

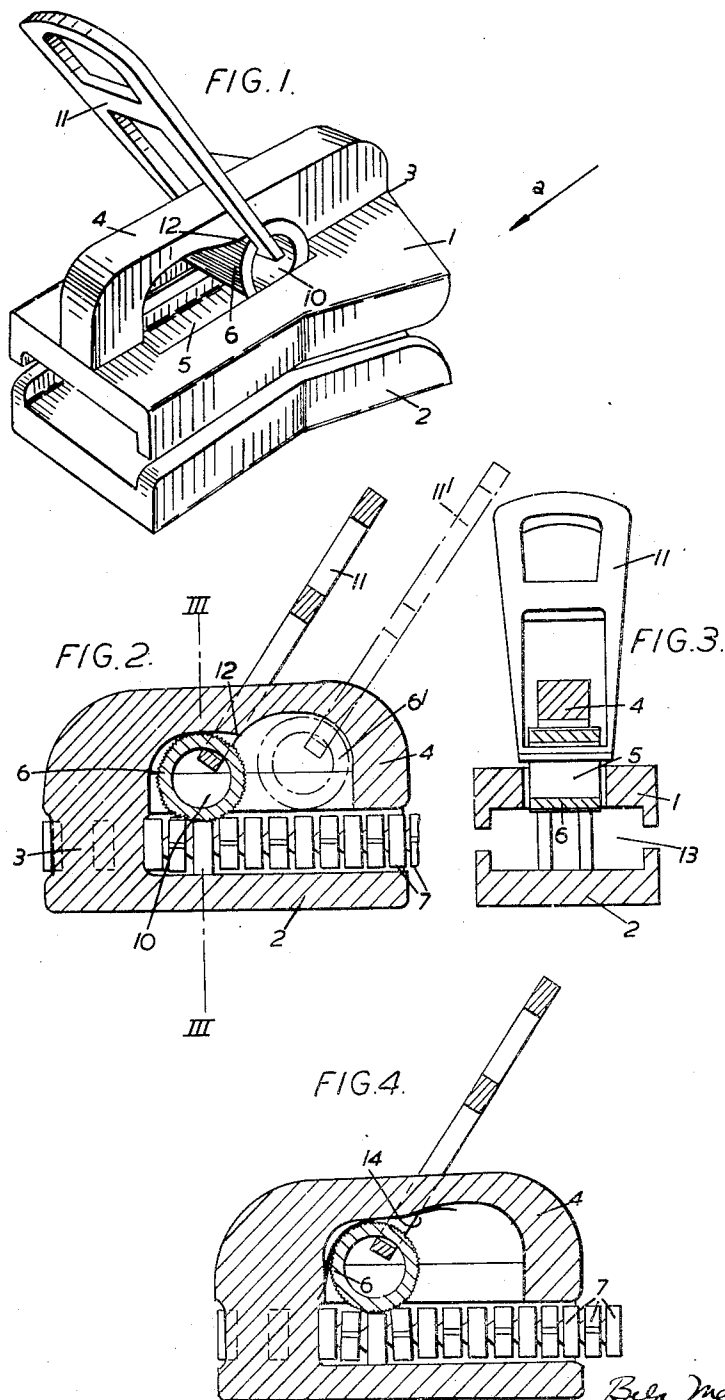
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SLIDER FOR SLIDING CLASP FASTENERS

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SLIDER FOR SLIDING CLASP FASTENERS

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1

The present invention relates to automatically locking sliders for sliding clasp fasteners.

As is known, a slider for sliding clasp fasteners usually comprises an upper shield and a lower shield joined together at a neck portion in the shape of a wedge or the like to form two inclined channels which merge into a single channel, the upper shield being provided in its longitudinal direction with an arched yoke to which a pull member is attached for moving the slider along the rows of fastener members for closing and opening the fastener.

It is an object of the present invention to provide an improved automatically locking slider.

It is another object of the invention to provide an automatically locking slider, which is simple and easy to manufacture.

It is a further object of the invention to provide an automatically locking slider which is particularly well adapted for use in connection with sliding clasp fasteners the interlocking members of which are lacquered or covered by a tape or the like to improve the appearance of the fasteners.

Other objects and advantages of the invention will become apparent to those skilled in the art from the sub-joined detailed description of the invention taken in conjunction with the accompanying drawing, in which:

Fig. 1 is a perspective view of one embodiment of the slider;

Fig. 2 is a sectional view of the slider shown in Fig. 1 the slider being attached to a sliding clasp fastener;

Fig. 3 is a section along the line III—III of Fig. 2; and

Fig. 4 is a section, corresponding to Fig. 2 of a modified embodiment.

Referring first to Figs. 1 to 3, an upper shield 1 is connected to a lower shield 2 at a neck portion 3. The upper shield 1 is provided in its longitudinal direction with an arched yoke 4. Beneath the yoke 4, an opening 5 is provided. A roller 6 is provided in the arch of the yoke 4. The roller 6 is roughened or toothed at its circumference so as to increase the friction between it and fastener members 7, and is provided with an axial hole 10 in which a pull member 11 is linked so as to allow rotation of the roller 6. The yoke 4 is so shaped that the height of the arch increases from the neck portion 3 to the other end of the slider. The inner or underside of the yoke 4 is stepped at 12 so as to produce an abrupt change in the height of the arch, approximately at its mid-point.

2

In the operation of the device when the pull member 4 is actuated to open the fastener the pull is directed away from the neck portion 3. Thereby the roller 6 is moved into the higher part of the arch to assume the position 6' indicated in dotted lines in Fig. 2. In this position the roller has sufficient play to allow the slider to move relatively to the fastener members 7 and the fastener to be opened. It will be seen from Fig. 2 that in the position 6' the roller is raised by the pull exerted on the pull member 11 (which assumes the position 11') to such an extent that it does not substantially enter the space 13 (see Fig. 3) between the upper shield 1 and the lower shield 2. When the pull member 11 is subsequently actuated to close the fastener the pull is directed towards the neck portion 3 but it is also inclined to the upper shield 1, so that the roller bears against the yoke the slope of which, owing to the inclined direction of the pull, prevents the roller from slipping into the lowest part of the arch, but causes the roller to bear against the right hand side in Fig. 2 of the step at 12. This step holds the roller against movement into the lowest part of the arch since the pull is inclined. The roller thus has, again, sufficient play to allow the slider to move relatively to the fastener members 7 and the fastener to be closed.

If a pull is exerted on the stringers of the closed or partly closed fastener or if the slider is pushed in the opening direction without employing the pull member 11, the fastener will not open as would an ordinary fastener. The fastener members 7 within the slider move somewhat towards the neck portion 3 and move the roller 6 by friction in the same direction until the roller 6 enters the lowest part of the arch, assuming the position indicated in Fig. 2 in full lines. In this position the roller protrudes into the space 13 between the upper shield 1 and the lower shield 2 and is pressed by the yoke 4 firmly against the fastener members 7, so that they are clamped between the roller 6 and the lower shield 2 of the slider, and any further movement of the fastener members 7 relatively to the slider, and consequent opening of the fastener, is prevented.

Fig. 4 illustrates a modification of the slider just described. In this modified embodiment, a spring 14 is provided in the arch of the yoke 4, in order to press the roller 6, when in the upper part of the arch of the yoke 4, positively against the members 7 and, thus, to increase the friction between the roller 6 and the members 7, and

thereby to ensure the beginning of the locking action.

It will be appreciated that since the roller or the like is rotatable, any undue scratching on the surfaces of the fastener members is avoided. Since the roller presses against the fastener members, but does not enter the space between the fastener members the present slider may be used in connection with a sliding clasp fastener the members of which are covered by tapes or the like to improve the appearance of the fastener. In this case the locking pressure is exerted by the roller or the like on the adjacent surfaces of the covering tapes, thus clamping the fastener between the roller or the like and the lower shield. If, on the other hand, the fastener members are not covered by a tape or the like, but lacquered, the rotation of the roller will substantially prevent scratching the lacquered surfaces of the members.

While two preferred embodiments of this invention have been described and illustrated, it should be clearly understood that the accompanying drawing is given by way of example only and that many alterations, omissions and additions are possible without departing from the spirit of this invention.

I claim:

1. In and for a sliding clasp fastener, a slider comprising an upper shield, a lower shield joined to said upper shield at a neck portion said shields defining therebetween a passageway for separable fastening members, an arched yoke on said upper shield, a locking member provided in the arch of said yoke and displaceable in the longitudinal direction of the slider, said upper shield having an opening through which said locking member may protrude into the space formed between said upper and lower shields, and a pull member attached to said locking member, said yoke being so shaped that the arch is stepped to form at least two sections with its height increasing in the direction from the neck portion to the other end of the slider, whereby in operation said slider is reciprocable with respect to said fastener members when said locking member is in the higher section of the arch said locking member is free when in the higher section of the arch, but when in the lower section of the arch it is pressed by said yoke towards the fastener members, which are in turn pressed towards said lower shield, the fastener being, thus, clamped between said locking member and said lower shield.

2. In and for a sliding clasp fastener, a slider comprising an upper shield, a lower shield joined to said upper shield at a neck portion said shield defining therebetween a passageway for separable fastening members, an arched yoke provided at said upper shield in the longitudinal direction of the slider and so shaped that the height of the arch increases from the neck portion to the other end of the slider said arch being stepped intermediate its length, said upper shield having an opening beneath said yoke, a locking member provided in the arch of said yoke and a pull member attached to said locking member and said locking member being larger in cross-section than the lower end of the arch and smaller in cross-section than the higher end of the arch, said locking member being displaceable in the longitudinal direction of the slider and adapted to extend into the opening in said upper shield and, when in the higher end of the arch, to be raised by a pull on said pull member to such an extent that it does not substantially enter the space

formed between said upper and lower shields, while when said locking member is positioned in the lower end of the arch said yoke causes the locking member to protrude into the space between said upper and lower shields.

3. In and for a sliding clasp fastener, a slider comprising an upper shield, a lower shield joined to said upper shield at a neck portion, an arched yoke provided at said upper shield in the longitudinal direction of the slider and so shaped that the arch is stepped intermediate its length increases in height from the neck portion to the other end of the slider, said upper shield having an opening beneath said yoke, a roller provided in the arch of said yoke and a pull member attached to said roller, said roller being displaceable in the longitudinal direction of the slider and adapted to extend into the opening in said upper shield and, when in the higher end of the arch, to be raised by a pull on said pull member to such an extent that it does not substantially enter the space formed between said upper and lower shields, while when said roller is positioned in the lower end of the arch said yoke causes the roller to protrude into the space between said upper and lower shields said slider being reciprocable only when said roller is in the higher end of said arch.

4. In and for a sliding clasp fastener, a slider comprising an upper shield, a lower shield joined to said upper shield at a neck portion, an arched yoke provided at said upper shield in the longitudinal direction of the slider and so shaped that is stepped intermediate its length the arch increases in height from the neck portion to the other end of the slider, said upper shield having an opening beneath said yoke, a pull member, and a roller provided in the arch of said yoke and rotatably attached to said pull member, said roller having a roughened circumference and being displaceable in the longitudinal direction of the slider and adapted to extend into the opening in said upper shield and, when in the higher end of the arch, to be raised by a pull on said pull member to such an extent that it does not substantially enter the space formed between said upper and lower shields, while when said roller is positioned in the lower end of the arch said yoke causes the roller to protrude into the space between said upper and lower shields said slider being reciprocable only when said roller is in the higher end of said arch.

5. In and for a sliding clasp fastener, a slider comprising an upper shield, a lower shield joined to said upper shield at a neck portion, an arched yoke provided at said upper shield in the longitudinal direction of the slider, the underside of said yoke being stepped so that the height of the arch increases abruptly from the neck portion to the other end of the slider to provide a higher and a lower arch section, said upper shield having an opening beneath said yoke, a locking member provided in the arch of said yoke, and a pull member associated with said locking member, said locking member being displaceable in the longitudinal direction of the slider and adapted to extend into the opening in said upper shield, and when in the higher section of the arch, to be raised by a pull on said pull member to such an extent that it does not substantially enter the space formed between said upper and lower shields, while when said locking member is positioned in the lower section of the arch said yoke causes the locking member to protrude into the space between said upper and lower shields.

5

6. In and for a sliding clasp fastener, a slider comprising an upper shield, a lower shield joined to said upper shield at a neck portion, an arched yoke provided at said upper shield in the longitudinal direction of the slider, the underside of said yoke being stepped at approximately the mid-point of the arch so that, at this point, the height of the arch increases abruptly from the neck portion to the other end of the slider to provide higher and lower arch sections, said upper shield having an opening beneath said yoke, a locking member provided in the arch of said yoke, and a pull member associated with said locking member, said locking member being displaceable in the longitudinal direction of the slider and adapted to extend into the opening in said upper shield and, when in the higher section of the arch, to be raised by a pull on said pull member to such an extent that it does not substantially enter the space formed between said upper and lower shields, while when said locking member is positioned in the lower section of the arch said yoke causes the locking member to protrude into the space between said upper and lower shields.

7. In and for a sliding clasp fastener, a slider comprising an upper shield, a lower shield joined to said upper shield at a neck portion, an arched yoke provided at said upper shield in the longitudinal direction of the slider and so shaped to provide respectively a high level and a low level interconnected by a stepped formation, said upper shield having an opening beneath said yoke, a locking member provided in the arch of said yoke, a pull member attached to said locking member, said locking member being displaceable in the longitudinal direction of the slider and adapted to extend into the opening in said upper shield and, when in the higher level of the arch, to be raised by a pull on said pull member to such an extent that it does not substantially enter the space formed between said upper and lower shields, while when said locking member is positioned in the lower level of the arch said yoke causes the locking member to protrude into the space between said upper and lower shields, and a spring provided in the arch for pressing said locking member, when in the higher level of the arch, towards the fastener members to increase the friction between said locking member and the fastener and thus to ensure the beginning of the locking action when, in operation, the slider is unintentionally moved in the direction of opening the fastener.

8. In and for a sliding clasp fastener incorporating meshing fastening elements carried on a stringer, a slider comprising an upper shield and a lower shield joined to said upper shield at a neck portion and between which are displaceable intermeshing lengths of fastening elements, an arched yoke on said upper shield, a locking member provided in the arch of said yoke and displaceable in the longitudinal direction of the slider, said upper shield having an opening through which said locking member may protrude into the space formed between said upper and lower shields for normally resting in surface contact with said fastener elements, and a pull member mounted on said yoke, said yoke being so shaped that the height of the arch increases in the direction from the neck portion to the other end of the slider and is stepped upwardly intermediate its length to define a plurality of arch sections of different height, whereby, in operation, said locking member is freely reciprocable when in the higher end of the arch, but when in

6

the lower end of the arch it is pressed by said yoke towards the fastener members, which are in turn pressed thereby towards said lower shield, the fastener elements being, thus, clamped between said locking member and said lower shield, the arrangement being such that when by a pull on the pull member is urged the slider is moved in the direction of opening or closing the fastener elements the pull member forces the locking member into and maintained within the higher end of the arch, while when the slider is unintentionally moved without using the pull member in the direction of opening the fastener, the locking member is forced into the lower end of the arch by friction between the locking member and the fastener elements, thereby preventing further movement of the slider.

9. In and for a sliding clasp fastener incorporating meshing fastening elements carried on a stringer, a slider comprising an upper shield and, a lower shield joined to said upper shield at a neck portion and between which are displaceable intermeshing lengths of fastening elements, an arched yoke provided at said upper shield in the longitudinal direction of the slider and so shaped that the height of the arch increases in stepped formation from the neck portion to the other end of the slider to define arched sections of different heights, said upper shield having an opening beneath said yoke, a locking member provided for movement in the arch of said yoke, and a pull member, said locking member being displaceable in the longitudinal direction of the slider and adapted to extend into the opening in the said upper shield whereby the slider is free to move relatively to the fastener to which it is attached when said locking member is in the higher arched section of the arch, while when said locking member is positioned in the lower end of the arch said yoke causes the locking member positively to protrude into the space between said upper and lower shields and thereby to prevent movement of the slider relatively to the fastener elements, the arrangement being such that when by a pull on the pull member the slider is moved in the direction of opening or closing the fastener elements the pull member urges and maintains the locking member into and within the higher arched section, while when the slider is unintentionally moved without using the pull member in the direction of opening the fastener, the locking member is forced into the lower arched section by friction between the locking member and the fastener elements, thereby preventing further movement of the slider.

10. In and for a sliding clasp fastener incorporating meshing fastening elements carried on a stringer, a slider comprising an upper shield, and a lower shield joined to said upper shield at a neck portion and between which are displaceable intermeshing lengths of fastening elements, an arched yoke provided at said upper shield in the longitudinal direction of the slider and so shaped that the height of the arch increases in stepped formation from the neck portion to the other end of the slider to define arched sections of different heights, said upper shield having an opening beneath said yoke, a roller provided for movement in the arch of said yoke, and a pull member, said roller being displaceable in the longitudinal direction of the slider and adapted to extend into the opening in said upper shield whereby the slider is free to move relatively to the fastener elements to which it is attached when said roller is in the higher arched section, while

7

when said roller is positioned in the lower arched section said yoke causes the roller positively to protrude into the space between said upper and lower shields and thereby to prevent movement of the slider relatively to the fastener elements, the arrangement being such that when by a pull on the pull member the slider is moved in the direction of opening or closing the fastener elements the pull member urges and maintains the

8

locking member into and within the higher arched section while when the slider is unintentionally moved without using the pull member in the direction of opening the fastener elements the roller is forced into the lower arched section by friction between the roller and the fastener elements, thereby preventing further movement of the slider.

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