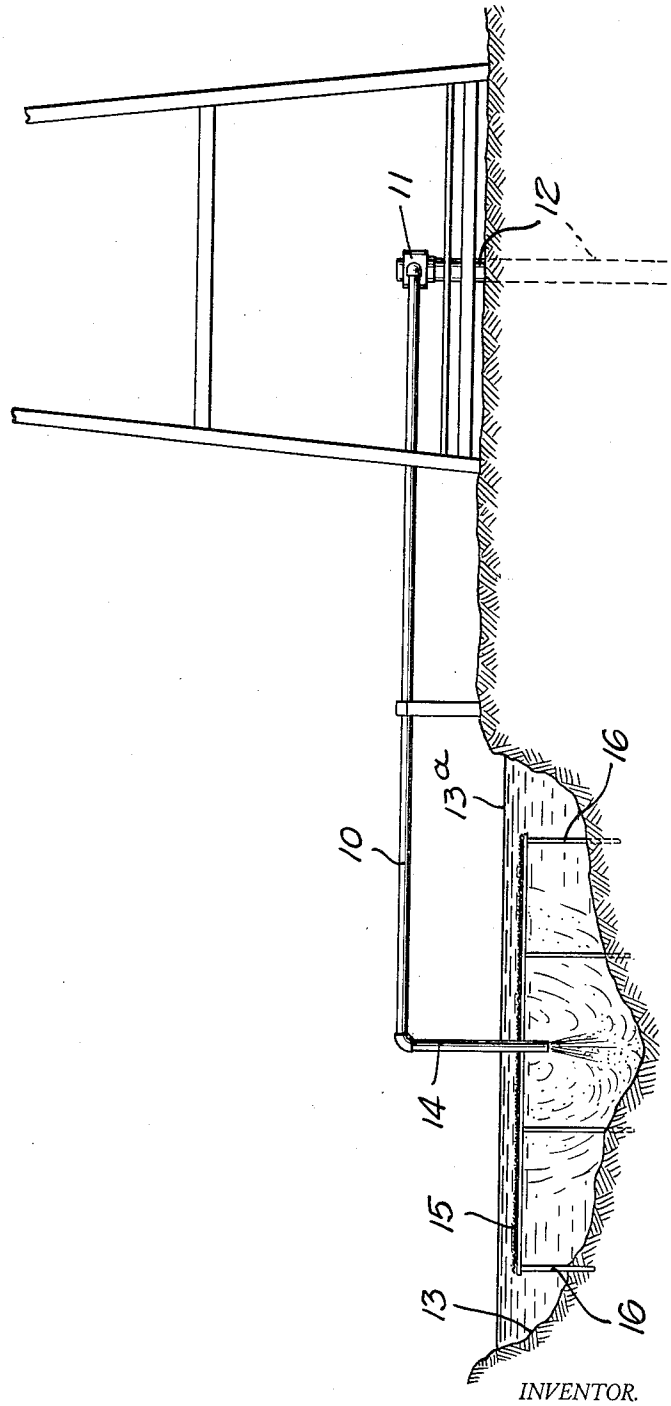
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FLOW CONTROL APPARATUS FOR WELLS

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FLOW CONTROL APPARATUS FOR WELLS

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7 Claims. (Cl. 166—1)

This invention relates to and has for a purpose the provision of an apparatus for use during the bringing in, or subsequent cleaning out, of an oil well, and by which the fire hazard attendant the discharge of oil directly into the atmosphere to a sump as is the present practice, will be reduced, the apparatus preventing ignition of the oil by sparks from friction or static electricity created at the outlet end of the discharge pipe by the flowing oil column and solid particles therein.

Only one form of the invention will now be described, following which its novel features will be pointed out in claims.

In the accompanying drawing,

The figure illustrates, in side elevation, the flow control apparatus associated with an oil well.

Similar reference characters designate similar parts in the drawing.

In carrying this invention into practice, a flow line or pipe 10 is connected at one end to the usual control casing head 11 provided at the upper end of the well casing 12 in the hole, the pipe being extended to a convenient sump 13 constructed in the ground. The outlet end of the pipe is formed by a depending vertical portion 14, the lower end of which is submerged in a body of water 13^a provided in the sump by supplying the water to the sump from any suitable source.

The lower end of the pipe portion 14 projects through a central opening in a metallic screen 15, which is supported horizontally in a submerged position in the body of water, by metal posts 16 preferably driven into the ground in the bottom of the sump.

Assuming that the apparatus as above described is connected to a well as shown in the drawing, and that oil from the well is discharging from the submerged outlet end of the pipe 10 under natural pressure, it will be evident that any static electricity which may be generated by the flowing column of oil, gas and foreign matter such as sand particles or mud fluid in the pipe, will be conducted by the body of water and by the screen 15 and posts 16 to the ground, thus effectively preventing the creation of any sparks which might effect ignition of the gas in the oil column. Furthermore, the generation of sparks by sand or other solid particles striking the outer edge of the pipe at its outlet end, is positively prevented by the surrounding body of water.

As the oil column discharges from the pipe, the screen 15 functions to prevent ejection of the oil and solid particles from the sump by the high natural pressure, and breaks up the gas as it rises through the water in the sump, so as to distribute the gas over a large area and thereby greatly reduce the pressure. As the solid particles in the oil column are trapped in the sump by the screen, the danger of sparks created by such particles in striking the pipe above the water, is obviated. It will thus be manifest that the fire hazard from friction and static electricity induced by the flowing oil column discharged directly into the atmosphere under the present practice of bringing in a well or cleaning out the latter either initially or subsequently, is reduced by the provision of this flow control apparatus.

I claim:

1. Flow control apparatus for oil wells comprising a sump having a body of water therein; a flow line leading from the casing in the well hole to the sump, with the outlet of the flow line submerged in the body of water so as to discharge oil from the casing into the water; and a foraminous member submerged in the water and through which the flow line projects, for preventing the ejection of solid particles in the oil from the water while rendering gas in the oil free to pass and escape into the atmosphere.

2. Flow control apparatus for oil wells comprising a sump having a body of water therein; a flow line leading from the casing in the well hole to the sump, with the outlet of the flow line submerged in the body of water so as to discharge oil from the casing into the water; a foraminous member, and grounded electrical conductors for supporting said member in a submerged position in the body of water with the flow line projecting through the member so that the latter will act to prevent solid particles in the oil from being ejected from the water while rendering gas in the oil free to pass and escape into the atmosphere.

3. Flow control apparatus for wells comprising a sump; a flow line for conducting oil from a well to the sump; and a foraminous member supported in the sump and through which the outlet of the flow line opens to the sump.

4. Flow control apparatus for wells comprising a sump; a flow line for conducting oil from a well to the sump; a foraminous metallic sheet; and electrically grounded members for supporting the sheet in the sump with the outlet of the flow line opening to the sump through the sheet.

5. Flow control apparatus for oil wells comprising a sump having a body of water therein; a

flow line leading from a well to the sump, with the outlet of the flow line submerged in the water so as to discharge oil from the well directly into the water; and a foraminous member submerged in the water in a position to prevent ejection of solid particles in the discharging oil from the water while rendering gas in the oil free to escape into the atmosphere.

6. Flow control apparatus for oil wells comprising a sump having a body of water therein; a flow line leading from a well to the sump, with the outlet of the flow line submerged in the water so as to discharge oil from the well directly into the water; a foraminous member submerged in the water in a position to prevent ejection of solid particles in the discharging oil from the water while rendering gas in the oil free to escape into the atmosphere, and means for electrically grounding the foraminous member.

7. Flow control apparatus for oil wells comprising a sump; a flow line leading from a well to the sump, with the outlet of the flow line disposed to be submerged in a body of liquid in the sump so as to discharge oil from the well directly into the body of liquid; and a foraminous member disposed in the sump in a position to be submerged in the body of liquid and to prevent ejection from the liquid of solid particles in the discharging oil, while rendering gas in the oil free to pass from the body of liquid into the atmosphere.

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