SELF-LOCKING SLIDER

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SELF-LOCKING SLIDER

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1 This invention relates to sliders as used upon

stringers of separable fasteners to couple and un-
couple the same. More particularly, the invention

deals with a lock slider construction which will

prevent movement of the slider along the

stringers as and when the stringers are subjected

to lateral stresses or strains, the locking action

being accomplished by forming the slider of rela-
tively movable parts which rotate about a vertical

axis or pivot point near the contracted end of the

slider. The rotation of these parts under the

influence of a lateral strain on the stringers serves

to bring the parts into binding engagement with

the stringers or the scoops thereof at the con-

tracted end of the slider to lock the latter to the

stringers. Still more particularly, the invention

deals with a two part slider structure of the char-

cacter described, wherein the parts are held in

assembled relationship in a simple and economi-

cal manner.

The novel features of the invention will be best

understood from the following description, when

taken together with the accompanying drawings,
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 plan view of one form of slider struc-
ture which I employ showing the separate parts

thereof in normal operating position.

Fig. 2 is an enlarged section on the line 2—2 of

Fig. 1.

Fig. 3 is a section substantially on the line 3—3

of Fig. 2 showing the slider arranged upon a pair

of stringers and illustrating the slider in the

locked position.

Fig. 4 is a view similar to Fig. 1 showing another

form of slider which I employ.

Fig. 5 is a view similar to Fig. 1 showing another

form of slider and omitting pull accessories in

order to simplify the showing.

Fig. 6 is a plan view of the two parts of the

slider shown in Fig. 5 in spaced relationship to

each other preparatory to assembling; and

Fig. 7 is a section on the line 7—7 of Fig. 5

showing the coupling of the slider parts by the

stringer and slider scoops on which the slider

is arranged.

Fig. 8 is a sectional view showing the lower wall

of a slider and illustrating still another modific-

ation.

In Figs. 1—3, I have shown one adaptation of

my invention, in which the slider 10 is formed

from two substantially similar parts 11 and 12,

each part having upper and lower flanged walls

5

which the slider O is formed from two substantially similar parts and 2, each part having upper and lower flanged walls

6

on the part 3 and 15—16 on the part 12.

These walls are joined at the wide end of the

slider in conventional web parts 17 and 18. The

upper and lower walls of each part adjacent the

contracted ends thereof have pin portions 19—20,

and 21 and 22 encircled by arc-shaped grooves 19'—

20' , 21'—22', in which grooves upper and lower

coupling rings 23 and 24 are arranged, the rings

being held in position by peening-over outer pe-

ripheral edges of the grooves, as indicated at 25

on the top wall portions and at 26 on the bottom

wall portions. This holds the two slider parts in

coupled relationship to each other with permit-

ting swinging movement of the parts one with re-

spect to the other on the pins formed by the pin

portions 19—21, 20—22.

Adjacent surfaces of the slider parts are spaced

apart at the contracted ends thereof as illustrated

by the V-slot 27 in Fig. 1 of the drawing. How-

ever, in the normal position of the slider for free

movement along a pair of stringers, such as 28

and 29, Fig. 3, the slider parts assume the posi-
tion shown in Fig. 1; whereas when the stringers

28 and 29 are strained in the direction of the ar-

rows 40, Fig. 3, the upper wide end portion of the

slider parts will be separated forming a deep V-

recess 31 therebetween and the contracted end

of the slider parts are moved inwardly in the di-
rection of the arrows 32 of Fig. 5, thus firmly

bearing upon and jamming coupled links or

scoops 38', 39' within the contracted end of the

slider. This operation prevents movement of the

slider along the stringers as will be apparent.

The parts 11 and 12 of the slider have, on the

upper walls thereof at the wide end, projecting

loop portions 33, 34 which register to form a sin-
gle loop or eye for the reception of a pull ring

or other type of pull 35.

In Fig. 5 of the drawing, I have shown a modified

form of slider 19' which differs from the

slider 10, simply in the following respects; name-

ly, instead of having the loop portions 33—34, the

separate parts of the slider have integral ear or

lug portions 36—37, the bores of which are round-
ed or nared, as clearly seen at 31' at the right-

hand side of Fig. 4, for receiving the pivot pin

ends 38 of a fingerpiece or pull 39. The structure

of Fig. 5 is further modified to the extent that the

web portions 11', 18' thereof have alined sockets

40, 41 on abutting surfaces thereof which form

a chamber for reception of a coil spring 42. This

spring will operate to apply slight tension on the

slider parts to frictionally retain the slider in a

fixed position on the stringers without interfer-

cence with normal coupling and uncoupling move-

55
movement of the slider along the stringers and, on the other hand, when the slider parts are strained, in the manner illustrated in Fig. 3, the same locking effect will be accomplished. Preferably, and as will be understood, the pin or axle portions 38 are similarly formed with the pull 39, and sufficient clearances for these pin portions are provided in the ear or lug portions 36, 37 to prevent jamming of the pin portions therein when the two parts or halves of the slider are rotated relatively to each other.

In Figs. 5 to 7, inclusive, I have shown another form of construction, wherein a pair of slider parts 43, 43' are united to form a complete slider. The parts 43, 43' are identical and are simply used in reverse relationship to each other.

Considering Fig. 7 of the drawing, it will appear that each part has upper and lower flanged walls 44, 45; 45, 46', it being noted that the upper wall 45' is in reverse position to the lower wall 45.

The walls 44, 46' have, in alignment with the outer surfaces of said walls, projecting half ring portions 46, 46' which project beyond the inner edges of said walls and have substantially semi-circular apertures 47, 47'. The walls 45, 45' have semi-circular grooves 48, 48' for reception of the half ring portions 45, 45', respectively, the grooves being partially defined by substantially semi-circular pin portions 45, 45' which fit in the apertures 47, 47', respectively, to produce a pivotal coupling of the parts 43, 43' one with respect to the other.

It will be apparent that adjacent abutting edges or surfaces of the parts 43, 43' are bevelled, as shown at 52, 59', to provide the V-shaped slot 51, note Fig. 5, between these parts similar in all respects to the slot 27 of Fig. 1.

It will be apparent that, while the parts 43, 43' can be retained in assembled form by peening over wall portions, as at 25, 26 of Fig. 2, this is not essential, as the links or scoops 52, 52' of a pair of stringers 56, 56', when coupled together within the channel 56 of the two slider parts, will maintain said parts in assembled relationship with respect to each other.

Considering Fig. 6 of the drawing, it will appear that, by simply moving the two parts 43, 43' one of the other in a vertical direction, i.e., laying one upon the other, they will be brought into the assembled relationship seen in Fig. 7 and then, when assembled with a stringer, the parts are held by the scoops 52, 52' against separation. It will be apparent that the parts 43, 43' will have web portions, similar to 17 and 18 of Fig. 2. These are not shown in the present illustration.

In Fig. 8 is shown the lower wall 55 of a slider having a conventional fixed flange 58 on one side and a flange 57 on the other side which is movable with respect to the flange 58. Flange 57 is pivoted as at 58 to the wall 55. When a slider of this kind is subjected to stress, as by subjecting the stringers to the kind of strain illustrated in Fig. 3, the flange 57 will rotate about the pivot portion 58 of the flange approaches the tail portion of the flange 58, thereby compressing the coupled scoops between the flanges and locking the slider to the stringers. When the strain on the stringers is relieved, the compressed coupled scoops tend to assume their normal position and to return to its original position. Stop means in the form of a projection or lug 61 is provided on the forward or web end of the flange to limit this reverse movement, i.e., to assure that the reverse movement does not proceed to a point beyond the original position of the flange. As shown, the lug engages the forward side edge of the wall 55. As will be understood, the upper wall of the slider will have the same construction as shown in Fig. 6, that is, it will have a fixed flange opposite the flange 58 and a pivotal flange opposite the flange 57. If desired, all flanges of the slider may have the construction of flange 57.

From a standpoint of description, it may be said that the pin portions 19, 21; 49, 49' form pintle halves in the pivotal coupling of the slider halves through the medium of ring or half-lug members or elements. Further, the slider has arc-shaped recesses around the half pintle portions for the reception of said members or elements.

In a broader sense it will be seen that the invention comprises at least two abutting parts adapted together to form a slider having a double channel or web end and a single channel or narrow end. Each of such parts includes a flange portion. One part is pivoted to another so as to be rotatable to it, the pivot point being located between the narrow end of the slider and the web end of the flange portions and spaced from the said narrow end. With heavier stringers the pivot point should be nearer to the narrow end of the slider.

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

1. A lock slider of the character described, comprising two slider parts having abutting surfaces centrally and longitudinally of the slider, the slider parts collectively forming a channelled body, wide at one end and narrow at the opposed end, the channelled body being formed by spaced upper and lower walls on each slider part, upper and lower walls at the narrow end portion of the slider having half pintle portions, said upper and lower walls around the pintle portions having arc-shaped recesses, and means arranged in said recesses and extending around said pintle portions for retaining the slider parts in assembled and relatively rotate relationship to each other.

2. A lock slider of the character described, comprising two slider parts having abutting surfaces centrally and longitudinally of the slider, the slider parts collectively forming a channelled body, wide at one end and narrow at the opposed end, the channelled body being formed by spaced upper and lower walls on each slider part, upper and lower walls at the narrow end portion of the slider having half pintle portions, said upper and lower walls around the pintle portions having arc-shaped recesses, a ring in said recesses extending around said pintle portions for retaining the slider parts in assembled and relatively rotate relationship to each other, and means for retaining the ring against displacement from the slider walls.

3. A lock slider of the character described, comprising two slider parts having abutting surfaces centrally and longitudinally of the slider, the slider parts collectively forming a channelled body, wide at one end and narrow at the opposed end, the channelled body being formed by spaced upper and lower walls on each slider part, upper and lower walls at the narrow end portion of the slider having half pintle portions, said upper and lower walls around the pintle portions having arc-shaped recesses, means arranged in said recesses and extending around said pintle portions...
for retaining the slider parts in assembled and relatively rotatable relationship to each other, adjacent surfaces of the slider parts at the wide end portion thereof having sockets, and a coil spring disposed in said sockets and acting on each slider part to maintain said parts under constant tension.

4. A lock slider of the character described, comprising two slider parts having abutting surfaces centrally and longitudinally of the slider, the slider parts collectively forming a channelled body, wide at one end and narrow at the opposite end, the channelled body being formed by spaced walls on each slider part, said walls at the narrow end portion of the slider having half pintle portions, said walls around the pintle portions having arc-shaped recesses, means arranged in said recesses and extending around said pintle portions for retaining the slider parts in assembled relationship to each other, and said last named means comprising half ring portions on one wall of each slider part engaging the pintle portion on the corresponding wall of the other slider part.

5. A slider for separable fastener stringers of the character described, said slider being composed of two similar slider halves, each slider half comprising spaced walls joined at one wide end thereof in a connecting web, one wall of each half having, at the narrow end portion thereof, a projecting semi-circular ring portion, and the other wall of said half having a half pintle and a semi-circular recess around said pintle for reception of the half ring portion of the companion slider half in coupling said slider halves together.

6. A slider for separable fastener stringers of the character described, said slider being composed of two similar slider halves, each slider half comprising spaced walls joined at one wide end thereof in a connecting web, one wall of each half having, at the narrow end portion thereof, a projecting semi-circular ring portion, the other wall of said half having a half pintle and a semi-circular recess around said pintle for reception of the half ring portion of the companion slider half in coupling said slider halves together, adjacent surfaces of the slider halves, at the wide end portion of the slider, being normally parallel, and corresponding surfaces at the narrow end portion diverging one with respect to the other.

7. A slider for separable fastener stringers of the character described, said slider being composed of two similar slider halves, each slider half comprising spaced walls joined at one wide end thereof in a connecting web, one wall of each half having, at the narrow end portion thereof, a projecting semi-circular ring portion, the other wall of said half having a half pintle and a semi-circular recess around said pintle for reception of the half ring portion of the companion slider half in coupling said slider halves together, adjacent surfaces of the slider halves, at the wide end portion of the slider, being normally parallel, corresponding surfaces at the narrow end portion diverging one with respect to the other, and said diverging surfaces extending from the axis portion of said half pintles.

8. A lock slider for separable fastener stringers, employing scoops adapted to be coupled and uncoupled by the slider in movement along the stringers, said slider comprising a channelled body defined by spaced walls joined at one wide end of the slider in a connecting web, said walls of the slider at the narrow end portion thereof having pintle portions and recesses enclosing the pintle portions, the slider being divided centrally and longitudinally into two slider halves, adjacent surfaces of the slider halves normally abutting at the wide end portion of the slider and diverging at the narrow end portion thereof, said diverging surfaces starting at the axis of the pintle portion, and means mounted in the recesses and encircling said pintle portions for coupling the slider halves together and permitting swinging movement of the slider halves one with respect to the other on said pintle portions in automatically moving the narrow end portions of the slider halves into gripping engagement with the scoops of stringers in locking the slider therewith.

9. A lock slider for separable fastener stringers, employing scoops adapted to be coupled and uncoupled by the slider in movement along the stringers, said slider comprising a channelled body defined by spaced walls joined at one wide end of the slider in a connecting web, said walls of the slider at the narrow end portion thereof having pintle portions and recesses enclosing the pintle portions, the slider being divided centrally and longitudinally into two slider halves, adjacent surfaces of the slider halves normally abutting at the wide end portion of the slider and diverging at the narrow end portion thereof, said diverging surfaces starting at the axis of the pintle portion, means mounted in the recesses and encircling said pintle portions for coupling the slider halves together, and one wall of each slider half, at the wide end portion thereof, having means for coupling a pull therewith.

10. A lock slider for separable fastener stringers, employing scoops adapted to be coupled and uncoupled by the slider in movement along the stringers, said slider comprising a channelled body defined by spaced walls joined at one wide end of the slider in a connecting web, said walls of the slider at the narrow end portion thereof having pintle portions and recesses enclosing the pintle portions, the slider being divided centrally and longitudinally into two slider halves, adjacent surfaces of the slider halves normally abutting at the wide end portion of the slider and diverging at the narrow end portion thereof, said diverging surfaces starting at the axis of the pintle portion, means mounted in the recesses and encircling said pintle portions for coupling the slider halves together, and means for normally urging narrow end portions of the slider halves toward each other.

11. A lock slider for separable fastener stringers, employing scoops adapted to be coupled and uncoupled by the slider in movement along the stringers, said slider comprising a channelled body defined by spaced walls joined at one wide end of the slider in a connecting web, said walls of the slider at the narrow end portion thereof having pintle portions and recesses enclosing the pintle portions, the slider being divided centrally and longitudinally into two slider halves, adjacent surfaces of the slider halves normally abutting at the wide end portion of the slider and diverging at the narrow end portion thereof, said diverging surfaces starting at the axis of the pintle portion, means mounted in the recesses and encircling said pintle portions for coupling the slider halves together, and means retaining said last named means against displacement from the slider halves.

12. In a flanged double-walled web-connected slider having a narrow tail end and a forward web end, the improvement comprising a pair of
slider parts, each part comprising a longitudinal portion of a flanged upper and of a flanged lower wall connected together by a portion of a web, one part being adapted to be brought into longitudinal abutting relationship with the other part to form a slider having complete upper and lower flanged walls and a complete web, at least one part having a bevelled portion on the abutting edges of its upper and lower walls, said bevelled portion extending from the narrow end of the slider to a point located between said narrow end and the forward ends of the wall flanges, said point being spaced from the narrow end and constituting a pivot point about which the pair of abutting slider parts are rotatable toward and from each other, and means extending from one part to the other for rotatably securing said parts together at said pivot point.

13. In a flanged double-walled web-connected slider having a narrow tail end and a forward web end, the improvement comprising a pair of attached slider parts, each part comprising a portion of a flanged upper and a flanged lower wall connected together by a portion of a web, one part being adapted to be brought into abutting relationship with the other part to form a slider having complete upper and lower flanged walls and a complete web, at least one part having a bevelled portion on the abutting edges of its upper and lower walls, said bevelled portion extending from the narrow end of the slider to a point located between said narrow end and the forward ends of the wall flanges, said point being spaced from the narrow end and constituting a pivot about which the pair of abutting slider parts are rotatable toward and from each other, and means for retaining said pivot on the slider.

14. An improved self-locking slider comprising a pair of attached parts adapted to abut each other to form a slider having a double channel end and a single channel end, each part comprising a flange portion, a pivot about which said parts are rotatable relatively to each other, said pivot being located between the single channel end of the slider and the double channel end of the flange portions and being spaced from the single channel end, and means for retaining said pivot on the slider.

15. An improved self-locking slider comprising a pair of attached parts adapted to abut each other to form a slider having a double channel end and a single channel end, each part comprising a flange portion for aiding to define said channels in the slider, a pivot about which said parts are rotatable relatively to each other, said pivot being located between the single channel end of the slider and the double channel end of the flange portions and being spaced from the single channel end, and means for retaining said pivot on the slider.

16. A flanged double-walled web-connected self-locking slider having a narrow tail end and a forward web end, upper and lower flanges on one side of the slider being movable with respect to the flanges on the other side of the slider so that the tail portions of said first-mentioned flanges compress coupled scoops within the slider against the tail portions of the opposite flanges, a pivot on the slider located between said narrow end of the slider and the forward ends of the wall flanges about which said first-mentioned flanges are movable, said pivot being spaced from said narrow end, means for retaining said pivot on the slider, said first-mentioned flanges being movable in an opposite direction to their original position, and stop means on the slider for limiting said last-named movement.

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