Dec. 26, 1961 H. B. EGING 3,014,532

PITLESS WELL CONNECTOR

Filed June 19, 1958

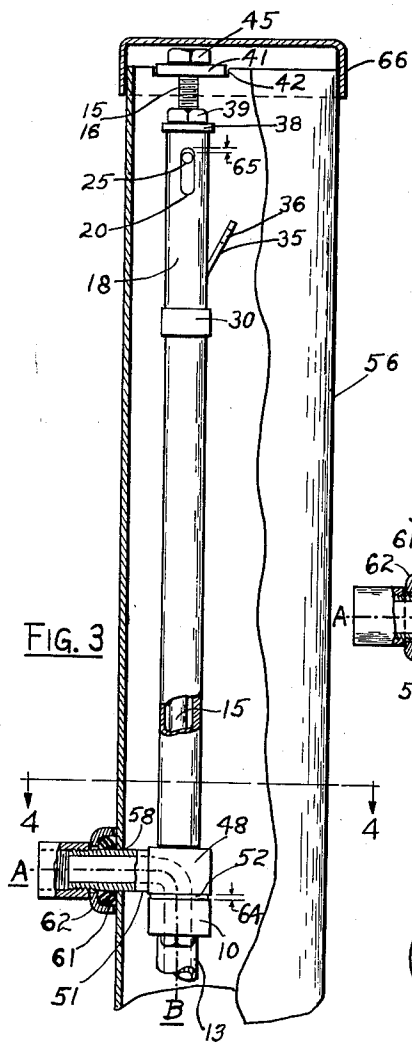


FIG. 3

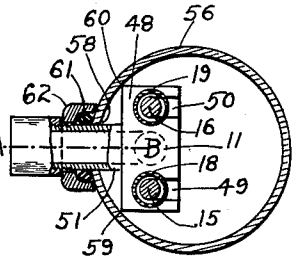
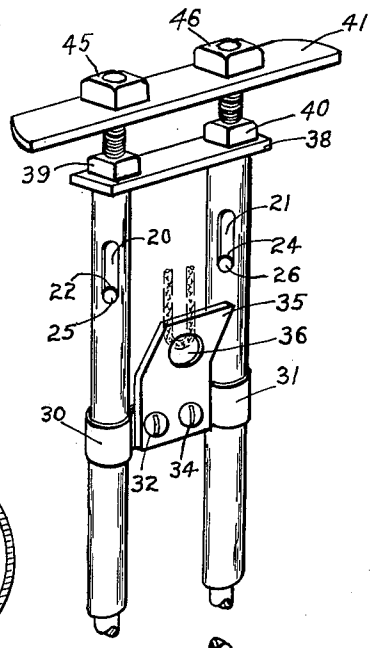


FIG. 4



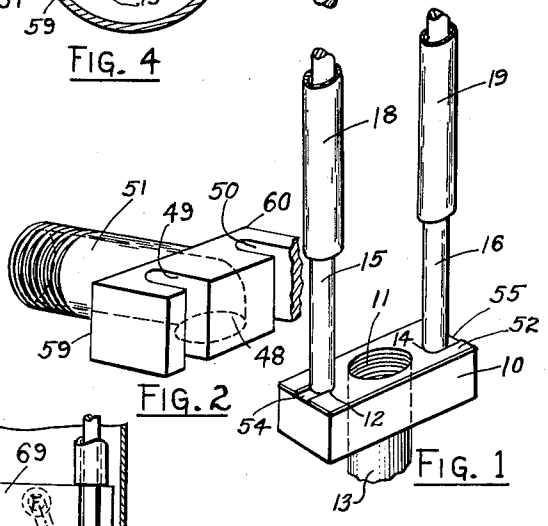


FIG. 2

FIG. 1

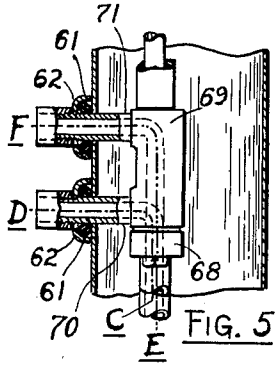


FIG. 5

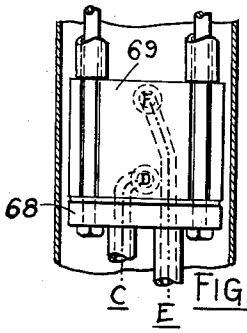


FIG. 6

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United States Patent Office 3,014,532 Patented Dec. 26, 1961

3,014,532

PITLESS WELL CONNECTOR

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Filed June 19, 1958, Ser. No. 743,040
2 Claims. (Cl. 166—85)

This invention relates to a pitless well connector for underground discharge units for offset installations, which are used in the upper end of a pipe line in an encased well for offset lateral discharge of water below the frost line, where the coupling connections are made within the well casing below the exposed top end thereof and, of course, below the frost line.

In converting a hand pumped water well, of a type which is encased, into a mechanical pumped well, it becomes necessary in most instances to discharge water laterally from the well within the pipe line. For this purpose it must be below the normal frost line for the area in question. In the past it was common practice to provide a concrete pit surrounding the well casing. This invention relates to a pitless well connector, in which a conventional well pipe and accessories are lowered into the end of a casing with its upper end coupled to an elbow for lateral discharge to a pipe line running below the frost line to suitable pumping equipment.

Although considerable simplification has been made recently in various pitless well connectors for lateral discharge below the frost line, most of these pitless well connectors still have a number of disadvantages. Some of the disadvantages are that they are too expensive, too complicated, too costly to install and service.

It is an object of this invention to provide a new and improved pitless well connector having a direct vertical clamping connection.

A further object of this invention is to provide a pitless well connector that is completely assembled as a unit with a well pipe prior to lowering said connector and well pipe into a well casing.

Another object of this invention is to provide means in a pitless well connector so that the combined weight of a pipe line unit and a well connector is suspended from the top edge of the well casing.

Another object of this invention is to provide a pitless well coupling that makes a connection, which is in the horizontal plane, for use with a conventional flat-type sealing gasket between the adjoining surfaces of said coupling, and does so by a direct pull on the pitless well connector.

A further object of this invention is to provide a pitless well connector whereby a fluid-tight junction is made in the coupling by a direct pull on the connector from the exposed end of the well casing.

In the drawings:

FIG. 1 is a fragmentary perspective view of a pitless well connector showing the removable portion thereof;

FIG. 2 is a perspective view of the upper body of the well coupling;

FIG. 3 is a fragmentary side elevational view of a pitless well unit in assembled relationship showing in the cross-sectional cutaway the upper end of the well casing;

FIG. 4 is a top sectional view along the line 4—4 of FIG. 3;

FIG. 5 is a fragmentary side elevational view of a modified pitless well connector for a two-pipe installation; and

FIG. 6 shows a front elevational view of the modified pitless well connector of FIG. 5.

Referring to FIGS. 1 and 2 of the drawings, the pitless well connector comprises a lower body 10 of generally rectangular shape and preferably of non-ferrous metal, having a tapped hole 11 for a standard pipe thread connection, into which may be threaded the upper end of well pipe line 13. Into the body member are openings 12 and 14 for securing bolts 15 and 16 which extend from the upper end of the well casing. Tubular spacer members 18 and 19 are loose fitting and in engagement with bolts 15 and 16, and, as well, are of a specified dimension, slightly shorter than the length of said bolts. In addition, aligned slots 20 and 21 are shown in the tubular spacers, and these are adapted to register with pins 25 and 26 which are fastened in openings 22 and 24 in the bolts 15 and 16. This determines the amount of takeup in the connector.

The tubular spacers and bolts are held together by an assembly involving clamps 30 and 31 which are flat strip steels fitting snugly around the tubular spacers 18 and 19 and having their opposed ends bent at right angles so that the end portions lie in the same plane but are spaced from each other. These, in turn, are held together by means of a hanger 35 fastened to the clamps by means of screws 32 and 34. The upper portion of the hanger is bent at about 30 degrees, and a large opening 36 is provided so that lifting devices may be placed therein.

A cross or header plate 38 of strip steel has large openings in its upper end spaced to receive bolts 15 and 16, and these are secured together by means of nuts 39 and 40 threaded onto bolts 15 and 16 which bear against the top surface of the cross plate 38.

The operation of this assembly is as follows: Loosening or tightening of nuts 39 and 40 will loosen or tighten, respectively, the pressure of the lower body 10 as it seats on the underside of the lateral discharge connection 48.

A second cross plate 41, preferably of strip steel, has openings similarly positioned for bolts 15 and 16. The cross plate must be sized large enough so as to be secured on the upper edge of the well casing.

The notch 42 is shown in FIG. 3 as well as an opposing notch 44 cut into the casing to receive the cross or header plate 41 to insure proper realignment in reassembly. Nuts 45 and 46 are threaded onto bolts 15 and 16 and bear against the top surface of cross plate 41. The load of the well pipe line and the pitless well connector are supported in notches 42 and 44.

The upper body 48, as shown in FIG. 2, is rectangular in shape and has vertical slots 49 and 50 in its outer portions for lateral entrance of bolts 15 and 16. The lower end of the tubular spacers 18 and 19 rest upon the upper surface of the body in order to provide for a fluid-tight connection for the well pipe line. There is a fluid connection or boss 51 extending for lateral discharge of water, and the internal construction is seen in dotted lines in FIG. 3.

This connection is made with the lower body 10 and the well pipe line 13 by means of a gasket shown at 52 in FIG. 3, which is of suitable material, rectangular in shape and has a center opening in registration with hole 11.

In FIG. 3 the pitless well connector is shown in assembled relationship with the upper end of the well casing 56. The fluid connection of the upper body 48 extends through the opening 58 in the well casing and is limited in its radial movement by the inside corners 59 and 60 of upper body 48 coming in contact with the inside surface of the well casing as seen in connection with FIG. 4. It will be understood that the terminal portion of the upper end of the well casing 56 projects slightly above ground level when the casing is in position in the well.

A suitable ring-type sealing gasket 61 fits over the connection 51 and fits over a smooth portion thereof coming into contact with the well casing. A rounded collar 62 is in contact therewith, and the flange surface adjacent the well casing and the inner wall of the collar

62 are concave in configuration about a vertical axis conforming with the conversely convex outer surface of the well casing. The opposed outer wall of the collar 62 has a flat surface lying in a plane at right angles to the rounded boss 51. A conventional pipe coupling threaded inside bears against the flange forcing the gasket 61 into sealing engagement with the outer unthreaded portion of boss 51, sealing the gap between the opening 58 in the well casing and a portion of the boss 51 to prevent seepage from the surrounding area into the well casing. This limits the amount of compression in the gasket 61. Space 64 between the adjacent ends of the upper and lower bodies provides a space for gasket 52 as seen in connection with FIG. 3.

The flow of water from a single pipe line for lateral discharge through the pitless well coupling is shown in dotted lines in FIG. 3 and traverses the path indicated by line B—A, which is interconnected by a dot-dash line.

The pitless well coupling shown in connection with FIGS. 5 and 6 is a modification for pumping equipment using two pipe lines in the cased well for lateral discharge of water therefrom, in which the lower body 68 is arranged for two tapped holes adapted to mate with the threaded ends of the top end portions of the respective well pipe lines. The upper body 69 has openings in the lower portion thereof in registration therewith for two tapped holes in the lower body. The openings extend upwardly in opposing offset directions as shown in FIG. 6, and then outwardly laterally in registration with the respective bosses 70 and 71, which are located one above the other in the respective assemblies.

The flow of water for this assembly is shown by the path C—D in dot-dash lines, for one leg, and path E—F, shown also in dot-dash lines, for the other leg.

The other features of this modification are substantially like those shown in connection with FIGS. 1–4.

From the above description it is apparent that a pitless well connector may be readily assembled without the use of special equipment or tools and with a minimum of instruction.

To install a pitless well connector the selection of a proper length unit for the installation is required. A hole is drilled into the casing below the frost line, notches are cut or filed at the respective locations on top of the well casing in alignment with the drilled hole, and then the encased well is ready for the reception of the pitless well connector and its pipe line and accessories. Suitable lowering means for the length of the pipe well line is attached to hanger 35 of the connector unit, and the lowering of the pipe line with its connector and accessories is made. This lowering is stopped when top cross plate 41 comes to rest on top of the well casing in notches 42 and 44. Nuts 45 and 46 are then adjusted so that boss 51 slides freely through the drilled hole in the well casing. If there is any additional length to bolts 15 and 16, they may be cut off flush with the top surface of nuts 39 and 40. Gasket 61 slips over boss 51 followed by collar 62 and the pipe line coupling is threaded onto the threaded end portion of boss 51, bearing against the flat surface of the collar and drawing tightly together the coupled assembly with respect to the wall casing.

The well is now complete and ready for further connections from the lateral discharge to the home. Of course, it will be understood that when necessary it may be required to loosen bolts 39 and 40 in order to break the seal around gasket 52 so that the lower body 10 may be separated from the upper body 48, moved laterally a short distance and lifted out of the well. By this means changes can be made in the connection but upon reassembly a tight, direct pull may be provided around the gasket 52 without the disadvantage of a sliding fit.

Having thus described in detail a preferred embodiment of this invention so that others skilled in the art may understand and practice the same, I claim;

1. In a pitless well connector, a lower body member having a generally flat upper surface, a central opening vertically therethrough and means for attaching a well pipe line to the lower surface thereof, supporting bolts fixedly secured to the opposite sides of said lower body, a tubular spacer surrounding each of said supporting bolts, a first header plate over the tubular spacers, fastening means on the supporting bolts for securing the first header plate thereon, and lifting means secured to each of said tubular spacers therefor, an upper body member adapted to register with the opening in the upper surface of said lower body member, said upper body member having a generally flat lower surface and an opening for a fluid passageway therethrough for lateral discharge, which opening communicates with the opening in the lower body, a pair of vertical slots on either side of said upper body adapted to hold the supporting bolts and tubular spacers, gasket means between said upper and lower body members, and a second header plate attached to the upper ends of said supporting bolts and above said first header plate with fastening means for securing the second header plate to the top of said well casing, whereby the lower body may be secured in a fluid tight connection to the lower surface of the upper body by tightening the fastening means on said first header plate, forcing the tubular spacers against the upper face of said upper body and causing a pulling force on said lower body through the vertical slots in said upper body.

2. A pitless well connector as defined in claim 1 in which the lower body member is provided with a second opening extending vertically therethrough and having means for attaching a second well pipe to the lower surface thereof, and in which the upper body member is provided with a second fluid passageway configured for lateral discharge and communicating with the second opening in the lower body member, whereby said connector is adapted for use with well installations utilizing two well pipes.

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