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ONE-SIDED SEPARABLE FASTENER

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This invention relates to separable fastener stringers, wherein the scoops are fixed to one surface only of the stringer tapes, producing a one-sided fastener, wherein scoops of coupled stringers become invisible when viewing the fastener from the other surface of the coupled stringers. More particularly, the invention deals with separable fasteners of the character described, wherein each stringer is of the same construction and the scoops spaced longitudinally of the stringers are provided, at their coupling end portions, with pairs of reversely arranged hook-shaped coupling members interlocking with the members of scoops of a companion stringer in establishing a secure coupling of the scoops to resist lateral separating stresses or strains.

Still more particularly, the invention deals with a fastener, wherein the slider employed for coupling and uncoupling the stringers is so constructed as to move the scoops of the pair of stringers toward each other to free the reverse hook-shaped coupling members sufficiently to establish engagement and disengagement of scoops of both stringers.

Further, the invention deals with a scoop structure, wherein the coupling end portion of each scoop includes a member overriding the tape of a companion stringer and each of the scoops including, at side portions thereof, wear shelves, over which the coupling heads or ends of the scoops of the companion stringer ride in movement of the scoops into coupling and uncoupling positions with respect to each other.

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 an enlarged diagrammatic plan view showing engagement of two scoops of one stringer with a single scoop of a companion stringer, with parts of the construction broken away and in section.

FIG. 2 is a side view of a scoop of one stringer detached, with part of the construction broken away and in section, the scoop being substantially on the scale of the showing in FIG. 1 and more accurately illustrating the contour of walls of the scoop.

FIG. 3 is a front view of the coupling end portion of the scoop as seen in FIG. 2; and

FIG. 4 is a diagrammatic sectional view through a slider illustrating the engagement and disengagement of the scoops of two stringers and omitting the tapes of the scoops in order to simplify the showing, the scoops of FIG. 4 being illustrated on a reduced scale from that of FIG. 1 and being roughly outlined.

Considering FIG. 1 of the drawing and bearing in mind that both stringers are of the same construction, the reference characters as applied to one stringer will be primed, as compared with that of the other stringer. In this figure, 10, 10' represents part of the stringer tapes, each having on one surface thereof inner and outer beads 11, 11' and 12, 12', the term outer being used with respect to the beads 12, 12' in reference to the tape edge portions, to which the scoops 13, 13' are suitably attached. As and when these scoops are composed of molded or die cast materials, the material of the scoops will extend into the interstices of the braid of the tapes, as

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well as the beads in establishing positive coupling engagement.

The coupling end portions of the scoops 13, 13' have outwardly contracted heads 14, 14' including, at sides thereof, reversely curved hook-shaped coupling members 15, 15' which operatively engage side female coupling portions or sockets 16, 16', generally conforming to the contour of the members 15, 15', it being understood that 15' engages the female sockets 16 and the members 15 engage the sockets 16'. It will appear from a consideration of FIG. 1 of the drawing that inner walls 17, 17', which partially define the sockets 16, 16', are spaced sufficiently from the flared walls 18, 18' of the heads 14, 14' to provide for relative movement of the scoops one with respect to the other, as later described.

It will clearly appear from a consideration of FIGS. 2 and 3 of the drawing, where the scoops 13 are shown by way of illustration, that the head 14 is primarily on what might be termed the outer surface of the scoop and the inner wall 19 of said head has, centrally thereof, a projecting rib 20, the lower surface 21 of which is in alinement with the surface of the tape 10 to which the scoop 13 is attached, as will clearly appear in FIG. 2 of the drawing. This figure also illustrates the rounded outer corner 22 on the rib for free passage over the tape of the companion stringer. It will clearly appear, from a consideration of FIG. 1 of the drawing, that the rib 20 overlies the tape 10' and also engages part of the bead 12'. It will be apparent that the scoops 13' are of identical construction and arrangement with respect to the tape 10.

Projecting from opposed sides of each of the scoops 13, 13' are wear shelves 23, 23', the upper surfaces of which are in alinement with the heads 14, 14' or the lower surfaces 19 of said heads and corner portions of the shelves are rounded for free passage of the heads over these shelves. As one scoop 13 only is shown in FIG. 2 of the drawing, the reference character 24 will only be applied to the upper surface of the shelf 23 and the rounded portions of 23 indicated at 25, again, it being understood that the scoops 13' or the shelves 23' thereof have a similar construction.

From the foregoing, it will be quite apparent that, when the scoops are coupled together, the outer side portions of the heads 14, 14' lie over the wear shelves 23', 23', respectively, and operate over these shelves, thus eliminating wear upon the tape by engagement of the hook-shaped coupling members with the sockets and, particularly, in movement imparted to the scoops of the stringers in establishing the coupling and uncoupling thereof, as will now be described.

In FIG. 4 of the drawing, I have diagrammatically indicated at 26 a sectional view through a slider, one wall of which is indicated at 27 and 28 represents the frog or web joining said wall with the opposed wall of the slider which is not shown. At 29 is shown the side flanges as commonly employed in sliders of this type and kind, which are widely flared to facilitate coupling engagement of the scoops in question; whereas, the flanges at the contracted end of the slider, as at 30, are so positioned and spaced as to impart movement of the scoops of one stringer toward the scoops of the opposed stringer to establish the coupling and uncoupling engagement of the scoops. To simplify the illustration, the stringers of the scoops are not illustrated in FIG. 4. However, 13 represents the scoops of what can be termed the lefthand stringer, as viewed in FIG. 4, and 13' represents the scoops of the righthand stringer, in other words, similar to the scoops attached to the stringers 10, 10' in FIG. 1.

In FIG. 4, it will appear that, as the scoops 13, 13' enter the restricted portion of the slider 26, the scoop 13

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is moved in the direction of the arrow 31; whereas, the scoop 13' is moved in the direction of the arrow 32, thus developing between the hook-shaped coupling members the space, as indicated at 33, which is possible by virtue of the clearance between the surfaces 17, 18', as previously noted. It will clearly appear from the diagrammatic illustration of FIG. 4 that this separates the reversely curved coupling members of the heads sufficiently to bring the coupling members of one scoop into engagement with the coupling members of the other scoop in one operation of the slider or in freeing the coupling members of one scoop from the coupling members of the other scoop sufficiently to separate the scoops in movement of the slider in the opposed direction on the stringers.

After passing through the restricted end 30 of the flanges 29 of the slider, the scoops are free to extend into their normal coupling engagement, as illustrated beyond the slider in FIG. 4, and it is here to be noted that, in actual use, there will be slight clearances between the engaged hook-shaped members which will bring the tape edges of the two stringers in close proximity to each other.

It will be apparent that separable fasteners of the type and kind under consideration will also be held in coupling engagement in any attempt to forcibly disengage the stringers when sharply bent in each direction and, by reason of the structure of the scoops, a strong and durable fastener will be produced and one which will render long use service by minimizing the wear factor commonly experienced in fasteners of this type and kind.

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

1. A one-sided separable fastener comprising a pair of similar stringers, each stringer including a tape having bead means projecting on only one surface thereof, scoops fixed to said surface of the tapes, the scoops of one stringer having projecting coupling end portions, said coupling end portions having heads, opposed sides of which include inwardly extending hook-shaped coupling members, scoops inwardly of said members, including at sides thereof female coupling sockets adapted to receive the coupling members of scoops of an opposed stringer in coupling and uncoupling said stringers, and parts of said sockets conforming to the contour of said coupling members, said scoops being symmetrical in relation to a longitudinal plane at right angles to the tape engaging side of said scoop, and the engaging end of said scoops

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of one stringer overlying at least part of said bead means on the companion stringer.

2. A fastener as defined in claim 1, wherein said heads and female socket portions are disposed at outer surface portions of the scoops, and sides of the scoops registering with said socket portions having adjacent the stringer tapes wear shelves overlying the same, over which the heads and coupling members of the scoops of companion stringers operate.

3. A fastener as defined in claim 2, wherein the heads of the scoops include centrally of the lower surface thereof projecting ribs, and the ribs of the scoops of one stringer overlying the tapes of a companion stringer.

4. A fastener as defined in claim 3, wherein lower surfaces of said ribs are rounded for free passage over the tapes of companion stringers.

5. A fastener as defined in claim 2, wherein the lower surfaces of the coupling members of said heads are substantially in alinement with the outer surfaces of said wear shelves.

6. A fastener as defined in claim 2, wherein said wear shelves project beyond sides of said scoops.

7. A fastener as defined in claim 1, wherein the sockets of said scoops are of sufficient size as to provide movement of the heads and coupling members of the scoops of one stringer opposed to movement of the scoops of the companion stringer in separating the coupling members sufficiently to establish coupling and uncoupling of the scoops in the use of the fastener, and a slider employed for coupling and uncoupling the scoops of the stringers including at its contracted end portion means imparting the aforesaid movement to the scoops of both stringers and including a wide end portion flared sufficiently to establish engagement of the scoops of both stringers preparatory to passage through the contracted end portion of the slider.

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