

FASTENING BRACKET FOR A CHAIR

The present invention concerns a fixing bracket for a chair, such as a children's chair with a seat plate, wherein the seat plate has a vertical opening in the front edge. The invention is especially suited for a chair with the possibility for vertical and horizontal
5 adjustment of the seat plate. Further, the invention concerns a harness set for a chair and the use of a fixing bracket and a harness set.

Background of the invention

It is well known that children, that is children such as from the age when they may sit by themselves (about 6-7 month) until they master sitting safely in a children's chair
10 without falling out (about 2 years), need safety harness securing them sitting safely in children's chairs.

Often conventional harnesses are used, such as those accompanying a children's pram, a children's chair of which may be bought separately. In new children's chairs the harnesses are often anchored by a strap on each side of the seat in integrated fastening
15 means, such as eyes or similar. Such harnesses have the disadvantage that they require integrated fastening means in the chair and also hinder the child in turning the upper body to the side because the straps on each side of the harness must be relative short. This short length of the straps should secure that the child sits safely in the chair, but this hinders and irritates the child.

In later years, a development has evolved in the direction of more countries and regions having their own safety measures for equipment to be used by children, such as in children's chairs and harnesses. This must be taken into account in the development of new children's chairs, but it may be difficult to adapt chairs which have been produced for a long time before such safety provision were put into force. It is especially difficult
25 to perform such adaptations on chairs without making physical interventions in the chairs.

This is for example the case with the Tripp Trapp® children's chair which was developed as early as in 1972 and patented in 1976 and which still is a very popular children's chair in many countries.

30 The chair is designed to be adjusted in coherence with the body size of the child and therefore has a seat plate and a foot plate which may be moved into different height

positions by gliding in tracks in the side pieces and being locked by tightening the distance between the side pieces. The sitting plate may further be adjusted in the depth position by the plate being pushed in relation to the seat support, and thereby providing the child using the chair a correct seatlength under the thighs.

- 5 It has proven difficult to adapt existing seats to new effective demands, especially in order to keep the above-mentioned original functions of the chair. In order to achieve this, the attachment of a children's harness should be able to follow the height position of the seat.

10 In addition to fastening a harness to such chairs, it may also be desirable to mount a children's bow, which either may be used alone or simultaneously with the harness.

It is a further objective to provide a fastening means for this additional equipment so that also owners of older chairs may upgrade their chairs. As mentioned, it is also an objective to avoid physical intervention in the chair, such as making holes in some of the parts or inserting screws that leave spoiling marks in the chair which will be visible
15 when there no longer is any use for the children's equipment. Such adaptations further result in a risk of the user making adaptations in the wrong manner, and that the safety is not kept intact. It is therefore an objective with the invention to make the fastening of the children's equipment as intuitive and simple as possible, upholding safety at the same time and preventing a child from operating the fastening by itself.

20 US 2002/0036419 shows a system for fastening a harness to a juvenile seat by a retainer attached to the underside of the seat by screws. The retainer has a vertical opening corresponding to an opening in the seat through which the crotch strap with a mount may be conducted and the mount may then be attached to the retainer. The document does not suggest non-marking fastening means of the retainer, and a child would be able
25 to release the mount from the retainer from the underside.

Description of the invention

In order to attain these objectives the applicant has developed a fastening bracket for the fastening of children's equipment solving the above-mentioned problems. The bracket may be part of a harness set which is especially suited for use in a children's chair.

30 The bracket consists of a frame piece for mounting on the underside of the seat plate, a lining clips being threaded through the opening in the seat plate from the topside

allowing a part of the children's harness being thread through the opening in the lining and which locks in the frame piece by the help of a locking pin. The bracket may comprise at least one additional fastening means for fixing a bow part to the seat plate.

Thus, the present invention concerns a fastening bracket, a harness set, and the use of
5 this according to the appended claims.

The invention will in the following be described in greater detail by the help of embodiments and the attached drawings, none of which are meant to limit the scope of the invention, which is only defined by the appended claims.

Short description of the drawings

10 Figure 1 shows a perspective view of the frame piece of the fastening bracket.

Figure 2 shows a side view of the frame piece.

Figure 3 shows a side view of the lining clips of the fastening bracket.

Figure 4 shows a planar view of the lining clips seen from above.

Figure 5 shows an installation drawing of the lining clips in a seat plate seen from
15 above.

Figure 6 shows an installation drawing of the lining clips seen from the underside of the seat plate and a harness part.

Figure 7 shows the lining clips in figure 5 with frame piece mounted thereon.

Figure 8 shows the installation of the bracket according to the invention with a locking
20 pin between the lining clips, the frame piece and the harness part.

Figure 9 shows the finished installation of the bracket in figure 8.

Figure 10 shows a perspective view of the bracket mounted on a chair with harness.

Figure 11 shows a perspective view of the bracket mounted on a chair with harness and bow.

Detailed description

The fastening bracket according to the present invention comprises in the following embodiment three parts: a frame piece, a lining clips and a locking pin.

In figure 1 the frame piece 10 is shown in perspective from above, that is from the side
5 that will abut the underside of the seat plate it is fastened to. The frame piece 10 in this
embodiment has a rectangular form with a decreasing thickness in the rear end 14, one
centrally positioned vertical first opening 11, and one vertically slanting second edge
opening 12 in the front short edge 13 of the frame piece 10, both openings in the cross
direction of the length direction of the frame piece 10. The shape may however be
10 adapted to each chair or the looks desired, such as an oval shape for example.

In figure 2 the frame piece 10 is shown in a side view in the length direction. As may be
seen the front end 13 of the frame piece is a rounded shape. The back end 14 has a
decreasing thickness towards the upper rear end edge of the frame piece as mentioned.

In figure 3 a lining clips 20 is shown in a side view in the cross direction. The lining
15 clips comprise two parallel vertical locking pegs 21, connected together in the upper
end by the help of an upper flange 22. The locking pegs 21 comprise expansions in a
lower end 23, in this embodiment in the cross direction, with horizontal, through going
pin hole 24 in the length direction.

In figure 4 the lining clips in figure 3 is shown in planar view from above, wherein it
20 may be seen that the flange 22 comprises a through going inner opening 25 on the
inside of the locking pegs 21. The inner opening 25 is adapted to allow the throughput
of a part of the harness, such as a crouch strap for a children's harness.

In figure 5 it is shown how the lining clips 20 is put into a opening in the seat plate 2 on
a children's chair 1. The lining clips 20 is adapted to the opening in the seat plate so that
25 the flange 22 has a larger horizontal extent than the area of the opening and rests on the
topside of the seat plate around the edge of the opening. The inner opening 25 in the
lining clips 20 thereby allows a harness part, which is a crouch strap 101 of a children's
harness 100 to be directed through the opening 25 and thereby through the seat plate 2
at the same time. In figure 6 the lining clips 20, is shown from the underside of the seat
30 plate 2 in that the lower ends of the locking pegs 21 protrude out through the seat plate
2. As may be seen from the figure the crouch strap 101 is also directed through the seat
plate 2 between the locking pegs 21, where the outer vertical sides of the locking pegs

21 abut the walls in the opening of the seat plate 2 so that there is no slack. The expansions 23 in the ends of the locking pegs 21 lead in this embodiment to the locking pegs 21 having to be bent somewhat inwards towards each other to pass through the opening in the seat plate during mounting, and that they spring out to the sides on the underside of the seat plate 2 when they are through.

In figure 7, the frame piece 10 is clasped firmly to the lining clips 20 by the locking pegs 21 also being directed through the middle opening 11 in the frame piece and by the expansions 23 springing out over the lower edge of the first opening 11. The first opening 11 has in principle about the same dimensions as the opening in the seat plate, so that there is no slack in the fastening bracket. The crouch strap 101 is also lead through the first opening 11 of the frame piece 10.

The frame piece 10 and the lining clips 20 is preferably made in a relative stiff material, such as metal, plastic or a composite material, preferably plastic.

In order to lock the crouch strap 101 to the bracket, and to secure that the frame piece 10 and lining clips 20 do not split from each other, a locking pin 30 as shown in figure 8 is used. The locking pin 30 comprises two parallel arms 31, which in a first end are connected via a pin crosspiece 32. By threading the crouch strap 101 over the pin crosspiece 32 and thereafter threading the arms 32 through the pin holes 24 in the lining clips 20, the crouch strap 101 is anchored to the bracket on the underside of the seat plate 2 and the frame piece 10 is locked to the lining clips 20 such that the bracket is locked firmly to the seat of the chair 2 as shown in figure 9. It should be noted that the crouch strap 101 is not locked to the bracket 10, but runs freely around the pin crosspiece 32, which enables adjustment of the crouch strap, such as adjustment of length for example. As may be seen in figure 9, the frame piece 10 has a recess 16 in order to hinder movement of the locking pin 30 when it is mounted. Both ends of the arms 31 are hindered in movement as they lie in deepening of the recess 16 in the frame piece 10 with stopping walls. The locking pin 30 is in this embodiment made of metal such that it has a flexibility which allows bending it enough to slip past the front end 13 of the frame piece 10 during mounting through pin holes 24 which lie down into the recess 16, but also have enough stiffness for the locking pin 30 not to be bent or removed by hazard from the recess 16 without a certain power or use of tools, such as for example a flat screwdriver.

Figure 10 shows a children's harness 100 mounted to a seat plate 2 via the crouch strap 101, which is anchored to the bracket 10 on the underside of the seat plate. As may be

seen from figure 10, the front end 13 of the frame piece 10 with the edge opening 12 protrudes out on the underside of the seat plate 2. The edge opening 12 may be used to fasten other units to the seat plate, such as a part of a children's safety bow as shown in figure 11.

5 In this embodiment the bracket is adapted to the seat plate of a Tripp Trapp® chair. In addition being fixed to the seat plate, the harness is further adapted by having a back strap 102 which runs around at least one cross part 4 of the back support of the chair. By this fixing of the harness the child will obtain better freedom of movement in relation to traditional children's harnesses. There will also be fewer straps, which the child may
10 soil or get fingers caught into.

Thus the invention also comprises a harness set for a children's chair comprising a harness 100 with a crouch strap 101 which may be anchored to the bracket 10 according to the invention and at least one strap 102 which runs around at least one cross piece 4 of the backrest of the chair 1 it is fastened to.

15 Further, the invention comprises the use of the fastening bracket and harness set.

The advantage with the bracket and the harness set according to the present invention is that they may be used on an existing chair, such as the Tripp Trapp® chair or other chairs, without making physical changes on any of the chair parts or use of fixing means such as screws. The bracket 10 is locked firmly only by the aid of three parts, and the
20 fastening point for the harness 100 follows chair adjustments both vertically and horizontally, such as height adjustment or depth adjustment of the seat plate, without hindering any of the functions of the chair.

The bracket makes detachable fixing of a harness and a safety bow possible, either separately or together. This provides several practical solutions and enables the use of
25 the chair to be adapted to several different users in a simple and flexible manner.

The bracket 10 and harness set may easily be removed after use or be moved to another corresponding chair when their use is no longer needed.

Further embodiments

The present invention may contain further features in order to adapt the bracket or the
30 harness set or to provide them with further functions.

As shown in figures 1 and 2 the frame piece 10 may have a thickness which is reduced on the top side of the front end 13 in relation to the central part of the frame piece. The background for this shaping is to be able to allow a cushion to be fastened to the top surface of the seat plate 2, wherein the cushion may have a "pocket" along the entire front edge of the cushion by a "lip" being thread over the front edge of the seat plate 2.
5 The room arising between the front edge 13 and the seat plate 2, thereby allows for such a cushion to be thread over the seat plate. As shown in figures 1 and 2 the frame piece 10 has a protrusion 15 from the upper middle part and into the mentioned room. The protrusion 15 is an enforcement providing extra abutting surface towards the underside
10 of the seat plate in order to hinder the front piece in breaking if the front end 13 is subjected to a load too large in the upward directed direction.

In an additional embodiment the frame piece 10 may alternatively be mounted with the front end 13 in a backward direction under the seat plate 2 if there is no (longer) need for the edge opening 12. If the length of the rear end 14 of the frame piece is shorter
15 than the front end 13, in relation to the position of the middle opening, the entire rear end of the frame piece may be hidden by the seat plate 2 in a backward directed position. As the first opening 11 in the frame piece 10 is vertically and symmetrically shaped, the frame piece 10 may be mounted in both ways. The backward directed position will in this embodiment be aesthetically preferred if there is no need for extra
20 fastening point on the seat plate, and the bracket will thereby be protected against spills from the child.

The shaping of the locking pin 30 may have different designs, and in one embodiment the arms 31 may be bent in the vertical direction in order to strain the ends further down into the recess 16. Possibly, parts or areas of the pin crosspiece 32 or the arms 31 may
25 have a specific shape in order to be adapted to recesses or walls in the frame piece 10 so that a certain locking is achieved or special methods must be used to remove the locking pin 30. Such adapted areas may for example be raised parts, which allow the introduction of a flat screwdriver or pliers in order to flip the locking pin 30 over the edge of the recess 16 when the fastening bracket 10 is to be demounted. In the
30 suggested embodiment the locking pin 30 consists of one continuous part. Possibly the locking pin 30 may comprise two separate arms 31 which are mounted together with a separate pin crosspiece 32, and alternatively the mounting of the pin crosspiece may induce the locking of the arms 31 to the frame piece 10.

Claims

1. A fastening bracket for use in a children's chair (1) with a seat plate (2), the seat plate having a vertical opening, wherein the fastening bracket comprises a frame piece (10) with a vertical first opening (11), for placement on the underside of the seat plate
5 (2) wherein the fastening bracket further comprises:
 - a lining clips (20) comprising two parallel vertical locking pegs (21) for introduction into the opening in the seat plate (2) from above, wherein the locking pegs (21) are connected together in a first end with a flange (22) and each locking peg has a horizontal pin hole (24) in the other end, wherein the
10 flange (22) has a horizontal extent which is larger than the opening area of the opening in the seat plate (2) and comprising a vertical inner opening (25) between the locking pegs (21), and
 - a locking pin (30) comprising at least two parallel arms (31) for introduction into the pin holes (24) in the lining clips (20), wherein the arms (31) are connected
15 together with the pin crosspiece (32).
2. Fastening bracket according to claim 1, wherein both the first opening (11) in the frame piece (10) and the inner opening (25) in the lining clips (20) allows throughput of a part of a harness (100), preferably a crouch strap (101).
3. Fastening bracket according to claim 2, wherein the locking pin (30) or the pin
20 crosspiece (32) anchors the part of the harness (100) or the crouch strap (101) to the bracket (10).
4. Fastening bracket according to claim 3, wherein the part of the harness (100) or the crouch strap (101) may run freely around the crosspiece (32), and preferably that it may be length adjusted.
- 25 5. Fastening bracket according to any preceding claim, wherein the frame piece (10) comprises another edge opening (12), more preferably a cross-directed opening and even more preferred a vertical slanted opening.
6. Fastening bracket according to claim 5, wherein the edge opening (12) protrudes out in front of the seat plate (2) when the fastening bracket is mounted to the chair (1).

7. Fastening bracket according to any preceding claim, wherein the frame piece (10) has an essentially oblong form, preferably a rectangular form, comprising a front edge (13) and a rear end (14).
8. Fastening bracket according to claim 7, wherein the distance between the first opening (11) and the front end (13) is longer than the distance between the first opening (11) and the rear end (12), and preferably that the front end comprises the edge opening (12).
9. Fastening bracket according to claim 7 or 8, wherein the front end (13) is rounded and/or that the rear end (14) has a decreasing thickness towards the end.
10. Fastening bracket according to any of the claims 7-9, wherein the front end of the frame piece (10) is reduced in thickness on the topside in relation to the central part of the frame.
11. Fastening bracket according to claim 10, wherein the central part of the frame piece comprises a protrusion (15) towards the front end (13) of the bracket in the area where the thickness of the frame piece is reduced.
12. Fastening bracket according to any of the claims 7-11, wherein it may be mounted back to front, and preferably that no parts of the fastening bracket protrude in front of the seat plate (2).
13. Fastening bracket according to any preceding claim, wherein the frame piece (10) comprises a recess (16), which locks the movement of the locking pin (30) when mounted through the pinholes (24).
14. Fastening bracket according to claim 13, wherein the recess (16) comprises end walls for the arms (31), or tracks for raised parts for the pin crosspiece (34) or arms (21), preferably end walls.
15. Fastening bracket according to any preceding claim, wherein the locking pegs (21) of the lining clips (20) comprises extensions (23) in the second end, preferably extensions in the cross direction.

16. Fastening bracket according to claim 15, wherein the extensions (23) may be directed through the first opening (11) in the frame piece (10) and clasp the front piece firmly to the lining clips (20).
17. Fastening bracket according to any preceding claim, wherein the arms (31) and/or the pin crosspiece (34) of the locking pin (30) comprises bent portions for straining or locking the locking pin in the frame piece (10).
18. Fastening bracket according to any preceding claim, wherein the locking pin (30) is made of a rigid and flexible material, preferably a metal, more preferably steel.
19. Fastening bracket according to any of the claims 5-18, wherein the second edge opening (12) in the frame piece (10) allows for fastening of a part of a safety bow (200), preferably a crouch strap (201).
20. Fastening bracket according to any preceding claim, wherein the first opening (11) in the frame piece (10) and the inner opening (25) in the lining clips (20) allows for the fixing of a part of a safety bow (200), preferably a crouch strap (201).
21. Fastening bracket according to any preceding claim, wherein the first opening (11) in the frame piece (10) and the second opening (25) in the lining clips (20) allows anchoring of a part for a harness (100), preferably a crouch strap (101).
22. Harness set for a children's chair (1) with a seat plate (2) and backrest, wherein it comprises a bracket according to any of the claims 1 to 21 and a children's harness (100) comprising a crouch strap (101) which may be anchored in the bracket.
23. Harness set according to claim 22, wherein the children's harness (100) comprises at least one back strap (102) running around at least one crosspiece (4) of the back support in the children's chair (1) it is fixed to.
24. Harness set according to claim 22 or 23, wherein it further comprises a safety bow (200).
25. The use of a fastening bracket according to any of the claims 1 to 21, or a harness set according to any of the claims 22 to 24, for the mounting of a harness (100) and/or a safety bow (200) in a children's chair (1), such as a Tripp Trapp® chair.