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(54) **TABLE HAVING AT LEAST TWO CANTILEVER EXTENSIONS HINGED ON TO A FIXED TABLE TOP**

TISCH MIT MINDESTENS ZWEI FREITRAGENDEN, AN EINER FESTSTEHENDEN TISCHPLATTE
ANGELENKTEN VERLÄNGERUNGEN

TABLE COMPRENANT AU MOINS DEUX RALLONGES EN PORTE-A-FAUX ARTICULEES SUR UN
PLATEAU DE TABLE FIXE

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Description

[0001] The present invention refers to an extensible table, which is provided with at least two cantilever extensions coupled to a fixed table top by hinging means. In a table of this kind, the extensions, when in the retracted condition thereof, are suspended under the fixed table top, whereas, when extracted, they enable the available surface of the table to be increased by extending it in one or more directions.

[0002] The most relevant state of the art in this connection is represented by the international patent application filed by this same Applicant, and published under No. WO-A-02 054 908, in which both the fixed table top and the extensions of a table are made out of thick crystal (tempered glass) panes having mutually opposed, parallel section planes that are inclined relative to the useful surface. The hinges have their axes extending orthogonally to said section planes and enable the extensions to be extracted and retracted by a simple 180°-rotation..

[0003] In particular, each one of the hinges in the second embodiment described in the above-mentioned prior-art disclosure comprises a bushing that is firmly joined to a wing attached to the lower face of an extension. This bushing is capable of rotating between two head pieces that are firmly joined with each other, one of said pieces being secured to the lower face of the fixed table top.

[0004] Since there is nothing to actually prevent an extracted extension from retracting under a horizontal force being exerted thereagainst, quite clear is the drawback that may derive if a force of this kind is unintentionally exerted when the surface of an extracted extension is being used, e.g. by a person sitting at the table while having a meal.

[0005] It therefore is a main object of the present invention to provide an extensible table that is an improvement of the above-mentioned prior-art table, in that it is provided with means adapted to ensure full stability of the table extensions when in their extracted configuration.

[0006] In accordance with this object of the present invention, the hinges used to support the extensions have been given a construction that partly differs from the previously used design, while however further ensuring an unaltered level of convenience for the user in protracting and retracting the extensions themselves.

[0007] These and further objects of the present invention are reached in a table having the features and characteristics recited in the appended claims, as this will be more readily understood from the description that is given below by way of nonlimiting example of embodiment with reference to the accompanying drawings, in which:

- Figure 1 is a side, partially sectional view of the contiguous portions of the fixed table top and an extension, along with the related hinge, in a table shown in the configuration corresponding to an extracted extension;

- Figures 2 to 4 are views illustrating the operating sequence of the hinge when bringing the extension from the extracted configuration shown in Figure 1 into the retracted configuration thereof;
- Figures 5 and 6 are views illustrating the operating sequence of the hinge when bringing the extension from its retracted configuration shown in Figure 4 into its extracted configuration shown in Figure 1;
- Figure 7 is a view of a detail of the hinge that is part of the table.

[0008] In Figure 1, which relates to a table according to the present invention, the following parts are illustrated :

- a fixed table top 10, made out of a crystal, i.e. a tempered glass pane having preferably a wall thickness of approx. 15 mm, wherein the upper and lower faces of which are indicated at 12 and 14, respectively. The fixed table top 10 (of which only the portion terminating with a section plane 16 inclined downwards towards the centre of the table are shown) actually, rests on a rigid support structure which, owing to its having no direct relevance to the present invention, is not shown in the Figure, but can for instance be the same as the one disclosed in the above-discussed patent application WO-A-02 054 908, to which reference is made for further details;
- an extension 20, which is itself made out of a crystal or tempered glass pane having the same wall thickness as the fixed table top 10, wherein the upper and lower faces thereof are indicated at 22 and 24, respectively. The extension 20 is supported in a cantilevered manner by the fixed table top 10 with the aid of articulated support means that shall be described in greater detail further on. The extension 20 has a section plane 26 that is adapted to move into abutting against the corresponding section plane 16 of the fixed table top 10 when the extension is in the extracted configuration thereof, so that it is inclined and parallel to the same section plane 16. On the lower face 24 of the extension 20, very close to the section plane 26, there is attached (e.g. bonded with the use of a silicone-based adhesive) a disc 30 having two vertical wings 32 to receive a stud 34, which is part of the afore-mentioned articulated support means, and the horizontal axis X of which is parallel to the section planes 16 and 26. Onto this disc 30, in a position that is closer to the section plane 26 of the extension 20 than the stud 34, there is finally screwed the stem 36 - extending orthogonally to the faces 22 and 24 of the same extension 20 - of a first retaining member 35 that further comprises a head 37. This head is in the shape of substantially a triangular prism having a base 38 parallel to said faces of the extension 20 and - at a certain distance from said base - an undercut 39;
- a hinge, which is generally indicated at 100 and a

also part of the afore-mentioned articulated means provided on the fixed table top 10 as a support for the extension 20, the axis Z thereof being orthogonal to the section planes 16 and 26. The hinge 100 comprises: ,

- a cylindrical bushing 110, inside which there is housed a spring 112 extending along a diameter of the same bushing. To this spring 112 there are attached two small terminal blocks 114 serving the purpose of retaining the spring between a pair of longitudinal grooves (not shown, for a better clarity) of the cylindrical bushing 110. From the outer surface of the bushing 110 there extends a wing 116, whose upper and lower faces are indicated at 118 and 119, respectively. On the free end portion 117 of the wing 116 the stud 34 supporting the extension 20 is mounted in a freely rotatable manner about the horizontal axis X. A pair of adjacent slots 120 and 122 are further provided, in a central position, on the wing 116. The first slot 120 has a larger size than the second slot 122 and comprises a narrower appendix 124 facing the stationary top surface 10 of the table. This appendix 124 - whose shape can be seen in Figure 7, which is a partial top view of the wing 116 - is not a fully open, i.e. of through-passing design, but is only open on the upper face 118 of the wing 116; however, it is connected via a hole 126 having a circular cross-section with the second, narrower slot 122 that opens on the lower face 119 of the wing 116 only. A second retaining member 130 is associated to the wing 116, the said member 130 comprising a mushroom-shaped head 132, a stem 134, a retaining spring 136 and a small terminal block 135. Specifically, the head 132 is adapted to be received in the appendix 124 of the first, larger slot 120, whereas the stem 134 is adapted to slide, jointly with the small terminal block 135 screwed on to the stem 134, through the hole 126 connecting the two slots 120 and 122 with each other. To the lower face 119 of the wing 116, below the second retaining member 130, there is attached a third retaining member 140 comprising a piston capable of sliding, in a direction parallel to the wing 116, in a sleeve 138 provided with a slit 139 in correspondence to the aperture of the second slot 122. The head 142 of this piston is flattened and inclined downwards under the corresponding aperture of the first slot 120, and the piston itself is biased by an opposing spring 144, whose tension can be adjusted by means of a nut 146 screwing on the stem 148 of the same retaining member 140. Unlike all other above-described parts, which are preferably made of stainless steel, the springs 112, 136 and 144 are made

of music wire;

- a first disc 150 that retains the spring 112 housed in the bushing 110 from above and has a perfectly smooth and flat upper face 152 so as to enable it to be properly attached, e.g. by bonding with a silicone-based adhesive, to the lower face 14 of the fixed table top 10;
- a second disc 160 that is rigidly coupled to the first disc 150 by means of screws (not shown for reasons of greater simplicity) provided inside the bushing 110, in order to ensure that the same bushing 110 is capable of rotating about the axis Z, as this shall be explained in greater detail further on.

[0009] When the extension 20 is to be brought into its retracted position from the extracted configuration thereof shown in Figure 1, the mode of operation of the above-described arrangement is as follows. In the extracted configuration shown in Figure 1, the section planes 16 and 26 are abutting against each other, while the head 37 of the first retaining member 35 is housed within the first slot 120 and, owing to the base 38 of the same retaining member 35 lying below the head 132, keeps the second retaining member 130 in a raised position. The third retaining member 140 is in turn in such a position as to cause the head 142 thereof to lie in correspondence to the aperture of the first slot 120 in the lower face 119 of the wing 116.

[0010] Now, in order to retract the extension 20, the user must grasp the free end portion thereof with his/her hands and lift it, i.e. rotate it anti-clockwise about the horizontal axis X by making use of the connection between the stud 34, which is associated to the extension 20, and the wing 116, which is associated to the fixed table top 10. In this way, the head 37 of the first retaining member 35 moves away from the second retaining member 130, thereby displacing downwards so as to move through the entire thickness of the extension and slip out of the lower face 119 of the wing 116. Towards the end of this displacement thereof, the head 37 of the retaining member 35 strikes against the inclined head 142 of the third retaining member 140, which is in this way pushed towards the fixed table top 10 -see Figure 2.

[0011] At the end of said displacement, the head 142 of the third retaining member 140 eventually abuts against the undercut 39 provided on the head 37 of the first retaining member 35, thereby positively preventing the extension 20 from being capable of rotating about the horizontal axis any further - see Figure 3.

[0012] Upon reaching this position, the user pushes the extension 20 to turn relative to the fixed table top 10 by 180° about the axis Z, since the bushing 110 of the hinge 100 is capable of turning jointly with the wing 116 relative to the discs 150 and 160, while however maintaining unaltered the arrangement of the retaining members 35, 130, 140 relative to each other, as well as the arrangement of the stud 34 on the wing 116. At the end

of this rotation, the extension 20 lies in its retracted configuration, i.e. under the fixed table top 10 - see Figure 4.

[0013] When on the contrary the available top surface of the table has to be enlarged, i.e. the extension 20 has to be pulled out from the retracted position thereof under the fixed table top (configuration illustrated in Figure 4) and brought into its extracted configuration, the user must first of all rotate the extension 20 with the bushing 110 of the hinge 100 by 180° relative to the fixed table top 10 about the axis Z in the opposite direction and in the reverse order with respect to the afore-described procedure, while anyway keeping unaltered the arrangement of the retaining members 35, 130, 140 relative to each other, as well as the arrangement of the stud 34 on the wing 116. At the end of this rotation, the extension 20 and the hinge 100 will lie in the configuration shown in Figure 3.

[0014] To bring the extension 20 into the extracted configuration thereof, the user must at this point grasp the free end portion thereof with his/her hands and lift it further, i.e. rotate it anti-clockwise on the stud 34 about the horizontal axis X up to the point at which the lower edge of the section plane 26 of the same extension 20 comes to touch the upper face 118 of the wing 116. This rotation is made possible by the stud 34 cooperating with the wing 116 and results in the head 37 of the first retaining member 35 disengaging from the head 142 of the third retaining member 140. This disengagement is permitted by the displacement of the piston 140 caused by the action of the biasing spring 144, and it in turn enables the second retaining member 130 to slide downwards within the connecting hole 126 and the narrower slot 122 of the wing 116. This sliding motion comes to an end when the head 132 of the same second retaining member 130 lies fully within the appendix 124 of the larger slot 120 of the wing 116 - see Figure 5.

[0015] Finally, the user lowers the extension 20, i.e. rotates it clockwise on the stud 34 about the horizontal axis X, and this results in the head 37 of the first retaining member 35 moving upwards within the slot 120 of the wing 116 - see Figure 6. The lowering movement of the extension 20 comes of course to an end when the section plane 26 thereof eventually abuts against the section plane 16 of the fixed table top and the base 38 of the first retaining member 35 lies again under the head 132, so as to keep the second retaining member 130 in a raised position - see again Figure 1. It is exactly the first retaining member 35 interacting in this way with the second retaining member 130 that is effective in retaining the extension 20, i.e. to make it stable and fixed in the extracted configuration thereof by preventing the same extension to accidentally retract under the action of a force exerted against it in a horizontal direction.

[0016] While the preceding description is referred to a preferred embodiment of the present invention, it will be appreciated that, within the scope defined by the appended claims, a number of other embodiments and variations thereof are possible. In particular, it shall be appreciated

that the table may comprise any desired number of extensions, although such number is usually not higher than four when the fixed table top is square or rectangular in its shape, and not just a single extension as described above.

Claims

1. Table comprising a fixed table top (10) having an upper face (12) and a lower face (14) defining between each other a section plane and resting on a stationary support structure, and at least an extension (20) having in turn an upper face (22) and a lower face (24), also defining between each other a section plane, in which the said section planes (16, 26) are facing each other, inclined and parallel when said extension (20) is in its extracted condition and in which to the lower face (18) of the fixed table top (10) there is attached a hinge (100) having an axis (Z) orthogonal to said section planes (16, 26) and provided with a wing (116) for supporting said extension (20) in a cantilevered manner, **characterized in that** a stud (34) associated to the extension (20) is adapted to act on said wing (116), the axis (X) of said stud being horizontal and parallel to said section planes (16, 26).
2. Table according to claim 1, **characterized in that** said stud (34) is attached to the lower face (24) of the extension (20) and is supported by the free end portion (117) of the wing (116) provided in said hinge (100).
3. Table according to claim 2, **characterized in that** to the lower face (24) of the extension (20) there is also attached a first retaining member (35) in a position that is closer than said stud (34) to said section plane (26) of the extension.
4. Table according to claim 3, **characterized in that** said first retaining member (35) comprises a stem (36) extending orthogonal to the faces (22, 24) of the extension (20), a head (37) provided with a base (38) extending parallel to the faces (22, 24) of the extension (20), and an undercut portion (39) at a certain distance from said base (38).
5. Table according to claim 4, **characterized in that** it comprises a second retaining member (130) that includes a mushroom-shaped head (132), a stem (134), a retaining spring (138) and a small terminal block (135).
6. Table according to claim 5, **characterized in that** in said wing (116) there are provided a pair of slots (120, 122), in which the first slot (120) is adapted to enable said first retaining member (35) to pass there-

through and the second slot (122) is adapted to enable said second retaining member (130) to pass therethrough.

7. Table according to claim 5 or 6, **characterized in that** the heads (37, 132) of said first and second retaining members (35, 130) are adapted to interact so as to make the extension (20) stable in its extracted configuration.
8. Table according to any of the preceding claims 5 to 7, **characterized in that** to the lower face (119) of said wing (116), below said second retaining member (135), there is attached a third retaining member (140) comprised of a piston sliding parallelly to said same wing (116) and having a head (142) adapted to interact with said undercut portion (39) of the first retaining member (35) when the extension (20) is in the extracted configuration thereof and said section planes (16, 26) are abutting against each other.

Patentansprüche

1. Tisch mit:

einer festen Tischplatte (10), die eine Oberseite (12) und eine Unterseite (14) hat, die zwischen einander eine Schnittfläche definieren, und auf einer ortsfesten Stützstruktur liegt und mindestens einer Erweiterung (20), die ihrerseits eine Oberseite (22) und eine Unterseite (24) hat, die ebenfalls zwischen einander eine Schnittfläche definieren,

wobei die Schnittflächen (16, 26) einander zugewandt, geneigt und parallel sind, wenn die Erweiterung (20) in ihrer ausgefahrenen Stellung ist und wobei an der Unterseite (18) der festen Tischplatte (10) ein Gelenk (100) befestigt ist, das eine orthogonal zu den Schnittflächen (16, 26) stehende Achse (Z) hat und an dem ein Ausleger (116) vorgesehen ist, um die Erweiterung (20) in freitragender Weise zu stützen,

dadurch gekennzeichnet, dass ein Bolzen (34), der mit der Erweiterung (20) verbunden ist, daran angepasst ist, auf den Ausleger (116) zu wirken, wobei die Achse (X) des Stützens horizontal und parallel zu den Schnittflächen (16, 26) steht.

2. Tisch gemäß Anspruch 1, **dadurch gekennzeichnet, dass** der Stützen (34) an der Unterseite (24) der Erweiterung (20) befestigt ist und durch das freie Endstück (117) des Auslegers (116) gestützt wird, welche an dem Gelenk (100) vorgesehen ist.
3. Tisch gemäß Anspruch 2, **dadurch gekennzeichnet, dass** an der Unterseite (24) der Erweiterung

(20) auch ein erstes Halteteil (35), in einer Position befestigt ist, die näher an der Schnittfläche (26) der Erweiterung ist, als der Stützen (34).

4. Tisch gemäß Anspruch 3, **dadurch gekennzeichnet, dass** das erste Halteteil (35) aufweist:

einen Schaft (36), der sich orthogonal zu den Seiten (22, 24) der Erweiterung (20) erstreckt, einen Kopf (37), an dem eine Basis (38) vorgesehen ist, die sich parallel zu den Seiten (22, 24) der Erweiterung (20) erstreckt und ein Freistichabschnitt (39) mit einem bestimmten Abstand zur Basis (38).

5. Tisch gemäß Anspruch 4, **dadurch gekennzeichnet, dass** er ein zweites Halteteil (130) aufweist, das enthält:

einen pilzförmigen Kopf (132), einen Schaft (134), eine Rückholfeder (138) und einen kleinen Klemmenblock (135)

6. Tisch gemäß Anspruch 5, **gekennzeichnet dadurch, dass** an dem Ausleger (116) ein Paar Aussparungen (120, 122) vorgesehen ist, wobei die erste Aussparung (120) daran angepasst ist, es dem ersten Halteteil (35) zu ermöglichen dort hindurchzutreten und die zweite Aussparung (122) daran angepasst ist, es dem zweiten Halteteil (130) zu ermöglichen dort hindurchzutreten.

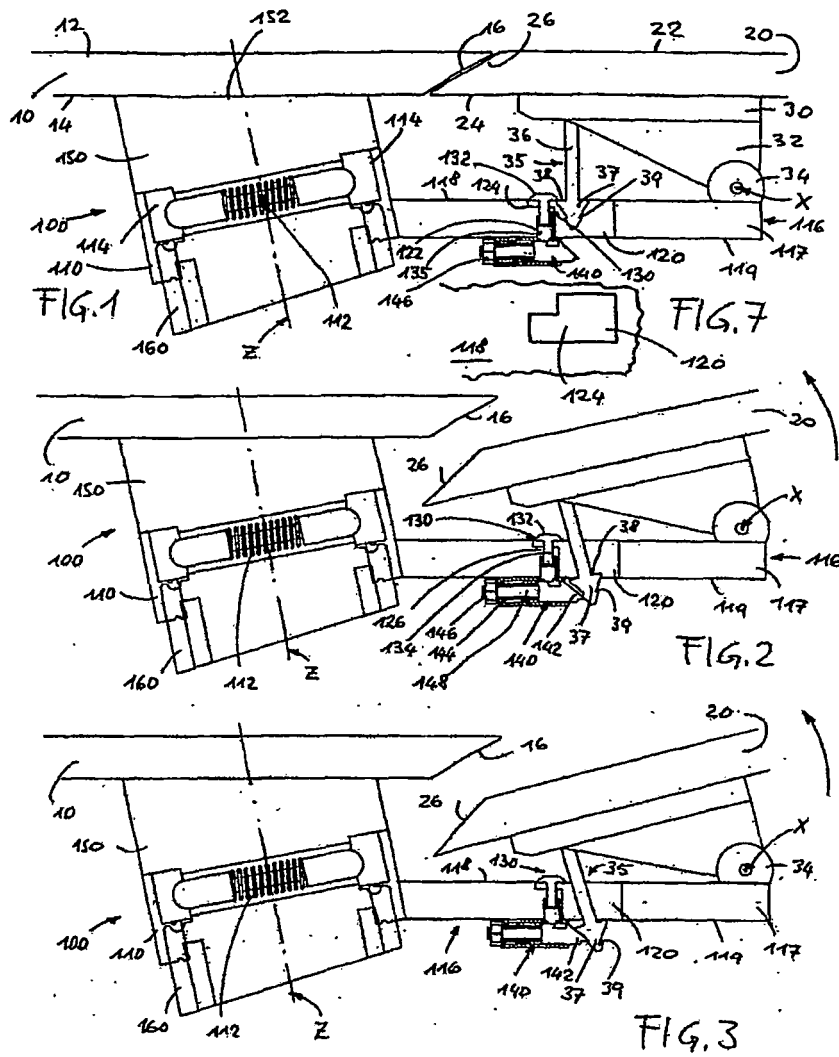
7. Tisch gemäß Anspruch 5 oder 6, **dadurch gekennzeichnet, dass** die Köpfe (37, 132) des ersten und zweiten Halteteils (35, 130) daran angepasst sind, so zu interagieren, dass die Erweiterung (20) in ihrer ausgefahrenen Stellung stabil bleibt.

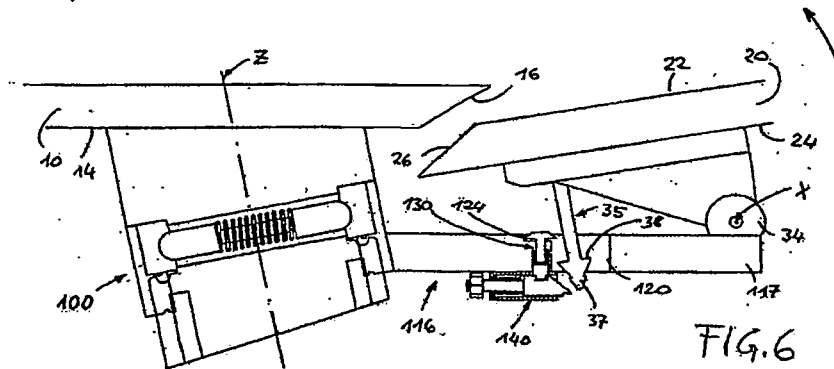
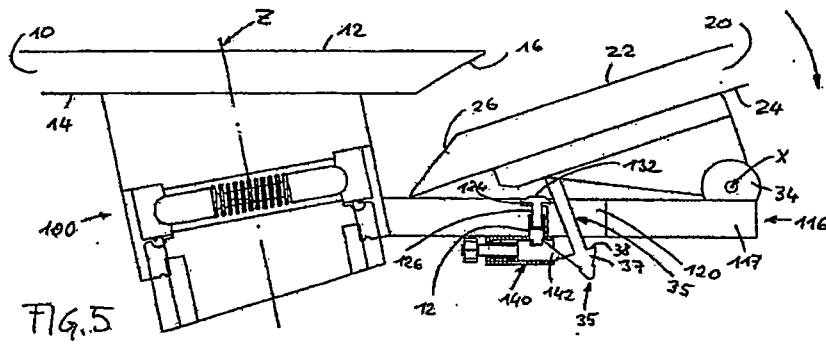
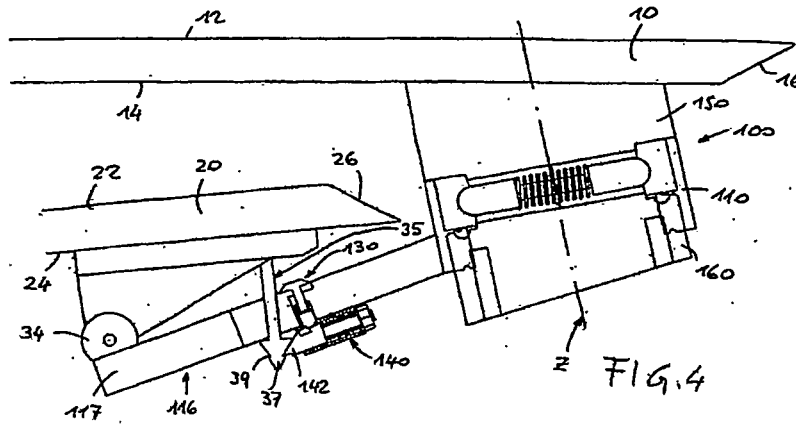
8. Tisch gemäß einer der vorangehenden Ansprüche 5 bis 7, **dadurch gekennzeichnet, dass** an der Unterseite (119) des Auslegers (116), unter dem zweiten Halteteil (135), ein drittes Halteteil (140) befestigt ist, das einen Kolben aufweist, der parallel zu dem Ausleger (116) gleitet und einen Kopf (142) hat, der daran angepasst ist, mit dem Freischnittabschnitt (39) des ersten Halteteils (35) zu interagieren, wenn die Erweiterung (20) sich in ihrer ausgefahrenen Stellung befindet und die Schnittflächen (16, 26) aneinander angrenzen.

Revendications

1. Table comprenant un plateau de table fixe (10) ayant une face supérieure (12) et une face inférieure (14) définissant entre elles un plan de section et reposant sur une structure de support fixe, et au moins une

- rallonge (20) ayant à son tour une face supérieure (22) et une face inférieure (24), définissant également entre elles un plan de section, dans laquelle lesdits plans de section (16, 26) se font face, inclinés et parallèles lorsque ladite rallonge (20) est dans ladite condition tirée et dans laquelle sur la face inférieure (18) du plateau de table fixe (10), on fixe une charnière (100) ayant un axe (Z) orthogonal par rapport auxdits plans de section (16, 26) et dotée d'une aile (116) pour supporter ladite rallonge (20) d'une manière en porte-à-faux, **caractérisée en ce qu'un** goujon (34) associé à la rallonge (20) est adapté pour agir sur ladite aile (116), l'axe (X) dudit goujon étant orthogonal et parallèle auxdits plans de section (16, 26).
2. Table selon la revendication 1, **caractérisée en ce que** ledit goujon (34) est fixé sur la face inférieure (24) de la rallonge (20) et est supporté par la partie d'extrémité libre (117) de l'aile (116) prévue dans ladite charnière (100).
3. Table selon la revendication 2, **caractérisée en ce qu'à** la face inférieure (24) de la rallonge (20), on fixe également un premier élément de retenue (35) dans une position qui est plus près que ledit goujon (34) dudit plan de section (26) de la rallonge.
4. Table selon la revendication 3, **caractérisée en ce que** ledit premier élément de retenue (35) comprend une tige (36) s'étendant de manière orthogonale aux faces (22, 24) de la rallonge (20), une tête (37) prévue avec une base (38) s'étendant parallèlement aux faces (22, 24) de la rallonge (20), et une partie de gorge (39) à une certaine distance de ladite base (38).
5. Table selon la revendication 4, **caractérisée en ce qu'elle** comprend un second élément de retenue (130) qui comprend une tête en forme de champignon (132), une tige (134), un ressort de retenue (138) et un petit bloc terminal (135).
6. Table selon la revendication 5, **caractérisée en ce que** dans ladite aile (116), on prévoit une paire de fentes (120, 122) dans laquelle la première fente (120) est adaptée pour permettre audit premier élément de retenue (35) de passer à travers celle-ci et la seconde fente (122) est adaptée pour permettre audit second élément de retenue (130) de passer à travers celle-ci.
7. Table selon la revendication 5 ou 6, **caractérisée en ce que** les têtes (37, 132) desdits premier et second éléments de retenue (35, 130) sont adaptées pour interagir afin de rendre la rallonge (20) stable dans sa configuration extraite.
8. Table selon l'une quelconque des revendications précédentes 5 à 7, **caractérisée en ce qu'à** la face inférieure (119) de ladite aile (116), au-dessous dudit second élément de retenue (135), on fixe un troisième élément de retenue (140) composé d'un piston coulissant parallèlement à ladite même aile (116) et ayant une tête (142) adaptée pour interagir avec ladite partie de gorge (39) du premier élément de retenue (35), lorsque la rallonge (20) est dans sa configuration extraite et lesdits plans de section (16, 26) viennent en butée l'un contre l'autre.





REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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