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SEAL MEANS FOR SLIDE FASTENERS

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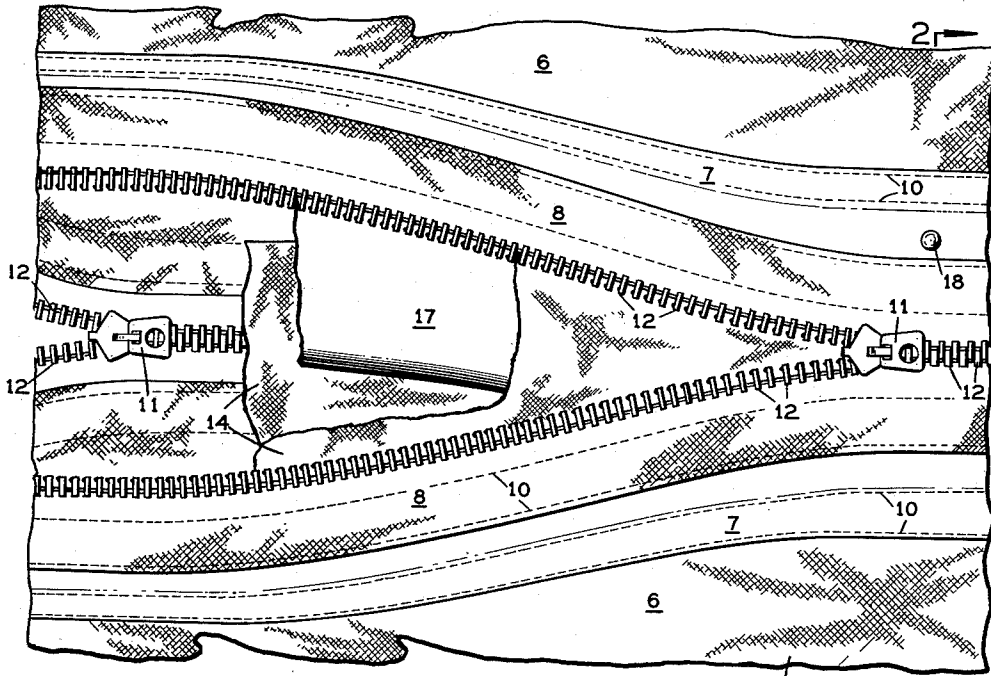


FIG. 1

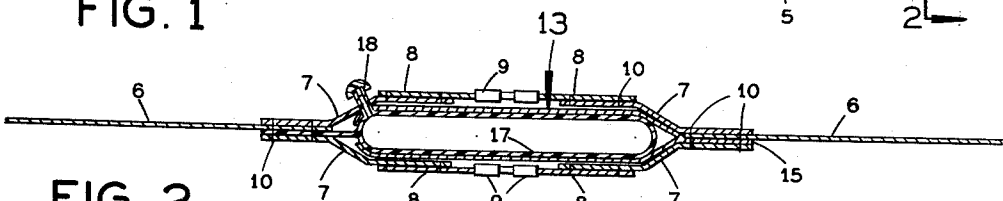


FIG. 2

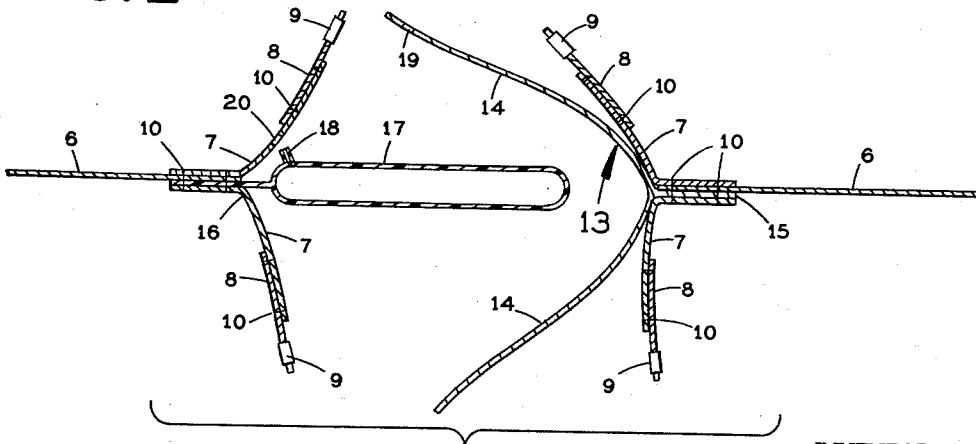


FIG. 3

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**SEAL MEANS FOR SLIDE FASTENERS**

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3 Claims. (Cl. 150—3)

This invention relates to an improved sealing means for gas and liquid tight closures of the double slide fastener type, adapted to be used as a closure means for flexible containers where it is desired to close a container or other structure in such manner as to prevent the ingress or egress of water, gas or other fluids.

A primary object of the invention is to provide an improved sealing means which will at all times maintain a fluid tight connection with respect to the slide fasteners when the slide fasteners are joined together.

The invention further comprises inner and outer conventional slide fasteners that are attached to the marginal edges of the water and gas proof receptacle and one marginal edge of the receptacle carries an envelope open at one end while the other marginal edge carries an inflatable tube that is fittingly engaged into the envelope after the inner fastener has been joined so that the outer fastener can then be joined and the tube inflated to fully expand the walls of the envelope and the inflatable tube to completely fill the space between the fasteners in such manner that leakage will be prevented at all times during the flexing of the receptacle. Double slide fasteners have heretofore been employed and means provided for attempting to seal the area between the slide fasteners but, such devices have been unsuccessful due to the frequent flexing of the walls of the receptacle, one such device being illustrated in Patent 2,641,037, June 9, 1953 wherein an inflatable tube has abutting engagement with a second inflatable tube, permitting the abutting edges to disengage and due to frequent operation of the fasteners soon becomes worn and causing a leakage.

Novel features of construction and operation of the device will be more clearly apparent during the course of the following description, reference being had to the accompanying drawings wherein has been illustrated a preferred form of the device and wherein like characters of reference are employed to denote like parts throughout the several figures.

In the drawings:

FIGURE 1 is a fragmentary side elevation of a receptacle having the invention applied thereto and shown in the partially closed position.

FIGURE 2 is a section taken substantially on line 2—2 of FIGURE 1, and

FIGURE 3 is a view similar to FIGURE 2 but showing the fasteners and associated parts in the spread or open position.

Referring specifically to the drawings, there has been illustrated a receptacle 5, such being formed of side walls 6, of water and gas proof material. Connected to each of the marginal edges of the side walls 6 are inner and outer strips of flexible water proof material 7. The strips 7 are stitched or otherwise connected to the side walls 6 and each of the strips carry wing portions 8 of slide fasteners 9. The wings 8 are stitched to the strips 7 as shown at 10. Each of the slide fasteners carry the usual slides 11, causing the teeth 12 to engage and disengage as is customary in fasteners of this type.

Connected to one edge portion of the side walls 6 is a generally elongated U-shaped envelope 13. The envelope 13 has flexible side walls 14 and the side walls 14 carry a connecting web portion 15 that is disposed beneath the connected edge of one strip 7 and with the web being co-extensive with the connected ends of the

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strips 7 and simultaneously stitched to the strips 7 and the marginal portion of the side wall 6. Connected in a similar manner to the opposite edge of the side walls 6, as by a web portion 16, is an elongated hollow tube 17 having flat side walls. During the closure operation of the opening of the receptacle, the tube 17 has fitting engagement between the side walls 14 of the envelope 13. The tube 17 is formed of rubber or other flexible material while the envelope 13 is likewise formed of rubber or other material that is water and gas tight so that the tube and the envelope are inter-engaged when the device is closed. An inflating valve 18 is connected to the tube 17 adjacent to the web 16 and this valve extends through an opening 19 in one marginal portion of one side wall of the envelope and also through an opening 20 formed in one strip 7 of the slide fasteners.

In the use of the device, when the receptacle is to be closed, the inner slide fastener 9 through the medium of the slide 11 is fully closed, the side walls 14 having been brought together from the position of FIGURE 3, fully embraces the tube 17. With the valve 18 threaded through the openings 19 and 20, the outer slide fastener is then brought together and closed by its slide 11. Air or other medium is then pumped into the tube 17 under pressure, expanding the tube against the side walls 14 of the envelope and compressing the envelope firmly forming a very positive sealing means for the opening of the receptacle that maintains its sealing action throughout all degrees of flexing or handling of the receptacle. When the receptacle is to be opened, the valve 18 is opened, permitting the pressure to exhaust from the tube 17 at which time the outer slide fastener is operated to its full open position, and the envelope and the tube disengaged, permitting access to the slide fastener 9 of the inner fastener device.

It will be apparent from the foregoing that a very novel form of seal has been provided for closure means for flexible or other types of receptacle in order to prevent the entry of harmful gases or moisture that would ordinarily damage machine elements or other devices to be shipped in the container and with the closure being of the type that has inner and outer slide fasteners and it has been difficult to seal such receptacles so far as is known in prior art patents. The positioning of the envelopes 13 and the tube 17, each being connected upon the marginal edges of the opening of the receptacle provides a quick and easy seal that permits of a quick closure both inner and outer slide fasteners and the expanding action of the tube 17, causing the wings 14 to fully engage and compress against the slide fasteners, forming a definite seal that will permit flexing of the receptacle in handling and that may be open and closed a maximum number of times without causing leaks. The device is simple in construction, easy to install and provides a most desirable sealing means for receptacles of the type that employ slide fasteners for their closure.

It is to be understood that the invention is not limited to the precise construction shown, but that changes are contemplated as readily fall within the spirit of the invention as shall be determined by the scope of the subjoined claims.

Having described my invention what I claim as new and desire to secure by Letters Patent is:

1. A closure means for flexible water proof containers wherein the container is provided with an elongated opening to permit ingress and egress to the interior for articles to be stored and transported therein, the marginal edges of the opening being provided with inner and outer slide fasteners of the interlocking type, the slide fasteners being each stitched to the marginal edges of the opening, a flexible elongated envelope hav-

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ing a flap portion that is connected to one marginal edge of the opening and a flexible elongated tube that is connected to the opposite marginal edge of the opening, the tube fittingly engaged into the envelope when the slide fasteners are engaged for closing the opening and means whereby the tube is pressurized and expanded to force the envelope into contacting sealing engagement with the slide after the slide fasteners have been fully engaged.

2. Closure means for flexible water and gas tight containers wherein the container is provided with an elongated access opening to permit ingress and egress to the interior for articles to be stored and transported therein, inner and outer slide fasteners each having marginal edge portions that are stitched to the marginal edges of the opening, a relatively wide flexible water proof envelope that is open upon one edge and having a flap portion that is stitched to one marginal edge of the container opening, the envelope being co-extensive with the opening of the container, a flexible relatively wide tube that is also provided with an end flap whereby to connect the tube to the opposite marginal edge of the opening, the tube also being co-extensive to the opening of the container, the tube having flat side walls, the tube fittingly engaged into the envelope after the inner slide fastener has been fully engaged and whereby the envelope covers the major area of the tube, a valve device carried by the tube and that projects through apertures formed in the envelope and the outer slide fastener whereby the tube may be pressurized to force the side walls of

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the envelope into full sealing engagement with the slide fasteners after the outer slide fastener has been closed, the walls of the envelope being forced into full seating and sealing engagement with the slide fasteners after the tube has been pressurized and whereby to fully seal the slide fasteners against entry of moisture or gasses during shipment.

3. The structure according to claim 2 wherein the envelope is generally U-shaped and wherein the flap of the envelope is stitched to the marginal edge of the container opening in laminated manner with respect to the marginal edge of the opening and the marginal portions of the slide fasteners, the envelope being formed of moisture and gas proof material, the said tube having its flap portion in laminated connected relation to the opposite edge of the container opening and laminated with respect to the marginal portions of the slide fasteners, the said tube being formed of expandable material whereby to expand the side walls of the envelope into sealing engagement with both the inner and outer slide fasteners, the flaps of the envelope and the tube being connected to the marginal edges of the opening of the container and the slide fasteners by common lines of stitching.

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