

Jamming device for a cord or tape fastener such as shoelaces

The invention relates to a jamming device as described in the introductory part of Claim 1.

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For lacing shoes, jackets or trousers, there exist variously shaped hooks, rings, eyes etc. for the fastening means such as shoelaces for example. For footwear with extended uppers, such as work, walking and sport shoes for example,
10 there are exacting requirements regarding the security of the lacing, and also the comfort of the wearer, which greatly depends on the proper functioning of the lacing elements. One altogether essential requirement for the comfort of this kind of footwear is that it should be
15 possible for the wearer to adopt different tensions in different regions of the lacing.

The object of the invention is to form a jamming device for a cord or tape fastener so that when a shoelace, for
20 example, is being pulled tight it runs through the device freely, but can be securely jammed with the desired tension.

The object of the invention is achieved by the features set out in Claim 1. Surprisingly these have the advantage that
25 the design according to the invention of the ring lug and jamming cleat allows the fastening means, such as a shoelace for example, to pass freely through as the shoe is being laced up (and also as it is being unlaced), but the shoelace can be secured by hinging the ring lug down into a jamming
30 position. Yet it also allows a different tension, and hence different clasping forces, to be applied in adjacent regions of the lacing, so that lower tension is applied for example to parts which are more sensitive to pressure, such as the instep, than, say, the region between shin and instep.

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A design according to Claim 2 is also advantageous: this

provides effective jamming of the fastening means.

An embodiment according to Claim 3 is also advantageous:
this jams the fastening means over the entire region of the
5 jamming cleat which is surrounded by the ring lug.

One possible advantageous development is described in Claim
4: here the jamming device, in particular the cleat, can be
made in one production operation, resulting in a reduction
10 in production costs.

Also advantageous is a design as described in Claim 5, as
this allows the fixing tab to be made extremely thin and
flexible, with thickening only in the jamming region and/or
15 the region of the ring lug mounting, resulting in a
reduction in both material and production costs. Moreover
the resistance to bending and the strength of the fixing
device can be varied to suit the particular application.

20 Also advantageous is an embodiment according to Claim 6, as
it provides effective jamming in the region of the
wraparound of the fastening means and increases the area of
contact between fastening means, ring lug and jamming cleat,
resulting in improved positive locking and frictional
25 connection of the fastening means and so-called overcentre
locking to prevent accidental loosening.

A possible advantageous development is described in Claim 7:
this allows the ring lug to be swung above the jamming
30 cleat, which is particularly advantageous when the fastening
means is initially threaded through the ring lug.

Also advantageous is a design according to Claim 8: this
allows a further saving of material without adversely
35 affecting the strength of the hinge bearing.

An embodiment according to Claim 9 is also favourable: this provides effective jamming of the fastening means in the jamming device.

- 5 A development according to Claim 10 is also possible: this gives the jamming device elasticity and an attractive appearance in a simple way and at low material and production cost, without sacrificing strength, especially in the hinge bearing.

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A construction according to Claim 11 has the advantage that the mounting for the ring lug can be produced in a simple manner.

- 15 An alternative embodiment according to Claim 12 is advantageous: this enables the jamming cleat with its fixing tab and the rivet strap to be fabricated in separate equipment, and only joined together at the moment of assembly of the jamming device consisting of these parts on
20 an article of clothing. In addition this "sandwich construction" of the jamming device has a positive effect on the strength of the device.

A possible advantageous design is described in Claim 13.

- 25 Here the rivet strap and fixing tab can be mounted on the article of clothing with a single fixing element.

Also advantageous is a design according to Claim 14, which further increases the strength of the device.

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An alternative embodiment according to Claim 15 is also favourable: it allows the jamming device to be made in one piece, which is particularly advantageous where cold-forming production techniques are used.

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Another possibility is the development according to Claim

16: this enables the rivet strap to be latched in the vertical direction, thereby preventing the rivet strap from being lifted off the fixing tab, and also preventing the jamming device from opening accidentally.

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A construction according to Claim 17 has the advantage that it reduces the number of production steps, thus reducing production costs, and a hinge bearing is obtained in a simple manner by assembling the separate parts consisting of
10 ring lug, jamming cleat and rivet strap.

Claim 18 describes a favourable embodiment in which the ring lug is prevented from pivoting accidentally; this is absolutely essential if the assembly of the jamming device
15 is automated. Furthermore overcentre locking of the ring lug is provided.

Also advantageous is a design according to Claim 19, in which the ring lug can be swung out of the jamming zone
20 only through elastic deformation, to allow insertion of the fastening means into the jamming zone, e.g. when lacing up. Accidental pivoting of the ring lug is prevented.

Finally, a development according to Claim 20 is possible: in
25 this, the rivet strap is enveloped in the jamming cleat and/or fixing tab, thus forming a sandwich component possessing good strength properties.

In order that the invention maybe better understood, it will
30 be described in detail with reference to the embodiments shown by way of example in the drawings.

Fig. 1 shows a jamming device according to the invention
in plan view;

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Fig. 2 shows the jamming device sectioned on the lines II -

II in Fig. 1;

Fig. 3 shows a further embodiment of the jamming device according to the invention, in plan view;

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Fig. 4 shows the jamming device sectioned on the lines IV - IV in Fig. 3;

10 Fig. 5 shows another embodiment of the jamming device according to the invention, in plan view;

Fig. 6 shows the jamming device sectioned on the lines VI-VI in Fig. 5;

15 Fig. 7 shows a further embodiment of the jamming device according to the invention, viewed in section and in elevation;

20 Fig. 8 shows another embodiment of the jamming device according to the invention, viewed in section and in elevation;

25 Fig. 9 shows a further embodiment of the jamming device according to the invention, viewed in section and in elevation.

Figs. 1 and 2 (which will be described together) show a jamming device 1 which is made up of a rivet strap 2 and a ring lug 3. The rivet strap 2 is formed symmetrically about a longitudinal centre line 4, with a length 5 extending parallel therewith, and a width 6 measured at right angles thereto. A portion 7, having, for example, two holes 8 located symmetrically about the longitudinal centre line 4, is separated by a region 10 of reduced thickness from a jamming cleat 9 a portion of which is surrounded by the ring lug 3. The jamming cleat 9 is joined to the rivet strap 2.

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The region 10 of reduced thickness has a depth 12 measured at right angles to a contact surface 11 which lies on the surface of an article of clothing such as for example a shoe, a jacket, or trousers, and a width 13 measured at right angles to the depth and parallel with the longitudinal centre line 4.

The function of the region 10 of reduced thickness, which extends over the whole width 6, is to make the portion which forms the jamming cleat 9 and a hinge bearing 14 movable in relation to the portion 7 which forms a fixing tab 15. A thickness 17 separates an upper surface 16 of the fixing tab 15 from the contact surface 11 on the opposite side. The fixing tab 15 and the jamming cleat 9 with the hinge bearing 14 are joined together, for example as one piece by a connecting web 18. However, it is also possible to form the rivet strap 2 without the region 10 of reduced thickness separating the jamming cleat 9 from the fixing tab 15, by using suitably pliable materials such as suitable plastic materials for example. As is shown in broken lines, it is also possible for the distance 19 separating the upper surface 16 from the contact surface 11 to be smaller than the thickness 17. The distance 19 can be minimized so that the fixing tab 15 can also be sewn or glued to the article of clothing, in which case the hole 8 is unnecessary. Again, the distance 19 can be made equal to a thickness 20 of the connecting web 18 which is the thickness 17 minus the depth 12. In this case, an upper surface 21 of the jamming cleat 9, opposite to, and extending parallel with, the contact surface 11, lies at a distance equal to the depth 12 from the upper surface 16 opposite to the contact surface 11.

The hinge bearing 14 separated from the fixing tab 15 by the region 10 of reduced thickness has one or more bearing holes 22 extending more or less parallel with the contact surface

11 and with the width 6. These may extend as round bores across the whole width 6. Alternatively, however, two bearing holes 22 formed as blind pocket holes may be provided. From lateral faces 23, 24 of the rivet strap 2
 5 separated by the width 6 and extending parallel with the longitudinal centre line 4, hinge arms 25 of the ring lug 3 are aligned with each other in the bearing hole 22 and extend towards the longitudinal centre line 4. These arms are arranged concentrically about a pivot axis 26 which
 10 extends parallel with the contact surface 11 and with the width 6, at the centre of the bearing hole 22. The distance between the pivot axis 26 and the contact surface 11 (in the direction towards the upper side 21) may be such that the hinge arms 25 are located within the region bounded by the
 15 depth 12.

The ring lug 3 is formed for example in the shape of a C with straight end regions 27 projecting into the bearing hole 22 and forming the hinge arms 25. A hoop 28 linking
 20 the hinge arms 25 to each other extends for example approximately in a semicircle around a jamming zone 29 of the jamming cleat 9 whose shape is for example likewise approximately semicircular. Alternatively, the hoop 28 may be formed with a leg extending more or less parallel with
 25 the width 6 and linked to the hinge arms 25 parallel with the said leg by legs extending parallel with the lateral faces 23 and 24.

Alternatively, the hoop 28 may be formed without a leg
 30 parallel with the width 6, but with two legs which are arranged at an angle to one another and which are joined to each other and to the hinge arms 25. The ring lug 3 may be bent from wire with for example a round, square or triangular cross-section. In the assembled condition the
 35 ring lug 3 is in a position more or less parallel with the contact surface 11, forming with the jamming zone 29 of the

jamming cleat 9 the locking position for a fastening means 30, e.g. for a shoelace 31. However, as a result of slight play of the hinge arms 25 in the bearing hole 22 and/or elastic deformation of the hoop 28 and of the hinge arms 25, it can be splayed so that it can be pivoted through a pivot angle 32, of less than 180° , into the release position (as shown in broken lines), releasing the fastening means 30.

In order for this to happen, it is necessary inter alia that the width 6, which for example also bounds the jamming cleat 9, be slightly smaller than an internal width 33 of the ring lug 3 extending parallel with the bearing hole 22 and defining an inner surface 34 of the ring lug 3 facing the rivet strap 2. An end face 35 extending for example at right angles to the contact surface 11 faces towards the inner surface 34 and bounds the end region of the jamming cleat 9 with its jamming zone 29. The end face 35 of the jamming cleat 9, together with the inner surface 34 of the ring lug 3, forms, when the ring lug is positioned more or less parallel with the contact surface 11, jamming surfaces 36 between which the fastening means 30 is nipped in the jamming zone 29. The end face 35 may be flat, or may have a groove-like indentation 37 which is concavely formed back towards the hinge arms 25. The cross-section of this indentation 37, which forms the jamming surface 36, may be curved or angular. A point on the surface of the groove-like indentation 37 which lies closest to the hinge arms 25 is separated from the inner surface 34 of the hoop 28 by a gap 38. This establishes the distance between the jamming surfaces 36, and, at least in the jamming zone 29, is smaller than a thickness 39 of the fastening means 30 in the undeformed condition. Alternatively, it may be made more or less constant over the entire extent of the end face 35 or inner surface 34. If the hoop 28 is made in the form of a circular arc, both the groove-like indentation 37 and the end face 35 extend more or less concentrically with the inner surface 34.

Furthermore the size of the gap is such that, when the ring lug 3, and in particular the hoop 28, is in the undeformed condition, that is to stay when the hoop 28 is not being subjected to any deformation force and no fastening means 30 is inserted, the inner surface 34 is in contact with the end face 35, thus preventing accidental pivoting of the ring lug 3. This is particularly necessary if the mounting of the clamping device 1 on an article of clothing is automated, as self-actuated pivoting of the ring lug 3 into an undefined intermediate position greatly increases the risk of malfunction of the mounting machine.

However, when a fastening means 30 is to be inserted, the elasticity of the ring lug 3 allows it to be pivoted clear of the end face 35, towards the upper side 21 and the fixing tab 15, through the exertion of a deforming force.

The groove-like indentation 37 in the end face 35 forms a bead-like projection in the region between the indentation and the upper surface 16 of the jamming cleat 9, and this projection constitutes a dead centre point when the ring lug 3 is pivoted. When the ring lug 3 with the shoelace 31 drawn through it is pivoted into a jamming position in which the ring lug 3 extends more or less parallel with the upper surface 16, this dead centre point has to be surmounted. Pivoting is effected by the exertion of an obliquely directed pull on the shoelace 31, with one force component resulting from the pull acting towards the contact surface 11 of the jamming cleat 9. Jamming of the shoelace 31 can therefore be performed as a follow-on to the lacing operation by an appropriate angle of pull, and therefore does not require the help of the user's other hand. Moreover, the dead centre point formed by the bead-like protuberance acts as a reliable lock counteracting accidental and unintentional release of the jamming action of the device.

A further embodiment of the jamming device 1 with a rivet strap 2 and a ring lug 3 is shown in Figs. 3 and 4 (which will be described together). Here the rivet strap is formed so that the upper surface 16 extends parallel with the
 5 contact surface 11 at a distance 19 therefrom which is smaller than the thickness 17 of the hinge bearing 14 bounded by the contact surface 11 and the upper side 21. The fixing tab 15 also has the hole 8 to accommodate the fixing element.

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A rivet is not the only possible fixing element: it is also possible to join the fixing tab 15 to the article of clothing by stitching for example. On the one hand, this eliminates the hole 8; on the other hand, the fixing tab 15
 15 must be made as thin as possible so that the distance 19 in particular is kept as small as possible.

The hinge bearing 14 is designed with each of the bearing holes 22 extending concentrically about the pivot axis 26 of
 20 the hinge arms 25 in the end regions 27 of the ring lug 3, in a rib 40 extending parallel with the longitudinal centre line 4. The ribs 40 are for example arranged symmetrically with respect to the longitudinal centre line 4 at a distance 41 from one another and slope up from the upper surface 16
 25 towards the upper side 21 at an angle 42. The ribs 40 are formed on a jamming cleat 43 which is joined as one piece to the fixing tab 15, and is at least partially surrounded by the inner surface 34 of the ring lug 3. The jamming cleat 43 has a groove-like indentation 37 forming the jamming zone 29
 30 and indenting the end face 35 of the jamming cleat 43 concavely towards the pivot axis 26.

The gap 38 thereby formed between the inner surface 34 of the ring lug 3 and the most recessed point (towards the pivot axis 26) of the groove-like indentation 37 is not
 35 greater than the thickness 39 of the fastening means 30, for example the shoelace 31, in the undeformed condition. Viewed

in plan, the fixing tab 15 has for example a curved contour 44 which extends symmetrically about the longitudinal centre line 4 and which in the region around the hole 8 may extend in a circular arc with a radius 45 about an axis of symmetry 46 of the hole 8. The points on the contour 44 furthest from the longitudinal centre line 4 are bounded by the width 6.

The ring lug 3, or hoop 28 linking the two hinge arms 25 to each other, is formed from two legs 47 which converge with each other symmetrically about the longitudinal centre line 4 at an angle 48. Since the inner surface 34 of the ring lug 3, or of the legs 47, extends around the end face 35 with a more or less constant clearance 38, the end face 35 has an angle of convergence 49 matching the leg angle 48. The inner surface 34 and the end face 35 (or the surface of the groove-like indentation 37) form the jamming surfaces 36, as already described.

Another embodiment of the jamming device 1 is shown in Figs. 5 and 6 (described together). In this embodiment the rivet strap 2 is designed as an independent part, separate from the jamming cleat 43 and from the fixing tab 15 formed on the latter, and is arranged on the upper surface 16 of the fixing tab 15. This rivet strap 2 is a two-ply component made by bending sheet metal and has a bend zone 50 which is adjacent to the jamming cleat 43, which is made in one piece with the fixing tab 15, for example from plastic material. The bend zone 50 has an inner bend radius 51 which is approximately equal to half the diameter 52 of the hinge arms 25 and is measured from the pivot axis 26 extending through the centre of the hinge arm 25.

The bend zone 50 clasps the hinge arms 25 with an angle of contact which is for example smaller than 360° so that a sloping region 53 is formed, sloping upwards (i.e. in the direction away from the upper surface 16) from a point of

contact 54 which lies between the hinge arms 25 and the hole 8 and at which two legs 55 and 56 of the rivet strap 2 adjoin each other, towards a tangent point 57 located on the circumference of the hinge arms 25 or [on] the inner
 5 circumference, bounded by the inner bend radius, of the bend zone 50. The bearing hole 22 in which the hinge arms 25 are mounted is formed by the bend zone 50 and the sloping region 53. The two legs 55 and 56 of the rivet strap 2 have through holes 58 and 59 formed concentrically with one
 10 another and with the axis of symmetry 46 of the hole 8, and are thus in register with the hole 8.

On the side facing the bend zone 50 and facing away from the jamming zone 29, the jamming cleat 43 has a latching
 15 projection 60 located some way above the upper surface 16 and projecting towards the hole 8. This creates an indentation 61 which concavely extends in the opposite direction to the said hole 8 and in which the bend zone 50 of the rivet strap 2 is bedded. This prevents the rivet
 20 strap 2, and in particular the bend zone 50, from lifting off the upper surface 16 when force is applied in the opposite direction to the surface 16. The jamming cleat 43 also has the indentation 37 already described. The hoop 28 in this variant again has a circular arc profile, and the
 25 jamming cleat 43 also has a circular arc profile, formed by the end face 35. As a result, the rivet strap 2 is positioned with respect to the jamming cleat 43 upon automated assembly.

30 The inner surface 34 of the ring lug 3 is separated from the pivot axis 26 of the hinge arms 25 by a pivot radius 62. In the undeformed condition of the ring lug 3 and of the hoop 28, this radius is smaller than a span 63 between the pivot axis 26 and an upper rim 64. This represents the line of
 35 contact of the end face 35 with the upper side 21 or contact surface 11.

The result is that the undeformed ring lug 3 cannot be accidentally swung over the jamming zone 29, or past the contact surface 11 or upper side 21. However, when the fastening means 30 is to be inserted into the jamming zone
 5 29, the inherent elasticity of the ring lug 3 allows the pivot radius 62 to be lengthened so that it at least assumes the dimension of the span 63, thus allowing the ring lug 3 to be pivoted past the bearing surface 11 or upper side 21.

10 Another embodiment of the jamming device 1 is shown in Fig. 7. This consists of the rivet strap 2 and the jamming cleat 43, which is joined as one piece to the fixing tab 15 and is formed as an injection or press moulded or cast part of metal and/or plastic material. On the side facing away from
 15 the rivet strap 2, the jamming cleat 43 has the jamming zone 29 for the fastening means 30. Again, the jamming effect is obtained as a result of the fact that the gap 38 is smaller than the thickness 39 of the fastening means 30 in the undeformed condition. Unlike the jamming cleat of the
 20 previous variants, the jamming cleat 43 is not a solid body, but has for example a cavity 65 whose depth 66 measured at right angles to the contact surface 11 is smaller, by an amount equal to the wall thickness 67 of the fixing tab 15 or of the jamming cleat 43, than the thickness 17 bounded by
 25 the contact surface 11 and the opposing upper side 21. The jamming cleat 43 also has, on the side facing the rivet strap 2, the latching projection 60 which prevents relative movement of the rivet strap 2 in the opposite direction to the contact surface 11, or towards the jamming zone 29. The
 30 rivet strap 2 is formed as a plastic part, with a reinforcement region 68 in which the bearing hole 22 for the hinge arms 25 is arranged. From the reinforcement region 68 a sloping surface 69 slopes down with respect to the upper surface 16, towards the hole 8 and the through hole 58
 35 corresponding with the latter.

Fig. 8 shows an alternative embodiment in which the rivet strap 2 is formed in one piece as a two-ply bent component. The jamming cleat 43 is connected to the fixing tab 15 and rivet strap 2 in one piece, and has the latch projection 60, jamming zone 29 and cavity 65. The rivet strap 2, which has the bend zone 50 forming the hinge bearing 14 or bearing hole 22, and the sloping region 53, is joined, in an end region 70 opposite the jamming-zone 29, to the fixing tab 15, in one piece, at a bend 71. This is formed so that the through hole 58 is in concentric register with the hole 8.

Finally, a development of the jamming device 1 is illustrated in Fig. 9. This consists of the jamming cleat 43 and the fixing tab 15 formed thereon. As in the embodiments previously described, the jamming cleat 43 is surrounded by the ring lug 3, and the opposing jamming faces 36 form the jamming zone 29. However, the end face 35 is flat (without the groove-like indentation 37), providing a jamming face 36 which is also flat. Embedded in the fixing tab 15 is the rivet strap 2, which is formed as a bent component with the bend zone 50 adjacent to the jamming cleat 43. Alternatively, the rivet strap 2 may be formed for example from ceramics or from latticed or woven plastic fibres reinforced with fibres, particularly glass, carbon or aramide fibres. In this way a reinforcing part 72 is obtained, to accommodate in particular the hinge bearing 14 or its bearing holes 22.

It is of course possible to combine the various details of embodiments which may constitute separate inventions. For a clearer disclosure of the details according to the invention, the illustrations of the jamming device in the individual figures are not drawn to scale.

List of reference symbols

	1	jamming device	41	distance
	2	rivet strap	42	angle of slope
5	3	ring lug	43	jamming cleat
	4	longitudinal centre line	44	contour
	5	length	45	radius
	6	width	46	axis of symmetry
10	7	portion	47	leg
	8	hole	48	leg angle
	9	jamming cleat	49	angle of convergence
	10	region of reduced thickness	50	bend zone
15	11	contact surface	51	bend radius
	12	depth	52	diameter
	13	width	53	sloping region
	14	hinge bearing	54	point of contact
	15	fixing tab	55	leg
20	16	upper surface	56	leg
	17	thickness	57	tangent point
	18	connecting web	58	through hole
	19	distance	59	through hole
	20	thickness	60	latch projection
25	21	upper side	61	indentation
	22	bearing hole	62	pivot radius
	23	lateral surface	63	span
	24	lateral surface	64	rim
	25	hinge arm	65	cavity
30	26	pivot axis	66	depth
	27	end region	67	wall thickness
	28	hoop	68	reinforcement region
	29	jamming zone	69	sloping surface
	30	fastening means	70	end region
35	31	shoelace	71	bend
	32	pivot angle	72	reinforcing part

	33	inner width
	34	inner surface
	35	end face
	36	jamming surfaces
5	37	indentation
	38	gap
	39	thickness
	40	rib

CLAIMS

1. Jamming device for a cord or tape fastener such as shoelaces, for shoes, jackets, trousers and other articles of clothing, comprising a ring lug for looping the fastening means and a rivet strap which forms a hinge bearing for the ring lug and which is joined to the article of clothing by means of at least one fixing element, such as for example a rivet, stitching or gluing, characterized in that the rivet strap (2) has a jamming cleat (9; 43) joined to the rivet strap and provided with an end face (35) which is surrounded by the ring lug (3) when the latter is in a position more or less parallel with a contact surface (11), in a jamming zone (29) which is made up of jamming surfaces (36) formed by the end face (35) and an inner surface (34) of the ring lug (3) facing the end face (35), and in that the jamming surfaces (36) are separated from each other by a gap (38) in the jamming zone (29). (Fig. 2)

2. Jamming device according to Claim 1, characterized in that the gap (38) between the end face (35) of the jamming cleat (9; 43) and the inner surface (34) of the ring lug (3) is smaller than a thickness (39) of the fastening means (30) in the undeformed condition. (Figs. 2, 9)

3. Jamming device according to Claim 1 or Claim 2, characterized in that the gap (38) is approximately constant over the extent of the end face (35) of the jamming cleat (9; 43), or over the extent of the inner surface (34) of the ring lug (3). (Figs. 1, 3)

4. Jamming device according to one or more of Claims 1 to 3, characterized in that the jamming cleat (9; 43) is joined to the rivet strap (2) as one piece, and in particular is moulded, glued or welded to it.

(Figs. 2, 4)



5. Jamming device according to one or more of Claims 1 to 4, characterized in that the jamming cleat, (9; 43) rises above an upper surface (16) of a fixing tab (15) arranged on, and for example moulded, glued or welded on, the jamming cleat (9; 43) by a height which is greater than a diameter (52) of the ring lug (3). (Fig. 4)

6. Jamming device according to one or more of Claims 1 to 5, characterized in that the end face (35) of the jamming cleat (9; 43) has a groove-like indentation (37) extending more or less concentrically with the said end face. (Fig. 1)

7. Jamming device according to one or more of Claims 1 to 6, characterized in that a width (6) of the jamming cleat (9; 43) is slightly smaller than an inner width (33) of the ring lug (3) extending parallel with a bearing hole (22) of the hinge bearing (14). (Fig. 1)

8. Jamming device according to one or more of Claims 1 to 7, characterized in that the region of the hinge bearing (14) accommodating the bearing hole (22) tapers towards the upper surface (16) of the fixing tab (15).

9. Jamming device according to one or more of Claims 1 to 8, characterized in that the gap (38) extending parallel with the upper surface (16) is bounded by the inner surface (34) of the ring lug (3) and a facing surface of the groove-like indentation (37) and is smaller than a thickness (39) of the fastening means (30) in the undeformed condition.

30 (Fig. 2)

10. Jamming device according to one or more of Claims 1 to 9, characterized in that the jamming cleat (9; 43) is formed of plastic material and/or the region accommodating the bearing hole (22) is formed by ribs (40) extending symmetrically about and parallel with a long-



itudinal centre line (4) of the rivet strap (2) and rising above the upper surface (16) of the fixing tab (15).

(Fig. 3)

- 5 11. Jamming device according to one or more of Claims 1 to 10, characterized in that the ring lug (3) is formed approximately in the shape of a C and forms hinge arms (25) in straight end regions (27) which point towards each other and protect into the bearing hole (22). (Fig. 1)

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12. Jamming device according to one or more of Claims 1 to 11, characterized in that the rivet strap (2) is separate from the jamming cleat (9; 43) and is arranged as an independent part, by means of fixing elements, on the upper
15 surface (16) of the fixing tab (15) arranged on the jamming cleat (9; 43). (Fig. 6)

13. Jamming device according to one or more of Claims 1 to 12, characterized in that the rivet strap (2) has at least
20 one through hole (58; 59) for the fixing element, extending coaxially with a corresponding hole (8) in the fixing tab (15). (Fig. 6)

14. Jamming device according to one or more of Claims
25 1 to 13, characterized in that the jamming cleat (9; 43) together with the fixing tab (15) is formed by a one-piece injection or press moulded or cast part of metal and/or plastic material. (Figs. 2, 7)

- 30 15. Jamming device according to one or more of Claims 1 to 14, characterized in that the jamming cleat (9; 43) is formed from a two-ply bent component which has through holes (58; 59) for the fixing element in register with one another adjacent to a bend (71), with an end region of one leg
35 forming a bearing hole (22) for the hinge arms (25) of the ring lug (3). (Fig. 8)



16. Jamming device according to one or more of Claims 1 to 15, characterized in that the jamming cleat (9; 43) carries on the side facing the bend zone (50) and at a distance from the upper surface (16) a latching projection (60) for the rivet strap (2), and the end face (35) of the jamming cleat (9; 43) facing away from the bend zone (50) forms the jamming zone (29) for the fastening means (30) threaded through the ring lug (3). (Fig. 8)
17. Jamming device according to one or more of Claims 1 to 16, characterized in that the hinge bearing (14), and in particular the bearing hole (22), is formed by the latching projection (60) [and] regions of the jamming cleat (9; 43), the upper surface (16) and a crimped bearing on the rivet strap (2) clasping the hinge arms (25) between latching projection (60) and upper surface (16) in an approximately quadrantal [recess].
18. Jamming device according to one or more of Claims 1 to 17, characterized in that a pivot radius (62) of the ring lug (3) measured from the pivot axis (26) and bounded by the inner surface (34) is smaller than a span (63) which is bounded by the pivot axis (26) and a rim (64) formed by the end face (35) and the contact surface (11) or the upper side (21). (Fig. 6)
19. Jamming device according to one or more of Claims 1 to 18, characterized in that the ring lug (3) pivots through an angle (32) of less than 180° through elastic deformation of the ring lug, from a position extending parallel with the upper surface (16) in which the fastening means (30) is locked, to a position further away from the upper surface (16) in which the said fastening means is released.
20. Jamming device according to one or more of Claims 1 to 19, characterized in that the rivet strap (2) is embedded in



the injection moulding process, as a reinforcing part (72),
in the jamming cleat (9; 43) and/or in the fixing tab (15)
and the reinforcing part (72) is formed from sheet metal,
ceramics or as a lattice or web of plastic with fibre
5 reinforcement, in particular of glass, carbon or aramide
fibre. (Fig. 9)

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