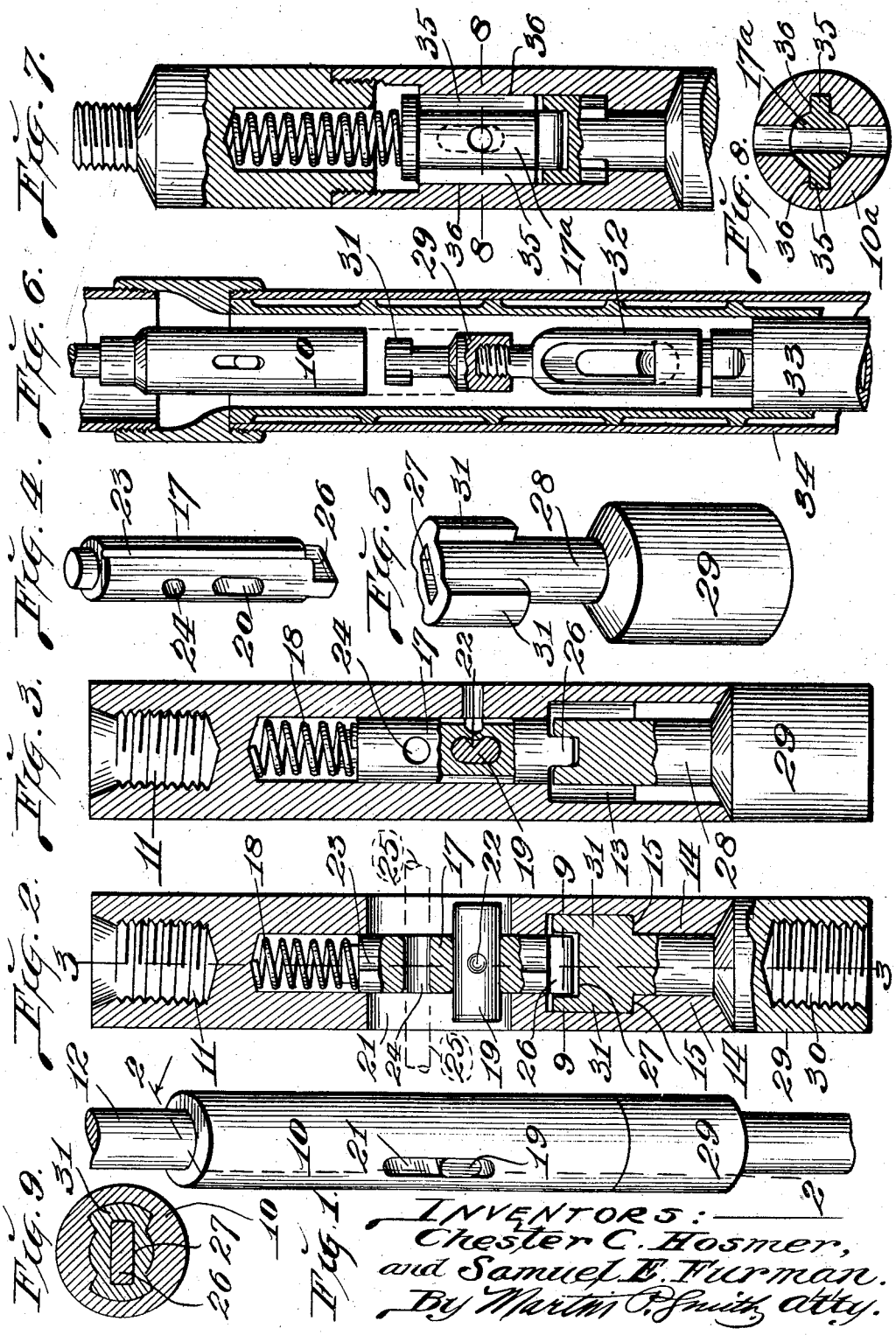
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OIL WELL PLUNGER ATTACHMENT AND SUCKER ROD CONNECTION

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OIL-WELL-PLUNGER ATTACHMENT AND SUCKER-ROD CONNECTION.

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Our invention relates generally to tool joints and more particularly to a device that may be advantageously used as a connection or coupling between the sections or stands of oil well pump sucker rods or between the lower end of the sucker rod line and an oil well pump plunger.

Among the principal objects of our invention are, the provision of a relatively simple, practical and easily produced joint structure that will afford a quick acting, positive and substantial coupling or connection between the adjacent ends of two members, such as oil well sucker rods, or a rod section and a pump plunger and, to provide a coupling or joint structure that will be effective in saving much of the time and labor that is involved in the screwing together and unscrewing of the joints ordinarily used between sucker rods and the like.

A further object of our invention is the provision of a joint or connection that will enable the plunger of an oil well pump to be inserted with the pump barrel, when the well is tubed and the sucker rod connected to said plunger afterwards, and which procedure entirely eliminates the scratching, marring and cutting of the surface of the plunger that invariably results where said plunger is lowered through the well tubing into the barrel at the lower end thereof.

With the foregoing and other objects in view, our invention consists in certain novel features of construction and arrangement of parts that will be hereinafter more fully described and claimed and illustrated in the accompanying drawings in which

Figure 1 is a perspective view of a joint or connection of our improved construction.

Figure 2 is a vertical section taken on the line 2—2 of Fig. 1.

Figure 3 is a vertical section taken on the line 3—3 of Fig. 2.

Figure 4 is a perspective view of a spring-pressed latch or locking pin.

Figure 5 is a perspective view of the lower member of the joint and which is engaged by the locking pin.

Figure 6 is a vertical sectional view through the upper portion of a pump barrel and showing our improved device in use as a connection between the sucker rod and the pump plunger.

Figure 7 is a vertical section taken through the center of a modified form of the connection.

Figure 8 is a horizontal section taken on the line 8—8 of Fig. 7.

Figure 9 is a horizontal section taken on the line 9—9 of Fig. 2.

Referring by numerals to the accompanying drawings, 10 designates the upper member of our improved connection, said member being in the form of a short cylindrical body, in the upper end of which is formed a threaded recess 11 that is adapted to receive the threaded end of a sucker rod or similar member, such as 12.

Formed in the lower portion of member 10 is a cylindrical recess 13, within which is located a pair of oppositely disposed, inwardly projecting lugs 14 having at their upper ends, horizontally disposed shoulders 15.

Extending from recess 13 upwardly through the central portion of body 10 is an axial bore 16 in which is arranged for sliding movement, a locking pin or bolt 17 and located in the upper portion of said bore 16 is a compression spring 18 that bears on top of said bolt.

The downward movement of the locking bolt within the bore 16 is limited by a key 19 that is seated in a diametrically arranged aperture 20 in said bolt and the end portions of which key occupy vertically disposed slots 21 that are formed in member 10 to the sides of bore 16.

Key 19 may be secured to bolt 17 in any suitable manner, preferably by indenting the side of the bolt and pressing a small portion of the metal thereof into a recess 22 that is formed in the side face of said key (see Fig. 3).

Formed in the side faces of the bolt 17 are vertically disposed drain grooves 23 and formed through said bolt above the key aperture 20 is an aperture 24 that is adapted to receive a pin or tool such as 25 when the bolt is lifted in disconnecting the parts of the joint or connection.

Formed on the lower end of bolt 17 is a diametrically disposed rib 26 that is adapted to enter a recess 27, which latter is formed in the upper end of a stem or shank 28 that projects upward from the lower member 29 of the joint or connection.

This member 29 is in the form of a short cylinder, in the lower end of which is

formed a threaded recess 30 that is adapted to receive the threaded end of a sucker rod or the like.

Formed on the upper portion of shank 28 are oppositely arranged lugs 31 that are adapted to enter the recess 13 and rest directly on the shoulders 15 of lugs 14. When the parts of the joint are being connected or disconnected, the lugs 31 pass vertically between the lugs 14 and when the lower ends of said lugs 31 pass above the shoulders 15, one part of the joint is rotated in either direction, a quarter of a turn, thereby permitting lug 26 to drop into recess 27, which action is brought about as a result of the pressure of spring 18 on the upper end of bolt 17.

Thus the parts of the joint are securely coupled together by the engagement of the lugs 31 on top of lugs 14 and the parts are locked against relative rotary movement by the engagement of lug 26 in the recess 27.

To enable the parts of the joint to be disconnected, a pin or rod, such as 25, is inserted through aperture 24, so that locking bolt 17 may be raised or retracted a sufficient distance to withdraw lug 26 from recess 27, thus permitting one part of the connection to be rotated to a position where the lugs 31 can be drawn downward between lugs 14.

In Fig. 6 our improved joint or coupling is shown as a connection between the lower end of the string of sucker rods and the pump plunger.

Where the device is thus used, the lower member 29 is screwed onto the stem that projects from the top cage 32, that is arranged at the upper end of the plunger 33 and the parts thus assembled are arranged within the working barrel 34, before the latter is placed in the well. Thus the surface of the plunger is prevented from being cut, scratched or dented while being placed in the well and when the sucker rod is lowered into the tubing, the upper portion 10 of the joint member that is secured to the lower end of said rod, may be readily connected to the joint member in the manner heretofore described.

In the modified construction illustrated in Figs. 7 and 8, the locking bolt 17^a, instead of being provided with the key 19 has formed on its outer surface, vertically disposed ribs 35, that are arranged for sliding movement in grooves 36, in the upper member 10^a of the joint.

It will be noted that the shoulders or contacting faces between the adjacent ends of the two members of the joint or coupling are tapered or made conical. This is done in order that the parts may be readily "centered" when being connected and, further, the contacting faces being inclined, will shed dirt, dust, scale and the like and, as a result, said faces and the joint between same will remain comparatively clean.

In some instances, it may be found desirable to provide the joint with two or more pairs of the interchanging lugs 14 and 31.

Thus it will be seen that we have produced a tool joint or coupling that may be advantageously employed between the sections or stands of oil well sucker rods, or between the sucker rod pump plunger, said connection being "quick acting," in that it can be quickly connected or disconnected, and said joint or coupling possessing superior advantages in point of simplicity, durability and general efficiency.

Obviously, minor changes in the size, form and construction of our improved sucker rod connection and pump plunger attachment may be made and substituted for those herein described without departing from the spirit of the invention, the scope of which is set forth in the appended claims.

We claim as our invention:

1. In a connection for sucker rods or the like, a pair of joint members, one of which is axially recessed to receive an axially disposed projecting portion of the other member, the interengaging portions of said members being provided with interlocking parts the inner end of said axially disposed projecting portion being provided with a non-circular recess, and an axially disposed spring-pressed member carried by the other joint member and provided with a non-circular projecting end that is adapted to engage in said non-circular recess for locking the joint members against relative rotary movement when properly connected.

2. In a connection for sucker rods or the like, a pair of members, one of which is provided with an axially disposed recess in which is formed a pair of oppositely arranged lugs, an axially disposed shank projecting from the other member and adapted to enter said recess as the members are moved endwise toward each other, a pair of oppositely arranged lugs on said shank, which last mentioned lugs are adapted to engage the lugs in the recess the end of said shank being provided with a non-circular recess and a spring-held member axially arranged within the opposite joint member and provided on its end with a non-circular lug that is adapted to enter the non-circular recess in the end of the shank for locking the two joint members against relative rotary movement when properly connected.

3. In a connection for sucker rods or the like, a pair of members, an axially arranged shank projecting from one of said members and adapted to enter an axially arranged recess in the other member the end of which shank is provided with a non-circular recess, interlocking lugs on the engaging portions of said members and longitudinally movable means axially arranged within the recessed member and provided on its outer end with

a non-circular lug that is adapted to engage in said non-circular recess in the shank on the other member to hold the two members against relative rotary movement when properly assembled.

4. In a coupling of the class described, a pair of members one of which is provided with an axially disposed recess within which is formed a pair of oppositely arranged lugs, a shank projecting from the other joint member and adapted to enter said recess as the members are moved endwise toward each other, a pair of oppositely arranged lugs on said shank, which lugs are adapted to engage the lugs within the recess when the joint members are assembled and one member is rotated a quarter turn, the end of said shank being provided with a non-circular recess, a spring-held member axially disposed within the opposite joint member and provided on its outer end with a non-circular lug that is adapted to enter the non-circular aperture in the end of the shank to lock the joint members against relative rotary movement, a key passing through said axially disposed spring-held locking member and the joint member within which the spring-held locking member is arranged being slotted lengthwise for the accommodation of the projecting ends of said key.

5. In a coupling of the class described, a pair of members one of which is provided with an axially disposed recess within which is formed a pair of oppositely arranged lugs, a shank projecting from the other joint member and adapted to enter said recess as the members are moved endwise toward each other, a pair of oppositely arranged lugs on said shank, which lugs are adapted to engage the lugs within the recess when the joint members are assembled and one member is rotated a quarter turn, the end of said shank being provided with a non-circular recess, a spring-held member axially disposed within the opposite joint member and provided on its outer end with a non-circular lug that is adapted to enter the non-circular aperture in the end of the shank to lock the joint members against relative rotary movement, a key passing through said axially disposed spring-held locking member, the joint member within which the spring-held locking member is arranged being slotted lengthwise for the accommodation of the projecting ends of said key and said spring-held locking member being provided with an aperture that is adapted to receive a retracting tool.

In testimony whereof we affix our signatures.

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