July 18, 1944. J. T. TEDESCO 2,353,858

SLIDE FASTENER

Filed Feb. 16, 1943 2 Sheets-Sheet 1

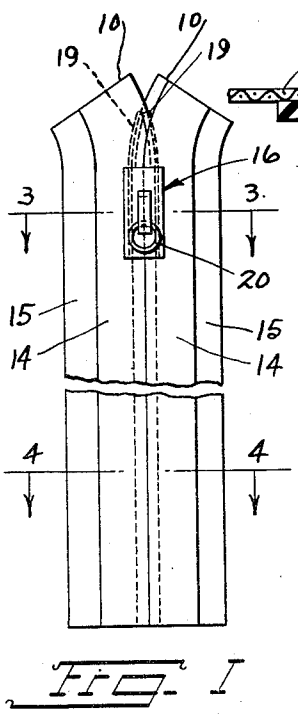


Fig. 1

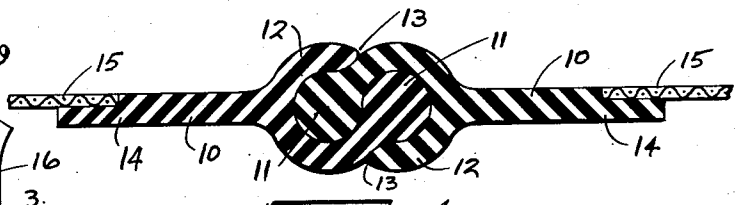


Fig. 4

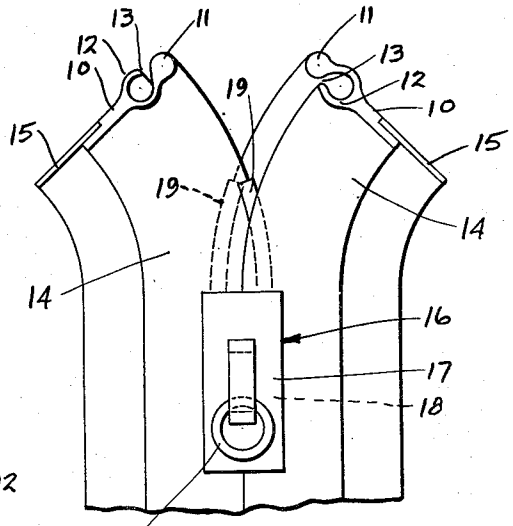


Fig. 2

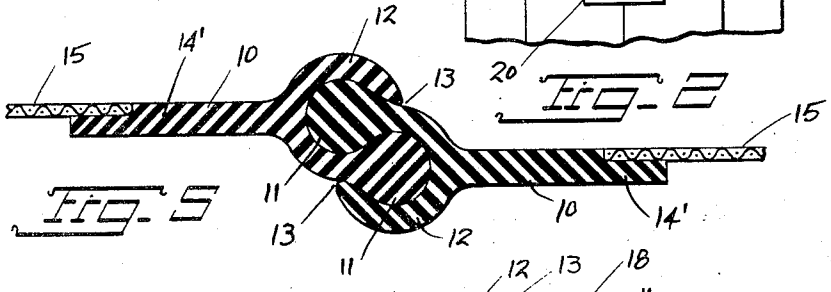


Fig. 5

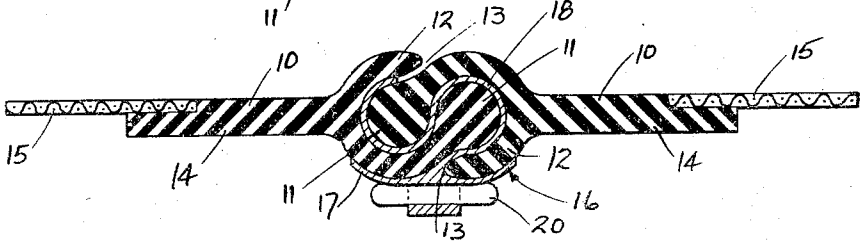


Fig. 3

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SLIDE FASTENER

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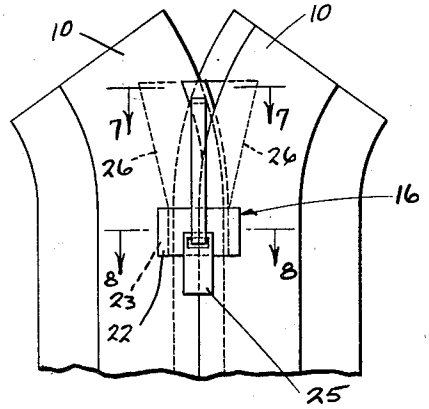


Fig. 6

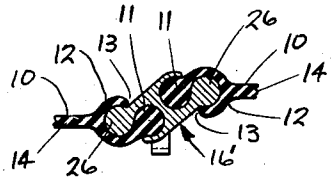


Fig. 7

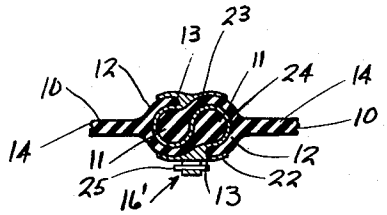


Fig. 8

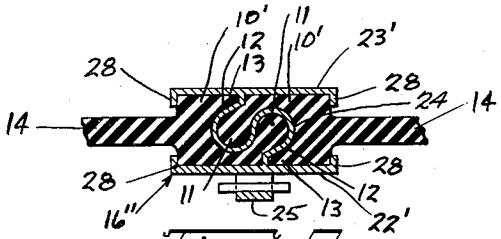


Fig. 9

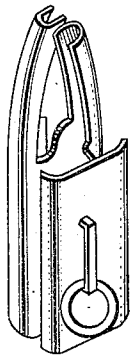


Fig. 4-A

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2,353,858

SLIDE FASTENER

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Application February 16, 1943, Serial No. 476,066

13 Claims. (Cl. 24—206)

This invention relates to new and useful improvements in slide fasteners.

More particularly, the invention proposes a slide fastener which is characterized by a pair of interlocking strips of resilient material, each strip of which is provided with a solid cylindrical front edge portion and a tubular portion located rearwards of said front edge portion and complementary to said cylindrical portion, and said tubular portions being provided with side slit-like openings into which said cylindrical portions engage said tubular portions for accomplishing the interlocking of said strips. It is contemplated to reinforce said resilient material strips with internal strips of metal if necessary. Furthermore, it is contemplated to provide the resilient material strips with end stops for limiting sliding of a slider for opening and closing the fastener.

An important object of this invention resides in the production of a slide fastener which is exceptionally simple for fastening and unfastening garments, containers, and other articles.

Another important object gained by the new construction is the production of a fastener which is flexible and which does not contain any exposed metal other than the slider for accomplishing the interlocking of the parts. By the elimination of all unnecessary metal the possibility of injury to one's skin has also been eliminated.

Another important object of the new construction resides in the arrangement which makes the slide fastener dustproof, water proof and rust proof.

Another feature of the invention resides in the fact that garments, containers and other articles provided with the fastener may be cleaned by the normal cleaning processes, including dry cleaning, etc., without injury to the fastener.

Still further the invention proposes constructing the interlocking strips of the fastener with flat rear edges forming webs by which these strips may be attached to the edges of openings to be closed by the slide fastener.

Still another important feature of the new slide fastener resides in the fact that the pair of interlocking strips of the fastener are of identical shape so that they may be cut from a long strip of material and merely turned around to oppose each other for interlocking.

Still further the invention contemplates the construction of a simple slide for interlocking and disengaging the strips of the slide fastener.

It is an object of this invention to characterize the new slide for the fastener by the fact that it includes a face wall in intimate contact with and extending across the adjacent side edge portions of the interlocking strips, and being connected with an S-shape wall extending from the back face thereof and encasing a small section of said inter-engaged cylindrical and tubular portions for forcing the strips into interlocking positions, when the slide is moved in one direction.

Still further it is proposed to provide the slide with longitudinally extending laterally curved fingers projecting from the end portions of one of the edges of said S-shaped wall and engaging the front edge portions of said straight cylindrical edge portions, holding same disengaged from their complementary tubular portions to open the interlocking strips when the slide is moved in the other direction.

Still further it is proposed to construct the curved fingers to be concave in transverse cross section so as to better engage the front edge portions of the straight cylindrical edge portions of the interlocking strips.

The invention also contemplates that the resilient material of the interlocking strips be tough and smooth so that the slide may be easily moved in one direction or the other for operating the fastener.

Still further the invention proposes a slide fastener in which the interlocking strips of resilient material may be constructed of rubber or synthetic rubber. It is contemplated that with resilient material garments and containers, the said interlocking strips may be integral with edge portions thereof. In so far as the slide is concerned it is proposed to so construct the slide that it may be made from metal or composition material.

For further comprehension of the invention, and of the objects and advantages thereof, reference will be had to the following description and accompanying drawings, and to the appended claims in which the various novel features of the invention are more particularly set forth.

In the accompanying drawings forming a material part of this disclosure:

Fig. 1 is a fragmentary elevational view of a slide fastener constructed in accordance with this invention.

Fig. 2 is a fragmentary enlarged detailed view of the upper portion of Fig. 1, but illustrated with the slide moved down a short distance and with the free ends of the strips bent forwards so that their cross sectional shapes may be readily seen.

Fig. 3 is an enlarged horizontal sectional view taken on the line 3—3 of Fig. 1.

Fig. 4 is a fragmentary enlarged horizontal sectional view taken on the line 4—4 of Fig. 1.

Fig. 4A is a perspective view of the slide, per se.

Fig. 5 is a transverse sectional view similar to Fig. 4 but illustrating a modified construction of the invention.

Fig. 6 is a fragmentary elevational view of a slide fastener constructed in accordance with another form of this invention.

Fig. 7 is a fragmentary horizontal sectional view taken on the line 7—7 of Fig. 6.

Fig. 8 is a fragmentary horizontal sectional view taken on the line 8—8 of Fig. 6.

Fig. 9 is an enlarged fragmentary horizontal sectional view similar to Fig. 8 but disclosing still another modified form.

The slide fastener, in accordance with this invention, includes a pair of interlocking strips 10 of resilient material. Each of these strips has a solid cylindrical front edge portion 11 and a tubular portion 12 located rearwards of said front edge portion and complementary to said cylindrical portion 11. Said tubular portions 12 have side slit-like openings 13 through which said cylindrical portions 11 engage said tubular portions 12.

The strips 10 have flat rear edges 14 forming webs by which the strips may be attached to the edges of an opening to be closed by the slide fastener. Preferably, the strips 10 are formed from rubber, synthetic rubber, or other similar materials. Preferably, cloth strips 15 are extended along and attached to the flat rear edges 14 to facilitate the attachment of the strips to the edge portions of the openings of a garment, container or other article to be closed by the slide fastener. These cloth strips 15 may be cemented, calendered, or even stitched to the webs 14. These cloth strips 15 may be water-proofed. Of course, if desired, the strips 10 may be directly attached by their webs 14 to the edges of an opening to be closed by the slide fastener, eliminating the necessity of the cloth strips 15.

It should be noted that the pair of strips 10 are of identical cross sectional shapes and dimensions. For this reason they may be cut from a continuous piece of strip material. Thus, the strips forming the slide fastener may be manufactured in long lengths of material which may be cut into small sections, as needed. It is merely necessary to turn cut sections so that they oppose each other for producing the interlocking strips of the slide fastener.

A slide 16 is used in conjunction with the interlocking strips. The slide 16 includes a face wall 17 in intimate contact with and extended across adjacent side edge portions of said interlocking strips 10. An S-shaped wall 18 extends from the back of said face wall 17 and encases a small section of the said inter-engaged cylindrical portions 11 in said tubular portions 15. Longitudinally extending laterally curved fingers 19 project from the end portions of one of the edges of said S-shaped wall 18 and engage the front edge portions of said solid cylindrical edge portions 11 holding these edge portions disengaged from their complementary tubular portions 12. A handle 20 is mounted on the face wall 17 by which the slide may be conveniently moved up and down.

In Fig. 1 the slide fastener is shown in its closed position. It may be opened by merely gripping the handle 20 and moving the slide 16 downwards. As the slide 16 is moved downwardly the longitudinally extending laterally curved fingers 19 will force the solid cylindrical edge portions 11 out from their complementary tubular portions 12, thus opening the fastener. It should be noted that the fingers 19 are concave in transverse cross section so as to conform with the front edge portions of the solid cylindrical edge portions 11.

When the slide 16 is moved back to its raised position, the S-shaped wall 18 will force the solid cylindrical edge portions 11 back into engagement with their complementary tubular portions 12 and thus the slide fastener is again closed. The resilient material of the interlocking strips 10 must be tough so that the interlocking strips will be tightly engaged with each other. This construction makes the slide fastener water-proof and dust proof. This construction also makes it possible for the fastener to remain closed under all possible loads generally placed upon slide fasteners of this nature.

In Fig. 5 a modified form of the invention has been disclosed which distinguishes from the prior form in the fact that the web portions 14' are offset laterally of each other. In other respects this form of the invention is identical to the previous form and like parts are identified by like reference numerals.

The purpose of offsetting the web portions 14' is to divide up the stresses which tend to open the fastener when it is closed and in use. Because of the offset arrangement there is a tendency for only component parts of the forces tending to pull open the fastener to be transferred to portions of the fastener which must flex or give when the fastener opens. Consequently, the design shown in Fig. 5 is capable of remaining closed under slightly greater loads than the design disclosed in the prior form of this invention. However, the prior form of the invention has the advantage of symmetry with the webs 14 in a common plane.

In the modified form of the invention disclosed in Figs. 6 to 8, another slide fastener is shown which includes a pair of interlocking strips 10 of resilient material. Each of these strips has a solid cylindrical front edge portion 11 and a tubular portion 12 located rearwards of said solid cylindrical front edge portion 11 and complementary to said cylindrical portion 11. Said tubular portions 12 have side slit-like openings 13 through which said cylindrical portions 11 engage the tubular portions 12.

The strips 10 have flat rear edges forming webs 14 by which they may be attached to the edges of an opening to be closed by the slide fastener. It should be noted that the strips are of identical cross sectional shapes and dimensions. A slide 16' is used in conjunction with said interlocking strips 10. This slide includes a front face wall 22 in intimate contact with and extended across the front faces of the adjacent side edge portions of said interlocking strips 10, and a back face wall 23 in intimate contact with and extended across the back faces of the adjacent side edge portions of said interlocking strips 10. An S-shaped wall 24 extends between the adjacent faces of said walls 22 and 23 and encases a small section of said interengaged cylindrical portions 11 in said tubular portions 12. A handle 25 is mounted upon the front face wall 22 by which the slide 16' may be moved upwards and downwards.

The slide 16' is also provided with longitudinally extending fingers 26 which project from the end portions of the top edges of said S-shaped wall 24. These fingers 26 engage the adjacent

edge portions of the strips 10 for holding a small section thereof disengaged. The fingers 26 fill up the compass of the small section of the tubular portions 12 and engage the front edge portions of the solid cylindrical edge portions 11, as clearly shown in Figs. 6 and 7. The arrangement is such that when the slide 16' is moved downwards the interlocking strips 10 will be opened. When it is moved upwards the strips 10 will be relocked.

In Fig. 9 another modified form of the invention is disclosed which is similar to the form shown in Figs. 6 to 8, distinguishing in several respects. In this form of the invention the front wall 22' and the back wall 23' of the slide 16'' are flat and straight and engage over complementary straight faces formed upon the edge portions of the strips 10'. The walls 22' and 23' have their ends bent towards each other to form small flanges 28 which engage the edges of the flat faces of the strips 10'.

In other respects this form of the invention is similar to the previous forms and like parts are indicated by like reference numerals.

While I have illustrated and described the preferred embodiments of my invention, it is to be understood that I do not limit myself to the precise constructions herein disclosed and the right is reserved to all changes and modifications coming within the scope of the invention as defined in the appended claims.

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

1. In a slide fastener, a pair of interlocking strips of resilient material, each strip having a solid cylindrical front edge portion and a tubular portion located rearwards of said front edge portion and complementary to said cylindrical portion, and said tubular portions having side slit-like openings through which said cylindrical portions engage said tubular portions.

2. In a slide fastener, a pair of interlocking strips of resilient material, each strip having a solid cylindrical front edge portion and a tubular portion located rearwards of said front edge portion and complementary to said cylindrical portion, and said tubular portions have side slit-like openings through which said cylindrical portions engage said tubular portions, said interlocking strips being of identical cross sectional shapes and sizes so that they may be cut from a continuous strip.

3. In a slide fastener, a pair of interlocking strips of resilient material, each strip having a solid cylindrical front edge portion and a tubular portion located rearwards of said front edge portion and complementary to said cylindrical portion, and said tubular portions having side slit-like openings through which said cylindrical portions engage said tubular portions, and said strips having flat rear edges forming webs by which the strips may be attached to the edges of openings to be closed by said slide fastener.

4. In a slide fastener, a pair of interlocking strips of resilient material, each strip having a solid cylindrical front edge portion and a tubular portion located rearwards of said front edge portion and complementary to said cylindrical portion, and said tubular portions having side slit-like openings through which said cylindrical portions engage said tubular portions, said strips having flat rear edges forming webs by which the strips may be attached to the edges of openings to be closed by said slide fastener, and cloth strips attached along said webs.

5. In a slide fastener, a pair of interlocking strips of resilient material, each strip having a solid cylindrical front edge portion and a tubular portion located rearwards of said front edge portion and complementary to said cylindrical portion, and said tubular portions having side slit-like openings through which said cylindrical portions engage said tubular portions, said resilient material being waterproof and dust proof.

6. In a slide fastener, a pair of interlocking strips of resilient material, each strip having a solid cylindrical front edge portion and a tubular portion located rearwards of said front edge portion and complementary to said cylindrical portion, and said tubular portions having side slit-like openings through which said cylindrical portions engage said tubular portions, and a slide comprising a face wall in intimate contact with and extending across adjacent side edge portions of said interlocking strips, an S-shaped wall extending from the back of said face wall and encasing a small section of said inter-engaged cylindrical and tubular portions, and longitudinally extending laterally curved fingers projecting from the end portions of one of the edges of said S-shaped wall and engaging the front edge portions of said solid cylindrical edge portions holding same disengaged from their complementary tubular portions.

7. In a slide fastener, a pair of interlocking strips of resilient material, each strip having a solid cylindrical front edge portion and a tubular portion located rearwards of said front edge portion and complementary to said cylindrical portion, and said tubular portions having side slit-like openings through which said cylindrical portions engage said tubular portions, and a slide comprising a face wall in intimate contact with and extending across adjacent side edge portions of said interlocking strips, an S-shaped wall extending from the back of said face wall and encasing a small section of said interengaged cylindrical and tubular portions, and longitudinally extending laterally curved fingers projecting from the end portions of one of the edges of said S-shaped wall and engaging the front edge portions of said solid cylindrical edge portions holding same disengaged from their complementary tubular portions, said fingers being concave in transverse cross section to conform with said front edge portions.

8. In a slide fastener, a pair of interlocking strips of resilient material, each strip having a solid cylindrical front edge portion and a tubular portion located rearwards of said front edge portion and complementary to said cylindrical portion, and said tubular portions having side slit-like openings through which said cylindrical portions engage said tubular portions, and a slide comprising a face wall in intimate contact with and extending across adjacent side edge portions of said interlocking strips, an S-shaped wall extending from the back of said face wall and encasing a small section of said interengaged cylindrical and tubular portions, and longitudinally extending laterally curved fingers projecting from the end portions of one of the edges of said S-shaped wall and engaging the front edge portions of said solid cylindrical edge portions holding same disengaged from their complementary tubular portions, and a handle on said face wall by which the slide may be moved.

9. In a slide fastener, a pair of interlocking

strips of resilient material, each strip having a solid cylindrical front edge portion and a tubular portion located rearwards of said front edge portion and complementary to said cylindrical portion, and said tubular portions having side slit-like openings through which said cylindrical portions engage said tubular portions, said strips having flat rear edges forming webs by which the strips may be attached to the edges of openings to be closed by said slide fastener, said webs being in a common plane.

10. In a slide fastener, a pair of interlocking strips of resilient material, each strip having a solid cylindrical front edge portion and a tubular portion located rearwards of said front edge portion and complementary to said cylindrical portion, and said tubular portions having side slit-like openings through which said cylindrical portions engage said tubular portions, and said strips having flat rear edges forming webs by which the strips may be attached to the edges of openings to be closed by said slide fastener, said webs being in slightly offset parallel planes.

11. In a slide fastener, a pair of interlocking strips of resilient material, each strip having a solid cylindrical front edge portion and a tubular portion located rearwards of said front edge portion and complementary to said cylindrical portion, and said tubular portions having side slit-like openings through which said cylindrical portions engage said tubular portions, and a slide comprising front and back face walls in intimate contact with and extending across adjacent side edge portions of the front and back faces of said interlocking strips, an S-shaped wall extending between said face walls and encasing a small section of said interengaged cylindrical and tubular portions, and longitudinally extending fingers projecting from one of the edges of said S-shaped wall and engaging in said tubular portions and against the front edge portions of said solid cylindrical edge portions holding a small section of said interlocking strips disengaged from their complementary tubular portions.

12. In a slide fastener, a pair of interlocking strips of resilient material, each strip having a solid cylindrical front edge portion and a tubular portion located rearwards of said front edge portion and complementary to said cylindrical portion, and said tubular portions having side slit-like openings through which said cylindrical portions engage said tubular portions, and a slide comprising front and back face walls in intimate contact with and extending across adjacent side edge portions of the front and back faces of said interlocking strips, an S-shaped wall extending between said face walls and encasing a small section of said interengaged cylindrical and tubular portions, and longitudinally extending fingers projecting from one of the edges of said S-shaped wall and engaging in said tubular portions and against the front edge portions of said solid cylindrical edge portions holding a small section of said interlocking strips disengaged from their complementary tubular portions, said front and back face walls being flat and straight.

13. In a slide fastener, a pair of interlocking strips of resilient material, each strip having a solid cylindrical front edge portion and a tubular portion located rearwards of said front edge portion and complementary to said cylindrical portion, and said tubular portions having side slit-like openings through which said cylindrical portions engage said tubular portions, and a slide comprising front and back face walls in intimate contact with and extending across adjacent side edge portions of the front and back faces of said interlocking strips, an S-shaped wall extending between said face walls and encasing a small section of said interengaged cylindrical and tubular portions, and longitudinally extending fingers projecting from one of the edges of said S-shaped wall and engaging in said tubular portions and against the front edge portions of said solid cylindrical edge portions holding a small section of said interlocking strips disengaged from their complementary tubular portions, said front and back face walls being flat and straight, and having inturned edge portions engaging complementary edges on the face of said interlocking strips.

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