

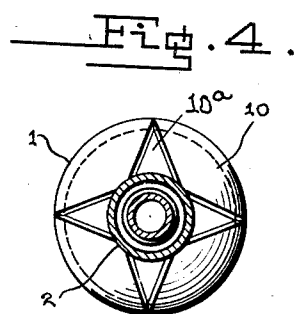
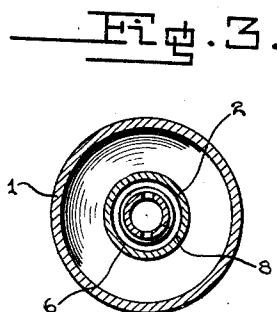
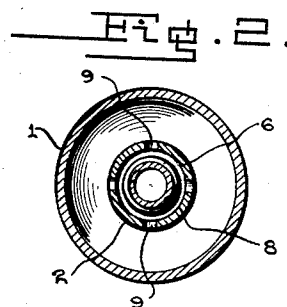
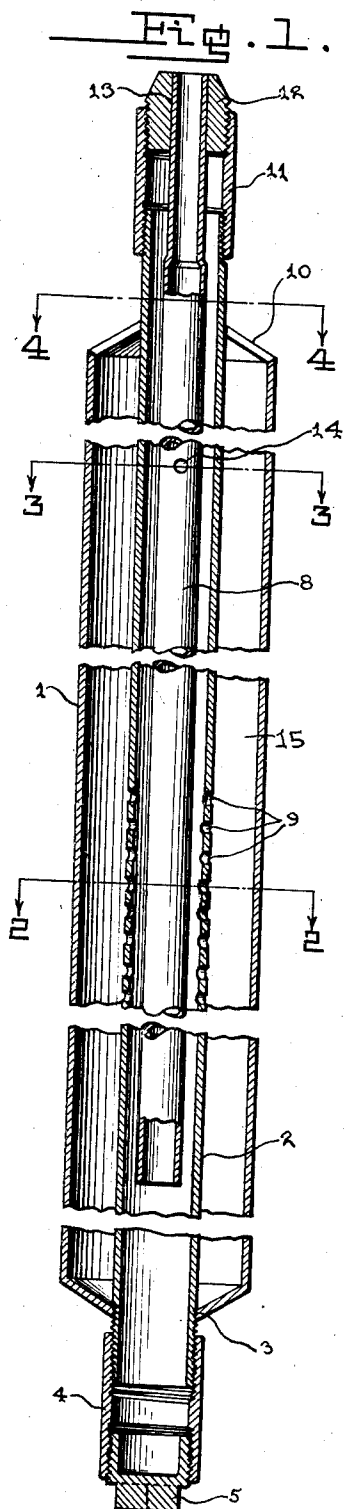
Oct. 19, 1926.

A. H. CARNES

1,604,019

OIL AND GAS SEPARATOR FOR OIL WELLS

Filed April 17, 1925



Inventor  
A. H. CARNES

By *Wm. Talbot*  
Attorney.

Patented Oct. 19, 1926.

1,604,019

# UNITED STATES PATENT OFFICE.

ALFRED H. CARNES, OF OKEMAH, OKLAHOMA, ASSIGNOR, BY MESNE ASSIGNMENTS,  
OF ONE-SIXTEENTH TO C. M. SHUGERT, OF OKEMAH, OKLAHOMA.

## OIL AND GAS SEPARATOR FOR OIL WELLS.

Application filed April 17, 1925. Serial No. 23,875.

The object of the invention is to provide a device for use in connection with various pumping outfits for oil wells which will prevent the entrance of gas into the pump and tubing and therefore eradicate the troubles caused by the presence of gas, such as the prevention of the seating of the pump valves, thus preventing the pump from readily taking in a full charge of oil upon each suction stroke; to provide a construction in which there is always an ample supply of oil for the pump, so that on the suction strokes the effect of the pull may not be communicated to the walls of the well with the consequent erosion of the oil sand and emulsification of the oil; and to provide a construction of the above mentioned character which is of simple form and therefore inexpensive to manufacture.

With this object in view, the invention consists in a construction and combination of parts of which a preferred embodiment is illustrated in the accompanying drawings, wherein:

Figure 1 is a central vertical sectional view of one form of structure embodying the invention.

Figures 2, 3 and 4 are respectively transverse sectional views on the planes indicated by the lines 2-2, 3-3 and 4-4 of Figure 1.

The outer casing 1 is of materially increased cross section as compared with the intermediate tube or casing 2 which it surrounds and to which it is connected at its lower end which is conical by interior threads 3 which engage exterior threads on the intermediate casing. The intermediate tube or casing protrudes below the exterior casing, receiving a coupling or collar 4 in the lower end of which is engaged a plug 5 connected with the collar by exterior threads which engage the interior threads in the collar. The intermediate tube or casing is provided with a plurality of perforations 9 arranged in vertical series uniformly spaced around its periphery, the lowermost units of these series being above the plane of the lower end of an inner fluid tube 8 disposed centrally in the intermediate tube or casing.

The upper end 10 of the outer casing is of the conical form shown and is provided with a plurality of openings 10\*. The intermediate tube or casing extends beyond the upper end of the outer casing and threads into a collar or coupling 11 with which a plug 12

connects, this plug being designed for connecting the device to the working barrel of an oil pumping apparatus, in which working barrel (not shown) the usual standing valve is disposed directly above the plug. The inner fluid tube, which is open at its lower end, extends into the plug 12, as at 13, being frictionally or otherwise secured to the plug.

The outer casing 1 is of smaller diameter than the drilled well and when lowered into the latter, a space intervenes between it and the walls of the well. Thus, the gas may readily rise between the device and the walls of the well to pass out from the well through the well cap in the gas pipes connected with the cap. The oil, however, passes into the outer casing through the openings 10\* at the top of the latter and, reaching the level of the perforations 9, enters the inner tube or casing 8, rising in the fluid tube 8 which it enters through the open bottom end of the latter. The continued entrance of oil into the outer casing finally fills the fluid tube 8 and the intermediate and outer casings and when the pumping operation starts, the oil is taken from the fluid tube 8 through the working barrel to the surface, the gas at the same time passing to the top of the well between the walls of the latter and the separator and the working barrel. The path of the oil being from the top of the outer casing 1 to a point near the bottom of the intermediate casing 9 and then to the bottom of the fluid tube 8, provides a circuitous path and always leaves a fluid trap which will preclude the entrance of gas into the fluid tube 8. Also, the walls of the well will be freed from the effects of the suction strokes of the pump, since the separator will always contain a volume of oil for response to the operation of the pump.

Should the oil producing strata fail at any time to supply sufficient oil to completely fill several tubes, the continued operation of the pump will reduce the level of the oil to the plane of the uppermost of the perforations 9 with which the fluid tube is supplied. The pump can then no longer effect any lifting operation of the contents of the separator, since the vent or perforation 14 will function with the result that air only will be displaced, being admitted to the fluid tube through the openings 10\*, the exposed perforations 9 and the vent 14. Thus it is im-

possible, by reason of the provision of the vent or perforation 14, to completely empty the separator of oil in the event of failure of the supply or of failure to flow steadily through the openings 10. The device, therefore, having once been filled with oil, will always contain a certain amount which functions as a trap that will effectively prevent the entrance of gas into the pipe 8 and thence to the working barrel.

It will be noted that the combined area of the several openings 10<sup>a</sup> and the combined area of the perforations or openings 9 is greater than the cross sectional area and therefore the inlet end of the pipe 8. Thus, means is provided for making the supply to the separator in excess of the quantity removed therefrom.

The invention having been set forth, what is claimed is:

1. An oil and gas separator comprising a casing constituting an oil chamber, a second casing disposed within the first and having series of perforations arranged at an intermediate point in its height to effect communication interiorly between it and the outer casing, and a fluid tube extending into the intermediate casing and having an open lower end, the fluid tube extending below the plane of the lowermost of the perforations in the second casing and the outer casing at its upper end being provided with a plurality of

oil inlet openings, the combined area of which exceeds the cross-sectional area of the open lower end of the fluid tube. 35

2. An oil and gas separator comprising a casing constituting an oil chamber, a second casing disposed within the first and interiorly in communication with the latter through series of perforations, and a fluid tube within the second casing and having an inlet below the plane of said perforations, the outer casing having an inlet above the plane of said perforations, the combined area of said perforations exceeding the area of the inlet of the fluid tube and the area of the inlet of the outer casing exceeding the area of the inlet of the fluid tube. 40 45

3. An oil and gas separator comprising a casing constituting an oil chamber, a second casing disposed within the first and in communication with the latter at an intermediate point in its height, and a fluid tube extending into the intermediate casing and having an intake below the point of communication between the first and second casings, the first casing having an inlet above said point of communication and the area of said inlet being in excess of the area of the intake of the fluid tube. 50 55 60

In testimony whereof he affixes his signature.

ALFRED H. CARNES.