S. H. HUSTON.

SCREENING DEVICE FOR OIL WELLS.

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1,342,813.

Patented June 8, 1920.

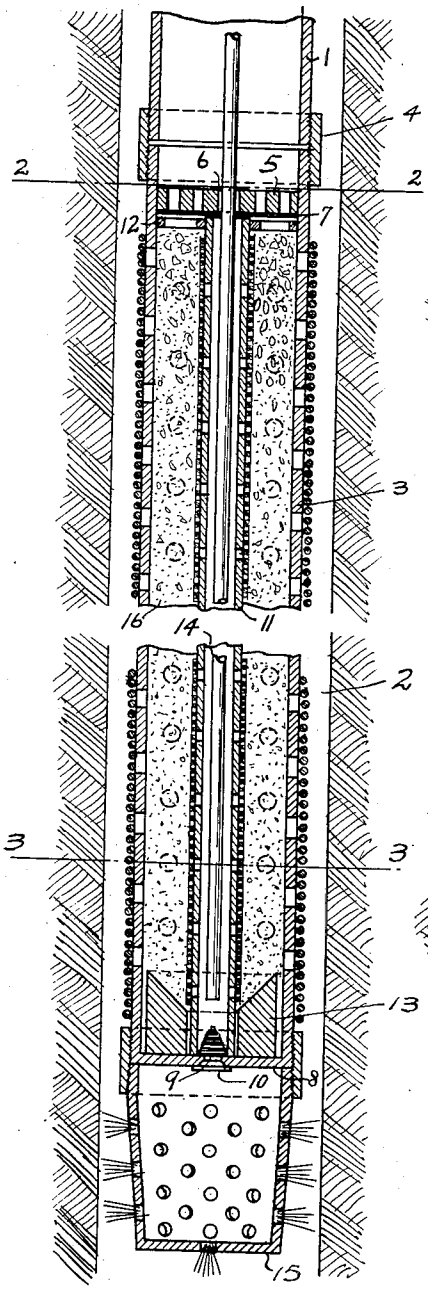


Fig. 1.

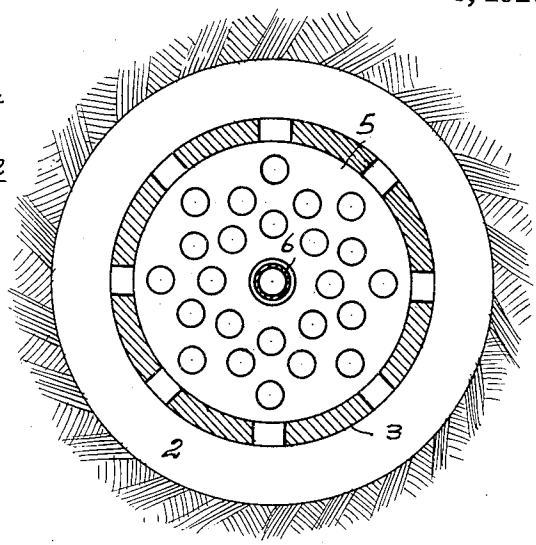


Fig. 2.

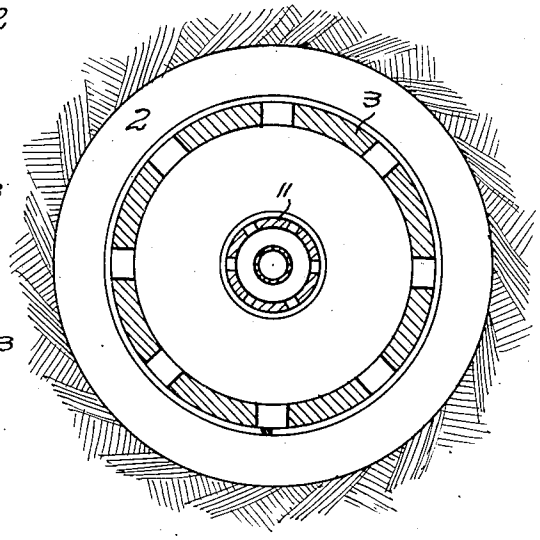


Fig. 3.

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SCREENING DEVICE FOR OIL-WELLS.

1,342,813. Specification of Letters Patent. Patented June 8, 1920.

Application filed April 2, 1919. Serial No. 286,941.

To all whom it may concern:

Be it known that I, SIDNEY H. HUSTON, a citizen of the United States, residing at Houston, in the county of Harris and State of Texas, have invented certain new and useful Improvements in Screening Devices for Oil-Wells, of which the following is a specification.

This invention relates to new and useful improvements in a screening device for oil wells.

One object of the invention is to provide a device of the character described, which has been specially constructed for use in oil wells, where there is a strong gas pressure. In drilling oil wells, when the oil bearing stratum is pierced, strong gas pressure is often encountered, which forces the oil into the screen, and up through the pipe under great pressure, and if unrestrained, the oil laden with sand, will be forced into the screen with such force that the sand will soon cut out and destroy the screen, and the well will thereby be lost. It is the object of this invention to provide a screen of the character described, which will restrain the gas pressure, and to a certain extent, restrict the flow of oil into the screen, thereby preventing the screen from becoming cut out by the sand and destroyed, and materially lengthening the life of the screen and the well.

Another object of the invention is to provide a device of the character described, which may be cheaply and easily constructed, and which will be durable and will not be likely to require repairs or replacement, but which may be easily repaired or replaced.

With the above and other objects in view, the invention has particular relation to certain novel features of construction, arrangement of parts and use, an example of which is given in this specification and illustrated in the accompanying drawings, wherein:

Figure 1, is a vertical sectional view of the device.

Fig. 2, is a transverse sectional view taken on the line 2—2 of Fig. 1, and

Fig. 3, is a transverse sectional view taken on the line 3—3 of Fig. 1.

Referring now more particularly to the drawings, wherein like numerals of reference designate similar parts in each of the figures, the numeral 1, refers to the pipe, which is let down into the well bore 2, and which extends to the surface of the ground. To the lower end of this pipe, a screen 3 is attached by means of the usual coupling 4. The screen may be of any desired form but usually consists of perforated pipe, wrapped with screen wire, the turns of which are spaced apart to permit the inflow of the fluid. The upper end of the screen has a perforated plate 5, secured thereon, having the central opening 6, and whose lower side is protected by a screen 7, usually formed of wire mesh. The lower end of the screen is closed by the plate 8, having a central opening 9, controlled by the back pressure valve 10, which opens downwardly. An inner screen pipe 11 is located within the screen 3, and its upper and lower ends are fixed in said screen by means of the spider 12, and the wash plug 13, respectively. When the pipe 1 is let down into the bore, bringing the screen 3 opposite the oil bearing strata, water is forced down through the wash pipe 14, and on through the valve 10, which passes through the perforated sprayer 15, secured to the bottom of the screen, and around the lower end of the screen, and up the bore 2, washing the screen and freeing the same from sand and earth, which clog up the slits between the turns of the wire, and washing the slush and mud out of the walls of the oil formation. The wash pipe 14 is then withdrawn by means of a suitable fishing tool provided for the purpose. However, before the device is let down into the well, the screen is filled with coarse rock or aggregate, 16, which surrounds the screen pipe 11.

The oil is now forced into the screen by gas pressure, and percolates through the filling in the screen up through the wire mesh 7, and through the perforated plate 5, and thence through the pipe 1, to the surface of the ground, a part of said oil pasing in through the screen pipe 11, and on out through the pipe 1. The filling in the screen partially shuts off the gas pressure so as to reduce the force thereof, and also assists in filtering out the sand and other foreign matter with which the oil is laden, thus preventing the screen from being rapidly cut away by the grit and sand in the oil, and freeing said oil from a considerable portion of said sand and other foreign matter.

What I claim is:

1. A device of the character described, including a foraminated tubular screen, a closure for the lower end thereof, provided with an opening, a valve controlling said opening, a perforated plate secured in the

upper end of said screen, a screen covering said perforated plate, said plate having a central opening therethrough, alined with the opening in said lower end closure, a pipe passing through the upper opening and alined with the lower opening for forcing water through said valve, and coarse aggregate filling said screen.

2. A device of the character described, including a foraminated tubular casing, a screened casing within said first mentioned casing, the lower end of said first mentioned casing being closed, a foraminated closure secured in the upper end of said screen first mentioned, a screen covering said last mentioned closure and coarse aggregate filling the space between said casings.

3. A device of the character described including a foraminated tubular casing whose lower end is closed, a valve in the lower end of said casing, a foraminated closure secured in the upper end of said casing, a wire mesh screen interposed immediately beneath said foraminated closure a centrally located screen pipe within the casing, coarse aggregate filling the space between said casing and said screen pipe and a pipe passing within said screen pipe for forcing fluid therethrough.

4. In combination, a tubular foraminated screen, a perforated plate secured in the upper end thereof, a screen below said plate, a closure for the lower end thereof, provided with a central opening, a valve controlling said opening, a perforated sprayer secured to the lower end of said screen, a centrally located wash pipe, extending through said pipe down into the screen through which water may be forced through said pipe and through the perforations of said sprayer and coarse aggregate filling the space between said screens.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

SIDNEY H. HUSTON.

Witnesses:
WM. A. CATHEY.
IRENE BRUNS.