

somewhat like a tree, thus its name "christmas tree." The christmas tree is the most visible part of a producing well, and allows for the surface monitoring and regulation of the production of hydrocarbons from a producing well. As previously noted, the components of the casing head provide a tight seal between the casing and the surface of the inner casings.

SUMMARY

[0008] This section provides a general summary of the disclosure, and is not a comprehensive disclosure of its full scope or all of its features.

[0009] The present disclosure provides a casing seal for a wellhead, including a casing with an internal surface having an annular groove therein. A fluid seal is disposed in the annular groove and includes an internal bead for sealing against a cylindrical surface of an inner case or tube. A swellable material is disposed within the annular groove and surrounds the fluid seal. An energizing port is in communication with the annular groove for delivering fluid to the swellable material to cause the swellable material to expand and further load the fluid seal.

[0009a] According to a first aspect of the present invention, there is provided a seal, comprising: an annular casing having an inner surface with at least one annular recessed groove therein and a port extending from an outer surface of said casing to said recessed groove; a fluid seal disposed in said annular recessed groove, said fluid seal having an inner surface for sealingly engaging a cylindrical surface and an outer surface; and an oil swellable material disposed in said recessed groove and extending around said outer surface of said fluid seal, wherein oil is introduced to said oil swellable material through said port to cause said oil swellable material to swell and apply external pressure on said fluid seal to increase a sealing pressure against said cylindrical surface.

[0009b] According to a second aspect of the present invention, there is provided a wellhead, comprising: an annular outer casing having an inner surface with at least one annular recessed groove therein and a port extending from an outer surface of said outer casing to said recessed groove; an inner casing disposed in said annular outer casing; a fluid seal disposed in said annular recessed groove in said outer casing, said fluid seal having an inner surface for sealingly engaging a cylindrical surface of said inner casing and an outer surface; and an oil swellable material disposed in said recessed groove and extending around said outer surface of said fluid seal, wherein oil is introduced to said oil swellable material through said port to cause said oil swellable material to swell and apply external pressure on said fluid seal to increase a sealing pressure against said cylindrical surface.

[0009c] According to a third aspect of the present invention, there is provided a seal, comprising: an annular casing having an inner surface with at least one annular recessed groove therein and a port extending from an outer surface of said casing to said recessed groove; a fluid seal disposed in said annular recessed groove, said fluid seal having an inner surface for sealingly engaging a cylindrical surface and an outer surface; and a swellable material disposed in said recessed groove and extending around said outer surface of said fluid seal, wherein a fluid is introduced to said swellable material through said port to cause said swellable material to swell and apply external pressure on said fluid seal to increase a sealing pressure against said cylindrical surface.

[0010] Further areas of applicability will become apparent from the description provided herein. The description and specific examples in this summary are intended for purposes of illustration only and are not intended to limit the scope of the present disclosure.