Jan. 27, 1942. J. P. STOCKTON 2,271,211

FASTENING DEVICE

Filed May 6, 1939

Fig. 1.

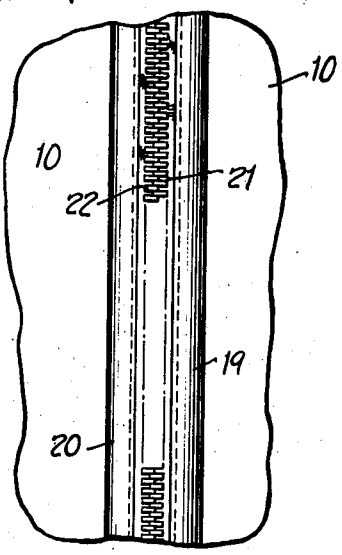


Fig. 2.

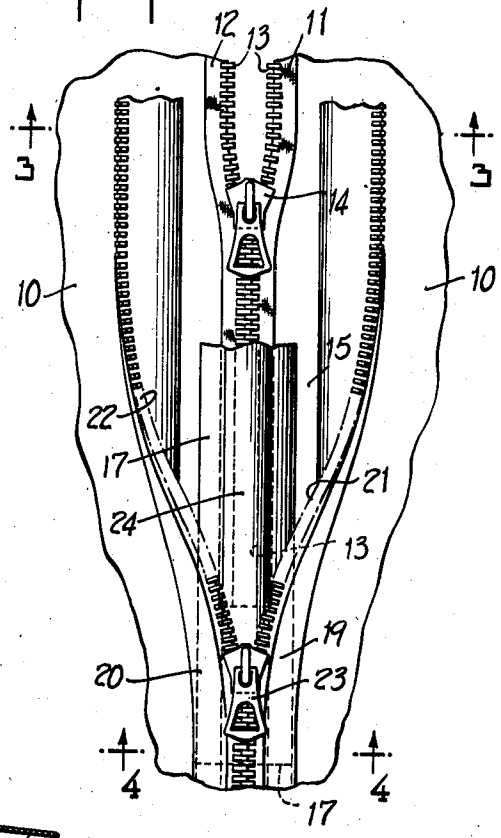


Fig. 4.

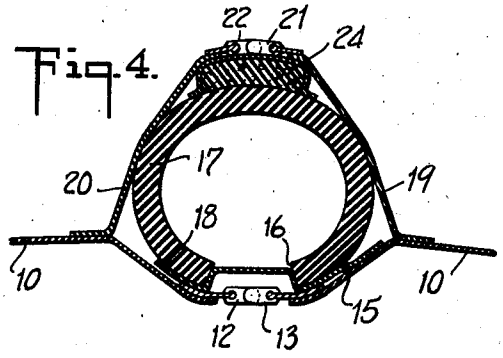


Fig. 5.

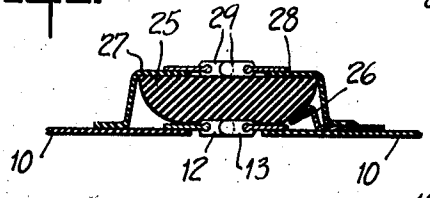
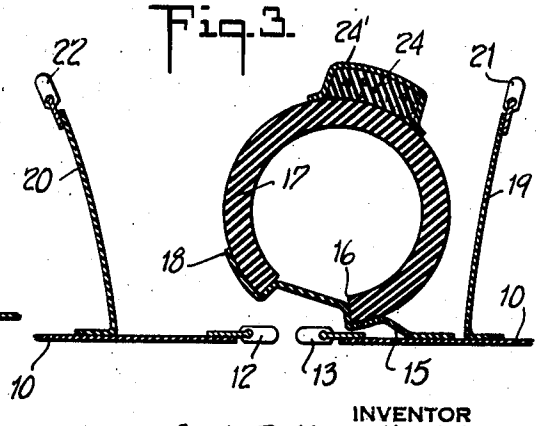


Fig. 3.



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FASTENING DEVICE

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Application May 6, 1939, Serial No. 272,091

8 Claims. (Cl. 2—96)

The present invention relates to water-tight and gas-tight articles, and is more particularly directed toward such articles having a plurality of fasteners with interposed compressible material arranged to effectively prevent the passage of gas or liquids. The customary slide fastener employed with garments makes an effective mechanical closure of the opening, but owing to the necessary spacing of the interlocking metal parts and the porous nature of the binding tape to which they are usually secured, it is impossible to provide a gas or liquid type joint with a single slide fastener.

According to the present invention a garment having an opening and provided with the usual slide fastener for closing the opening is also provided with an arrangement of flaps and a second fastener whereby a second closure generally coextensive with the first may be made and interposed between these two closures is a piece of material of sufficient body to overlie the first slide fastener and provide a very substantial seal when pressed thereagainst by the closing of the second fastener. The material of this body member is preferably transversely compressible. This second fastener will generally be another slide fastener, but in some instances a lacing may be substituted for the outer slide fastener.

According to the present invention the compressible member is preferably in the form of a suitable length of flexible tubular material, such as a length of rubber tubing with a comparatively wide longitudinally extending opening. This tubing is secured to a flap disposed to one side of the first or main slide fastener and is disposed so as to overlie the slide fastener.

Other and further objects will appear as the description proceeds.

The accompanying drawing shows, for purposes of illustrating the present invention, two of the many embodiments in which the invention may take form, it being understood that the drawing is illustrative of the invention rather than limiting the same.

In the drawing:

Figure 1 is a side elevational view of a fragment of a garment or the like with completely closed opening;

Figure 2 is a view similar to Figure 1 showing each of the two fasteners partly closed and the interposed compression member;

Figure 3 is a section taken on the line 3—3 of Figure 2;

Figure 4 is a section taken on the line 4—4 of Figure 2; and

Figure 5 is a section similar to Figure 4 showing a modified form of construction.

The flexible impervious material from which the article is made is indicated at 10. It has an opening about the margins of which are secured the tapes 11 and 12 carrying the interlocking elements 13 and slider 14 of a slide fastener of conventional type. When the opening is closed by moving the slider to the upper position, as indicated in Figure 2, the garment will be securely held but will not be water or gas tight.

The margin of the material 10 on one side of the opening is provided with a flap 15 which extends across the opening 16 in a length of rubber tubing 17. The free edge 18 of the flap is also secured to the tubing as indicated. These parts are so located that the tubing can be moved aside to permit access to the slide fastener when it is desired to manipulate the slide fastener. After the slide fastener has been manipulated, the tubing may be swung over so as to bring the gap opposite the slide fastener so that the slide fastener is bridged by the impervious flexible waterproofing material employed in the flap 15.

Two outer flaps 19 and 20 of flexible impervious material are secured to the body 10 of the article on opposite sides of the opening. These flaps carry the interengaging elements 21 and 22 of the slide fastener which are cooperative with the slider indicated at 23. The tube 17 preferably carries a comparatively soft pad 24 in a casing 24' adapted to come opposite the second slide fastener as will be apparent from Figure 4. When the tubing is used the arrangement is preferably such that upon the closing of the second or outer slide fastener the tubing will be distorted from the round shape of Figure 3 to the oval shape of Figure 4 so as to secure an additional transverse pressure on the first slide fastener, and at the same time it will be apparent that the flaps 19 and 20 hug the sides of the tube very closely. The compressible member is longer than the inner slide fastener and shorter than the outer slide fastener to effectively seal the ends of the opening.

The device described affords an extremely tight joint which will prevent the passage of water or gas. Any such fluid trying to pass through the completed closure will meet hinderance between the outer slide fastener and the pad 24. It will then be further hindered by the pressure of the flaps 19 and 20 with the sides of the tube and any fluid which might pass either of these obstacles will again be hindered by the closure over the inner slide fastener ob-

tained by the lateral pressure on the compressible member. Devices such as described are intended more particularly for gas and water tight clothing and the like where slide fasteners may conveniently be used. In some instanecs the outer slide fastener may be supplanted by a suitable lacing.

In the arrangement shown in Figure 5 the compression member is in the form of a rectangular strip of soft but impervious rubber **25** secured to a flap **26** in a manner similar to the tube previously described. This strip has sufficient body and rigidity to overlie the inner slide fastener and provide a sealing action similar to that above described. Shorter outer flaps **27** and **28** and slide fastener **29** are employed to complete the closure and secure the transverse pressure.

It will be noted that the devices described may possess sufficient flexibility so as to conform to the body on which the garments using them are worn, or to other irregular or curved surfaces and at the same time the effectiveness of the seal is not impaired. There is no seam or other crack to open and impair the tightness of the joint.

It is obvious that the invention may be embodied in many forms and constructions within the scope of the claims and I wish it to be understood that the particular forms shown are but a few of the many forms. Various modifications and changes being possible, I do not otherwise limit myself in any way with respect thereto.

What is claimed is:

1. In a water-tight and gas-tight article or the like, the combination with the flexible impervious material of which the article is made and provided with an opening, and a slide fastener for closing the same, of flaps of similar material on opposite sides of the opening, the flaps forming an outer opening, a slide fastener to close the same, a third flap secured to the article between the opening and one of the other flaps, a split tube of compressible material secured to the third flap and adapted to overlie the first slide fastener, the tube being compressed transversely when the outer opening is closed by the second slide fastener.

2. The combination of claim 1, wherein the tube has a soft pad on the outer surface opposite the second slide fastener.

3. The combination of claim 1, wherein the spacing of the flaps is substantially the width of the tube so that they lie close to the tube for a substantial portion of its area so as to prevent passage of gas or liquid.

4. In a water-tight and gas-tight article or the like, the combination with the flexible impervious material of which the article is made and provided with an opening, and a slide fastener for closing the same, of flaps of similar material on opposite sides of the opening, the flaps forming an outer opening, a fastener to tightly close the same, a third flap secured to the article between the opening and one of the other flaps, a split tube of compressible material secured to the third flap and adapted to overlie the slide fastener, the tube being compressed transversely when the outer opening is closed by the second fastener.

5. In a water-tight and gas-tight article or the like, the combination with the flexible impervious material of which the article is made and provided with an opening, and a slide fastener for closing the same, a sealing member secured to one side of the opening in the article and adapted to be moved laterally to permit access to the slide fastener, the sealing member being of a width to span the slide fastener and of a thickness to afford rigidity sufficient to maintain itself in such spanning position, the flaps and second fastener, when the outer opening is closed, effecting a transverse pressure on the sealing member to hold it tightly against the slide fastener.

6. In a water-tight and gas-tight article or the like, the combination with the flexible impervious material of which the article is made and provided with an opening, and a slide fastener for closing the same, of flaps of similar material on opposite sides of the opening, the flaps forming an outer opening, a fastener to tightly close the same, and a compressible member secured to the article between one of the flaps and the opening in the article and adapted to overlie the slide fastener, the member being compressed transversely when the outer opening is closed by the second fastener, the end of the compressible member extending beyond an end of the opening in the article and the outer flaps and fastener extending beyond the said end of the compressible member.

7. In a water-tight and gas-tight article or the like, the combination with the flexible impervious material of which the article is made and provided with an opening, and a slide fastener for closing the same, of flaps of similar material on opposite sides of the opening, the flaps forming an outer opening, a slide fastener to close the same, and a compressible member secured to the article between one of the flaps and the opening in the article and adapted to overlie the first slide fastener, the member being compressed transversely when the outer opening is closed by the second slide fastener, the compressible member having a soft pad on the outer surface opposite the second slide fastener.

8. In a water-tight and gas-tight article or the like, the combination with the flexible impervious material of which the article is made and provided with an opening, and a slide fastener for closing the same, of flaps of similar material on opposite sides of the opening, the flaps forming an outer opening, a slide fastener to close the same, and a compressible member secured to the article between one of the flaps and the opening in the article and adapted to overlie the first slide fastener, the member being compressed transversely when the outer opening is closed by the second slide fastener, the spacing of the flaps being substantially the width of the compressible member so that they lie close to the compressible member for a substantial portion of its area so as to prevent passage of gas or liquid.

JACK POTTER STOCKTON.