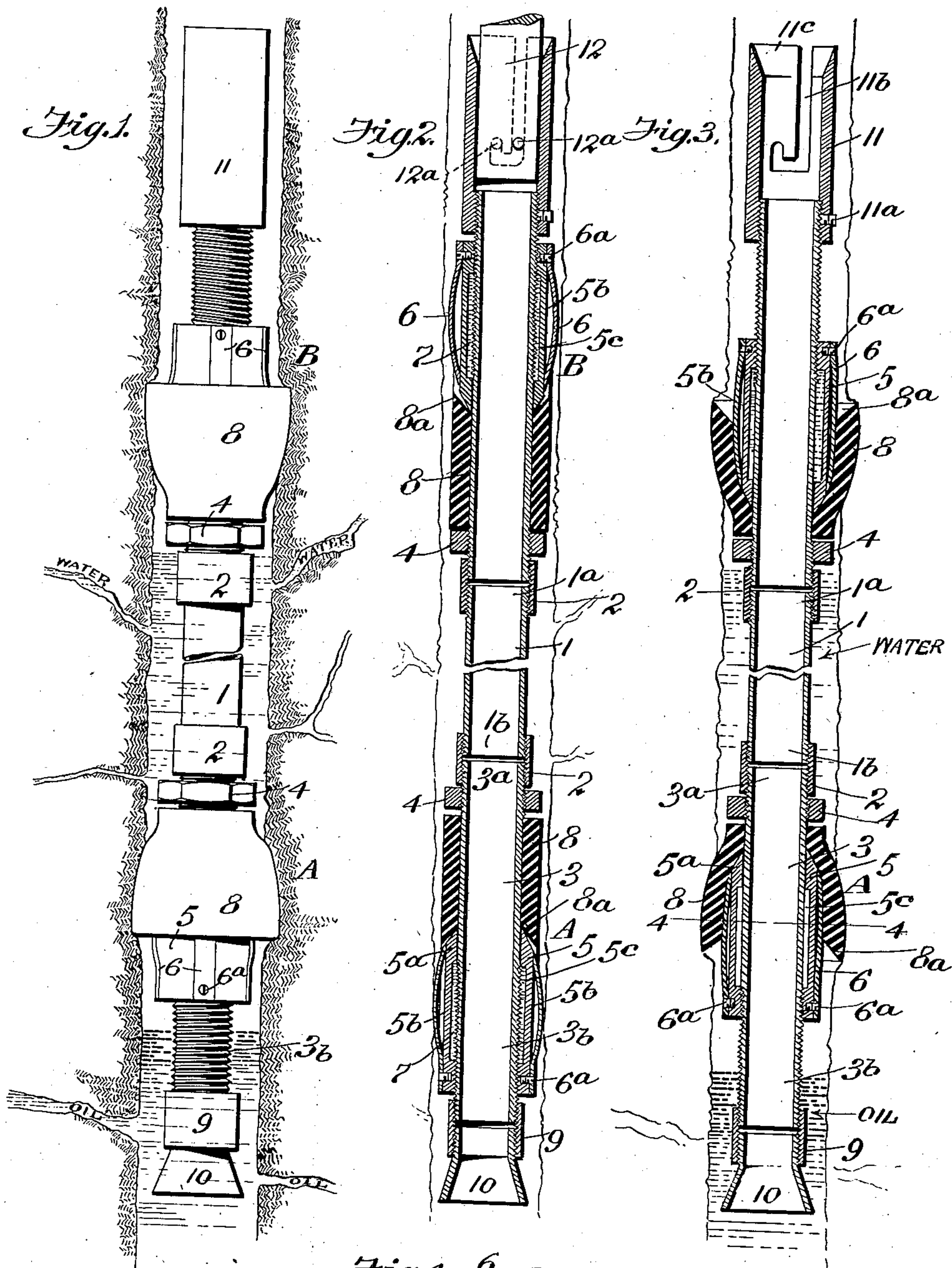


No. 886,114.

PATENTED APR. 28, 1908.

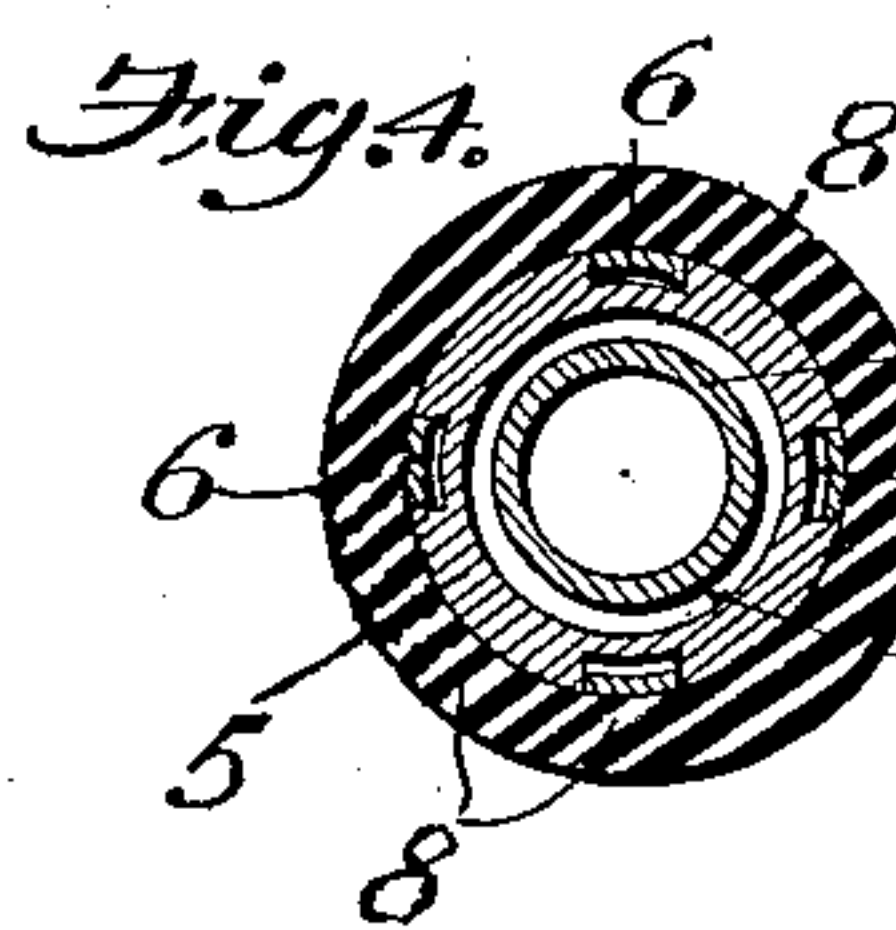
A. COLLINGWOOD.  
OIL WELL PACKER.

APPLICATION FILED MAY 20, 1907.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

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## OIL-WELL PACKER.

No. 886,114.

Specification of Letters Patent.

Patented April 28, 1908.

Application filed May 20, 1907. Serial No. 374,625.

*To all whom it may concern:*

Be it known that I, ALFRED COLLINGWOOD, residing at Franklin, in the county of Venango and State of Pennsylvania, have invented certain new and useful Improvements in Oil-Well Packers, of which the following is a specification.

My invention relates to certain new and useful improvements in oil well packers and the like, and is particularly designed for the purpose of shutting off water in the oil or any place in the well hole where the water may enter.

The invention also has for its object to provide a packer immediately above and immediately below the point of entry of the water so as to save the use of the pipe or casing from the top of the packer to the surface of the earth.

In its generic nature, the invention embodies an improved form of packer adapted to be expanded to tightly embrace the walls of the well and form a seal at such point.

In its more subordinate nature the invention embodies certain novel details of construction, combination and arrangement of parts, all of which will be first described in detail, and then be specifically pointed out in the appended claims, reference being had to the accompanying drawings, in which:—

Figure 1, is a diagrammatic side elevation of my invention, showing the same applied for use, the well being shown in section. Fig. 2, is a central, vertical longitudinal section similar to Fig. 1, showing the position of the parts prior to having the packer expanded to tightly engage the surface of the well aperture. Fig. 3, is a similar view showing the packer expanded. Fig. 4, is a section on the line 4—4 of Fig. 3.

Referring now to the accompanying drawings in which like numerals and letters of reference indicate like parts in all of the figures it will be noticed that 1 represents a casing which is of such length as to suit the requirements of the oil well and the casing 1 has its ends threaded at 1<sup>a</sup> and 1<sup>b</sup> to receive the collars 2.

The packers designated generally by A and B have their tubular portions 3 threaded as at 3<sup>a</sup> and screwed into the collars 2, jam nuts 4 being provided for purposes hereinafter to be explained. The lower packer A has its tube portion 3 provided with a threaded portion 3<sup>b</sup> to receive the

slidable wedge sleeve 5 which has a beveled portion 5<sup>a</sup> and slotted sides 5<sup>b</sup> to receive the leaf springs 6 which are secured at one end by set screws 6<sup>a</sup> or otherwise, and the sleeve 5 has an internal bore or pocket 5<sup>c</sup> to receive tallow or other suitable lubricant 7, as indicated in the drawings.

Above the sleeve 5 on the tubular section 3 is mounted the expansible packing 8 which may be of any approved material and the packing 8 has a conical portion 8<sup>a</sup> at its lower end to cooperate with the conical or beveled end 5<sup>a</sup> of the sleeve 5 whereby as the sleeve 5 is moved toward the jam nut 4 the packing 8 will be expanded to tightly fit the walls of the well as shown in Figs. 1 and 3. The jam nut 4 serves to form an abutment for the packing 8. The tubular section 3 receives a collar 9 at the lower end, to which a bell member 10 is screwed in the usual manner. The bell member 10 serves to form a mouth to aid in directing the oil through the tubular members.

The upper packer B is of the same construction as the lower packer and comprises a tubular portion 3, the longitudinally movable sleeve 5 which has a lubricant pocket 5<sup>c</sup>, a beveled or wedge end 5<sup>a</sup> and longitudinal grooves 5<sup>b</sup> for receiving the leaf springs 6 in a manner similar to the packer A. The sleeve portion 3 of the packer B is threaded as at 3<sup>b</sup> in a manner similar to the lower packers' tubular section 3, except that the thread of the upper packer section B is left handed while the lower thread 3<sup>b</sup> of the packer A is right handed.

11 designates the upwardly extending collar which is securely threaded on to the tube portion 3 of the upper packer B and may be held with set screws 11<sup>a</sup> if so desired. The collar 11 is elongated in shape and is provided with a bayonet slot 11<sup>b</sup> and a beveled mouth 11<sup>c</sup> to permit insertion of a pipe 12 having lugs 12<sup>a</sup> by means of which pipe the packer is operated.

In the practical application of my invention, the tubing casing 1 is made of sufficient length to permit the packers A and B being held on each side of the water area 13 of the well and preferably the packers A and B are arranged as closely to the water area as possible, thus making it necessary to use a comparatively short section of the tube 1.

In applying my invention to the well, the tube and packers are lowered into the well as



shown in Fig. 2 and the tube or pipe or rod 12 being secured in the sleeve or collar 11 with its lug 12<sup>a</sup> in the bayonet joint 11<sup>b</sup>.

As soon as the tube and packer has been lowered to a proper position the rod 12 is rotated, thus causing the tube and the tubular section 3 of the packer to turn and force the sleeves 5 toward their respective packings 8 and thereby expanding the packings 8 until they tightly engage the sides of the well, it being understood that the leaf springs 6 biting into the well wall or frictionally engaging same, will prevent the sleeves 5 from turning.

After the parts have been positioned as shown in Fig. 1 and 3, the operating rod or pipe 12 is removed from the bayonet slot in a manner well understood by reference to the drawings and withdrawn from the well.

From the foregoing description, taken in connection with the accompanying drawings, it is thought the complete construction, operation and many advantages of my invention will be readily understood by those skilled in the art to which it appertains.

Having thus described my invention, what I claim and desire to secure by Letters Patent, is:—

1. In a well packer, a tubular member, a pair of expansible packing members held thereon at suitable intervals apart, expanding sleeves for such packing members, and means coöperating with said expanding sleeves for forcing said expanding sleeves into said packing members to expand the same by rotating the tubular member, substantially as shown and described.

2. In a well packer, the combination with a tubular member, an upper and a lower packer thereon, each of said packers comprising an expansible packing member, an expanding sleeve mounted on said tubular member, and having a threaded engagement therewith, means for holding said sleeves from rotation, means whereby said tubular members may be rotated to force said sleeves toward one another to expand said packing members, substantially as shown and described.

3. In an apparatus of the class described, a pair of packers, each comprising a tubular portion having threaded ends, a jam-nut held on said tubular portion, an expansible packing sleeve held on said tubular portion, an expanding sleeve also held on said tubular portion having a threaded engagement therewith, said expanding sleeves each having an internal lubricant receiving chamber, leaf springs on the outside of said expanding sleeves to engage the well walls for preventing rotation of the sleeves, a tube section coupled with said packer tubular portions to form an extension thereof and another tube section connecting one tubular portion with the other, substantially as shown and described.

4. In an apparatus of the class described,

the tubular section 1, having threaded ends, collars 2 screwed thereon, packers secured at each end of said tubular member 1 and each comprising a tubular section 3 having a threaded end to coöperate with said collars 2, an expansible packing sleeve carried on each of said tubular members 3, an expanding sleeve also carried on each of said tubular members 3, means for holding said expanding sleeves from rotation, means whereby said tubular sections 3 may be rotated and means coöperatively connecting said tubular sections 3 with said expanding sleeve whereby the rotation of the tubular section 3 will force the expanding sleeves toward the expansible packing sleeves to expand the same, substantially as shown and described.

5. In an apparatus of the class described, a tubular section 1 having threaded ends, collars 2 screwed thereon, packers secured at each end of said tubular section and each comprising the tubular section 3 having a threaded end to coöperate with said collars, an expansible packing sleeve carried on each of said tubular sections 3, an expanding sleeve also carried by each of said tubular sections 3, means for holding said expanding sleeves from rotation, means for rotating said tubular sections 3 and means coöperatively connecting said tubular sections 3 with said expanding sleeves whereby the rotation of the tubular sections 3 will force the expanding sleeves toward the expansible sleeves to expand the same, said rotating means including an upwardly extending tubular member 11 connected with one of said tubular sections 3 and having a bayonet slot substantially as shown and described.

6. In an apparatus of the class described, a tubular section 1, having threaded ends, collars 2 screwed thereon, packers secured at each end of said tubular member 1 and each comprising the tubular section 3 having a threaded end to coöperate with said collars 2, an expansible packing sleeve carried on each of said tubular members 3, an expanding sleeve also carried on each of said tubular members 3, means for holding said expanding sleeves from rotation, means whereby said tubular sections 3 may be rotated and means coöperatively connecting said tubular sections 3 with said expander sleeve whereby the rotation of the tubular section 3 will force the expanding sleeves toward the expansible packing sleeves to expand the same, and a fluid directing bell 10 coupled with the tubular section 3 to one of said packers, substantially as shown and described.

7. In a well packer for oil wells having water and oil areas, a tubular member having a pair of spaced packers adapted to be held on either side of said water area, each of said packers including an expansible packing member and an expanding sleeve therefor adapted to enter the expansible packing



member to expand the same at times, and means for simultaneously operating both of said expanding sleeves to expand their respective packing members, substantially as shown and described.

8. In an apparatus of the class described, a pair of packers each comprising a tubular section and an expansible packing sleeve held thereon, and an expanding sleeve also held thereon, a nut for holding such expansible sleeve in position, means coöperatively connecting the expanding sleeve and the tubular section together, means whereby the tubular sections may be rotated to force the expanding sleeves into the expandible packing sleeves to expand the same, means for holding such expanding sleeves from rotation while the tubular section is being rotated, a tubular member connecting the tubular sections of adjacent packers, substantially as shown and described.

9. In an apparatus of the class described, a pair of packers each comprising a tubular

section, an expansible packing sleeve held thereon and an expanding sleeve also held thereon, a nut for holding said expansible packing sleeve in position, means coöperatively connecting the expanding sleeve and the tubular section together, means whereby the tubular section may be rotated to force the expanding sleeve into the expansible packing sleeve to expand the same, means for holding said expanding sleeve from rotation while the tubular section is being rotated, a tubular member connecting the tubular sections of adjacent packers and each of said expanding sleeves having an internal lubricant holding chamber to lubricate the tubular sections of the packer as the expanding sleeve is moved thereon, substantially as shown and described.

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Witnesses:

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