

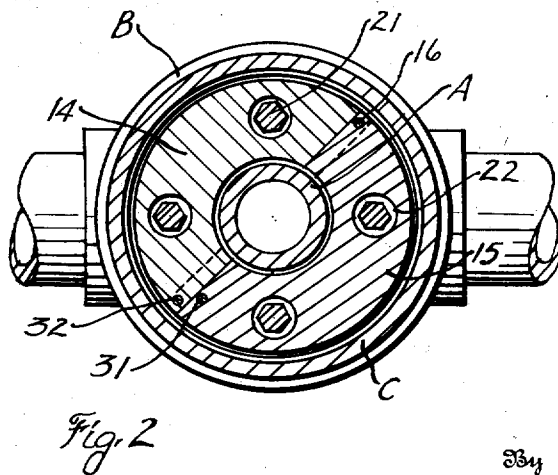
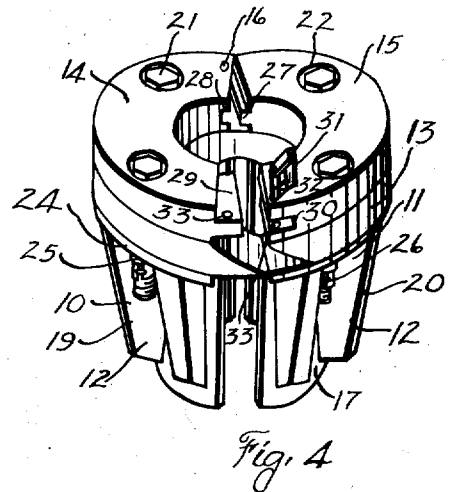
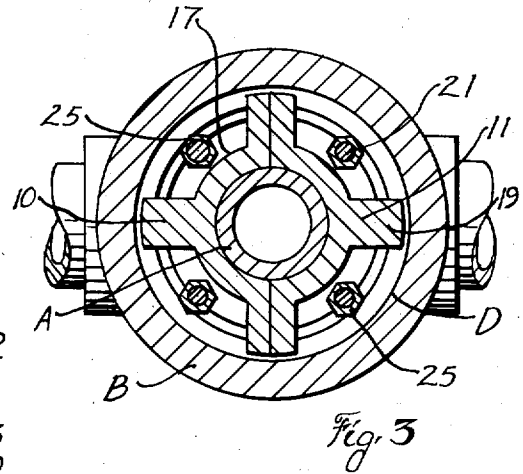
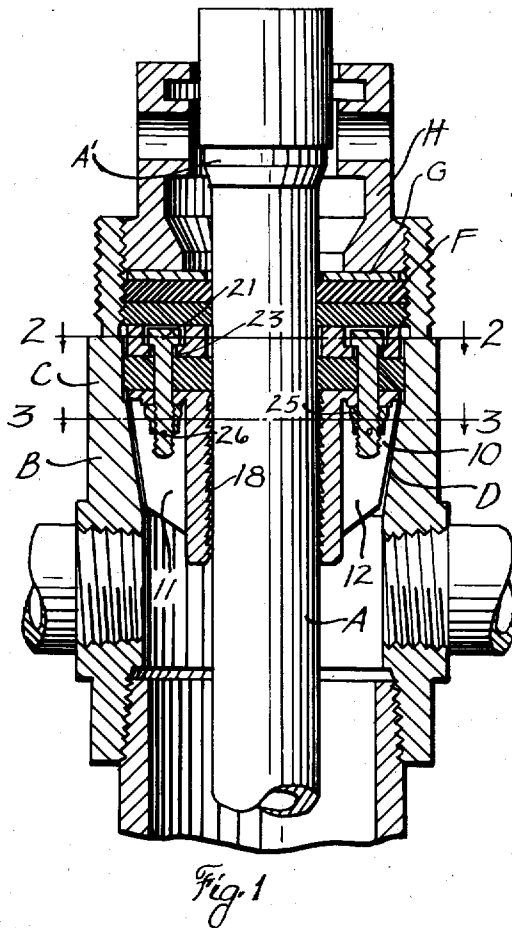
March 16, 1937.

S. P. TSCHAPPAT

2,073,890

TUBING HEAD

Filed April 6, 1935



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2,073,890

TUBING HEAD

Sheridan P. Tschappat, Tulsa, Okla.

Application April 6, 1935, Serial No. 15,035

2 Claims. (Cl. 166—14)

This invention relates to new and useful improvements in slips.

One object of the invention is to provide a slip structure including a lower, or supporting member, having teeth for engaging around a tubing and an upper member connected to the lower member, but separated therefrom by a packing adapted to be distorted by a load placed upon the upper member to pack off the tubing and the head.

A further object of the invention is to provide a combined blow-out preventer and slips which may be used to pack off the well casing while running tubing into the well.

Another object of the invention is to provide improved slips having an elastic packing arranged to co-act with the wall of a head, so as to pack off the tubing and the head when the slips are forced down into the head, either by the weight of the tubing, or otherwise, whereby the functions of a blow-out preventer are combined with the slips.

A construction designed to carry out the invention will be hereinafter described, together with other features of the invention.

The invention will be more readily understood from a reading of the following specification and by reference to the accompanying drawing, in which an example of the invention is shown, and wherein:

Figure 1 is a vertical sectional view of a portion of a tubing supported in a head by a slip structure constructed in accordance with the invention.

Figure 2 is a horizontal, cross-sectional view taken on the line 2—2 of Figure 1.

Figure 3 is a horizontal, cross-sectional view taken on the line 3—3 of Figure 1, and

Figure 4 is a prospective view of the improved slips partially opened.

In the drawing, the numerals 10 and 11 designate the two semicircular sections which comprise the slips, or slip structure. Each section comprises a lower member 12 and these lower members are substantially duplicates of each other.

The members 12 are surmounted by a split semi-annular packing member or ring 13. On top of the packing member is mounted a semi-annular carrier or top member 14, while a similar member 15 is mounted on the other packing member.

The members 14 and 15 are hinged together on a pin 16.

Each lower member 12 comprises a semi-annular skirt 17, having teeth 18 on its inner surface adapted to engage the tubing A when the slips are placed in the bowl B of the tubing head C.

Semi-annular flanges 24 overhang the skirts. Upright wings or webs 19 extend in diverging relation from each skirt and depend from the flanges, and also, have their outer faces 20 curved and inclined so as to rest upon the inclined surface D of the bowl B in the usual manner. From the foregoing it will be seen that when the slips are placed around the tubing A and dropped into the bowl B, the wings 19 sliding down the inclined wall D, will cause said slips to snugly embrace the tubing, whereby the teeth 18 will be forced into engagement with the tubing and support the same in the customary manner.

In order to unite the members of the slip structure, bolts 21 are employed. The heads of these bolts are countersunk in sumps 22 in the upper surface of the members 14 and 15. These bolts pass through enlarged apertures 23 in the members 14 and 15, as is shown in Figure 1, and then through the packing member 13 and thence through the top flanges 24 of the lower members 12. Castle nuts 25 are screwed onto the lower ends of the bolts and secured by cotter keys 26. By enlarging the apertures 23, the lower members 12 are free to move independently of the top members and thus adjust themselves to the bowl of the head and the tubing.

It will be observed that the head C has an internal annular packing band E offset outwardly from top of the inclined wall D of the bowl. This band is of less diameter than the internal diameter of the upper portion of the head. The flanges 24 are less in diameter than the band so as to permit the slips to freely slide down into the bowl. The packing ring 13 has an external diameter slightly greater than the internal diameter of the band, so when said ring is carried down within said band it will be distorted into packing engagement with said band and the tubing, thereby packing off the tubing and the head. The members 14 and 15 may be of such diameter as to have a relatively close sliding fit at the top of the band, thus preventing the packing ring 13 from flowing around the outer under edges of said members.

There are certain details which are employed to increase the efficiency of the structure. As before stated, the top members 14 and 15 are hinged together by a pin 16. The member 15 is provided with a tenon 27 engaging in a mortise 28 at the hinged portion of said slips. The member 14 has at its front, or open end, a tenon 29 which engages in a mortise 30 in the member 15. When the slips are closed these tenons engage in the mortises and prevent relative vertical displacement of the top members and also provide a

more substantial structure. In order to fasten the slip sections 10 and 11 in their closed position, I provide a latch 31 which is countersunk in the member 15 and is adapted to slide vertically. This latch has a pin 32 adapted to pass through apertures 33 in the tenon 29 and the member 15.

By elevating the latch, as is shown in Figure 4, the slip sections may be opened, but when the latch is pushed downwardly after the sections have been closed, said sections will be locked in their closed positions. This lock or latch is quite important because it prevents the fluid pressure from spreading or opening the slips after they have been fastened in the head around the tubing. In order to prevent the pressure fluid from bypassing the packing ring 13 the split ends thereof are beveled so as to form a scarf joint when the slips are closed.

In running tubing in the well the slips are dropped into the head C around the tubing A and no other packing is employed. Several methods may be employed to force the slip sections 10 and 11 down into the bowl B, so that the packing ring 13 will pack off the tubing and head. Usually the tubing hangs or shifts off the axial center of the head and this causes the teeth 18 of one of the sections to grip the tubing, whereby said section will be pulled down into the bowl, thus pulling the entire assembly down into place. The bolts 21 will pull the top members 14 and 15 downward and they will force the oversize packing ring into the band E. It is apparent that the upset shoulder A' at the top of the tubing would engage the members 14 and 15 and force the slips down into the bowl, if the tubing were lowered. Any downward force contributed by the tubing may be used to push the slips into place.

If the well shoulder head or a high or dangerous pressure build up below the slips it is obvious that a blow-out would be prevented. The pressure exerted upwardly against the slip sections

10 and 11 would be off-set by the weight of the tubing hanging on the teeth 18 of said sections. Upward displacement of the packing ring 13 would be defeated by the members 14 and 15, which are in turn held by the bolts 21 secured to slip sections 10 and 11. The packing ring being thus held, upward pressure would tend to distort said ring and enhance its packing contacts.

When it is desired to pack off the head C after the tubing is in place packing rings F are placed in the head so as to rest upon the top slip members 14 and 15. A metal follower ring G (made in two sections) is mounted on the packing rings and a packing nut H is then screwed into the top of the head in the usual manner, whereby a downward pressure is exerted not only on the packing rings F, but also upon the packing ring 13. Such an arrangement gives a double pack in the head.

What I claim and desire to secure by Letters Patent is:

1. The combination of a tubing head having an inclined bowl, of a slip assembly supported in said bowl and including a packing ring for packing off against the inter-wall of the head and the tubing passing therethrough, packing rings carried by the slip assembly thereabove in the head, a follower ring mounted on the last named packing ring, and a packing nut engaging in the upper end of the head and exerting a downward pressure on the packing ring above the slips as well as upon the packing ring within the slips, whereby the head is packed off at two points.

2. Well slips comprising, lower slip members having internal pipe engaging teeth and outwardly extending supporting wings, top members hinged together, a latch for fastening said top members together, an elastic packing ring interposed between the top members and the lower members, and bolts passing through the members and the packing ring and having their heads countersunk in the top members, and nuts on said bolts for holding the members thereon.

SHERIDAN P. TSCHAPPAT.

CERTIFICATE OF CORRECTION.

Patent No. 2,073,890.

March 16, 1937.

SHERIDAN P. TSCHAPPAT.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 1, second column, line 14, for the words "the unite" read to unite; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 27th day of April, A. D. 1937.

(Seal)

Leslie Frazer
Acting Commissioner of Patents.

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