UNITED STATES PATENT OFFICE

2,578,056

COMBINED TUBING HEAD AND BLOWOUT PREVENTER

Walter P. French, Houston, Tex., assignor to Oil Center Tool Company, Houston, Tex., a corporation of Texas

Application January 30, 1948, Serial No. 5,532

6 Claims. (Cl. 285—22)

1 This invention relates to a combined tubing head and blowout preventer.

An object of the invention is to provide a well head through which a tubing or other well pipe may extend into the well and, for which said tubing or pipe may be suspended with means incorporated therein for sealing about the tubing or pipe to prevent escape of well fluid about the pipe thus forming a blowout preventer.

It is another object of the invention to provide, in a construction of the character described, a blowout preventer which is completely enclosed within the head with operative means therefor accessible to an attendant for operating the preventer into sealing relation with the tubing or pipe or to release the same to inactive position.

It is a further object of the invention to provide well equipment of the character described wherein not only the blowout preventer but the operating mechanism therefor are substantially enclosed within the head whereby they will be shielded and protected against injury or distortion.

Other objects and advantages will be apparent from the following specification which is illustrated by the accompanying drawings, wherein:

Figure 1 is a vertical, sectional view of the head and preventer.

Figure 2 is a vertical, cross-sectional view taken on the line 2—2 of Figure 1 and

Figure 3 is a plan view, partly in section, of the blowout preventer.

Referring now more particularly to the drawings wherein like numerals of reference designate the same parts in each of the figures, the numeral 1 designates a substantially tubular well head member through which the well piping extends into the well.

Within said member and on opposite sides of the pipe passageway 2 there are opposed, similar, arcuate halves 3, 3 of the blowout preventer. These preventer halves, or sections, are of a general arcuate shape in plan view and they are each hinged to swing radially, with respect to the pipe passageway 2, on the hinge pins 4, 4. The head member 1 is provided with enlarged internal cavities 5, 5 of size and shape to permit the blowout preventer sections to swing outwardly into an inactive position entirely clear of the pipe passageway 2. Each section, or half, of the blowout preventer is provided with an arcuate groove 6 in its upper face to receive an arcuate seal 7. The seals 7 of the respective halves form a continuous seal around the blowout preventer which fits against, and forms a seal with, an annular downwardly directed face 8 of the head member when the blowout preventer is in closed, or active, position and the seal of the two halves 3, 3 is complementary thus forming a continuous annular seal 5 when the blowout preventer is closed to form a continuous seal ring about a pipe through the head.

Each seal 7 may be maintained in place by an arcuate metallic wedge 9, as more clearly shown in Figure 1.

Within the inner face of each half of the blowout preventer there is an arcuate groove 10 and fitted within each groove there is an arcuate seal 11, said seals registering when the blowout preventer is closed to form a continuous seal ring about a pipe through the head.

Mounted on the sides of the head 1 in diametrically opposed relation are the bonnets 12, 12 which may be secured to said head member in any preferred manner. As shown these bonnets are secured in position by means of set bolts 13.

Mounted to swivel, or rotate, in the respective bonnets are the actuating screws 14, 14. These screws are in sealed relation with the outer ends of the bonnets by means of suitable stuffing boxes 15 and their outer ends are exposed to receive a wrench or other implement by means of which they may be turned. They are also sealed inwardly of said stuffing boxes in any preferred manner preferably by O-ring assemblies, as 16. The inner ends of said screws 14 are coarsely threaded externally and threaded onto said inner ends are the tubular rams 17, 17 which may be moved radially through the rotation of said screws. These rams fit snugly in radial bearings in the head member 1 and their outer ends are provided with external annular shoulders 18 to limit their inward radial movement. The inner ends of the rams may be tapered inwardly as shown.

The blowout preventer sections 3 are provided with the downward extensions 18, 19 which are formed with inwardly tapering arcuate seats to receive the inner tapering ends of the rams 17 when said rams are moved inwardly to move the preventer sections into active position.

The drawings 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 I claim is:

1. In combination, a tubular well head shaped to receive a pipe therethrough, complementary, arcuate blowout preventer sections pivotally mounted within the head and movable on transverse axes into active position to surround said
pipe and movable on said axes to inactive position to clear the pipe passageway and transversely movable means mounted in the head and co-acting with the sections for controlling pivotal movement of said sections.

2. In combination, a tubular well head shaped to receive a pipe therethrough, complementary, arcuate blowout preventer sections pivotally mounted within the head and movable on transverse axes into active position to surround said pipe and movable on said axes to inactive position to clear the pipe passageway, rams within the head and actuating screws having threaded connections with the rams and accessible to an operator and by the rotation of which the rams may be moved inwardly to move the sections to said active position and moved outwardly to allow the sections to move to said inactive position.

3. A combination well head and blowout preventer comprising, a tubular head member shaped to receive a pipe therethrough, complementary blowout preventer sections hinged within the head member and having arcuate seats on their under sides, rams mounted to move radially in the head member into one position in contact with said seats to close the sections about the pipe and movable to another position to release the sections to allow the sections to open away from the pipe.

4. A combination well head and blowout preventer comprising, a tubular body having an axial bore through which a well pipe is adapted to extend, said body having an annular cavity therein in communication with the bore, complementary blowout preventer sections hinged within the upper portion of the cavity and adapted to normally swing downwardly by gravity to inactive position within the cavity and out of alignment with the axial bore, and operating means mounted in the well head co-acting with the sections for swinging the same upwardly into active position encircling a pipe extending through the body.

5. A combination well head and blowout preventer as set forth in claim 4, together with sealing means carried by said sections for sealing around the pipe when the sections are in active position, and additional sealing means also carried by said sections and engageable with the body for sealing off between the body and sections when the sections have been swung to active position.

6. A combination well head and blowout preventer as set forth in claim 4, wherein the operating means which coacts with the sections is accessible from the exterior of the body.

WALTER P. FRENCH.

REFERENCES CITED

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

UNITED STATES PATENTS

<table>
<thead>
<tr>
<th>Number</th>
<th>Name</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>221,162</td>
<td>Edelen</td>
<td>Nov. 4, 1879</td>
</tr>
</tbody>
</table>