

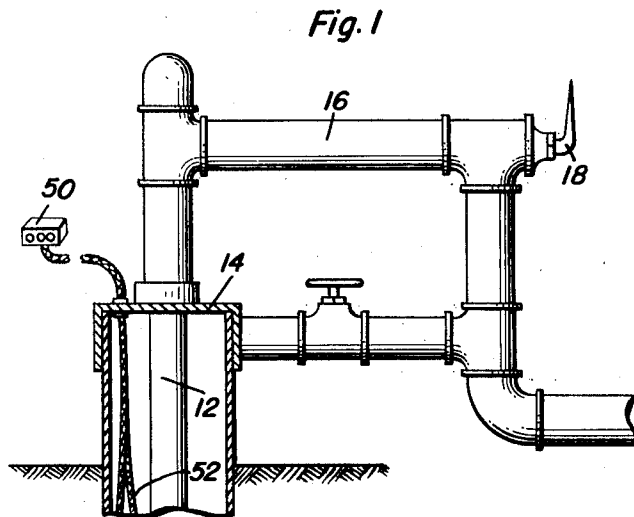
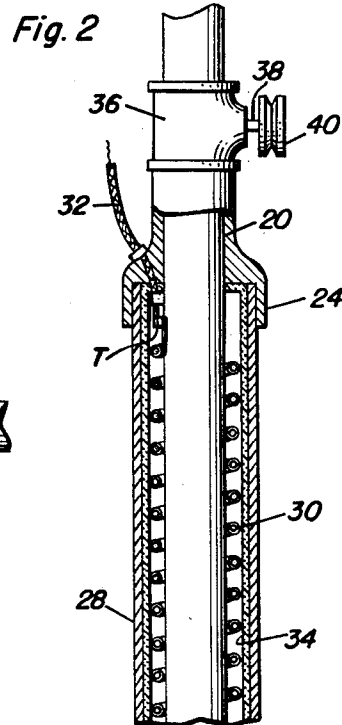
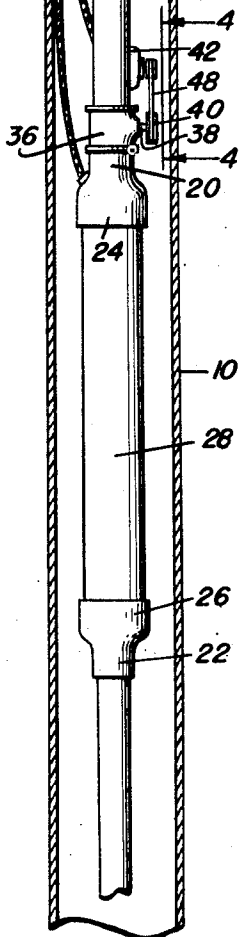
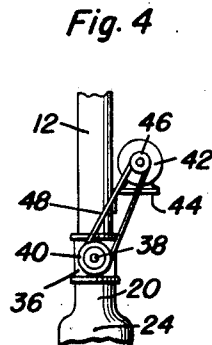
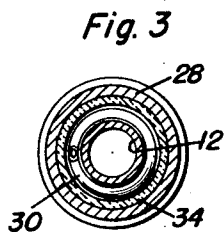
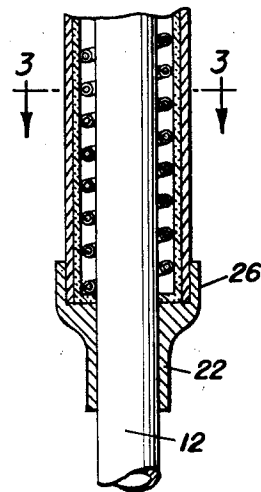
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FLOWING UNIT FOR OIL WELL CONTROLLERS

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FLOWING UNIT FOR OIL WELL
CONTROLLERS

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This invention relates to new and useful improvements in flowing units for oil well controllers and the primary object of the present invention is to provide a device that will effectively prevent the formation of paraffin on the inner walls of an oil supply pipe and flow lines which normally clog such conduits.

Another very important object of the present invention is to provide a valve mounted in an oil supply line, well below the surface of the ground, together with a means whereby the valve may be selectively urged to its open and closed positions by a switch disposed remotely from the valve and above the ground.

A further object of the present invention is to provide a flowing unit for oil well controllers utilizing a heating unit in conjunction with the valve to prevent the formation of paraffin upon the inner walls of an oil supply pipe and which heating unit is so constructed as to permit a swabber to extend into the pipe without engaging the heating unit.

A still further aim of the present invention is to provide a device of the aforementioned character that is simple and practical in construction, strong and reliable in use, efficient and durable in operation, inexpensive to manufacture, install and service, and otherwise well adapted for the purposes for which the same is intended.

Other objects and advantages reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming part hereof, wherein like numerals refer to like parts throughout, and in which:

Figure 1 is a vertical sectional view of a well casing showing the oil supply pipe and its outlet lines of the present invention mounted on the pipe;

Figure 2 is an enlarged detail sectional view of Figure 1 to show the internal construction of the heater unit;

Figure 3 is a transverse horizontal sectional view taken substantially on the plane of section line 3—3 of Figure 2;

Figure 4 is a fragmentary vertical detail view taken substantially on the plane of section line 4—4 of Figure 1; and

Figure 5 is an enlarged view taken from the opposite side of Figure 4 and with parts broken away and shown in section for the convenience of explanation.

Referring now to the drawings in detail, wherein for the purpose of illustration, there is

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disclosed a preferred embodiment of the present invention, the numeral 10 represents a vertical pipe casing in which there is mounted a supply pipe 12 whose upper end extends through a cap 14 on the upper end of the casing 10 and which is joined with a branch conduit 16 having a manually operated valve 18 for controlling the flow of oil through the conduit 16.

Upper and lower collars 20 and 22 are suitably secured about the pipe 12 intermediate the ends of the pipe 12. The collar 20 includes a depending skirt or flange 24 and the collar 22 includes an upstanding skirt or flange 26. The upper end of a sleeve 28 is surrounded by the flange 24 and the lower end of the sleeve 28 is surrounded by the flange 26.

An electrical heating wire 30, of any suitable well known type, is spiralled about the pipe 12 and is confined within the sleeve 28. The wire 30 is connected to a suitable source of electric current by insulated wires 32 that extend through the collar 20 and which are disposed exteriorly of the pipe 12 but within the casing 10 until they pass through the cap 14. A cylinder of insulating material 34 is mounted in the sleeve 28 and embraces the wire 32 so that the section of the pipe contacted by the wire 30 will be effectively heated.

A valve housing 36 is interposed in the pipe 12 immediately above the collar 20 and a suitable valve is positioned in the housing 36 and includes an operating shaft 38 that projects from the housing to support a pulley 40.

A reversible electric motor 42 is supported on a mounting bracket 44 carried exteriorly of the pipe 12 above the housing 36. The drive shaft of the motor 42 supports a pulley 46 that is connected to the pulley 40 by a pulley belt 48. An operator or switch 50 is provided for the motor and is electrically connected to the motor by insulated wires 52. The switch 50 is disposed remotely from the motor and exteriorly of the drill hole for the casing 10.

Obviously, the motor is to be enclosed within an air tight case which also encloses the belt 48 and pulley 40 to prevent sparks from the motor or the drive connection from igniting fumes.

Every oil well has a certain bottom hole temperature as well as a very high pressure, ranging anywhere from six or eight hundred pounds up to thousands of pounds pressure.

Most apparatus of the character relative to this invention suggest heating units but fail to anticipate the valve unit located above a single heat unit forming the present invention. Without the

valve unit, the heated oil under pressure will cool off immediately, therefore, the oil must be removed from the heated zone relieved of pressure in order to retain the oil hot or warm.

With a heating unit sufficient to accomplish the desired result, the supply pipe would become too hot and would stretch or buckle and the oil would be affected unfavorably, but with the heating unit and valve arrangement of the instant invention this undesirable occurrence is eliminated.

At the bottom of a well where heating units have been heretofore installed, the paraffin is usually in liquid form, because the oil at such depths is ordinarily sufficiently hot to retain the paraffin melted. Therefore, the heating unit proposed is located intermediate the ends of the pipe 12.

The purpose of the present invention is not necessarily to do away with salt water and other hazards although it will tend to reduce such hazards. Rather, the present invention is to rid the tubing or pipe 10 of paraffin which starts freezing at approximately 70° C., and which congeals or freezes more readily under pressure and does not congeal or freeze ordinarily out from under pressure.

Practically all oil wells have a different bottom hole temperature, therefore, one well, say 5000 feet deep might not have any trouble with paraffin until the oil rises within 50 or 100 feet of the top of the well, however, in another well the same depth, paraffin might start congealing or freezing at 400 or 500 feet from the well top. In extreme cases, paraffin has been known to congeal or freeze at a depth of 1000 or 1200 feet, but never any deeper.

The main feature of the present invention is to melt the paraffin back into the oil, to keep the oil hot or warm after it is heated, through the use of a valve located above the single heating unit. The device is placed in operation at the first collection of paraffin, depending absolutely upon the bottom hole temperature.

It should be noted that a thermostatical control or heat responsive member T is operatively connected to the heating unit. Such a structure is required in order to prevent overheating of the heating unit which will cut off at a predetermined high temperature.

Additional or alternate means may be employed for actuating the valve, such as a cog system or other suitable drive means void of sparks which would ignite gas or oil fumes.

Having described the invention, what is claimed as new is:

1. A flowing unit for oil well controllers comprising a vertically disposed supply pipe having an upper end portion exposed from a drill hole, an insulated sleeve about the pipe intermediate the ends of the pipe, an electrical heating unit within the sleeve and surrounding the pipe, a thermostatic control operatively connected to the heating unit to prevent overheating of the pipe, a valve in the pipe immediately above the sleeve, a reversible electric motor supported on the pipe above the valve and operatively connected to the valve for selectively opening and closing the valve, and a switch disposed remotely from the motor and electrically connected to the motor.

2. The combination of claim 1 wherein said motor includes a drive shaft, a drive pulley on said drive shaft, said valve including an operating shaft, a driven pulley on said operating shaft, and an endless belt trained about said pulleys.

3. A flowing unit for oil well controllers comprising a vertically disposed supply pipe, upper and lower collars on said pipe intermediate the ends of said pipe, said upper collar including a depending flange surrounding the pipe and said lower collar including an upstanding flange surrounding the pipe, an insulated sleeve embracing the pipe and having an upper end surrounded by the flange of the upper collar and a lower end surrounded by the flange of the lower collar, a heating unit about the pipe and confined within said sleeve, a valve in the pipe immediately above the upper collar for controlling the flow of oil from the pipe, a reversible electric motor supported on the pipe above the upper collar and operatively connected to the valve for selectively urging the valve to its open and closed positions, a switch disposed remotely from the motor and electrically connected to the motor, and a thermostatic control operatively connected to the heating unit and mounted in the sleeve to break the supply of current to the heating unit after the heating unit has heated the pipe to a predetermined temperature.

4. A flowing unit for oil well controllers comprising a vertically disposed supply pipe having an upper end exposed from a drill hole, a valve mounted in the pipe intermediate the ends of the pipe, an insulated sleeve embracing the pipe, a heating unit about the pipe and within the sleeve, and means connected to the valve for selectively urging the valve to its open and closed position, said means including a reversible electric motor supported on said pipe above said valve and operatively connected to the valve for selectively urging the valve to its open and closed positions, a switch disposed remotely from the motor and electrically connected to the motor, and a thermostatic control operatively connected to the heating unit and mounted in the sleeve to break the supply of current to the heating unit after the heating unit has heated the pipe to a predetermined temperature.

5. An apparatus for conducting oil from deep wells, said apparatus comprising an elongated vertically disposed supply pipe, a single insulated sleeve disposed about an intermediate portion of the pipe, an electrical heating unit within the sleeve, a thermostatic control operatively connected to the heating unit and located within the sleeve to prevent overheating of the pipe, a valve in the pipe immediately above the sleeve, an electric motor mounted on the pipe above the valve and operatively connected to the valve for selectively opening and closing the valve, and a switch disposed remotely from and electrically connected to the motor.

6. The combination of claim 5 and an air tight case supported on the pipe and enclosing the motor, valve and sleeve.

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