

T. R. STANLEY.
 COUPLING FOR RODS.
 APPLICATION FILED SEPT. 20, 1919.

1,389,787.

Patented Sept. 6, 1921.

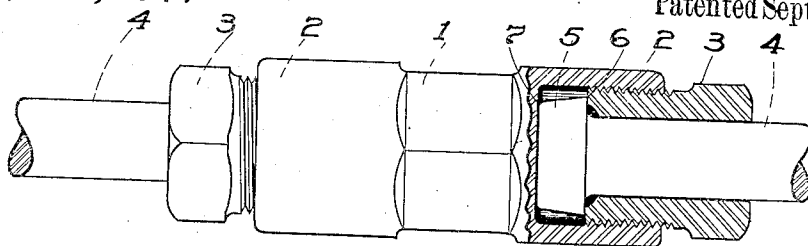


FIG. 1.

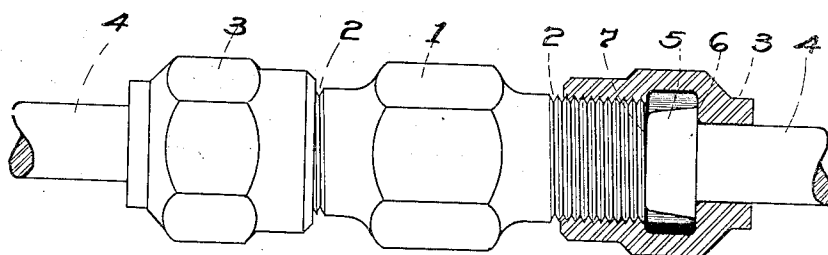


FIG. 2.

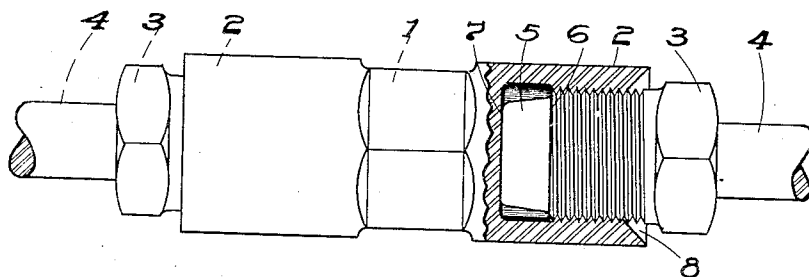


FIG. 3.

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COUPLING FOR RODS.

1,389,787.

Specification of Letters Patent.

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Application filed September 20, 1919. Serial No. 325,198.

To all whom it may concern:

Be it known that I, THOMAS R. STANLEY, citizen of the United States, residing at Oil City, in the county of Venango and State of Pennsylvania, have invented certain new and useful Improvements in Couplings for Rods, of which the following is a specification.

The object of this invention is to provide an easily-applied efficient and inexpensive coupling for metallic rods.

Various forms of construction whereby I attain this object are shown in the drawings, each of the figures of which is an elevation of my improved coupling, one end being in section to illustrate the construction more clearly.

The construction as here illustrated is substantially as follows:

I form from a metallic bar of any suitable cross-section, a body 1, and provide the same at both ends with a screw-thread, that may be either an internal thread as shown in Figure 1, or an external thread as shown in Fig. 2.

A member 3 is provided to cooperate with said threaded portion of said body 1, which may be either in the form of a sleeve-nut, as shown in Fig. 1, or a bushing as shown in Fig. 2; in either form of construction said member 3 is provided with a rod-passage or socket through which the rod 4 to be coupled extends.

The end of said rod 4 is formed into a head 5, the outer face of which is adapted to abut against the face 7 of said body.

Said member 3, at the inner end of said rod-socket, is adapted to bear upon the under face of said head 5.

It will, therefore, be readily understood that, when said rod is in position to be coupled and the members 1 and 3 are properly screwed together, a firm and rigid coupling is formed, in which a relative longitudinal play of the respective elements is prevented.

There is, at times, however, an abnormal and practically unavoidable condition of service to which a coupling of this class is subjected when it is used as a sucker-rod coupling, which produces a severe longitudinal thrust upon the rod. This condition of service is likely to occur where an oil well is pumped by means of what is termed a "power" located at a considerable distance from the well, and motion is transmitted from said power to a pumping jack at the

well, one arm of which is directly connected to the sucker-rod. Said transmission is effected by means of a surface line, consisting of a wire cable or metallic rods. The distance from the power to the pumping jack is in many cases upward of a thousand feet and may considerably exceed this figure. These surface lines are in the open, and temperature has the usual effect upon them with reference to expansion and contraction. When the pumping-jack is properly connected to the surface line, and to the sucker-rod, and a proper adjustment thereby made, the pump piston is thereby caused to reciprocate within suitable and desired limits within its cylinder—termed the working barrel—which is positioned adjacent to the bottom of the well. If these adjustments have been made when the weather is cool, a subsequent rise of temperature will cause the surface lines to elongate sufficiently to permit the piston to "bump" the check valve in the bottom of said cylinder, at the lower end of its stroke. When this occurs, at every stroke of the pump, each coupling—especially the head 5—is subjected to a thrust equal to the weight of the rods above the coupling. This may be several hundred pounds, as the diameter of these rods is usually seven sixteenths of an inch and the weight is .511 lbs. per foot exclusive of the extra weight of the couplings. This thrust or bumping action tends to upset the head 5 and increase its diameter, thus causing it to enlarge within the socket which it occupies, and to become firmly stuck therein, causing much difficulty in uncoupling the rods.

In order to avoid such difficulty, I taper said head toward its outer end so that it has approximately the form of a truncated cone, the base of which is at the junctional point of the rod 4. The outer diameter of said base is considerably smaller than the inside diameter of the socket which said head occupies when the coupling is connected, and because of said shape and dimensions, said head does not become upset or expanded sufficiently to produce the difficulty above mentioned.

In Fig. 3 a slight modification is shown at 8, which consists in chamfering the entering wall of the screw-threaded portion 2 of the device. This feature has been found to be useful when my improved coupling is applied to the sucker-rods of oil wells, as it assists in preventing any sand which may be

in the oil from settling, and tends to keep it moving in the upward direction, and out of the well.

Said feature 8, which is termed the "sand cup" is positioned at the top or upper end of the coupling when used with vertically-disposed sucker-rods in a well. Said feature could be formed at some other point in the body 1 than that shown in the drawing if desired, the main requirement being, that it forms a horizontally-disposed, annular, upwardly-facing, cup-like groove, that will keep any sand in the well-tubing moving in the upward direction when the pumping mechanism is in operation.

I claim the following:

1. A coupling for rods comprising in combination, a body provided at both ends thereof with a screw-thread, also a face for abutment of the rod to be coupled; a rod provided at its end with a tapering head, tapered toward its free end and having oppositely-positioned faces spaced longitudinally of said rod; and a member provided with a screw-thread cooperating with said body screw-thread, an opening in said member into which said rod extends, also a clamping face between which and said body clamping face, the respective faces of said head are clamped.

2. A coupling for rods comprising in combination, a body provided at both ends thereof with oppositely-disposed screw-threads, also a face for abutment of a rod to be coupled; a rod provided at its end with a head having the shape of a truncated cone, the larger diameter of which is smaller than the diameter of said screw-threaded portion of said body, said head also having oppositely-positioned faces spaced longitudinally of said rod; and a member provided with a screw-thread cooperating with said body screw-thread, an opening in said member through which said rod extends, also a clamping-face cooperating with said body face clamping the respective faces of said rod-head therebetween.

3. A coupling for rods, comprising in combination, an elongated body provided at both ends thereof with a screw-thread, also a face for the abutment of the end of a rod to be coupled; a rod provided at its ends with a head having oppositely-positioned

faces spaced longitudinally of said rod; and a member provided with a screw-thread cooperating with said body screw-thread, a socket for the passage of said rod, said socket being flared outwardly at its outer end so as to form sand pockets, said member having also a clamping face cooperating with said body face, clamping the respective faces of said rod-head rigidly therebetween.

4. A coupling for rods comprising in combination, an elongated body provided at both ends thereof with a screw-thread, also a face for abutment of a rod to be coupled; a rod provided at its end with a head having the shape of a truncated cone, the larger diameter of said head being smaller than said screw-threaded portion of said body, said head also having oppositely-positioned faces spaced longitudinally of the rod, and a member having a screw-threaded portion cooperating with said body screw-thread, an opening in said member through which said rod extends, a clamping face on said member between which and said body-face, the respective faces of said head are clamped, and a sand-pocket carried by said coupling.

5. A coupling for rods comprising an elongated body provided at both ends thereof with a screw-threaded portion also a face for abutment of the end of a rod to be coupled; a rod provided with a head having the shape of a truncated cone, the larger diameter of which is adjacent to the rod and is of less diameter than said screw-threaded portion of said body, said head also having oppositely-positioned faces spaced longitudinally of said rod; and a member provided with a screw-threaded portion cooperating with the screw-threaded portion of said body, an opening in said member through which said rod extends, also a clamping face formed thereon cooperating with said body face, clamping the respective faces of said rod-head therebetween, and a sand pocket formed in said coupling.

In testimony whereof I affix my signature in presence of two witnesses.

THOMAS R. STANLEY.

Witnesses:

C. E. WOLCOTT.

S. H. PERRY.