

CLAIMS

We claim:

1. A hydrostatically actuatable downhole piston apparatus comprising:
 - a mandrel having an internal bore;
 - a hydrostatic piston slidably disposed about the mandrel and forming a sealed chamber between the mandrel and the hydrostatic piston;
 - the chamber containing at least one glide spacer having a thickness sufficient to resist deflection of the hydrostatic piston toward the mandrel for at least a portion of the radial thickness of the chamber;
 - wherein the hydrostatic piston has a first fixed configuration which responsive to an increase in pressure external to the chamber shifts longitudinally relative to the mandrel; and
 - wherein the glide spacer is maintained in position prior to the longitudinal shifting of the piston by a retainer that is contractible.
2. The hydrostatically actuatable downhole piston apparatus according to claim 1, further comprising a slip assembly disposed on the mandrel having a radially extendible surface, wherein the surface extends responsive to the longitudinal shift of the hydrostatic piston.
3. The hydrostatically actuatable downhole piston apparatus according to claim 2, further comprising a seal assembly disposed on the mandrel having a radially extendible seal, wherein the seal extends responsive to the longitudinal shift of the hydrostatic piston.
4. The hydrostatically actuatable downhole piston apparatus according to claim 1, wherein the chamber is at a pressure equal to or below surface atmospheric pressure.
5. The hydrostatically actuatable downhole piston apparatus according to claim 1, wherein the glide spacer has a radial thickness essentially equal to the radial thickness of the chamber.
6. The hydrostatically actuatable downhole piston apparatus according to claim 1, wherein the glide spacer comprises a passageway providing pressure communication between different portions of the chamber otherwise separated by the glide spacer.
7. The hydrostatically actuatable downhole piston apparatus according to claim 1, wherein the retainer comprises a spring.

8. The hydrostatically actuatable downhole piston apparatus according to claim 1, wherein the glide spacer comprises at least one material selected from the group consisting of PEEK, glass-filled PTFE (TFG), bronze-filled PTFE (TFB), and nickel-filled PTFE (TFN).
9. A method of hydrostatically setting a downhole tool in a wellbore, comprising:
running a downhole tool into the wellbore to a setting depth, wherein the downhole tool comprises:
at least one mandrel having an internal bore;
a hydrostatic piston slidably disposed about the mandrel and forming a sealed chamber between the mandrel and the hydrostatic piston, the chamber containing at least one glide spacer having a thickness sufficient to resist deflection of the hydrostatic piston toward the mandrel for at least a portion of the radial thickness of the chamber, wherein the hydrostatic piston has a first fixed configuration; and
a slip assembly disposed on the mandrel having a radially extendible surface,
and
wherein responsive to an increase in hydrostatic pressure in the wellbore external to the chamber, the hydrostatic piston shifts longitudinally from its fixed configuration actuating the slip assembly to extend the extendible surface, thereby setting the downhole tool within the wellbore;
wherein the at least one glide spacer is maintained in position prior to the longitudinal shifting of the piston by a retainer that is contractible.
10. The method according to claim 9, wherein the downhole tool is a packer.
11. The method according to claim 9, wherein the at least one glide spacer comprises a passageway providing pressure communication between different portions of the chamber otherwise separated by the glide spacer.
12. The method according to claim 9, wherein the retainer comprises a spring.
13. The method according to claim 9, wherein the at least one glide spacer comprises at least one material selected from the group consisting of PEEK, glass-filled PTFE (TFG), bronze-filled PTFE (TFB), and nickel-filled PTFE (TFN).
14. The method according to claim 9, further comprising evacuating the chamber by pulling a vacuum when the hydrostatic piston is in a first fixed configuration.

15. A hydrostatic pressure setting system comprising:
- a downhole tool provided within a wellbore, the downhole tool comprising :
 - at least one mandrel having an internal bore;
 - a hydrostatic piston slidably disposed about the mandrel and forming a sealed chamber between the mandrel and the hydrostatic piston, the chamber containing at least one glide spacer having a thickness sufficient to resist deflection of the hydrostatic piston toward the mandrel for at least a portion of the radial thickness of the chamber,
 - wherein the hydrostatic piston has a first fixed configuration which responsive to an increase in pressure external to the chamber shifts longitudinally relative to the mandrel;
 - a slip assembly disposed on the mandrel having a surface which radially extends in response to the longitudinal shift of the hydrostatic piston thereby setting the downhole tool within the wellbore;
 - wherein the at least one glide spacer comprises a passageway providing pressure communication between different portions of the chamber otherwise separated by the glide spacer.
16. The system according to claim 15, wherein the downhole tool is a packer.