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S. B. TOPF
WATER-PROOF CLOSURE

2,853,758

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2 Sheets-Sheet 1

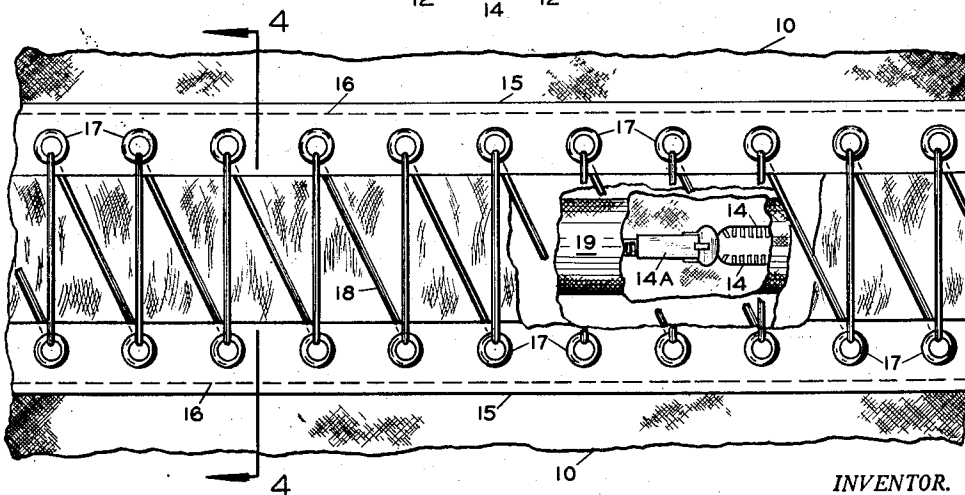
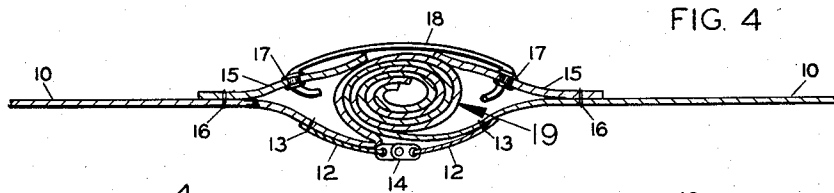
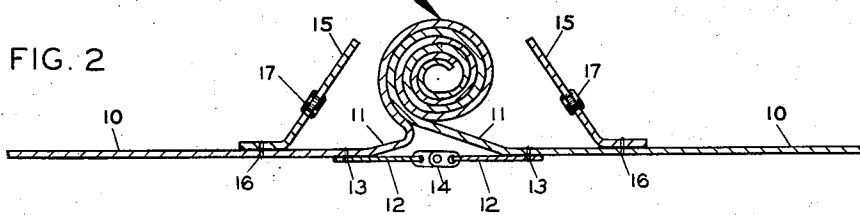
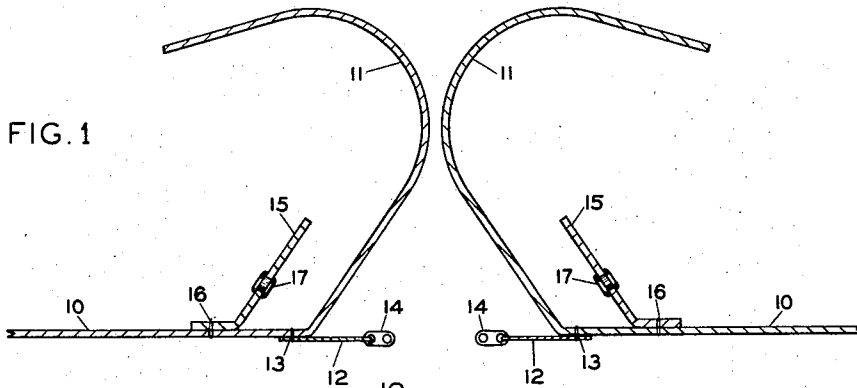


FIG. 3

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2 Sheets-Sheet 2

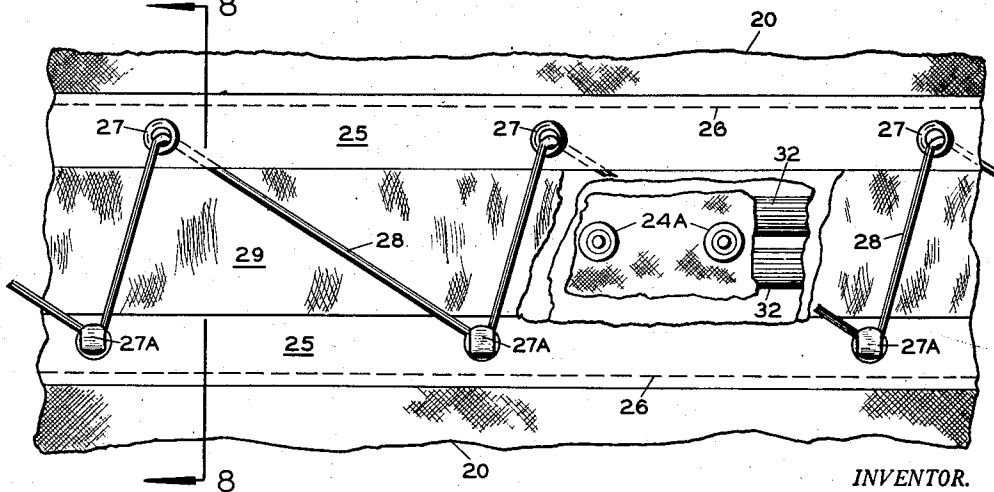
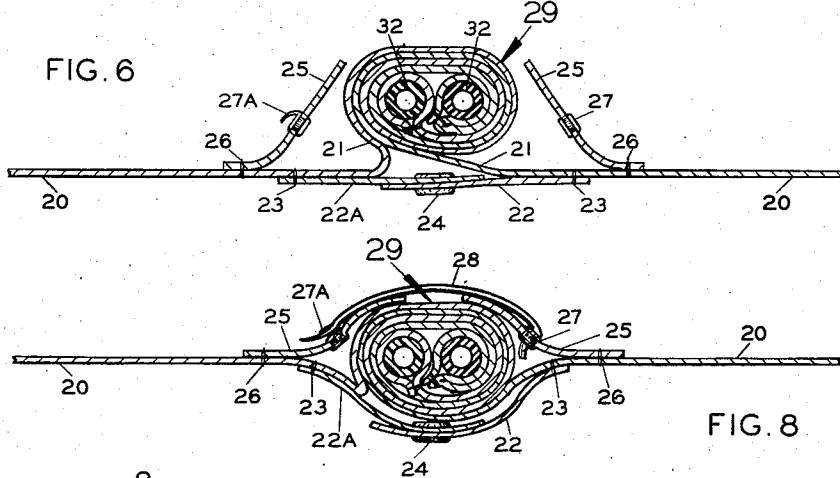
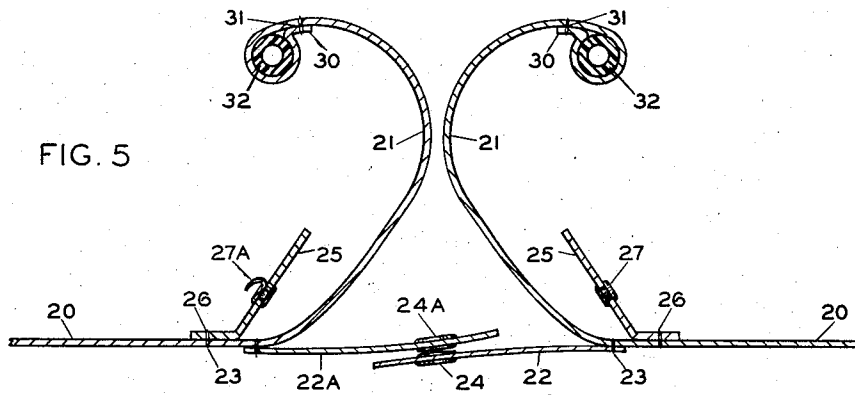


FIG. 7

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WATER-PROOF CLOSURE

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7 Claims. (Cl. 24—203)

This invention relates generally to fastener devices and is more particularly directed to a separable water-proof closure means of flexible material.

A principal object of the present invention is to provide a water-proof separable juncture of two sections of flexible material wherein edge portions of the flexible material are rolled together and compressed to form an effective seal against the ingress of water, moisture and the like.

A further object of the present invention is to provide a water-proof closure for flexible material described as above wherein the roll of flexible material is compressed by separable fasteners secured on each of the outer and inner surfaces of the flexible material and as more tension or pull is exerted on the fasteners, the roll is compressed further and its effectiveness as a seal increased.

A further object of the present invention is to provide tents, tarpaulins for storing grain and the like with separable closures which are water and moisture proof, of sufficient strength to prevent rupturing when subjected to extra ordinary pull or stress and relatively inexpensive in cost.

A still further object of the present invention is the provision of a water-proof closure characterized as above which is readily uncoupled at any desired position to provide an opening therein and equally as readily fastened together without impairing the water seal characteristics of the closure.

With these and other objects in view, the invention will be best understood from a consideration of the following detailed description taken in connection with the accompanying drawings forming a part of this specification, with the understanding, however, that the invention is not confined to any strict conformity with the showing of the drawing but may be changed or modified so long as such changes or modifications mark no material departure from the salient features of the invention as expressed in the appended claims.

In the drawings:

Figure 1 is a transverse sectional view of a separable water-proof closure embodying my invention shown at the position of the fasteners in their open or disengaged position.

Figure 2 is a similar view with the fasteners shown in their partially closed position.

Figure 3 is a fragmentary top plan view partially broken away with the fasteners shown in their completely secured positions.

Figure 4 is a sectional view taken along the line 4—4 in Figure 3 showing the water-proof roll compressed to its water-tight position.

Figure 5 is a view similar to Figure 1 of a modified form of my invention.

Figure 6 is a similar view with the fasteners shown in their partially closed position.

Figure 7 is a fragmentary top plan view partially broken away to show the roll and snap fasteners.

Figure 8 is a cross sectional view taken along the line 8—8 of Figure 7 showing the fasteners in their engaged position and the water-proof roll compressed to its moisture sealing position.

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Referring to the drawings and particularly to Figures 1-4 inclusive, wherein like numerals are used to designate similar parts throughout the several views, the numeral 10 refers to portions of flexible material such as water-proof fabrics, plastic sheeting and the like normally used for tents, storage of grain, etc. It is preferable that a synthetic base fabric coated with a vinyl copolymer resin be used although any water-proof material which is mildew and rot resistant would be suitable since the material itself forms no part of the present invention.

The sections of material 10 which form the desired protective covering have overlapping end portions 11, 11 whose function is described in detail hereinafter. Adjacent each of the free ends 11, 11 of the portions 10, 10 there is secured a stringer 12 sewed along one edge to the lower surface of the material 11 as at 13. Along the free edges of the stringers 13 there is a conventional zipper or slide fastener 14 coupled together by a slider 15 which is adapted to couple together the zipper elements 14 when slid along in one direction and disengage the zipper elements 14 from each other when permitted to slide or move in the other direction. Also provided on each of the material sections 10 is a flap 15 having their inner edge portions sewed or otherwise secured as at 16 to the outer surface of the material 10 with the free ends of the flaps 15 extending in a direction toward each other. The stitchings 13 and 16 are water-proofed in the usual manner and more than one row thereof may be used to provide the stringers 12 and flaps 15 with sufficient strength to withstand the strain and pull to which the various parts are subjected. The flaps 15 are each provided with a row of equally spaced grommets 17 to receive a lacing thong 18 therethrough.

In the normal use of the instant invention to form a water-tight juncture of the sections 10, 10, the fasteners 14, 14 are positioned together and the slide fastener 15 moved therealong to effect the inter-engagement of the fasteners 14. Then the end portions 11, 11 are placed edge to edge and rolled together along their full lengths to form a roll 19 as shown by Figure 2. The flaps 15 are made to lie on the roll and the thong 18 is laced through the grommets 17 going from one side to the other as shown by Figure 3. The thong 18 is then pulled tightly drawing the flaps 15 close to each other and at the same time compressing the roll 19. It is evident that as long as the roll 19 is maintained in a compressed condition water, moisture, etc. cannot leak or seep by the layers of fabric 11, 11. Any pull or outward force exerted by the sections 10 will effect an increased compression of the roll 19 by the flaps 15 and the stringers 12 becoming drawn in a direction toward each other and thereby exerting equal pressures on the roll 19 to compress same and render it more effective to seal out moisture. To open the closure formed herein, all that need be done is remove the thong 18 from the grommets 17 to release the roll 19, which is then unrolled, and slide the slider 15 to disengage the zipper 14, 14.

It will be evident that many changes or variations may be made of the instant invention in attempting to achieve the results attained herein. For example, any or all of the parts formed by the stringer 12, flap 15 and end portion 11 of the material section 10 may be constructed of the same cloth or material as the section 10 as by folding and sewing the fold, or metallic hooks may be used in lieu of the zipper 14, 15 and the lacing 18.

Also, the effectiveness of the water-tight feature of the instant invention may be enhanced as illustrated by Figures 5-8 inclusive where there is shown the material section 20, 20 having stringers 22, 22A and flaps 25 sewed along their lengths to the upper and lower surfaces, re-

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spectively of the section 20 adjacent end portions 21 in substantially the same manner as the previously described water-proof closure. To the stringer 22 there is attached a row of equally spaced male snap buttons 24 while on the other stringer 22A there is a row of matching female snap buttons 24A adapted to be engaged by the male buttons 24 when securing the stringers 12 together as shown by Figure 8. Also, one of the flaps 25 is provided with a row of grommets 27 while the other flap 25 has metallic hooks 27A secured thereon in a row staggered in position thereon with relation to the grommets 17.

Free ends 30 of the end portions 21 are returned or folded on themselves and sewed as at 31 to form a tubular chamber for receiving a resilient tubular member 32 which is positioned therein. The tubular member 32 may be of any desired cross sectional configuration.

To produce a water and moisture proof joint, the snap buttons 24 and 24A are positioned one on the other and snapped together, and the end portions 21, 21 are grasped at the position of the tubular members 32 and coiled together to form a roll 29 as shown by Figure 6. Then the lacing thong 28 is alternately threaded through the grommets 27 and slipped over the metallic hooks 27A to become engaged thereby. As hereinabove stated the lacing thong 28 is drawn tightly to compress the roll 29. The folds of material 11 are compactly pressed together to prevent any seepage of water, moisture and the like therebetween, thereby insuring the dryness of the commodity being covered by the material sections 20, 20. Also, if it is desired to attain access to the commodity protected by the material 20, 20 along any position removed from the extreme ends of the closure, all that need be done is to grasp the lacing 28 adjacent one of the metallic hooks 27A and slip the lacing over that hook and a number of adjacent hooks 27A to open a portion sufficient to release the roll 29 and permit the roll 29 to be uncoiled and the stringers 24, 24A to be disengaged at the snap buttons 24, 24A. This permits a person to obtain a sample, to observe or otherwise have access to the product being covered by the sections 20. Now, by snapping the snap buttons 24, 24A together, coiling the free ends 24 together to form the roll 29 and then slipping the disengaged loops of the thongs 28 over the hooks 27A to their original position the closure is again sealed. In addition, the lacing thong 27 cannot be lost or mislaid since it is at all times threaded through the grommets 27.

Having described my invention, what I claim as new is:

1. A water-proof closure for separably joining a plurality of sections of material having free end portions comprising releasable fastening means secured to one surface of said sections adjacent said free end portions, a roll formed of said free end portions coiled about each other and positioned on said fastening means, and further fastening means secured to the other of said surfaces of said sections whereby said roll may be compressed to seal said first named fastening means.

2. A water-proof closure for separably joining a pair of sections of material having free end portions comprising releasable fastening means secured to a lower surface of each of said sections in spaced relation to said free end portions, said end portions coiled one about the other to form a roll, said roll supported by said fastening means, second fastening means secured to the upper surface of each of said sections in proximity of said first named fastening means, said second fastening means engaging said roll whereby said roll may be compressed to seal said closure.

3. A water-proof closure comprising a pair of sections of material having free end portions, a stringer extending from a lower surface of each of said sections of material adjacent said free end portions, interengaging fastening means mounted on each of said stringers, a flap extending from an upper surface adjacent each of said free end portions, said free end portions coiled one about the other to form a roll, said roll supported by said interengaging fastener means, and fastening means mounted on said

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flaps engaging the upper portion of said roll adapted to compress said roll and seal said interengaging fastening means.

4. A water-proof closure comprising two sections of flexible material having free end portions adjacent each other, releasable fastening means mounted on one surface of said sections securing said sections of flexible material adjacent said free end portions, an elongated flexible member mounted on each of said free end portions, a roll formed of said elongated flexible members and said free end portions coiled about each other and positioned adjacent said fastening means, and further fastening means mounted on the other surface of said sections securing said sections of flexible material and extending across said roll for compressing said roll and sealing said closure.

5. A water-proof closure comprising two sections of flexible material having free end portions, a stringer secured along one edge to a lower surface of each of said sections of material adjacent said free end portions, slide fastener elements mounted along the other edge of each of said stringers, a slider mounted on said fastener elements for securing said fastener elements together, a flap secured along one edge to the upper surface of each of said sections in proximity of said stringers, a plurality of thong receiving means secured in a row on each of said flaps, said free end portions of said sections coiled about each other to form a roll, said roll supported by said stringers and a thong extending over said roll and received by said thong receiving means adapted to secure said flaps together and compress said roll against said fastener elements to seal same.

6. A water-proof closure comprising two sections of flexible material having free end portions, a stringer secured along one edge to a lower surface of each of said sections of material adjacent said free end portions, releasable fastening means mounted on said stringers for releasably fastening said stringers together, a flap secured along one edge to the upper surface of each of said sections adjacent said free end portions, a plurality of thong receiving means secured on said flaps, an elongated flexible member mounted along each of said free end portions, a roll supported by said stringers, said roll formed by said flexible members and said free end portions coiled about each, and a thong extending over said roll and received by said thong receiving means for securing said flaps together and compressing said roll to seal same.

7. A water-proof closure comprising two sections of flexible material having end portions, a flexible tubular member mounted at the free edge of said end portions, a stringer secured along one edge to a lower surface of each of said sections adjacent said end portions, releasable fastening means mounted on said stringers for fastening said stringers together, a flap secured along one edge to the upper surface of said sections adjacent said end portions, a plurality of grommets mounted on one of said flaps, a plurality of metallic hook members mounted on the other of said flaps, said flexible tubular members and said end portions coiled about each other to form a roll, said roll supported on said stringers, and a lacing thong extending over said roll and alternately threaded in said grommets and said hook members for securing said flaps together and effectively sealing said roll.

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