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(54) Seats for swings.

(57) A seat for a swing comprises a core member (1) having sufficient rigidity to bear the weight of a user, resiliently compressible polymeric material (2) covering the core member (1), first wall means (3) formed by a part of the resiliently compressible polymeric material (2) and located adjacent the periphery of the core member (1), second wall means (4) formed by another part of the resiliently compressible polymeric material (2) and defining a pliant peripheral skin at the periphery of the seat, and buckling struts, in the form of webs (5) of the resiliently compressible polymeric material (2) running back and forth between the first and second wall means in a zig-zag configuration.

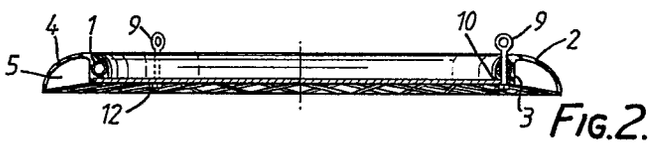

FIG.2.

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Description

SEATS FOR SWINGS

This invention relates to seats for swings.

Our British patent specification No.1 535 728 discusses the disadvantages and dangers of the traditional wooden swing seat, moulded seats of plastics material, and old tyres used as swing seats, and discloses a swing seat of greatly improved safety in use. The disclosure of that specification is to be considered as incorporated herein by this reference to it.

The seat for a swing disclosed by us in that specification comprises a rectangular core member of generally laminar form having sufficient rigidity to bear the weight of a user, resiliently compressible polymeric material covering the core member, first wall means formed by a part of the polymeric material and located adjacent the periphery of the core member, second wall means formed by another part of the polymeric material and defining a pliant peripheral skin at the periphery of the seat, and buckling struts, defined by rows of circular blind apertures in the resiliently compressible polymeric material, interconnecting the first and second wall means.

The wall means and buckling struts co-operate to provide a deflection characteristic such that on impact of the periphery of the seat with an object there is an initial deformation with little absorption of energy in which the shape of the impacted object is taken up by the pliant peripheral skin defined by the second wall means and a subsequent deformation in which substantially all of the energy is absorbed.

Although that swing seat has excellent safety characteristics, many children would prefer to use an old tyre as a swing seat rather than a seat of the traditional rectangular shape and smaller size. Unfortunately, the construction used in our swing seat disclosed in specification No. 1 535 728 is too expensive to scale up to the size of a tyre particularly as old tyres can be obtained for nothing.

The present invention provides a seat for a swing, the seat comprising:

a core member having sufficient rigidity to bear the weight of a user,

resiliently compressible polymeric material covering the core member,

first wall means formed by a part of the resiliently compressible polymeric material and located adjacent the periphery of the core member,

second wall means formed by another part of the resiliently compressible polymeric material and defining a pliant peripheral skin at the periphery of the seat, and

buckling struts of the resiliently compressible polymeric material interconnecting the first and second wall means, wherein the buckling struts are webs of the resiliently compressible polymeric material running back and forth between the first and second wall means in a zig-zag configuration.

Such a seat has the advantage that it can be made economically in a size and shape approximating to a tyre yet still retain the safety characteristics of our swing seat disclosed in specification No. 1 535 728.

Advantageously, the webs are individually of substantially constant thickness as that simplifies the manufacture of the seat.

Instead, however, the webs may be thinner near the second wall means than near the first wall means to give a buckling characteristic such that the outermost parts of the buckling struts buckle more easily than the innermost parts so that there is a more gradual absorption of energy on impact.

Additionally or instead, the webs may be thinner near the bottom of the seat, as arranged for use, than near the top. Such a construction gives a more gradual absorption of energy on impact with the underside of the seat.

The variation in the thickness of a web may be achieved by the webs being tapered or stepped or both tapered and stepped.

All the webs may be substantially alike as regards thickness but it would be possible for the webs to differ from each other whether they are individually of substantially constant thickness or not.

Advantageously, as considered in plan, the webs define with the first wall means a multiplicity of equal, substantially triangular, spaces. The use of such a "triangulated" construction enables the desired deflection characteristic to be obtained with particular economy of materials. Not only does such economy in the use of materials represent a cost saving but in reducing the mass of the seat it contributes to the safety of the seat too.

Preferably, the triangular spaces are defined by triangles based on the first wall means having substantially equal base angles.

Advantageously, the triangular spaces are substantially equilateral as this again enables the desired deflection characteristic to be obtained with particular economy of materials. It would, however, be possible to have triangular spaces of other form.

Advantageosly, the buckling struts comprise two sets of the said webs with one set of webs intersecting the other set. Such a construction enables the advantageous triangulation mentioned above to be employed twice over.

Advantageously, the second wall means has, considering the seat as arranged horizontally for use, greater vertical depth than the first wall means. Such a construction provides economy in the use of materials with safety because the greater depth is where it is needed most to spread the area of impact.

Instead, however, the second wall means may have, considering the seat as arranged horizontally for use, substantially the same vertical depth as the first wall means.

Preferably, the second wall means is arcuate in section and has one end joined to one end, uppermost in use, of the first wall means to provide a convex outer periphery for the seat. Such a construction provides safety in the form of a rounded outer edge and an attractive aesthetic

appearance to the seat.

Preferably, the resiliently compressible polymeric material is a rubber material compression moulded to the core member.

Preferably, the resiliently compressible polymeric material has a hardness lying within the range of from 40 to 55, more preferably 45 to 50 I.R.H.D.

Advantageously, the core member is tubular and preferably of circular section. Such a construction is inherently both strong and safe because of the use of a circular section, such a section presenting a blunt exterior if exposed through an act of vandalism.

Preferably, the core member is made of metal. Metal is desirable for strength and resistance to vandalism but for non-public use, for example, a core member of plastics material could be used.

Advantageously, the core member defines, in plan, a hollow closed geometric figure.

Preferably, the core member is circular in plan.

Where the triangular spaces are equilateral, two sets of webs are provided and the core member is circular in plan, it is advantageous for the number of triangles based on the first wall means to be, for each set of webs, between twelve and twenty inclusive, preferably between fifteen and seventeen inclusive, and more preferably the said number of triangles is sixteen. The number of such triangles defines the length and number of buckling struts in relation to the diameter of the core member.

The seat may further include a substantially laminar base member mounted within the area of the hollow closed geometric figure.

Preferably, the seat further includes suspension means connected to the core member. Such an arrangement is safer and more secure than the simple rope suspension often used with an old tyre to make a swing.

Preferably, the suspension means comprise a plurality of eye-bolts.

A seat for a swing constructed in accordance with the invention will now be described, by way of example only, with reference to the accompanying drawing, in which:

Figure 1 is a plan view of the seat,

Figure 2 is a cross-section taken on the line II-II marked in Figure 1, and

Figure 3 is an underneath view of the seat.

Referring to the drawing, a seat for a swing intended as a safe substitute for an old tyre used as a swing seat comprises a core member 1 having sufficient rigidity to bear the weight of a user and resiliently compressible polymeric material 2 covering the core member. The polymeric material defines a first wall 3 adjacent the periphery of the core member 1 and an arcuate second wall 4 defining a pliant peripheral skin at the periphery of the seat.

Buckling struts 5 interconnect the first wall 3 with the second wall 4 and are defined by a first set 6 and a second set 7 of webs of the polymeric material 2 running back and forth between the first wall 3 and the second wall 4 in a zig-zag configuration. Each set of webs defines sixteen equal, substantially triangular, spaces 8 having their curvilinear bases on the first wall 3. The approximate triangles are substantially equilateral, a symmetrically-placed tangent to the first wall 3 defining with adjacent webs an equilateral triangle (one such tangent is shown as a broken line in Figure 3). The webs or buckling struts 5 are of constant thickness.

The first wall 3 has its top connected to the top of the second wall 4 but the second wall extends downwardly a greater distance and the underneath parts of the webs 5 run upwardly (as may be seen in Figure 2) to meet the bottom of the first wall.

The core member 1 is a steel tube of circular cross-section formed into a circle by, for example, having its ends welded together.

The polymeric material 2 is a synthetic rubber compression moulded to the core member 1, the rubber having a hardness lying within the range of from 45 to 50 International Rubber Hardness Degrees (I.R.H.D.). An example of a suitable rubber material is the ethylene-propylene terpolymer and polychloroprene material disclosed in our specification No. 1 535 728.

Four eye-bolts 9 secured to the core member 1 are provided to enable the the seat to be suspended by, for example, chains. The eye-bolts 9 are secured to the core member 1 by, for example, prior to the moulding of the polymeric material, drilling the core member, inserting the eye-bolts and welding them to the core member. Another way of securing the eye-bolts 9 is by bolting them to the core member 1. One way of securing the eye-bolts 9 by bolting is to use eye-bolts with a shoulder and a threaded end, and to drill holes at the appropriate places in the core member 1, fit tubes into the drilled holes, weld the tubes to the core member, and insert the eye-bolts into the tubes, each eye-bolt having its shoulder abutting the top of the associated tube and being retained in the tube by a nut on its threaded lower end.

An annular recess 10 is provided in the polymeric material 2 beneath the core member 1 to receive the edge of an optional circular wooden base plate 11.

Where the base plate is provided, eye-bolts 9 with projecting threaded lower ends are used to enable the base plate 11 to be secured in place by nuts 12. The ends of the eye-bolts 9 projecting from the nuts 12 may, if desired, be hammered over to prevent subsequent removal of the base plate 11.

An example of suitable dimensions for the swing seat are as follows:

overall diameter 1 metre,
inside diameter 75 centimetres,
overall depth 8 centimetres,
web (5) thickness about 3 millimetres,
second wall (4) thickness about 3 millimetres.

Claims

1. A seat for a swing, the seat comprising:

a core member having sufficient rigidity to bear the weight of a user,

resiliently compressible polymeric material covering the core member,

first wall means formed by a part of the

resiliently compressible polymeric material and located adjacent the periphery of the core member,

second wall means formed by another part of the resiliently compressible polymeric material and defining a pliant peripheral skin at the periphery of the seat, and

buckling struts of the resiliently compressible polymeric material interconnecting the first and second wall means, wherein the buckling struts are webs of the resiliently compressible polymeric material running back and forth between the first and second wall means in a zig-zag configuration.

2. A seat as claimed in claim 1, wherein the webs are individually of substantially constant thickness.

3. A seat as claimed in claim 1, wherein the webs are thinner near the second wall means than near the first wall means.

4. A seat as claimed in claim 1 or claim 3, wherein the webs are thinner near the bottom of the seat, as arranged for use, than near the top.

5. A seat as claimed in any preceding claim, wherein, as considered in plan, the webs define with the first wall means a multiplicity of equal, substantially triangular, spaces.

6. A seat as claimed in claim 5, wherein the triangular spaces are defined by triangles based on the first wall means having substantially equal base angles.

7. A seat as claimed in claim 6, wherein the triangular spaces are substantially equilateral.

8. A seat as claimed in any preceding claim, wherein the buckling struts comprise two sets of the said webs with one set of webs intersecting the other set.

9. A seat as claimed in claims 7 and 8, wherein the core member is circular in plan, and the number of triangles based on the first wall means is, for each set of webs, between twelve and twenty.

10. A seat as claimed in any preceding claim, wherein the second wall means is arcuate in section and has one end joined to one end, uppermost in use, of the first wall means to provide a convex outer periphery for the seat.

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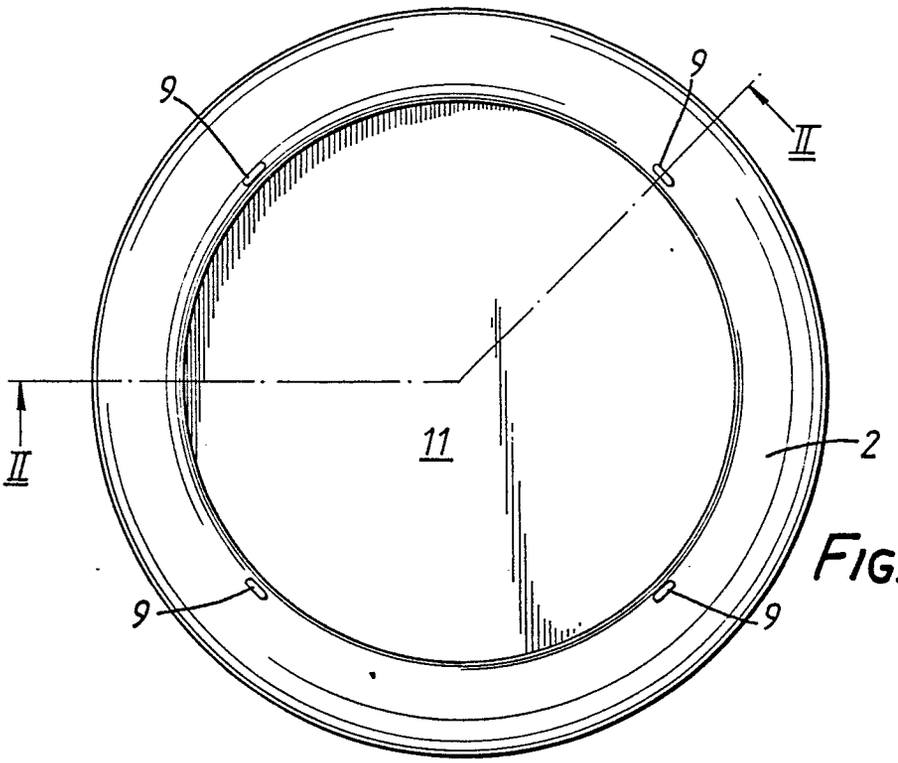

FIG.1.

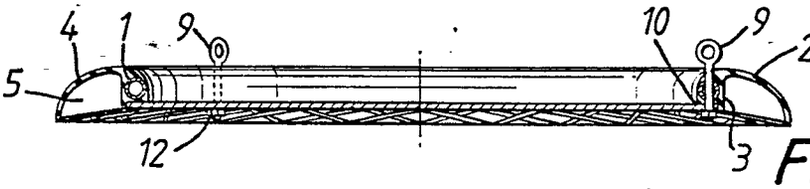

FIG.2.

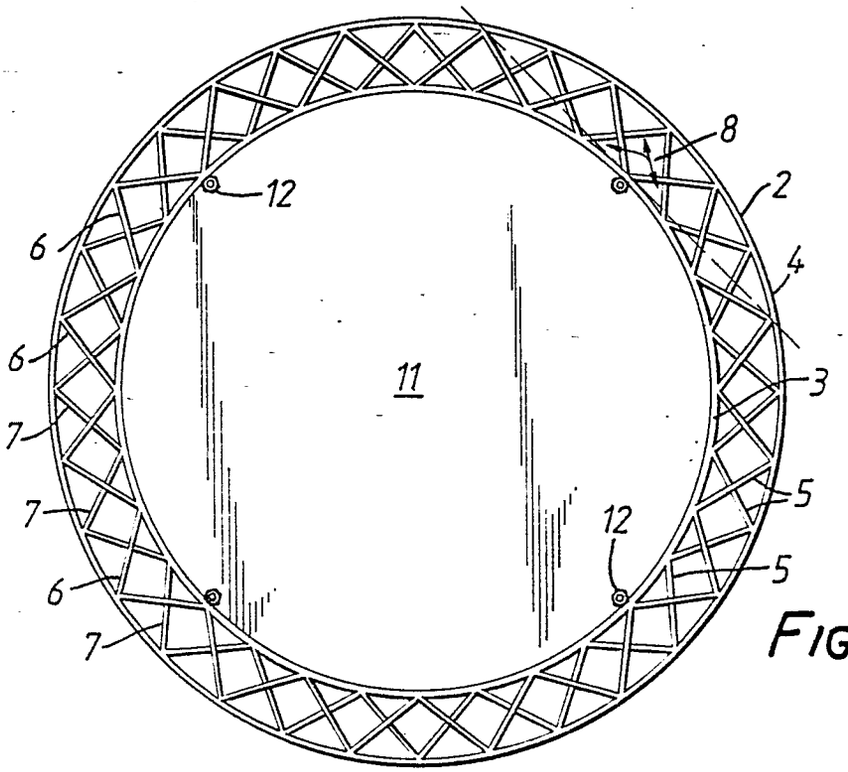

FIG.3.