

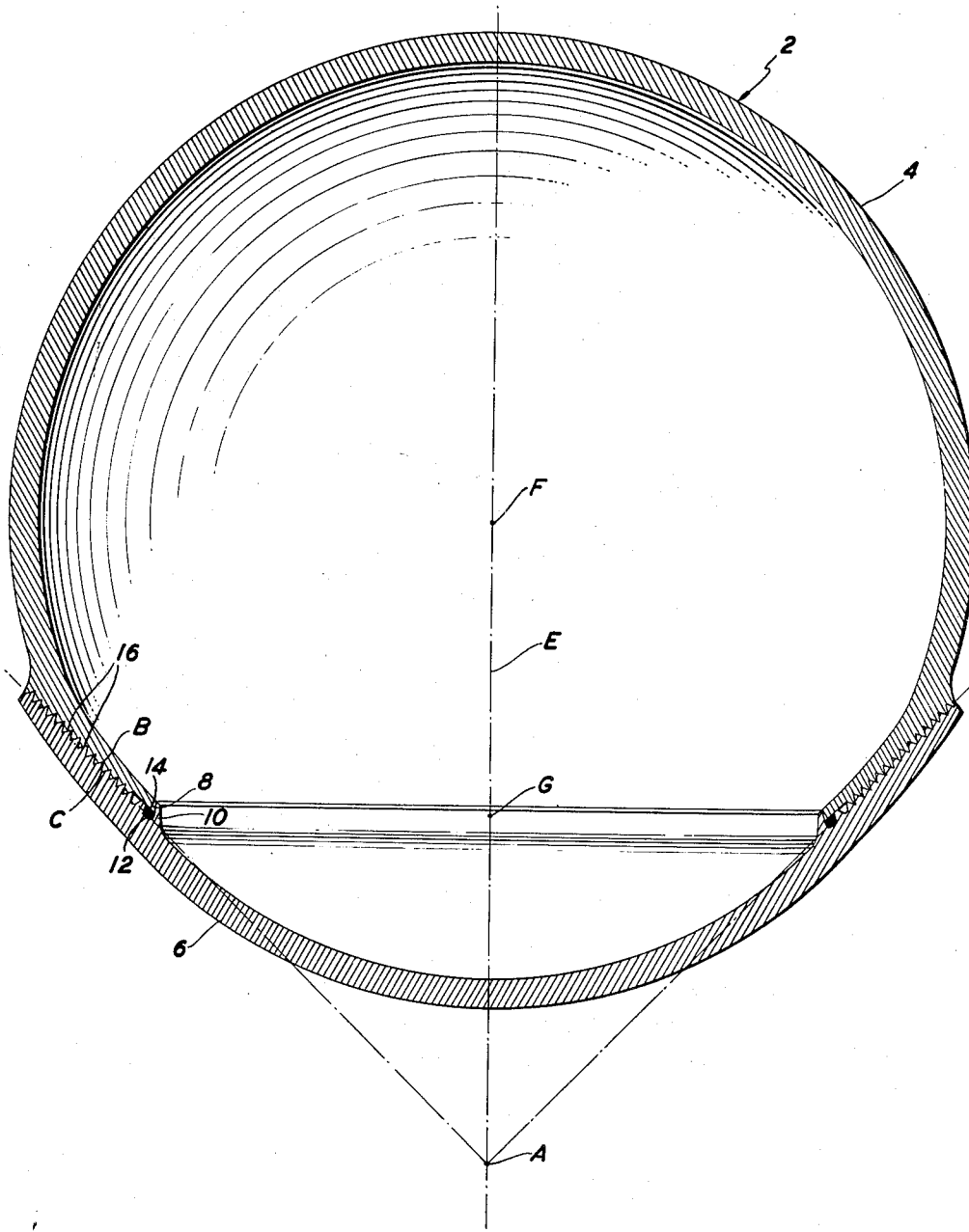
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SPHERICAL SHELL CLOSURE

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SPHERICAL SHELL CLOSURE

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1 Claim. (Cl. 220—4)

This invention relates to a spherical shell closure, particularly adapted to contain high pressures.

An object of this invention is to provide a closure having a quick-acting arrangement to open or close said closure.

Another object is to provide a closure having a body and cover of substantially a constant thickness throughout. This is important in various specialized applications where uniform heat transmission is desired.

A further object of this invention is to provide a closure having a line of action closely approaching the direction of membrane stresses in spherical shells. This practically eliminates bending moments which are large in other methods of closures.

Another object of this invention is to provide a closure in which the body and cover have a reaction under pressure which serves to restrain movement or deflection of both members.

A further object of this invention is to provide a closure which is light in weight and is self-locking.

Further objects and advantages will be apparent from the following specification and drawing.

The figure shown is a section taken through the center of a closure showing the shell body and cover.

Referring to the figure, the closure 2 is shown having a spherical shell segment 4 and a spherical cover segment 6 threadably connected thereto. The spherical shell segment 4 is formed having its shell of substantially the same thickness throughout. However, at its open end it is formed having a conical surface the apex of which appears at point A. The surface is threaded so that if any plane is taken through the line E, which is a line drawn through the center F of the spherical closure 2 and G, the center of the opening 8 in the spherical segment 4, the resulting section through the threads 16 will place the point B of the thread closer to the line E than point C. While the shell of the spherical shell segment has been enlarged at this point to provide a larger threaded area, it can be seen that this thread could be generated on a cone formed on the regular thickness of the shell.

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The spherical cover segment 6 is formed having a shell of substantially the same thickness. However, it is made thicker at its outer circumference to provide a threaded area equal to that on the spherical shell segment 4. The teeth formed on the inner side adjacent the outer edge of the cover segment are formed on a conical surface whose angle of generation is the same as that of the surface generated on the spherical shell segment.

A circular flange 10 is formed on the inner side of the spherical cover segment inside of the threaded area. This circular flange 10 is dimensioned to have a sliding engagement with the opening 8 of the spherical shell segment 4. An annular groove 12 is located on the spherical cover segment between the flange 10 and the threaded area. When the spherical shell segment and spherical cover segment are placed together to form a closure an O-ring 14 is positioned in the groove 12.

While no means are shown to pressurize this closure this pressurization can be done by either piping into the closure an external pressure or forming a pressure within said closure by some self-contained means.

Although only one embodiment of this invention has been illustrated and described herein, it will be apparent that various changes and modifications may be made in the construction and arrangement of the various parts without departing from the scope of this novel concept.

I claim:

An openable spherical container for corrosive liquids at high pressure and temperature, the walls of which are substantially free from bending moments and have substantially uniform wall thickness throughout, said container comprising a first spherical shell segment consisting of substantially more than half the sphere, said first segment having a circular opening intersecting its inner surface, a second spherical shell segment forming a cover for said first segment and completing the sphere, said first segment having a threaded conical surface extending between the periphery of said opening and the outer surface of said segment and its axis extending through the center of said opening and through the center of said sphere with its apex intersecting said axis at a point externally of said sphere, said second shell segment having a threaded conical surface extending around its inner edge and threadably engaging the threaded conical surface on said first shell segment, and an annular stop on one of said shell segments having a sliding engagement with the circular edge of the outer shell segment as said segments are threadably engaged.

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