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(54) **ADJUSTABLE SEAT**
VERSTELLBARER SITZ
SIÈGE RÉGLABLE

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Description

[0001] This patent relates to the field of orthopaedic devices and in particular concerns a new chair for disabled children.

[0002] Currently, there are adjustable seats for children with physical disabilities.

[0003] In fact, a number of diseases, such as muscular atrophy, that affect the child's muscular apparatus and prevent him/her from assuming a proper and stable posture are unfortunately widespread.

[0004] In particular, these diseases do not allow the child to be able to stand or sit because the muscular system connected to the spine is not able to support the child in the posture.

[0005] The existing seats are not able to provide proper support of the child's posture across the child's developmental stages. In fact the seat where the disabled child is seated must always be able to provide support to the child's posture in some specific areas of the spine, such as the pelvis, back and neck.

[0006] DE 10108311 A1 discloses a seat unit comprising adjustable support elements for a wheelchair occupant. To provide better comfort to the child that is not able to hold himself/herself up, a new seat, adjustable as a function of the child's development, has been designed and constructed.

[0007] The object of the present invention is to provide disabled children with a new lightweight, modular, and breathable posture system.

[0008] Another object of the present invention is to provide the child with support that makes him/her feel embraced and protected.

[0009] A further object of the present invention is to provide an adjustable seat to follow and accommodate in a timely manner any change in the child's posture during his/her development.

[0010] The new invention consists in its main parts of a rigid support base, at least two armrests, a postural unit for the pelvis, a postural unit for the torso, and a headrest.

[0011] This seat comprises a rigid base to support the entire structure forming the seat.

[0012] This base is made of wood or metal alloys, having a semicircular or rounded quadrilateral shape.

[0013] A series of adjustable angular brackets are fixed to that base. The angular brackets comprise two areas with holes, one for each side, which allow the brackets themselves to be moved and fixed by means of a screw based system.

[0014] These brackets can be shifted toward the outside, by loosening the screws fixing the brackets to the rigid base, so that the brackets may be placed at the appropriate distance from each other as a function of the size and growth of the child.

[0015] Two arm rests to support the child's arms are fixed on the top of these brackets.

[0016] Each of these arm rests is equipped with a ver-

tical bracket on the bottom in order to fix them to the angular brackets through a screw based system.

[0017] The arm rest brackets are suited to be shifted upward or downward to fix the height of the armrests as a function of the height of the child.

[0018] Thus, using this system to shift the armrest brackets on the angular brackets, the armrests can be fixed at the appropriate height to support the child's arms.

[0019] There is also a third rear bracket fixed on the rigid base formed by two brackets, one vertical and one horizontal, hinged together and having a series of aligned holes or one or more slotted holes on each side.

[0020] The horizontal part of the third bracket can slide outwards in relation to the growth of the child.

[0021] The vertical part of the third bracket can be variously tilted or placed at a right angle to the rigid base to maintain the correct position of the child in the seat.

[0022] A first vertical extension is also fixed on the hinged vertical bracket having a series of aligned holes or one or more slotted holes to fasten it to the hinged vertical bracket by means of a screw based system. This series of aligned holes or one or more slotted holes enable the first vertical extension to slide upwards or downwards according to the height of the child.

[0023] A first postural unit to support the child's pelvis is fixed to the first vertical extension.

[0024] The postural unit is made in the shape of a semicircle so that the pelvis of the child is partially wrapped and supported in the posture.

[0025] The first postural unit may be covered with padding of various kinds and may also be removable for washing.

[0026] A second vertical extension comprising a series of aligned holes or one or more slotted holes is fixed to the vertical bracket or the first extension.

[0027] The second vertical extension can slide vertically as a function of the height and growth of the child. A second postural unit for the child's torso can be fixed on the second vertical extension.

[0028] In the preferred embodiment, the second postural unit for the child's torso may be in a semicircle shape and is suited to support the child's posture when sitting on the seat.

[0029] A headrest to support the child's head is fixed on the second vertical extension by means of a vertical bracket comprising a series of aligned holes or one or more slotted holes and a screw based system. This headrest can be raised or lowered by sliding the headrest bracket on the first or second vertical extension depending on the needs and the height of the child.

[0030] Other lateral support elements, preferably with an arcuate shape, can be fixed on the first and second vertical extension.

[0031] The seat also comprises a pelvic belt attached to the rigid base of the seat suited to keep the child fixed and secure in the adjustable seat.

[0032] The base further comprises an anatomical separator wedge where the child is seated. In the preferred

embodiment, this wedge will preferably be made of padded and washable material. In the preferred embodiment the anatomical separator wedge will be fixed to the rigid base.

[0033] The rigid base also comprises a cushion attached to the rigid base by means of two bands comprising a Velcro closure passing under the bottom of the rigid base.

[0034] The seat may further comprise a removable table suited to be supported by and fixed to each armrest so as to allow the placement of dishes, toys and other objects. This table can be fixed with a locking system to the armrests of the seat or to the relative vertical slotted brackets.

[0035] The characteristics of the new seat will be better clarified by the following description with reference to the drawing, attached by way of a non-limiting example.

[0036] Figure 1 shows the parts comprising the assembled seat.

[0037] Figure 1 shows the rigid supporting base A having two angular side brackets P1 and P2 equipped with a series of aligned holes or one or more slotted holes on each side and suited to be fixed to the rigid base A. These angular brackets P1 and P2 equipped with a series of aligned holes or one or more slotted holes on both sides, are fixed to the rigid base A.

[0038] Two armrests B1 and B2 are fixed to the top of the angular brackets P1 and P2 to support the child's arms. The armrests B1 and B2 are equipped with slotted vertical brackets B1a and B2a suited to fix the armrests B1 and B2 through a screw based system to the angular brackets P1 and P2.

[0039] The slotted vertical brackets B1a and B2a of the armrests B1 and B2 are equipped with a series of aligned holes or one or more slotted holes and are suited to slide upward or downward and to fix the armrests B1 and B2 as a function of the height of the child.

[0040] A third rear bracket S1-S2 comprising a horizontal bracket S1 and a vertical bracket S2 hinged together and having a series of aligned holes or one or more slotted holes is fixed on the back area of the rigid base.

[0041] The horizontal bracket S1 of the third bracket S1-S2 can slide outwards and be fixed by hand.

[0042] A first extension S3 comprising a series of aligned holes or one or more slotted holes is fixed on the vertical bracket S2 using the holes or slotted holes themselves.

[0043] This series of aligned holes or the one or more slotted holes allow the first extension S3 to slide and be fixed to the vertical bracket S2 at different heights as a function of the growth of the child.

[0044] The first vertical extension S3 is fixed to a first postural unit E to support and keep the child's pelvis in place.

[0045] In the embodiment shown in Figure 1, the first postural unit comprises two arms in a semicircle shape to support the child's pelvis.

[0046] A second extension S4 comprising a series of aligned holes or one or more slotted holes is fixed on the first vertical extension S3 and where the second extension S4 is fixed to the first extension S3 through a screw based system. The second extension S4 can slide upwards or downwards along the first extension S3 or along the vertical bracket S2 depending on the height of the child.

[0047] In the embodiment shown in Figure 1, the second postural unit F may comprise two rods in a semicircle shape designed to keep the child's torso in position. The first postural unit F for the torso can be covered with padding of various kinds and may also be removable for washing.

[0048] A headrest T may be fixed by means of a bracket Z, comprising a series of aligned holes or one or more slotted holes and a screw based system, on the vertical extensions S3 or S4.

[0049] The headrest T can be covered with padding of various kinds which may also be removable for washing. The headrest T, integral with the bracket Z, can move vertically thanks to a screw based system along the extension S3 or S4 depending on the height of the child.

[0050] On the first vertical extension S3 and on the second vertical extension S4 elements preferably with a semi-circular shape C1, C2 may be attached to favour the support of the child's back. These lateral supporting elements shall preferably have an arcuate shape and may be covered with removable and washable padded material.

[0051] The seat also comprises a pelvic belt fixed to the rigid base A of the seat and suitable to secure the child to the base of the seat.

[0052] This rigid base A also includes an anatomical separator wedge D where the child is seated. In the preferred embodiment, this separator wedge D is preferably made of padded and washable material.

[0053] In the preferred embodiment the separator wedge D is associated with a soft cushion made of rubber or other synthetic material designed to increase the child's comfort while seated on the rigid base A. This cushion is attached to the rigid base by means of two straps comprising a Velcro closure passing under the bottom of the rigid base A.

[0054] The seat may further comprise a removable table V that can be fixed to each armrest B1, B2 or to the slotted brackets B1a and B2a for the placement of dishes, toys, or other items commonly used by children.

[0055] Therefore, with reference to the preceding description and the attached drawing the following claims are made.

Claims

1. Seat for disabled persons, comprising a rigid supporting base (A); at least two angular side brackets (P1, P2);

- at least one third rear bracket (S1-S2) comprising a horizontal rod (S1) and a vertical rod (S2) hinged to each other; at least one first vertical extension (S3); at least two armrests (B1, B2) fixed to said angular side brackets (P1, P2); at least one headrest (T) integral with a rod (Z), **characterized in that** said angular side brackets (P1, P2), said rear bracket (S1, S2), said first vertical extension (S3) and said bracket (Z) of the headrest (T) comprise a series of aligned holes, or one or more slotted holes, suited to allow the various parts to be fixed in different positions and wherein said angular side brackets (P1, P2) comprise two areas with holes, one for each side, which allow the brackets (P1, P2) themselves to be shifted toward the outside, so that the brackets may be placed at the appropriate distance from each other.
2. Seat according to claim 1, **characterized in that** it comprises at least one postural unit for the pelvis (E) suited to be fixed in different positions to said first vertical extension (S3) and/or to a second vertical extension (S4).
 3. Seat according to claims 1 and 2, **characterized in that** it comprises at least one postural unit for the torso (F) suited to be fixed in different positions to said first vertical extension (S3) and/or to a second vertical extension (S4).
 4. Seat according to claims 2 and 3, **characterized in that** said vertical extensions (S3, S4) can be translated upwards and downwards thanks to a series of aligned holes or one or more slotted holes.
 5. Seat according to claims 1, 2, 3 and 4, **characterized in that** said armrests (B1, B2) are fixed to said brackets (P1, P2) by means of two slotted vertical brackets (B1a, B2a) and can be translated upwards or downwards according to the height of the child.
 6. Seat according to claims 1, 2, 3, 4 and 5, **characterized in that** a headrest (T) integral with a bracket (Z) is fixed to the first extension (S3) or to the second extension (S4).
 7. Seat according to the preceding claims, **characterized in that** it comprises a pelvic belt fixed to the rigid base (A) of said seat.
 8. Seat according to the preceding claims, **characterized in that** it comprises an anatomical separator wedge (D) for the child's seated position.
 9. Seat according to the preceding claims, **characterized in that** it comprises a removable table (V) suited to be fixed to each armrest (B1, B2) or to the relative

slotted vertical brackets (B1a, B2a).

10. Seat according to the preceding claims, **characterized in that** all the metallic parts are covered with a fixed or removable washable padded material.

Patentansprüche

1. Sitz für Behinderte, Folgendes umfassend:
 - eine starre Tragbasis (A);
 - wenigstens zwei abgewinkelte Seitenbügel (P1, P2);
 - wenigstens einen dritten Hinterbügel (S1-S2), eine waagerechte Stange (S1) und eine senkrechte Stange (S2) umfassend, die aneinander angelenkt sind;
 - wenigstens eine erste senkrechte Verlängerung (S3);
 - wenigstens zwei Armstützen (B1, B2), die an den besagten abgewinkelten Seitenbügeln (P1, P2) befestigt sind;
 - wenigstens eine Kopfstütze (T), die mit einer Stange (Z) eine Einheit bildet, **dadurch gekennzeichnet, dass** die besagten abgewinkelten Seitenbügel (P1, P2), der besagte Hinterbügel (S1, S2), die besagte erste senkrechte Verlängerung (S3) und der besagte Bügel (Z) der Kopfstütze (T) eine Reihe gefluchterter Bohrungen umfasst, oder eine oder mehrere Schlitzbohrungen, dazu geeignet, die Fixierung der verschiedenen Teile in unterschiedlichen Positionen zu erlauben und wobei die besagten abgewinkelten Seitenbügel (P1, P2) zwei Bereiche mit Bohrungen umfassen, einen je Seite, welche es ermöglichen, dass die Bügel (P1, P2) selbst nach außen geschoben werden können, so dass die Bügel in geeignetem Abstand voneinander positioniert werden können.
2. Sitz nach Patentanspruch 1, **dadurch gekennzeichnet, dass** er wenigstens eine Stützeinheit für das Becken (E) umfasst, die geeignet ist, in verschiedenen Positionen an der besagten ersten senkrechten Verlängerung (S3) und/oder an einer zweiten senkrechten Verlängerung (S4) fixiert zu werden.
3. Sitz nach den Patentansprüchen 1 und 2, **dadurch gekennzeichnet, dass** er wenigstens eine Stützeinheit für den Oberkörper (F) umfasst, die geeignet ist, in verschiedenen Positionen an der besagten ersten senkrechten Verlängerung (S3) und/oder an einer zweiten senkrechten Verlängerung (S4) fixiert zu werden.
4. Sitz nach den Patentansprüchen 2 und 3, **dadurch gekennzeichnet, dass** die besagten senkrechten

Verlängerungen (S3, S4) dank einer Reihe gefluchteter Bohrungen oder einer oder mehrerer Schlitzbohrungen nach oben und nach unten verschoben werden können.

5. Sitz nach den Patentansprüchen 1, 2, 3 und 4, **dadurch gekennzeichnet, dass** die besagten Armstützen (B1, B2) durch zwei geschlitzte, senkrechte Bügel (B1a, B2a) an den besagten Bügeln (P1, P2) befestigt sind und je nach Größe des Kinds nach oben oder nach unten verschoben werden können. 5
6. Sitz nach den Patentansprüchen 1, 2, 3 4 und 5, **dadurch gekennzeichnet, dass** eine mit einem Bügel (Z) eine Einheit bildende Kopfstütze (T) an der ersten Verlängerung (S3) oder an der zweiten Verlängerung (S4) befestigt ist. 10
7. Sitz nach den vorstehenden Patentansprüchen, **dadurch gekennzeichnet, dass** er einen Beckengurt umfasst, der an der starren Basis (A) des besagten Sitzes befestigt ist. 20
8. Sitz nach den vorstehenden Patentansprüchen, **dadurch gekennzeichnet, dass** er einen anatomischen Spreizkeil (D) für die Sitzposition des Kindes umfasst. 25
9. Sitz nach den vorstehenden Patentansprüchen, **dadurch gekennzeichnet, dass** er einen abnehmbaren Tisch (V) umfasst, der geeignet ist, an jeder Armstütze (B1, B2) oder an den entsprechenden, geschlitzten senkrechten Bügeln (B1a, B2a) befestigt zu werden. 30
10. Sitz nach den vorstehenden Patentansprüchen, **dadurch gekennzeichnet, dass** alle Metallteile mit einem festen oder abnehmbaren, waschbaren Polstermaterial bedeckt sind. 35

Revendications

1. Siège pour personnes handicapées, comprenant 45

- une base rigide d'appui (A) ;
- au moins deux étriers angulaires latéraux (P1, P2) ;
- au moins un troisième étrier arrière (S1-S2) comprenant une tige horizontale (S1) et une tige verticale (S2) fixées entre elles par charnière ;
- au moins une première rallonge verticale (S3) ;
- au moins deux accoudoirs (B1, B2) fixés auxdits étriers angulaires latéraux (P1, P2) ;
- au moins un appui-tête (T) solidaire d'une tige (Z), 50

caractérisé en ce que lesdits étriers angulaires la-

téraux (P1, P2), ledit étrier arrière (S1, S2), ladite première rallonge verticale (S3) et ledit étrier (Z) de l'appui-tête (T) comprennent une série de trous alignés, ou un ou plusieurs trous oblongs, aptes à permettre la fixation des différentes parties dans des positions différentes et où lesdits étriers angulaires latéraux (P1, P2) comprennent deux zones avec des trous, une pour chaque côté, qui permettent que les étriers (P1, P2) mêmes soient déplacés vers l'extérieur, de manière à ce que les étriers puissent être disposés à une distance appropriée l'un de l'autre.

2. Siège selon la revendication 1, **caractérisé en ce qu'il** comprend au moins une unité posturale pour le bassin (E) apte à être fixée, dans des positions différentes, à ladite première rallonge verticale (S3) et/ou à une deuxième rallonge verticale (S4). 15
3. Siège selon les revendications 1 et 2, **caractérisé en ce qu'il** comprend au moins une unité posturale pour le buste (F) apte à être fixée, dans des positions différentes, à ladite première rallonge verticale (S3) et/ou à une deuxième rallonge verticale (S4). 20
4. Siège selon les revendications 2 et 3, **caractérisé en ce que** lesdites rallonges verticales (S3, S4) peuvent être déplacées vers le haut et vers le bas grâce à une série de trous alignés ou un ou plusieurs trous oblongs. 25
5. Siège selon les revendications 1, 2, 3 et 4, **caractérisé en ce que** lesdits accoudoirs (B1, B2) sont fixés auxdits étriers (P1, P2) au moyen de deux étriers verticaux oblongs (B1a, B2a) et peuvent être déplacés vers le haut ou vers le bas en fonction de la hauteur de l'enfant. 30
6. Siège selon les revendications 1, 2, 3, 4 et 5, **caractérisé en ce qu'un** appui-tête (T) solidaire d'un étrier (Z) est fixé à la première rallonge (S3) ou à la deuxième rallonge (S4). 35
7. Siège selon les revendications précédentes, **caractérisé en ce qu'il** comprend une ceinture pelvienne fixée à la base rigide (A) dudit siège. 40
8. Siège selon les revendications précédentes, **caractérisé en ce qu'il** comprend une cale séparatrice anatomique (D) pour la position assise de l'enfant. 45
9. Siège selon les revendications précédentes, **caractérisé en ce qu'il** comprend une tablette amovible (V) apte à être fixée à chaque accoudoir (B1, B2) ou aux étriers verticaux oblongs correspondants (B1a, B2a). 50
10. Siège selon les revendications précédentes, **caractérisé en ce que** toutes les parties métalliques sont 55

recouvertes avec du matériel rembourré lavable, fixe
ou amovible.

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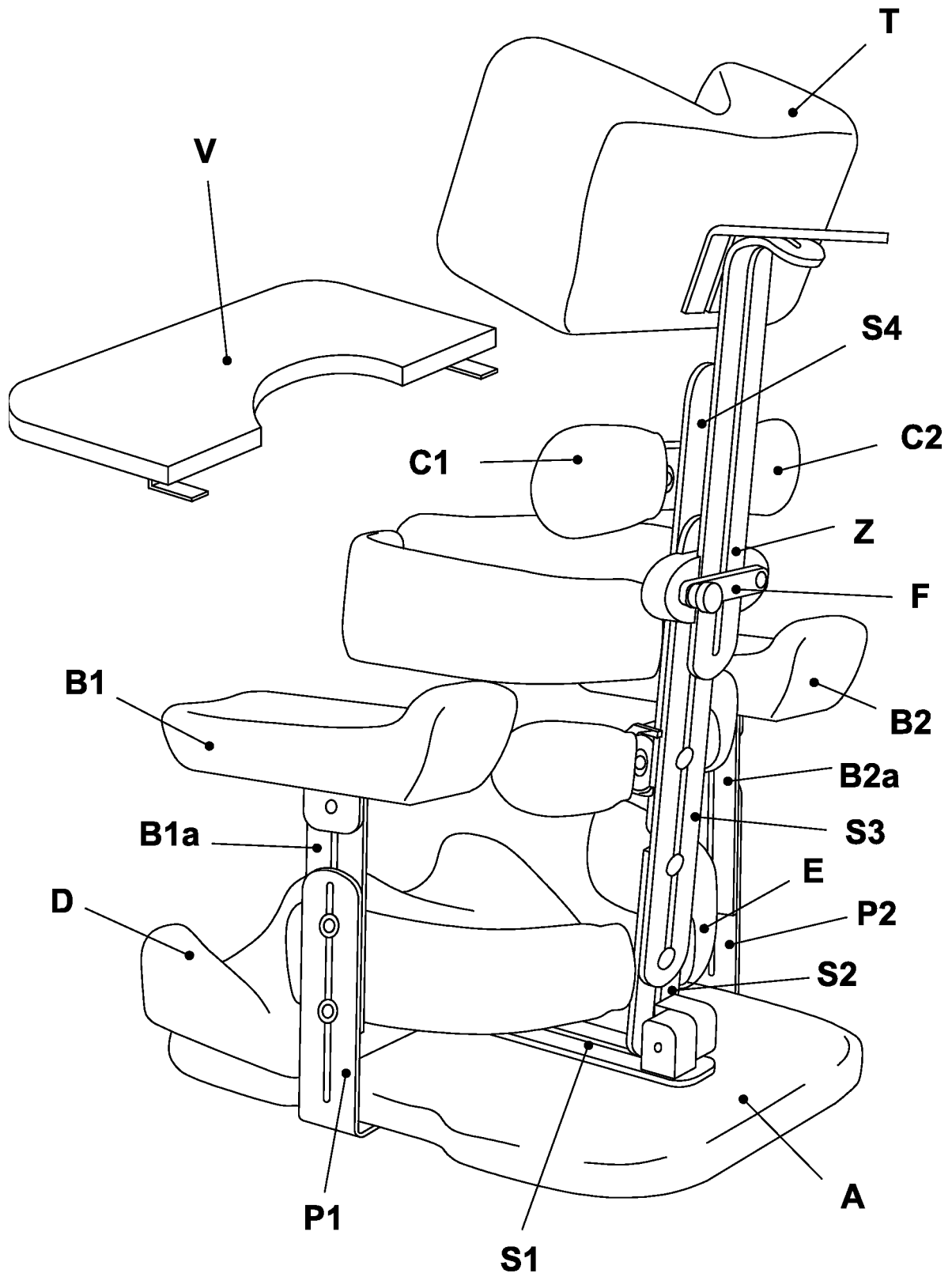


Fig. 1

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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