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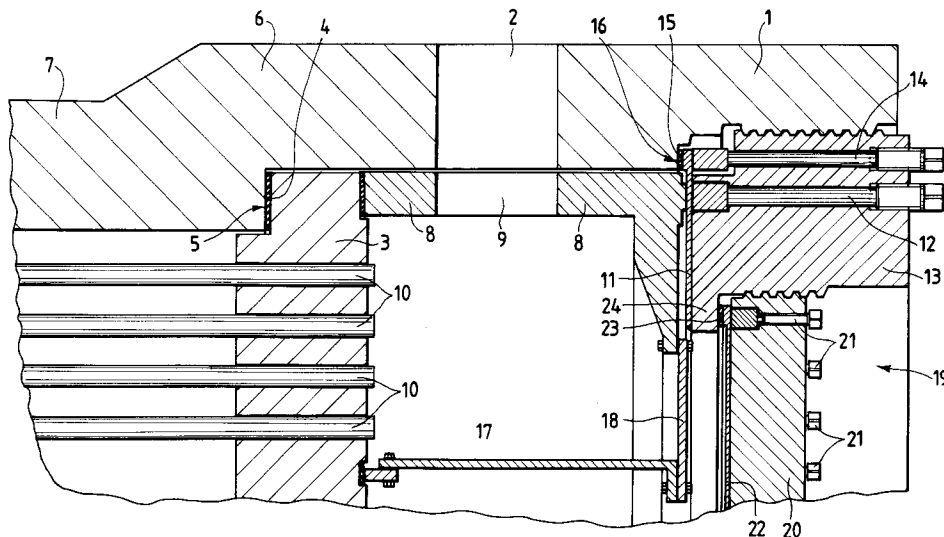
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54 **Improved closure system for a heat exchanger distributor.**

57 A closure system for a heat exchanger distributor in which the cover, of breech lock type, is provided with a central aperture hermetically sealable

by a door. Preferred door fastening embodiments are also described.

Fig.1



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This invention relates to a new closure system for a heat exchanger distributor which, by providing easy access to the distributor interior while maintaining the sealed clamping of the tube plate without the need for independent auxiliary seal members, enables the dimensions of the distributor to be limited with consequent reduction in manufacturing costs, and the down times and hence the relative maintenance costs to be minimized.

In the heat exchanger field there are many known devices for sealedly clamping the tube plate against a suitable bearing surface on the end of the heat exchanger shell via a gasket.

In a widely used known device, said clamping is effected via the cover of the distributor which is provided for this purpose with both the adjustable device necessary to form the pressure seal for the cover, and with the adjustable device necessary for clamping the tube plate by the breech lock method.

It is however always essential to be able to gain access to the interior of the distributor in order to check the functional clamping of the tube plate.

This requirement has resulted in the use of an additional adjustable device within the distributor to keep the tube plate clamped in the absence of the cover, with a consequent obvious increase in the distributor length and cost. In addition, access to the distributor interior depends on removing the entire cover, which is not particularly easy.

The object of the present invention is to obviate said drawbacks by providing a closure system for a heat exchanger distributor which enables said additional internal adjustable member for clamping the tube plate to be eliminated, while still allowing easy access to the distributor interior.

This is substantially achieved in that for access to the distributor interior, said cover is provided with a central aperture which is sealable.

This avoids the need to remove the cover for any inspection or maintenance work within the distributor, so that this keeps the tube plate tightly clamped during said operations.

Hence, the closure system for the distributor of a heat exchanger comprising inter alia a tube plate sealedly pressed via a gasket against a bearing surface on the end of the heat exchanger shell by a cylindrical presser operated by an adjustment device in the distributor cover, said cover also being provided with an adjustable device for its sealed clamping against said distributor, is characterised according to the present invention in that said cover is provided with a central aperture hermetically sealable by means of a door.

According to a preferred embodiment of the present invention, said door for hermetically sealing said central aperture in the cover is screwed into said cover and is provided along its circumferential

periphery with a screwed series of position-adjustable axial pressers which press a diaphragm against an internal projection provided on said aperture, via a seal gasket.

5 According to a modification of the present invention, said door is pressed against an internal projection on said aperture, via a gasket, by a circumferential series of axial pressers position-adjustable by screwing, the series being supported
10 by a cylinder retained in position by a sector ring housed in a circumferential recess provided within said aperture.

The invention is further described hereinafter with reference to the accompanying drawings, which show preferred embodiments thereof by way
15 of non-limiting example only, in that technical or constructional modifications can be made thereto without leaving the scope of the present invention.

In said drawings:

20 Figure 1 is a partial view in longitudinal semi-section of a tubular heat exchanger using a distributor closure system according to the invention;

25 Figure 2 is a considerably enlarged section through a modification of the invention.

In the figures the reference numeral 1 indicates the cylindrical body of a heat exchanger distributor, comprising a hole 2 for fluid entry, a similar fluid exit hole being provided in the distributor body in a diametrically opposite position. Within said distributor 1 there is housed the tube plate 3 which, provided with heat transfer tubes 10, is sealedly pressed, via the gasket 4, against the bearing surface 5 on the end 6 of the heat exchanger shell 7
30 by a cylindrical presser 8 comprising a hole 9 in correspondence with said hole 2 and provided with suitable known seals, not shown in the figure. Said cylindrical presser 8 is operated, via a diaphragm 11, by an adjustment device consisting of a series of threaded pins 12 (only one being visible in the figure for reasons of clarity) distributed circumferentially along the closure cover 13 for the distributor 1. Said cover 13, of the breech lock type, is screwed into the distributor 1 to achieve a pressure seal by means of an adjustable clamping device consisting of a second series of threaded pins 14 (only one being visible in the figure for reasons of clarity) which compress said diaphragm 11 and the annular gasket 15 against a projection 16 provided on the interior of the distributor 1. In the distributor 1 the entering fluid is kept separated from the exit fluid by known partition walls 17 and 18 bolted together and hence easily removable.

55 Finally, said cover 13 is provided with a central aperture 19 hermetically sealable by the door 20 which is screwed into the cover 13 and supports along its circumferential periphery a screwed series of position-adjustable axial pressers 21 which, via a

diaphragm 22, press the annular gasket 23 against an internal projection 24 provided on said cover 13.

In this manner it is necessary only to unscrew said door 20 to gain access to the distributor interior without altering the seal at the annular gaskets 4 and 15. 5

In the modification of Figure 2, said door 20 is pressed against said internal projection 24 on the cover 13, via the annular gasket 23, by means of a circumferential series of axial pressers 21 position-adjustable by screwing into the support cylinder 25, which is held in position by a ring in the form of sectors, respectively 26, 26', 26'', 26''', ..., housed in a circumferential recess 27 provided in the cover 13. 10 15

Claims

1. A closure system for the distributor of a heat exchanger comprising inter alia a tube plate sealedly pressed via a gasket against a bearing surface on the end of the heat exchanger shell by a cylindrical presser operated by an adjustment device in the distributor cover, said cover also being provided with an adjustable device for its sealed clamping against said distributor, characterised in that said cover is provided with a central aperture hermetically sealable by means of a door. 20 25 30
2. A closure system for the distributor of a heat exchanger as claimed in claim 1, characterised in that said door for hermetically sealing said central aperture in the cover is screwed into said cover and is provided along its circumferential periphery with a screwed series of position-adjustable axial pressers which press a diaphragm against an internal projection provided on said aperture, via a seal gasket. 35 40
3. A closure system for the distributor of a heat exchanger as claimed in claim 1, characterised in that said door for hermetically sealing said central aperture in the cover is pressed against an internal projection on said aperture, via a gasket, by a circumferential series of axial pressers position-adjustable by screwing, the series being supported by a cylinder retained in position by a sector ring housed in a circumferential recess provided within said aperture. 45 50

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Fig.1

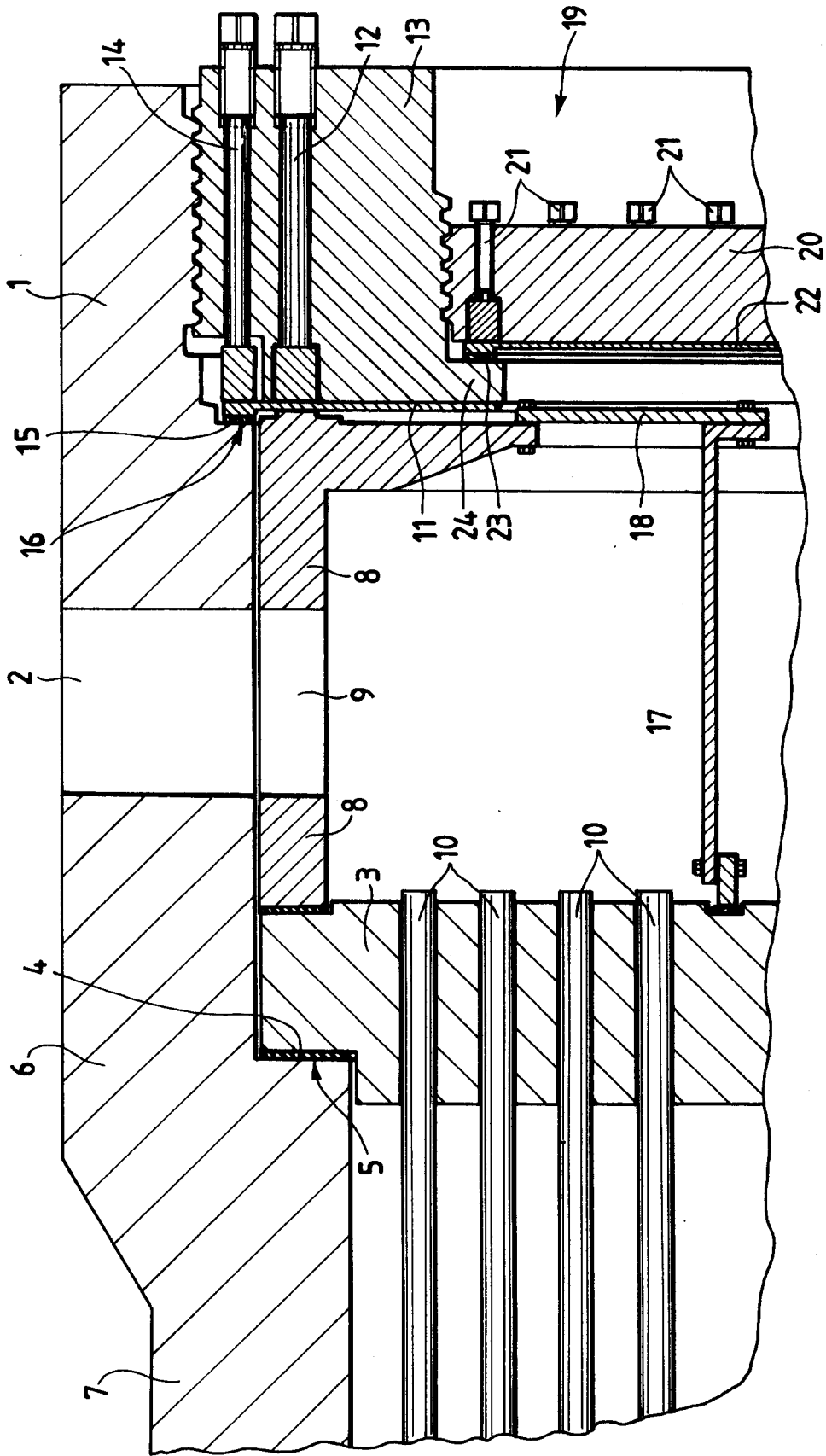


Fig.2

