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WORKING BARREL FOR DEEP WELL PUMPS

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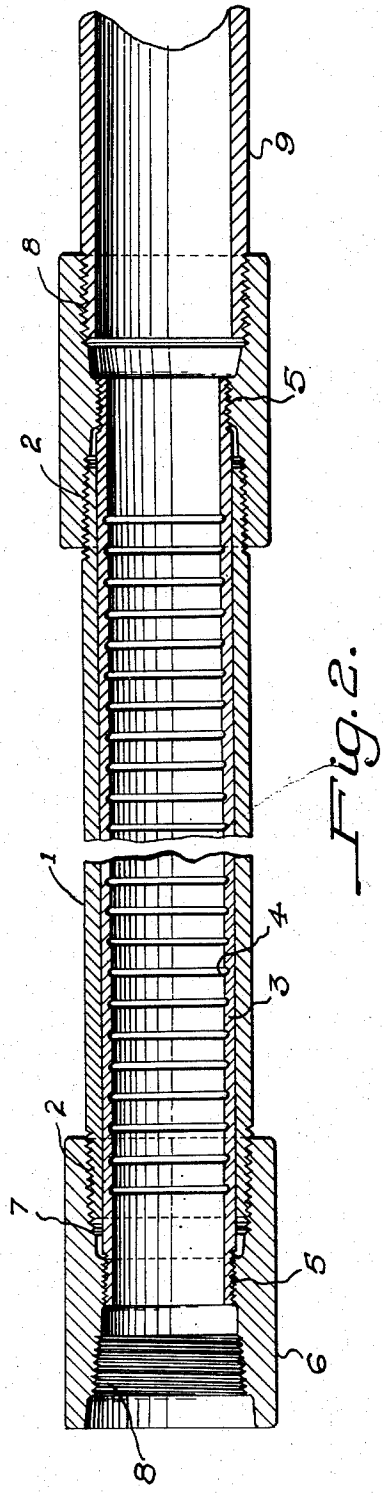


Fig. 1.

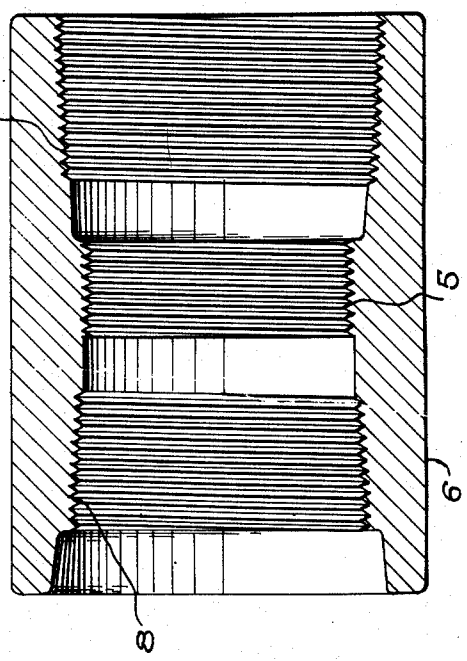


Fig. 2.

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WORKING BARREL FOR DEEP WELL PUMPS

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3 Claims. (Cl. 103—216)

This invention relates to improvements in deep well pumps more particularly to improvements in the working barrel and lining of deep well pumps for intimately locking the lining with the barrel proper.

In my copending application Serial No. 516,661 filed February 18, 1931, I have disclosed a deep well pump, the features of which are the grooving of the inner wall with the working barrel and the grooving of the outer surface of the plunger to form a liquid seal whereby the packing cups of the conventional form of pumps are eliminated, and wherein the grooves function to displace sand which may be present in the liquid thereby preventing scoring or marring of the cylinder and plunger.

This type of pump is particularly adapted for deep well operation, and the working cylinder is of relatively great length varying from three to seven feet in length, and on account of the great length of the cylinders, great accuracy of the bore must be maintained in the working barrel. On this account it is desirable, if not necessary, to bore the barrel and line the interior wall thereof with a brass or bronze liner and the present invention is particularly designed to provide for the fastening of such liner in the working barrel, and also for producing strong and safe joints of the barrel with the casing of the pump. Accordingly, it is a primary object of the present invention to provide means for securely fastening and interlocking a brass liner in a working barrel for deep well pumps.

The invention will be more clearly understood in connection with the accompanying drawing constituting a part hereof in which like reference characters designate like parts and in which:

Figure 1 is a longitudinal cross sectional view of a working barrel, a brass liner, and connecting couplings, embodying the principles of this invention; and,

Fig. 2 is a longitudinal sectional view of the coupling member for interlocking the brass liner with the working barrel and for connecting the working barrel to the pump casing.

With reference to the drawing, 1 constitutes a working barrel made of mild carbon steel or the like which is bored out in the conventional manner by mounting it in a lathe and removing the metal from solid bar to constitute a hollow tube of straight concentric form.

The working barrel is provided with threads 2 on its respective ends and a brass liner 3 in the form of a tube is intimately engaged with the inner wall of the working barrel by pressing the same therein.

As in my aforementioned copending application, the brass liner is provided with annular grooves 4 in axially spaced relation which cooperate with grooves formed in the plunger (not herein shown) to form liquid seals and to allow for the displacement of sand to prevent scoring of the barrel and plunger.

The liner 3 is provided with a screw thread 5 at its respective end and is of greater length than the working barrel so much so that the threaded portion of the liner extends beyond the thread 2 of the barrel.

To provide for the interlocking of the barrel and liner, a nipple or coupling 6 is employed having threaded portions at the mid-section thereof corresponding to the threads 5 of the liner for engaging the threads of the liner, and a threaded portion 7 which interacts with the threads 2 of the working barrel.

A feature of this invention is the employment of threads of different pitch for the ends of the barrel and liner, an example of which is shown in Figure 1 of the drawing in which the threaded portion 2 has eleven and one-half threads to the inch, and the threaded portion 5 twelve threads per inch so that when the nipple 6 is turned on the threads 2 and 5, the nipple will tend to move faster in an axial direction along the thread 2 than on the thread 5 to cause the nipple to interlock between the two sets of strands of different pitch to securely hold the working barrel and liner together

The nipple or coupling 6 is also provided with a threaded portion 8 for screwing it onto the pump casing at the top end and for fastening it to a sump or screen 9 at its lower end which is the end that is lowered into the pool such as an oil pool in which the pump is operated.

By constructing the barrel in the manner specified, namely, by boring it from a solid steel bar and providing it with a liner secured by the threaded coupling with differentiation of the thread to form the interlock, a strong durable structure is produced, which is in true alinement with the working plunger.

By employing the novel means of interlocking the liner and working barrel, the parts are securely held thereby eliminating the hazard of the liner becoming loose in the barrel during operation and causing damage by the reciprocatory movement of the plunger.

By utilizing the means of interlocking the barrel and liner as herein employed, the parts may be

readily assembled and dismembered as the case may be which is of importance in oil field operations where the parts must be handled with the employment of a minimum number of special tools.

Although one embodiment of the invention has been herein illustrated and described, it will be obvious to those skilled in the art that various modifications may be made in the details of construction without departing from the principles herein set forth.

I claim as my invention:

1. A working barrel for pumps comprising an outer casing having threaded ends and an interior lining having threaded ends which extend beyond the ends of the working barrel or casing, and threaded couplings having threaded portions for engagement with the threads of the barrel and the lining which threads are of different pitch whereby upon rotative movement of the couplings the barrel and liner are interlocked.

2. A working barrel for pumps comprising a cylindrical casing and a brass liner, the casing and liner having their respective ends provided with screw threads of different pitch, coupling members for connecting said barrel and liner having threaded portions for interacting with the threads of said casing and liner so that when the couplings are screwed on the threads the working barrel and liner will be securely interlocked.

3. A working barrel for deep well pumps comprising a relatively long cylindrical casing or tubing, a liner therefor having annular grooves on the interior surface thereof and adapted for intimate engagement with the inner wall of said tubing, said liner having its ends projecting beyond the ends of the working barrel, and said working barrel and liner having threads of different pitch formed exteriorly of their respective ends, and coupling members having threaded portions adapted to interact with the threads of the working barrel and liner whereby the said barrel and liner are interlocked, said couplings having threaded portions for connection with the pump casing whereby the working barrel is fastened in the pump line.

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