

Oct. 19, 1937.

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2,096,565

TUBING HEAD

Filed April 30, 1936

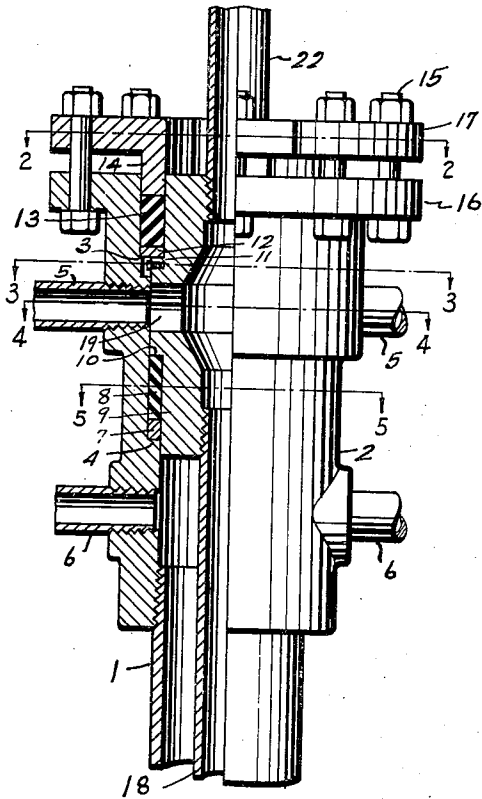


Fig. 1

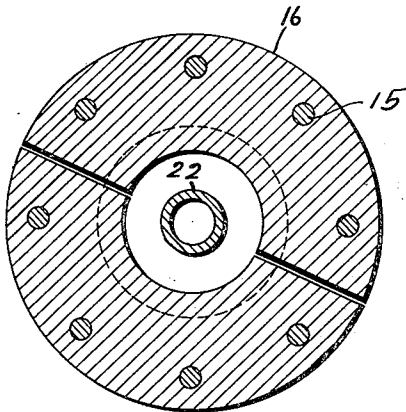


Fig. 2

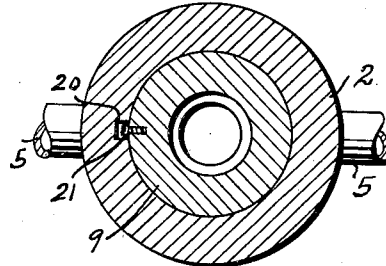


Fig. 3

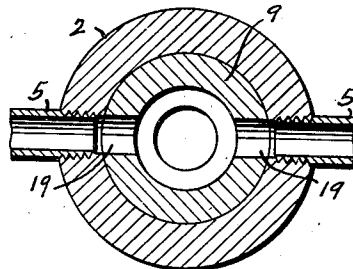


Fig. 4

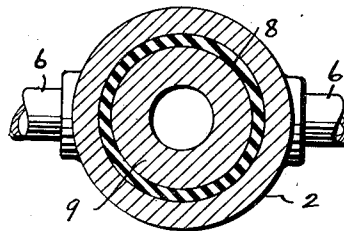


Fig. 5

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2,096,565

TUBING HEAD

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Application April 30, 1936, Serial No. 77,232

6 Claims. (Cl. 285—22)

This invention relates to a tubing head and has particular relation to a novel type of hanger mounted in the head for suspending the tubing in a well.

5 An object of the invention is to provide in combination a tubular head having one or more outflow lines and provided with an internal seat with a tubing hanger fitted into the head and supported by the seat and having outlet ports with means
10 for aligning the ports with the outflow lines of the head.

It is another object of the invention to provide a head having an outflow line and a tubular hanger therein having an outlet port, the head and
15 hanger being so shaped as to fit closely together above and beneath the outflow line and having a packer above and beneath the outflow line around the hanger so as to form fluid tight joints between the hanger and head.

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

Figure 1 shows a side view of the head partly in section.

Figure 2 shows a cross sectional view taken on the line 2—2 of Figure 1.

30 Figure 3 shows a cross sectional view taken on the line 3—3 of Figure 1.

Figure 4 shows a cross sectional view taken on the line 4—4 of Figure 1, and

35 the line 5—5 of Figure 1.

Referring now more particularly to the drawing wherein like numerals of reference designate the same parts in each of the figures, the numeral 1
40 designates a pipe adapted to be located in a well bore and to the upper end of which the tubular head 2 is attached. This head has the upper and lower annular inside seats 3 and 4 and has the outflow lines 5 between the said seats.

Beneath the seat 4 the head also has the outflow lines 6, said lines 5 and 6 being equipped with
45 suitable control valves (not shown). On the seat 4 there is the annular metal ring 7 supporting the annular sleeve-like packing 8 of rubber or other resilient material. There is a tubular hanger 9
50 whose lower end fits closely within the head beneath the seat 4. This hanger has an external annular downwardly facing shoulder 10 which rests on the packing 8.

The upper end of the hanger is reduced forming
55 an external annular shoulder 11 thereon

which is aligned with the shoulder 3 and supported on said shoulders is an annular metal ring 12 which supports the packing sleeve 13 which is fitted between the upper end of the hanger and the head.

A gland 14 is fitted between the upper end of the hanger and head against the packing 13 and is held in clamping relation with said packing by means of the bolts 15 which are fitted through the registering flanges 16, 17 on the head and gland
10 respectively.

An inner string of tubing 18 has its upper end connected to the lower end of the hanger 9 and when the tubing is lowered into the well and the hanger is landed on the packing 8 it will compress said packing to form a tight seal with the head as well as with the hanger and as above stated the packing 13 is compressed by the gland 14 to form a tight seal between the head and hanger. Between the upper and lower packing
20 as well as beneath the lower packing the hanger fits closely within the head so that close fitting joints will be formed which, together with the packing, will prevent any leakage between the hanger and head.

The hanger 9 is provided with outlet ports 19 and in order to insure the registration of these ports with the flow lines, when the hanger is landed, the head is provided with a deep notch or groove 20 leading downwardly from the shoulder 3 and the hanger is provided with an external projection which will be aligned with and which will fit into said groove as the hanger is lowered and this projection is positioned to cause the ports 19 to align with the flow lines 5. As shown this projection is formed by the head of a set bolt 21
35 which is screwed into the hanger, although any other type of projection may be employed.

Screwed into the upper end of the hanger there is a pipe 22 by means of which the tubing is lowered and which also may serve for the connection of a Christmas tree or other flow controlling means thereto.

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 we claim is:—

1. A tubular head having a side outlet, a seat in the head beneath the outlet, a tubular hanger in the head shaped to be fitted downwardly into the head and having a side port and a downwardly facing external shoulder beneath the port, packing around the hanger between the shoulder and
55

seat and arranged to support and be compressed by the hanger and means for aligning the port with the outlet while landing the hanger on its support.

5 2. A tubular head having a side outlet, a seat in the head beneath the outlet, a seat in the head above the outlet, a tubular hanger shaped to be fitted downwardly into the head and having a side port arranged to be aligned with the outlet
10 and also having a downwardly facing shoulder beneath the port and an upwardly facing shoulder above the port, packing around the hanger between the lower seat and lower shoulder, packing around the hanger on the upper seat and shoulder, clamp means adjustable on the head and
15 clamping against the upper packing.

3. A tubular head having a side outlet, upper and lower seats in the head above and beneath said outlet respectively, a tubular hanger shaped to be lowered into the head and to fit closely within the head beneath the respective seats, the hanger having a side port arranged to be aligned with the outlet and also having a downwardly facing shoulder beneath the port and an upwardly facing shoulder above the port, packing around the hanger between the lower seat and lower shoulder, packing around the hanger on the upper seat and shoulder, clamp means adjustable on the head and clamping against the upper packing.

30 4. A tubular head having a side outlet, a seat in the head beneath the outlet, a seat in the head above the outlet, a tubular hanger shaped to be fitted downwardly into the head and having a side port arranged to be aligned with the outlet
35 and also having a downwardly facing shoulder beneath the port and an upwardly facing shoulder

above the port, packing around the hanger between the lower seat and lower shoulder, packing around the hanger on the upper seat and shoulder, clamp means adjustable on the head and clamping against the upper packing, and means for aligning the port with the outlet while landing the hanger on the lower packing.

5. A tubular head having a side outlet, a seat in the head beneath the outlet, a seat in the head above the outlet, a tubular hanger shaped to be fitted downwardly into the head and having a side port arranged to be aligned with the outlet and also having a downwardly facing shoulder beneath the port and an upwardly facing shoulder above the port, packing around the hanger on the upper seat and shoulder, clamp means adjustable on the head and clamping against the upper packing, the lower packing forming a support for and arranged to be compressed by the hanger when the hanger is landed in the head
20 and means for aligning the port with the outlet while landing the hanger on the lower packing.

6. A tubular head having a side outlet, a seat in the head beneath the outlet, a tubular hanger shaped to be fitted into the head and having a side port arranged to be aligned with the outlet and also having an external supporting means beneath the port, packing around the hanger between said seat and said supporting means on the hanger, said assembly having an annular upwardly facing seat above the outlet, packing around the hanger on said upper seat, clamp means adjustable on the head and clamping against the upper packing.

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