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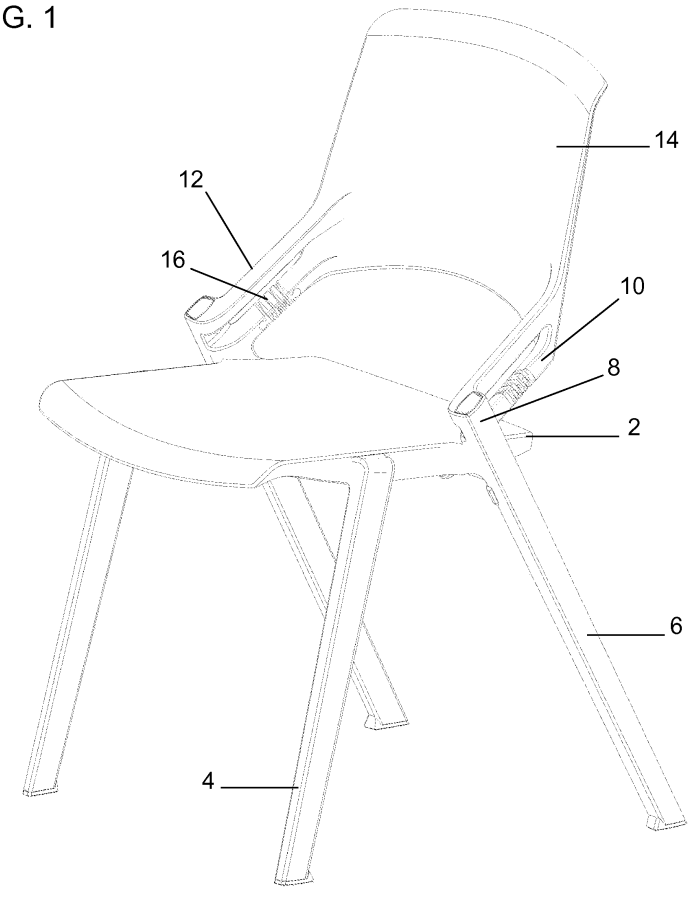
(54) Chair with an elastically yieldable back rest

(57) A chair with an elastically yieldable back rest connected lowerly on both sides to the legs (6) and/or to the seat portion (2), **characterised in that** each connection between the back rest (14) and the corresponding leg (6) and/or seat portion (2) is formed by a pair of superposed arms (10, 12), of which the upper arm (12) is continuous and possesses elastic flexibility, and the lower arm is interrupted by an elastic element (16) of plastic material operating essentially by compression.

FIG. 1



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Description

[0001] The present invention relates to a chair with an elastically yieldable back rest.

[0002] Chairs are known, generally formed of plastic, or of metal and plastic, in which their back rest is provided with a certain elastic yieldably relative to their seat portion. This elastic yieldability can be achieved substantially in two ways: by utilizing the intrinsic characteristics of the material forming the structure or by interrupting the structure continuity with elastic elements (springs, joints, etc.), which provide the back rest with the desired elastic yieldability localized at the points of insertion of the elastic elements.

[0003] Utilizing the intrinsic characteristics of the material forming the chair structure is more economical than using external elastic elements, in terms both of the material used and of the production process.

[0004] However, utilizing the intrinsic elasticity of the material forming the structure gives rise to other problems, in the sense that this material must on the one hand be sufficiently rigid to ensure solidity and stability of the structure, and on the other hand must be elastically yieldable to ensure the elastic yieldability of the back rest.

[0005] These contrasting requirements have up to the present time been solved by making the portion connecting the back rest to the seat portion sufficiently thin to ensure a certain elastic yieldability with a material which, by its nature, is hardly elastic but which in the remaining part of the structure acts with sufficient rigidity. However not even this expedient has proved satisfactory, in that the localized weakness formed in the structure to render it elastically yieldable can lead to breakage of the structure itself because of excessive flexural stress caused by the user in thrusting the back rest rearwards.

[0006] An object of the invention is to eliminate these drawbacks by providing a plastic, or metal and plastic, structure for a chair with a back rest which is rearwardly elastically yieldable by utilizing the intrinsic elasticity of the material forming the structure, but without the risk that an excessive rearward thrust on the back rest can result in structural breakage.

[0007] Another object of the invention is to provide a plastic, or metal and plastic, structure the production and assembly costs of which are very low.

[0008] These and other objects which will be apparent from the ensuing description are attained, according to the invention, by a chair with an elastically yieldable back rest as described in claim 1.

[0009] The present invention is further clarified hereinafter with reference to the accompanying drawings, in which:

Figure 1 is a perspective view of a chair of the invention, and

Figure 2 is an enlarged perspective view of the detail representing the connection between the back rest and the corresponding leg.

[0010] As can be seen from the figures, in the illustrated example the chair of the invention is made entirely of plastic by traditional injection moulding techniques. It comprises a seat portion 2 with two front legs 4 and two rear legs 6, which extend upperly beyond the plane of the seat portion 2 as a short portion 8, to which two parallel arms 10 and 12 are fixed to support the back rest 14.

[0011] However the back rest 14 can also be connected by the arms 10 and 12 directly to the seat portion 2 instead of to the two extensions 8 of the rear legs 6.

[0012] That surface of both the seat portion 2 and the back rest 14 intended to come into contact with the user can be smooth or corrugated or totally or partially covered with suitable covering material.

[0013] Each upper arm 12 is integral with the corresponding extension portion 8 of the leg 6 and with the back rest 14, while the underlying lower arm 10 is interrupted by an elastic insert 16 having its overall cross-section substantially equal to that of the two arm portions to which it is secured.

[0014] The elastic insert 16 is preferably of castellated or zig-zag shape, by virtue of which it presents an elastic yieldability in the axial compression direction.

[0015] In the illustrated embodiment, the elastic insert 16 is formed separately from the remaining part of the arm 10, and is secured to the two arm portions by any conventional system, preferably by insertion fitting.

[0016] The two arms 10 and 12 preferably have the same cross-section for appearance reasons, the dimensions of the upper arm 10 being such as to ensure the desired elastic yieldability of the back rest in the rearward direction.

[0017] In this respect, when a person is seated on the chair and thrusts rearwards while resting against the back rest, this thrust causes the arm 12 to flex downwards with consequent axial compression of the elastic insert 16. The transverse dimensions of the arm 12 ensure optimal flexibility characteristics while at the same time the insert 16, which elastically yields under axial compression, provides both the necessary elastic counteraction to the flexure of the arm 12, and the cessation of this flexure before it reaches its maximum value, which could result in arm breakage.

[0018] The return of the back rest to its original configuration on halting the rearward thrust, imparted by the seated user, is ensured both by the elastic reaction of the arm 12, no longer subjected to flexural stress, and by the elastic reaction of the insert 16, no longer subjected to axial compression stress.

[0019] From the aforegoing it is apparent that the chair of the invention is considerably more advantageous than plastic, or metal and plastic chairs with an elastically yieldable back rest, in that it enables a yieldability to be obtained which is smooth and definable in the required manner during design, while at the same time it presents a deformability limit which excludes any risk of breakage by excessive stress.

Claims

1. A chair with an elastically yieldable back rest connected lowerly on both sides to the legs (6) and/or to the seat portion (2), **characterised in that** each connection between the back rest (14) and the corresponding leg (6) and/or seat portion (2) is formed by a pair of superposed arms (10, 12), of which the upper arm (12) is continuous and possesses elastic flexibility, and the lower arm is interrupted by an elastic element (16) of plastic material operating essentially by compression.

2. A chair as claimed in claim 1, **characterised in that** said superposed arms (10, 12) are substantially parallel.

3. A chair as claimed in claim 1, **characterised in that** said pair of arms (10, 12) is interposed between a lower portion of the back rest (14) and the seat portion (2).

4. A chair as claimed in claim 1, **characterised in that** said pair of arms (10, 12) is interposed between a lower portion of the back rest (14) and the corresponding rear legs (6) of the seat.

5. A chair as claimed in claim 1, **characterised in that** said pair of arms (10, 12) is interposed between a lower portion of the back rest (14) and an extension (8) of the corresponding rear legs (6) emerging from the upper surface of said seat portion (2).

6. A chair as claimed in claim 1, **characterised in that** said elastic element (16) consists of a plate of plastic material repeatedly bent to zig-zag shape.

7. A chair as claimed in claim 6, **characterised in that** said elastic element (16) is integral with the remaining portions of the respective arm (10).

8. A chair as claimed in claim 6, **characterised in that** said elastic element (16) is secured to the adjacent portions of the respective arm (10) by adhesive bonding.

9. A chair as claimed in claim 6, **characterised in that** said elastic element (16) is secured to the adjacent portions of the respective arm (10) by insertion-fitting.

FIG. 1

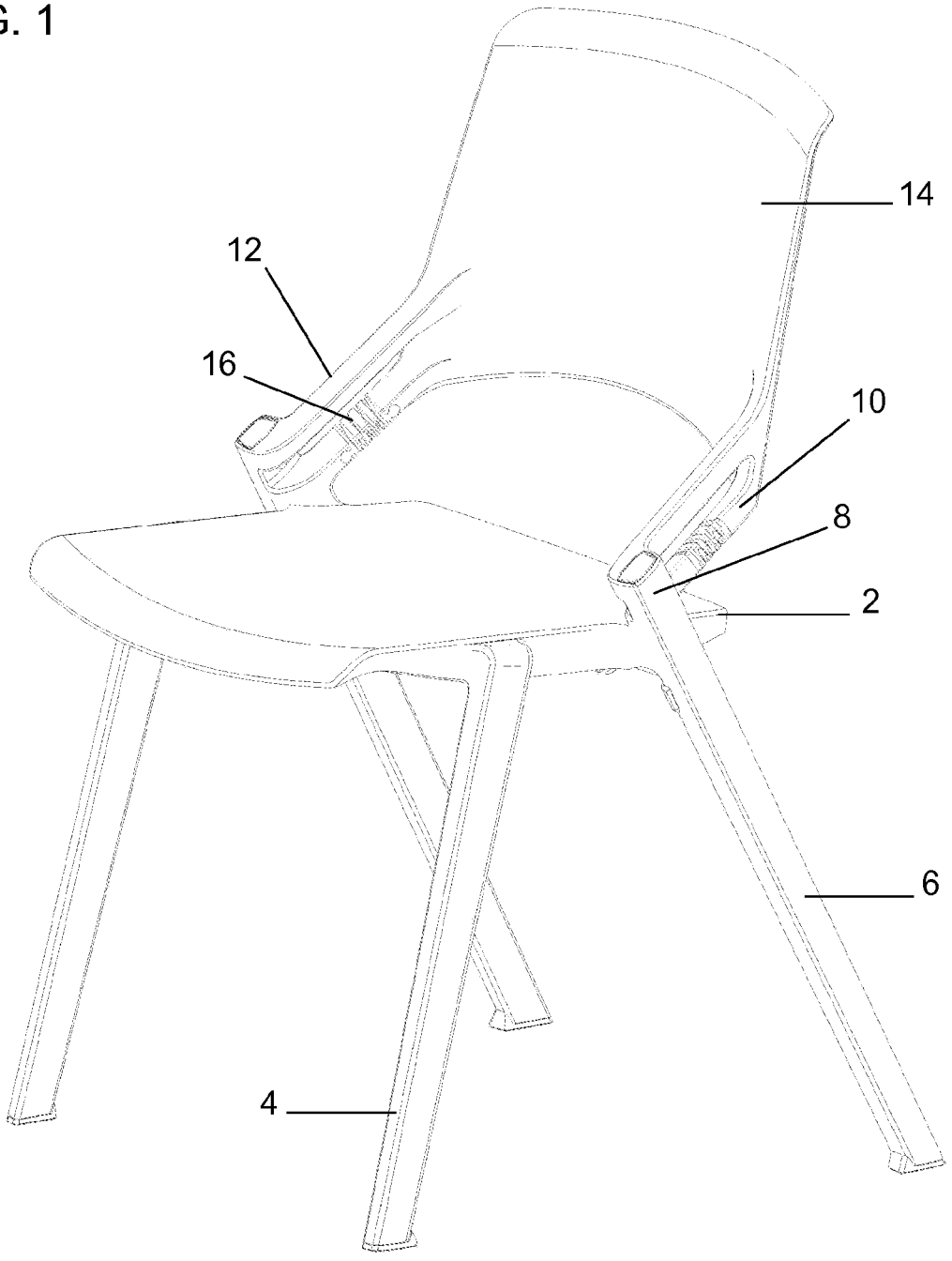

FIG. 2