

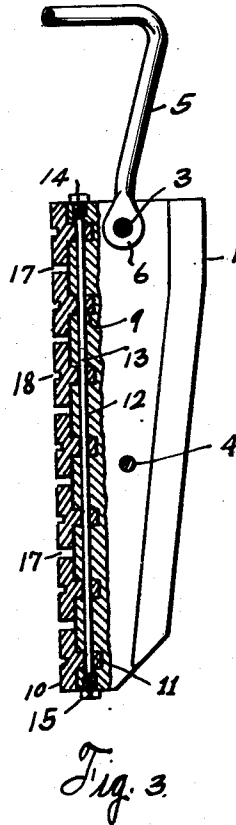
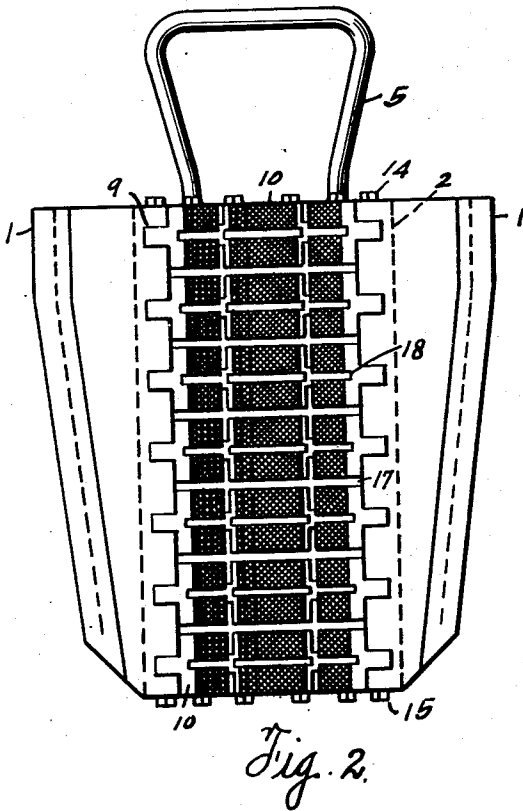
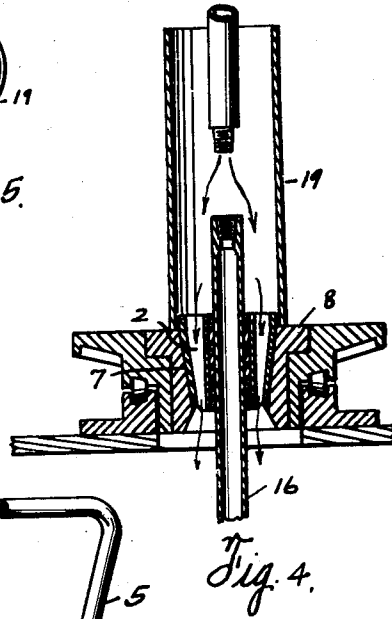
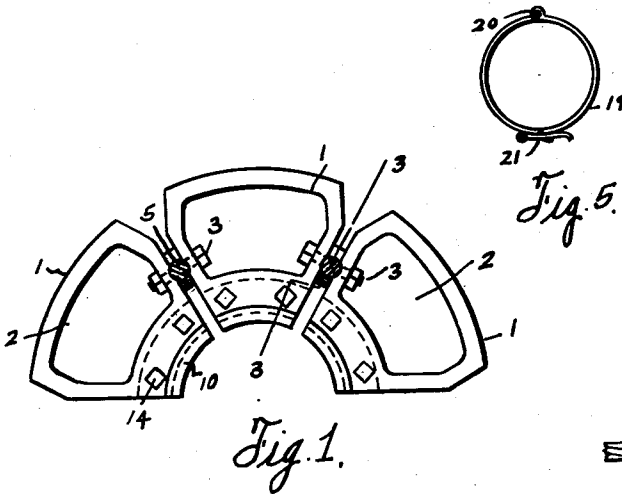
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SLIP

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SLIP

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9 Claims. (Cl. 24-263)

This invention relates to a slip and has particular relation to that type of slip adapted to seat in a downwardly converging seat and to grip and hold a pipe, or the like suspended.

5 An object of the invention is to provide a slip of the character described which will securely grip and hold a pipe or a similar object suspended in a well bore without cutting, scarring or marring the surface of the suspended pipe.

10 Another object is to provide a slip whose segments are formed hollow to provide passageways for the return of the drilling fluid back into the well bore as the drill stem or other pipe is broken up in withdrawing the same from the bore.

15 A further object is to provide a pipe holding slip having removable pipe gripping jaws that may be readily replaced when they become worn or broken.

20 A still further object is to provide a sectional pipe holding slip which is of such construction that it will have the required strength and at the same time will be light and easily handled.

With the above and other objects in view the invention has particular relation to certain novel 25 features of construction arrangement of parts and use, an example of which is given in this specification and illustrated in the accompanying drawing, wherein:

30 Figure 1 shows a plan view of a slip section, showing the handle in section.

Figure 2 shows an inside view of said section.

Figure 3 shows a sectional view taken on the line 3-3 of Figure 1.

35 Figure 4 shows a vertical sectional view of a rotary drilling machine showing the improved type of slip suspending the drill stem therefrom, and

Figure 5 shows a top plan view of a mud box that may be used in connection with the slip.

40 Referring now more particularly to the drawing wherein like numerals of reference designate similar parts in each of the figures the numerals designate the segments of the slip. These segments may be connected into a plurality of sections, one of said sections being shown in Figure 1. As illustrated the complete slip is composed

45 of two complementary sections, each section being composed of three segments but the complete slip may be composed of more sections, as for example, three if desired, and each section may be composed of two or more segments, three segments to the section being preferred.

Each segment is formed with a vertical channel 2 therethrough. This channel is formed preferably by casting the segment hollow and is pro-

vided to render the segment lighter in weight and for the further purpose of providing for the return of the drilling fluid, that may be spilled out in breaking up the drill stem, back into the well as hereinafter more specifically explained.

5 The segments may be connected together in any preferred manner into a section. As shown the adjacent segments are connected by upper and lower bolts 3, 4 which are fitted through suitable bearings in the facing sides of adjacent segments, said bolts having heads on one end, and nuts screwed on the other ends thereof.

10 These bolts may be fitted loosely through said bearings, if desired, to give the required flexibility to the slip sections. Each section of the slip may be handled by a suitable U-shaped handle 5. The free ends of the side bars of these handles have the eyes 6 through which the corresponding bolts 3 pass.

15 The outer side of each segment is tapered to conform to the shape of and to fit into the downwardly converging seat 7 of the rotary spider 8 as shown in Figure 4.

20 The inside face of each segment has the spaced transverse mortises 9 and on said inner faces are the series of gripping jaws 10. The back of each jaw has a transverse tenon 11 to fit into corresponding mortise 9. Each segment and the corresponding tenons have one or more vertically aligned bores 12 therethrough to receive the rods 13 whereby the jaws 10 are locked in position. These rods 13 are retained in position by the upper and lower plugs 14 and 15 which may be removed so that the corresponding rod 13 may be driven out when it is desired to replace the 35 jaws. The inner face of the jaws 10 are arcuate as shown in Figures 1 and 2 so as to conform to the shape of and to closely grip the pipe or drill stem 16 to be suspended and said inner faces may be knurled or roughened to effectively grip said 40 pipe but not to cut, scar or deform the external surface thereof.

45 As shown, the jaws 10 are spaced apart forming the transverse grooves or channels 17 between them and the inner faces of the jaws may be also transversely grooved providing the channels 18. The pipe to be handled usually collects paraffin or other similar deposit thereon and the channels 17, 18 are provided so that when the slip is applied to the pipe the paraffin or other 50 deposit will be forced into said channels so that the roughened surface of the jaws may come into direct contact with the metal of the pipe to more securely grip the same to prevent the pipe from slipping downwardly through the slip. 55

In withdrawing a drill stem or other pipe from the well it is usually filled with fluid and as the sections are broken out as illustrated in Figure 4, the liquid filling the broken out section will spill out onto the rotary table and derrick floor thus interfering with the work.

In order to prevent this a mud box 18, which is tubular in form, may be placed on the rotary drilling machine around the slips. This mud box is tubular in form and is composed of longitudinal sections hinged together at one side by the hinge 20 and which may be latched together at the other side by the latch 21. In placing the mud box in position it may be opened and placed in position on the rotary table around the drill stem and slip as shown in Figure 4 and then latched in closed position and as the upper sections of the drill stem are broken out in withdrawing the stem, the liquid draining therefrom will be confined by the mud box and will pass down through the channels 2 back into the well and the drilling fluid will thus be prevented from spilling out over the rotary table and over the derrick floor.

The drawing and description disclose what is now considered to be a preferred form of the invention by way of illustration only while the broad principle of the invention will be defined by the appended claims.

What I claim is:

1. In a pipe holding slip a segment having an enclosed, unobstructed drain channel there-through.
2. In a pipe holding slip a segment, a series of pipe gripping jaws on the inner side of the segment, each jaw and the segment being provided one with a mortise and the other with a tenon fitted into the mortise.
3. In a pipe holding slip a segment, a series of pipe gripping jaws on the inner side of the

segment, each jaw and the segment being provided one with a mortise and the other with a tenon fitted into the mortise, and means for releasably locking the tenons in the mortises.

4. A pipe holding slip formed of segments and tapered downwardly to fit into a downwardly converging seat, said slip having enclosed, unobstructed channels providing for the passage of liquid downwardly therethrough.

5. A pipe holding slip formed of a plurality of sections, each section being formed of a plurality of segments, transverse bolts connecting the segments of each section, a U-shaped handle for handling each section as a unit the free ends of the side bars of each handle being spaced apart and having bearings on the bolts of the corresponding section.

6. In a slip a segment, a series of removable pipe gripping jaws on the inner side of the segment and spaced apart, each jaw and the segment being provided one with a mortise and the other with a tenon which fits into the corresponding mortise.

7. In a slip a segment, a series of removable pipe gripping jaws on the inner side of the segment and spaced apart, each jaw and the segment being provided one with a mortise and the other with a tenon which fits into the corresponding mortise, and means for securing each tenon in its mortise.

8. In a pipe holding slip a slip segment, a plurality of pipe gripping jaws fixed on the inner side of the segment, the inner surfaces of the jaws being roughened, and each jaw being provided with a transverse channel.

9. In a pipe holding slip a slip jaw having an arcuate gripping face which is provided with a transverse channel and a transverse tenon on the back side of the jaw.

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