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(54) **Sitting furniture**

Meuble d'assise

Sitzmöbel

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(72) Inventor: **Doricko, Peter**
080 01 Presov (SK)

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(74) Representative: **Toningerova, Daniela**
Kamenicka 3
CZ-170 00 Praha 7 (CZ)

(73) Proprietor: **Doricko, Peter**
080 01 Presov (SK)

(56) References cited:
CH-A- 338 284 DE-C- 839 079
GB-A- 699 608 US-A- 3 014 762

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Description

Technical Field

[0001] The sitting furniture having a seat area being an object of the invention is intended for schools, offices, household, catering institutions, transport vehicles and special working places requiring a longlasting sitting.

Background Art

[0002] Known are solutions of chair seats with a compact area whose parts in the anal and genitals location are free and/or have a possibility of getting free by means of an inserted section having various thickness. In an alternative solution the inserted area is continually displaceable. Such solution is known from the utility model DE 9416674U it represents a solution of a seat area having a recess in the location of the anal outlet, genitals and tailbone, the femoral parts being stabilized by rotary areas serving for constriction of the movements of a physically disabled person.

[0003] The patent specification DE 441479 shows a solution of a seat area composed of two tilting planes. The solution according to US 4643 481 Patent is a seat area consisting of two channel-like sections for location of the thighs with the aim of their stabilization, while in the area of the anal outlet the seat has a mushroom-like throughgoing opening. The seat area can be tilted:

[0004] Another example of known sitting furniture is disclosed in GB699608A.

[0005] The solutions mentioned above are suitable only for physically disabled persons and their aim is constricting the movements of the sitting part of a sitting person. They do not solve the origin of the diseases, resulting above all from a longlasting sitting on seats of e.g. chairs, armchairs etc. Their limitation is a complicated structure, which also affects their overall appearance.

[0006] A considerable disadvantage of known solutions is in that the sitting area is designed as a rigid structure with no or with only an insufficient adaptability of its form to the forms and dimensions of the user. They bring no really complete solution of the essential problem, arising from a longlasting sitting because of the said lack of adaptability to the anatomic forms and dimensions

Disclosure of Invention

[0007] The limitations of known sitting furniture having a seat area as described, above; their utilization being limited mostly to physically disabled persons only, their complicated structure, a poor possibility of an aesthetical design generally insufficiently reflecting physiological marks of sitting persons are removed in a large extent by the sitting furniture having a seat area according to the invention of claim 1. Preferred features of the present invention are set out in the dependent claims below.

[0008] At least one sleeve is placed in the central part

of the seat area and fitted with an element for a sliding fastening on a carrying structure. Side parts of the seat area are fitted by their ends on a level carrying tube of the carrying structure.

[0009] The element for sliding fastening on the carrying structure is equipped with a fitting allowing for rocking movements of the sleeve in all directions and is designed preferably by means of a knuckle joint.

[0010] A method of production of a sitting furniture consists in that the seat area is manufactured by means of an elastic deformation of a flat blank of elastic material. The flat blank has a form of annular segment limited by two arches with a central angle of $\alpha = 10^\circ$ to 170° and surface straight lines. AB and A'B', and by two side parts limited by tangents t_1, t_2, t'_1, t'_2 , surface straight lines AB, A'B' and terminal lines n, n'.

[0011] Should a change of the seat area width be required, the latter can be made of two sections of the flat blank with compatible flat blank ends fitted in the contact place with a mechanism for widening the seat area.

[0012] The flat blank can be manufactured of an elastic single-layer or of a sandwich type material.

[0013] The flat blank edges can be bordered, preferably by rims.

[0014] The seat area can be manufactured preferably by moulding.

Brief Description of Drawings

[0015] The substance of the invention is explained more in detail in the enclosed drawings, in which Fig. 1 shows schematically the flat blank, Fig. 2 shows schematically the blank in its deformed condition, Fig. 3 is a side view of an armchair with a seat area, Fig. 4 is a plan view of an armchair with the seat area, Fig. 5 is the mechanism in its basic position and Fig. 6 shows the mechanism in a first increased spacing of the extremities of the seat area sections.

Examples of Implementation of the Invention

Example 1

[0016] The example shows the seat area 1 as fastened on the carrying structure of an armchair 5. The basic dimensions of the seat area are:

- width of the seat area $w = 450$ mm
- spacing of inner tangents $d = 110$ mm
- depth of the seat area $h = 450$ mm
- central angle $\alpha = 90^\circ$
- angle of the intersection line $\beta = 70^\circ$.

[0017] The carrying structure 5 consists of a level carrying tube 5.1, on both extremities of which is fastened a twin armchair footing 5.2. At the middle of the carrying tube 5.1 a carrying bracket 5.3 is fastened: The central part 1.1 of the seat area 1 is equipped with a sleeve 4,

on which a fastening element 4.1 is situated. An elastic deformation of the flat blank 2 is obtained in fixing it at the place of its terminal lines n_1, n_2 on the carrying tube 5.1 and fastening at the point of annular segment 2.1 axis by means of the sleeve 4 with the fastening element 4.1 to the carrying bracket 5.3.

[0018] The fastening element 4.1 is suspended on the bracket 5.3 on a sliding joint with freedom of rocking movements. The implementation shows an angle of $\beta = 70^\circ$. The terminal lines n, n' form with the horizontal plane an angle 0° . The seat area 1 is made of a single-layer elastic material.

Example 2

[0019] The example shows an armchair with a carrying structure 5 and a seat area 1 of identical dimensions and forms of Example 1. The seat area 1 is made of a flat blank 2 composed of two compatible flat blank ends 2.3, 2.4, where a joint of the two flat blank ends 2.3, 2.4 is performed by means of a mechanism 6, permitting to change the spacing of the flat blank ends and consequently enabling a widening or narrowing of the seat area 1. The mechanism 6 is fastened with freedom of shifting on the carrying bracket 5.3 of the carrying structure 5, and it replaces the sleeve 4. A simple implementation of the mechanism 6 is in that two openings 2.3.1, 2.3.2 and 2.4.1, 2.4.2 respectively with identical spacing are shaped on compatibly modified flat blank ends 2.3, 2.4. An overlapping sheet 6.1 is fastened to the bracket 5.3 by means of a nut 6.3 and a screw 6.2, the screw 6.2 being slung through suitably chosen openings 2.3.1 or 2.3.2 and 2.4.1 or 2.4.2 respectively.

List of references in drawings:

[0020]

Fig. 1

2 flat blank
2.1 annular segment
2.1.1 outer arch
2.1.2 inner arch
2.2, 2.2' side parts
 α central angle
 t_1, t_2, t_1', t_2' tangents
 n, n' terminal lines
AB, A'B' straight lines

Fig.2

2 flat blank
d distance of inner tangents
s width of seat area
h depth of seat area

Fig.3

1 seat area
4 sleeve
4.1 element
5 carrying structure

5.1 carrying tube
5.2 armchair footing
5.3 carrying bracket
 β angle of intersectional line of central part and symmetry axis with level plane
p surface straight line

Fig. 4

1.1 central part
1.2, 1.2' side parts
4 sleeve
4.1 fastening element
5.1 carrying tube
5.2 armchair footing
5.3 carrying bracket
p, p' surface straight lines
 n, n' terminal lines
d distance between inner tangents
s width of seat area
h depth of seat area

Fig. 5

2.3, 2.4 compatible flat blank ends
2.3.1, 2.3.2 openings
2.4.1, 2.4.2 openings
5.3 carrying bracket
6 mechanism
6.1 splice overlap plate
6.2 screw
6.3 nut

Fig. 6

references see Fig. 5

Claims

1. A sitting furniture having a seat area (1) fastened on a fixed or mobile structure (5), wherein the seat area (1) is shaped by an elastic deformation of a flat blank (2) delimited by two concentric circular arches (2.1.1, 2.1.2) with a central angle (α) of 10° - 170° , continuing as their tangents (t_1, t_2, t_1', t_2') and ending by lines (n, n') normal to the tangents (t_1, t_2, t_1', t_2'), wherein the seat area (1) is symmetrical to the vertical symmetry plane of the sitting furniture, wherein the seat area (1) is made of backrest central part (1.1) being in a form of a truncated cone surface segment, and tangentially continuing side parts (1.2, 1.2') formed as buckled surfaces limited by terminal lines (n, n') normal to the tangents (t_1, t_2, t_1', t_2') defining said side parts (1.2, 1.2'), wherein, the intersection line of the central parts (1.1) and the vertical symmetry plane is at an angle (β) \neq of 15° to 90° from the horizontal plane, the said terminal lines (n, n') being at an angle 0° to 10° from the horizontal plane, **characterized in that** seat area (1) is fastened on the structure (5) at least in three points, namely by the terminal lines (n, n') and at the central part (1.1).
2. The sitting furniture having a seat area (1) according to claim 1 **characterized in that** at least one sleeve

- (4) is placed in the central part (1.1), the said sleeve (4) being fitted with an element (4.1) for sliding fastening on the carrying structure (5), and side parts (1.2, 1.2') are fitted by their ends on a level carrying tube (5.1) of carrying structure (5).
3. The sitting furniture having a seat area (1) according to claim 2 **characterized in that** the said element (4.1) is equipped with a fitting allowing a rocking movement of sleeve (4) in all directions, preferably by means of a knuckle joint.
 4. A method of production of sitting furniture according to claims 1 to 3 **characterized in that** the seat area (1) is manufactured by an elastic deformation of a flat blank (2) of elastic material in a form of annular segment (2.1) limited by arches (2.1.1, 2.1.2) with a central angle (α)# of 10° to 170° and surface straight lines (AB and A'B'), and two side parts (2.2, 2.2') of the blank (2) limited by tangents (t_1, t_2, t'_1, t'_2), surface straight lines (AB, A'B') and terminal lines (n, n').
 5. A method of production according to claim 4, **characterized in that** the seat area (1) is shaped of two sections of the blank (2) with compatible flat blank ends (2.3, 2.4) fitted in the contact place with a mechanism (6) for widening the seat area (1).
 6. A method of production according to some of the claim 4 and 5, **characterized in that** the flat blank (2) is made of an elastic single-layer material.
 7. A method of production according to claim 4 or 5 **characterized in that** the flat blank (2) is made of a sandwich-type material.
 8. A method of production according to some of claims 4 to 7 **characterized in that** the flat blank (2) edges are bordered, preferably by rims.
 9. A method of production of the seat area according to claims 1 to 3 **characterized in that** the seat area (1) is manufactured by moulding.

Patentansprüche

1. Ein Sitzmöbel mit einer Sitzfläche (1) ist auf oder an einer festen oder einer beweglichen Konstruktion befestigt, wobei das eine Sitzfläche (1) tragende Sitzmöbel durch eine elastische Deformation eines flachen Rohlings (2) gestaltet wird durch Bemessung in zwei konzentrisch kreisförmigen Bögen (2.1.1., 2.1.2) mit einem Betätigungswinkel (α) von 10° bis 170°, die weitergeführt werden als deren Tangenten (t_1, t_2, t'_1, t'_2), mit ihrer Beendigung durch die Linien (n, n') quer zu den Tangenten (t_1, t_2, t'_1, t'_2), wobei die Sitzfläche (1) zur vertikalen symmetri-

schen Ebene des genannten Sitzmöbels symmetrisch ist, wobei die Sitzfläche (1) aus dem zentralen Teil der Lehne (1.1) in der Form eines Kegelstumpfes besteht, und die tangential weiter verlaufenden Seitenteile (1.2, 1.2') als konvex geformte Oberflächen mit Endlinien (n, n') quer zu den die genannten Seitenteile (1.2, 1.2') bemessenden Tangenten (t_1, t_2, t'_1, t'_2) gestaltet sind, wobei die Schnittstellenlinie des Zentralteiles (1.1) und der vertikalen symmetrischen Ebene einen Winkel (β) gleich 15° bis 90° zur horizontalen Ebene bildet, wobei die genannten Beendigungslinien (n, n') unter einem Winkel von 0° bis 10° zur horizontalen Ebene liegen, **dadurch gekennzeichnet, dass** die Sitzfläche (1) an der tragenden Konstruktion (5) mindestens in drei Punkten, mit Vorteil an den Endlinien (n, n') und am Zentralteil (1.1) befestigt sind.

2. Ein Sitzmöbel mit einer Sitzfläche (1) nach Einspruch 1, **dadurch gekennzeichnet, dass** mindestens eine Büchse (4) im Zentralteil (1.1) angeordnet ist, wobei die genannte Büchse (4) auf einem Element (4.1) zwecks gleitender Sitzart auf der tragenden Struktur (5) gelagert ist, und die Seitenteile (1.2, 1.2') mit ihren Enden auf einer vertikalen Hohlachse (5.1) der tragenden Struktur (5) gelagert sind.
3. Ein Sitzmöbel mit einer Sitzfläche (1) nach Einspruch 1, **dadurch gekennzeichnet, dass** das genannte Element (4.1) mit einer Baugruppe ausgestattet ist, die Schwingbewegungen der Büchse (4) in allen Richtungen, vorzugsweise mit Hilfe einer Gelenkkupplung, ermöglicht.
4. Ein Fertigungsverfahren für die Sitzmöbel nach den Patentansprüchen 1 bis 3, **dadurch gekennzeichnet, dass** die Sitzfläche (1) durch elastische Verformung eines flachen Rohlings (2) aus elastischem Material in der Form eines durch Bögen (2.1.1, 2.1.2) bemessenen Kreissegments (2.1) mit einem zentralen Winkel (α) 10° bis 170° und mit Oberflächengeraden (AB und A'B') und mit zwei Seitenteilen (2.2, 2.2') des Rohlings (2), begrenzt durch die Tangenten (t_1, t_2, t'_1, t'_2), die Oberflächengeraden (AB und A'B') und Beendigungslinien (n, n') hergestellt wird.
5. Ein Fertigungsverfahren für die Sitzmöbel nach Patentanspruch 5, **dadurch gekennzeichnet, dass** die Sitzfläche (1) aus zwei Teilstücken des Rohlings (2) gestaltet wird mit kompatiblen Rändern des Rohlings (2.3, 2.4), die an der Berührungsfläche mit einem Mechanismus (6) zur Vergrößerung der Sitzflächenbreite (1) versehen ist.
6. Ein Fertigungsverfahren nach den Patentansprüchen 4 oder 5, **dadurch gekennzeichnet, dass** der Rohling (2) aus einem elastischen einschichti-

gen Material besteht.

7. Ein Fertigungsverfahren nach den Patentansprüchen 4 oder 5, **dadurch gekennzeichnet, dass** der Rohling (2) aus einem Verbundmaterial Typ "sandwich" hergestellt wird. 5
8. Ein Fertigungsverfahren nach den Patentansprüchen 4 bis 7, **dadurch gekennzeichnet, dass** die Ränder des Rohlings (2) abgekantet, vorzugsweise mit Bördelung versehen werden. 10
9. Ein Fertigungsverfahren für die Sitzfläche (2) nach den Patentansprüchen 1 bis 3, **dadurch gekennzeichnet, dass** die Sitzfläche (1) durch Formpressen hergesellt wird 15

Revendications

1. Un meuble-siège comprenant une surface d'assise (1), attaché à une structure fixe ou déplaçable, ledit meuble-siège comprenant une surface d'assise (1) formée par déformation élastique d'un demi-produit (2) délimité par deux courbes circulaires concentriques (2.1.1., 2.1.2) avec un angle de manoeuvre (α) de 10°-170°, continuant comme leur tangentes (t_1 , t_2 , t'_1 , t'_2) et terminées par les lignes (n , n') normales par rapport aux tangentes, la surface d'assise (1) étant symétrique au plan de symétrie vertical dudit meuble-siège, ladite surface d'assise (1) étant formée par la pièce centrale de la surface portante (1.1) ayant une forme d'une surface segment d'un cône tronqué, et parts latérales (1.2, 1.2') continuant selon tangente et formées comme surfaces convexes limitées par les lignes terminales (n , n') normales aux tangentes (t_1 , t_2 , t'_1 , t'_2), qui délimitent lesdites parts latérales (1.2, 1.2'), la ligne d'intersection de la part centrale (1.1) et le plan de symétrie vertical étant situés à un angle (β) de 15° à 90° par rapport à la horizontale, lesdites lignes terminales (n , n') étant à un angle de 0° à 10° à la horizontale, **caractérisé par le fait que** la surface d'assise (1) est fixée à la structure (5) au minimum dans trois points, en particulier dans les lignes terminales (n , n') et dans la part centrale (1.1). 20 25 30 35 40 45
2. Un meuble-siège comprenant une surface d' assise (1) selon la revendication 1, **caractérisé par le fait qu'**au moins un manchon (4) est situé dans la part centrale (1.1), ledit manchon (4) étant muni d'un élément (4.1) pour un ajustement glissant à la structure portante (5), les parts latérales (1.2, 1.2') étant montées par leur extrémités à un tube horizontal portant (5.1) de la structure portante (5). 50 55
3. Un meuble-siège comprenant une surface d' assise (1) selon la revendication (1), **caractérisé par le fait**

que ledit élément (4.1) est équipé avec une articulation permettant un mouvement oscillant ou pendulaire du manchon (4) dans toutes les directions, en préférence à l'aide d'un joint oscillant.

4. Une méthode de production du meuble-siège comprenant une surface d' assise selon les revendications 1 à 3, **caractérisée par le fait que** la surface d'assise (1) est fabriquée par déformation élastique d'un demi-produit (2) en matériau élastique dans la forme d'un secteur de cercle (2.1), limitée par les arcs (2.1.1, 2.1.2) avec un angle central (α) de 10° - 170°, et par les lignes droites de surface (AB et A'B'), et deux parts latérales (2.2, 2.2') du demi-produit plat (2), limitées par les tangentes (t_1 , t_2 , t'_1 , t'_2), par les lignes droites de surface (AB et A'B') et par les lignes terminales (n , n'). 5
5. Une méthode de production selon la revendication 5, **caractérisée par le fait que** la surface d'assise (1) est dessinée en deux sections du demi-produit plat (2) avec les bords de la plaque du demi-produit (2.3, 2.4) compatibles l'un avec l' autre, arrangés dans le lieu de contact ensemble avec un mécanisme (6) élargissant l'espace de la surface d' assise (1). 20 25 30
6. Une méthode de production selon une des revendications 4 ou 5, **caractérisée par le fait que** la plaque du demi-produit (2) est fabriquée en matériau élastique une seule couche. 35
7. Une méthode de production selon une des revendications 4 ou 5, **caractérisée par le fait que** la plaque du demi-produit (2) est fabriquée en matériau stratifié du type sandwich. 40 45
8. Une méthode de production selon une des revendications 4 à 5, **caractérisée par le fait que** la plaque du demi-produit (2) est fabriquée avec des bords, en préférence avec bordures. 50
9. Une méthode de production du meuble-siège selon les revendications 1 à 3, **caractérisée par le fait que** la surface d'assise (1) est fabriquée par moulage. 55

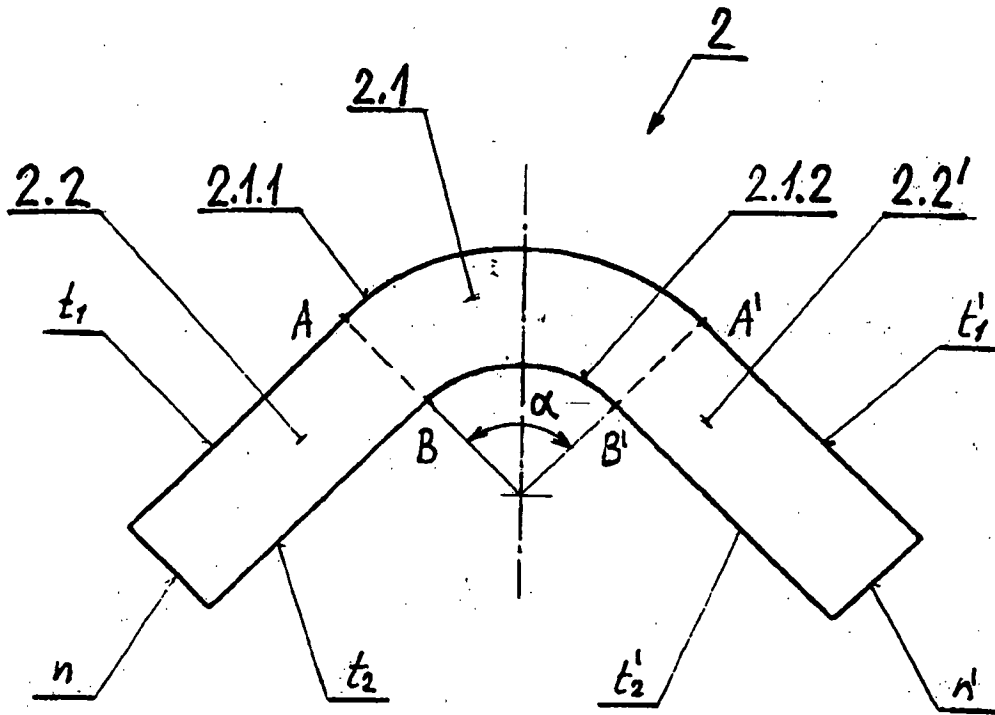


FIG 1

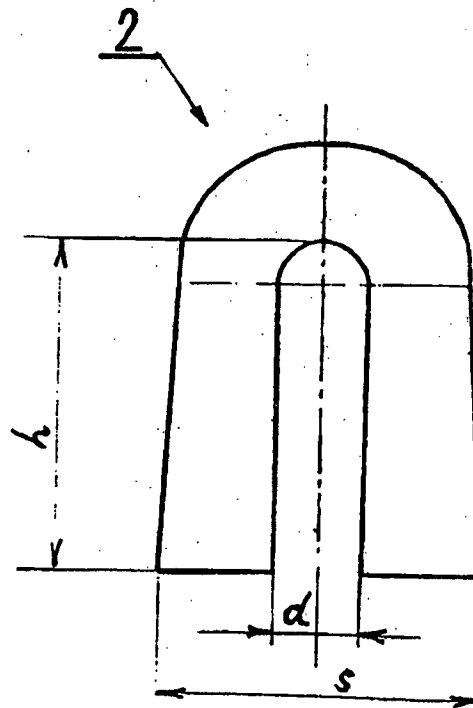


FIG 2

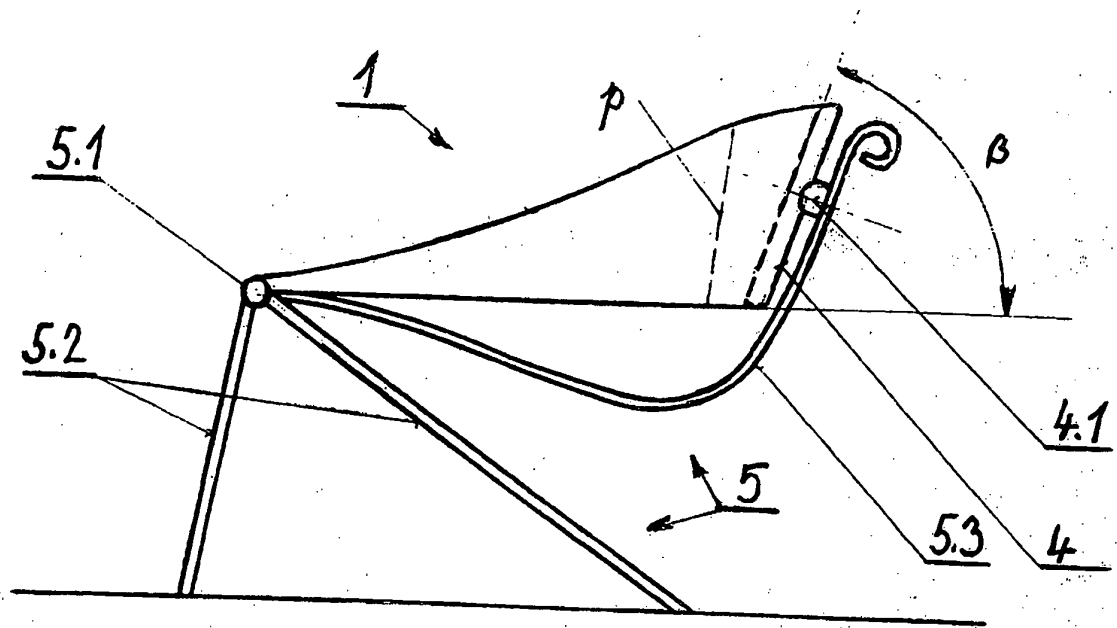


FIG 3

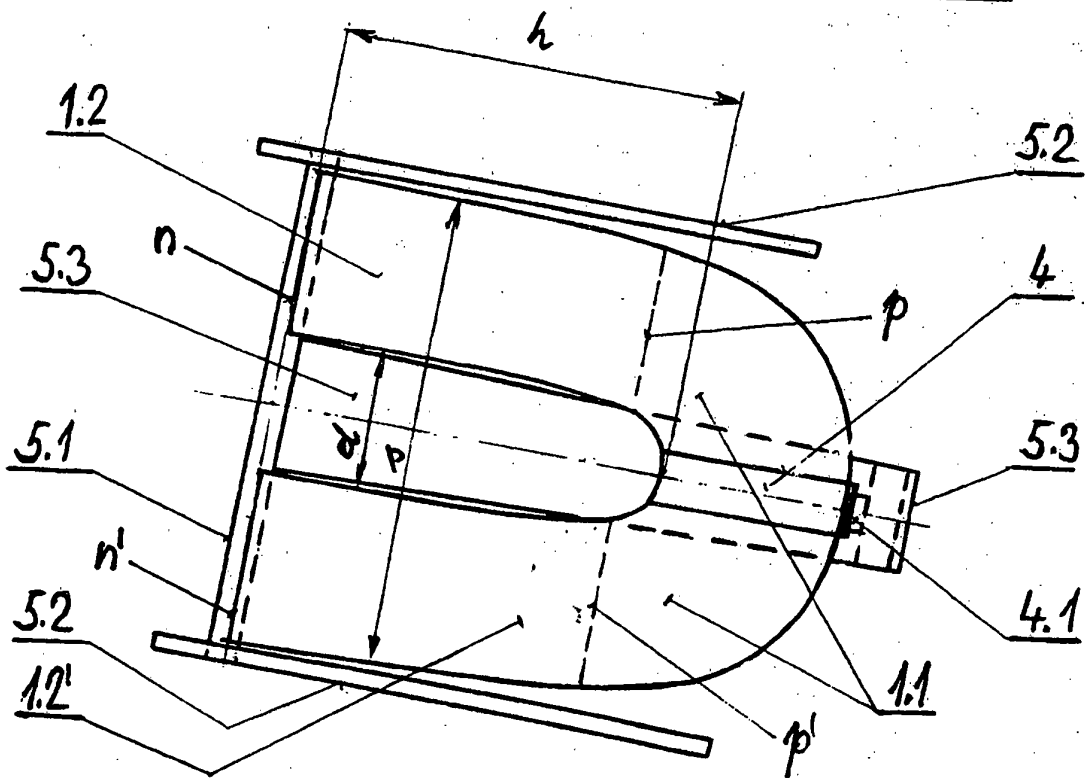


FIG 4

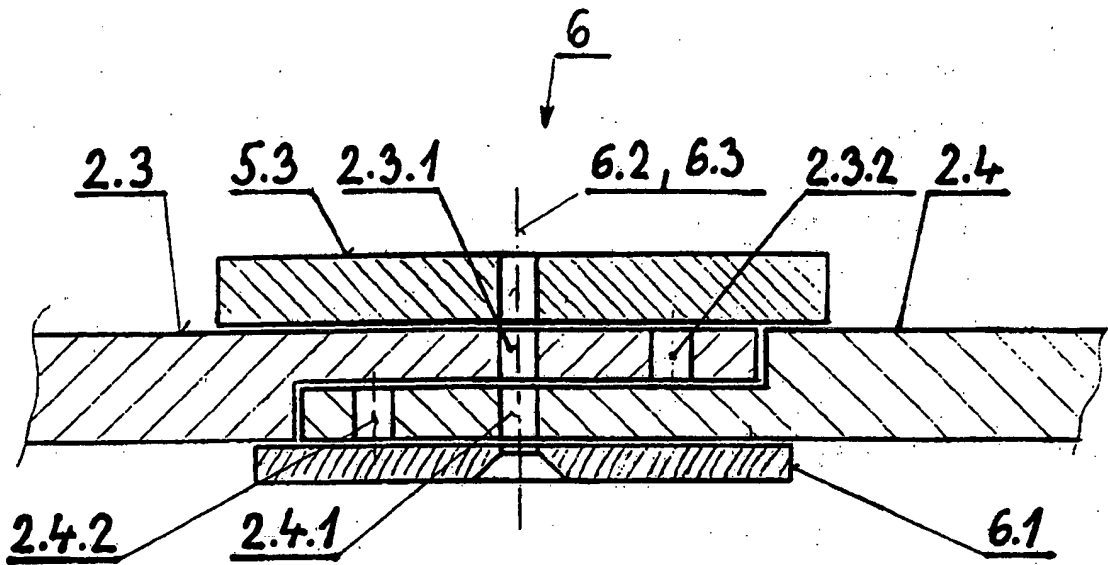


FIG 5

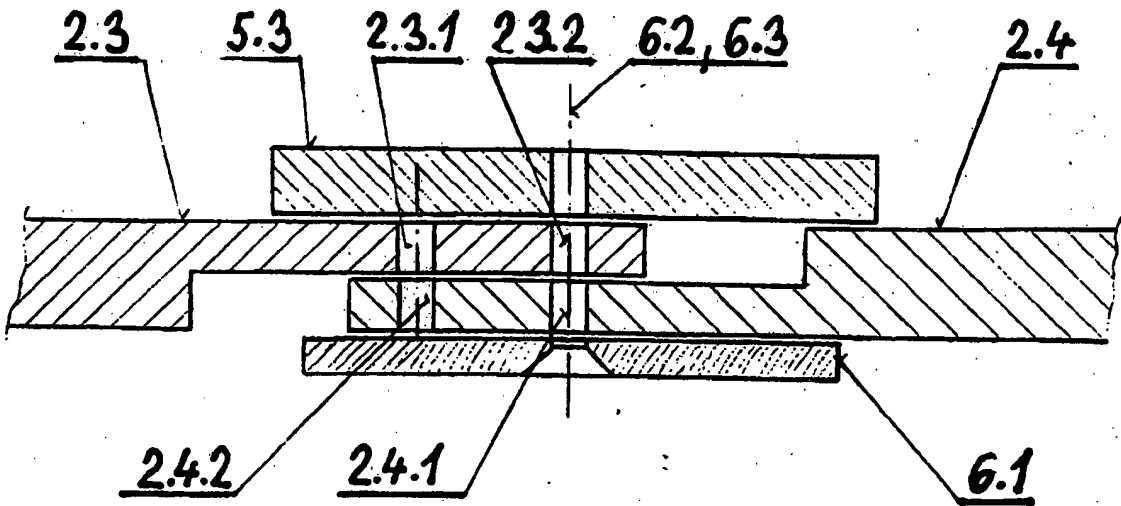


FIG 6

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- DE 9416674 U [0002]
- DE 441479 [0003]
- US 4643481 A [0003]
- GB 699608 A [0004]