(12) UK Patent (19) GB (11) 2 140 078 B

(54) Title of invention

Slider for slide fastener

(51) INT CL[4]; A44B 19/26

(21) Application No
8410851

(22) Date of filing
27 Apr 1984

(30) Priority data

(31) 58/068212

(32) 7 May 1983

(33) Japan (JP)

(43) Application published
21 Nov 1984

(45) Patent published
19 Mar 1986

(73) Proprietors
Yoshida Kogyo KK
(Japan)
No 1 Kanda Izumi-cho
Chiyoda-ku
Tokyo
Japan

(72) Inventors
Hiroshi Yoshida
Susumu Ishii

(74) Agent and/or
Address for Service
Marks & Clerk,
57-60 Lincoln's Inn Fields,
London WC2A 3LS

(52) Domestic classification
E2S GF

(56) Documents cited
GB 0622791

(58) Field of search
E2S

GB 2 140 078 B

PRIOR ART

FIG. 1

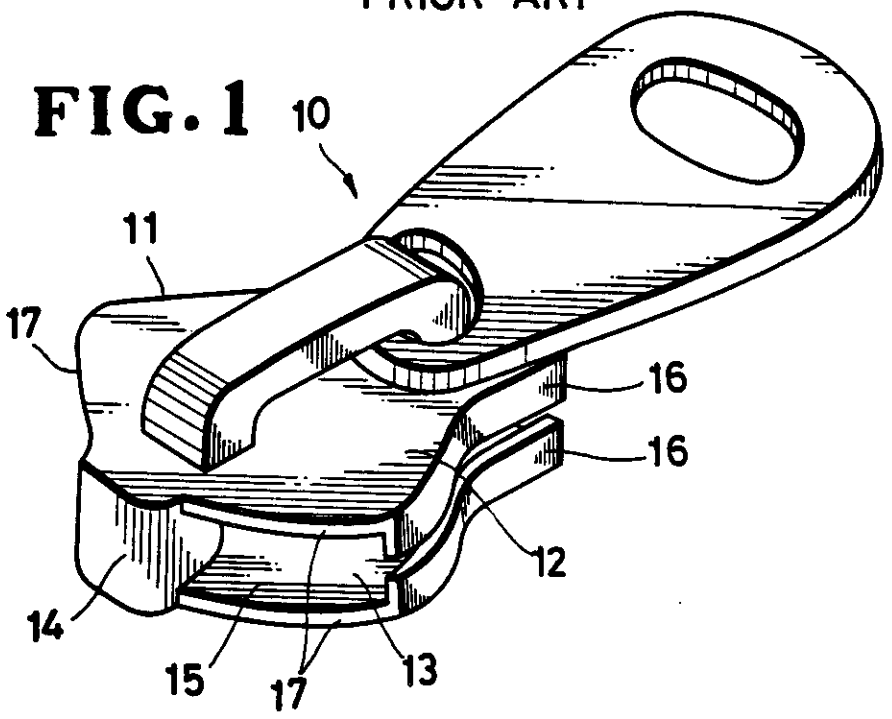


FIG. 2

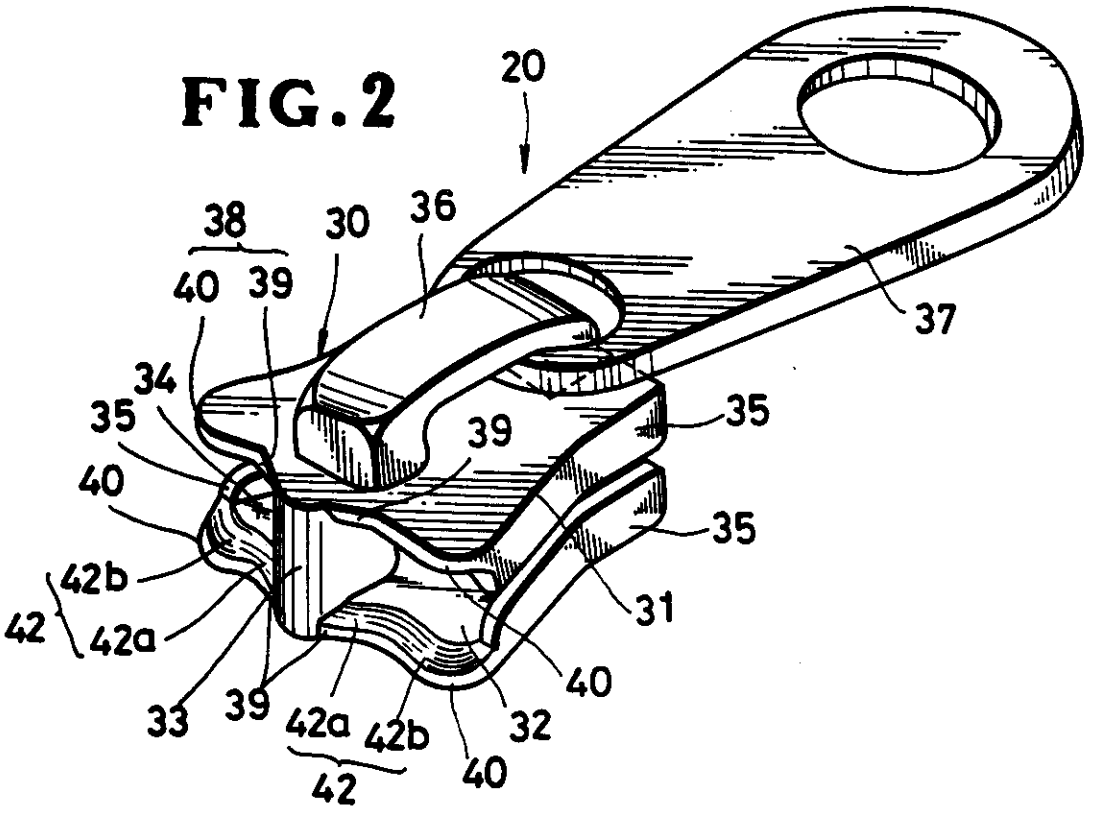


FIG. 3

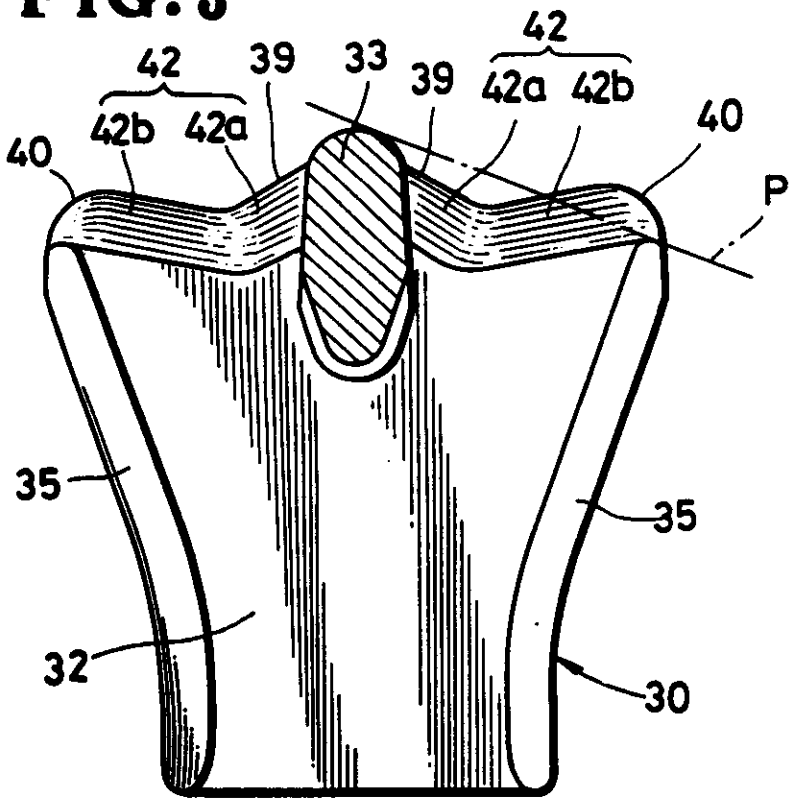

42
42b
42a
39
33
39
42
42a
42b
40
40
P
35
35
32
30

FIG. 6

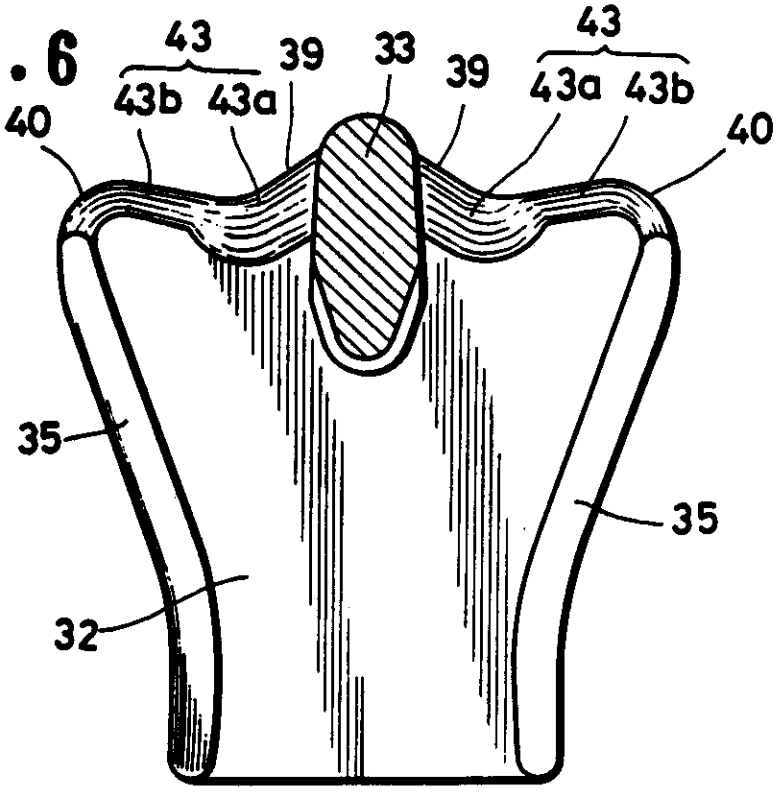
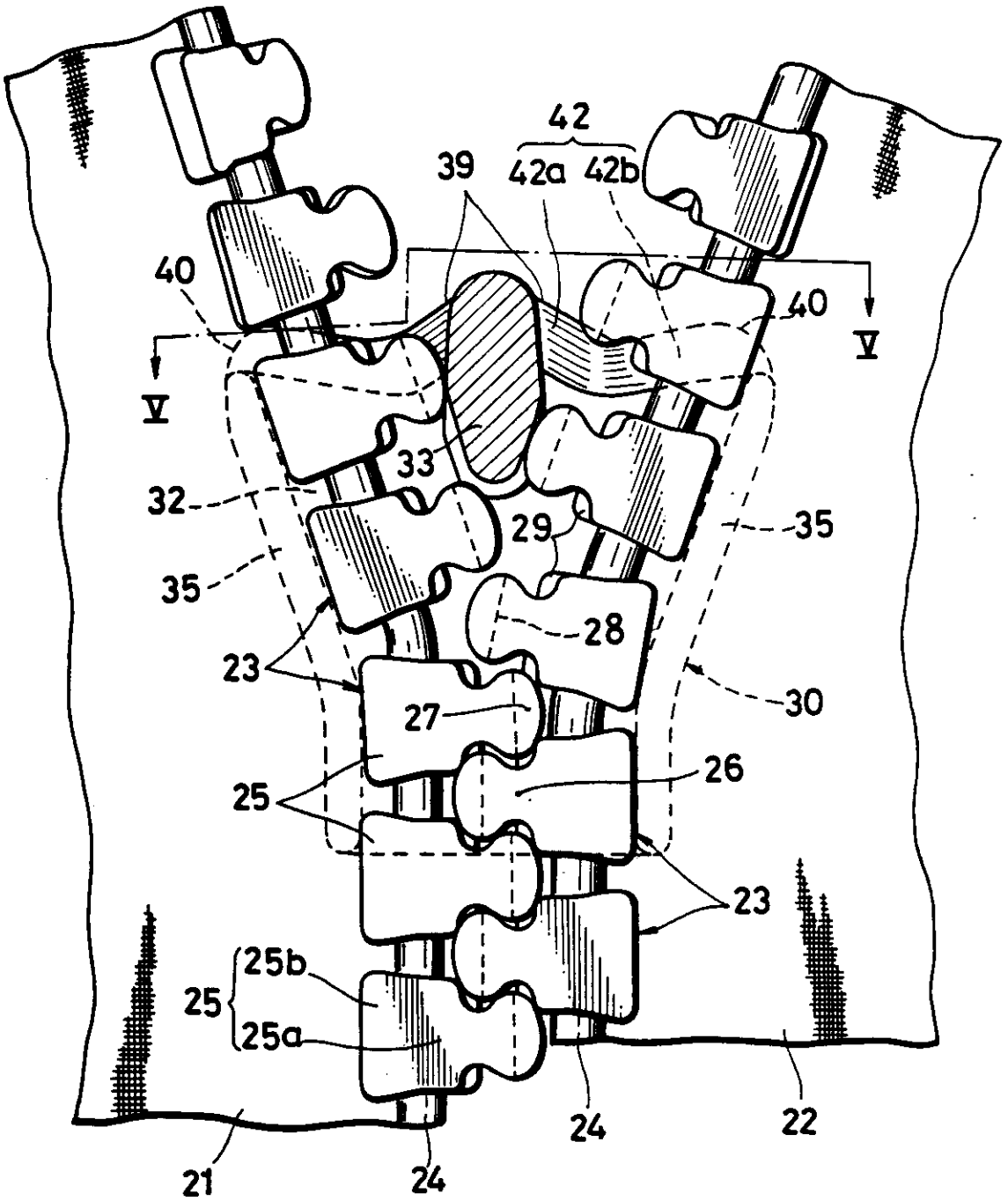

43
43b
43a
39
33
39
43
43a
43b
40
40
35
35
32

FIG.4


42
39
42a
42b
40
40
V
V
33
32
29
35
35
28
23
27
30
26
25
23
25b
25
25a
24
22
21
24

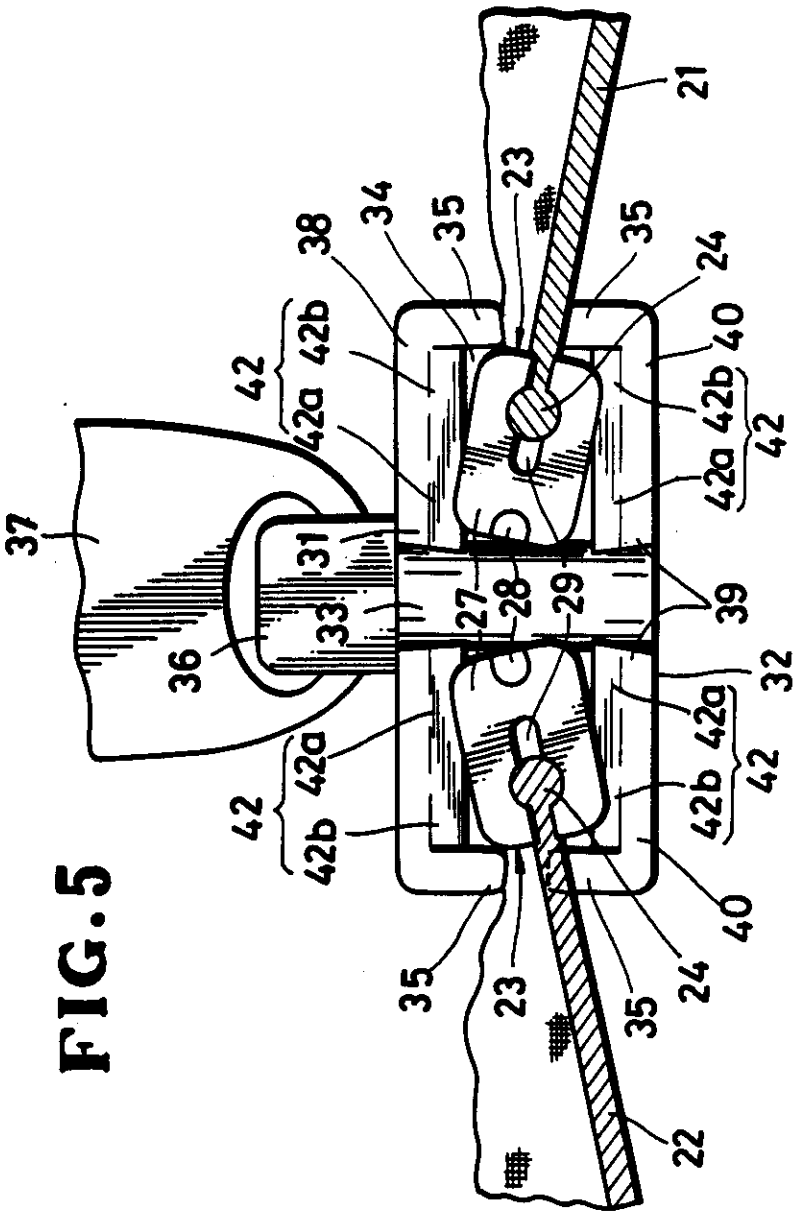

21
23
34
35
38
35
24
42
42b
42a
40
42b
42
42a
37
31
33
36
27
28
29
39
32
42a
42
42b
42b
42a
42
40
35
23
35
24
22

FIG.5

SLIDER FOR SLIDE FASTENER

The present invention relates generally to slide fastener sliders, and more particularly to a slider which is particularly suitable for a slide fastener having a pair of opposed rows of discrete coupling elements.

Slide fastener sliders 10 are known which generally comprise, as shown in Figure 1 of the accompanying drawings, a slider body 11 including upper and lower wings 12, 13 joined at their front end by a neck 14 so as to define therebetween a substantially Y-shaped guide channel 15 for the passage therethrough of a pair of opposed rows of coupling elements (not shown) of the slide fastener. Each of the wings 12, 13 has a pair of flanges 16 extending along opposite lateral edges thereof to define a portion of the guide channel 15, and a front edge 17 extending substantially arcuately between the flanges 16 across the neck 14. When the opposed rows of coupling elements are taken

into mutual engagement by the slider 10 to close the slide fastener, they are likely to tilt with respect to the general plane of slide fastener stringer tapes. Such tilted coupling elements successively impinge at their respective coupling heads against the arcuate front edge 17 of one of the wings 12, 13 before their respective leg portions are introduced into the guide channel 15. Thus, the slider 10 is prevented from sliding smoothly along the rows of coupling elements and is likely to damage the latter during repeated opening and closing operations of the slide fastener.

It is believed possible by means of the present invention to provide a slide fastener slider capable of sliding smoothly along a pair of opposed rows of coupling elements even when the coupling elements are tilted with respect to the general plane of slide fastener stringer tapes.

According to the present invention, there is provided a slider for a slide fastener including a pair of stringer tapes carrying along their inner longitudinal edges a pair of rows of coupling elements, each coupling element having a leg portion mounted on the longitudinal edge and a coupling head projecting beyond the longitudinal edge transversely of the stringer tape, said slider comprising a slider body including a pair of parallel spaced wings joined at their front end by a neck so as to define therebetween a substantially Y-shaped guide channel for the passage of the rows of

coupling elements, at least one of said wings having a pair of flanges projecting from opposite lateral edges thereof toward the other wing and defining therebetwee.' a portion of said guide channel, each of said wings having a front edge extending between said opposite lateral edges thereof across said neck, characterized in that said front edge has a pair of outer portions respectively disposed adjacent to said opposite lateral edges and projecting forwardly beyond a pair of planes extending respectively between a front end of said neck and respective front ends of said flanges, each of said wings having a pair of sloped interior guide surfaces extending respectively along said outer portions of said front edge and facing forwardly of said slider body, said guide surfaces being engageable with the leg portions of the coupling elements.

The invention will be described by way of example with reference to Figures 2 to 6 of the accompanying drawings, wherein:-

Figure 1 is a perspective view of a known slide fastener slider;

Figure 2 is a perspective view of a slide fastener slider embodying the present invention;

fastener slider embodying the present invention;

Figure 3 is an enlarged plan view, partly in cross section, of the slider of Figure 2 with an upper wing omitted;

Figure 4 is a view similar to Figure 3, showing a pair of fastener stringers threaded through the slider;

Figure 5 is a fragmentary cross sectional view taken along line V-V of Figure 4; and

Figure 6, appearing with Figure 3, is a view similar to Figure 3, showing another embodiment.

The present invention is particularly useful when embodied in a slide fastener slider such as shown in Figure 2, generally indicated by the numeral 20.

The slider 20 is suitable for a slide fastener which comprises, as shown in Figures 4 and 5, a pair of stringer tapes 21, 22 having a pair of opposed rows of discrete coupling elements 23 made of synthetic resin injection-molded on the stringer tapes 21, 22 along opposed inner longitudinal edge portions thereof, each longitudinal edge portion having a reinforced or beaded marginal edge 24. Each of the coupling elements 23 includes a leg portion 25 mounted on the longitudinal edge portion around the respective beaded edge 24, and a coupling end portion projecting beyond the beaded edge 24 transversely of the stringer tape 21, 22 and

having a reduced neck 26 and a rounded head 27 integral therewith, the neck 26 and the head 27 being complementary in shape with each other. The head 27 has a recess 28 extending longitudinally of the stringer tape 21, 22 in the general plane of the same and opening away from the leg portion 25. The neck 26 has a pair of wings or projections 29 projecting laterally in opposite directions in the same plane as the recess 28. Each of the leg portions 25 has a first part 25a contiguous to the neck 26 and having a uniform width, and a second part 25b integral with the first part 25a and having a width increasing gradually away from the neck 26, as shown in Figure 4. When the opposed rows of coupling elements 23 are coupled together, the projections on the neck 26 of one coupling element 23 are received in the recesses 28 in the heads 27 of the adjacent coupling elements 23.

As shown in Figure 2, the slider 20 comprises a slider body 30 including a pair of parallel spaced upper and lower wings 31, 32 joined at their front end by a neck or guide post 33 so as to define therebetween a substantially Y-shaped guide channel 34 for the passage therethrough of the opposed rows of coupling elements 23 (Figure 4). Each of the wings 31, 32 has on its interior side a pair of flanges 35, 35 extending along the opposite lateral edges thereof to define therebetween a portion of the guide channel 34. Each

pair of opposed flanges is spaced from one another by a distance slightly larger than the thickness of the stringer tape 21, 22 (Figure 5) so as to restrict tilting of the coupling elements 23. The body 30 also includes an arch-shaped lug 36 disposed on the top surface of the upper wing 31, and a pull tab 37 pivotably connected to the lug 36 for manipulating the slider 20.

As better shown in Figure 3, each of the wings 32 (only the lower wing being illustrated) has a generally W-shaped front edge 38 extending between the opposite flanges 35, 35 across the guide post 33. The front edge 38 has a pair of opposite inner portions 39, 39 adjacent to the guide post 33, and a pair of opposite outer portions 40, 40 adjacent to the flanges 35, 35, respectively. Each of the inner portions 39, 39 terminates short of a plane P extending between the front end of the guide post 33 and a corresponding one of the flanges 35, while each of the outer portions 40, 40 projects forwardly beyond the plane P. The wing 32 has a pair of sloped interior guide surfaces 42, 42 each extending along the length of a corresponding pair of the inner and outer front edge portions 39, 40 and facing forwardly outwardly of the slider body 30. Each of the guide surfaces 42, 42 has an inner portion 42a extending along the inner front edge portion 39, and an outer portion 42b extending along the outer front edge

portion 40, the inner and outer portions 42a, 42b having the same width and sloping at the same angle, preferably between 25 to 30 degrees. Alternatively, the inner portion 42a may be narrower than the outer portion 42b and hence has an angle of inclination greater than that of the outer portion 42b so as to accomodate the amount of tilting of the coupling head 27 which is greater than that of the leg portion 25 (Figure 5).

With the slider 20 thus constructed, sliding movement of the slider 20 in a direction to close the slide fastener causes the leg portion 25 of each coupling element 23 to come to the respective pair of opposed outer portions 40 of the wings' front edges 38 prior to arrival of the coupling head 27 at the inner portions 39 of the front edges 38. When the opposed rows of coupling elements 23 are introduced into the guide channel 34 in a tilted condition as shown in Figure 5, the leg portions 25 are brought into engagement with the outer portions 42b of the sloped guide surfaces 42 of the lower wing 32. As the leg portions 25 slide along the outer portions 42b, the coupling heads 27 angularly move toward the lower wing 32. Continuous movement of the slider 20 causes the coupling heads 37 to slide along the inner portions 42a of the guide surfaces 42 of the upper wings 31, thereby further rectifying the position of the coupling

elements 23.

With the slider 20 having the W-shaped front edges 38 and the sloped guide surfaces 42, the opposed rows of coupling elements 23 are smoothly introduced into the slider's guide channel 34 without impinging against the front edges 38 of the wings 31, 32 even when they are tilted with respect to the general plane of the stringer tapes 21, 22. Thus, smooth sliding movement of the slider 20 can be achieved.

A modified slide fastener slider, only a lower portion of which is shown in Figure 6, is substantially the same as the slider shown in Figures 2 - 5, with the exception that each of sloping interior guide surfaces 43 has a varying or non-uniform width. An inner portion 43a of the guide surface 43 which extends along the inner front edge portion 39, is wider than an outer portion 43b extending along the outer front edge portion 40. Thus, the outer guide portion 43b has an angle of inclination greater than that of the inner guide portion 43a. With the slider having such guide surfaces 43, the individual coupling elements are rapidly restored into their normal position as they slide along the narrow, steep sloped outer guide portions 43b. An additional rectification of the position of the coupling elements is achieved as the coupling heads slide along the wide, gentle sloped inner guide portions 43a.

The slider constructed in accordance with the present invention also performs satisfactorily when it is used in slide fasteners having a pair of opposed rows of continuous coiled or zigzag coupling elements.

Claims:-

1. A slider for a slide fastener including a pair of stringer tapes carrying along their inner longitudinal edges a pair of rows of coupling elements, each coupling element having a leg portion mounted on the longitudinal edge and a coupling head projecting beyond the longitudinal edge transversely of the stringer tape, said slider comprising:

(a) a slider body including a pair of parallel spaced wings joined at their front end by a neck so as to define therebetween a substantially Y-shaped guide channel for the passage of the rows of coupling elements, at least one of said wings having a pair of flanges projecting from opposite lateral edges thereof toward the other wing and defining therebetween a portion of said guide channel;

(b) each of said wings having a front edge extending between said opposite lateral edges thereof across said neck, said front edge having a pair of outer portions respectively disposed adjacent to said opposite lateral edges and projecting forwardly beyond a pair of planes extending respectively between a front end of said neck and respective front ends of said flanges; and

(c) each of said wings having a pair of sloped interior guide surfaces extending respectively along said outer portions of said front edge and facing forwardly of said slider body, said guide surfaces being engageable with the leg portions of the coupling elements.

2. A slider according to claim 1, said front edge further having a pair of inner portions disposed one on each side of said neck, each said inner portion terminating short of a corresponding one of said planes, each of saidwings having another pair of sloped guide surfaces extending respectively along said inner portions of said front edge and facing forwardly of said slider body, said another pair of guide surfaces being engageable with the coupling heads of the coupling elements.

3. A slider according to claim 2, said front edge having a generally W-shape.

4. A slider according to claim 2 or 3, said pair of guide surfaces and said another pair of guide surfaces having the same width and sloping at the same angle.

5. A slider according to claim 4, said pair of guide surfaces and said another pair of guide surfaces sloping at an angle between 25 degrees and 30 degrees.

6. A slider according to claim 2, 3, 4 or 5, said pair of guide surfaces and said another pair of guide surfaces having different widths and sloping at different angles.

7. A slider according to claim 6, said pair of guide surfaces being narrower than said another pair of guide surfaces and sloping at an angle greater than the angle of inclination of said another pair of guide surfaces.

8. A slider according to claim 6 , said another pair of guide surfaces being narrower than said

pair of guide surfaces and sloping at an angle greater than the angle of inclination of said pair of guide surfaces.

9. A slider according to any preceding claim, said flanges being spaced from said other wing by a distance slightly larger than the thickness of the stringer tape.

10. A slide fastener comprising a pair of stringer tapes carrying along their inner longitudinal edges a pair of rows of coupling elements, each coupling element having a leg portion mounted on the longitudinal edge and a coupling head projecting beyond the longitudinal edge transversely of the stringer tape, and a slider according to any preceding claim.

Publication No.
2140078 A dated 21 November 1984

Patent Granted:
WITH EFFECT FROM SECTION 25(1) 19 MAR 1986

Application No.
8410851 filed on 27 April 1984

Priority claimed:
7 Ma[illegible]83 in Japan doc: 58/068212

Title:
Slider for slide fastener

Applicant:
Yoshida Kogyo KK (Japan), No 1 Kanda Izumi-cho, Chiyoda-ku, Tokyo, Japan.

Inventors:
Hiroshi Yoshida, 29 Horitaka, Kurobe-shi, Toyama-ken, Japan.

Susumu Ishii, 16 Ueki, Kurobe-shi, Toyama-ken, Japan.

Classified to:
E28

Examination requested 20 FEB 1985

Address for Service:
Marks & Clerk, 57-60 Lincoln's Inn Fields, London WC2A 3LS.

Printed by the Patent Office at St. Mary Cray, 16 OCT 84