Aug. 4, 1925. 1,548,803

T. J. COTTON

COMBINATION GAS ANCHOR AND SAND TRAP

Filed Oct. 11, 1924

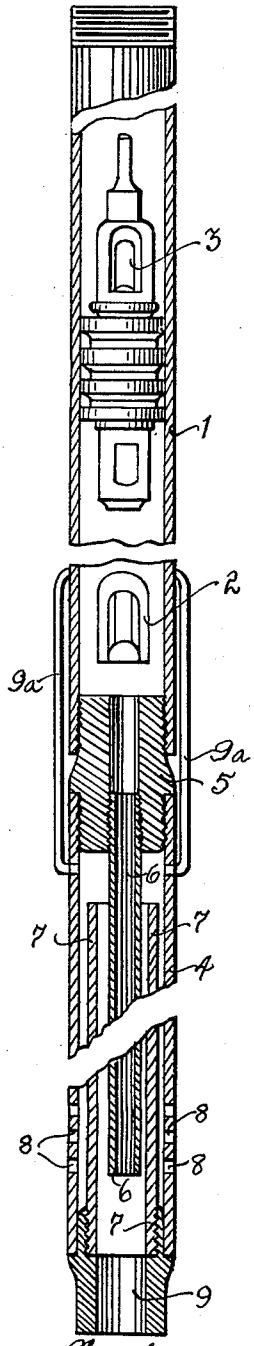


Fig. 1.

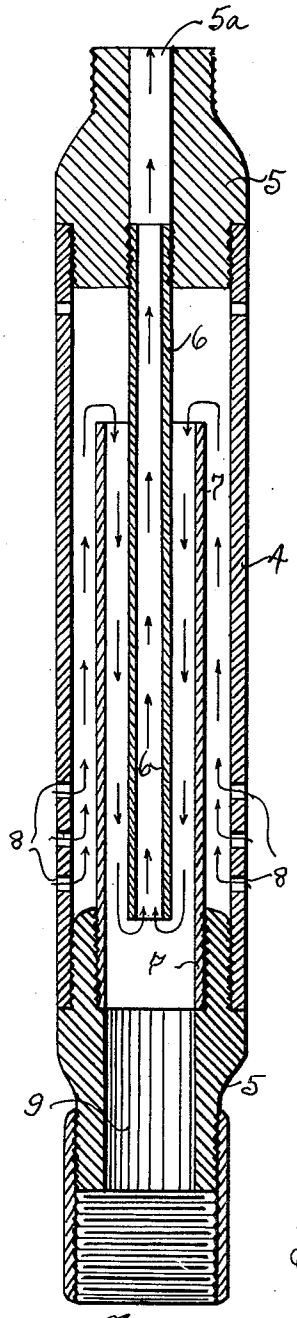


Fig. 2.

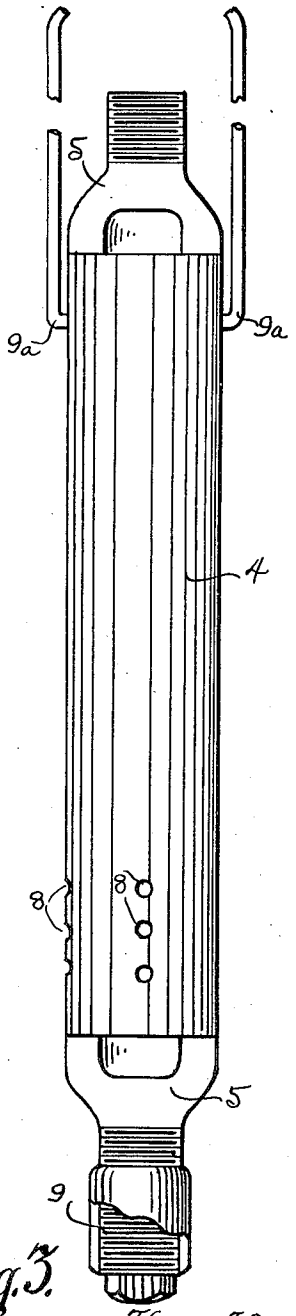


Fig. 3.

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UNITED STATES PATENT OFFICE.

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COMBINATION GAS ANCHOR AND SAND TRAP.

Application filed October 11, 1924. Serial No. 743,014.

To all whom it may concern:

Be it known that I, THOMAS J. COTTON, a citizen of the United States, residing at Erick, in the county of Beckham and State of Oklahoma, have invented certain new and useful Improvements in Combination Gas Anchors and Sand Traps, of which the following is a specification.

This invention relates to oil well equipment and refers more particularly to an oil well sand trap in combination with a pump valve, the object being primarily to provide such a device whereby the ingress of sand with the oil may be deflected, and prevented from circulating through the valve chambers of the pump. By certain provisions only a minimum of sand is allowed to enter the trap.

Another object of the invention is the provision of such a device, by the use of which the passage of gas through the valves of the pump is obviated, thus increasing the operating efficiency thereof.

A feature of the invention lies in the vacuum creating means whereby the vacuum or suction of the pump is above the fluid level in the well, such suction means arranged in such a manner as to prevent gas entering the valves or their chambers, thus retaining the valves in such position that they may at all times function properly.

Also in the arrangement provided for substantially increasing the capacity of the sand receiving chamber by the extension thereof, and means for the release of sand therefrom.

With the above objects and features in view, the invention is comprised also of additional features and advantages which will become more apparent in the following detailed description; taken in connection with the accompanying drawings which form a part of this description and wherein:

Figure 1 represents a pump appearing partly in section upon which the invention is applied.

Figure 2 is an enlarged view of the invention in section.

Figure 3 is an elevational exterior view of the invention illustrating the position of the ventilating ports thereupon.

In the course of the following description, similar characters of reference are used to indicate parts constituting the novel construction of the invention and their function wherein; 1 denotes a working barrel in which is shown a standing valve 2, of usual construction. The traveling valve 3 is operable within the working barrel 1. The foregoing is not claimed however as a part of the invention.

The invention consists primarily of an outer cylindrical member 4, having threaded connecting heads 5—5 on either end. The upper of these connections has extending therethrough a hole 5^a. This hole is smaller in proportion than that of the lower member similar in construction. The member 5 is internally threaded to receive a smaller tubular member 6, which latter member is adapted to extend into a similar tube 7 of larger diameter than the former, and which is threadedly secured to the lower connection 5, as clearly illustrated in Figure 2 of the drawings.

It will be noted that the ventilating tubes 9^a are situated in a position of advantage to prevent a vacuum being created within the outer cylinder, thus it will be seen that any sand entering through the ports 8—8 will have no elevating agent and will necessarily have to rise through dormant fluid to enter into the central tube 6 and eventually into the valve chambers of the pump, thereby increasing the life of the pump and compression members and valves in the pump construction.

It is obvious that the concentrical arrangement of these tubes provides a passage for the liquid entering through the apertures 8—8 spaced around the outer cylinder 4. During the circulation of the liquid through this passage, if a portion of sand is permitted to enter the trap the same is allowed time to settle in the extensible chamber 9 formed below the barrel.

The ventilating ports 9^a, opening into the outer cylinder 4, are also adapted to release gas accumulating within this cylinder and to retard the passage of the latter through the valves, which passage will effect the proper and efficient functioning of the pump.

It is evident, in view of the foregoing, that a simple and economical means has been provided for the recovery of a better grade of fluid from a well in a minimum of time in a very efficient and satisfactory manner. No delicate mechanism is embodied in the construction thereof, thus per-

mitting the device to be subjected to hard usage and still maintain its usefulness and purpose, which apparently adds to its economy.

Heretofore, the gas anchor, comprising in this device, the small tubular member 6, was threadedly secured directly to the standing valve 2. This necessitated the removal of the entire device from the well, when it was desired only to remove the standing valve. In the present construction, the gas anchor is separated from the standing valve and forms a part of the sand trap and the removal of the standing valve is accomplished without the necessity of removing the gas anchor.

It is not desired however, that the invention be limited to the specific disclosure herein described, but that minor changes may be resorted to as fall within the scope and meaning and in keeping with the following claims:

What is claimed is:

1. A gas anchor and sand trap in combination with the working barrel and valve of a pump, comprising a casing with upper and lower heads, tubular members therein projecting one into the other, openings in the lower end of said casing for entrance of liquid, openings with tubular connections in the upper part of the casing for escape of gas, the liquid adapted to travel in an alternate up and down movement from one tubular member to the other to permit sand to be separated from the liquid at the bottom of the tubular members.

2. A gas anchor and sand trap in combination with the working barrel and valve of a pump, comprising a casing with upper and lower heads with openings and tubular members in the openings and projecting one into the other, spaced apertures in the lower end of said casing for entrance of liquid, and openings with tubular connections to the outside of said casing for escape of gas, said opening in said lower head extended downward and forming a sand pocket and a cap over the end thereof.

In testimony whereof I have signed my name to this specification.

THOMAS J. COTTON.