Dec. 31, 1963 L. H. MORIN 3,115,690

ONE-SIDED SEPARABLE FASTENER STRINGER

Filed July 12, 1960

FIG. 1

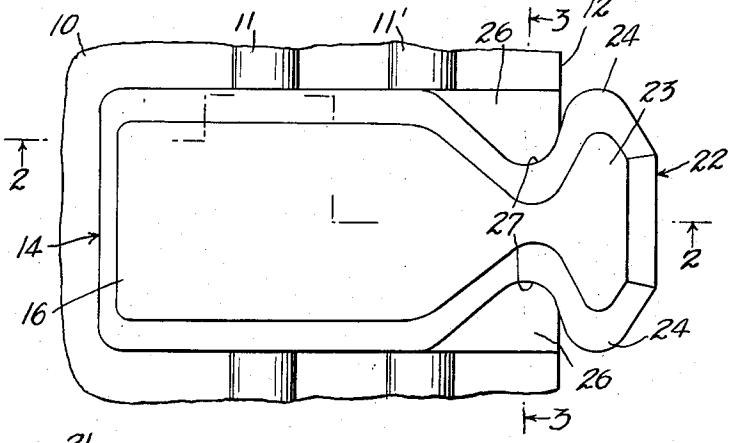


FIG. 2

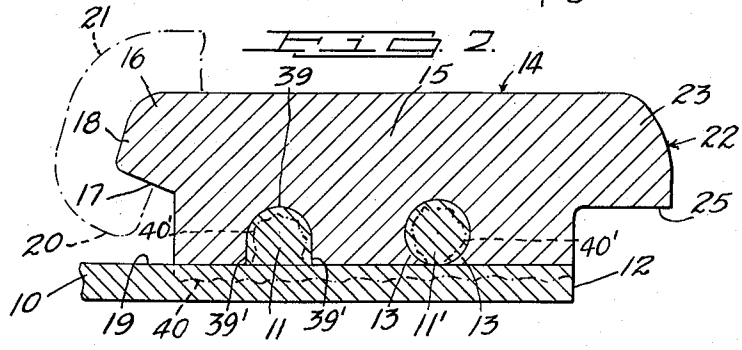


FIG. 3

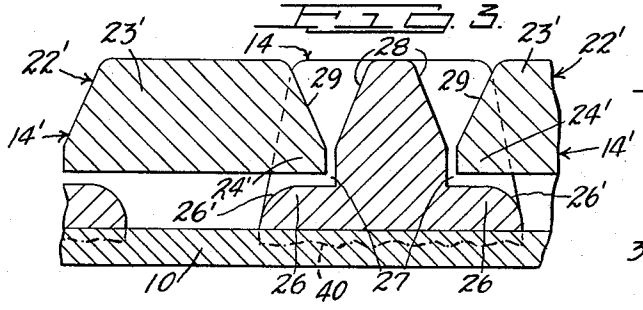


FIG. 5

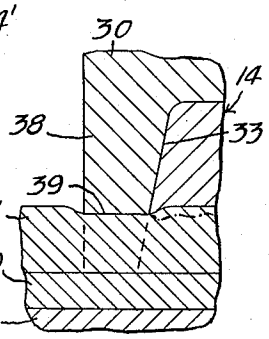
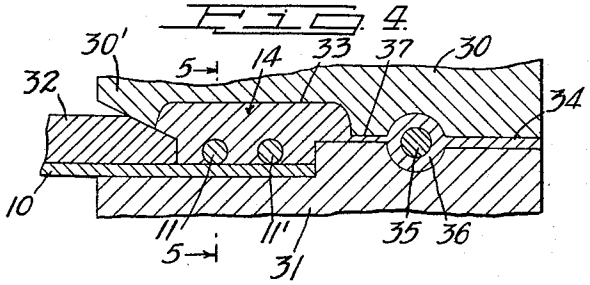


FIG. 4



INVENTOR.
LOUIS H. MORIN
BY
Howard C. Thompson
ATTORNEY

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ONE-SIDED SEPARABLE FASTENER STRINGER

Louis H. Morin, 125 Beechwood Ave., Bronx, N.Y.

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This invention relates to separable fastener stringers employing sliders movable along the scoops of the stringers to couple and uncouple the same. More particularly, the invention deals with fasteners of this type and kind wherein the scoops in their entirety are disposed on one side surface only of the stringer tape and primarily adhered thereto by extension of the casting material of the scoop into the interstices of the braid of the tape and, further, by engagement of the casting material with the beaded portion or portions on the surface of the tape, to which the scoops are attached.

Still more particularly, the invention deals with a fastener of the character described, wherein the arrangement of the scoops on the stringer tape is such as to bring edges of coupled stringer tapes into abutting engagement with each other when the stringers are coupled in producing a separable fastener wherein the scoops are completely hidden in viewing the assembled stringers from the surface thereof opposed to the surface of the stringers, to which the scoops are attached.

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 plan view of one scoop as attached to an edge portion of a stringer of a separable fastener.

FIG. 2 is a section on the broken line 2—2 of FIG. 1 and diagrammatically indicated in dot-dash lines one side edge portion of a slider engaging a special heeled portion provided on the scoop.

FIG. 3 is a section on the line 3—3 of FIG. 1 of the showing of the scoop in FIG. 1 and portions of scoops of a companion stringer coupled with said first named scoop.

FIG. 4 is a sectional detail view, generally similar to the section of FIG. 2 on a reduced scale and diagrammatically illustrating the dies and associated parts for forming the scoops; and

FIG. 5 is an enlarged section on the line 5—5 of FIG. 4 showing part of the die structure and its engagement with the bead of the stringer tape.

In the pressure injection of metal or other materials into the cavity of a die in forming a cast article upon a tape or similar mounting having braid interstices or other crevices, I have found that the pressure of injecting the material into the die and onto the mounting results in extending the cast material into such interstices or crevices to establish a positive securing and attachment of the casting to the mounting. Further, in providing on the surface of the mounting to which the casting is attached a supplemental element such, for example, as a bead, the casting material will envelope the bead and, thus, establish a further means of securing the casting to said surface of the mounting.

In illustrating one adaptation and use of my invention, I have shown in FIGS. 1 to 3, inclusive, the attachment of scoops to one surface only of a stringer tape in producing separable fasteners which I term one-sided separable fasteners, in other words, wherein the scoops are disposed in their entirety upon one surface only of the stringers.

In FIGS. 1 to 2, 10 represents a stringer tape, usually constructed of woven fabric, and at 11, 11' I have shown two beads extending longitudinally of the stringer tape

and parallel with respect to the edge 12 of the tape. The beads 11, 11' can be integrally woven in the formation of the tape or can be stitched or otherwise attached, as known in this art. In either form of construction, recesses or undercuts 13 are formed at opposed sides of each of the beads, as shown at the right of FIG. 2. The modified showing at the left of FIG. 2, by virtue of the irregular sectioning, will be later described.

At 14 I have shown one of a number of scoops equally spaced along the stringer 10, the substantial central body portion 15 of the scoop being arranged over and attached to the beads 11, 11'. At 16 I have shown an extended heel portion having a lower bevelled surface 17 and an outer bevelled surface 18. The surface 17 is spaced sufficiently above the surface 19 of the tape 10 to receive the flanged side 20 of a slider 21, as indicated in dot-dash lines at the left side of FIG. 2, the slider being employed to couple the scoops of companion stringers together in an assemblage, as diagrammatically shown in FIG. 3, as with other types of sliders used on separable fasteners of the type and kind under consideration.

With the exception of the showing in FIG. 3, only a single scoop is shown in order to simplify the present illustration and in view of the fact that it is well known in the art that scoops of the kind under consideration are spaced along the stringer tapes in a manner to facilitate coupling engagement of the scoops of companion stringers.

Each scoop has a coupling end portion 22 comprising a head 23 having laterally projecting sides 24 and a flat lower surface 25 spaced above the tape surface 19, as clearly illustrated in FIG. 2 of the drawing. This spacing prvoides clearance for reception of wear shelves 26 laterally extending from sides of the inner female or recessed portions 27 of the coupling end 22, as will clearly appear in FIG. 3 of the drawing. In this figure, the projecting sides 24' of the heads 23' of scoops of a companion stringer are shown overlying the wear shelves 26. In this connection, the spacing between 26 and 24' is consistent with the enlarged showing of the scoops. However, some clearance is required for entrance of the projecting sides 24' into the recesses 27 in establishing the coupling engagement and, here, the rounded surfaces 26' on the wear shelves 26 facilitate this coupling engagement.

The outer boundary walls of the coupling end portion 22 of the scoop 14 and corresponding end portions 22' of scoops 14' are, for the most part, bevelled, as clearly illustrated, and parts of these bevels are shown at 28 and 29 in FIG. 3, these bevels facilitating the transverse bending or folding of coupled stringers one with respect to the other.

To illustrate the method of forming the scoops on the stringer, as diagrammatically illustrated in FIGS. 4 and 5 of the drawing, dies 30, 31 and 32 form the cavity portion 33 of the scoop. At 34 is shown the sprue or gate passage for introduction of the casting material into the cavity 33 and arranged in this passage between the dies 30 and 31 is a casting transfer pin 35, around which the sprue or gate 34 is formed, as seen at 36. This procedure is common in the art and is utilized for transfer of the formed casting or scoop 14 from the casting station to a trimming station, where the sprue or gate 37 is trimmed from the resulting casting, this operation being performed when the dies are in open position.

Considering FIG. 5 of the drawing, here I have shown at 38 one side wall of the die 30 to simply indicate that, where recesses or openings 39 are formed in this wall, as well as the opposed wall of said die, they are so formed as to place the bead 11 under compression so as to extend the material of the bead 11 into the portions 39' of the recess or opening 39, as clearly indicated at the left of FIG. 2 of the drawing, to prevent discharge of the casting

material at these positions and, yet, permit the free separation of the die 30 from the beads 11, 11'. This same structure is also employed on that part of the die 30 engaging the bead 11'.

In contrast, the bead within the die cavity 33 will be completely enveloped by the cast material, as indicated at the right of FIG. 2 of the drawing, in establishing a further anchorage of the casting with the stringer tape 10. The tape 10 is diagrammatically illustrated in the several views and no attempt is made to show extension of the casting material into the interstices of a braided tape or into recesses or crevices of any type of mounting that may be provided. However, in FIG. 2 of the drawing, I have indicated by a dot-dash line 40 what can be regarded as the anchorage portion of the casting within the tape or other mounting 10, this line being irregular to diagrammatically illustrate irregularities in the contour of this anchorage line. In order to clearly illustrate this anchorage, the normal fabric sectioning has been omitted from the drawing. It will also be understood that this anchorage of the plastic material will also extend into the beads 11, 11', as indicated by the dot-dash line 40' in FIG. 2 of the drawing. The dot-dash line 40 is illustrated in FIG. 3 of the drawing, but is omitted from FIG. 4.

It will appear from a consideration of FIG. 1 of the drawing that the die 32 which fits between the tape 10 and the heel forming portion 30' of the die 30 forms the undercut in the heel portion. The die 32 is preferably moved to the left to a slight degree in separation of the dies 30 and 31. At this time, it is also well to point out that the bevelled or rounded surfaces bordering the entire scoop also facilitate free separation of the dies from the formed scoop. It will further appear that the large surface area of the scoop disposed upon the tape establishes an extremely secure attachment of the scoop to said surface of the tape. This surface engagement is increased by virtue of the wear shelves 26.

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

1. A separable fastener stringer comprising a mounting tape having bead means extending longitudinally of one surface thereof and spaced from one edge thereof, a plurality of scoops spaced longitudinally of said surface of the tape, said scoops in their entirety being fixed to said surface of the tape and said bead means, the scoops being in the form of injection molded bodies with the material of said bodies extending into interstices of the braid of said tape, each scoop having a coupling end portion defined by a head projecting beyond said edge of the tape, the scoop inwardly of the head having symmetrical side recesses defining the female coupling portion of the scoop, the other inner end of the scoop having a projecting heel lying in a plane parallel to said surface and passing through said coupling end portion of the scoop, and said heel having a lower surface widely spaced with respect to the surface of the tape to which the scoop is attached.

2. A separable fastener stringer comprising a mounting tape having bead means extending longitudinally of one surface thereof, a plurality of scoops spaced longitudinally of said surface of the stringer, said scoops in their entirety being fixed to said surface of the scoop and said bead means, the scoops being in the form of injection molded bodies with the material of said bodies extending into interstices of the braid of said tape, each scoop having a coupling end portion defined by a head projecting beyond the adjacent edge of the tape, the scoop inwardly of the head having side recesses defining the female coupling portion of the scoop, the other inner end of the scoop having a projecting heel, said heel having a lower surface widely spaced with respect to the surface of the tape to which the scoop is attached, and said coupling head having a lower surface widely spaced with respect to the surface of the tape to which the scoop is attached.

3. A separable fastener stringer comprising a mounting tape having bead means extending longitudinally of one

surface thereof, a plurality of scoops spaced longitudinally of said surface of the stringer, said scoops in their entirety being fixed to said surface of the tape and said bead means, the scoops being in the form of injection molded bodies with the material of said bodies extending into interstices of the braid of said tape, each scoop having a coupling end portion defined by a head projecting beyond the adjacent edge of the tape, the scoop inwardly of the head having side recesses defining the female coupling portion of the scoop, the other inner end of the scoop having a projecting heel, said heel having a lower surface widely spaced with respect to the surface of the tape to which the scoop is attached, and opposed sides of the scoop in alinement with said recesses having projecting shelves.

4. A separable fastener stringer comprising a mounting tape having bead means extending longitudinally of one surface thereof and spaced from one edge thereof, a plurality of scoops spaced longitudinally of said surface of the tape, said scoops in their entirety being fixed to said surface of the tape and said bead means, the scoops being in the form of injection molded bodies with the material of said bodies extending into interstices of the braid of said tape, each scoop having a coupling end portion defined by a head projecting beyond said edge of the tape, the scoop inwardly of the head having symmetrical side recesses defining the female coupling portion of the scoop, the other inner end of the scoop having a projecting heel lying in a plane parallel to said surface and passing through said coupling end portion of the scoop, said heel having a lower surface widely spaced with respect to the surface of the tape to which the scoop is attached, opposed sides of the scoop in alinement with said recesses having projecting shelves, and the heads of scoops of a companion stringer when coupled with scoops of the first named stringer being disposed over said shelves.

5. A separable fastener stringer comprising a mounting tape having bead means extending longitudinally of one surface thereof and spaced from one edge thereof, a plurality of scoops spaced longitudinally of said surface of the tape, said scoops in their entirety being fixed to said surface of the tape and said bead means, the scoops being in the form of injection molded bodies with the material of said bodies extending into interstices of the braid of said tape, each scoop having a coupling end portion defined by a head projecting beyond said edge of the tape, the scoop inwardly of the head having symmetrical side recesses defining the female coupling portion of the scoop, the other inner end of the scoop having a projecting heel lying in a plane parallel to said surface and passing through said coupling end portion of the scoop, said heel having a lower surface widely spaced with respect to the surface of the tape to which the scoop is attached, opposed sides of the scoop in alinement with said recesses having projecting shelves, the heads of scoops of a companion stringer when coupled with scoops of the first named stringer being disposed over said shelves, and lower surfaces of the heads of said companion stringer being spaced with respect to upper surfaces of said shelves.

6. A separable fastener stringer comprising a mounting tape having bead means extending longitudinally of one surface thereof, a plurality of scoops spaced longitudinally of said surface of the tape, said scoops in their entirety being fixed to said surface of the tape and said bead means, the scoops being in the form of injection molded bodies with the material of said bodies extending into interstices of the braid of said tape, each scoop having a coupling end portion defined by a head projecting beyond the adjacent edge of the tape, the scoop inwardly of the head having side recesses defining the female coupling portion of the scoop, the other inner end of the scoop having a projecting heel, said heel having a lower surface widely spaced with respect to the surface of the tape to which the scoop is attached, opposed sides of the scoop in alinement with said recesses having projecting shelves,

the heads of scoops of a companion stringer when coupled with scoops of the first named stringer being disposed over said shelves, lower surfaces of the heads of said companion stringer being spaced with respect to upper surfaces of said shelves, and the outer edges of said shelves being in alinement with said first named edge of the stringer tape.

7. A separable fastener stringer comprising a mounting tape having bead means extending longitudinally of one surface thereof, a plurality of scoops spaced longitudinally of said surface of the stringer, said scoops in their entirety being fixed to said surface of the scoop and said bead means, the scoops being in the form of injection molded bodies with the material of said bodies extending into interstices of the braid of said tape, each scoop having a coupling end portion defined by a head projecting beyond the adjacent edge of the tape, the scoop inwardly of the head having side recesses defining the female coupling portion of the scoop, the other inner end of the scoop having a projecting heel, said heel having a lower surface widely spaced with respect to the surface of the tape to which the scoop is attached, opposed sides of the scoop in alinement with said recesses having projecting shelves, the heads of scoops of a companion stringer when coupled with scoops of the first named stringer being disposed over said shelves, and the heads of each scoop, as well as the recessed female coupling portion of the scoops, having bevelled walls facilitating free bending of coupled stringers.

8. A separable fastener stringer comprising a mounting tape having bead means extending longitudinally of one surface thereof, a plurality of scoops spaced longitudinally of said surface of the tape, said scoops in their entirety being fixed to said surface of the tape and said bead means, the scoops being in the form of injection molded bodies with the material of said bodies extending into interstices of the braid of said tape, each scoop having a coupling end portion defined by a head projecting beyond the adjacent edge of the tape, the scoop inwardly of the head having side recesses defining the female coupling portion of the scoop, the other inner end of the scoop having a projecting heel, said heel having a lower surface widely spaced with respect to the surface of the tape to which the scoop is attached, opposed sides of the scoop in alinement with said recesses having projecting shelves, the heads of scoops of a companion stringer when coupled with scoops of the first named stringer being disposed over said shelves, and exposed side edges of said shelves being rounded facilitating coupling engagement of scoops of a pair of stringers.

9. A separable fastener stringer, comprising a tape, injection molded scoops spaced longitudinally of and disposed on one surface only of the tape and adhered to the tape by extension of the molded material into interstices of the tape braid, each scoop having a coupling head portion projecting beyond one edge of the tape, the other inner end of the scoop having a projecting heel portion spaced with respect to said surface of the tape to adapt said heel portion for engagement by a slider for coupling and uncoupling scoops of companion stringers, each scoop having a female coupling portion defined by symmetrical disposed recesses on opposed sides of the scoop inwardly of and adjacent said head, and each scoop including in alinement with said recesses laterally projecting shelves directly fixed to said surface of the tape.

10. A separable fastener stringer, comprising a tape, injection molded scoops spaced longitudinally of and disposed on one surface only of the tape and adhered to the tape by extension of the molded material into interstices of the tape braid, each scoop having a coupling head portion projecting beyond one edge of the tape, the other inner end of the scoop having a projecting heel portion spaced with respect to said surface of the tape to adapt said heel portion for engagement by a slider for coupling and uncoupling scoops of companion stringers, each scoop having a female coupling portion defined by recesses on opposed sides of the scoop inwardly of and adjacent said head, each scoop including in alinement with said recesses laterally projecting shelves directly fixed to said surface of the tape, and other means fixed to said surface of the tape engaged by each scoop in further establishing coupling engagement of each scoop with the tape.

11. A separable fastener stringer, comprising a tape, injection molded scoops spaced longitudinally of and disposed on one surface only of the tape and adhered to the tape by extension of the molded material into interstices of the tape braid, each scoop having a coupling head portion projecting beyond one edge of the tape, the other inner end of the scoop having a projecting heel portion spaced with respect to said surface of the tape to adapt said heel portion for engagement by a slider for coupling and uncoupling scoops of companion stringers, each scoop having a female coupling portion defined by recesses on opposed sides of the scoop inwardly of and adjacent said head, each scoop including in alinement with said recesses laterally projecting shelves directly fixed to said surface of the tape, other means fixed to said surface of the tape engaged by each scoop in further establishing coupling engagement of each scoop with the tape, and said last named means comprising a pair of beads extending longitudinally of the tape and substantially parallel with respect to said tape edge and spaced therefrom.

12. A separable fastener stringer, comprising a tape, injection molded scoops spaced longitudinally of and disposed on one surface only of the tape and adhered to the tape by extension of the molded material into interstices of the tape braid, each scoop having a coupling head portion projecting beyond one edge of the tape, the other inner end of the scoop having a projecting heel portion spaced with respect to said surface of the tape to adapt said heel portion for engagement by a slider for coupling and uncoupling scoops of companion stringers, each scoop having a female coupling portion defined by recesses on opposed sides of the scoop inwardly of and adjacent said head, each scoop including in alinement with said recesses laterally projecting shelves directly fixed to said surface of the tape, and said projecting heel portion having a lower upwardly inclined surface widely spaced with respect to said surface of the tape.

13. A separable fastener stringer, comprising a tape, injection molded scoops spaced longitudinally of and disposed on one surface only of the tape and adhered to the tape by extension of the molded material into interstices of the tape braid, each scoop having a coupling head portion projecting beyond one edge of the tape, the other inner end of the scoop having a projecting heel portion spaced with respect to said surface of the tape to adapt said heel portion for engagement by a slider for coupling and uncoupling scoops of companion stringers, each scoop having a female coupling portion defined by recesses on opposed sides of the scoop inwardly of and adjacent said head, each scoop including in alinement with said recesses laterally projecting shelves directly fixed to said surface of the tape, other means fixed to said surface of the tape engaged by each scoop in further establishing coupling engagement of each scoop with the tape, and the injection molded body portion of each scoop establishing an interlocked engagement with said last named means.

14. In a slide fastener, the combination comprising two companion stringer tapes having marginal sections therealong, which come close together in opposed relationship when said tapes are coupled together in closed position of said fastener, and a plurality of similar scoops attached to a surface of each of said tapes in spaced relationship along the marginal section of the tape to which the scoops are attached and terminating in respec-

tive coupling heads projecting outwardly beyond said marginal section, whereby the scoops on the two tapes can be coupled together in intermeshing relationship with the coupling heads of the scoops on each tape overlapping the surface of the other tape, each scoop having shelf means extending laterally from the base section of the scoop over the outer surface of the tape to which the scoop is attached and having an inner surface substantially seated on the outer surface of the tape to which the scoop is attached, and an outer surface substantially parallel to the surface of the tape to which the scoop is attached, said shelf means being in position to lie between the outer surface of the tape to which the scoop is attached and a shelf-overlying portion of the adjacent coupling head of the scoop on the other tape when the scoops on the two tapes are coupled together, the distance between the lowest part of the coupling head of each scoop attached to each tape and the outer surface of the other tape being greater than the distance between the shelf-overlying portion of the coupling head of each scoop attached to each tape and the outer surface of the shelf means on the adjacent scoop attached to the other tape, when the scoops on the two tapes are coupled together, to prevent the coupling heads of the scoops attached to one tape from coming into direct contact with the outer surface of the other tape, when the scoops on the two

tapes are coupled together, the thickness of the shelf means on each scoop being sufficiently less than the thickness of the scoop, to bring the outer surfaces of the coupling heads of the scoops on the two tapes over said tape surfaces substantially to the same level, when the scoops on the two tapes are coupled together, the shelf-overlying portions of the coupling heads on the scoops being spaced from the shelf means said shelf-overlying portions overlie, when the scoops on the two tapes are coupled together.

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