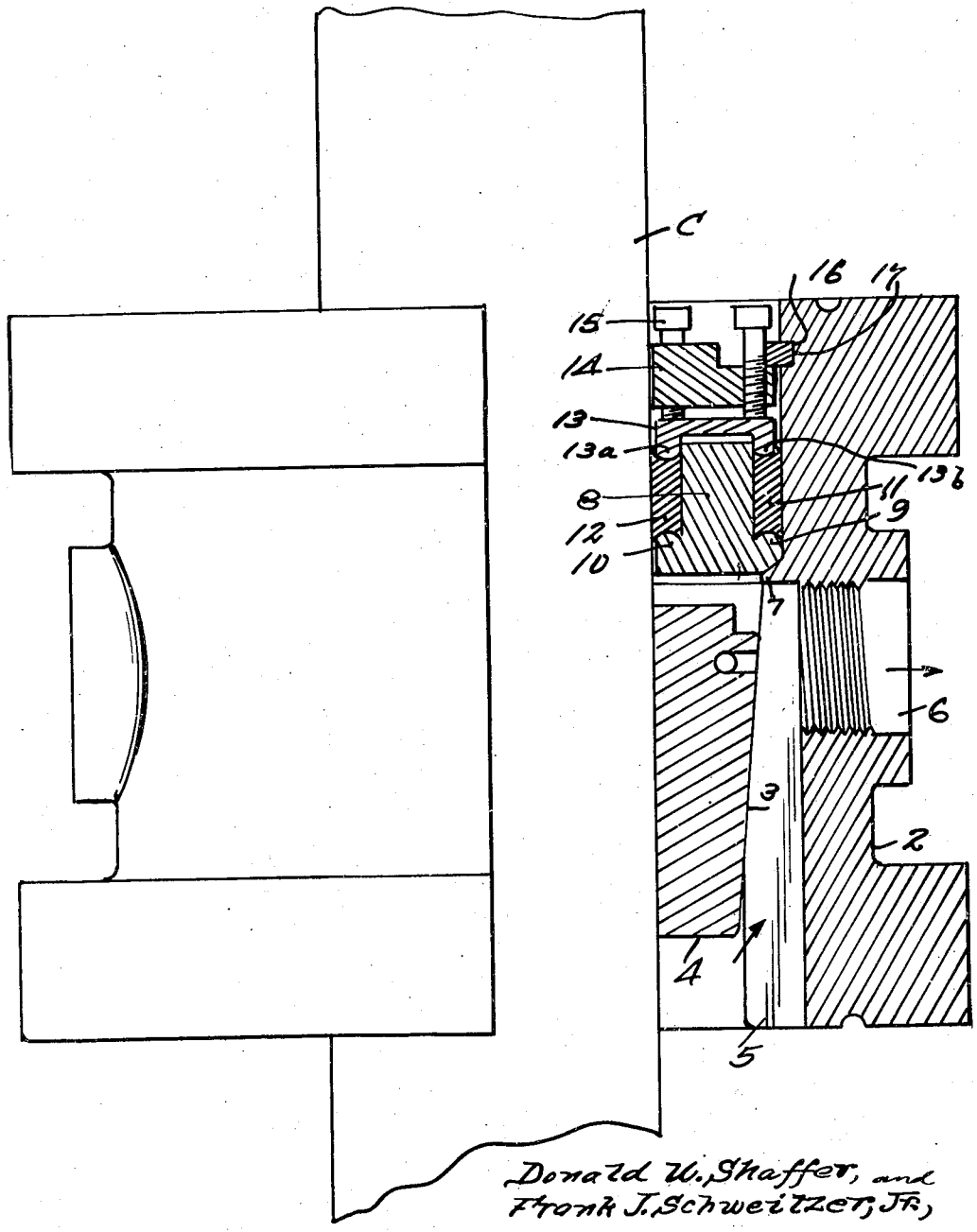
May 31, 1949. D. U. SHAFFER ET AL 2,471,658

CASING LANDING HEAD

Filed June 24, 1946



Donald U. Shaffer, and
Frank J. Schweitzer, Jr.,

INVENTORS;

BY their attorney

Frederick E. Maynard.

Patented May 31, 1949 2,471,658

UNITED STATES PATENT OFFICE

2,471,658

CASING LANDING HEAD

Donald U. Shaffer and Frank J. Schweitzer, Jr., Brea, Calif., assignors to Shaffer Tool Works, a corporation of California

Application June 24, 1946, Serial No. 678,907

4 Claims. (Cl. 285—22)

1

This invention is a slip supporting casing head and packing assembly for landing well casing installed in a gas or oil well.

It is a general practice to seal off the landed casing in a casing head by a packing make-up involving the threading of the head bore surface and a complementary gland ring.

An object of this invention is to provide a very compact, highly efficient, easily installed, reliable and rugged packer assembly of a structural combination which eliminates core threading and rim threaded ring elements to fit the same.

A further object of the invention is to provide a packer assembly including a combination of members which are removably interlocked in the casing bore.

An additional object is to provide a packer assembly in which the effective packing medium, of rubber type kind, can be readily compacted in place by the simple adjustment of a system of set screws—these constituting, with a companion element, the only screw threaded features of the landing head in so far as the packer is concerned.

And an object of the invention is to provide a key-ring, packer and casing interlock and means for compacting the packing medium and having the additional function of fastening the locking key-ring.

The invention resides in certain advancements in this art as set forth in the ensuing disclosure and having, with the above, additional features, objects and advantages as hereinafter developed, and whose construction, combinations and details of means, and manner of operation and functions will be made manifest in the following description of the herewith illustrative embodiment; it being understood that modifications, variations and adaptations may be resorted to within the scope, spirit and principle of the invention as it is claimed in conclusion hereof.

The drawing is a partial axial section of the casing head assembly.

The head includes a tubular, end flanged body 2 having a conical bore face seat 3 in its lower portion for the complementary reception of a set of casing gripping slips 4 of conventional type. In the seat 3 are one or more longitudinal bypass slots 5 for gas or oil flow to pipe outlets 6 in the side wall of the body 2.

At the upper end of the slip seat 3 is an annular, internal ledge 7 on which is removably supported a packer assembly which includes a crown ring 8 of a width to slide down into position on the ledge and around the interposed, central casing C which is to be landed and packed in the

2

head body 2. The crown ring 8 has an external, transverse shoulder 9 near its lower end, and also has an internal, transverse shoulder 10 located on the transverse plane of the outer shoulder and both shoulders facing upwardly.

This crown ring 8 constitutes a core and carrier of packing means superimposed thereon and here embodying concentric and opposite packing bands 11 and 12 lodged on the said shoulders 9 and 10 and filling the space thereabove between the body of the crown and the head wall and the central casing C.

Means are provided to concurrently compact the said packing bands to effectively seal off the casing C and the head bore surface at zones around the seated crown 8; these bands being of rubber-type material, that is rubber or a suitable substitute therefor. The compacting device includes an annular follower ring 13 of a transverse width to cover the concentric bands 11 and 12 and of inverted U-section with marginal beads 13a and 13b standing on the exposed upper ends of the said bands and straddling the body of the crown 8 to provide for some descent of the follower 13 in compacting the packing bands.

Above the follower 13 is nested about the casing C a backing collar 14 having a system of longitudinally extending set screws 15 some of which are arranged near the outer margin or periphery of the collar; all of the set screws being adjustable downwardly for the purpose of compacting the bands 11—12 onto the crown shoulders and their expansion onto the casing and the near bore wall surface. For the purpose of removably locking the backing collar 14 in place with great security an expansive, spring key-ring 16 is countersunk in the wall of the head body 2 near its upper end; this key-ring sufficiently overhanging the top of the collar 14 to lock it against unintentional outward movement in the head bore and also supporting the collar as it may be repressed by operation of the several set screws 15 in compacting the bands 11—12.

Some of the set screws 15 are located so close to the key-ring 16 as to lock it against inward contraction from its recess 17 in the body 2.

It will be seen from the above that the two packing bands set solidly, one on the casing C and the other on the bore wall face of the head body 2 and are buttressed by the core forming body of the crown 8.

In order to remove the packer combination it is only necessary to remove the outermost set screws 15 and then pull the key-ring to give

ready access to the nested packer elements in the body bore.

What is claimed is:

1. A casing head assembly including a tubular body, a crown ring slidably fitting and rigidly seated on the bore wall of the body, rubber-type packing bands mounted concentrically on the crown ring one to seal on the body wall and the other on an interposed, central wall casing, a follower ring axially movable in the said body and concurrently engaging said bands, and a collar slidably fitted and locked in the bore of the body and having screws for jamming the follower onto the bands.

2. A casing head assembly including a tubular body, a crown ring slidably fitting and rigidly seated endwise on the bore wall of the body and having concentric packing bands lodged endwise thereon, one on the inner face and the other on the outer face of the crown ring, an annular follower bridging the body of the crown ring and engaging the top ends of the said bands, a collar freely telescopic into and a key ring by which it is interlocked in the bore wall of the said body, and screws into the collar for jamming down the follower to compact the bands whilst the collar reacts on the key ring.

3. A casing head assembly including a tubular body having a bore wall ledge, a packing unit lodged on the ledge and including concentric packing bands, a backing collar and an expansion spring key ring by which it is telescopically secured in the bore of the body, and screw means adjustable in the collar to concurrently jam the bands to sealing position.

4. The casing head assembly of claim 3; the screw means forming a device whereby the key ring is normally locked.

DONALD U. SHAFFER.
FRANK J. SCHWEITZER, JR.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,976,238	Long et al.	Oct. 9, 1934
1,988,442	Begg	Jan. 22, 1935
2,019,885	Black	Nov. 5, 1935
2,023,033	Spalding	Dec. 3, 1935