April 3, 1928. 1,664,709

T. SEVERNS ET AL

POLISH ROD CLAMP

Filed Aug. 27, 1925

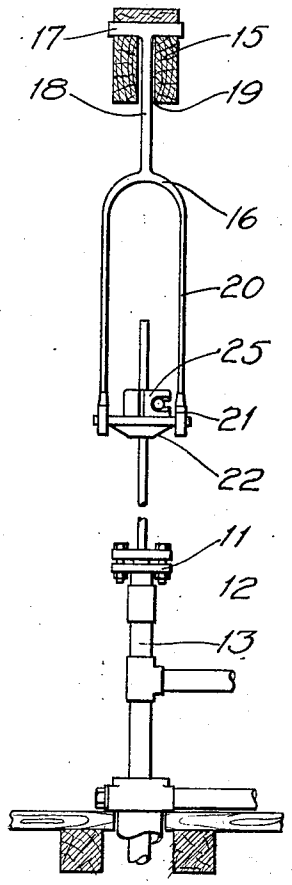


Fig. 1.

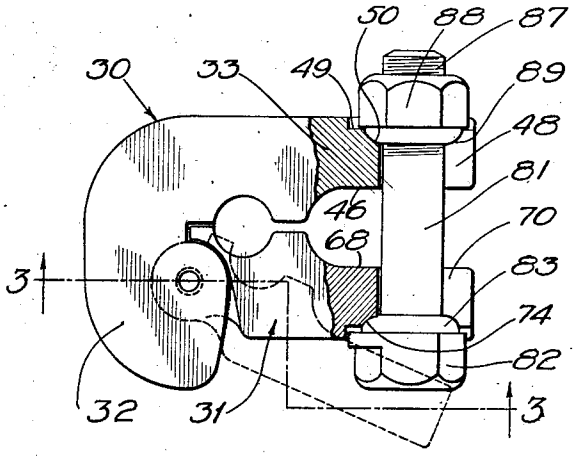


Fig. 2.

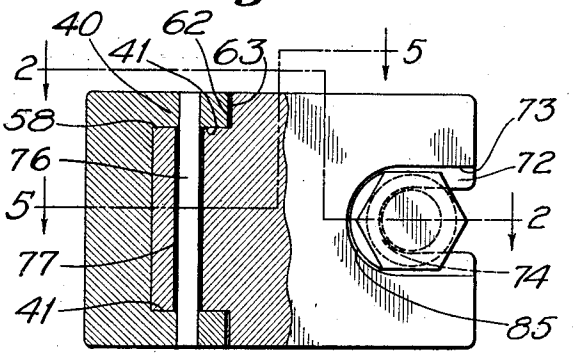


Fig. 3.

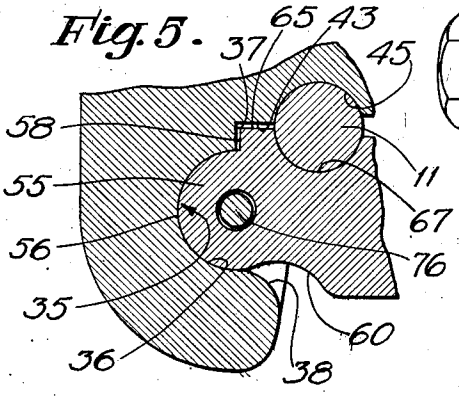


Fig. 5.

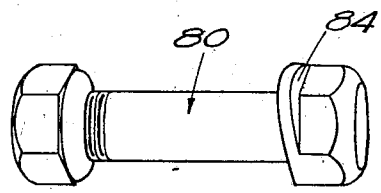


Fig. 4.

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UNITED STATES PATENT OFFICE.

THOMAS SEVERNS, OF LONG BEACH, AND RALPH R. HALL, OF LOS ANGELES, CALIFORNIA.

POLISH-ROD CLAMP.

Application filed August 27, 1925. Serial No. 52,940.

Our invention relates to a novel form of polish rod clamp.

In the oil well industry it is common practice to secure a pump barrel to the lower end of a pump tubing near the bottom of a well. Adapted to reciprocate in the barrel is a pump plunger which is attached to the lower end of a string of sucker rods. The string of sucker rods extends up through the pump tubing and has a polish rod secured to the upper end. The polish rod extends through a stuffing box attached to the upper end of the pump tubing. A walking beam is situated in the derrick of the well, which walking beam is oscillated by mechanism of the derrick. Secured to one end of the walking beam is a hanger or stirrup. A polish rod clamp of the character of our invention is employed for connecting the polish rod to the stirrup. When the walking beam is oscillated, the plunger is reciprocated in the pump barrel and oil is elevated to the surface of the ground through the pump tubing.

It is an object of our invention to provide a sucker rod clamp having a pair of members adapted to be clamped to a rod, one of which members fulcrums directly on the other.

It is also an object of our invention to provide a polish rod clamp having a pair of members which are hingedly secured together by a hinge pin, which hinge pin does not take any clamping strains, but serves solely to retain the members in assembly.

It is a further object of our invention to provide a polish rod clamp which is designed so that considerable leverage may be obtained.

It is a still further object of our invention to provide a polish rod clamp having novel means for keeping a clamping bolt of the clamp in place on clamp members thereof when the polish rod clamp is loose.

It is also an object of our invention to provide a polish rod clamp of the character mentioned having seating means for the clamping bolt.

Other objects and particular advantages of the invention will be made evident hereinafter.

With reference to the drawings in which we illustrate a preferred form of our invention,

Fig. 1 is a fragmentary diagrammatic view illustrating the utility of our invention.

Fig. 2 is a plan view of our sucker rod clamp, a portion being broken away to clearly show the bolt construction.

Fig. 3 is a section taken as indicated by the line 3—3 of Fig. 2.

Fig. 4 is an enlarged perspective view of the clamp bolt of our invention.

Fig. 5 is an enlarged fragmentary view taken on the line 5—5 of Fig. 3 and clearly showing the fulcrum arrangement of our invention.

With reference to Fig. 1, 11 denotes a polish rod which extends vertically through a stuffing box 12 secured at the upper end of a pump tubing 13. 15 denotes a walking beam which supports a hanger or stirrup 16. A head 17 of the stirrup 16 rests on the upper face of the walking beam 15 and a vertical bar 18 extends downwardly through an opening 19 in the walking beam 15 and connects to a bifurcated portion having a pair of arms 20. The lower ends of the arms 20 are provided in the form of bearings 21 and pivotally support a block or plate 22. Clamped to the polish rod 11 and supported on the block 22 is a polish rod clamp 25 which embodies the features of our invention.

With reference to Figs. 2 to 5 inclusive of the drawings, our invention comprises a body 30 having a fulcrumed or movable jaw 31. The body 30 has a head 32 from which there extends a stationary jaw 33. Formed in the head 32, as shown clearly in Figs. 3 and 5, is a socket 35 which has a semi-cylindrical face 36. The inner end of the semi-cylindrical face 36 connects with a flat face 37 which extends radially with respect to an axis on which the semi-cylindrical face 36 is generated. The outer end of the semi-cylindrical face 36 connects with a curved face 38 which curves in a direction opposite to the semi-cylindrical face 36. The ends of the socket 35 are closed by end walls 40 of the head 32 which provide flat end faces 41. The flat face 37 joins with a flat face 43 of the stationary jaw 33, which face 43 extends substantially at right angles to the face 37. Formed in the face 43 substantially parallel to the axis of the socket 35 is a semi-cylindrical channel 45. The outer end of the stationary jaw 33 is reduced in width and has an inner face

46 which is considerably offset from the face 43. A slot 48 is formed in the outer end of the stationary jaw 33 and a countersunk face 49 is formed at the outer end of the slot 48. A spherical seat 50 is provided at the bottom of the slot 48 at a point where the slot joins the countersunk face 49.

The movable or fulcrumed jaw 31 has a formation 55 which is adapted to operate in the socket 35. The formation 55 has a semi-cylindrical face 56 which is adapted to engage the semi-cylindrical face 36 of the socket 35. The formation 55 has flat end faces 58 which are adapted to engage the end faces 41 of the socket 35. The inner end of the cylindrical face 56 of the formation 55 connects with a face 58′ which extends substantially radially with respect to an axis on which the face 56 is generated and the outer end of the face 56 connects with a face 60 which is curved oppositely from the face 56. The end faces 58 of the movable jaw 31 connect with vertical faces 62 which are formed to extend around vertical faces 63 of the end walls 40 of the head 32. The radial face 58 joins with a face 65 which extends at right angles thereto and which has a semi-cylindrical channel 67 formed therein, which channel extends parallel to the channel 45 of the stationary jaw 33. The outer end of the jaw 31 is reduced in width and has an inner face 68 which is considerably offset from the inner face 65. A slot 70 is formed in the outer end of the movable jaw 31. In the outer face of the jaw 31 there is provided a countersunk face 72 which is surrounded by a wall 73. A semi-spherical seat 74 is formed at the bottom of the slot 70 at a point where the slot joins the countersunk face 72.

The body 30 and the movable jaw 31 are retained in assembled position by a hinge pin 76 which is secured in the end walls 40 of the head 32. This hinge pin 70 extends concentrically through the socket 35. A concentric opening 77 is formed through the formation 55 through which the hinge pin 70 extends. As clearly shown in Figs. 3 and 5 the opening 77 is larger than the hinge pin 67 and there is an appreciable clearance therearound.

Our invention also provides a clamp bolt 80 having a cylindrical portion 81 and a head 82. Formed between the cylindrical portion 81 and the head 82 is a semi-spherical portion 83 which, when the bolt is in place on the clamp body and movable jaw 30 and 31, rests in the semi-spherical seat 74. Extending from the inner part of the head 82 is a lug 84 which rests adjacent to the countersunk face 72 of the movable jaw 31 and which has a face 85 adapted to engage the wall 73 in order to prevent a rotation of the bolt 80. An end of the cylindrical portion 81 is threaded at 87 and a nut 88 is placed thereupon. The nut 88 has a semi-spherical boss 89 which is adapted to engage the semi-spherical seat 50 formed in the outer end of the stationary jaw 33.

The channels 45 and 67 of the stationary and movable jaws 33 and 31 are clamped against the polish rod 11 by advancing the nut onto the bolt 80. When the nut 88 is turned, the semi-spherical boss 89 rotates in the seat 50. The bolt 80 is restrained from rotation by engagement of the face 85 of the lug 84 with the wall 73 which surrounds the counter sunk face 72.

Owing to the fact that clearance is provided between the hinge pin 76 and the formation 55 of the movable jaw 33, the semi-cylindrical face 56 will engage the semi-cylindrical face 36 of the socket 35; that is to say, the formation 55 fulcrums upon the head 32 of the body 30, and clamping strains are imposed directly upon the head 32. The hinge pin 76 serves solely for the purpose of preventing the body 30 and the movable jaw 31 from being separated when the parts are loose. The bosses 89 and 83 and the semi-cylindrical seats 50 and 74 tend to keep the bolt 80 and the nut 88 in proper position in the slots 48 and 70 when the parts are loose.

From the foregoing description it is obvious that our invention provides a polish rod clamp in which the parts are not easily separated and lost. The semi-spherical seats and bosses provide means for keeping the bolt and nut in the slots of the jaws, and the semi-spherical seat 50 and the boss 89 provide bearing faces which allow the nut 88 to be easily rotated without noticeable binding such as might occur if the lower flat face of the nut engages the countersunk face 49.

The hinge pin 76 which prevents the body 30 and the movable jaw 31 from being separated takes no clamp strain. The feature of fulcruming the movable jaw directly on the body 30 makes it possible to provide a polish rod clamp which is very strong and thus permits high clamping pressure.

We claim as our invention:

1. A polish rod clamp comprising: a J-shaped body having a stationary jaw providing a semi-cylindrical channel and having a socket in the curved portion of the body; a movable jaw provided with a head adapted to fulcrum in said socket and having a semi-cylindrical channel; a clamp means adapted to engage said stationary and movable jaws to clamp said jaws on a polish rod, said channels receiving said polish rod; and a hinge pin secured in said body and extending through said head.

2. A polish rod clamp comprising: a J-shaped body having a stationary jaw providing a semi-cylindrical channel and having a socket in the curved portion of the

body; a movable jaw provided with a head adapted to fulcrum in said socket and having a semi-cylindrical channel; a clamp means adapted to engage said stationary and movable jaws to clamp said jaws on a polish rod, said channels receiving said polish rod, said clamp means causing said movable jaw head to exert a pressure on said stationary jaw member in a direction tending to straighten the curved portion of said body; and a hinge pin secured in said body and extending through said head, there being an opening in said head larger in diameter than said pin so that said pin does not act as a fulcrum when said body members are clamped together.

3. A polish rod clamp comprising: a stationary jaw member having a semi-cylindrical channel and having a semicylindrical socket in one end; a movable jaw member formed with a head adapted to fulcrum in said socket and having a semi-cylindrical channel; a hinge pin secured in said stationary jaw member and extending through said head; and a clamp means adapted to engage said stationary and movable jaw members to clamp said jaw members on a polish rod, said semi-cylindrical channels receiving said polish rod.

4. A polish rod clamp comprising: a stationary jaw member having a semi-cylindrical channel and having a semi-cylindrical socket in one end; a movable jaw member formed with a head adapted to fulcrum in said socket and having a semi-cylindrical channel, both of said jaw members having slots formed in the outer ends and having semi-spherical seats formed at the bottom of said slots; a hinge pin secured in said stationary jaw member and extending through said head; and a clamp means adapted to engage said stationary and movable jaw members to clamp said jaw members on a polish rod, said semi-cylindrical channels receiving said polish rod, said clamp means comprising a cylindrical portion adapted to extend through said slots, a head having a semi-spherical boss adapted to engage one of said semi-spherical seats, and a nut threaded on said cylindrical portion having a semi-spherical boss adapted to engage the other of said semi-spherical seats.

In testimony whereof, we have hereunto set our hands at Long Beach, California, this 8th day of August, 1925.

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