Feb. 20, 1951 C. S. ANDERSON 2,542,453

DOUBLE-ACTING SLIDER

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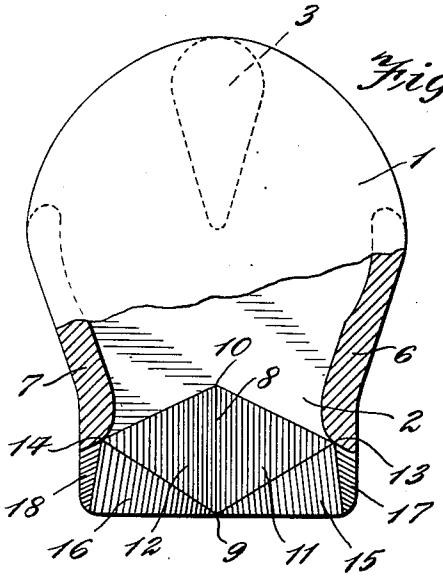


Fig. 1.

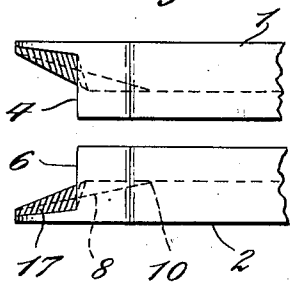


Fig. 3.

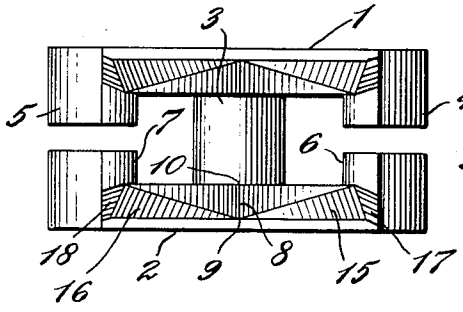


Fig. 2.

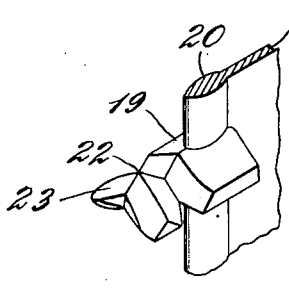


Fig. 4.

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DOUBLE-ACTING SLIDER

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3 Claims. (Cl. 24—205.15)

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This invention relates to sliders for so-called slide fasteners and, in particular, to what for convenience may be termed a double-acting slider, by which is meant a slider which when applied to appropriate fastener stringers is effective to mesh the fastener elements no matter at which end of the slider the elements happen to be uncoupled. Normally, a slider incorporating the usual Y-shaped channel (of which the divergent channel end may be termed the "head" of the slider and the single channel end the "tail") is advanced head first to mesh the fastener elements and the coupled stringers emerge from the tail of the slider; and, conversely, the slider is moved tail first to uncouple the stringers. On occasion, the fastener elements become uncoupled behind or beyond the tail of the slider and it is extremely laborious to re-couple them by hand, as has usually been necessary, in order to free the slider for movement in the uncoupling direction. The double-acting slider to which the present invention relates is constructed to move with equal facility in either direction and to receive the stringer elements smoothly even when the slider is moved tail first toward uncoupled elements and without regard to the position in which such elements happen to be presented to the opening in the tail end of the slider.

The invention will be understood from the accompanying drawings, of which:

Fig. 1 is a broken-out plan view of a preferred form of slider construction;

Fig. 2 is an end view of the same slider, that is, looking at the tail end;

Fig. 3 is a side view of the tail end of the slider; and

Fig. 4 is a perspective view of one form of fastener element which is particularly well suited for use with the slider of this invention.

The slider includes the usual upper and lower walls 1, 2 spaced by a web member 3 adjacent the head end of the slider, and extending along the side edges of the walls 1, 2 are the usual flanges 4, 5, 6 and 7 which are spaced apart to receive the fastener tapes while confining and directing the fastener elements within the resulting slider channels.

According to the present invention a portion of each of the walls 1 and 2 projects beyond the ends of the flanges 4—7 at the tail end of the slider and, preferably, to a uniform extent across the full width of the slider. In other words, the tail end of this form of slider is rectangular, as viewed in plan, and the flanges 4—7 terminate short of the extreme end of the slider.

Formed in the inner surface of each of the

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walls 1, 2, and at least in part in the projecting portions of them, is a central longitudinally extending valley. Since the valley constructions and associated details of the two walls are identical, only one of them need be described.

The valley in the wall 2, of which the bottom is represented by the line 8, extends upgrade from the extreme edge of the tail of the slider, that is, from the point 9 to the point 10. At the point 9, the thickness of wall 2 is greatly reduced, while at the point 10 the thickness is what for convenience may be referred to as the normal wall thickness, that is, the thickness of the wall throughout the balance of the slider channel portions. Preferably, and as illustrated, the valley bottom extends into the slider to a point beyond the near ends of the flanges 6, 7.

This particular slider is adapted for die-casting and it is preferred, therefore, that the side slopes of the valley, and such other bevels as are provided, as below described, be formed as plane surfaces, such surfaces also having been found to provide for smooth operation under all working conditions of the slider. In this instance, therefore, the side slopes of the valley comprise the plane triangular surfaces 11, 12 extending laterally from the valley bottom 8 to points 13, 14 adjacent or at the foot of the flanges 6, 7, respectively.

The balance of the projecting portion of wall 2, and particularly in this rectangular form, incorporates two additional plane triangular surfaces or bevels 15, 16, contiguous with the valley slopes 11, 12, respectively, and sloping from the adjacent boundaries of the latter to the extreme edge of the wall 2 substantially throughout its entire width. The angle or slope of these surfaces 15, 16 is such as to conform the thickness of the tail edge of wall 2 to its thickness at the point 9.

Finally, it is preferred to reduce the thickness of the side edges of the projecting portion of wall 2 by means of laterally sloped bevel surfaces 17, 18, contiguous with the surfaces 15, 16, respectively. As stated above and illustrated, the projecting portion of wall 1 is formed with a valley and bevel surfaces just like those described with reference to the projecting portion of wall 2.

The scoop or fastener element illustrated in Fig. 4 is of a well known type, including a mounting end portion 19 embracing the beaded edge 20 of a tape 21 and a projecting coupling portion incorporating a reduced neck 22 and a head 23, the element being of inverted V-shaped cross-section throughout its entire length. As is well understood, the reduced neck receives the head

of an element of a companion stringer, to provide interlock against pull-apart separation, and the V-section mates with the V-section of the element of the companion stringer to provide interlock against transverse separation.

While the slider of this invention is by no means limited in its utility to stringers equipped with fastener elements of the kind shown in Fig. 4, it is of particular benefit in that connection, especially in the preferred form illustrated.

In the "tail-first" movement of a slider toward uncoupled elements, it is found that minimum difficulty is experienced in making the tail end opening of the slider receive such elements if the stringers are maintained in a common plane, as when they are laid out on a flat surface; but, in practical use, the stringers are rarely so arranged, and, depending on the degree of twisting or other distortion to which the tapes may be subjected, the fastener elements may be presented to the tail end opening of the slider in a great variety of positions unsuitable for the free entry of the elements into the slider channel. Also, in some instances, the elements tend to block each other, resulting in complete fouling of the stringers.

By means of the central, longitudinally extending valley provided in the projecting wall portions, as herein contemplated, the foregoing objections and difficulties are eliminated and the elements are found to enter the slider smoothly under what would otherwise be quite impossible conditions. The central valley slopes, supplemented by the contiguous bevels, serve to reorient fastener elements which are so displaced from the central plane of the slider as to have difficulty entering the slider channel, and serve also to ensure the correct order of entry of the elements of the respective stringers, thus ensuring correct meshing and preventing the elements from blocking one another. Furthermore, with a slider of the kind described, it is found that the foregoing advantages result with elements of the form illustrated in Fig. 4 regardless of the direction in which the slider happens to be applied to the stringers; that is, without regard to whether the element enters the tail end opening of the slider with the point of the V ahead, or in the reverse position.

It being understood that the details of the invention may be modified to suit the exigencies of particular cases, the following is claimed:

1. In a slider of the kind including upper and lower walls which are spaced by a web member adjacent the head end of the slider and which have upstanding flanges extending along their side edges: a portion of the upper and of the lower wall projecting beyond the said flanges at the tail end of the slider and to a uniform extent across the full width of the slider, a central, longitudinally extending valley formed in the inner surface of each of said projecting portions, the bottom of each said valley extending from a point of reduced wall thickness at the extreme edge of the tail end of the slider to a point of normal wall thickness beyond the near ends of the said flanges, the side slopes of the valley comprising triangular plane surfaces extending laterally from the valley bottom each to a point adjacent the near end of one of the said flanges, the balance of the projecting portions of the said walls incorporating triangular plane bevel surfaces contiguous with said first-mentioned plane surfaces and sloping from the adjacent boundaries of the latter to the extreme edges of the tail end of the slider substantially throughout the width thereof and at an angle to conform the said tail edges to the thickness of the walls at the said points of reduced thickness, and also incorporating laterally sloped bevel surfaces contiguous with the second-mentioned plane bevel surfaces and serving to reduce the thickness of the side edges of the projecting wall portions.

2. In a slider of the kind including upper and lower walls which are spaced by a web member adjacent the head end of the slider and which have upstanding flanges extending along their side edges, and in which portions of the said upper and lower walls project beyond the said flanges at the tail end of the slider: a central, longitudinally extending valley formed in the inner surface of each of said projecting portions, the bottom of each said valley extending from a point of reduced wall thickness at the extreme edge of the tail end of the slider to a point of normal wall thickness beyond the near ends of the said flanges, the side slopes of the valley comprising triangular plane surfaces extending laterally from the valley bottom each to a point adjacent the near end of one of the said flanges, the balance of the projecting portions of the said walls incorporating triangular plane bevel surfaces contiguous with said first-mentioned plane surfaces and sloping from the adjacent boundaries of the latter to the extreme edges of the tail end of the slider substantially throughout the width thereof and at an angle to conform the said tail edges to the thickness of the walls at the said points of reduced thickness, and also incorporating laterally sloped bevel surfaces contiguous with the second-mentioned plane bevel surfaces.

3. In a slider of the kind including upper and lower walls which are spaced by a web member adjacent the head end of the slider and which have upstanding flanges extending along their side edges: a portion of the upper and of the lower wall projecting beyond the said flanges at the tail end of the slider and to a uniform extent across the full width of the slider, a central, longitudinally extending valley formed in the inner surface of each of said projecting portions, the bottom of each said valley extending from a point of reduced wall thickness at the extreme edge of the tail end of the slider to a point of normal wall thickness beyond the near ends of the said flanges, the side slopes of the valley comprising surfaces extending laterally from the valley bottom to points of normal wall thickness, the balance of the projecting portions of the said walls incorporating bevel surfaces contiguous with said slide slope surfaces and sloping to the extreme edges of the tail end of the slider and also incorporating laterally sloped surfaces contiguous with said bevel surfaces and serving to reduce the thickness of the side edges of the projecting wall portions.

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