Dec. 31, 1929. S. L. JOLLEY 1,741,720

SUCKER ROD JOINT LOCK

Filed March 7, 1927

Fig. 1.

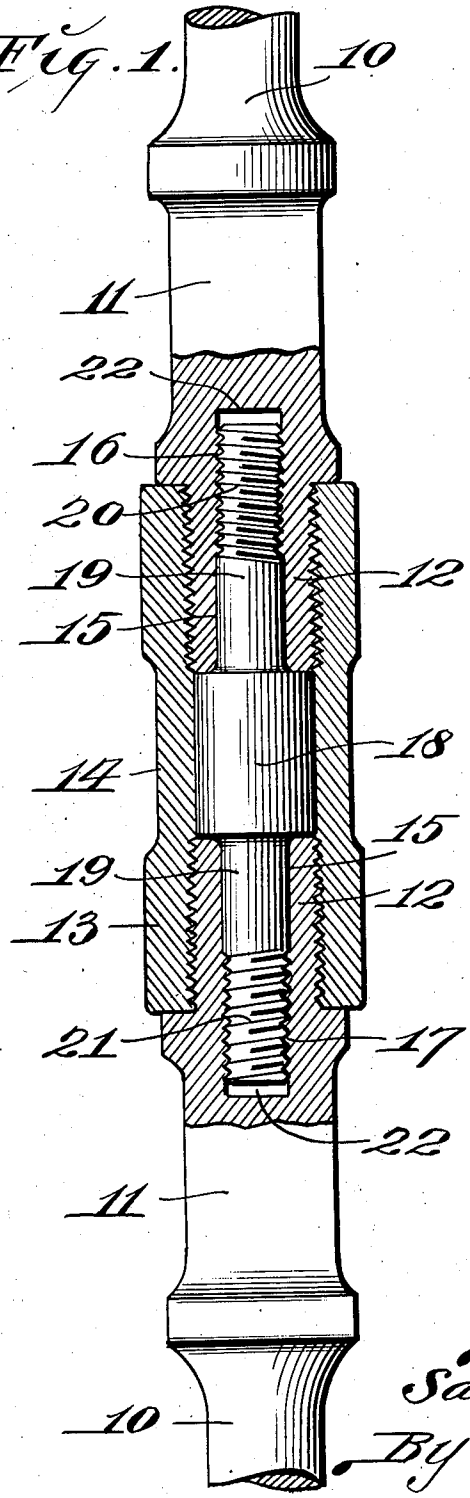
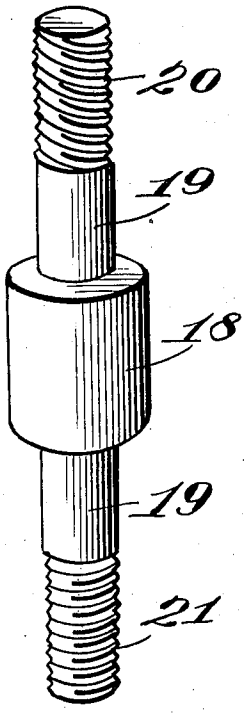



Fig. 2.




Inventor:—
Samuel L. Jolley.
By Martin P. Smith Atty.

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# UNITED STATES PATENT OFFICE

SAMUEL L. JOLLEY, OF NORWALK, CALIFORNIA

## SUCKER-ROD-JOINT LOCK

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My invention relates to a lock for the joints of sucker rods or those rods that are utilized in connection with deep well pumps, particularly the pumps in oil wells and the principal object of my invention is to provide simple, inexpensive and efficient means that will combine with the joint between the sucker rod sections in providing a positive lock between said rod sections.

Further objects of my invention are to provide a sucker rod joint locking device of the character referred to that will serve as a tie or connection between the ends of the rod sections, even though the usual coupling member between said rod sections is worn to such a degree as to render the same ineffective in performing its intended functions; further, to provide a sucker rod joint lock which, when properly applied for use, is wholly protected by the members with which it is associated; and further, to provide a joint lock that is disconnected with the same operations that "break" or disconnect the standard form of coupling between said rod sections.

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

Fig. 1 is a vertical section taken through the center of a joint between two sucker rod sections and showing my improved lock in position in said joint.

Fig. 2 is a perspective view of the joint locking member contemplated by my invention.

Referring by numerals to the accompanying drawing, which illustrates a practical embodiment of my invention, 10, 10 designates sucker rod sections of standard form, the end portions 11 of which are slightly enlarged and made square or non-circular in cross section so as to provide wrench receiving faces, and projecting axially from the enlarged end portions of said rods are short cylindrical pins 12 that are provided with standard right hand threads, preferably ten to the inch.

These threaded pins are adapted to be screw-seated in the internal threaded end portions of a standard form of tubular coupling member 13, the latter having formed on its outer surface intermediate its, ends, wrench receiving faces 14.

The parts just described are of standard construction and for the accommodation of my improved joint locking device, the threaded pins 12 that project from the ends of the rod sections are provided with axially disposed bores 15, the inner portions of which are threaded. The bore at the lower end of each rod, or the end that first enters the well hole, has its inner portion provided with a standard left hand thread 16, preferably ten to the inch, and the inner portion of the bore at the upper end of each rod section is provided with a standard right hand thread 17, preferably ten to the inch.

The locking member contemplated by my invention comprises a cylindrical body 18 that is adapted to fit within the cylindrical chamber in coupling member 14 between the ends of the pins 12, and projecting from the ends of said body 18 are cylindrical stems 19 that are adapted to occupy the axially disposed bores 15 in the ends of the rod sections. The upper portion of the stem that projects upwardly from the body 18 is provided with a standard left hand thread 20 that is adapted to engage the thread 16 in the lower end of the sucker rod section and the lower portion of the stem that depends from the body 18 is provided with a standard right hand thread 21, preferably ten to the inch, and which is adapted to engage the thread 17 in the upper end of the sucker rod section.

The lengths of the bores 15 are slightly greater than the lengths of the stems 19 and thus relatively short clearance chambers 22 are formed at the inner ends of said bores when the lock is properly applied to the joint. This arrangement permits the threaded stems to be wholly seated in the bores 15 without binding engagement between the ends of said stems and the inner ends of said bores.

When my improved joint lock is properly positioned between the ends of a pair of rod sections, the threaded engagement between

the stems 19 and the rod sections provides a very effective lock and connection between said rod sections, and the locking member is wholly enclosed by the coupling 14 and the threaded pins 12 in which the stems 19 are seated.

It will be understood that the joints of sucker rods are subject to relatively rapid wear, especially where the joints contact with the well tube or casing, and where the joint wears to such a degree as to cut through the coupling member 13 so as to expose the threads between the ends of said coupling member and the pins 12, there is danger of breakage at the worn joint, in which event a portion of the sucker rod drops into the well and the recovery thereof involves much time, labor and expense. Further, it frequently happens that the threaded pins 12, when subjected to undue strains, break at points two or three threads from the shoulders between the pins and the enlarged end portions 11 of the rods, in which event a portion of the rod drops into the well hole.

By the use of my improved joint lock, the possibility of breakage of the joint is reduced to a minimum, for said joint lock provides a strong, substantial and efficient coupling between the ends of the rod sections in addition to the usual tubular coupling that connects the pins, and, as the threaded ends of the stems 19 project into the ends of the rod sections beyond the inner ends of the pins 12, the rods will remain coupled, even though the pins should break.

To assemble my improved joint the threaded portion of stem 19 is screw seated in the threaded bore 15 in the lower end of a sucker rod after which the internally threaded upper end of the coupling member is screw seated on the pin 12 that depends from the lower end of the sucker rod, and when the parts are thus assembled the cylindrical body 18 is positioned on the central portion of coupling member 13. The pin 12 on the upper end of the lower sucker rod is now screwed into the internally threaded lower end of the coupling member 13 and as the thread on said pin 13 and the threads 17 and 21 are both right hand threads the threaded lower portion of the lower stem 19 will be screw seated in the threaded portion of the bore in the upper portion of the lower sucker rod. It will be noted that only the outer end portions of the stems 19 are threaded and that the corresponding portions of the bores 15 are threaded. This arrangement enables the member 18 and the stems 19 carried thereby to be connected to the ends of the sucker rods with comparatively few turns of said member 18 and at the same time the formation of relatively short threaded portions of the stems and at the inner ends of the bores minimizes the time, labor and consequent expense in production costs.

In breaking joints, or uncoupling the rod sections as the same are elevated from the well hole, a rod elevator is positioned on the rod just below the joint that is to be broken and after rod wrenches have been applied to the wrench receiving faces 11 above and below the joint, the upper one of said wrenches is rotated anti-clockwise, thereby simultaneously unscrewing the lower end of the coupling 14 from the stem with which it has been engaged and unscrewing the threaded portion of the lower stem 19 from the threaded portion of the bore in which said stem has been seated.

Thus it will be seen that I have provided a sucker rod joint locking device that is relatively simple in construction, inexpensive of manufacture, capable of being easily and quickly applied for use and which provides a positive and efficient lock for the joint between the ends of sucker rods and the like.

The ends of the pins 12 and the ends of body 18 around the stems 19 are faced off so that when the locking member is properly positioned in the joint, the faced ends of body 18 bear directly against the faced ends of the pins 12, and these abutting shoulders, with the abutting shoulders between the ends of the coupling member 13 and the ends of the rods 10, provide strong substantial bearings that tend to add strength and rigidity to the completed joint.

It will be understood that minor changes in the size, form and construction of the various parts of my improved sucker rod joint lock may be made and substituted for those herein shown and described without departing from the spirit of my invention, the scope of which is set forth in the appended claims.

I claim as my invention:

1. The combination with a pair of sucker rod sections provided at their ends with the usual threaded pins and said pins being provided with axially disposed bores, that extend into the ends of the sucker rods beyond the pins thereon, the inner portions of which bores are threaded, of a joint member arranged between the ends of the pins on said rods, stems projecting axially from the body of said joint member, the diameter of which stems is substantially less than the diameter of the body of said joint member to form abrupt shoulders that engage the ends of the threaded pins on the sucker rod sections when the joint is assembled, the outer portions only of which stems being threaded for engagement in the threaded portions of said bores and a coupling member enclosing the body of said locking member and with its ends screw-threaded on the threaded pins that project from the ends of the rod sections.

2. The combination with a pair of rod sections provided at their ends with axially disposed externally threaded projecting pins, said pins and the adjacent end portions of

the rods being provided with axially disposed bores that extend into the ends of the sucker rods beyond the pins thereon, the inner portion of one of said bores being provided with a right hand thread and the inner portion of the other bore being provided with a left hand thread, of a joint locking member comprising a body arranged between the ends of the threaded pins, axially disposed stems projecting from the ends of the body of said locking member, the diameter of which stems is substantially less than the diameter of the body of said joint member to form abrupt shoulders that engage the ends of the threaded pins on the sucker rod sections when the joint is assembled, the outer portions of which stems being threaded for engagement respectively with the right and left hand threaded portions of said bores and a tubular coupling having its end portions screw-seated on the threaded pins that project from the ends of the rod sections.

In testimony whereof I affix my signature.

SAMUEL L. JOLLEY.