage a tool joint, and a gripping device by means of which the slips may be swung outwardly to their inoperative positions.

3. An apparatus of the character specified comprising a holder having a bottom wall provided with openings, and slips having pipe joint engaging means and having base portions formed with lugs extended through said openings and engaged with the under side of the holder.

4. An apparatus of the character specified comprising a holder having a bottom wall provided with openings, and slips having pipe joint engaging means and having base portions formed with lugs extended through said openings and engaged with the under side of the holder, said slips being swingingly mounted and the lugs being engaged with the end walls of said opening whereby to limit the outward swinging movement of the slips.

5. An apparatus of the character specified comprising a holder having bottom and end walls, slips having upstanding portions provided with shoulders to engage a tool joint and having flat base portions flatly contacting with the bottom wall of the holder, said bottom wall being provided with openings, and lugs carried by the base portions of the slips and received in said openings, said lugs being flatly engaged with the under side of said end wall.

6. An apparatus of the character specified comprising a holder having bottom and end walls, slips having upstanding portions provided with shoulders to engage a tool joint and having flat base portions flatly contacting with the bottom wall of the holder, said bottom wall being provided with openings, lugs carried by the base portions of the slips and received in said openings, said lugs being flatly engaged with the under side of said end wall, and a depending tubular portion carried by the bottom wall of said holder to receive the string of pipe.

7. An apparatus of the character specified comprising a holder, L-shaped slips having base portions swingingly and detachably connected to said holder and having tool joint engaging portions at right angles thereto, said tool joint engaging portions being gravity actuated to their operative positions and being movable to a position beyond vertical center to their inoperative positions.

8. An apparatus of the character specified comprising a holder, slips having base portions swingingly connected to said holder and having tool joint engaging portions at right angles thereto, said tool joint engaging portions being gravity actuated to their operative positions and being movable to a position beyond vertical center to their inoperative positions, and means limiting the outward swinging movement of the slips.

GEORGE F. LE BUS.