

July 28, 1925.

G. J. ARMSTRONG

1,547,285

SAND PUMP

Filed June 30, 1924

2 Sheets-Sheet 1

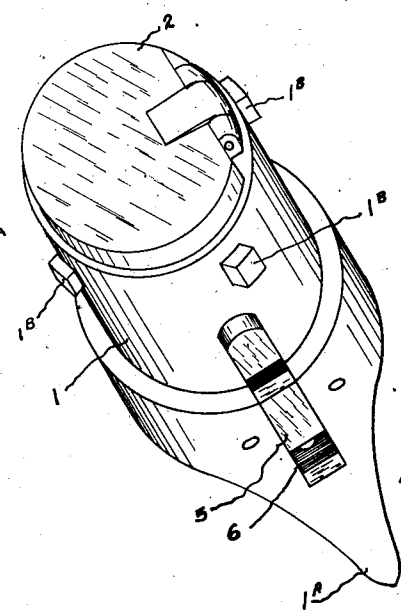
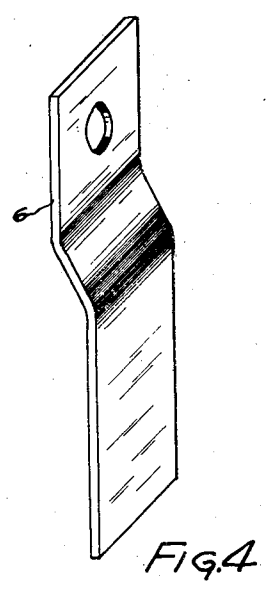
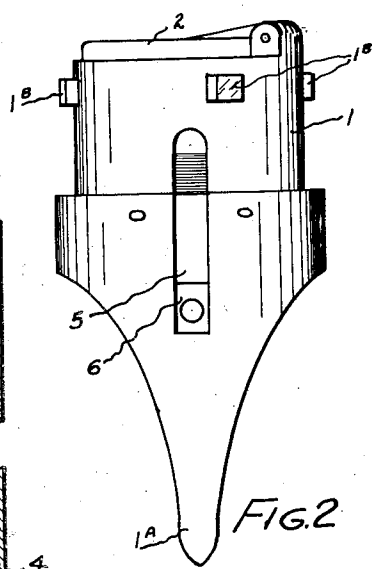
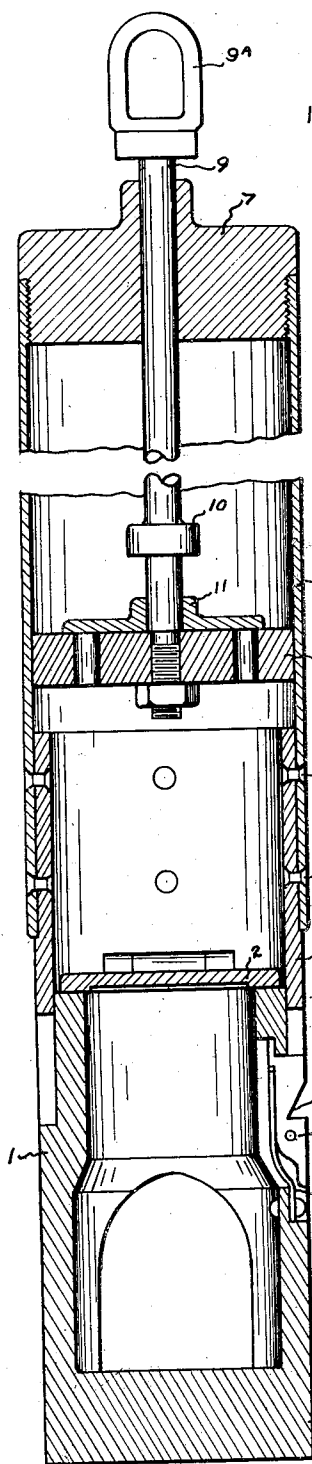


Fig. 1

Fig. 3

INVENTOR

George J. Armstrong

July 28, 1925.

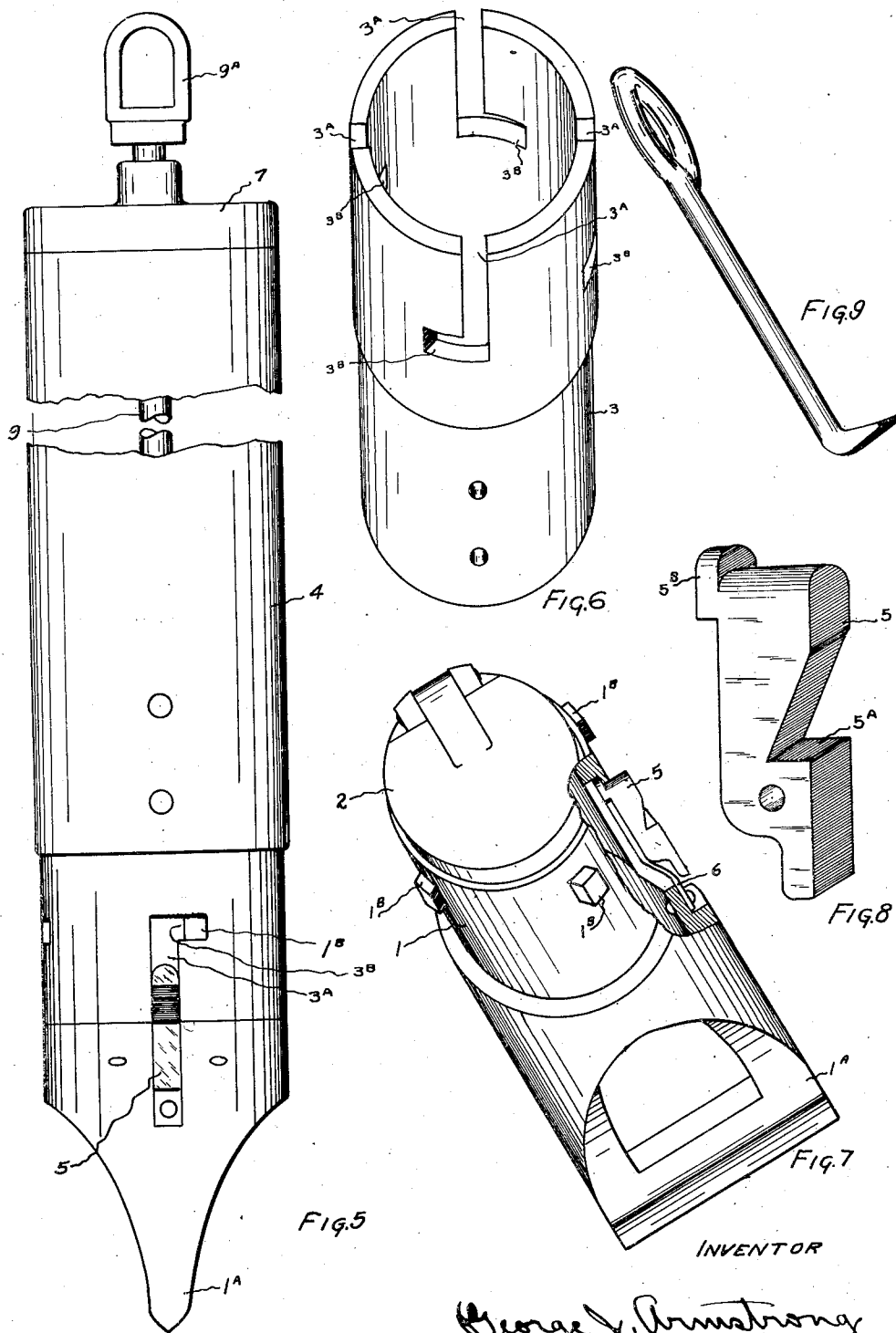
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2 Sheets-Sheet 2



Patented July 28, 1925.

1,547,285

UNITED STATES PATENT OFFICE.

GEORGE J. ARMSTRONG, OF BURKBURNETT, TEXAS.

SAND PUMP.

Application filed June 30, 1924. Serial No. 723,416.

REISSUED

To all whom it may concern:

Be it known that I, GEORGE J. ARMSTRONG, a citizen of the United States, and a resident of Burkburnett, in the county of Wichita and State of Texas, have invented new and useful Improvements in Sand Pumps; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The invention relates to sand pumps to be used in connection with producing oil wells for the purpose of removing sand from the gathering reservoir of the well.

The chief object of the invention is to provide a cutting and mixing member in combination with the lower valve to agitate and mix the sand with the fluid so it will be more easily pumped into the pump barrel.

A further object is to provide a means of attaching the lower valve to the pump barrel enabling the same to be quickly attached or removed when emptying the barrel.

Further objects and advantages will be apparent as the invention is more fully disclosed.

With the foregoing in view the invention resides in the novel subject matter herein-after described and claimed, the description being supplemented by the accompanying drawing, wherein,

Figure 1 is a central longitudinal sectional view.

Figure 2 is a side plan view of the cutting member and lower valve.

Figure 3 is a perspective view of the cutting member and valve showing the locking member.

Figure 4 is a perspective view of the locking member spring.

Figure 5 is a side plan view of the entire assembly.

Figure 6 is a perspective view of the barrel bottom.

Figure 7 is a perspective view of the valve and cutting member partly sectioned to show a side view of the locking member.

Figure 8 is a perspective view of the locking member.

Figure 9 is a perspective view of a hook used to release the locking member.

The invention comprises a tubular member 1, having a flat pointed cutting web 1^a at the bottom, forming a part thereof. 2 is a cover hinged to the top of the tubular

member 1 and seated thereon, forming a valve for the purpose hereinafter described. 3 is a tubular member which is riveted to the pump barrel 4, as shown at 4^a. The lower end of the tubular member 3 is provided with four longitudinal slots 3^a having right angle circumferential slots at the termination thereof, as shown at 3^b. The tubular member 1 is provided with four square bosses 1^b substantially the same size as the slots 3^a and 3^b in the tubular member 3. 5 is a locking member pivoted in the tubular member 1, as shown. 6 is a spring for the purpose of holding the top of the locking member 5 in an outward position. Thus it will be noted that the tubular member 3, which is attached to the barrel 4 may be slipped over the tubular member 1 by placing the bosses 1^b in the slots 3^a. When placing the tubular member 3 over the tubular member 1 it is necessary to press the top of the locking member 5 inwardly even with the outer diameter of the tubular member 1. The deposed portion 5^a in the locking member 5 provides a clearance for the lower end of the tubular member 3 when the locking member 5 is pressed inwardly for assembling. 5^b is a projection on the inner side of the locking member 5 to limit the outward travel of the same. When the tubular member 3 has been placed over the tubular member 1, and the bosses 1^b are even with the circumferential slots 3^b, the tubular member 3 is then turned circumferentially on the tubular member 1 until the locking member 5 is even with one of the slots 3^a and the spring 6 forces the locking member 5 therein, thereby holding the tubular members 1 and 3 securely together. Figure 9 illustrates a hook which may be used to press the top of the locking member 5 inwardly by placing the said hook under the lower end of the said locking member and pulling outwardly. To remove the tubular member 3 from the tubular member 1, the top of the locking member 5 is pressed inwardly and the tubular member 3 is turned circumferentially on the tubular member 1 until the bosses 1^b are even with the longitudinal slots 3^a, the tubular member 3 may then be slipped longitudinally and removed from the tubular member 1. The pump barrel 4 is of the well known design having the centrally apertured plunger disposed in the barrel 4. 9 is a plunger rod which is attached to the plunger 8 and ex-

tending through the central aperture in the plug 7; having an apertured member 9^a at the top thereof for the purpose of attaching a cable. 10 is a flange on the plunger rod 9, which presses against the plug 7 and supports the sand pump when the same is being raised or lowered in a well. 11 is a centrally apertured disc slidably mounted on the plunger rod 9 between the flange 10 and the plunger 8.

In operation, the sand pump is lowered to the bottom of a well and the cutting web 1^a is used to spud and mix the sand with the fluid. The sand is then pumped into the barrel 4 by raising the plunger 8. It will be noted that on the upward stroke of the plunger 8, the suction created therebelow will open the hinged valve 2 and suck the sand into the barrel 4, and when the barrel has filled with fluid and sand the suction will cease and the hinged valve 2 will close, thereby retaining the sand in the barrel, the sand pump is then raised to the surface and the hook, as shown in Figure 9, is placed under the lower end of the locking member 5 and pulled outwardly, thereby moving the upper portion of the locking member 5 inwardly out of the slot 3^a. The tubular member 3 is then turned circumferentially on the tubular member 1, until the bosses 1^b are even with the slots 3^a, the

tubular member 1 is then removed allowing the sand in the barrel 4 to be emptied.

While it is believed from the foregoing description the nature, operation and advantages will be readily apparent, I desire to indicate clearly that I do not limit myself to the specific construction herein shown and described, and that such changes may be resorted to, when desired, as fall within the scope of what is herein claimed.

What I claim is:

In a sand pump in combination with a working barrel and plunger; a slotted cylindrical member rigid upon the lower extremity of the said barrel; a valved cutting member having projections spaced around the periphery thereof and arranged to be inserted within the slots of said cylindrical member and having a stop shoulder; a spring pressed auxiliary locking lever on said cutting member having an upwardly extending finger engageable with the stop shoulder to have its outward movement restricted by the said shoulder, the lower end of the lever being formed to be gripped and moved outwardly to move the upper end of the lever inwardly thereby, to permit rotation of the locked members to effect release thereof.

GEORGE J. ARMSTRONG.