Nov. 6, 1934. J. H. HOWARD 1,979,389

PIPE ENGAGING SLIP

Filed July 11, 1931 2 Sheets-Sheet 1

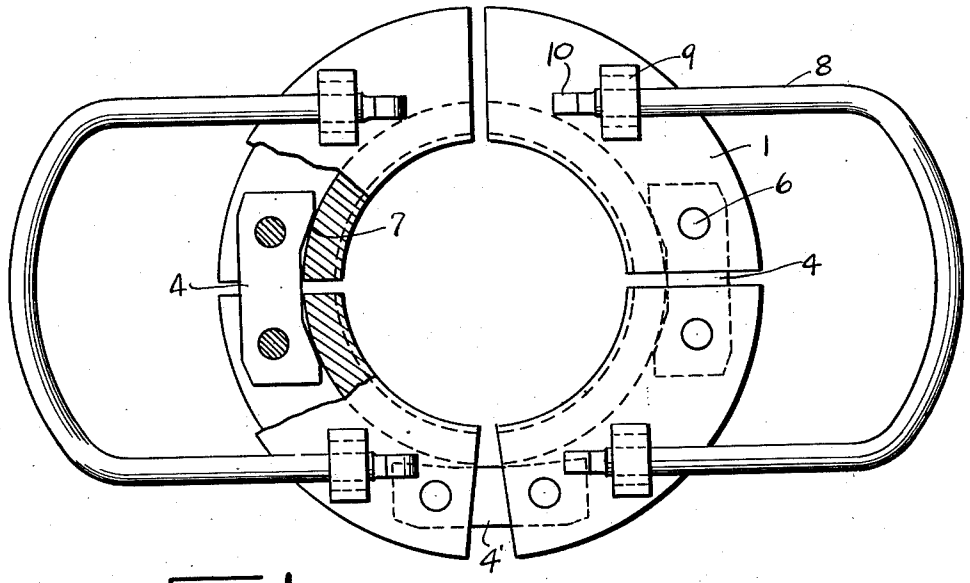


Fig. 1.

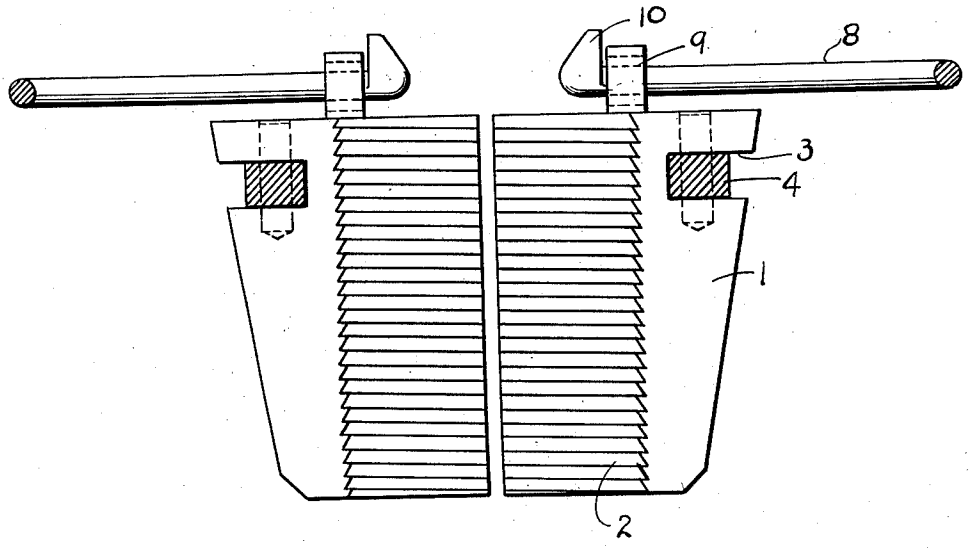


Fig. 2.

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Filed July 11, 1931 2 Sheets-Sheet 2

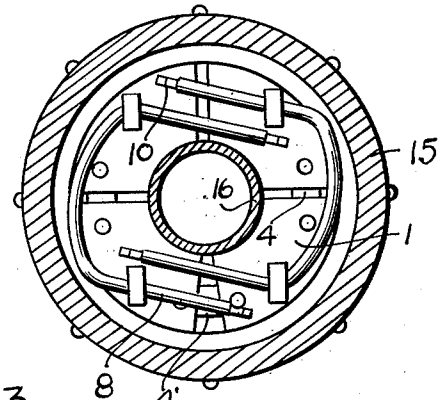


Fig. 3.

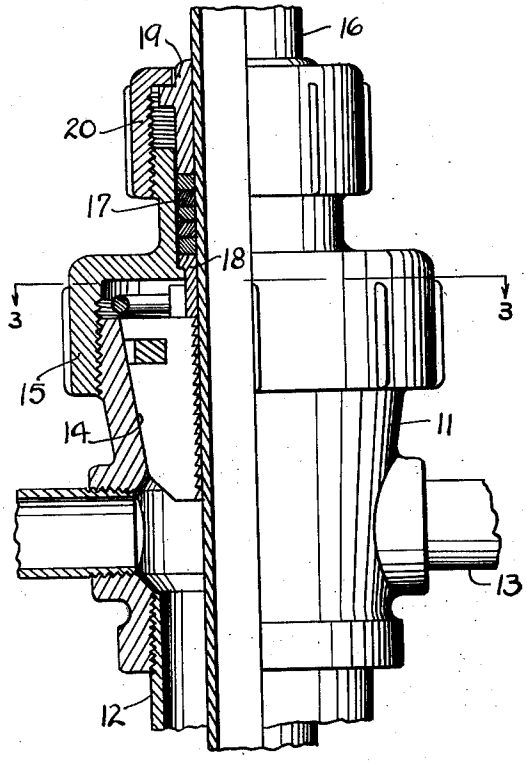


Fig. 4.

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UNITED STATES PATENT OFFICE

1,979,389

PIPE ENGAGING SLIP

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Application July 11, 1931, Serial No. 550,102

9 Claims. (Cl. 24—263)

The invention relates to slips for engaging and holding pipe while it is suspended in the well.

It is an object of my invention to provide a slip made up of a plurality of jaws hinged together so as to provide a unit for surrounding and gripping the pipe.

The invention includes a particular manner of hinging the jaws to each other in making up the pipe engaging unit.

Another object of the invention is to so form the handles that they will project laterally from the slips so as to be engaged by the operator without danger of being struck by the elevator.

A further object is to attach the handles to the slip so that said handles may be moved inwardly about the pipe when the slips are seated so as to be out of the way when the jaws are in operative position.

I further desire to provide a slip made up of a plurality of jaws so hinged together at one point that they may be swung apart to engage the pipe but capable of being slightly flexible at other pivotal points.

In the drawings herewith Fig. 1 is a top plan view of my slips with the handles extended, certain parts being broken away to show one of the hinge members.

Fig. 2 is a central vertical section through the slips shown in Fig. 1.

Fig. 3 is a transverse section on the plane 3—3 of Fig. 4.

Fig. 4 is a side view partly in elevation and partly in vertical section showing my slips as employed with the usual casinghead and flow line equipped for production.

The particular construction of my slips will be understood best from Figs. 1 and 2. I employ a plurality of jaws hinged together to make up a single unit surrounding the pipe. I have shown four jaws 1 which are tapered downwardly on their outer surfaces and toothed at 2 on their inner faces, said teeth being inclined upwardly to better engage and support the pipe. There are radial grooves or recesses 3 on the outer faces of each of the slips adjacent the upper end, said grooves being sufficiently deep to accommodate hinge members 4 between adjacent slips. The jaws are spaced slightly apart at the points where they are hinged together, there being three separate hinges. The jaws are not hinged at one side as shown at 5 where they are adapted to swing apart to engage about the pipe.

The hinge 4' opposite the point 5 where the jaws swing open is pivoted on each end to the jaws by pins extending downwardly through the slots 3 and the plates 4' to allow free swinging movement. The inner face of the hinge plate 4' is only slightly curved so as to not interfere with the opening of the jaws about the plate 4' as a pivot. The two plates 4 are formed and mounted so that the inner face will contact with the inner wall of the groove or recess 3. With reference particularly to Fig. 1, the inner face of the plate 4 is recessed on its inner face to provide two stop surfaces 7 adjacent each end, which bear against the inner wall of the groove 3 and limit the outward swinging movement of each jaw relative to the hinge plate. There is, therefore, only a slight flexibility between these two pairs of jaws connected with the two hinge plates 4.

The jaws are moved to and from the position engaging the pipe by means of opposite handles 8. Said handles are U shaped with the legs projecting inwardly and slidable through eyelets 9 formed upon upwardly projecting ears secured upon the jaws 1. As will be noted from Fig. 1 each jaw has an eyelet formed thereon at the upper end and aligned so as to slidably receive the legs of the U shaped handles. The openings through the eyelets for the handles are comparatively large to allow a free sliding movement of the handles relative thereto. The inner ends of the handles are upwardly curved and formed with shoulders 10 adapted to contact with the inner sides of the eyelets and limit the outward movement of the handles therein. It will be seen that the unitary slip, made up of four jaws as shown, may be handled by means of the two opposite handles which project laterally from the slip in such manner that the hands of the operator will not come within reach of the elevator which ordinarily is dropped over the pipe against the slips. It is also to be noted that when the jaws are properly placed in position engaging the pipe the handles may be moved slightly inward and at a slight angle relative to each other so that the handles will be positioned approximately within the outline of the upper end of the slip as shown particularly in Fig. 3.

My slips are intended particularly for use with the usual casinghead as shown in Figs. 3 and 4. In Fig. 4 I have shown a casinghead 11 of usual construction secured at its lower end to the casing 12 and having lateral outlets 13. The interior of the casinghead is downwardly tapered at 14 to receive the slips. The upper end of the casinghead is threaded for engagement with a cap 15 which is formed to engage about the tubing or flowline 16 through means of a stuffing box thereon.

Said stuffing box includes the packing means 17 supported upon a lower gland 18 and clamped between the same and the upper gland 19. Said upper gland is adapted to be moved downwardly to compress the packing by means of the threaded cap 20.

When the slips have been placed in position in the tapered seat 14 of the casinghead engaging and supporting the tubing 16, the upper end of the casing may be closed about the tubing as just described. The lower end of the gland 18 may be moved downwardly through the screwing of the cap 15 so as to be clamped against the upper end of the casinghead.

The closing of the upper end of the casinghead will be possible with my slips through the fact that the handles formed and attached to the slips, as previously described, may be shoved inwardly into the position shown in Fig. 3. My slips are, therefore, not only adapted for the handling of tubing and other pipe generally, but may be used particularly in supporting the tubing in the casinghead for flowing or pumping the well. The slips are easily and economically manufactured and are convenient and safe in operation.

What I claim as new is:

1. A unitary pipe-engaging slip comprising two pairs of jaws, each pair hinged together for a limited, relative, swinging movement, said pairs of jaws being hinged together at one side to allow free movement to swing apart at the other side, and a handle for each pair slidable laterally relative to said jaws in opposite directions.

2. A pipe engaging slip including two pairs of jaws, said jaws being pivoted together except at one side where they may swing apart, a U-shaped, laterally extending handle on each pair of jaws, each handle being slidable inwardly to lie approximately within the circumference of the upper ends of said slip.

3. A pipe engaging slip including a pair of jaws hinged together, upwardly extending eyelets on each jaw, a U-shaped handle, the legs of which extend slidably through said eyelets to allow an approximately radial sliding movement of said handle in said eyelets, the handle normally extending materially outside the slip, but movable to lie within the upper circumference of said slip.

4. A pipe engaging slip including a pair of jaws hinged together, upwardly extending eyelets on each jaw, a U-shaped handle, the legs of which extend slidably through said eyelets to allow an approximately radial sliding movement of said handle in said eyelets, the handle normally extending materially outside the slip, but movable to lie within the upper circumference of said slip, and means on the inner ends of said handles to limit the outward movement of said handles and operatively engage said eyelets.

5. A pipe engaging slip including a plurality of jaws hinged together, handles secured to said jaws, said handles being of rigid material and extending normally in an approximately horizontal position from said slip and slidable relative to said slip to be moved into position above said jaws.

6. A pipe engaging slip including pipe engaging jaws secured together, eyelets on certain of said jaws and handles slidably mounted in said eyelets to move in an approximately horizontal direction radially relative to the pipe.

7. A plurality of pipe engaging jaws secured together as a unit, and a handle mounted to slide in an approximately radial direction relative to said jaws whereby said jaws may be moved to and from pipe-engaging position.

8. A pipe engaging slip structure including a body portion, a handle therefor, and means connecting said handle to said body so that said handle extends radially of said body when in slip supporting position.

9. A pipe engaging slip construction, a handle therefor extending radially of the slip, and means connecting the slip and handle so that the weight of the slip may be carried by said handle when the handle is perpendicular to the slip construction.

JAMES H. HOWARD.