

April 1, 1924.

1,489,129

D. H. KELLER
DEVICE FOR PUMPING WELLS

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Fig. 1.

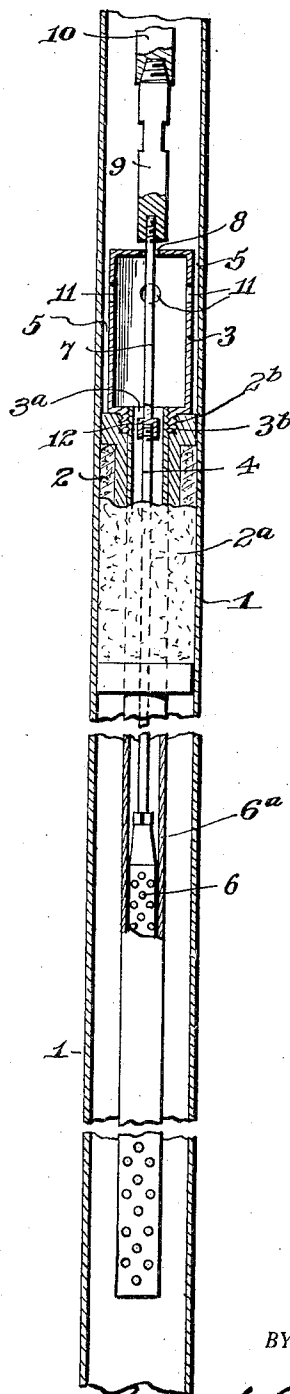


Fig. 2.

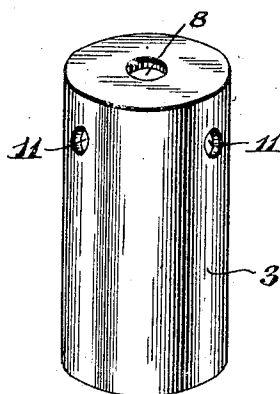
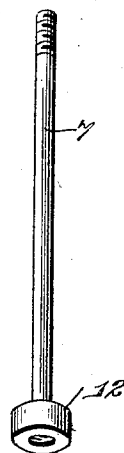


Fig. 3.



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UNITED STATES PATENT OFFICE.

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DEVICE FOR PUMPING WELLS.

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To all whom it may concern:

Be it known that I, DAVID H. KELLER, a citizen of the United States, residing at Humboldt, in the county of Allen and State of Kansas, have invented certain new and useful Improvements in Devices for Pumping Wells, of which the following is a specification.

This invention relates to a device for pumping wells without the necessity of using an extra string of casing or tubing and it consists of a set of three tools, comprising a coupling member, followed by a rod attached to the coupling member, and working in a cylinder which in turn is attached to a packer.

The rod passes through an orifice at the top of the cylinder and this rod has at the lower end an enlarged portion or head of sufficient size that when raised it will not pass through the orifice or opening in the top of the cylinder, this being for the purpose of pulling the packer and working barrel and all other pumping apparatus out of the well after having pumped the well as long as desired.

The coupling member is of sufficient size so it will not pass through the orifice or opening in the top of the cylinder and for the purpose of setting the packer the coupling member is driven down onto the cylinder by the weight of the tools with sufficient force to set the packer.

Novelty is claimed for the combination of a coupling portion with a rod passing through a perforated cylinder so arranged that a packer can be seated by forcing the coupling member down and against the perforated cylinder mentioned, with the intermediate rod of the proper length to enable it to extend downward through the working barrel until the perforated cylinder is driven downward a sufficient distance to set the packer, and then when through pumping, by drawing the coupling member upward, the head of the intermediate rod will come in contact with the top of the perforated cylinder and raise it, the packer, the working barrel, and all pumping appliances out of the well, all of these conditions making it unnecessary to set an extra string of casing or tubing to pump any well.

The purpose of the attachment is to pump the well through the casing and save putting in tubing and rods the full depth of the well. To use the attachment, it is necessary

to take up the anchor and perforated pipe and the working barrel and put the packer on top of the working barrel together with the usual valve and rod with the pump rod entering the packer with a string of drilling tools above the packer and with the whole structure run to the bottom of the well, whereby to set the packer by letting the tools down so that the part above and engaging the packer will set the packer, after which the tools are raised so that they will not touch the intermediate part of the attachment, and then the attachment is ready to be put to pumping.

The invention will be best understood from a consideration of the following detailed description taken in connection with the accompanying drawings, forming part of this specification, with the understanding that the invention is not confined to any strict conformity with the showing of the drawings, but may be changed and modified so long as such changes and modifications mark no material departure from the salient features of the invention as expressed in the appended claims.

In the drawings:—

Figure 1 is a longitudinal section of a portion of a well casing with the attachment applied thereto.

Fig. 2 is a perspective view of a tubular member at the top of the packer.

Fig. 3 is a perspective view of a rod forming one member of the attachment and shown separately from the other members.

Referring to the drawings, there is shown a well casing 1 in which, at a suitable depth, there is located a hollow cylindrical packer structure 2 having a body portion 2^a and further having a counter sink 2^b in its upper end, the wall of which counter sink is screw threaded. On top of this packer there is located a vertically positioned cylindrical casing 3 having axially positioned apertures 3^a and 3^b in its ends. Surrounding the aperture 3^a is an internally and externally threaded depending collar 3^b which is threaded into the counter sink 2^b. The casing or member 3 is of a size to provide a space 5 surrounding it and separating it from the inner wall of the well casing 1.

Below the casing 3 and extending through the packer 2 is a pump barrel 6^a, having its upper end in threaded engagement with the interior of the collar 3^b, in which the plunger 6 travels, and to which plunger is connected

a pump rod 4 having a removable section 7 at its upper end extending through the casing 3 passing through the aperture 8 at the upper end of the casing 3. The rod section 7 is screwed or otherwise connected at the upper end to a coupling member 9 to the upper end of which are connected the sucker rod 10 of usual construction and consequently unnecessary to describe.

Oil or other liquid coming from the pump barrel 6^a will rise through the casing 3 and out through perforations 11 therethrough and about the casing 3 and flow through the tubing 1 to the top of the well.

The rod section 7 terminates at the lower end within the packer 2 in an enlarged head 12, which may be connected to the bottom of the rod 7 by the head or coupling 12, but the head 12 is too large to pass through the aperture 8 at the upper end of the casing 3.

The coupling head 12 is of such size as to move freely into and out of the barrel 6^a to the upper end of the casing 3, but is too large to pass through the opening 8 at the upper end of the casing 3.

When the parts are assembled, the coupling member 9 is attached to the lower end of the sucker rod 10 and then the rod section 7 is applied to the lower end of the coupling member 9 with the coupling 12 at its lower end entering the upper end of the pump barrel 6^a and in turn attached to the pump rod 4.

The plunger, not shown in detail, is operable by the coupling member 9 to affect the pumping operation, the packer 2 having first been located in position by the coupling member 9 after the pump barrel and parts connected therewith have been seated in the well.

After the pumping has been accomplished, the sucker rod, and coupling member 9, and the pump barrel are drawn from the well by lifting them so that the coupling head 12 will engage the under surface of the end of the casing 3 and lift all the parts in the well to the surface thereof, the coupling member 12 being too large to pass through the aperture 8 and so lifting the

various parts when the coupling member 9 is raised.

In placing the parts in the well, the coupling member 9 will tend to force the packer tightly into position.

What is claimed is:—

1. A well pumping device of the character described comprising, a hollow cylindrical packer for insertion into a well casing, a vertical cylindrical casing having axially positioned apertures through its ends, an internally and externally threaded annular collar arranged concentrically with respect to the aperture in, and depending from, the lower end of said cylindrical casing for threaded engagement with the upper end of said packer, a pump barrel extending through said packer and in threaded engagement with the interior of said collar, a plunger within said barrel, a plunger rod carrying said plunger, and passing through the upper end of said casing, and a coupling member connecting said rod above the casing with a sucker rod.

2. A well pumping device of the character described comprising, a hollow cylindrical packer having a body portion for insertion into a well casing, and further having a counter sink in its upper end, said counter sink having its wall provided with screw threads, a vertical cylindrical casing having axially positioned apertures through its ends, an internally and externally threaded annular collar arranged concentrically with respect to the aperture in, and depending from, the lower end of said cylindrical casing for threaded engagement with the threaded wall of said counter sink, a pump barrel extending through said packer and in threaded engagement with the interior of said collar, a plunger within said barrel, a plunger rod carrying said plunger and passing through the upper end of said casing, and a pumping member connecting said rod above the casing with a sucker rod.

In testimony whereof, I affix my signature hereto.

DAVID H. KELLER.