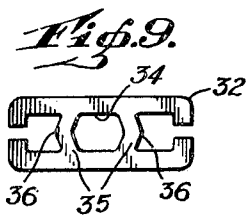
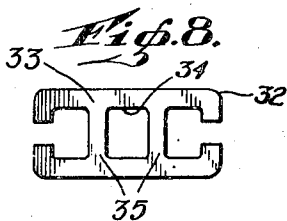
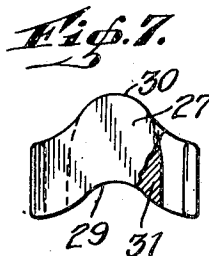
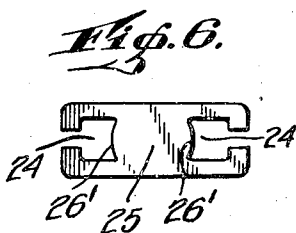
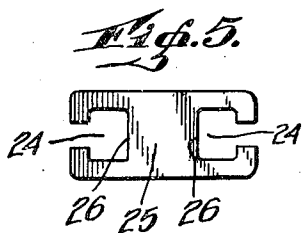
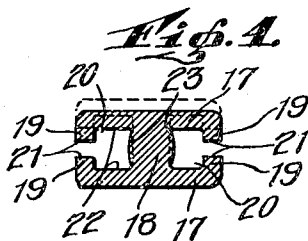
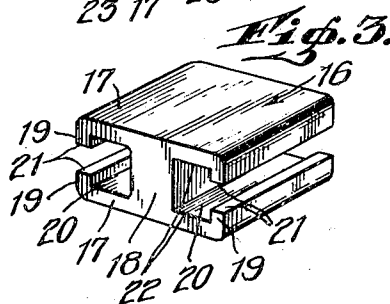
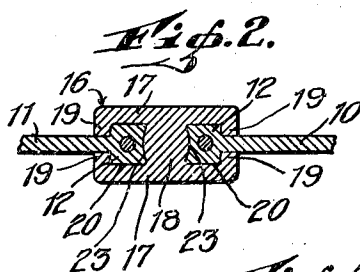
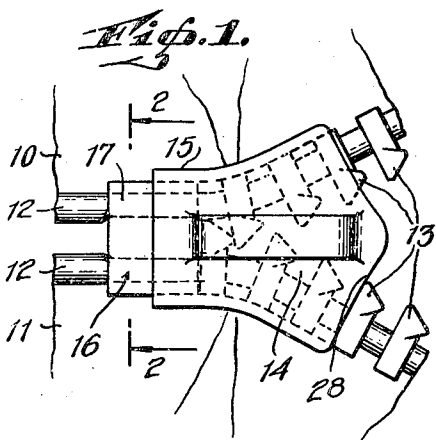


July 5, 1949.

L. H. MORIN  
END STOP FOR SEPARABLE FASTENERS  
AND METHOD OF FORMING THE SAME  
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2,474,908



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# UNITED STATES PATENT OFFICE

2,474,908

## END STOP FOR SEPARABLE FASTENERS AND METHOD OF FORMING THE SAME

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4 Claims. (Cl. 24—205.11)

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This invention relates to separable fasteners in which a slider moves along the stringers to couple and uncouple the links of the stringers. More particularly, the invention relates to end stops pre-formed with tape engaging flanges or jaws which are normally widely spaced to facilitate free mounting on the stringer tapes and moved into firm engagement with the tapes upon compression of the end stop body or blank. Still further, the invention comprises the formation of stops of the kind described from die cast members or blanks, and in forming key means on the compressed members to engage the beaded edges of the stringer tapes.

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 diagrammatic view of one end portion of a pair of stringer tapes, showing an end stop thereon with a slider checked on the stringers by said stop.

Fig. 2 is a section on the line 2—2 of Fig. 1.

Fig. 3 is a perspective view of a die cast stop member prepared for free attachment to stringer tapes.

Fig. 4 is a sectional view of the stop indicating the normal size of the stop blank in dotted lines, and the finished attached stop in full lines, omitting the stringer tapes for sake of clarity.

Fig. 5 is an end view of a stop in the unattached position or blank form, and showing a slight modification.

Fig. 6 is a view similar to Fig. 5, showing the device in the form assumed after attachment to stringer tapes.

Fig. 7 is a plan view partly in section of a bridge stop, showing a modified contour which adapts the stop to checking the wide or diverging end of the slider; and

Figs. 8 and 9 are views similar to Figs. 5 and 6, showing another modification.

In the construction of stop devices for checking the movement of a slider at the ends of separable fastener stringers, it has been common to employ sheet metal stampings pronged, flanged or otherwise formed to engage the tape edges. These type of devices have been objectionable from the standpoint of weakening the tapes in attachment of the stops. In other instances, cast bodies have been formed with open channels to receive the beaded edges of the stringers, and the

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walls of the channels have been reformed or bent inwardly in securely attaching the stops to the stringer tapes. This other method has also been objectionable from a standpoint of weakening tape structure and also it has been experienced that the bending operation, as applied to cast materials, has resulted in destruction or breaking of the holding flanges, thus necessitating renewal or replacement of the end stop.

It is the purpose of my invention to provide an end stop construction which comprises a die cast double channelled stop body. This body is formed with integral inturned flanges at side edges thereof which defines the channels. However, the connecting web joining the side walls of the body is made of sufficient dimensions to normally provide a wide spacing between the flange ends, facilitating free passage of the beaded edges of the stringers into the channels of the end stop body.

After attachment and proper location upon the stringer tapes, the body is placed under compression so as to move the opposed walls of the body toward each other, and correspondingly move the inturned flanges into firm engagement with the tape edges. The stop compression of the body is taken up through the web structure joining the side walls, which web structure is bulged or enlarged within the channels or otherwise re-shaped in the movement of opposed walls of the body toward each other. This method of forming end stops eliminates destruction of the end stop body, and further provides a definite control of gripping pressure upon the beaded edge portions of the tape, thus minimizing the weakening of the stringer tapes, where said stops are attached.

For purposes of illustrating one use of the invention, I have diagrammatically represented in Fig. 1 of the drawing small portions of one end of two stringer tapes 10 and 11, to the beaded edges 12 of which are attached, at spaced intervals, coupling links or scoops 13 for coupling the stringer together. These links or scoops are coupled and uncoupled by a slider 14 movable along the stringers and the slider is shown in Fig. 1 with its contracted end 15 arranged upon an end stop 16. In other words, the end stop, or at least part thereof is adapted to enter the contracted channel end of the slider 14 in checking the opening movement of the slider. The stop 16 is shown in detail in Figs. 3 and 4, and in attached cross sectional form in Fig. 2.

In Fig. 3 of the drawing is shown a perspective view of what may be termed an end stop blank which represents a die cast body having similar side walls 17 spaced by a central connect-

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ing web 18, which extends the full length of the body 16. The walls 17 terminate at their side edges in inturned flanges 19, and these form within the body 16 at opposite sides of the web 18, elongated channels 20.

In the die cast blank, the inturned flanges 19 have their adjacent surfaces 21 normally spaced apart a sufficient distance to provide free placement of the stop body upon the beaded edges of the stringer tapes, and in like manner, the opposed surfaces 22 of the walls 17 are also widely spaced.

In attaching the stop 16 to the stringer tapes, the blank is placed under compression in a suitable machine or by suitable tools, so as to move the walls 17 toward each other. The result of this operation is diagrammatically illustrated in Fig. 4, in which figure the normal position and spacing of the walls 17 is indicated in dotted lines. After compression is indicated in full lines, which is a position similar to the stop as shown in section in Fig. 2 of the drawing.

In this compression operation the normal straight side walls of the web 18 are bulged outwardly, as seen at 23, into the channels 20. This operation will also aid in engaging the beaded edges 12 of the stringer tapes, as will be apparent. This bulging produces a key like structure on the end stop, sufficiently indenting the bead of the tapes to aid in retaining the stop against sliding movement longitudinally of the tapes. In other words, it might be said that the bulges 23 apply edgewise pressure upon the beads 12, while the walls 17 apply surface pressure to these beads from opposite sides of the tapes and the flanges 19 have a pressure engagement with the surfaces of the tapes adjacent the beads.

In Figs. 5 and 6 is shown a stop blank 24 having a connecting web 25. The web has side surfaces 26 which after compression of the blank forms bulged or protruding members 26' on the web 25, as is illustrated in Fig. 6.

In Figs. 5 and 6, the stop is further modified in employing wider webs 25. For example, in producing what is commonly referred to as bridge stops, similar to the stop 27, shown in Fig. 7 of the drawing, this type of stop compensates for the normal spacing of the stringers at what is commonly referred to as the top end. In other words, when the wide or diverging end 28 of the slider 14 reaches the other end of the stringers, as shown in Fig. 1, stops such as 27 are preferably fashioned to provide concaved surfaces 29 at one end thereof to receive the end 28 of the slider. The opposed end of the stop is correspondingly convexed, as seen at 30. The web 31 will be similar to the web 25 of the stops 24, illustrated in section in Figs. 5 and 6.

In Figs. 8 and 9 is shown another modification where the stop body 32 has a web portion 33, which is recessed centrally, as seen at 34, throughout the full length of the web, to divide the web into two side wall portions 35. With this construction, and after compression of the stop 32, the walls 35 bulge outwardly to form the protruding keying members 36 for engagement with the beaded edge of the stringer tapes.

While this structure is particularly applicable to the bridge type of end stop, as disclosed in Figs. 5, 6 and 7, it is also applicable to the stops of the type and kind shown in Figs. 1 to 4. Any sub-division of the web centrally and longitudinally will form the dual wall portions, such as the walls 35, and these walls will assist the compression operation upon the stop body, and also

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aid in forming the protruding key members for engaging the beaded edges of the tape.

It will also be apparent that the contour of the apertures or recesses, such as 34 may be shaped in any desired manner.

It will be apparent that the end stop members or blanks may be formed of any die cast or molded material, and when these materials are thermoplastic, they will be heated sufficiently to soften the material prior to the compression operation.

One of the distinctive advantages in a pre-formed blank or end stop member resides in the fact that the opposed wall structure of the resulting end stop can definitely be controlled as to size and contour. This is particularly desirable within stops of the type and kind shown in Figs. 1 to 4 inclusive where the end stop enters the slider, or in other words, the slider rides over the end stop.

From a structural standpoint the end stop comprises a blank body having pre-formed inturned flanges at side edges thereof which are normally widely spaced to facilitate free attachment to the beaded edges of stringer tapes. These flanged edges may be said to be the gripping jaws of the end stop. In other words, jaws which are normally opened and closed upon the tape in applying pressure to the side walls of the end stop, as heretofore set forth.

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

1. As an article of manufacture, an end stop blank for use in forming stops limiting movement of a slider along the stringers of separable fasteners, said blank comprising a body having parallel walls joined and spaced by a web extending the full length of said walls centrally thereof, side edges of said spaced walls having inturned flanges forming in conjunction with the web longitudinal channels between said walls at opposite sides thereof, opposed surfaces of the inturned walls at each side of said body being spaced apart to form passages opening into said channels, and said web having a passage extending longitudinally thereof.

2. As an article of manufacture, an end stop for use in limiting movement of a slider along the stringers of separable fasteners, said stop comprising a body having walls joined and spaced by a web extending the full length of said walls centrally thereof, side edges of said spaced walls having inturned flanges forming in conjunction with the web longitudinal channels between said walls at opposite sides thereof, opposed surfaces of the inturned walls at each side of said body being spaced apart to form passages opening into said channels, said web having a passage extending longitudinally thereof, opposed walls of said passage being concave in cross section, and outer surfaces of the web being convexed in cross section.

3. The method of forming stops at the ends of stringers of separable fasteners to check movement of the sliders on the stringers, which comprises pre-forming a body comprising walls joined and spaced by a central longitudinal web and with inturned flanges at side edges of said walls, spacing the walls and opposed surfaces of said inturned flanges sufficiently to provide free mounting of the body upon adjacent edges of two stringer tapes, mounting the body on said stringer tapes, then compressing said body to move the walls and flanges toward each other to firmly grip

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the edges of said tapes while maintaining said walls in the same angular relation to each other and during said compression step distorting said web on opposite sides thereof to form bulging portions which engage and indent said tape edges.

4. In a stop for checking movement of a slider in the direction of the ends of separable fastener stringer tapes, an end stop member comprising parallel side walls joined and spaced by a central connecting web, said member having in-  
 10 Number  
 1,609,080  
 1,673,322  
 1,873,872  
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 2,174,160  
 2,192,013  
 2,231,645  
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key the stop member against movement longitudinally of the tapes.

LOUIS H. MORIN.

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