April 29, 1930. W. E. KEENAN 1,756,597

OIL WELL CASING HEAD

Filed Aug. 30, 1928

Fig. 1.

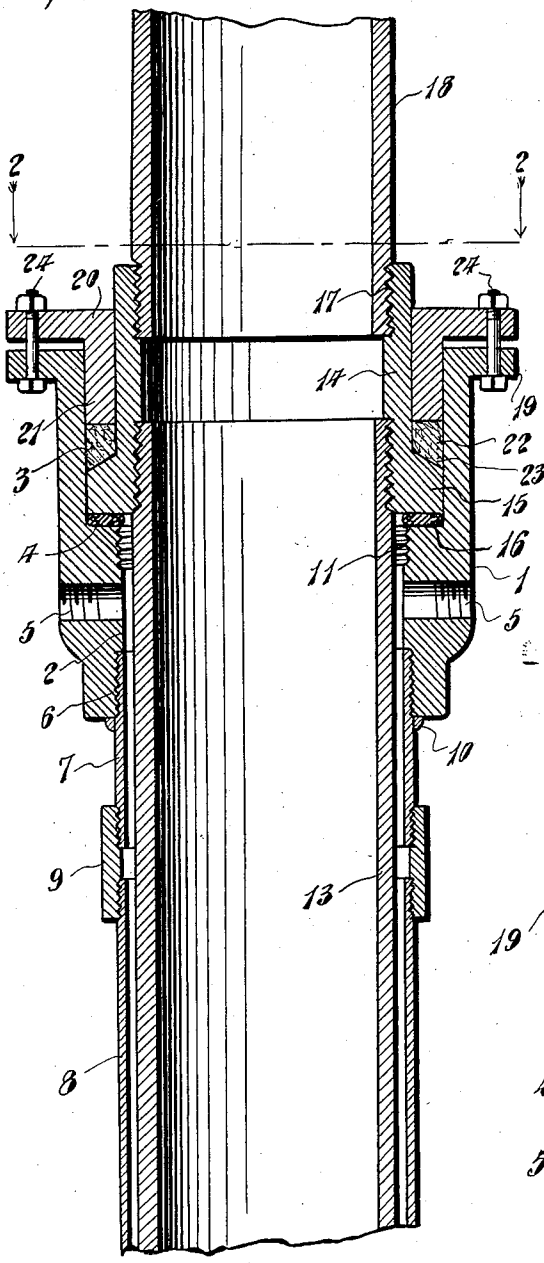


Fig. 2.

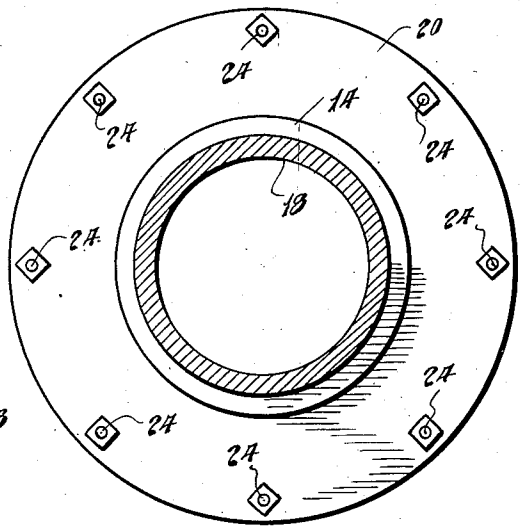
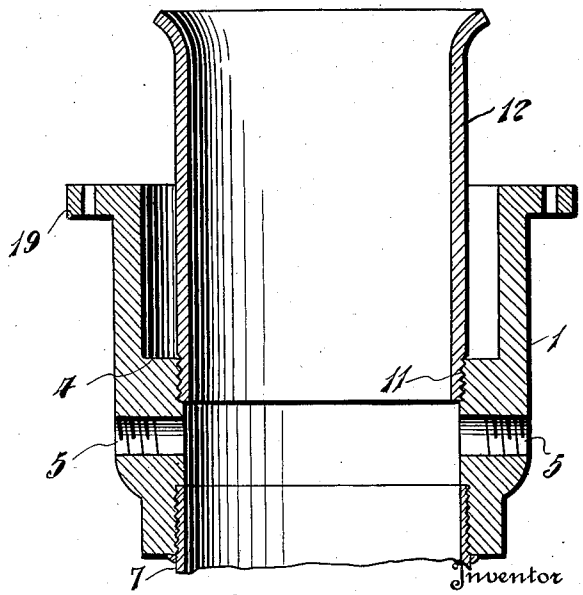


Fig. 3.



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UNITED STATES PATENT OFFICE

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OIL-WELL CASING HEAD

Application filed August 30, 1928. Serial No. 303,082.

This invention relates to oil well equipment and pertains particularly to an improved type of stuffing box casing head.

The primary object of the present invention is to provide a casing head structure through which under reaming operations may be conveniently and effectively carried out and in which a ground joint is provided and maintained in tight condition by an inner string casing support.

Another object of the invention is to provide an improved type of casing head employing a gland anchor which, in addition to maintaining a packing gland in place, acts to secure the casing in position in the well.

The invention broadly comprises a head body of cylindrical formation having the central passage therethrough of greater diameter adjacent one end than at the other end and with a shoulder formed about the inner face thereof between the sections of the passage. In the smaller end of the passage, a coupling nipple is secured which is designed to threadably connect with an outer string casing and adapted to be extended into the other end is a collar member interiorly threaded to engage one end of an inner string casing, the collar at its inner end being of increased diameter and adapted to rest upon and compress a packing against said shoulder. A gland surrounds the collar and holds the packing in place against the enlarged portion thereof, thus securing the collar in the head and at the same time holding a packing in position to prevent leakage of gas from the well between the collar and the head.

This packing is assisted by the packing which is compressed between the interior shoulder of the head and the collar, the collar being securely held against the packing by the weight of the inner string casing carried thereby.

The invention will be best understood from a consideration of the following detailed description taken in connection with the accompanying drawing forming part of this specification, with the understanding, however, that the invention is not confined to any strict conformity with the showing of the drawing but may be changed or modified so long as such changes or modifications mark no material departure from the salient features of the invention as expressed in the appended claims.

In the drawings:—

Figure 1 is a longitudinal sectional view through the casing head structure embodying the present invention, showing an inner and outer pipe string attached thereto;

Figure 2 is a sectional view taken upon the line 2—2 of Figure 1;

Figure 3 is a view in longitudinal section of the head showing the guiding bell nipple attached thereto.

Referring to the drawing in detail, the numeral 1 indicates the body of the head, the same being provided with the usual longitudinal passage therethrough as indicated at 2, this passage being of materially greater width at one end as indicated at 3 than at the other end.

The portion of greater width of the passage opens through the upper end of the head and extends throughout substantially half the length of the same, a ledge 4 being formed about the inner wall of the passage where the two portions of the same join.

The lower portion of the body is provided with the laterally opening interiorly threaded gas outlet passages 5 to which suitable conducting pipes may be attached when desired.

The lower end of the passage 2 is threaded as at 6 for the reception of one end of a coupling nipple 7 which is designed to be connected with the outer string casing of the well, a portion of which is indicated by the numeral 8 by the casing coupling 9. The nipple 7 is preferably welded to the lower end of the head as at 10 to hold the same from turning or unscrewing when removing the head.

At the inner end of the portion of smallest diameter of the passage 2, there are formed the screw-threads 11 which are designed to receive one end of a guiding bell nipple of the character indicated by the numeral 12, when inserting into the well outer casing through the head, the inner string casing 13. After the inner string casing is in position the bell nipple 12 is removed from the head

and then there is attached to the upper end of the inner string casing the casing supporting collar 14 which, as shown, is of substantially the same overall diameter throughout except for the laterally projecting surrounding shoulder 15 formed at the inner end, which shoulder is designed to rest upon a suitable copper or asbestos gasket 16 positioned upon the ledge 4 upon the interior of the head.

It will thus be seen that the inner string casing is entirely supported by the supporting collar 14 and the weight of the casing holds the shoulder 15 of the collar securely against the packing 16 thus making the joint between the shoulder and ledge of the body head gas and liquid tight.

The upper end of the casing supporting collar 14 is interiorly threaded as at 17 to receive the well casing nipple, a portion of which is indicated by the numeral 18.

The upper end of the body of the head is provided with the laterally projecting surrounding flange 19 over which the lateral flange 20 of a packing gland 21 positions when the gland is extended into the upper end of the head between the same and the collar 14.

A suitable packing 22 is interposed between the lower edge of the gland 21 and the inclined upper edge 23 of the shoulder 15 and this packing is suitably compressed by extending bolts 24 through the superposed flanges 19 and 20 and drawing the flanges together thereby.

From the foregoing description, it will be readily seen that with a casing head of the character herein described, a tight leak-proof joint can be set up between the same and the inner string casing, which joint can be readily separated for renewal of the packing. It will also be seen that the packing of the joint is maintained tight through the application thereto of the weight of the inner string well casing which is supported by the supporting collar, in turn supported by the packing and flange formed about the wall of the passage through the head.

In the event of the development of a leak between the body 1 and the collar 14, replacement of the packing 22 may be made without lifting the casing, all that would be necessary would be to loosen the bolts 24, lift up the gland 20 and replace the packing therebeneath.

Having thus described my invention, what I claim is:—

1. An oil well casing head comprising a centrally bored body having a surrounding ledge in the wall of the bore, means for securing the body at one end of the bore to an outer string casing, a collar insertible into the bore from the other end with the inner edge opposing said ledge, means for attaching an inner string casing to the collar to be supported thereby, a packing between the said inner edge of the collar and said ledge, packing surrounding the collar adjacent said inner edge, and means working between the collar and the body for compressing said last packing.

2. A casing head comprising a body having a bore formed longitudinally therethrough, a portion of said bore being of materially less diameter than the remainder thereof, a flange formed about the wall of said bore at the inner end of the portion of smaller diameter and connecting the same with the remainder of the bore, means for securing the smaller end of the bore to an outer string casing, an inner string casing supporting collar designed to be inserted into the bore from the other end and having its inner end enlarged to form a surrounding shoulder, a packing arranged between the inner end of said collar and said flange and compressed against the flange by the collar, a packing surrounding the collar and resting upon the shoulder, and an anchor gland surrounding the collar and extending into the bore to compress the last mentioned packing against said shoulder.

3. An oil well casing head, comprising a centrally bored body formed interiorly to provide a surrounding ledge, means for securing the body at one end of the bore to an outer string casing, a collar insertable into the bore from the other end, a laterally projecting shoulder surrounding the inner end of the collar and disposed over said ledge, said collar being interiorly threaded to facilitate the attachment of an inner string casing thereto to be supported thereby, a packing between said shoulder and said ledge, packing surrounding the collar above said shoulder and resting thereon, and means working between the collar and the body whereby the last mentioned packing may be compressed against the shoulder.

In testimony whereof I hereunto affix my signature.

WILLIAM E. KEENAN.