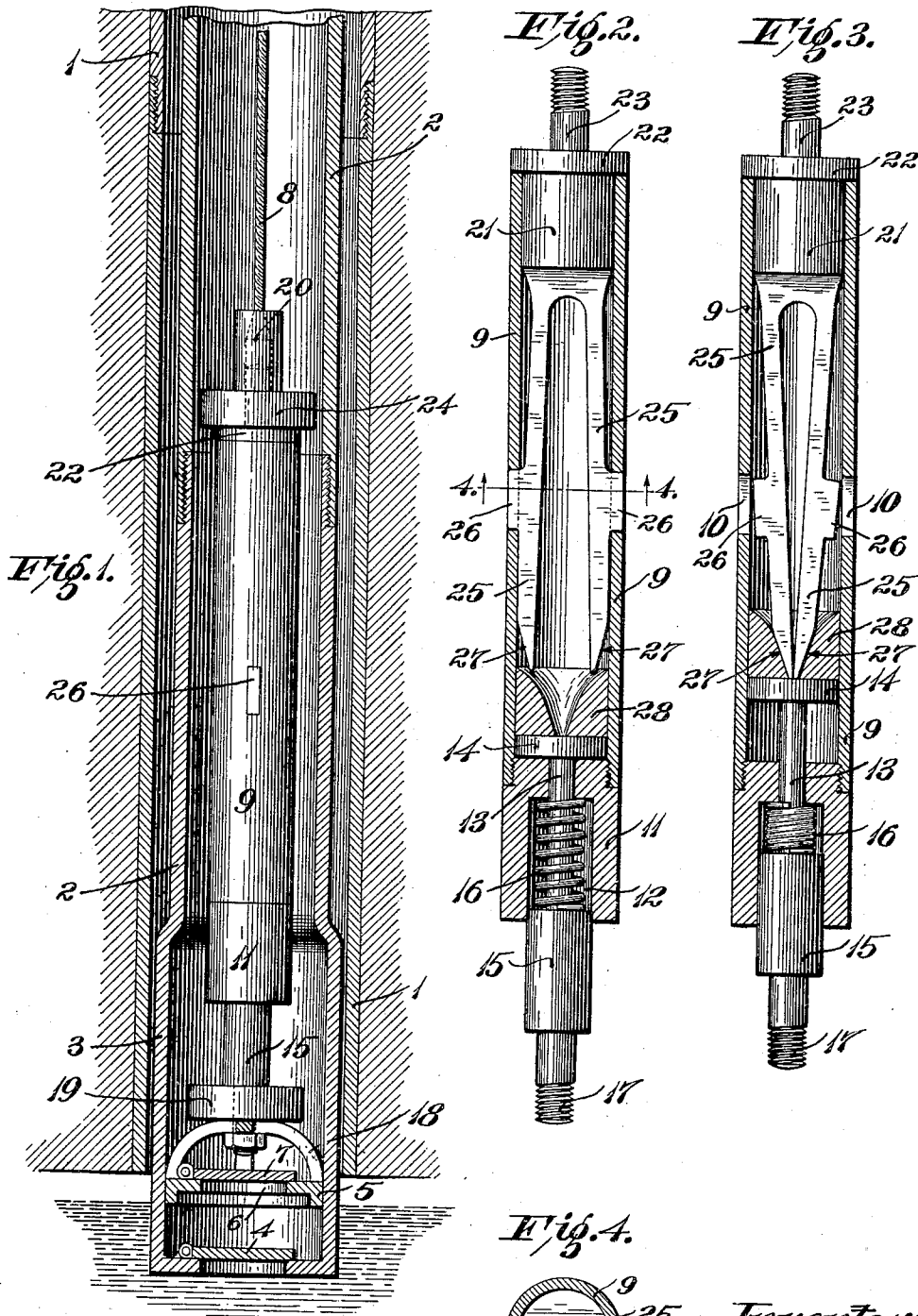


D. E. ENGLE.
COUPLING DEVICE.
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1,005,699.

Patented Oct. 10, 1911.



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UNITED STATES PATENT OFFICE.

DAVID E. ENGLE, OF KIEFER, OKLAHOMA, ASSIGNOR OF ONE-HALF TO A. LESCHEN & SONS ROPE COMPANY, OF ST. LOUIS, MISSOURI, A CORPORATION OF MISSOURI.

COUPLING DEVICE.

1,005,699.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, DAVID E. ENGLE, a citizen of the United States, and a resident of the city of Kiefer, in the county of Creek and State of Oklahoma, have invented a new and useful Improvement in Coupling Devices, of which the following is a specification.

This invention relates to coupling devices and more particularly to such devices used in connection with sucker rods for oil wells and the like.

It has for its principal objects to produce a simple, compact and durable coupling device which is not liable to become accidentally disconnected, to provide for readily disconnecting the rod from the sucker in the depths of the well when so desired, and to attain certain other advantages more fully appearing.

The invention consists in the parts and in the arrangements and combinations of parts hereinafter described and claimed.

In the accompanying drawing which forms part of this specification and wherein like symbols refer to like parts wherever they occur,—Figure 1 is a vertical section through the bottom portion of an oil well casing, the coupling device for the cable and sucker being shown in elevation; Fig. 2 is a detail view partly in vertical section and partly in elevation, showing the parts of the coupling device in connected position; Fig. 3 is a similar view illustrating the manner of disconnecting the coupling; and Fig. 4 is a section on the line 4—4 of Fig. 2.

Referring to Fig. 1 of the drawings, the well is illustrated as lined with a tubular casing 1. Within the tubular casing 1 is a pump-tube 2 on the lower end of which is fixed a pump-barrel or cylinder 3. In the bottom of the pump-barrel is an upwardly opening valve 4; and working above said valve within the pump-barrel is a sucker or piston 5. The sucker is provided with a central opening 6 which is covered by an upwardly opening valve 7. Obviously, however, any desirable construction and arrangement of sucker and valves may be substituted for that herein set forth without departing from my invention.

The attachment of the sucker 5 to the

plunger rod or cable 8 is effected by means of a coupling device comprising a cylinder or barrel 9 which is provided with two diametrically disposed slots 10. Secured to the lower portion of the cylinder or barrel 9 is a plug 11 which is bored axially as at 12. The bore in the plug is of two diameters, the smaller being at the inner end of the plug; and working in the smaller bore is a stem or shank 13 which carries on its inner end a collar or head 14. On the outer portion of the stem 13 is a cylindrical enlargement 15 which is adapted to work in the larger diameter of the bore of the plug 11; and interposed between the inner end of the enlargement 15 and bottom of the larger bore is a spring 16 which normally holds the stem or plunger 13 in its outermost position. The lower end of the stem 13 is screw-threaded as at 17 so as to be secured in a screw-threaded central opening in the yoke or spider 18 on the sucker 5. A weight 19 is preferably interposed between the outer end of the enlargement 15 on the stem 13 and top of the yoke 18.

Secured to the plunger rod or cable 8 is a shank 20 to which is secured a coupling member 21. This coupling member 21 comprises a cylindrical body portion which is adapted to fit loosely in the cylinder or barrel 9, and it is provided with an annular enlargement or shoulder 22 adapted to bear against the end of said cylinder or barrel 9. On the upper end of the body portion is an axial screw-threaded stud 23 which is adapted to fit into a screw-threaded bore in the stem or shank 20 to which the cable 8 is attached. A weight 24 is preferably interposed between the annular enlargement or shoulder 22 and said stem or shank 20. Extending from the inner end of the body portion 21 are two spring forks or fingers 25 having lateral lugs 26 which are counterparts of the slots 10 in the cylinder 9 and adapted to fit therein. The ends of the spring forks or fingers 25 are beveled, as at 27, so as to cooperate with a flared bore or central opening in a cylindrical plug 28 which is slidably fitted in the cylinder or barrel 9 between the inner face of the head 14 on the plunger 13 and the ends of said fingers 25.

In connecting the separable members of

the coupling device the spring fingers 25 on the member 21 are pressed together and inserted into the upper end of the cylinder 9. The parts are then moved to the position shown in Fig. 2 whereupon the lugs 26 snap into the slots 10 in said cylinder. In this position the coupling is held against endwise separation, and as long as the piston or sucker is free to reciprocate in the pump-barrel 3 and also as long as the plunger rod or cable 8 is held taut, the parts of the coupling will remain intact. However, should it be desirable to disconnect the plunger rod or cable from the piston or sucker it is only necessary to suddenly drop the plunger and cable until the plunger is arrested at the bottom of the pump-barrel, whereupon the impact due to the weight of the cable will force the coupling cylinder 9 and its connected member 21 downwardly against the tension of the spring 16; and the plunger stem 13 moves the plug 28 upwardly into engagement with the beveled end portions of the prongs or fingers 25 upon the member 21 and presses them inwardly as shown in Fig. 3, thereby withdrawing the lugs 26 from the slots 10. In this position of the parts a sharp upward pull on the cable will cause the withdrawal of the coupling member 21 from the cylinder 9 and the cable can then be withdrawn from the well casing. Should the sucker or piston stick or wedge in the pump-barrel, it is only necessary to suddenly let out the cable, and the action in disengaging the coupling is the same as just described.

Obviously, the device admits of considerable modification without departing from my invention. Therefore, I do not wish to be limited to the specific construction and arrangement shown and described.

What I claim is:

1. A coupling device for sucker rods, comprising a tubular cylinder, a member adapted to cooperate with said cylinder and having a resilient member arranged for interlocking engagement with said cylinder, and a resilient device on said cylinder adapted to engage said resilient securing device on the cooperating coupling member whereby the coupling may be disconnected by impact.

2. A coupling device for sucker rods, comprising a tubular cylinder, a member arranged for engagement with said cylinder, and resilient means on the cylinder arranged and adapted to disconnect the cylinder and the cooperating coupling member by impact.

3. A coupling device for sucker rods, comprising a cylindrical tube having a slot in its wall, a coupling member adapted to slidably fit in said cylindrical tube and having a resilient member arranged for engagement with the slot in the wall of said cylindrical tube, a device slidably fitted in said

cylindrical tube and adapted to engage said resilient coupling member and resilient means cooperating with said disconnecting device whereby the coupling is disengaged by impact.

4. In an oil pump, a coupling device comprising two members, the one adapted for connection with the sucker and the other with the sucker rod, one of said members having a rigid inter-engaging portion and the other member having a resilient inter-engaging portion adapted to cooperate with said rigid portion, and means on said rigid portion adapted to effect the disengagement of said two mentioned coupling members by impact.

5. In an oil pump, a coupling device comprising two telescopic sections, one of said sections having a rigid inter-engaging portion and the other section having a resilient inter-engaging portion adapted for engagement with said rigid portion, a device movably mounted on said rigid portion of the one section and adapted to engage said resilient portion of the other section to effect its release from said rigid portion, and resilient means for normally holding said movable device out of engagement with said resilient member.

6. In an oil pump, a coupling device comprising a tubular coupling member having diametrically opposite openings in its wall, a plunger mounted in one end of said tubular member, resilient means for holding said plunger normally in outermost position, means for connecting said plunger with the sucker, a coupling member adapted for connection with the sucker rod and cooperating with said tubular member, said coupling member having spring portions adapted to engage the openings in the wall of said tubular member, and a reciprocatory device mounted in said tubular member between the inner end of said plunger and ends of said spring portions on said coupling member, whereby, when said plunger is moved inwardly, said reciprocatory member engages said spring portions and withdraws the same from engagement with the tubular member so that the coupling may be separated endwise.

7. In an oil pump, a coupling device comprising a rigid tubular coupling member, said tubular member having perforations in its wall, a plunger mounted in one end of said tubular member, resilient means for holding said plunger normally in outermost position, a second coupling member adapted for engagement with said tubular member, said second coupling member comprising a rigid portion adapted to fit in said tubular member and having resilient fingers projected into said tubular member, said resilient fingers having lugs adapted to engage the openings in said tubular member

and the ends of said fingers being tapered, and means operated by said plunger adapted to effect the disengagement of said two coupling members, said means comprising
5 a sliding plug having a flared opening adapted to engage the outer end portions of said resilient fingers, whereby, when said plug is moved inwardly, said resilient fingers are withdrawn from engagement with said tubular member.
Signed at Kiefer, Oklahoma, this 2nd¹⁰ day of Feb. 1911.

DAVID E. ENGLE.

Witnesses:

N. W. HIBBARD,
S. E. BAILEY.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."