

April 27, 1937.

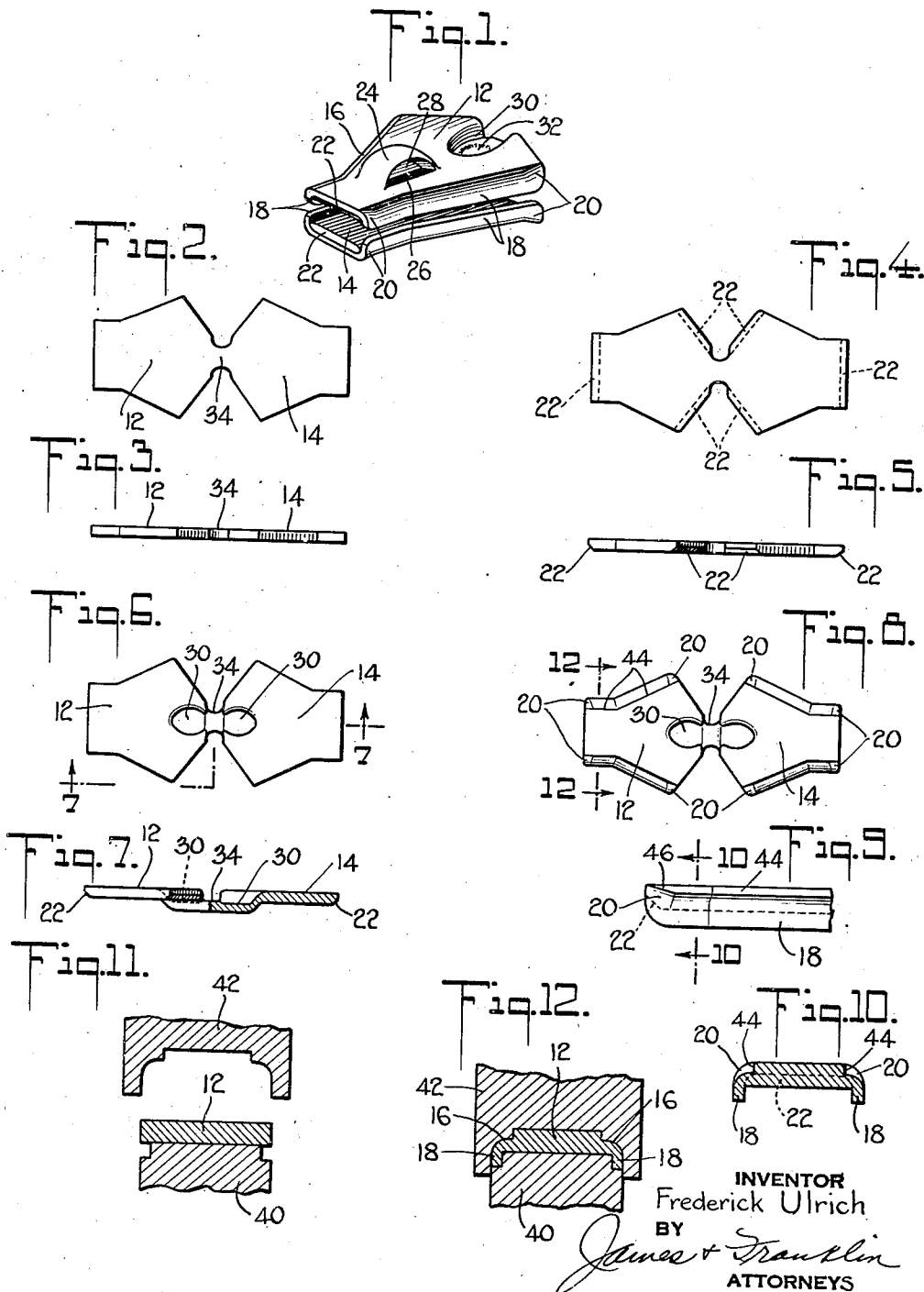
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2,078,745

SLIDER FOR SLIDE FASTENERS AND METHOD FOR MAKING THE SAME

Filed Aug. 21, 1934

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

Fig. 13.

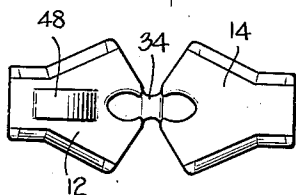


Fig. 16.

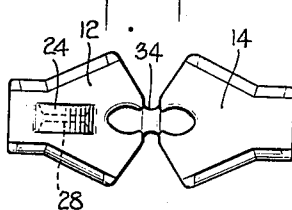


Fig. 14.

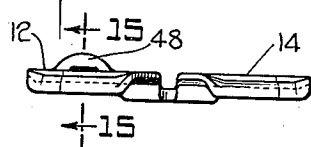


Fig. 17.

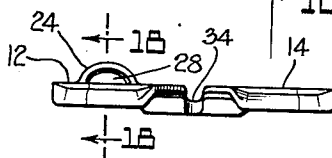


Fig. 15.

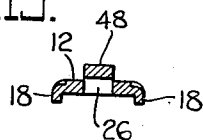


Fig. 18.

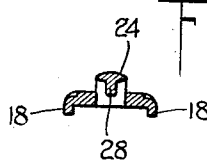


Fig. 19.

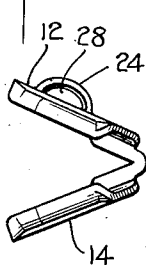
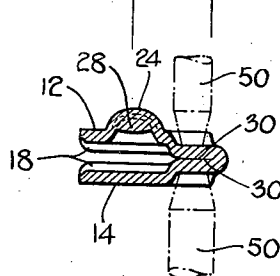


Fig. 20.



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SLIDER FOR SLIDE FASTENERS AND
METHOD FOR MAKING THE SAME

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17 Claims. (Cl. 29—148)

This invention relates to slide fasteners, and more particularly to a slider therefor and method for making the same.

The primary object of my invention is to generally improve sliders for slide fasteners, as well as to provide an improved method for making such sliders.

Certain objects of my invention center about the flanges or guideways at the edges of the slider. It is not possible to bend a narrow flange on thick metal, and it has therefore been necessary to bend excess metal and to subsequently trim away the excess. This is a complicated procedure which results in sharp edges and requires considerable tumbling. It has also been suggested to coin or upset flanges on the slider, but this is difficult to accomplish, greatly strains the tools and dies, and any way, requires trimming of the slider in order to finish the sides of the slider outside of the flanges. An object of my invention is to overcome the foregoing difficulties and to provide flanges or guideways which are finished in a single operation, which require no trimming and tumbling, which are formed integrally with a slider body made of relatively thick metal, and which are made by thinning rather than thickening the metal of the slider body, this being a comparatively simple and inexpensive operation. The marginal edges of the slider body are thinned and bent, preferably simultaneously in a single swaging or die operation. The thinned marginal portion is preferably carried partially around the outside of the slider, thereby giving the slider an attractive appearance and causing the same to appear smaller in size and lighter in weight, while retaining the strength of the relatively thick metal body.

Further objects of my invention center about the bail for anchoring the handle or finger piece to the slider. To form this bail, it has heretofore been the practice either to rivet extra parts to the slider body or to thicken or upset sufficient metal by a coining operation to form the bail. In accordance with features and objects of my invention, the difficulties attendant upon these prior practices are overcome by striking a part of the metal of the slider partially outwardly to form an embryo bail, this metal being separated from the body of the slider and leaving a slot therebeneath. The inner portions of the side edges of the embryo bail are thereupon indented sidewardly, thus thinning the metal of the bail, elevating the bail to desired displacement, and forming a thin web of metal beneath the bail which strengthens and rigidifies the same.

Other objects of my invention concern the formation of the neck of the slider and means to prevent spreading of the sides of the slider. The use of inwardly dished neck portions to properly space the sides of the slider is desirable, but has heretofore necessitated the additional use of rivets or like fastening means to prevent spreading. An alternative suggestion is the use of a greatly thickened neck portion of such stiffness as to prevent spreading, but this necessitates preliminary upsetting of metal at the neck portion which in turn makes it difficult to bend or close the slider during manufacture and involves annealing of the metal to prevent breakage.

In accordance with still another object of my invention, I retain the substantial advantages and eliminate the concomitant disadvantages of the foregoing methods by utilizing thin inwardly dished neck portions which are brought into contact and which are spot-welded together to prevent spreading of the slider.

To the accomplishment of the foregoing, and other objects which will hereinafter appear, my invention consists in the slider and method steps for making the same, as well as their relation one to another, as are hereinafter more particularly described in the specification and sought to be defined in the claims. The specification is accompanied by drawings, in which:

Fig. 1 is a perspective view of a slider embodying features of my invention;

Figs. 2 and 3 are plan and elevational views, respectively, of a blank formed as the first step in my invention;

Figs. 4 and 5 are plan and elevational views, respectively, of the blank after its ends have been beveled;

Figs. 6 and 7 are plan and elevational views, respectively, of the blank after the neck portion has been dished, Fig. 7 being taken on the plane of the line 7—7 of Fig. 6;

Fig. 8 is a plan view of the blank, showing the side edges swaged to thinned, bent condition;

Fig. 9 is an enlarged side elevation of a part of the blank;

Fig. 10 is a transverse section taken on the plane of the line 10—10 of Fig. 9;

Fig. 11 is a section schematically showing the die arrangement for thinning and bending the guideways or flanges;

Fig. 12 is a similar view with the die closed and the metal shaped to correspond to a section taken on the plane of the line 12—12 of Fig. 8;

Figs. 13 and 14 are plan and side elevational

views, respectively, of a blank showing a partially formed or embryo bail;

Fig. 15 is a transverse section taken on the plane of line 15—15 of Fig. 14;

Figs. 16 and 17 are plan and side elevational views, respectively, of the blank having a finished bail;

Fig. 18 is a transverse section taken on the plane of line 18—18 of Fig. 17;

Fig. 19 shows the blank partially bent to closed condition; and

Fig. 20 is a section through the finished or closed blank, and schematically illustrates the spot-welding of the neck portion of the slider.

Referring to the drawings, and more particularly to Fig. 1 thereof, the slider of my invention comprises parallel or superposed sides 12 and 14 which are of substantial thickness, but the marginal edges 16 of which are thinned and turned inwardly to form the flanges or guideways 18 of the slider. The reduction in thickness is not carried entirely to the ends of the slider and is regained at the sloping parts 20. This is done not only to improve the appearance of the slider and to avoid exposed sharp edges, but also to accommodate the internal beveling of the ends of the slider indicated at 22. The opposite end of the slider is similarly beveled, although it is not visible in Fig. 1, for the beveled ends facilitate the passage of the interlocking elements of the slide fastener through the slider. The bail 24 of the slider is formed integrally with the side 12 but does not necessitate a coining operation and is instead made by displacing metal upwardly from side 12, the bail being separated from the side, leaving a slot 26 therebeneath. The embryo bail is indented from opposite sides to form a thin central web 28, thus strengthening the bail while thinning the exposed metal. The neck portion of the slider is dished inwardly at 30 thereby properly spacing the sides 12 and 14 apart, and the dished portions are spot-welded together at 32 to prevent spreading or opening of the slider.

The construction of the slider may be further clarified by a description of the process of making the same. A strip or sheet of relatively heavy gauge metal has stamped therefrom slider blanks of the form shown in Figs. 2 and 3. These blanks comprise wings 12 and 14 connected by a narrow neck 34. The thickness of the blank and of the stock from which it is stamped corresponds to the desired thickness for the sides of the slider.

It has heretofore been mentioned that the ends of the slider are preferably internally beveled to facilitate passage of the interlocking fastener elements therethrough. This beveling may be accomplished as a second press or die operation and the resulting blank is shown in Figs. 4 and 5, the beveled edges being indicated at 22.

The neck portion is dished by still another die operation which, referring to Figs. 6 and 7, results in a substantial depression of the areas 30 and the connecting neck 34. It should be understood that there is no thickening of the neck portion of the slider, and while not essential, it is a fact that the neck region, by which I mean the areas 30 and the connecting neck 34, are actually thinned, because of the nature of the drawing operation by which the blank is downwardly dished in the manner shown.

The flanges or guideways are formed of thinned metal which is bent downwardly, and the thinning and bending operations are performed simultaneously. Referring to Figs. 11 and 12, the

blank is placed between dies 40 and 42, which are then closed to swage the theretofore uniform thickness of the metal of the blank to the form shown in Fig. 12. It will be noted that flanges 18 are substantially thinner than side 12; that the marginal portions 16 of side 12 are preferably also thinned; and that the metal including the flanges or guideways 18 is fully enclosed by the die 40, 42, thus forming the blank positively and accurately to desired dimension. This insures absolute uniformity of the completed sliders. Referring to Figs. 8, 9, and 10, the sides 12 and 14 are thinned and flanged in the manner indicated except at the end points 20. The shoulder which results at the thinned part of the slider is indicated at 44 and the manner in which this shoulder tapers off at the ends 20 is clearly shown at 46 in Fig. 9.

The bail 24 is formed in two operations. The first operation consists in striking or upwardly displacing a strap of metal 48 for a small distance, as is clearly shown in Figs. 13, 14, and 15 of the drawings. It is important to note that this embryo bail is not formed by an upsetting or coining operation, for the strap 48 is actually severed from the side 12, leaving a slot 26 therebeneath. The inner portions of the sides of strap 48 are next sidewardly indented to finish the bail, this operation being illustrated in Figs. 16, 17, and 18. As a result of this indentation of the sides of the strap 48, the metal is greatly thinned and is further elevated, thereby providing ample room to receive the subsequently inserted ends of the handle or finger piece of the slider. At the same time the inwardly struck metal forms a thin web 28 which rigidifies the bail.

Both sides of the slider being here shown as formed of a single piece of metal, the blank is next folded to bring the sides 12 and 14 into superposed parallel relation. This folding or bending operation is preferably performed in two steps, the first stage of which is illustrated in Fig. 19, and which serves to partially close the slider. The slider is then completely closed, thereby bringing the dished neck portions 30 in contact. The dishing of the neck portions is of course so dimensioned that the sides of the slider are then spaced apart the proper distance. The contacting neck portions are thereupon welded to prevent re-opening or spreading of the slider, and this is schematically illustrated by the electric welding electrodes 50 as shown in Fig. 20. I find that spot-welding the dished neck portions together results in a sturdy, light-weight slider produced at minimum cost.

It is believed that the mode of constructing my improved slider as well as the many advantages thereof will be apparent from the foregoing detailed description. The slider body is made of comparatively thick metal and is correspondingly rigid and strong. Nevertheless, the guideways are no thicker than is necessary for sufficient wear and are produced without a trimming operation to remove excessive metal and without the production of fins or sharp edges. The slider is attractive in appearance, to a degree difficult to bring out in the drawings, because the thinning of the marginal portions breaks up the area of the slider in a decorative manner and causes the slider to appear much smaller than it is. Because all of the forming operations on the slider are in the nature of thinning operations, the slider is light in weight but without sacrifice in strength. Tumbling of the newly made sliders is minimized

and may even be completely eliminated. The sliders are absolutely uniform in dimension and all parts of the slider are pressed and formed between die surfaces.

5 It will be apparent that while my invention is shown and described in preferred form, many changes and modifications may be made in the structure and method disclosed without departing from the spirit of the invention defined in the following claims. For example, the order in which many of the steps take place, may be varied, so that the exact sequence named in the method claims is by way of illustration rather than limitation.

15 I claim:

1. A slider for a slide fastener, said slider comprising relatively heavy gauge sheet metal sides, the main longitudinal edges of the sides being reduced to a thickness substantially less than that of the sides and the outer or edge portion of each thinned marginal portion being directed inwardly to form the guideways of the slider, the thinned marginal portion extending within the bend.

2. A slider for a slide fastener, said slider comprising a single piece of relatively heavy gauge sheet metal reversely bent at the neck portion to form the sides of the slider, the main longitudinal edges of the sides being reduced to a thickness substantially less than that of the sides and the outer or edge portion of each thinned marginal portion being directed inwardly to form the guideways of the slider, the thinned marginal portion extending within the bend.

3. A slider for a slide fastener, one side of the slider being incised and a part thereof being struck outwardly free of the side, and the inner portion of the side edges of said outwardly struck freed part being indented to form a finished bail.

4. A slider for a slide fastener, said slider comprising a single piece of relatively heavy gauge sheet metal reversely bent at the neck portion to form the slider body, a part of one side of the slider being slit and struck outwardly free of the side, and the inner portion of the side edges of said outwardly struck freed part being indented to form a finished centrally webbed bail.

5. In the manufacture of a slider for a slide fastener, the method which includes forming a slider blank having sides connected by a neck portion, striking a portion of one side free of the side and a slight distance outwardly to form an embryo bail, indenting the inner portion of the side edges of the aforesaid outwardly struck portion from opposite sides to finish and to web the bail, and reversely bending the blank at the neck portion to bring the sides in superposition.

6. A slider for a slide fastener, said slider comprising a piece of relatively heavy gauge sheet metal stamped and shaped to form the side of a slider body, the main longitudinal side edges of the slider being reduced to a thickness substantially less than that of the slider body and the outer or edge portion of each thinned marginal portion being directed inwardly to form the guideways of the slider, the thinned marginal portion extending within the bend, a portion of one side of the slider being struck outwardly free of the slider body and indented from opposite sides to form a finished bail.

7. A slider for a slide fastener, said slider comprising a single piece of relatively heavy gauge sheet metal stamped and shaped to form a slider body, said sheet metal being dished inwardly at the neck portion to form contacting means spacing

the sides of the slider apart, said means being welded together to prevent spreading of the slider, the side edges of the slider being reduced to a thickness substantially less than that of the slider body and the outer or edge portion of each thinned marginal portion being directed inwardly to form the guideways of the slider, the thinned marginal portion extending within the bend.

8. A slider for a slide fastener, said slider comprising a single piece of relatively heavy gauge sheet metal stamped and shaped to form a slider body, said sheet metal being dished inwardly at the neck portion to form contacting means spacing the sides of the slider apart, said means being welded together to prevent spreading of the slider, the side edges of the slider being reduced to a thickness substantially less than that of the slider body and the outer or edge portion of each thinned marginal portion being directed inwardly to form the guideways of the slider, a portion of one side of the slider being struck outwardly free of the slider and indented from opposite sides to form a bail.

9. In the manufacture of a slider for a slide fastener, the method which includes stamping a shaped blank from relatively heavy gauge sheet metal, swaging the edges of the blank to thin the same and to bend the same inwardly to form guideways for the slider, and compressing the guideways on all sides including the inwardly facing edges, striking a portion of one side of the slider outwardly free of the slider to form an embryo bail, indenting the embryo bail from opposite sides to finish the same, and bending the blank at the neck portion to bring the sides in superposition.

10. In the manufacture of a slider for a slide fastener, the method which includes stamping a shaped blank from sheet metal, dishing the blank at the neck portion to form means to space the sides of the slider apart, striking a portion of one side of the slider outwardly free of the slider to form an embryo bail, indenting the embryo bail from opposite sides to finish the same, bending the blank at the neck portion to bring the sides in superposition and the dished neck portions in contact, and welding the neck portions to prevent spreading of the slider.

11. In the manufacture of a slider for a slide fastener, the method which includes stamping a shaped blank from relatively heavy gauge sheet metal, dishing the blank at the neck portion to form means to space the sides of the slider apart, swaging the edges of the blank to thin the same and to bend the same inwardly to form guideways for the slider, striking a portion of one side of the slider outwardly free of the slider to form an embryo bail, indenting the embryo bail from opposite sides to finish the same, bending the blank at the neck portion to bring the sides in superposition and the dished neck portions in contact, and welding the neck portions to prevent spreading of the slider.

12. A slider for a slide fastener, said slider comprising relatively heavy gauge sheet metal sides, said sides being dished inwardly toward one another at the neck portion to form means spacing the sides of the slider apart, the contacting spacer means being welded together, the side edges of the slider being reduced to a thickness substantially less than that of the slider body, and the outer or edge portions of the thinned marginal portions being directed inwardly to form the guideways of the slider, the

inner edges of the thinned portions forming shoulders on the outside faces of the slider, which shoulders extend generally in the direction of the edges of the slider.

5 13. In the manufacture of the side of a slider for a slide fastener, the method which includes using heavy-gauge sheet metal to form the side of the slider body, but swaging the main longitudinal edge portions of the side of the slider 10 to a substantially thinned condition with the outer portion only of the resulting thinned marginal portions inwardly turned or marginally bent in order to form the guideways of the slider, said thinned edge portions being of substantial width 15 and extending within the bends.

14. In the manufacture of slide fasteners, the method which includes stamping and shaping relatively heavy-gauge sheet metal to form the side of a slider body, substantially thinning and 20 bending the main longitudinal edges inwardly to form the guideways of the slider, and compressing the guideways on all sides including the inwardly facing edges, to bring the guideways to desired dimension.

25 15. In the manufacture of slide fasteners, the method which includes stamping and shaping a single piece of relatively heavy-gauge sheet metal to form a slider body, swaging the main longitudinal edges of the slider to a thickness sub- 30 stantially less than that of the body of the slider

and bending the outer portion of the thinned marginal portions inwardly to form the guideways of the slider, compressing the guideways on all sides including the inwardly facing edges to bring the guideways to desired dimension, and 5 reversely bending the slider at the neck portion to bring the sides in superposition.

16. In the manufacture of a slider for a slide fastener, the method of forming a bail thereon, which includes striking a portion of the slider 10 body free of the body and a slight distance outwardly to form an embryo bail, and indenting the inner portion of the side edges of the aforesaid outwardly struck portion from opposite sides to finish the bail. 15

17. In the manufacture of a slider for a slide fastener, the method which includes stamping a shaped blank from relatively heavy-gauge sheet metal, dishing the blank at the neck portion to 20 form means to space the two sides of the slider apart, swaging the edges of the blank to thin the same and to bend the same inwardly to form guideways for the slider and compressing the guideways on all sides including the inwardly 25 facing edges to bring the guideways to desired dimension, bringing two side in superposition with the guideways toward one another and dished neck portions in face to face contact, and welding the neck portions together.

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