May 19, 1953 L. H. MORIN 2,638,651

LOW PERMEABILITY SEPARABLE FASTENER

Filed Sept. 10, 1945

Fig. 1

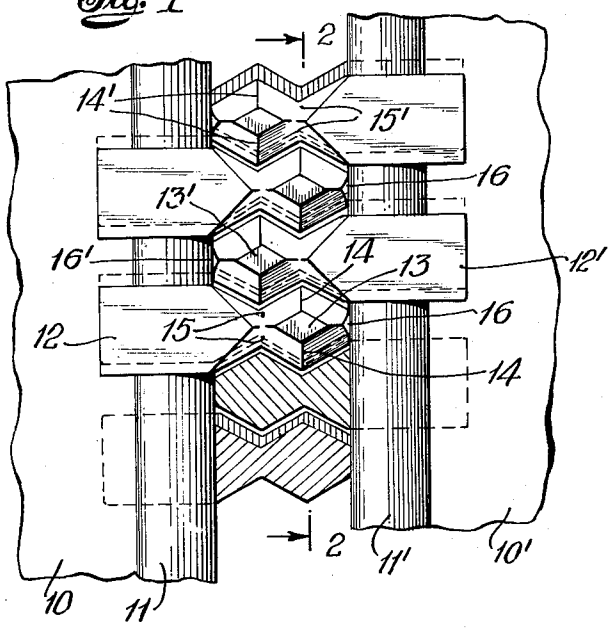


Fig. 2

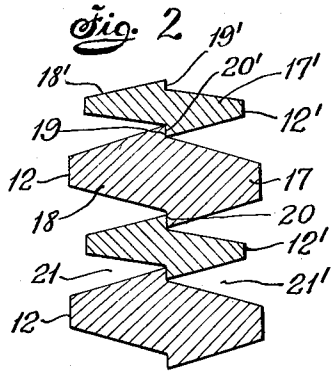


Fig. 3

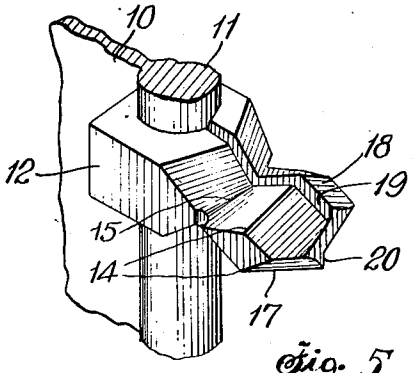


Fig. 4

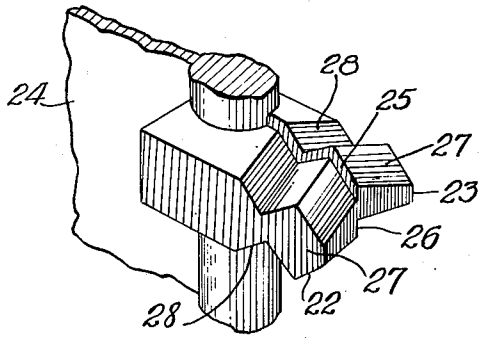


Fig. 5

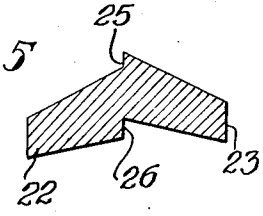
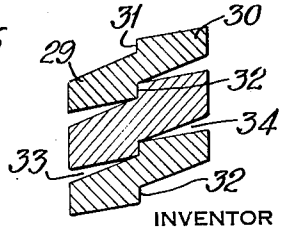


Fig. 6



INVENTOR
LOUIS H. MORIN
BY
Howard E. Thompson
ATTORNEY

Patented May 19, 1953 2,638,651

UNITED STATES PATENT OFFICE

2,638,651

LOW PERMEABILITY SEPARABLE FASTENER

Louis H. Morin, Bronx, N. Y.

Application September 10, 1945, Serial No. 615,261

15 Claims. (Cl. 24—205.13)

1

This invention relates to separable fasteners, particularly of the type employing what I term coreless scoops arranged along the stringers of the fastener. More particularly, the invention deals with scoops having offset coupling side portions forming flat shoulders centrally and longitudinally of the scoops with the shoulders of one scoop overlapping those of adjacent scoops in establishing a tight or substantially sealed coupling between the scoops. Also, and as illustrated in the drawings of the forms of the invention, hereinafter described, the scoops are preferably constructed and arranged so as to form a substantially tight seal with the edge portions of the respective tapes or mounting members to which the scoops are secured.

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. In such drawings:

Fig. 1 is a partially sectioned elevational view of a few coupled scoops on adjacent edges of two stringers shown on a scale much enlarged over life-size;

Fig. 2 is a partial section on the line 2—2 of Fig. 1 simply showing the scoop structure at the section line indicated and omitting all background illustrations;

Fig. 3 is a perspective view of one of the scoops as arranged on the beaded edge of a stringer;

Fig. 4 is a view similar to Fig. 3 showing a modification;

Fig. 5 is a sectional view similar to Fig. 2 showing only a single scoop as constructed in Fig. 4; and

Fig. 6 is a view similar to Fig. 2 showing only three scoops and showing a modification.

The present application constitutes a continuation-in-part of my prior application Serial Number 548,257; filed August 5, 1944, now abandoned.

In forming the scoops of separable fasteners of the kind under consideration and, particularly, when formed as die castings, it has been customary to employ core members to form the recesses, apertures or other depressions on at least one surface of the scoop to receive a projection on the opposed surface of an adjacent scoop to couple the scoops together against transverse separation. The use of cores of this type and kind, in some instances, is objectionable and this is particularly true in attempting to form a large

2

number of castings simultaneously upon the beaded edge of a stringer tape. By dispensing with the use of cores, it is possible to materially increase the number of individual scoops formed in one casting operation and to provide the coupling engagement preventing transverse separation by simply offsetting the side portions of each scoop body to form projecting flanges or walls on the center line of the scoops, establishing between adjacent coupled scoops an interlock which retains the scoops against transverse separation. This result may be carried out in scoops of the more or less conventional transversely straight construction or with scoops of what might be termed V-shaped cross-sectional form, as illustrated in Figs. 4 and 5 of the drawing.

Considering Figs. 1–3 inclusive, I have shown at 10, 10' two small portions of stringers, having beaded edges 11, 11', to which are attached scoops 12, 12'. As both stringers and the scoops thereon are of the same construction, the illustration of one scoop, for illustrative purposes in perspective in Fig. 3, is all that is essential. In this figure, the tape 10 with the scoop 12 is shown arranged upon the beaded edge 11. Each scoop is of what I term the diamond head construction. In other words, the outer ends of all the scoops have more or less diamond-shaped coupling heads 13, 13' defined by upper and lower V-shaped projections 14, 14'. Inwardly of the projections 14, 14' are V-shaped recesses 15, 15' disposed on upper and lower surfaces of the scoops which are adapted to receive the heads 13', 13 of the scoops of an opposed stringer or the projections 14', 14 thereon, as will clearly appear from a consideration of Fig. 1 of the drawing. While not essential to the enjoyment of the other advantages of the construction, it is preferred that the heads 13, 13' are so formed as to extend to a point establishing a firm abutting engagement with the beaded edges of opposed stringers, the ends 16 of the heads 13 abutting the head 11' and the ends 16' of heads 13' abutting the bead 11. This closes the scoop gap between the beads 11, 11' transversely with respect to the stringers.

The head and recess construction of the scoops forms the coupling between the scoops which prevents lateral or pull-apart separation of the stringers. Transverse separation, on the other hand, is prevented in the manner to be described.

Considering Fig. 3 of the drawing, it will be seen that the scoop is formed as if composed of halves or side portions vertically off-set with re-

spect to each other. For convenience the side portion 17 of the scoop 12 may be termed the lower side portion and the side portion 18 may be termed the higher side portion. This offset relationship of the side portions 17 and 18 forms centrally and longitudinally of the scoop a raised coupling wall or shoulder 19 at the upper surface of the scoop and a downwardly extending coupling wall or shoulder 20, at the lower surface of the scoop. Such coupling walls or shoulders may also be defined as coupling flanges. In Fig. 2 of the drawing, which shows two of the scoops 12, as well as two of the scoops 12' in cross-section, reference numerals 17', 18', 19' and 20' have been applied to indicate the elements of scoops 12' corresponding to the elements 17 to 20 of scoops 12.

The coupling walls or shoulders 19, 19' and 20, 20' extend the full length of the scoops, that is, throughout the mounting end portions as well as the coupling end portions, as indicated in Fig. 1 of the drawing.

Now turning to the illustration in Fig. 2, which shows a section through a few coupled scoops along the line 2—2 of Fig. 1 without illustrating any of the background of the scoops or the mounting therefor, here is shown the interengagement between the shoulders or coupling walls 19, 19', 20, 20' of adjacent coupled scoops which retain the scoops against transverse separation and, further, establishes a substantial seal between adjacent scoops throughout the full length of the coupling ends thereof and from the beaded edge of one stringer to the beaded edge of the opposed stringer. This, in combination with the abutting ends 16, 16', substantially seals the space between the beads of the stringer tapes, which type of scoop construction is preferable in many installations or uses of stringers wherein it is desirable to maintain a substantially complete closure. It will also appear that, by reason of the outwardly tapered construction in the walls of the projections and recesses, relatively large spaces 21, 21' (Fig. 2) are provided at opposite sides of the coupled stringers which provide for free bending or flexing of the stringers without interference with the substantial closure achieved by the abutting contact between the walls or shoulders 19, 19', 20, 20'.

The modified structure shown in Fig. 4 is generally similar to the structure of Figs. 1–3 inclusive, but differs from it in that, instead of having each side portion of the scoop extending perpendicularly to side surfaces of the stringer tapes, the side portions 22, 23 of the modified scoop shown in Fig. 4 are arranged at angles to each other as appears more clearly in the cross-sectional view in Fig. 5 of the drawing. In other words, this angular relationship will give a more or less V-shaped cross-sectional form to the scoop and this cross-sectional form, in itself, is sufficient to retain the coupled scoops against transverse separation. However, the same type of substantial seal and interlock as above described is provided by offsetting the side portions 22, 23 one with respect to the other centrally and longitudinally of the stringer tape 24 to form a raised coupling wall or shoulder 25, similar to the walls or shoulders 19, 19', and a downwardly extending coupling wall or shoulder 26, similar to the wall or shoulders 20, 20'. Each side portion 22 and 23 of the scoop will have diamond-shaped heads 27 similar to the heads 13, 13' and opposed recesses 28 inwardly of said head and similar to the recesses 15, 15'. It will be understood that scoops of the form of Figs. 4 and 5 are adapted to mesh and interlock with identically formed scoops of a companion stringer. As before, the heads of these scoops may be of such length as to abut the tape edges of the respective stringers.

By reason of the offsetting of the scoop sides or halves centrally and longitudinally of the tape, the scoops can be formed as die castings on the tape, each side or half being formed by a die part with the dies having a parting line centrally and longitudinally of the scoops, thus dispensing with the use of cores of any type or kind.

For convenience, and to distinguish from the forms already described, the scoops of the Fig. 6 modification may be defined as laterally tilted with respect to the tapes. As in the Fig. 5 form the scoop halves 29, 30 extend at an angle (i. e. other than 90°) from the tapes; but, as in the Fig. 2 form, the axes of the halves are in substantial alignment. As in both the previous forms, the halves are vertically off-set to form upwardly extending coupling walls 31 and downwardly extending coupling walls 32, similar to the walls 25 and 26. Upper and lower surfaces of each side portion or scoop halve 29, 30 converge to outer sides thereof; thus forming clearances as at 33 and 34 which will provide for flexure or bending of the stringers. Aside from the structural differences above defined, the structure of the scoops in Fig. 6 may be precisely the same as that of the forms already described.

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

1. In separable fastener stringers having scoops spaced along one edge thereof, said scoops having coupling end portions projecting beyond the edge of the tape of the stringer, each of said scoops being divided along the entire length thereof into right hand and left hand longitudinal side portions, one of said side portions being offset with respect to the other side portion in a direction extending longitudinally of the tape, both side portions of each scoop having on opposed surfaces thereof alined projections and recesses, the projections and recesses of said scoops providing means for coupling opposed stringers to retain the stringers against lateral separation, and the offsetting of the side portions of said scoops providing coupling walls on upper and lower surfaces of the scoops centrally and longitudinally of the full length thereof, said coupling walls being adapted to retain coupled scoops against transverse separation.

2. In separable fastener stringers having scoops spaced along one edge thereof, said scoops having coupling end portions projecting beyond the edge of the tape of the stringer, the entire coupling end portion of each scoop being divided centrally and longitudinally thereof into side portions, one of said side portions being offset with respect to the other side portion in a direction extending longitudinally of the tape, both side portions of each scoop having on opposed surfaces thereof alined projections and recesses, the projections and recesses of said scoops providing means for coupling opposed stringers for retaining the stringers against lateral separation, the offsetting of the side portions of said scoops providing coupling walls on upper and lower surfaces of the scoops centrally and longitudinally of the full length of the coupling end portions thereof, said coupling walls being

adapted to retain coupled scoops against transverse separation, and said side portions of a scoop being disposed angularly to each other to form a coupling end portion of substantially V-shaped cross-sectional form.

3. A scoop for a separable fastener stringer, said scoop being divided centrally and longitudinally thereof into side portions, said side portions extending throughout the length of the scoop, each side portion being of similar construction and having means forming male and female couplings on upper and lower surfaces thereof for retaining coupled scoops of a pair of stringers against lateral separation, one of said side portions being offset with respect to the other side portion in a direction extending longitudinally of the tape, and upper and lower surfaces of the scoop having centrally and longitudinally of the full length thereof coupling flanges for retaining coupled scoops of a pair of stringers against transverse separation.

4. In a pair of separable fastener stringers having scoops spaced along the edges thereof, said scoops having coupling end portions projecting beyond the edges of the tapes of the stringers, the entire coupling end portion of each scoop being divided centrally and longitudinally thereof into side portions, one of said side portions being offset with respect to the other side portion in a direction extending longitudinally of the tape, both side portions of each scoop having on opposed surfaces thereof alined projections and recesses, the projections and recesses of said scoops providing means for coupling opposed stringers for retaining the stringers against lateral separation, the offsetting of the side portions of said scoops providing coupling walls on upper and lower surfaces of the scoops centrally and longitudinally of the full length of the coupling end portions thereof, said coupling walls being adapted to retain coupled scoops against transverse separation, the outer ends of the coupling end portions of the scoops abutting the edges of the opposite tapes when the stringers are coupled together, and said abutment in combination with said coupling walls substantially closing the space between said tape edges.

5. A scoop for separable fastener stringers having a mounting end portion and a coupling end portion, said scoop having on upper and lower sides a line of demarcation dividing the same centrally and longitudinally throughout the full length thereof into offset side portions, said side portions being offset in a direction extending longitudinally of the stringer tape, each side portion having on upper and lower surfaces alined projections, inwardly of which are alined recesses, said projections and recesses of one side portion being in transverse alinement with those of the other side portion, said offset side portions forming on upper and lower surfaces of the scoop a pair of continuous coupling walls centrally of the same throughout the full length thereof, one wall being formed by one side portion of the scoop and the other wall by the other side portion thereof.

6. A scoop according to claim 3 having a V-shaped cross section throughout its entire length.

7. A scoop according to claim 5 in which said side portions extend angularly to each other.

8. A scoop according to claim 5 in which the upper and lower surfaces of each offset side portion converge from said demarcation line to the free edge of the side portion.

9. A scoop according to claim 5 in which each offset side portion extends at an angle other than 90° from the stringer tape.

10. A scoop for separable fastener stringers having a mounting end portion and a coupling end portion, said scoop having on upper and lower sides a line of demarcation dividing the same centrally and longitudinally throughout the full length thereof into offset side portions, said side portions being offset in a direction extending longitudinally of the stringer tape, each side portion having male and female coupling portions for preventing pull-apart separation of said stringers, said offset side portions forming on upper and lower surfaces of the scoop a pair of continuous coupling walls centrally of the same and throughout the full length thereof, one wall being formed by one side portion of the scoop and the other wall by the other side portion thereof.

11. A scoop according to claim 10 in which each offset side portion extends at an angle other than 90° from the stringer tape and in which both said side portions lie in the plane passing through the transverse axis of the scoop.

12. A scoop according to claim 10 in which each offset side portion extends at an angle other than 90° from the stringer tape and in which said side portions lie in transverse axial planes which intersect.

13. In separable fasteners comprising a pair of stringer tapes having scoops spaced longitudinally of adjacent edges of said tapes, said scoops having coupling portions beyond said tape edges, said coupling portions of the scoops of a pair of stringers having interlocking means for coupling the stringers against lateral pull-apart separation, the improvement which comprises scoops having scoop ends in abutting engagement with tapes of opposed stringers, interengaging means extending longitudinally of the full length of adjacent surfaces of coupled scoops for retaining the coupled scoops against transverse separation, said interengaging means comprising a coupling flange on both the upper and lower surfaces of each scoop, each scoop having a tapered scoop section with the tapering extending from said flanges to both longitudinal side edges of the scoop, and said interengaging means in combination with said scoop ends abutting said opposed tapes serving to form a substantial closure by the coupled scoops between said tape edges.

14. In separable fasteners comprising a pair of stringer tapes having scoops spaced longitudinally of adjacent edges of said tapes, said scoops having coupling portions beyond said tape edges, said coupling portions of the scoops of a pair of stringers having interlocking means for coupling the stringers against lateral pull-apart separation, the improvement which comprises scoops having scoop ends in abutting engagement with tapes of opposed stringers, interengaging means extending longitudinally of the full length of adjacent surfaces of coupled scoops for retaining coupled scoops against transverse separation, said interengaging means comprising a coupling flange on both the upper and lower surfaces of each scoop, each scoop having a tapered cross section with the tapering extending from said flanges to both longitudinal side edges of the scoop, and said interengaging means in combination with said scoop ends abutting said opposed tapes serving to form a substantial closure by the coupled scoops between said tape edges, and the scoops of each stringer being of V-shaped cross-sectional form.

15. In separable fasteners comprising a pair of stringer tapes having scoops spaced longitudinally of adjacent edges of said tapes, said scoops having coupling portions beyond said tape edges, said coupling portions of the scoops of a pair of stringers having interlocking means for coupling the stringers against lateral pull-apart separation, the improvement which comprises scoops having scoop ends in abutting engagement with tapes of opposed stringers, interengaging means extending longitudinally of the full length of adjacent surfaces of coupled scoops for retaining coupled scoops against transverse separation, said interengaging means comprising a coupling flange on both the upper and lower surfaces of each scoop, each scoop having a tapered cross section with the tapering extending from said flanges to both longitudinal side edges of the scoop, and said interengaging means in combination with said scoop ends abutting said opposed tapes serving to form a substantial closure by the coupled scoops between said tape edges, and one longitudinal side portion of each scoop being arranged at a downward inclination with respect to the tape while the other side portion is arranged at an upward inclination.

LOUIS H. MORIN.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
1,756,736	Gallina et al.	Apr. 29, 1930
1,817,838	Poux	Aug. 2, 1931
1,906,808	Poux	May 2, 1933
2,082,619	Dau	June 1, 1937
2,158,079	Miller	May 16, 1939
2,331,618	Morin	Oct. 12, 1943