March 18, 1930. J. R. SULLIVAN 1,751,017

OIL AND GAS SEPARATOR

Filed Nov. 30, 1928

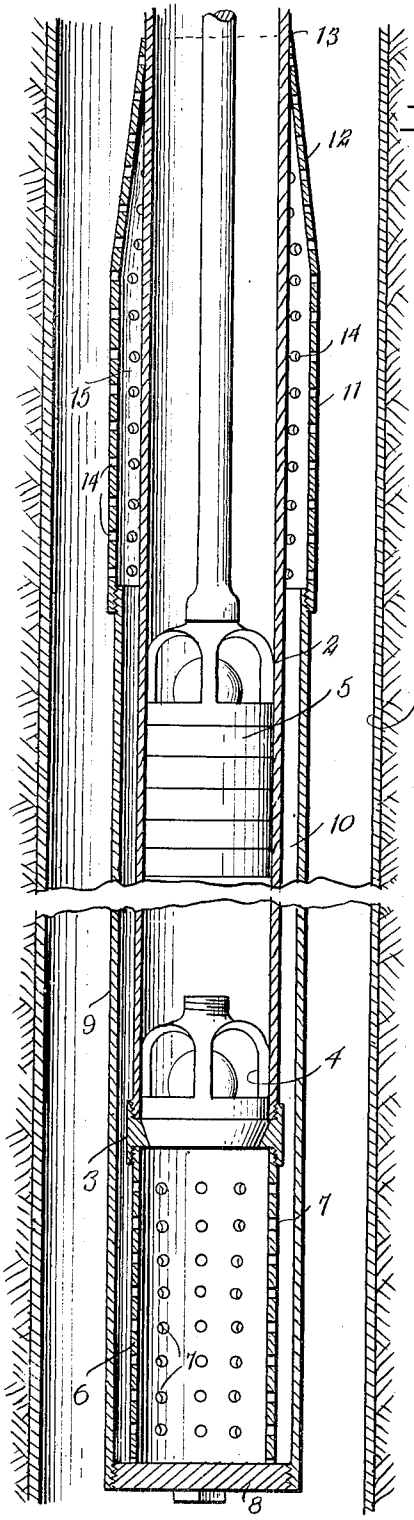


Fig. 1.

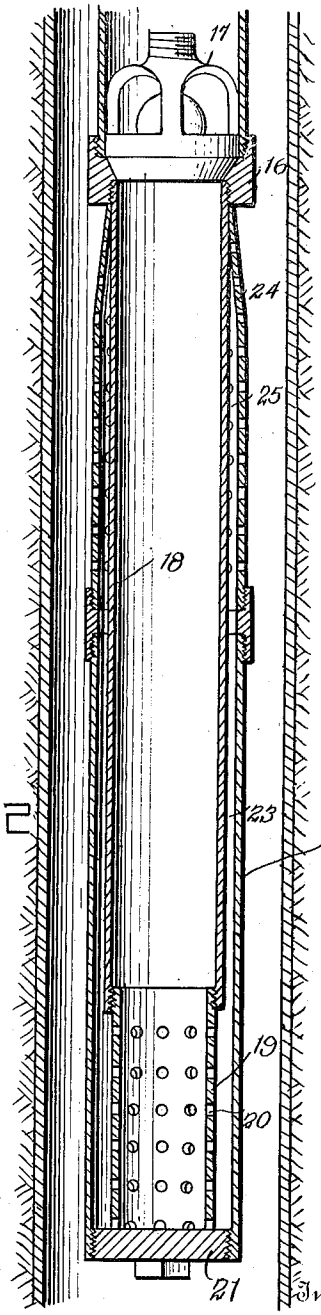


Fig. 2.

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UNITED STATES PATENT OFFICE

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OIL AND GAS SEPARATOR

Application filed November 30, 1928. Serial No. 322,810.

The present invention is directed to improvements in oil and gas separators.

The primary object of the invention is to provide a device of this character so constructed that it can be easily and quickly attached to a pump cylinder of conventional form.

Another object of the invention is to provide a device of this type which will effectively separate gas from the oil before the oil enters the pump cylinder.

Another object of the invention is to provide a device of this character which is exceedingly simple in construction, durable, efficient in operation, and one which can be manufactured at a very small cost.

It is a well known fact that when gas enters the pump cylinder the efficiency of the pump is greatly reduced owing to the action of the gas upon the valves thereof, and it is to overcome these objections that the present invention has been perfected.

With these and other objects in view, this invention resides in the novel features of construction, formation, combination and arrangement of parts to be hereinafter more fully described, claimed and illustrated in the accompanying drawing, in which:—

Figure 1 is a vertical sectional view through the device.

Figure 2 is a similar view to a modified form of the invention.

Referring to the drawing, 1 designates a conventional well casing for the reception of the pump cylinder 2, said cylinder having a coupling 3 upon its lower end for supporting the valved inlet cage 4, and since the cylinder is of conventional form, a detail description thereof is not thought necessary. Cooperating with the cage 4 is a conventional form of valved piston 5.

The coupling 3 has threaded therein the upper end of a nipple 6, said nipple being provided with a multiplicity of perforations 7. This nipple is substantially the same in diameter as the pump cylinder 2, said nipple having its lower end closed by the plug 8 threaded in the lower end of the tube 9 which encases the adjacent part of the pump cylinder. The tube 9 is of such diameter that an annular chamber 10 is provided around the pump cylinder. To the upper end of the tube 9 is threaded the lower end of the thimble 11, said thimble having its upper end swaged, as at 12, in order that a restricted seat 13 is provided for snugly engaging the pump cylinder. The thimble is provided with a plurality of perforations 14. The thimble is of such diameter that an annular chamber 15 is provided around the pump cylinder, said chamber communicating with the chamber 10.

Obviously the oil in the casing will pass through the perforations 14 of the thimble 11 and gravitate from the chamber 15 into the chamber 10, and will then pass through the perforations 7 of the nipple into the pump cylinder, whereas the gas will pass upwardly in the casing 1. In this manner gas will not enter the pump cylinder to interfere with the effective operation thereof.

In the modified form of the invention, as shown in Figure 2, the coupling 16 which supports the valve cage 17 of the pump cylinder has threaded therein the upper end of the tube 18. This tube has threaded in its lower end a nipple 19 in which is formed perforations 20. The lower end of the nipple rests upon the plug 21 threaded in the lower end of the tube 22, said tube encasing the tube 18 for a portion of its length to provide an annular chamber 23. Having its lower end coupled to the upper end of the tube 22 is a thimble 24, which encases the tube 18 in spaced relation to provide an annular chamber 25, said thimble having a plurality of perforations 26 therein. This form of the invention is primarily designed for use in connection with wells wherein the casing is of comparatively small diameter.

Obviously the oil will pass through the perforations of the thimble 24 and will pass downwardly through the chamber 23 and will then enter the nipple 20 and will rise upwardly in the tube 18 to enter the pump cylinder.

From the foregoing, it is thought that the construction, operation and many advantages of the herein described invention will be apparent to those skilled in the art, without further description, and it will be understood that various changes in the size, shape and

proportion and minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

What is claimed is:—

The combination with a pump cylinder, of a tube connected with the lower end thereof, a perforated thimble secured to the tube, a perforated nipple secured to the lower end of the tube, and a second tube connected with the thimble and surrounding said first tube and nipple and a plug closing the lower end of the second tube and bearing against the lower end of the nipple to close the same.

In testimony whereof I affix my signature.

JAMES R. SULLIVAN. [L. S.]