Feb. 20, 1923. 1,446,144.

G. ADAMS.

SUCKER ROD JOINT.

FILED MAR. 13, 1920.

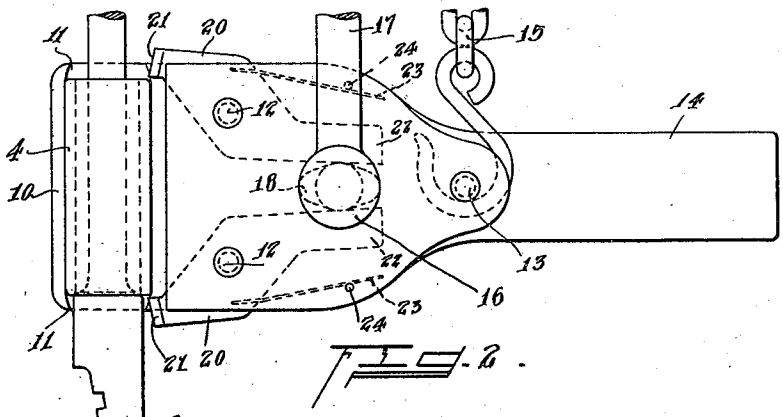


FIG. 2.

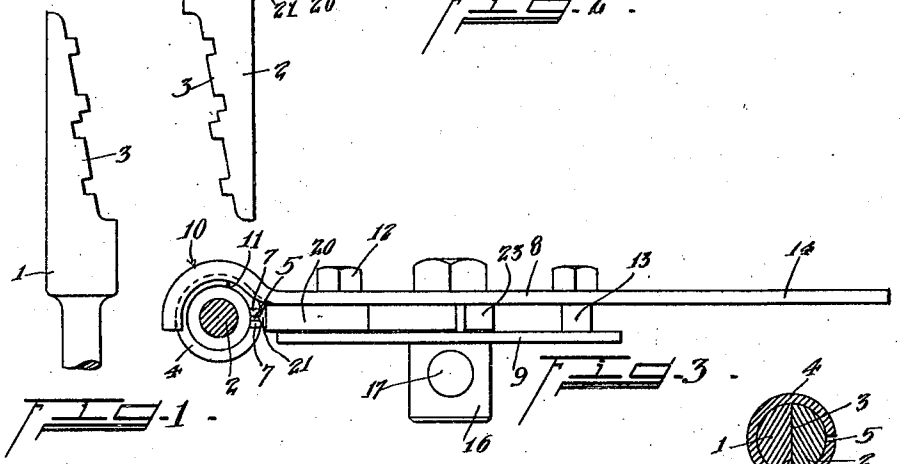


FIG. 1.

FIG. 3.

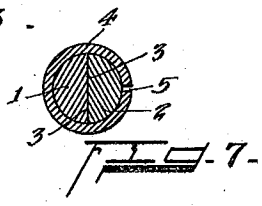


FIG. 7.

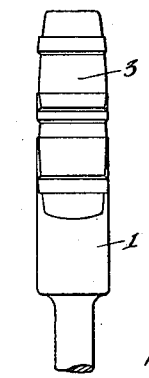


FIG. 4.

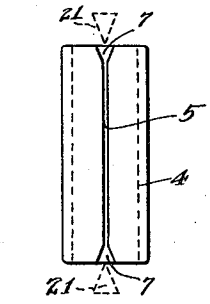


FIG. 5.

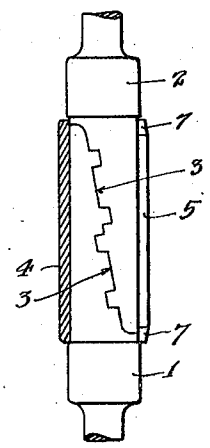


FIG. 8.

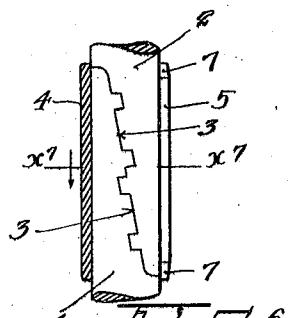


FIG. 6.

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UNITED STATES PATENT OFFICE.

GUS ADAMS, OF BREA, CALIFORNIA, ASSIGNOR OF ONE-FOURTH TO ANDREW M. STRONG, OF LOS ANGELES, CALIFORNIA.

SUCKER-ROD JOINT.

Application filed March 13, 1920. Serial No. 365,454.

To all whom it may concern:

Be it known that I, GUS ADAMS, a citizen of the United States, residing at Brea, in the county of Orange and State of California, have invented a new and useful Sucker-Rod Joint, of which the following is a specification.

The invention relates to joints for sucker rods and the like and is more particularly directed to that type of joint most generally employed for connecting together sections of oil-well sucker rods.

An object of the invention is to provide a joint for sucker-rods and the like in which the cooperating rod ends are of duplicate size and contour.

Another object is to provide a joint having no screw threads.

Another object of the invention is to provide a joint of the above character adaptable for speedy manipulation.

A further object is to provide a joint of great strength and simplicity, and susceptible of convenient operation.

Another object is to provide a joint having means for securing the sections together by direct transverse clamping tension.

Another object is to provide a joint having a split clamping member combined with means for expanding said member in connecting and disconnecting the joint.

Another object is to provide a joint in which the two cooperating rod ends are of duplicate size and contour.

Various other objects and advantages will be more fully apparent from the following description of the accompanying drawings which form part of this disclosure, and which illustrate a preferred form of embodiment of the invention.

Of the drawings:

Fig. 1 is an elevation of the upper end of a rod section which will herein be referred to as the lower section.

Fig. 2 is an elevation of the lower end of a rod section which is to be connected to the section in the well, the clamping member and the cooperating expanding device.

Fig. 3 is a top plan view of the parts shown in Fig. 2.

Fig. 4 is an elevation of the rod shown in Fig. 1 looking at the face of the serrated surface.

Fig. 5 is a side elevation of the split sleeve member showing the longitudinal split therein, with the expanded position of the expanding jaws indicated in dotted lines.

Fig. 6 is an elevation of two sucker rod sections joined together, with the clamping member shown in section.

Fig. 7 is a section on line x^7—x^7 of Fig. 6.

Fig. 8 is a view similar to Fig. 6 showing rod sections of a modified form.

With reference to the drawings, 1 designates a lower rod-section, which may be said to be the top section of a sucker rod in a well, and 2 designates an upper rod-section to be coupled thereto previous to lowering into the well. Each section has an enlarged end transversely cut to provide coincidently contoured inclined cooperating surfaces 3 having teeth or serrations adapted to intermesh when the rod ends are brought together. It will be noted that the serrations or teeth of both rods are identical thereby permitting them to be formed or machined with the same dies or machine tools. This is an important item in the production cost of these rod sections and it is of further importance in this regard that the sections have no screw-threads.

With reference to Figs. 6 and 7 which show the two sections connected, 4 designates a clamp sleeve. This sleeve, which is shown in detail in Fig. 5, is split longitudinally as indicated at 5, and is of a normal internal diameter which is slightly less than the external diameter of the cooperating enlarged ends of the rod sections. The walls of the sleeve are of a suitable thickness and the sleeve is formed of suitable material, to provide a relatively powerful inherent contractible tension normally tending to contract the sleeve to its normal diameter.

To apply the sleeve to the rod ends, it must first be expanded, then placed in position as in Fig. 6, and then the expanding means must be disengaged to allow the inherent contractible tension of the sleeve to act to cause said sleeve to clampingly grip the two cooperating rod sections and hold them firmly together.

The usual method of applying the clamp sleeve will preferably be to first expand the sleeve and then slip it over the lower end of the upper section and above the enlarged portion. The expanding means will then be disengaged and the sleeve allowed to rest on the top of said enlarged portion as shown in Fig. 2. The upper rod section will then be

properly intermeshed with the lower rod section, after which the sleeve will be again expanded, slipped in place and then released to clamp the sections together.

As shown in Fig. 5, the opposed edges of the sleeve wall, adjacent the split 5, are beveled to provide V-shaped throats 7, 7 into which the expanding device engages to expand the sleeve.

The expanding device shown comprises a housing formed of two plates 8, 9 fixed together and maintained in spaced relation by three shoulder-studs 12, 12, 13, the plate 8 having a semi-circular forward end 10 providing a sleeve receiving channel and having inturned edges 11, 11 retaining the sleeve therein. The plate 8 extends rearwardly, terminating with a handle 14, and the entire housing may be swung on a chain 15 if desired.

A rock shaft 16 is journaled in the plates 8, 9 and is provided with an external operating lever 17 and a double operating cam 18 between the plates.

Opposed expanding jaws 20, 20 are positioned between the plates 8, 9 and are respectively journaled on the studs 12, 12. Each jaw has a forwardly extended wedge-shaped nose 21 which will be in alignment with the adjacent V-shaped throat 7 of a sleeve when said sleeve is positioned within the sleeve receiving channel of the plate 8, (indicated in dotted lines in Fig. 5), and a rearwardly extended arm 22 adapted to be engaged by the cam 18. Springs 23, 23 attached to the jaws and engaging transverse pins 24, 24 tend to maintain the arms 22, 22 of the jaws in contact with the operating cam 18.

With the parts positioned as shown in Fig. 2, it will be evident that if the operating lever is turned the jaws 20, 20 will close, their wedge-shaped noses 21 entering the V-shaped throats 7, 7, of the sleeve 4 to expand the sleeve to a diameter which will allow said sleeve to slide freely over the enlarged rod-ends.

In Fig. 8, I have shown the rod ends provided with shoulders which will tend to prevent longitudinal displacement of the clamping sleeve by accident or otherwise.

The above structure provides a rod joint which has no screw threads and in which the rod ends are clamped together by direct transverse clamping tension of an inherently contractile clamp member. The ends of the several rod sections being of duplicate size and contour, further enhances the value of the device both from a standpoint of simplicity of structure as well as cost of manufacture and convenience and speed of manipulation.

It will be evident that the exterior surfaces of the rod ends or the interior surface of the clamp member, or both, may be roughened or transversely corrugated to guard against longitudinal slippage of the parts, without departing from the broad scope of the present invention, and also that various different types of expanding means may be employed.

Of course while I have described the joint herein shown as a sucker-rod joint it is to be understood that it is not confined to such specific use as it is equally as well adapted for other uses as it is for use on oil well sucker-rods.

I claim:

1. The combination of sucker-rod sections having intermeshing surfaces, and an inherently contractile clamping member maintaining the sections in engagement.

2. The combination of sucker-rod sections having intermeshing angularly disposed surfaces, and an inherently contractile clamping member maintaining the sections in engagement.

3. The combination of sucker-rod sections having intermeshing surfaces, and an inherently contractile split clamping member maintaining the sections in engagement.

4. The combination of sucker-rod sections having coincidently contoured cooperating surfaces, and an inherently contractile clamping member maintaining the sections in engagement.

5. The combination of sucker-rod sections having enlarged ends and formed to provide intermeshing surfaces, and a contractile clamping member of a normal internal diameter less than the external diameter of the rod ends, said member exerting a transverse clamping tension on the rod ends.

6. The combination of sucker-rod sections having coincidently contoured angled serrated surfaces, and a longitudinally split contractile clamping sleeve engaging the rod ends to maintain the serrated surfaces in engagement.

7. The combination of sucker-rod sections having intermeshing surfaces, a split contractile clamping member adapted to engage the rod ends to maintain said surfaces together, and means for expanding the clamping member.

8. The combination of sucker-rod sections having ends cut transversely to provide intermeshing surfaces, a longitudinally split transversely contractile clamping sleeve adapted to embrace the rod ends to maintain said surfaces together, and means for expanding the sleeve.

9. The combination of sucker-rod sections having co-engaging surfaces, and contractile means exerting a transverse clamping tension on the rod ends to maintain said surfaces together.

10. The combination including opposed sucker-rod sections having co-engaging surfaces, a longitudinally split contractile

sleeve exerting a transverse clamping tension on the rod ends to maintain said surfaces together, and a sleeve expanding device adapted to engage within said split to expand the sleeve.

11. The combination including opposed sucker-rod sections having co-engaging surfaces, a longitudinally split contractile sleeve exerting a transverse clamping tension on the rod ends to maintain said surfaces together, and a sleeve expanding device having opposed jaws adapted to engage within the opposite ends of said split to expand the sleeve.

12. The combination including opposed sucker-rod sections having co-engaging surfaces, a longitudinally split contractile sleeve exerting a traverse clamping tension on the rod ends to maintain said surfaces together, and a sleeve expanding device including a plate having a sleeve receiving channel and a pair of opposed jaws operable to engage within the opposite ends of said split to expand the sleeve.

Signed at Brea, California, this 5th day of March, 1920.

GUS ADAMS.

Witnesses:
L. A. SAYLES,
M. HUALDE.