This invention relates to sliders for use on separable fastener stringers to couple and uncouple the same, and, more particularly, to separable fasteners having a scoop structure generally of the type and kind disclosed in my prior application, Serial No. 307,279, filed August 30, 1952, now Patent No. 1,795,274, issued July 9, 1957.

Still more particularly, the invention deals with a slider structure having jam free properties by virtue of the structure of the slider, and structure and operation of the scoops within the slider, and to accomplish this result without the use of moving or yielding parts on the slider body.

The novel features of the invention will be best understood from the following description, when taken together with the accompanying drawing, in which certain embodiments of the invention are disclosed and, in which, the separate parts are designated by suitable reference characters in each of the views and, in which:

Figs. 1 is a sectional view through a slider made according to my invention, illustrating the arrangement of scoops in the slider body, and diagrammatically illustrating one arrangement of a foreign element in the slider body;

Fig. 2 is a partial view similar to Fig. 1, diagrammatically showing another element in jamming a slider, and, further, showing a modified form of slider structure.

Fig. 3 is another view similar to Fig. 1 showing only a part of the construction, and illustrating diagrammatically the arrangement of two foreign elements in the slider body;

Fig. 4 is a sectional plan of a modified form of slider body which I employ;

Fig. 5 is a section on the line 5—5 of Fig. 4;

Fig. 6 is a partial section on the line 6—6 of Fig. 4, diagrammatically illustrating a scoop arrangement in the slider body; and

Fig. 7 is a view similar to Fig. 5, showing a modified form of slider body.

With the separable fastener stringers of the type and kind disclosed in my prior application, noted above, having scoops generally referred to as center ledge scoops, I have found that by suitably constructing a slider body and elimination of the flanges on one wall of the slider body, that a jam-free slider can be provided which will permit the passage of a relatively thin or small foreign element through the slider body without checking movement of the sliders. However, when a real binding action takes place checking operation of the slider, the slider can be easily moved in the opposite direction to release the foreign element or elements from the slider body, thus permitting the slider to perform its normal function.

Aside from the showing in Fig. 7 of the drawing, the slider bodies which are disclosed for the most part in section are generally of the contour disclosed in Fig. 4 of the drawing and as these contours are generally known in the art, it is sufficient to deal with the sectional views of the slider for a complete understanding of the invention.

In Figs. 1 and 3 of the drawing, one form of slider body is disclosed, and in these figures the sections are taken through the narrow single channel end of the slider body where the scoops of the stringers are in coupled engagement with each other. In said figures, 10 represents the bottom wall of the slider body which has the inner turned flanges 11 defining the channel of the slider body. At 12 is shown a top wall, the walls 10 and 12 being joined at the wide end portion of the slider in a connecting web, shown in part at 13.

It will be noted that the top wall 12 does not include the normal inner turned flanges. However, the side openings 14 between the edges of the flanges 11 and the inner surface of the top wall is less than the thickness of the scoops 15, 15' of the separable fasteners, the stringers of these scoops being shown in part at 16, 16'.

As pointed out above, the scoops are generally of the type shown in the previously filed applications, the scoops being generally flat, adjacent to the outer walls 10 and 12, and spaced in alignment with the same so that the scoops are angularly disposed with the tapes 16, 16', thus the coupling end portions of the scoops are angularly disposed with the tapes 16, 16', the coupling end portions have the arrangement illustrated in Fig. 1 when in coupled relationship with each other. Such an arrangement of the scoops in the slider body is also, in part at least, to provide the extension surfaces 18, 18' provided at one side of the inner ends of the scoops. During the coupling action, these extensions bear against the flanges 11 of the slider, and owing to this fact, as well as the scoop construction and the fact that the slider walls 10 and 12 are spaced about an extra amount, i.e., a distance greater than the scoop thickness, the net result is that, during coupling, the scoops are free to tilt as shown in Fig. 1; in other words, opposed scoops are swingable relatively to each other within the slider in a plane substantially at right angles to the plane of either slider wall.

It will be apparent from a consideration of Fig. 1 of the drawing that a foreign element, such as a piece of cloth or the like 19, can enter the upper portion of the slider body, and such element 19 may pass freely through the slider without any real jamming action owing to the dimensional tolerance provided and to the absence of flanges on the upper wall 12, the scoops 15, 15' meanwhile being free to tilt within the slider body. As a matter of fact, two elements can extend into the slider body, as shown in part in Fig. 5 of the drawing, the element 19 being generally smaller than 19', whereas at 20 is shown a second element which is caught beneath the lower surface of the scoop 15 and the wall 10. It is also disposed within the flange 11. This latter arrangement might cause a jamming of the slider, but this can be readily corrected by movement of the slider in the opposite direction, disengaging the two elements 19' and 20, thus returning the slider to normal operation.

In Fig. 2 of the drawing, I have shown a slight modification, particularly in the construction of the bottom wall 16. Here, the flange 11' of the bottom wall has a fillet portion 21, which will conform with and substantially parallel the scoop surface in the event of a foreign element such as 22 being arranged between the scoop and the wall 16' as well as the flange 11'. As the structure of the slider body shown in Fig. 2 is the same as that shown in Figs. 1 and 3, no further detailed description will be given.

In Figs. 4, 5 and 6 of the drawing, I have shown a modified form of slider body 23, having a bottom wall 24, and top wall 25. The wall 24 has the turned flanges 26 with the filleted inner surfaces as at 27. At 28 is shown the connecting web joining the walls 24 and 25, and this web differs from the web 13, shown in the other figures, in having a ridge or platform 29 at the base thereof in connection with which head end portion 30
of the scoop 31 operates in guiding the scoop into the single channel end portion 32 of the slider body, as will be apparent in examination of Fig. 6 of the drawing. The ridge 29 serves to maintain the scoop 31 in proper position for coupling engagement with the scoop of the companion stringer, not shown, thus the ridge 29 extends to the point of coupling engagement, as indicated at 33 in Fig. 4 of the drawing.

The structure shown in Figs. 4 to 6 inclusive is further modified over the teachings in Figs. 1 to 3 in providing on the under surface of the top wall 25 of the slider body a recess 34, which provides increased tolerance or clearance space and permits greater tilting movement of the scoops within the slider body, as will be apparent. In other words, considering Fig. 1 of the drawing, it will be quite apparent that if the under surface of the wall 12 were recessed in the manner shown in Fig. 5, the two scoops would have greater tilting operation within the channel of the slider body. The recess 34 extends to opposed sides of the web 28, as indicated by the dot and dash lines 35 in Fig. 4 of the drawing, a section through one of these diverging portions of the recess being indicated at 36 in Fig. 6 of the drawing.

In Figs. 1 to 3 inclusive, no showing of the normal pivot mountings for slider pulls is disclosed. However, to illustrate such mountings, I have shown in Fig. 5 of the drawing two pull pivot bearings at 37. Further, in Fig. 5 of the drawing, part of the construction has been broken away to indicate an elongated aperture 38 in the wall 25 for reception of the conventional lock element of a pull in producing automatic lock sliders, such as well known in the art. These same structural features will be part of the sliders shown in Figs. 1 to 3 inclusive.

In Fig. 7 of the drawing, I have shown another form of slider structure which differs from the slider shown in Figs. 1 to 6 inclusive solely in the formation of the top wall 39, the bottom wall 40 being the same as that shown in Figs. 1 to 6. At 41 is shown the connecting web joining the walls 39 and 40, and at 42 is shown the ridge similar to the ridge 29. The wall 39 differs from the wall 25 in omitting the recess 34 and, further, in being much shallower and the single channel end of the slider body, thus providing large openings at the top of the slider above the single channel end, which will avoid any good bit of the normal jamming tendency of sliders, and which will further facilitate freeing a slider if a jamming condition should prevail.

When the structure shown in Fig. 7, it will be apparent that slightly greater upward tilting operation of the scoops is possible at the contracted end of the slider body in elimination of the checking wall, which would otherwise check the scoop, particularly bearing in mind the structure as shown in Fig. 2 of the drawing. It will be apparent from a comparison of the two figures that the narrow end portion 39 of the wall is only slightly greater in width than the corresponding dimensions of the web 41, and is substantially within the dimensions of the ridge 42.

Another variation in the structure shown in Fig. 7 of the drawing is in the use of a single pivot bearing at 43 on the top wall 39, rather than the two bearings 37 shown in Fig. 5 of the drawing.

Another advantage in my present slider structure resides in the fact that it can be utilized advantageously in the design of other elements of the slider body as a compression type of slider, in accordance with the teachings in my prior application, Serial No. 295,244, filed June 24, 1952. However, with the standard type of slider having intumescence flanges on both walls thereof, greater compression of the slider body is required in fixing the stringer upon the scoops and than would be required with the single flanged wall as employed in my present slider structure. In other words, compression is only to the extent of the depth of the flanges on one wall of the slider, whereas, in conventional slider structures, compression must be on the basis of the depth of both flanges in order to effect the proper assemblage.

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

1. In a jam-free slider for separable fastener stringers having tape mounted identical scoops adapted to be coupled and uncoupled one with the other and swingable relatively to each other within the slider in a plane substantially at right angles to the plane of the slider walls in their coupling engagement, the combination of a body defined by spaced substantially flat parallel walls joined at one end portion in a connecting web, the spacing between said walls being greater than the thickness of said scoops to an extent at least equal to the thickness of an ordinary piece of fabric and yet not so great that the slider loses control of the scoops during any ordinary operation of said slider along the stringers, one wall only of the slider body having inwardly extending scoop engaging and controlling flanges defining, in conjunction with said web, the channels of the slider body, the distance between the inner edge of said flange and the flangeless wall directly opposite thereto being less than the thickness of said scoops, said extra spacing of the body walls and said swinging movement of the scoops within the slider body in the plane of the ordinary piece of fabric through the slider without resisting movement of the slider along the stringers in coupling and uncoupling the scoops thereof.

2. In a jam-free slider for separable fastener stringers having tape mounted identical scoops adapted to be coupled and uncoupled one with the other and swingable relatively to each other within the slider in a plane substantially at right angles to the plane of the slider walls in their coupling engagement, the combination of a body defined by spaced substantially flat parallel walls joined at one end portion in a connecting web, the spacing between said walls being greater than the thickness of said scoops to an extent at least equal to the thickness of an ordinary piece of fabric and yet not so great that the slider loses control of the scoops during any ordinary operation of said slider along the stringers, one wall only of the slider body having inwardly extending scoop engaging and controlling flanges defining, in conjunction with said web, the channels of the slider body, said extra spacing of the body walls and said swinging movement of the scoops within the slider body facilitating passage of said ordinary piece of fabric through the slider without resisting movement of the slider along the stringers in coupling and uncoupling the scoops thereof.

3. In a jam-free slider for separable fastener stringers having tape mounted identical scoops adapted to be coupled and uncoupled one with the other and swingable relatively to each other within the slider in a plane substantially at right angles to the plane of the slider walls in their coupling engagement, the combination of a body defined by spaced substantially flat parallel walls joined at one end portion in a connecting web, the spacing between said walls being greater than the thickness of said scoops to an extent at least equal to the thickness of an ordinary piece of fabric and yet not so great that the slider loses control of the scoops during any ordinary operation of said slider along the stringers, one wall only of the slider body having inwardly extending scoop engaging and controlling flanges defining, in conjunction with said web, the channels of the slider body, said extra spacing of the body walls and said swinging movement of the scoops within the slider body facilitating passage of said ordinary piece of fabric through the slider without resisting movement of the slider along the stringers in coupling and uncoupling the scoops thereof.
for raising the connecting end of said scoops and guiding scoops of companion stringers into coupling engagement with each other, the inner surface of the other wall of the slider being recessed from one end of the slider to the other end to increase the clearance between said scoops and walls of the slider and thus the swinging movement of the scoops within said slider body, said extra spacing of the body walls and said swinging movement of the scoops within the slider body facilitating passage of said ordinary piece of fabric through the slider without resisting movement of the slider along the stringers in coupling and uncoupling the scoops thereof.

4. In a jam-free slider for separable fastener stringers having tape mounted identical scoops adapted to be coupled and uncoupled one with the other and swingable relatively to each other within the slider in a plane substantially at right angles to the plane of the slider walls in their coupling engagement, the combination of a body defined by spaced substantially flat parallel walls joined at one end portion in a connecting web, the spacing between said walls being greater than the thickness of said scoops to an extent at least equal to the thickness of an ordinary piece of fabric and yet not so great that the slider loses control of the scoops during any ordinary operation of said slider along the stringers, one wall only of the slider body having inwardly extending scoop engaging and controlling flanges defining, in conjunction with said web, the channels of the slider body, said web where it joins the flanged wall of the slider having an inwardly projecting shoulder portion for raising the connecting end of said scoops and guiding scoops of companion stringers into coupling engagement with each other, the inner surface of the other wall of the slider being recessed from one end of the slider to the other end to increase the clearance between said scoops and walls of the slider and thus the swinging movement of the scoops within said slider body, and the said other wall being contracted from the web end of the slider body in the direction of the other end thereof, said extra spacing of the body walls and said swinging movement of the scoops within the slider body facilitating passage of said ordinary piece of fabric through the slider without resisting movement of the slider along the stringers in coupling and uncoupling the scoops thereof.

5. In a jam-free slider for separable fastener stringers having tape mounted identical scoops adapted to be coupled and uncoupled one with the other and swingable relatively to each other within the slider in a plane substantially at right angles to the plane of the slider walls in their coupling engagement, the combination of a body defined by spaced substantially flat parallel walls joined at one end portion in a connecting web, the spacing between said walls being greater than the thickness of said scoops to an extent at least equal to the thickness of an ordinary piece of fabric and yet not so great that the slider loses control of the scoops during any ordinary operation of said slider along the stringers, one wall only of the slider body having inwardly extending scoop engaging and controlling flanges defining, in conjunction with said web, the channels of the slider body, said web where it joins the flanged wall of the slider having an inwardly projecting shoulder portion for raising the connecting end of said scoops and guiding scoops of companion stringers into coupling engagement with each other, the inner surface of the other wall of the slider being recessed from one end of the slider to the other end to increase the clearance between said scoops and walls of the slider and thus the swinging movement of the scoops within said slider body, and the said other wall being contracted from the web end of the slider body in the direction of the other end thereof, said extra spacing of the body walls and said swinging movement of the scoops within the slider body facilitating passage of said ordinary piece of fabric through the slider without resisting movement of the slider along the stringers in coupling and uncoupling the scoops thereof.

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UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 2,862,274

December 2, 1958

Louis H. Morin

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction and that the said Letters Patent should read as corrected below:

Column 1, line 21, for "Patent No. 1,798,274" read -- Patent No.
2,798,274 --; line 54, for "fasterner" read -- fastener --; column 3,
line 45, for "avod" read -- avoid --.

Signed and sealed this 7th day of April 1959.

(SEAL)
Attest:
KARL H. AXLINE
Attesting Officer

ROBERT C. WATSON
Commissioner of Patents