Oct. 17, 1950 J. BOLTEN, JR 2,526,599

SEPARABLE BOTTOM STOP MECHANISM
FOR SLIDING CLASP FASTENERS
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Fig. 1.

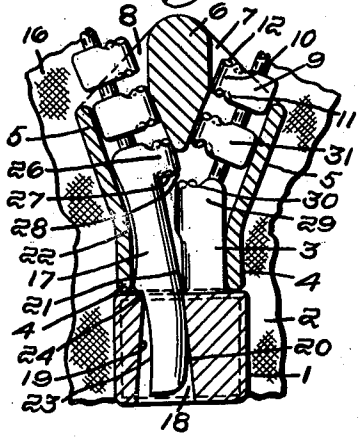



Fig. 4

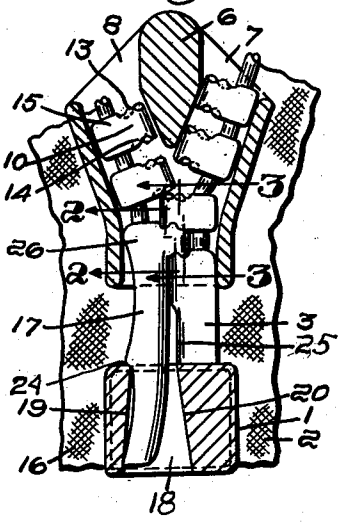



Fig. 2.




Fig. 3.

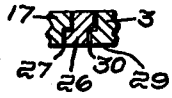



Fig. 5.

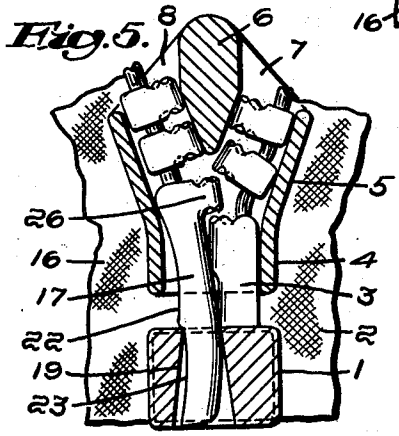



Fig. 7.

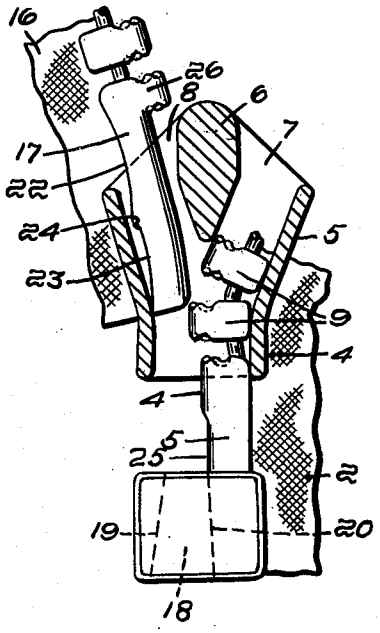
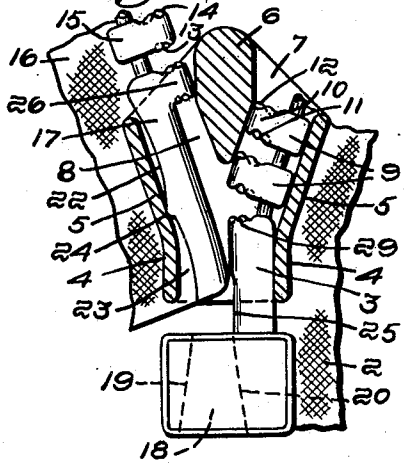



Fig. 6.




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## SEPARABLE BOTTOM STOP MECHANISM FOR SLIDING CLASP FASTENERS

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1 Claim. (Cl. 24—205.11)

1

This invention relates to improvements in separable bottom stop mechanisms for sliding clasp fasteners and one of the objects of the invention is to provide a separable bottom stop that will not be rendered inoperative because of accumulation of debris, such as dirt, mud, etc., in the retainer portion of the bottom stop.

Another object of the invention is to provide a separable bottom stop for sliding clasp fasteners which can be easily assembled and disassembled.

Another object of the invention is to provide a separable bottom stop for sliding clasp fasteners in which the pin and retainer upon the respective stringers will be positively locked during the normal operation of the slider.

These and other objects and features of the invention will more fully appear from the following description and the accompanying drawings and will be particularly pointed out in the claim.

A preferred embodiment of the invention is illustrated in the accompanying drawings, in which,

Fig. 1 is a vertical sectional view through the slider and the portion of the retainer which is attached to a stringer, portions of the stringers and the interlocking elements thereof and the pin and finger of the retainer being shown in elevation;

Fig. 2 is a vertical sectional view on line 2—2 Fig. 4;

Fig. 3 is a vertical sectional view on line 3—3 Fig. 4;

Fig. 4 is a view similar to Fig. 1 showing the slider separated from the retainer and illustrating the interlocking of the pin and finger and the lowermost interlocking element of the stringer to which the retainer is secured in normal engagement;

Fig. 5 is a view similar to Fig. 1 showing the slider in closer proximity to the retainer with the interlocking members of the respective stringers approaching interlocking engagement;

Fig. 6 is a view similar to Fig. 1 illustrating the manner in which the pin is introduced through the slider into the retainer or removed therefrom while the slider is in substantially the same proximity to the retainer as shown in Fig. 5; and,

Fig. 7 is a view similar to Fig. 1 showing the slider more widely separated from the retainer and in the position in which it cannot be introduced through the slider without interfering engagement with one of the interlocking elements of the other stringer so any mis-meshing of the interlocking members will be avoided.

2

Separable bottom stop mechanisms for usual commercial types of sliders comprise a box-like retainer which is secured to one of the complementary stringers which are provided with interlocking elements adapted to be coupled by a slider mounted upon them, the retainer having an upwardly extending finger adapted to enter the slider when it is forced to lowermost position. The lower end of the other stringer is provided with a pin adapted to enter a socket in the retainer having a closed bottom which serves as a stop for the pin, the finger and pin being provided at their upper ends respectively with interlocking members adapted to be coupled by the slider when forced to its lowermost position.

In such constructions debris, such as dirt, snow, mud, etc. frequently collects in the socket and is very difficult to remove when it is desired to assemble or disassemble the pin and the retainer. One of the objects of the present invention, as above stated, is to provide a construction in which this objection will be avoided and the bottom stop construction so formed as to enable the pin upon the lower end of one of the stringers to be readily assembled in the retainer and positively interlocked with the finger upon the retainer by positioning the slider properly relatively to the retainer.

In the construction illustrated the retainer comprises a block 1 of suitable material, such as metal, rigid plastic or the like, which is fixedly secured, preferably by being cast, upon the lower end portion of one of the stringers 2. The retainer is provided with an upwardly extending finger 3 adapted to enter the lower end of a slider 4 in which the edge walls 5 thereof diverge outwardly. The upper portion of the slider has the usual heart 6 which together with the walls of the slider provide channels 7 and 8. The stringer 2 has also secured to it suitably spaced elements 9 each of which is provided with a head 10 having on its upper and lower edges oppositely disposed recesses 11 and projections 12 adapted to be coupled in interlocking relation with similar projections and recesses 13 and 14 upon the interlocking elements 15 which are secured to the edge portions of the other stringer 16. The lower end portion of the stringer 16 has similarly secured to it a pin 17 which is adapted when assembled in the retainer 1 to couple the interlocking elements of the respective stringers as the slide is moved upwardly.

In usual constructions the retainer 1 is pro-

vided adjacent the lower end of the finger 3 with a recess into which the pin fits and having a closed bottom which forms a stop for the pin. This socket or recess frequently becomes jammed with dirt, mud, etc. which is difficult of removal, as above stated. In the present construction the retainer 1 is provided adjacent to the lower end of the finger 3 with a vertical downwardly extending aperture 18 which extends completely through the retainer, the side walls of which are parallel and engage closely the sides of the pin, and the upper ends of the end walls likewise closely engage the edges of the pin. However, in the present invention the edge walls 19 and 20 of the recess 18 diverge downwardly so that the through opening 18 has a larger cross sectional area at the bottom of the retainer than at the top so that any debris which may enter the aperture will easily be discharged through the larger lower open end thereof, thereby avoiding the objectionable accumulation within the pin-receiving aperture or socket.

In order to permit the pin to be readily assembled in the retainer it is so formed that it can be readily inserted through the channel 8 in the slider and into the aperture in the retainer when the slider is positioned at a suitable distance from the upper end of the retainer. In the preferred construction illustrated the pin is provided with an inwardly convex edge 21 and the outer edge of the pin is provided with concavely curved upper and lower sections 22 and 23 having a shoulder 24 at the junction thereof. The finger 3 desirably is also provided with a vertically recessed portion 25 adapted to be engaged by the rounded end of the pin as it is being introduced through the slider, as illustrated in Fig. 6. The concave outer edge sections of the pin are upon suitable radii to enable the shoulder of the pin to pass over the junction between the portion 4 of the slider and the diverging wall 5 thereof so that the pin can be easily assembled within the aperture 18 in the retainer 1.

The shoulder 24 at the junction of the concave sections of the pin is so positioned that when the pin is assembled within the retainer it will engage the upper end of the retainer and serves as a stop to prevent the pin from being inserted too deeply into the slider and also as a fulcrum to position the head upon the pin in proper relation to a complementary head upon the finger 3 of the retainer.

In order to insure positive locking of the pin in operative position the upper end of the pin is provided with a head 26 which extends inwardly and is provided at its lower edge with a preferably plurality of oppositely disposed projections and recesses 27 and 28 adapted to engage complementary projections and recesses 29 and 30 upon the upper end or head of the finger 3. The upper edge of the pin is also provided with a plurality of projections and recesses complementary to those upon the lower interlocking element 31 of the other stringer next adjacent to the finger 3.

In the assemblage of the device the slider is positioned at a proper distance from the upper edge of the retainer and the finger introduced through the slider, as illustrated in Fig. 6, the parts being then so positioned that it can be easily inserted downwardly. When the slider is seated the complementary interlocking projections and recesses of the finger are located in such relation, as illustrated in Fig. 5, that when the slider is moved upwardly, as illustrated in Fig. 4, the head 26 of the pin will be positively interlocked with the finger of the retainer and with the next adjacent element of the stringer to which the retainer and the interlocking elements of said stringer are attached. As the slider is moved upwardly this interlocked condition will remain throughout the usual clasping and unclasping of the interlocking elements by the movement of the slider.

It frequently occurs in usual types of commercial designs that when the usual bead upon the edge of either of the stringers becomes broken intermediate of the upper end of the pin or the finger the retainer and pin will be easily separated. However, by reason of the interlocking engagement between the head of the pin and the finger in the present construction such disengagement of the pin and retainer is prevented and the parts held in proper position until the slider is so located as to permit the withdrawal of the pin in the reverse direction to that in which it is inserted through the slider into the aperture in the retainer, as above described.

It will be noted that when the slider is improperly positioned with respect to the retainer, as shown in Fig. 7, the pin cannot be inserted therethrough because it will interfere with the lowermost interlocking element upon the other stringer.

Another important feature of the invention consists in providing a retainer construction in which the pin-receiving aperture can be readily formed simultaneously with the molding of the retainer upon its stringer. This is accomplished by inserting into the lower or outer end of the mold, in which the retainer is to be formed and secured to the stringer, a core of sufficient length to extend completely through the mold and having parallel sides and edges converging upwardly toward each other from said outer end throughout its length, thereby enabling the core to be readily withdrawn from the mold after the molding of the retainer upon the stringer has been completed.

By reason of the present construction therefore the slider must be properly positioned relatively to the stringer to enable the parts to be assembled and when so positioned the stringer can be readily inserted through the slider into the retainer and positively interlocked in proper position in the manner above described.

It will be understood that the particular embodiment of the invention shown and described herein is of an illustrative character and is not restrictive and that various changes in construction and arrangement of parts may be made within the spirit and scope of the following claim.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent is:

A separable bottom stop connection for a sliding clasp fastener of the type having stringers provided with a complementary series of interlocking elements having a plurality of complementary interengaging recesses and projections, and a slider for coupling and uncoupling said elements, said bottom stop comprising a pin secured to the bottom end of one of said stringers and having a head provided with a plurality of recesses and projections adapted to interlock with the lowermost interlocking element of the other stringer, a retainer connected to the other stringer and forming a bottom stop for the slider, said retainer having a finger extending into the

slider when the latter engages said retainer, the upper end of the finger being provided with a plurality of projections and recesses complementary to those upon the head of said pin, said retainer having adjacent to the base of said finger a vertically extending through opening having parallel side walls fitting said pin and downwardly diverging end walls, thereby providing an opening of progressively increasing cross sectional area from the top of the retainer to the bottom thereof which permits the ready escape through the larger bottom of debris accumulating in said opening, said pin having a shoulder on its outer edge to engage the upper end of the retainer and also having a convexly curved inner edge extending from the head of the pin to the lower end thereof, the portion of the outer edge of the pin above the shoulder and also the portion below said shoulder being concavely curved to enable said pin to be freely inserted through the slider and smaller upper end of the through aperture.



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