May 27, 1924. 1,495,845

A. G. HEGGEM

CASING HEAD

Filed March 29, 1923

Fig. 1

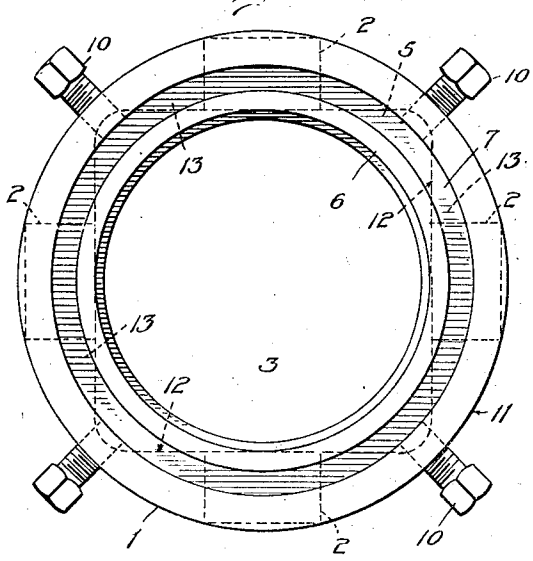


Fig. 3

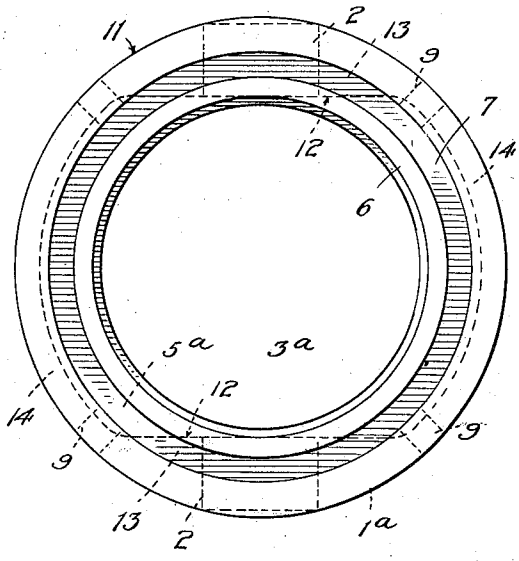


Fig. 2

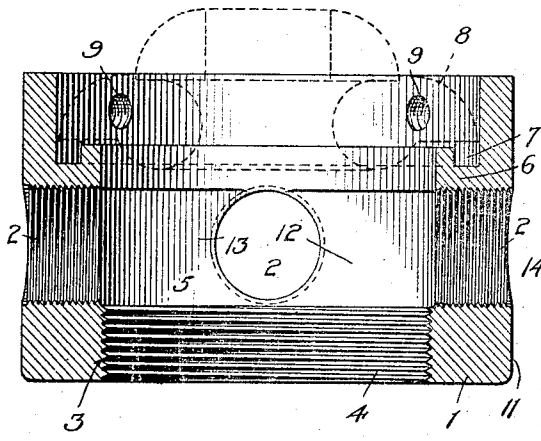
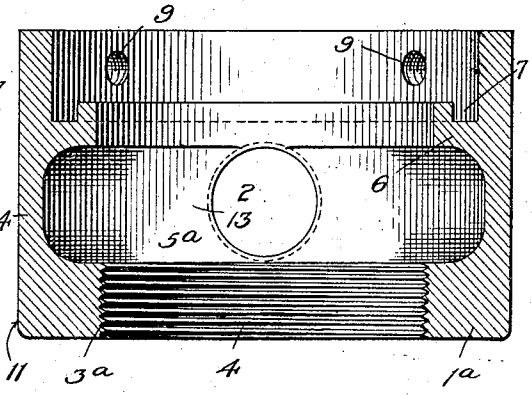


Fig. 4



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UNITED STATES PATENT OFFICE.

ALFRED G. HEGGEM, OF TULSA, OKLAHOMA.

CASING HEAD.

Application filed March 29, 1923. Serial No. 628,636.

To all whom it may concern:

Be it known that I, ALFRED G. HEGGEM, a citizen of the United States, residing at Tulsa, in the county of Tulsa and State of Oklahoma, have invented certain new and useful Improvements in Casing Heads; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to casing heads for oil wells and has for its principal object to provide a strong, simple and compact device which is adapted to be readily applied to or removed from the well casing by the use of chain tongs, which is easily moulded and machined, is not liable to contain casting defects, and is free of structural features apt to be broken in service with a resultant loss of oil.

The primary feature of the invention, generally stated, consists in providing the casing head with an axially extending opening or passage and with a plurality of radial side outlet openings communicating therewith, the outer ends of said side outlets terminating at the peripheral surface of the head, which is formed as a cylinder free from projections and of substantially uniform diameter throughout, and the inner ends of said side outlets being respectively reinforced by bosses or pads of metal on the interior of said head.

A further feature of the invention consists in forming the casing head with an internal shelf for supporting the tubing of the well, and in supporting said shelf at a plurality of points by means of bosses or pad portions which reinforce the inner ends of the side outlet openings with which the head is provided.

Other features of invention residing in particular constructions and relations of details will hereinafter appear.

In the drawings illustrating the preferred embodiment of the invention, the scope whereof is pointed out in the claims,—

Figure 1 is a plan view of a four-way casing head embodying the invention.

Figure 2 is a diagrammatic vertical section of the construction shown in Fig. 1, taken in the plane of oppositely disposed side outlet openings, and diagrammatically indicating by dotted lines the relation of the casing head top thereto.

Figure 3 is a plan view of a two-way casing head embodying the invention.

Figure 4 is a diametric vertical section of the construction shown in Fig. 3, taken in a plane at right angles to the axis of the side outlet openings of the casing.

The casing head 1 illustrated in Figs. 1 and 2 of the drawings is of the so-called four-way type, being formed with four circumferentially spaced radially extending threaded side outlet openings 2 which communicate with the axially disposed opening or passage 3 with which the head is constructed. At the lower end of the opening 3 the head is provided with threads 4 which are adapted to cooperate with the threads upon the upper end of the casing of the well. Above the threaded portion 4 thereof the axial passage 3 is expanded or enlarged, as indicated at 5, the said enlargement preferably corresponding in height to the diameter of the side outlets 2, which communicate with the interior of the casing head at this point. Immediately above the side outlet openings 2 the axial opening 3 is contracted by the provision of an internal reinforcing flange 6 which affords a shelf enabling the weight of the tubing of the well to be sustained by the casing head. The shelf 6 is shown as provided with a groove or annular recess 7 to receive the usual rubber packing ring on which the casing head top 8 rests. Above the groove 7 the head is provided with threaded openings 9 for receiving the usual set screws 10 by which the top is maintained in position. While a well known form of top 8, commonly designated the Berry type, has been diagrammatically illustrated by dotted lines in Fig. 8, it is to be understood that this particular form of top is merely shown for purposes of illustration and that other suitable devices may be substituted therefor.

The periphery or exterior of the head is formed as a cylindrical surface 11 of uniform diameter from top to bottom and the outer ends of the side outlet openings 2 terminate at said surface, thus leaving the exterior of the head free of bosses or projections. The interior walls of the head bounding the enlarged portion 5 of the axial opening 3 preferably comprise a plurality of vertically extending faces 12 which lie in planes parallel to the axis of the external cylindrical surface 11, such construction resulting in causing the bounding wall of

the head to be thicker at points adjacent the side outlet openings 2 than at points intermediate of said openings. By this means the inner ends of the openings 2 are surrounded and reinforced by internal bosses or pads of metal 13 forming supports for the shelf 6 by which the weight of the tubing is sustained.

The casing head 1ª illustrated in Figs. 3 and 4 is substantially the same as that shown in Figs. 1 and 2 except that it is provided with only two side outlet openings 2 instead of with four such openings. In this construction but two bosses or pad portions 13 are required to reinforce the inner ends of the side outlet openings 2 and therefore the enlarged portion 5ª of the axial opening or passage 3ª through the head may advantageously be of somewhat different configuration from that of the corresponding enlargement 5 in the axial passage of the four-way head heretofore described, the portions 14 of the bounding wall of the head which are between the bosses or pad portions being preferably comparatively thin and of uniform cross-section throughout. The remaining features of the construction of the casing head illustrated in Figs. 3 and 4 correspond in form and function to structural features shown in Figs. 1 and 2 and heretofore described, and accordingly corresponding reference characters have been applied thereto.

It will be perceived that my invention makes possible a compact casing head of less axial length than diameter to which chain tongs may be practically applied to set up said head or break its joint with the well casing. It will also be appreciated that a casing head constructed in accordance with the invention offers great strength to resist rupture where it receives the casing, is readily moulded because its cylindrical shape enables the pattern to be easily drawn from the sand, and requires only very simple machining. Moreover, the cylindrical form of the casing head enables the casting to be performed by pouring the molten metal so that it rises uniformly and does not have any projections to close over, thus insuring good metal throughout the head and consequently reducing the likelihood of breakage in service. The ability thus to pour the casing heads is a material advantage, for in the common types of casing heads the metal rises on the two sides and finally forms a union at the top, and if the metal chills on the rising surfaces a good union is not effected when these two surfaces contact on the upper portion of the mould.

I claim:—

1. A casing head having an axially extending opening therethrough, said head being provided at one end with means whereby it may be secured to the upper end of a well casing, and being provided adjacent its other end with means for supporting the tubing of a well, and having a plurality of side outlet openings, and being formed with a substantially cylindrical peripheral surface which is free from projections, and being provided with a plurality of thickened portions which extend inwardly from said peripheral surface and respectively surround and reinforce said side outlet openings at their inner ends.

2. A casing head having an axially extending opening therethrough and having its external peripheral surface formed between its ends as a cylinder of substantially uniform diameter throughout, said head being provided with means whereby it may be secured to the upper end of a well casing, and being provided with side outlet openings communicating with the interior of said head and terminating at said peripheral surface, the bounding wall of said head being of greater thickness at points adjacent said side outlets than at points between said outlets.

3. A casing head having an axial opening therethrough and having side outlet openings the inner ends whereof communicate with said axial opening and the outer ends whereof lie in a substantially cylindrical peripheral surface of the head whose axis corresponds to that of the opening first named, said head being provided above said side outlet openings with an internal shelf for supporting the tubing of a well, and also being formed on its interior beneath said shelf with a plurality of boss portions which respectively reinforce the inner ends of said side outlet openings and support said shelf.

4. A casing head having an axial opening therethrough and having its external peripheral surface formed as a cylinder of substantially uniform diameter throughout, and having a plurality of side outlet openings communicating with said axial opening and terminating at their outer ends at said peripheral surface, the lower end of said axial opening being threaded for receiving the casing of a well, said axial opening being enlarged immediately above said threaded portion and being contracted above said side outlet openings to form a shelf adapted to support the well tubing, and said shelf being disposed in a plane substantially tangent to said side outlet openings.

5. A casing head having an axial opening therethrough and a plurality of side outlet openings communicating with said axial openings, said head being provided below said side outlet openings with means for securing the casing of a well thereto, and being provided above said side outlet openings with means for supporting the tubing of a well, the external surface of said head

being substantially cylindrical and free from outwardly extending projections in a transverse plane passing through said side outlet openings, and the interior surface of said head adjacent said side outlet openings comprising a plurality of faces extending parallel to the axis of said cylindrical surface, portions of said faces being at a greater radial distance from said cylindrical surface than other portions thereof, whereby said head is reinforced at points adjacent said side outlet openings.

6. A casing head having an axial opening therethrough and having its peripheral surface formed as a cylinder of substantially uniform diameter throughout, said head being provided at one end of said axial opening with threads for cooperating with the threads of a well casing, and being provided with a plurality of side outlet openings communicating with said axial opening, and having an internal reinforcing flange above said side outlet openings, said head having an axial length less than its diameter, and said reinforcing flange forming a support for the tubing of a well.

In testimony whereof I affix my signature.

ALFRED G. HEGGEM.