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J. P. RATIGAN
GRIP FOR POLISH RODS

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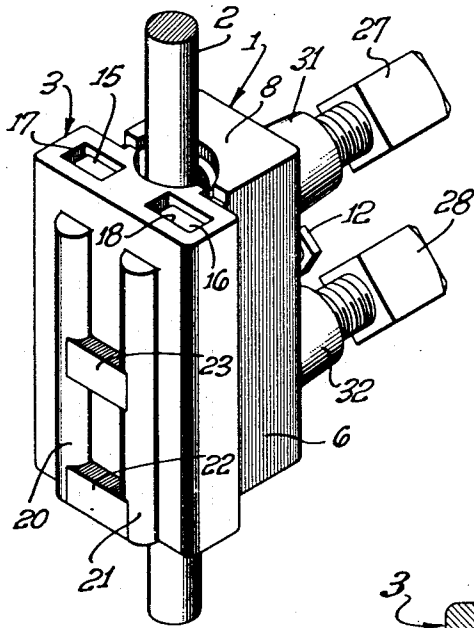


FIG. 2.

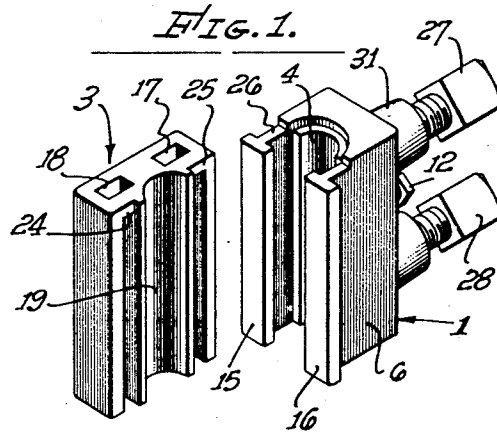


FIG. 1.

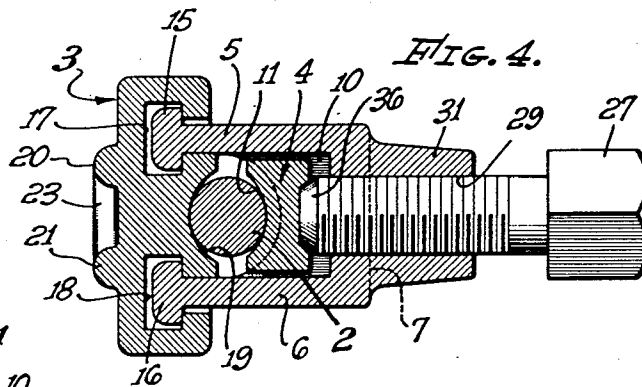


FIG. 4.

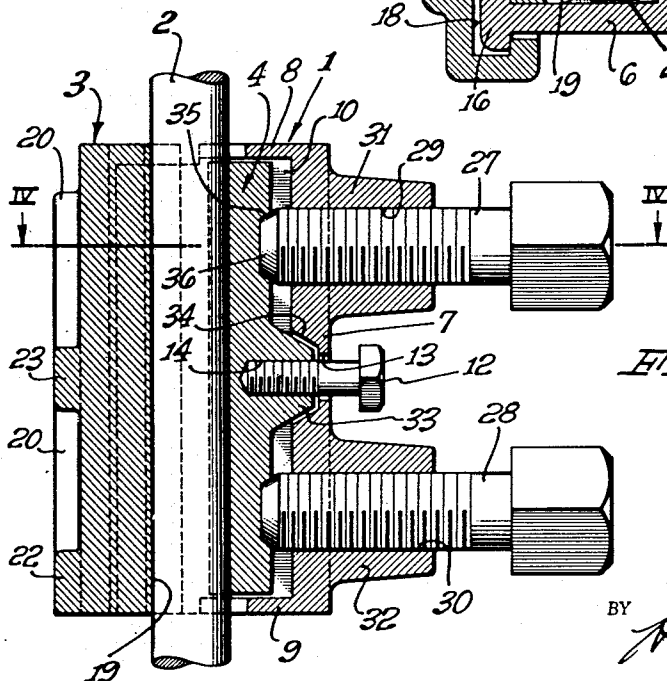


FIG. 3.

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GRIP FOR POLISH RODS

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2 Claims. (Cl. 24—263)

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My invention relates to grips and has particular reference to a polish rod grip which finds particular utility when employed as a spacing clamp or grip for connecting the horsehead to the polish rod of an oil well pumping installation.

Grips of the character referred to above are often used as a part of the surface installation of a pumping oil well and are frequently used as a means for effecting an attachment of the horsehead sling to the polish rod so that the oscillation of the walking beam may be translated into a reciprocation of the sucker rod string extended to the submerged pump. Grips which are to be used for this service must be strong and capable of withstanding hard usage. They must, because of the tremendous weight of the sucker rod string, be capable of developing tremendous gripping forces so as to require a pull of from thirty to fifty thousand pounds to cause the grip to slide along the rod. Such a grip should, furthermore, be so constructed as to prevent scoring of the polish rod in the event the grip should slip for any cause such as failure to tighten the grip adequately on to the rod because a scored polish rod will rapidly wear out the packing gland in the casing head and will, therefore, require replacement.

Grips of the character referred to should have a relatively wide adjustability so as to permit their use on polish rods of different sizes and must be so constructed as to permit ready installation of the grip onto the rod or removal of the grip from the rod without requiring that the grip be slipped over the end of the rod. Finally, it is essential that the grip be so constructed that when it is tightened onto the rod, no bending forces will be developed, tending to deform the polish rod. To my knowledge, no grip prior to the present invention fully achieves all of the desirable results set forth in the preceding paragraphs.

It is therefore an object of my invention to provide a grip which will achieve all of the above noted desideratum by a novel construction and arrangement of parts.

It is an additional object of my invention to provide a grip of the character referred to in the preceding paragraphs, which is so constructed as to apply to the polish rod a uniform gripping force devoid of any bending moments tending to deform the rod.

It is a still further object of my invention to provide a grip of the character set forth hereinbefore which includes two disengageable parts

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for surrounding the polish rod and which includes a pressure member mounted on one of the parts for clamping the rod against the other of the parts.

5 It is additionally an object of my invention to provide a grip of the character above referred to, which includes a T-slot and T-bar arrangement for detachably securing the disengageable parts of the grip to each other.

10 Another object of my invention is to provide a means for centering the pressure member and the screws which exert pressure thereon to align the pressure member with the polish rod and to avoid twisting strains which might be placed upon the pressure member.

Other objects and advantages of my invention will be apparent from a study of the following specifications, read in connection with the accompanying drawings, wherein

20 Fig. 1 is a perspective view illustrating the preferred embodiment of my invention with the two disengageable parts separated preparatory to installing the grip upon a polish rod;

Fig. 2 is a perspective view showing the grip installed on a polish rod;

25 Fig. 3 is a longitudinal sectional view through the grip shown in Figs. 1 and 2 and illustrating the manner in which the polish rod is clamped by the grip; and

30 Fig. 4 is a cross section taken substantially along the line IV—IV of Fig. 3 and illustrating the manner in which the two parts of the grip are detachably secured to each other for the purpose of clamping a polish rod therebetween.

35 The preferred embodiment of my invention as illustrated in the accompanying drawings comprises three principal parts, namely, a body member 1 adapted to be placed on one side of a polish rod 2, an anvil member 3 adapted to be placed on the opposite side of the polish rod 2 and secured to the body member 1, and a movable pressure clamping member 4 carried within the body member 1 and employed to force the polish rod 2 against the anvil member 3 for the purpose of clamping the assembly securely to the polish rod.

40 The body member 1 preferably comprises a box-like member defined by two parallel sides 5 and 6 interconnected by a rear face 7. The open ends of the box are partially closed by end plates 8 and 9. The walls just described define an enclosure or recess 10 within which the clamping member 4 is received.

55 The clamping member 4 has an axial length but slightly less than the inside length of the en-

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closure 10 and is preferably of substantially rectangular cross section as is shown in Fig. 4 except for a shallow, partially cylindrical groove 11 which is formed in the forward face thereof for engaging the curved surface of the polish rod 2.

The clamp member is prevented from falling out of the enclosure 13 when the clamp is separated as shown in Fig. 1 by means of a bolt or screw 12 passed through a suitable aperture 13 in the rear face 7 and threaded into the clamping member 4 as shown at 14.

The sides 5 and 6 of the body member 1 are terminated in longitudinally extending bars 15 and 16 which have a width in excess of the thickness of the sides 5 and 6 so that the outer edges of the sides 5 and 6 are provided with a T-shaped cross section which is clearly shown in Fig. 4. This T-shaped cross section is employed for detachably securing the anvil member 3 to the body member 1. Accordingly the anvil member 3 is provided with a pair of longitudinally extending T-slots 17 and 18 adapted to receive the T-bar ends 15 and 16 of the body member 1. This inter-engagement of the body member 1 and anvil member 3 in the assembled positions of the parts is shown in Fig. 4.

The anvil member 3 preferably has a length equal to the length of the body member 1 and a width sufficiently greater than the width of the body member 1 to encompass the T-slots 17 and 18. The anvil member 3 is preferably given a substantially rectangular cross section and is provided on its inward face with a shallow, partially cylindrical groove 19 adapted to engage the curved surface of the polish rod 2. The opposite face of the anvil 3 includes a pair of longitudinal reinforcing ribs 20 and 21 interconnected by a pair of horizontal ribs 22 and 23. The ribs 20—23 are so located with respect to the T-slots 17 and 18 as to reinforce the material surrounding these slots and reduce to a minimum the tendency of the slots to separate and open up when clamping forces are exerted on the anvil 3.

As is shown in Fig. 1, the upper ends of the T-slots 17 and 18 are preferably closed by relatively thin horizontally extending webs 24 and 25 and the sides 5 and 6 of the body member 1 are similarly bottomed as shown at 26. This construction requires that the anvil member 3 be raised from the position shown in Fig. 1 and lowered on to the T-bars 15 and 16. When so placed, the webs 24 and 25 engage the upper ends of the bars 15 and 16 and prevent the anvil member 3 from falling down, thus eliminating the requirement that the anvil member be held in place until the clamp is tightened.

As is shown in Fig. 3 the polish rod 2 is clamped against the anvil member 3 by the clamping member 4 which is urged toward the anvil member 3 by means of a pair of clamping screws 27 and 28. The screws 27 and 28 are preferably disposed radially with respect to the polish rod 2 and are spaced short distances inwards from the upper and lower ends of the clamping member 4.

The screws 27 and 28 are threadedly received in suitably threaded openings 29 and 30 formed in rearwardly extending bosses 31 and 32 formed integrally with the rear portion 7 of the housing 1. The bosses 31 and 32 are preferably tapered to provide a conical form and impart additional strength and rigidity to the housing member 1 while providing a relatively long thread engaging the threads of the respective clamping

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screws to permit the development of very large clamping forces.

While the pressure clamping member may be provided with a flat rear surface, I prefer to provide a truncated cone-like projection 33 or a hemispherical projection adapted to be received in a correspondingly shaped depression 34 formed in the rear wall of the body member 1 immediately adjacent the opening therein through which the screw 12 extends, the cooperating projection and depression acting to guide or center the mid portion of the pressure member 4 in substantially any of its positions. I also prefer to provide cone-shaped depressions 35 in the rear surface of the pressure member immediately at the point of contact with the inner ends of the pressure exerting screws 27 and 28, the innermost ends 36 of these screws being ground, machined or otherwise formed with a truncated cone-like surface adapted to cooperate with the respective depressions to additionally hold the pressure member 4 in a centralized position as it is being moved toward the polish rod 2 during the clamping operations.

By employing the cooperating projection and depression for the central portion of the pressure member and the cooperating depressions and cone-shaped ends on the screws, it will be apparent that there will never be any tendency for the pressure member 4 to twist as it is moved into engagement with the polish rod and hence great pressures may be exerted by the screws 27 and 28 without danger of imparting bending or twisting effects upon the pressure member. The result of these centering features permits the exertion of greater pressures upon the pressure member 4 than would otherwise be possible and materially aids in the assurance of a firm and non-slipping grip upon the polish rod 2.

From the foregoing it will be apparent that I have provided a novel grip which is of simple construction and which is capable of developing very large clamping forces. Attention is directed particularly to the T-rail and T-slot construction employed for interengaging the anvil member 3 with the housing member 1, this construction serving to simplify the installation and removal procedure to a minimum. It will also be noted that by forming the grooves 11 and 19 with a suitable radius of curvature, the grip may be adjusted to accommodate a rather wide variety of diameters of polish rods. Also the parts are so arranged and reinforced as to provide a maximum of strength with a minimum of weight.

While I have shown and described the preferred embodiment of my invention, I do not desire to be limited to any of the details of construction shown or described herein, except as defined in the appended claims.

I claim:

1. A grip for polish rods comprising: an anvil member having formed in one face thereof a channel for receiving a polish rod, said anvil member having also formed in said one face on opposite sides of said channel a pair of longitudinally extending slots, one on each side of said channel and disposed parallel thereto, said slots having a T-shaped cross section with the shoulders formed at the junction of the cross bar and leg of the T defining surfaces extending at right angles to the leg of the T, said slots extending from one end only of said anvil member and terminating short of the other end of said member; a body member defining a box-like recess; a pair of longitudinally extending legs formed

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integrally with said body member having a length equal to the length of said slots and having a T-shaped cross section with the surfaces of the cross bar of the T adjacent the leg thereof extending at right angles to the leg of said T, said legs having such size and location as to be removably received within said slots; a clamping member in said recess movable into engagement with said polish rod and having a channel in one face for receiving said rod; a pair of longitudinally extending reinforcing ribs formed integrally with said anvil member and positioned on the opposite face thereof in alignment with said slots; a pair of transversely extending reinforcing ribs formed integrally with said anvil member, one of said ribs being located substantially midway of said first mentioned ribs and the second being located at the ends of said first mentioned ribs adjacent the open ends of said slots; and means on said body member for applying to said clamping member a clamping force for clamping said rod between said anvil member and said clamping member.

2. A grip for polish rods comprising: an anvil member having formed in one face thereof a channel for receiving a polish rod, said anvil member having also formed in said one face on opposite sides of said channel a pair of longitudinally extending slots, one on each side of said channel and disposed parallel thereto, said slots having a T-shaped cross section with the shoulders formed at the junction of the cross bar and leg of the T defining surfaces extending at right-angles to the leg of the T, said slots extending from one end only of said anvil member and terminating short of the other end of said mem-

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ber; a body member defining a box-like recess; a pair of longitudinally extending side legs formed integrally with said body member, said side legs having a length equal to the length of said slots, and having a T-shaped cross section with the surfaces of the cross bar of the T adjacent the leg thereof extending at right-angles to the leg of the T, said legs having such size and location as to be removably received within the said slots; a clamping member in said recess movable into engagement with said polish rod and having a channel in one face for receiving said rod; and means on said body member for applying to said clamping member a clamping force for clamping said rod between said anvil member and said clamping member.

JAMES P. RATIGAN.

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