LANDING HEAD FOR PLURAL CASINGS AND OIL TUBINGS

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This invention is a plural casing and oil tubing head for deep well hookups. Therefore it has been necessary to laboriously remove the special head cap in which the oil tubing is commonly landed or suspended in order to be able to pull an inner or oil casing from the main landing seat of an installed casing head. This was for the reason that the inner casing could not be pulled from or inserted into the cap adapted to seat the upper end of the oil tubing. In other words, this cap structurally overhangs the seat on which the inner casing is landed, and the landed part cannot be pulled until the tubing cap is disassembled. The old apparatus thus not only makes for very expensive installation and dismantling, labor costs, but additionally involves many separate make-up parts and incidental machining, handling, packing and storage.

It is therefore a purpose of the instant invention to provide a casing head whose main body is intended to form the principal support not only of a plurality of concentric casing strings in a hole or producing well, but to also provide, in its own body, a seat for the innermost and central oil tubing string. And, in this connection, an object accomplished is the total elimination of the separate tubing cap and the incidental operations and parts associated therewith.

Further the invention involves the objective principle that means are provided which enable the ready installation and later pulling of the oil tubing string and, if needed, the inner casing without disturbing the primary seating portion of the head.

It is the general practice to attach several production hook-up elements to the conventional oil tubing landing cap (or subhead as it may be called) since this latter is provided with requisite lateral outlets for fittings used in the hook-up. A purpose of this invention is to provide for the permanent set-up of the production fittings directly on the main head body and thus eliminate the usual knock-down of the fittings commonly attached to the tube landing cap.

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

The drawing is an elevation in partial axial section, of the head and hookup. The head includes a main, basal, tubular body 2 having a somewhat reduced lower end portion 3 in which is telescoped and rigidly fixed and secured the landed or outer casing O on which the head is supported, though a base flange 4 of the head may be used if and when desired as additional or primary support.

In the lower end of the bore of the head there is a suitable conical seat 5 to receive complementary slips 6 forming a group to contractively clinch on and suspend a given, inner or collar casing 7; the group of slips being insertible through the open top end of the head bore. When the inner casing I is installed its upper end is externally, thoroughly packed in a suitable manner, as by a bench ring 7 bedded on a shoulder 8, of the head bore, just above the slip seat 5; this ring telescoping along the outside surface of the casing I. On the bench ring are mounted concentric packing gaskets 9 and 10, one to seal on the casing I and the other on the bore surface thereof; these packings being compressed by a saddle ring 11 by action of clamp screws 12 (one shown) threaded in the ring 7. A spring, hold-down ring 13, partly sunk in the bore wall of the body 2, locks the packing unit including the ring 7 and the saddle ring 11 above the set slips.

Lateral outlets 15 are provided below the packing bench ring 7 for attachment of production fittings 16 and 17. The upper end of the head body 2 is provided with a hookup flange 18 centrally bored to a size sufficient to permit formation of a shoulder 19 outward from the bore surface 20 at the aforesaid packing unit.

Removably mounted on the shoulder 19 is a collar 21 having a central, conic seat 22 for the stable seating of a complementary, annular nipple 23 whose lower end is threaded to receive a complementary terminal of a string of oil tubing T to be suspended by the nipple, its seating collar 21 and the primary supporting head body 2. The upper end of the nipple is threaded as at 25 for attachment of any desired fitting or a pulling out tool.

A ring nut 26 screws into the collar to lock the nipple in situ, and the latter has a packing girdle 27 sealing on the bore of the collar.

Upper outlet ports 28 and 29 lead from the space between the inner casing I and the oil
tubing T and enable the direct attachment of desired hookup fittings as 30 and 31.

The collar is packed in the bore of the head body 2 by a gland device 32 which is held down by a lock, spring ring 33 in the bore wall.

From the above it will be clear that both the oil tubing and the inner casing I can be readily removed from the fixedly mounted casing head 2 without in any manner disturbing the hookup fittings which tap the outer casing O and the inner casing I; the great advantages of which will be fully obvious to those skilled in this particular art. This is for the reason that the tubing and its nipple can be pulled without dismounting the collar 21 from the casing seat 18. If the inner casing is to be removed then the collar is removed to clear the head bore for extraction of the inner casing and its packing unit and the slips—all the while, the hookup fittings being untouched.

What is claimed is:
1. In a well casing head, in combination, an outer casing, a cylindrical body member mounted on the outer casing and having a central bore, longitudinally spaced, downwardly and inwardly inclined step projections formed on the face of the body bore, an inner casing, spacing and packing means between the said inner casing and the outer casing resting on the lower of said projections, a tubular device concentric in the inner casing, and upper packing and spacing means between the inner casing and said device and directly resting on the upper of said projections.
2. The combination of claim 1; the said upper means being bodily removable from its said projection while the inner casing remains seated in said body and including a landing collar engaged on its seat and having a concentric removable nipple seated and packed in the bore of the landing collar.
3. The combination of claim 1; each said spacing means including elements which directly countersink in the bore projections and are not interdependent in seating relation.
4. The combination of claim 1; the upper spacing means including a collar counterseated directly on its bore projection and having a conical bore seat provided with a nipple for said device.
5. A well head for supporting a plurality of concentric, tubular string parts and including a main body member having a central bore whose face is provided with axially spaced inwardly and downwardly inclined steps forming seats, spacing and packing means removably supported on the lower of said seats adapted for reception and hanging of a respective concentric inner string part, and a spacing and packing means on the upper of said steps for reception and hanging of a respective string part within the first named string part; whereby each string part is supported by its means directly on the said member independently of the other string support.

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