April 21, 1959 L. H. MORIN 2,882,578

JAM-FREEING-TYPE SLIDER

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Fig. 1.

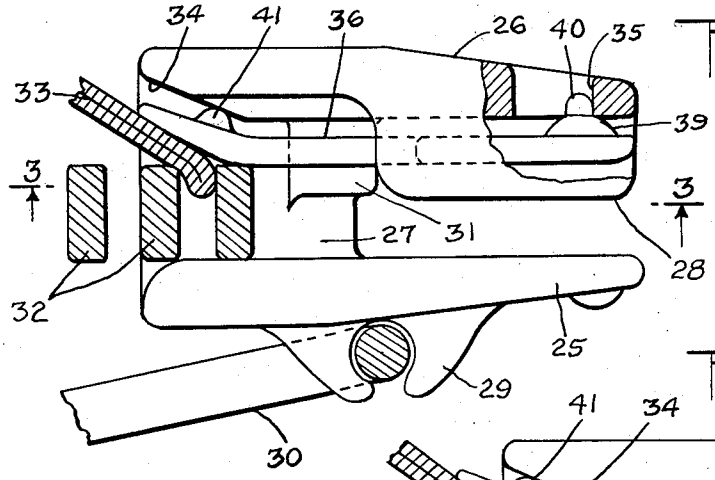


Fig. 2.

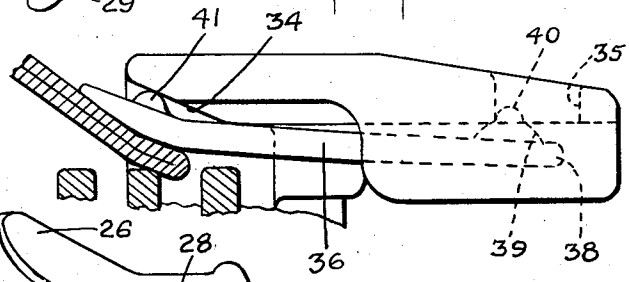


Fig. 3.

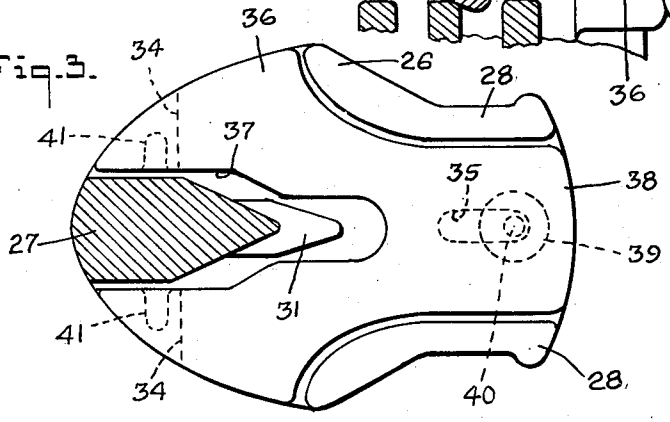
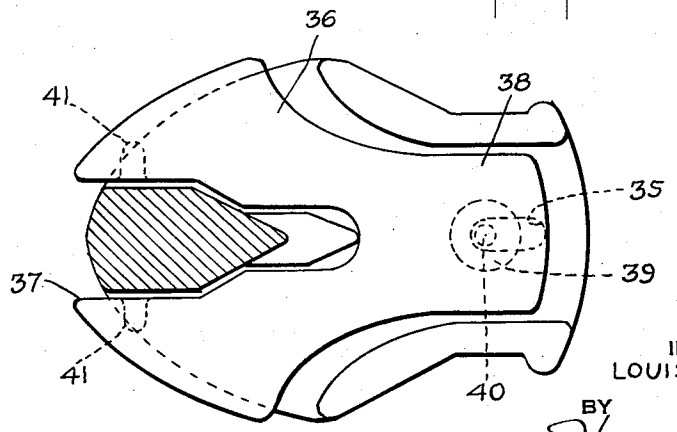


Fig. 4.



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Fig. 5.

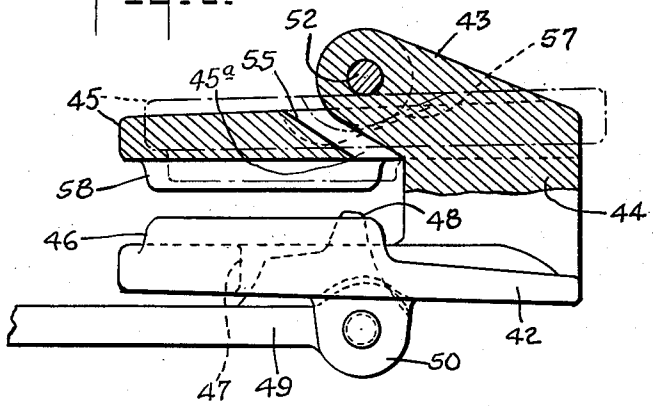


Fig. 6.

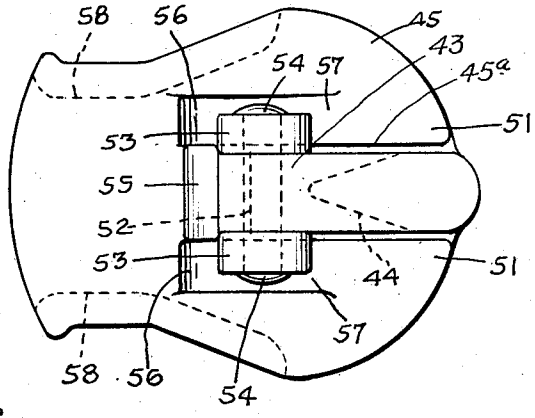


Fig. 7.

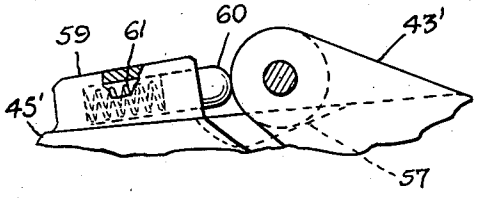


Fig. 8.

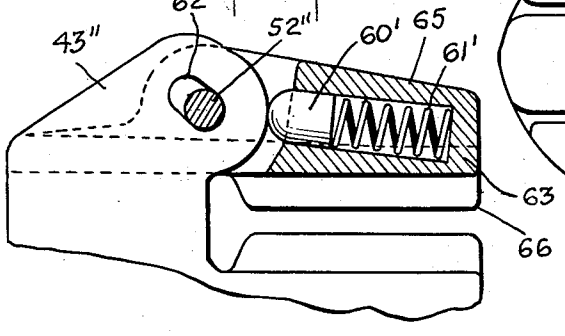
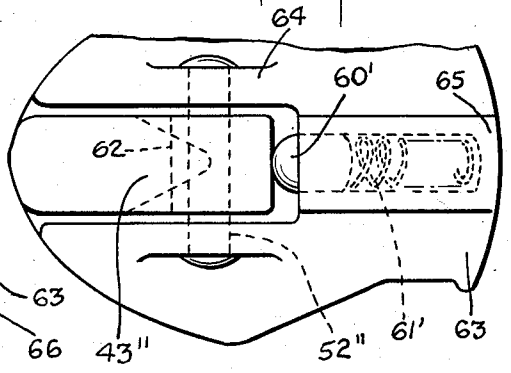


Fig. 9.



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Fig. 10.

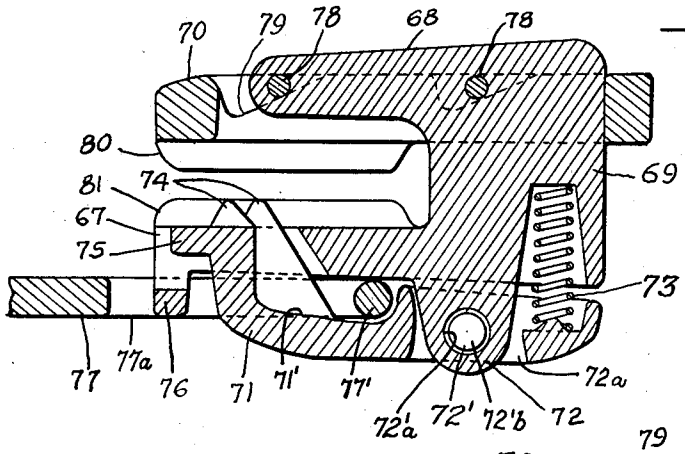


Fig. 11.

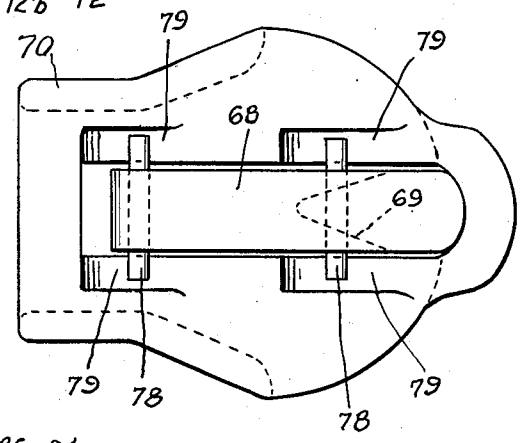


Fig. 13.

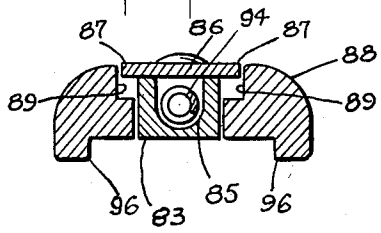


Fig. 12.

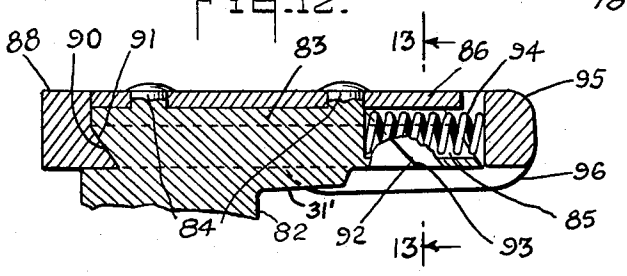
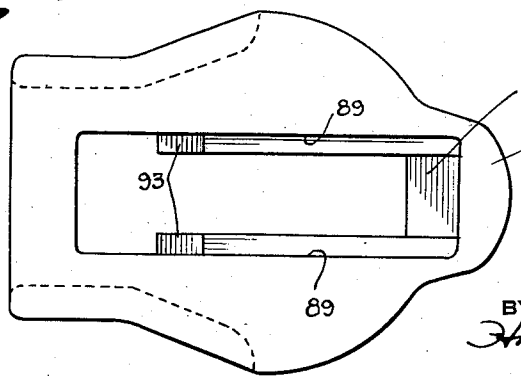


Fig. 14.



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United States Patent Office 2,882,578
Patented Apr. 21, 1959

2,882,578

JAM-FREEING-TYPE SLIDER

Louis H. Morin, Bronx, N.Y.

Application January 11, 1954, Serial No. 403,177
8 Claims. (Cl. 24—205.15)

This invention relates to sliders for use on separable fastener stringers to couple and uncouple the same. More particularly, the invention deals with what I term a jam-freeing slider, wherein the back or bottom wall structure of the slider includes a yielding or movable plate or wall part which will facilitate freeing the slider if the same becomes jammed by engagement with foreign elements positioned between the slider and the stringer scoops.

Still more particularly, the invention deals with a slider structure, wherein the slider body generally comprises top and bottom members which are spaced and integrally joined through a connecting web and, wherein, the bottom member has means for supporting and guiding and otherwise controlling operation of a plate or wall part, which latter is movable relatively to the top wall of the slider body in providing the jam-freeing properties to the slider.

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:

Fig. 1 is a side view of one form of slider, which I employ, with part of the construction broken away and in section and diagrammatically illustrating the use of the slider.

Fig. 2 is a view, generally similar to Fig. 1, showing only a part of the construction and showing parts in a different position.

Fig. 3 is a section on the line 3—3 of Fig. 1.

Fig. 4 is a view, similar to Fig. 3, showing the parts in a different position.

Fig. 5 is a view, similar to Fig. 1, showing half of the slider in section and showing a modification, with part of the structure in different position as shown by dot and dash lines.

Fig. 6 is a bottom plan view of the structure shown in Fig. 5.

Fig. 7 is a side view of a portion of the bottom of a slider, similar to that shown in Fig. 5, and showing a modification.

Fig. 8 is a view, similar to Fig. 7, with part of the construction in section and showing another form of slider construction.

Fig. 9 is a bottom plan view of the structure shown in Fig. 8.

Fig. 10 is a longitudinal sectional view through a modified form of slider which I employ.

Fig. 11 is a bottom plan view of the structure shown in Fig. 10.

Fig. 12 is a view, similar to Fig. 10, showing only a part of the construction and showing a modification.

Fig. 13 is a section on the line 13—13 of Fig. 12; and

Fig. 14 is a plan view of part of the slider shown in Figs. 12 and 13 detached.

For purposes of description, the several sliders shown

in Figs. 1 to 14, inclusive, may be said to comprise slider bodies defined by top and bottom members, which are integrally joined by a connecting web at the wide or double channelled end of the slider body. The top member of the slider body, in most instances, comprises a flanged wall, the flanges partially forming the channels of the slider body and, to this wall, is connected a pull, which may be an ordinary type of pull, or may be of the lock or automatic lock type and different types of pulls will be shown by way of illustration in certain of the views.

The bottom member, on the other hand, in all instances, provides means for guiding what may be termed a backplate or wall part, or member, to move toward and from the top wall in providing the jam-freeing properties to the slider. This part of the slider bottom member, in some instances, includes flanges to complete the formation of the channels of the slider body; whereas, in other instances, is movable with respect to a flanged part or member. Further, with some types of construction shown, spring means is employed to tensionally maintain the movable wall part in a predetermined position. In all other instances, cam surfaces are provided in guiding the movable wall part and this part moves longitudinally of the slider body as well as toward and from the top wall.

Considering now the structure shown in Figs. 1 to 4, inclusive, in these figures **25** represents the top member, or wall of the slider body, **26** the bottom member or wall, **27** the connecting web. In Figs. 1 to 4, inclusive, the bottom member or wall **26** includes the side flanges **28** for defining, in conjunction with the web **27**, the channels of the slider body. The wall **25** in this construction is not flanged. At **29** I have shown a pivot portion on the wall **25** for pivotal mounting of the pull **30** thereon, as with other devices of this kind.

The web **27** has an extending guide lug **31** for guiding scoops into the single channel end of the slider body, the scoops being of a structure to operate in conjunction with this guide lug.

In Figs. 1 and 2 of the drawing, I have indicated at **32** diagrammatically a few scoops in order to indicate the jamming of a foreign element such, for example, as part of a garment noted at **33** in Figs. 1 and 2. The inner surface of the bottom wall **26** has, at opposite sides of the web **27**, bevelled surfaces **34** and the wall, at the contracted or single end of the slider, has an elongated aperture **35**.

At **36** I have shown a movable plate or part, which may be said to comprise a backplate, this part being generally of the contour shown in plan in Figs. 3 and 4, in other words, is recessed as seen at **37** to slide freely over the web **27** and guide **31**. The part **36** otherwise generally conforms to this interior channelled portion of the wall **26**, in other words, includes a reduced extension **38** which operates in a single channelled end of the slider body.

The part **36**, or the end **38** thereof, has an enlarged outwardly extending disc portion **39** which operates upon the inner surface of the wall **26**, as clearly shown, thus maintaining the end **38** spaced from said surface. The disc **39** has, centrally thereof, an outwardly projecting pin **40** which operates in the aperture **35** in checking longitudinal movement of the part **36**. The other forked end portion of the part **36** is bent downwardly to a slight extent as noted in Figs. 1 and 2 and these bent portions have, on their lower surfaces, downwardly projecting lugs **41**, which operate upon the bevelled surface **34** in longitudinal movement of the part **36** in the slider body from the position shown in Fig. 1, which may be said to be a jammed position to the position shown in Fig. 2, where the fabric or garment **33** is shown in a

position to be freed readily from the slider. With the construction shown in Figs. 1 to 4, inclusive, the part 36 moves toward and from the wall 25, as well as longitudinally of the slider body.

In Figs. 5 and 6 of the drawing, I have shown a modified form of slider structure, in which 42 represents the top member or wall part, 43 the bottom member, 44 the connecting web integrally joining said members. The member 43 can be said to be a bar extension of the web 44. At 45 I have shown the plate or wall part movable toward and from the member or wall 42. With this construction, the wall 42 includes the flanges 46, partially defining the channel structure of the slider body. The wall 42 is apertured, as seen at 47, to receive a lock pin portion 48 of a pull 49 pivoted to a bearing 50 on the wall 42, as with other devices of this type and kind.

With the structure shown in Figs. 5 and 6, the member 43 forms a guide for the yoke-shaped end portion 51 of the plate or wall part 45. It also forms a support for a pin 52 which extends at opposed sides of the member 43 and forms a support for rollers 53, the latter being held against displacement by heading the ends of the pin 52, as seen at 54.

The plate or wall part 45 has, at the inner end of the longitudinal opening 45*a* thereof, which defines the yoked end 51, a bevelled wall 55. This wall engages the member 43 in checking movement of the part 45 in one direction. At opposite sides of the bevelled wall 55, the part 45 has recesses 56, in which the rollers 53 operate, the recesses having curved or bevelled wall portions 57 which help to check movement of the part 45 in the opposite direction. This last checking movement maintains the part 45 in alinement with the part or wall 42, in other words, keeps the inner adjacent surfaces of wall 42 and part 45 in predetermined alinement with respect to each other in formal operation of the slider.

It will be noted that the part 45, in the construction shown, includes the inwardly extending side flanges 58, similar to the flanges 46.

It will also be noted that, in Fig. 5 of the drawing, the part 45 is shown in its normal position in full lines. However, in dot-and-dash lines, this part is shown in its outwardly extended position, or what may be termed the jam-freeing position.

In Fig. 7 of the drawing, I have shown a slight modification of the structure shown in Figs. 5 and 6. In this figure, part of the member or bar extension 43′ only is shown, as well as only a portion of the wall part 45′. The part 45′ differs from the part 45 in having an outwardly extending elongated cylinder portion 59, in which is mounted a pin 60 actuated by a spring 61 within the cylinder. The pin 60 engages the member 43′ and serves to tensionally maintain the part 45′ in its normal operative position, in other words, a position similar to the full line position shown in Fig. 5. It will be understood, however, that, in moving the part 45′ into a jam-freeing position, this operation takes place against the action of the spring 61.

In Figs. 8 and 9 of the drawing, I have shown a further modification of the structure shown in Fig. 7, as well as that shown in Figs. 5 and 6. In other words, the member or bar extension 43″ has been modified in form and has an elongated aperture 62 for receiving a pin 52″, similar to the pin 52. Here again, in Figs. 8 and 9, a bottom part, plate or wall 63 is employed which has, instead of the recesses 56, raised bearing portions 64 for receiving the ends of the pin 52″. The part 63 has a long cylinder portion 65, in which is mounted a pin 60′, similar to the pin 60, the latter being actuated by a spring 61′ in said cylinder. It will be understood that, with the structure shown in Figs. 8 and 9, the wall part 63 can move relatively to the top wall of the slider body against the action of the spring pressed pin 60′ and, in this operation, the pin 52″ moves outwardly in the inclined aperture 62, which is provided in the member 43″.

The part 63 has flanges, as at 66, similar to the flanges 58, of Figs. 5 and 6 of the drawing.

In Figs. 10 and 11 of the drawing, I have shown another form of slider, wherein 67 represents one member of the slider body, 68 the other member, or bar extension of the web, and 69 the slider web integrally joining said members. At 70 is shown the plate or wall part movable relatively to the member 67. As the various actions of the part, similar to the part 70, are the same, or substantially the same through most of the showings, the brief description of the several showings will be limited to the difference in structural features.

In Fig. 10, I have shown the top wall or member 67 of the type and kind employing an automatic lock for retaining the slider against movement on the stringers, the wall 67 having the raised bearing portion 72 for the pivot 72′ of the lock element 71. Pivot 72′ comprises a pivot opening 72′*a* in the bearing portion 72 and a pair of pivot shafts which extend toward each other from opposite sides of the opening 72*a* in the lock element 71, with which they are integrally formed, one of these shafts being shown at 72′*b*. The foregoing construction of pivot 72′ is shown in detail and claimed in applicant's copending application Ser. No. 340,560, filed March 5, 1953. A spring 73 is provided between one end of the lock element and the web 69, as shown, to normally support the looking pins 74 of the element 71 in operative position. The element 71 has a projecting nose 75, at its free end, adapted to strike a yoke 76 on the wall 67 in checking outward movement of the lock element. The pull, shown in part at 77, actuates the element 71 in movement thereof into inoperative position. The pull is movably attached or coupled to wall 67 by means of the pull axle 77′ which extends through the aperture 71′ of lock element 71, the axle 77′ being connected to pull 77 by a pair of arms one of which is shown at 77*a*.

The bottom member 68 of the slider body in the construction shown, is in the form of an elongated bar having longitudinally spaced pins 78. The pins project at opposite sides of the bar, as clearly seen in Fig. 11 of the drawing, and operate in cam-shaped recesses 79 in the lower surface of the plate or part 70. This construction is generally similar to the structure of Figs. 5–6 having the rollers 53 operating in the recesses 56 and engaging their bevelled walls 57, thus no further description with regard to the function and operation of the part 70 need be described. The part 70 includes the inwardly projecting flanges 80 which, in conjunction with the flanges 81 of the member 67, define the channels of the slider body.

In Figs. 10 and 11, the part or plate 70 may be said to comprise an O-shaped plate from a standpoint that the plate completely envelopes the member 68 and, in this respect, differs from the fork or U-shaped plates shown in the earlier figures. In like manner, the structures shown in Figs. 12 to 14, inclusive, all employ the O-type of plate and, as the top member structure can be identical with the structure shown in Fig. 10, or that shown in Figs. 5 and 1 of the drawing, no showing of the top member is included in Fig. 12.

In Fig. 12 of the drawing, I have indicated at 82 part of the web of one of said top wall structures and at 83 is shown the bottom member integral with the web 82, the member being in the form of an elongated bar, similar to the bar 68 and includes downwardly directed rivet members 84 spaced longitudinally thereof. The bar 83 has a channelled extension 85 at one end, the channel being partially closed by a retaining plate 86 fixed to the bar by the rivet members 84, the plate 86 extending at opposite sides of the bar, as noted at 87 in Fig. 13 of the drawing. These extensions form stops checking unwanted outward movement of the movable plate or wall part 88.

The plate or wall part **88** is recessed, as seen at **89**, to receive the extensions **87** and, normally, the parts assume the position shown in Fig. 13 of the drawing. However, it will be understood that, in movement of the wall part **88**, the same moves outwardly in the direction of the stops **87** and also moves longitudinally of the slider body, the latter movement being controlled and guided by interengaging bevelled surfaces. In Fig. 12 of the drawing, one of the interengaging bevelled surfaces is the bevelled surface **90** at one end of the bar **83** and the surface **91** on the wall part **88**, as shown at the left of said figure. The other pair of surfaces are indicated at **92** and **93**, respectively, at opposed sides of the recess **89**. A coil spring **94** is arranged in the channel of extension **85** and operates upon the end **95** of the wall **88** and normally supports said wall in the position shown in Figs. 12 and 13. The wall part **88** is flanged, as seen at **96**, to partially define the channel of the slider body. The surfaces **91** and **93** are clearly shown in Fig. 14.

It may be noted here that the guiding lug or ridge which extends from the inner end of the web, as shown at **31** in Figs. 1–4 and at **31'** in Fig. 12, is useful to facilitate the coupling and uncoupling of the stringers. As will be understood, these lugs or ridges may be provided on any of the sliders disclosed, or may be dispensed with where the sliders are used on stringers having conventional scoops.

The operation of the sliders in the event a jam occurs is believed to be fairly indicated by the foregoing description but may be further detailed as follows. Using the slider of Figs. 1–4 as an example, let it be assumed that foreign matter, such as the cloth **33** becomes jammed between the scoops and the plate **36**, as shown in Fig. 1, so that the slider cannot be moved any further in the closing direction. The natural inclination of the zipper user is to try to move the slider the other way, and when this happens, the jam will be relieved. Thus, when the slider is moved so as to uncouple the stringers, the plate **36** tends to be moved in the direction of the web end of the slider, as shown in Fig. 2, by virtue of the friction which develops between the scoops and the surface of the plate. With the plate in the position shown in Fig. 2, it is apparent that at the point of the jam the distance between the plate and the top or front wall of the slider has been increased, thus enabling the cloth **33** to be removed. Removal of the cloth is further aided by the movement of the plate in the direction of the web end. With the slider unjammed or freed, it can then be moved to close the stringers and during this action the plate **36** slides back to its Fig. 1 position under the influence of the frictional force created by the scoops at their contact with the reduced end portion **38** of the plate. The same operation is followed in the case of the other modifications and substantially the same action takes place, it being evident that in these cases all of the back plate may move away from and toward the front wall of the slider.

With all of the different forms of slider structures shown, the movable plate or wall part is guided for movement at least toward and from the top wall of the slider and, in all instances, is also movable longitudinally of the slider body during the first mentioned movement. In all instances, the bottom member of the slider body provides a guide for said movable plate or wall, as well as providing means controlling such movement or supporting means which controls the movement. With the several slider structures, any experience of jamming that may take place in the slider operation by having a part of a garment or other foreign material come between the slider body and the stringer scoops, as noted, for example, in Figs. 1 and 2 of the drawing, can be rectified by reversing the movement of the slider, thus facilitating removal of the garment or other foreign matter, whereupon the slider is restored to its normal operating function.

It will be observed that in each modification there is a camming engagement between the movable back plate or wall part and the bottom member of the slider by virtue of which the back plate is movable away from and toward the front slider wall, as well as movable longitudinally of the slider. Thus, in Figs. 1–4, the plate **36** has a camming engagement with bottom member **26** through the contact between the lugs **41** and the surface **34**; in Figs. 5–6, the plate **45** has a camming engagement with bottom member **43** through the contact between rollers **53** and the curved surfaces of recesses **56**; in Fig. 7 the camming engagement is similar to that of Figs. 5–6; in Figs. 8–9 the back plate **63** has a camming engagement with bottom member **43''** by means of the contact of the pin **52''** with the surfaces of the aperture **62**; in Figs. 10–11 the contact of the surfaces of recesses **79** with the pins **78** provide the camming engagement; in Figs. 12–14 a camming engagement results by contact between surfaces **90** and **91** and between surfaces **92** and **93**.

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

1. A jam-freeing slider for separable fastener stringers, said slider comprising a body defined by top and bottom members, a web adapted to join and space said members, the top member having means adapted for coupling a pull therewith, the bottom member including a wall part movable toward and from the top member, and cooperating means on said bottom member and wall part for limiting movement of said wall part with respect to said bottom member, said bottom member also including a flanged wall, having an elongated aperture at one end portion and a bevelled inner surface at the opposed end portion, and said movable wall part having means, at end portions thereof, for enabling said wall part to move toward and from said top member.

2. A jam-freeing slider for separable fastener stringers, said slider comprising a body defined by top and bottom members, a web adapted to join and space said members, the top member having means for coupling a pull therewith, the bottom member including a wall part movable toward and from the top member, said wall part and top member being adapted to receive therebetween the scoops of a pair of stringers and to make contact with said scoops, cooperating means on said bottom member and wall part for limiting movement of said wall part with respect to said bottom member, said last named means comprising spaced pins on said bottom member having ends projecting at opposite sides thereof, and means on said wall part forming recesses having bevelled surfaces operatively engaging the projecting ends of said pins, said wall part having an elongated aperture, in which said bottom member is disposed, and said wall part having inwardly directed side flanges partially defining channels in the slider body.

3. A jam-freeing slider for separable fastener stringers, said slider comprising a body defined by top and bottom members, a web adapted to join and space said members, the top member having means for coupling a lock element therewith, the bottom member including a wall part movable toward and from the top member, cooperating means on said bottom member and wall part for limiting movement of said wall part with respect to said bottom member, said last named means comprising spaced pins on said bottom member having ends projecting at opposite sides thereof, means on said wall part forming recesses having bevelled surfaces operatively engaging the projecting ends of said pins, and a tensionally actuated lock element pivotally coupled to said means on said top member.

4. A jam-freeing slider for separable fastener stringers, said slider comprising a body defined by top and bottom members, a web adapted to join and space said members, the top member having means for coupling a pull therewith, the bottom member including a wall part movable toward and from the top member, said wall part and top member being adapted to receive therebetween the scoops of a pair of stringers and to make contact with said scoops, cooperating means on said bottom member and wall part

for limiting movement of said wall part with respect to said bottom member, said bottom member comprising an elongated bar, said wall part having an elongated aperture, in which the bar is disposed, said last named means comprising interengaging bevelled surfaces on the bar and wall part, and a plate in said aperture secured to the outer side of the bar and engageable by the wall part for retaining the wall part against displacement from said bar.

5. A jam-freeing slider for separable fastener stringers, said slider comprising a body defined by top and bottom members, a web adapted to join and space said members, the top member having means for coupling a pull therewith, the bottom member including a wall part movable toward and from the top member, cooperating means on said bottom member and wall part for limiting movement of said wall part with respect to said bottom member, said top member having inwardly directed side flanges partially defining a channel in the slider body, a pull tab pivotally mounted in connection with said top member, said wall part having inwardly extending flanges cooperating with the flanges of the top member in defining the channel of said slider body, and said wall part having a recess for receiving and at least partially enclosing the bottom member, said recess being of greater length than said bottom member to enable the wall part to move longitudinally thereof.

6. A slider for separable fastener stringers comprising top and bottom members, a web at one end portion of the slider integrally joining said members, said top member having means for attaching a pull thereto, and a movable plate part associated with the bottom member and having

substantially the same length and substantially the same outline shape as the top member, said plate part having a recess therein at that portion thereof adjacent the web end portion of the slider, said plate part as a unit being movable longitudinally of the slider and having a camming engagement with the bottom member by means of which the plate part is movable away from and toward the top member as well as movable longitudinally thereof, said plate part and top member being adapted to receive therebetween and make contact with the scoops of a pair of fastener stringers, and said slider, when jammed on the stringers by virtue of foreign matter coming between said scoops and the slider, being adapted to become free of the jam by virtue of the movability of the plate part.

7. A slider according to claim 6 in which said recess in the movable plate part receives said web therein.

8. A slider according to claim 6 in which said recess in the movable plate part at least partially encloses said bottom member.

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UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

Patent No. 2,882,578 April 21, 1959

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 2, line 55, for "in a" read -- in the --; column 4, line 30, for "looking" read -- locking --.

Signed and sealed this 18th day of August 1959.

(SEAL)

Attest:

KARL H. AXLINE
Attesting Officer

ROBERT C. WATSON
Commissioner of Patents