Oct. 26, 1926. 1,604,580

G. H. JAQUES

CASING HEAD

Filed Sept. 25, 1925

Fig. 1

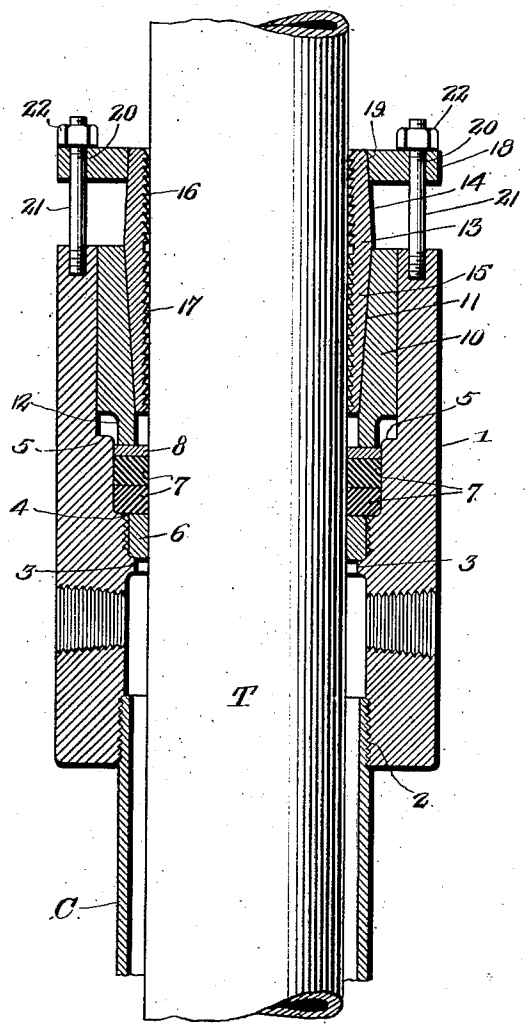



Fig. 2.

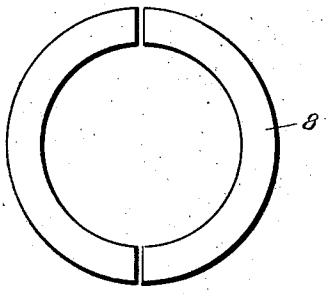



Fig. 3.

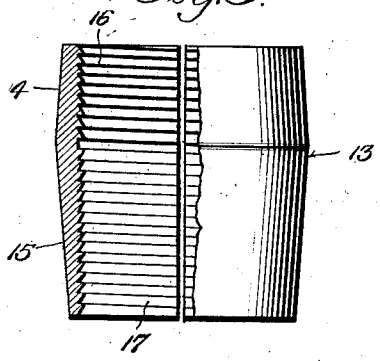
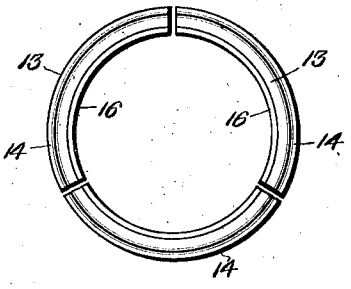



Fig. 4.



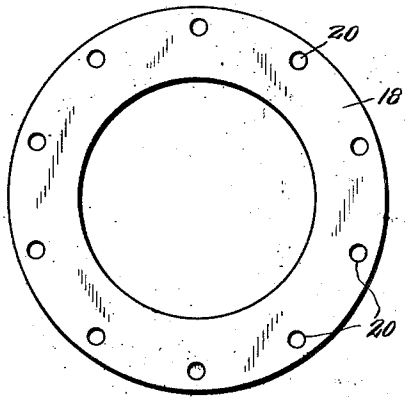




Fig. 5.

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# UNITED STATES PATENT OFFICE.

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## CASING HEAD.

Application filed September 25, 1925. Serial No. 58,624.

The invention relates to casing heads for oil wells and the like and has for its object to provide a novel form of head associated with means for effectively packing the joint between the head and the tubing and for anchoring the tubing to the casing head to prevent relative movement between the casing and the enclosed tubing by anchoring the tubing in the casing head in such manner as to prevent the string of tubing moving downward under its own weight, after it has been set, and also to prevent the well pressure raising the tubing.

The invention is illustrated in the accompanying drawings, in which:—

Fig. 1 is a sectional elevation of the head as applied to the casing and tubing.

Fig. 2 is a plan view of one of the split retaining rings for the packing.

Fig. 3 is a partial sectional elevation of the slips.

Fig. 4 is a plan view of the latter.

Fig. 5 is a plan view of the anchor or retaining ring.

Referring to the drawings, 1 indicates the main or tubular body portion of the head, which is internally screw threaded at 2 to engage the upper threaded end of the well casing C, within which latter is centered the string of well tubing T. The interior of the tubular body 1 is provided with annular shoulders 3, 4 and 5, the first two shoulders being adapted to receive and support the packing means interposed between the interior of the head and the exterior of the tubing. The packing means aforesaid comprises a split packing retaining ring 6 seating on the shoulder 3, one or more packing rings 7 of suitable material, the lowermost of which is seated on shoulder 4 and the upper edge of the retaining ring 6, and an upper split ring 8 of metal or the like, by means of which the packing is compressed and forced into intimate contact with the interior wall of the head and the outer surface of the tubing.

Fitting in the upper enlarged bore of the tubular member 1 is a sleeve 10 having a tapered bore 11 and a shouldered lower rim 12 engaging the upper face of split ring 8 and serving to compress the packing, when the sleeve 10 is forced downwardly in the tubular body portion 1.

Adjustably mounted in the tapered bore of the sleeve 10 are slips 13 having oppositely tapered upper and lower peripheral outer faces 14 and 15 and oppositely serrated inner faces 16 and 17, the teeth 16 being downwardly inclined and the teeth 17 upwardly inclined. These slips 13 are preferably formed originally as a tubular member having its exterior turned to produce the opposite tapers, bored to fit the exterior of the tubing and having oppositely inclined threads turned in its interior, the tubular member thus fashioned being split into three equal parts by means of a thin parting tool, so that each of the slips is arcuate in horizontal cross section and the three slips constitute an annular series of wedges interposed between the tapered bore of the sleeve 10 and the tubing.

Secured in the upper end of the tubular member 1 is a series of studs or bolts 21 provided on their outer end with nuts 22, which bolts pass through holes 20 in an anchor ring 18, the inner periphery of which ring is provided with a downwardly flaring or tapering surface 19 cooperating with the upper tapered surface 14 of the slips 13.

The various parts are assembled as illustrated in Fig. 1 and, when the nuts 22 are set up on the bolts or studs 21, the anchor or retaining ring 18 is forced downward toward the body portion 1, carrying with it the slips 13 and the sleeve 10. The cooperating tapered surfaces between the rings 18 and the slips and between the interior of the sleeve containing the slips causes the teeth or serrations on the slips to bite into the tubing T and lock the latter securely to the body 1 of the head. At the same time, the downward movement of the sleeve 10 compresses the packing 17 and causes the latter to effectively seal the joint between the tubing and the head to prevent the escape of gaseous or liquid media at this point. The upwardly inclined teeth or serrations 17 prevent any downward movement of the tubing with respect to the casing, so that, after the tubing has been set and the slips tightened up, the further downward movement of the casing is prevented. Similarly, the downwardly inclined teeth or serrations 16 lock the packing against upward movement due to well pressure and thereby obviates any possibility of blow outs.

As thus constituted, it will be seen that the new casing head serves to support the weight of the anchored string of tubing within the casing, prevents the well pressure from raising the string and, at the same

time, effects an absolutely fluid tight packing between the tubing and the head, thereby positively preventing a blow out from any cause. The casing also obviates the necessity of the application of landing clamps, anchor clamps and all other supporting and retaining devices usually employed in the application of the string of tubing in high pressure wells and furthermore renders it unnecessary for cutting landing nipples, since the tubing string may be landed and anchored in any desired position. It will be further noted that this new type of packing head is relatively simple, compact, may be manufactured at a small cost and, when applied as shown, greatly conserves cellar space and leaves all working parts for control of the well accessible.

While the invention has been illustrated and described with reference to the well tubing T, it will be understood that it is not restricted to use with such tubing, but is equally applicable to smaller size casing, when the latter is employed in connection with the outer casing.

What I claim is:

1. A casing head comprising a tubular member adapted to be secured to the well casing and provided with a series of internal shoulders, annular packing means supported by certain of said shoulders, an internally tapered sleeve fitting the tubular member and serving to compress the packing means, arcuate slips having serrated inner faces and oppositely tapered upper and lower peripheral outer faces, the lower peripheral outer faces engaging the tapered sleeve, an anchor ring having a tapered opening engaging the upper peripheral faces of the slips, and bolts engaging the upper edge of the tubular member for adjusting the anchor ring.

2. A casing head comprising a tubular member adapted to be secured to the well casing and provided with a series of internal shoulders, annular packing means supported by certain of said shoulders, an internally tapered sleeve fitting the tubular member and serving to compress the packing means, arcuate slips having oppositely serrated inner faces to engage the well tubing and oppositely tapered upper and lower peripheral outer faces, the lower peripheral outer faces engaging the tapered sleeve, an anchor ring having a tapered opening engaging the upper peripheral faces of the slips, and bolts engaging the upper edge of the tubular member for adjusting the anchor ring.

3. A casing head comprising a tubular member threaded to receive the upper end of a well casing and having internal packing receiving shoulders, an internally tapered sleeve engaging the upper part of the bore of said tubular member, arcuate slips having serrated inner faces to engage the well tubing and oppositely tapered upper and lower peripheral outer faces, the lower peripheral outer faces engaging the tapered sleeve, an anchor ring having a tapered opening cooperating with the upper peripheral faces of the slips, bolts mounted in the upper end of the tubular member and passing through openings in the anchor ring, and nuts on the bolts forcing the anchor ring toward the tubular member.

In testimony whereof I affix my signature.

GEORGE H. JAQUES.