



EUROPEAN PATENT APPLICATION

(43) Date of publication:
02.02.2022 Bulletin 2022/05

(51) International Patent Classification (IPC):
A47B 1/08 ^(2006.01) **A47B 1/04** ^(2006.01)

(21) Application number: **21188449.9**

(52) Cooperative Patent Classification (CPC):
A47B 1/08; A47B 1/04

(22) Date of filing: **29.07.2021**

(84) Designated Contracting States:
**AL AT BE BG CH CY CZ DE DK EE ES FI FR GB
GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO
PL PT RO RS SE SI SK SM TR**
Designated Extension States:
BA ME
Designated Validation States:
KH MA MD TN

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(30) Priority: **29.07.2020 IT 202000018502**

(54) **EXTENDABLE TABLE**

(57) In a table of adjustable length, comprising a plurality of top shelves which can be assembled on and disassembled from a sliding support of a base frame, said sliding support includes two side bars and a central bar,

the side bars having a first end slidably housed in said central bar and a second end constrained to the legs of the table or to a half-frame of the table which comprises the legs.

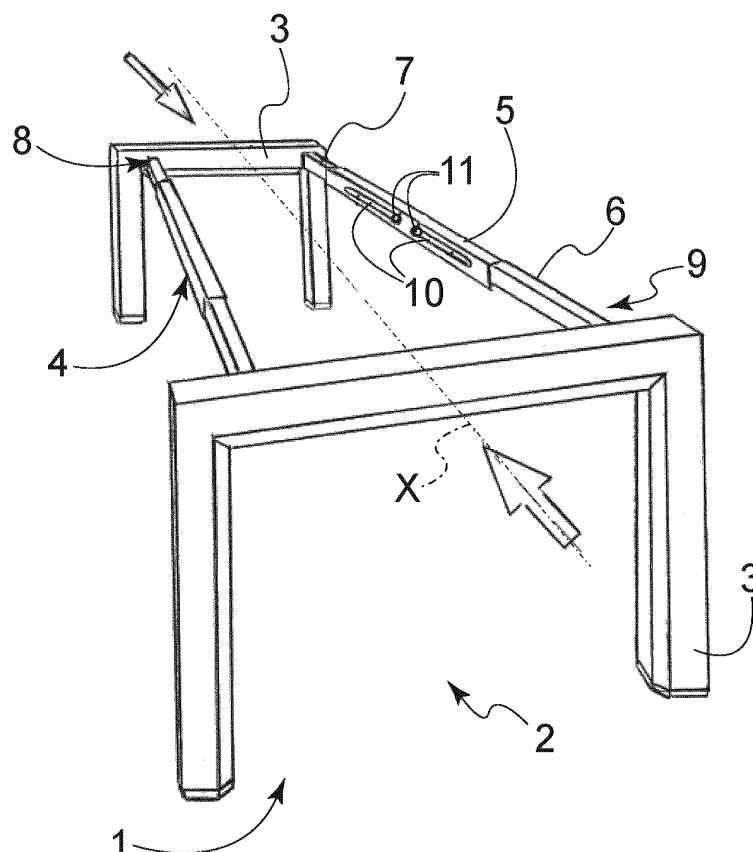


Fig. 1

Description

Field of the invention

[0001] The present invention relates to an extendable table. In particular, the invention relates to an extendable table with a top which comprises one or more inserts that can be assembled on a support and can be disassembled therefrom depending on the desired length.

Known prior art

[0002] Extendable tables based on table top inserts are known. In these embodiments, the table surface or top comprises a plurality of portions or shelves which are pushed toward each other to form a single table surface. At least one of the top portions or shelves is an insert that can be removed when the length of the table must be reduced and vice versa additional inserts may be added to extend the table supporting top surface.

[0003] Tables are known which provide a sliding system which acts as a sliding support for the inserts and which is used to connect two half-frames that comprise the legs of the table to each other.

[0004] The sliding system forms a sliding frame in such a way that when the table must be extended, the two pairs of legs and the shelves composing the table surface, if any, can be moved away from each other leaving a gap in the middle. In this gap, it is possible to place one or more inserts that are supported by the underlying sliding system. The insert or shelf forms an intermediate table surface portion, which is aligned with the two parts of the original table surface so as to form a continuous and extended table surface.

[0005] Sliding support systems or frames, in which elements such as profiles or bars can slide one above the other or one inside the other telescopically, are known.

[0006] One problem with known solutions is that of wear and tear of the sliding components, wear and tear which over time leads to possible detachment of the bars or profiles from each other. Another problem of the known solutions is the difficulty in extending or closing the table, an operation that typically requires four people. Moreover, the known solutions result in particularly cumbersome packages even if the table is supplied in a disassembled condition.

[0007] In light of the problems mentioned, it is necessary to provide an improved extendable table that provides a frame that is simple to produce and use, while providing the required flexibility of use and high security, as well as allowing for a small package.

Summary of the invention

[0008] Object of the present invention is to solve the above-mentioned problems with an extendable table according to claim 1.

[0009] The extendable table according to the present

invention allows to have a frame in which the sliding support, which allows to extend the table to accommodate other shelves or inserts and which is formed by at least three pieces, is stable and provides great flexibility of choice of the length of the same table, thus allowing it to extend at even considerable distances.

[0010] Specifically, said sliding support is configured to support a plurality of shelves and extends along a main development direction. Said plurality of shelves is composed of a number of shelves which can vary according to the length assumed by the sliding support. The shelves that compose the aforesaid plurality of shelves are, in use, arranged side by side along the main development direction of the sliding support, e.g. transversely to the longitudinal axis of the table. Depending on the length assumed by the table, one or more shelves are added or removed from the sliding support.

[0011] In this type of table, according to the present invention, the legs are coupled two by two to form two inverted U-shaped half-frames. In order to allow the table to support the inserts and to form a suitable frame, the two inverted U-shaped half-frames formed by the two pairs of table legs (and by the possible top parts constrained thereto) are connected to each other by means of a sliding support of the extendable table underlying the inserts and to the table top formed by them. The inserts can be locked on the sliding support to avoid them from being detached.

[0012] Advantageously, the sliding support comprises three tubular elements or bars coaxial to each other: two opposite side bars and a central bar. Preferably, the dimensions of the bars are such that the side bars can be slidably housed in the central bar, from which they project with one end. The remaining end stays housed in the central bar body.

[0013] The two side tubular bars are each constrained at their free end to one of the table half-frames; such half-frame typically comprises two legs connected to each other to form an inverted "U" and typically the part of the table which joins the legs at the top also constitutes a portion (even if of reduced size) of the table supporting surface.

[0014] In an embodiment, the tubular bars have a quadrangular, preferably a square, section. According to an embodiment, the central tubular element or bar is provided with at least one slot arranged on one side of the tubular element; preferably there are two side slots. Said slots cooperate with stops which are arranged at the ends of the side tubular bars that are housed in the central tubular element.

[0015] According to an embodiment, the stops are in the form of a pawl which projects from the side of the end of the side tubular bar; the pawl is preferably assembled in an element which acts as a cap for the ends of the side tubular elements, which are inserted in the central tubular element. Other stopping means can be used to avoid that the side tubular bars come out of the central bar when the table is extended.

[0016] The pawl is normally elastically stressed outwards, e.g. by a spring, so that it can engage the slots of the central body. In turn, the spring can carry a second pawl or stopping means to keep the cap fixed in its housing position in the side bar.

[0017] In another possible embodiment, the central bar is inserted in the side bars. In this embodiment, one end of the central bar is slidably housed in one of the two side bars, while the opposite end is slidably housed in the other side bar. In said embodiment, the side bars comprise at least one slot, each of which cooperates with a pin present on the central bar. Preferably, the central bar comprises a pair of pins as described above, each of which cooperates with a slot of the two side bars.

[0018] Each shelf of the plurality of shelves which can be inserted in, or disengaged from, the table comprises a supporting surface and two abutment surfaces. Said abutment surfaces are connected to the supporting surface at two opposite sides of a perimeter of said supporting surface. The half-frames also comprise a similar abutment surface. In use, i.e. when the table is assembled, said abutment surfaces are arranged perpendicularly to said sliding support. Specifically, each abutment surface of a shelf contacts an abutment surface of an adjacent shelf or one of said half-frames. In other words, when the table is assembled, the shelves and the two half-frames are in abutment at the respective abutment surfaces so as not to have empty gaps on the table supporting surface.

[0019] Preferably, said abutment surfaces are shaped in such a way as to ensure a shape coupling between adjacent shelves. In particular, the abutment surfaces have at least one projection and at least one recess or cavity which cooperate, preferably by a tongue-and-groove interlock, with the respective at least one recess or cavity and at least one projection of an adjacent shelf to form the aforesaid shape coupling.

[0020] Still preferably, the table comprises a plurality of connecting elements for constraining to each other adjacent shelves and shelves with half-frames. Moreover, the abutment surfaces of the shelves and said half-frames comprise at least one hole. Said connecting elements are configured to be inserted in two holes of two adjacent shelves or of a shelf and of a half-frame for an integral fastening. When the table is assembled, therefore, the holes of two adjacent elements match. In other words, when two adjacent shelves or a shelf and a half-frame are in abutment, the insertion of the connecting elements through the respective holes integrally connects two elements and advantageously avoids the undesired detachment thereof.

[0021] According to an embodiment, the connecting elements, once inserted in two holes, are movable, preferably in the rotary direction, between a locking position, in which the two adjacent shelves or a shelf and a half-frame are connected integrally, and a releasing position, in which said connecting element can be inserted in, or extracted from, the aforesaid two holes. In other words,

when the connecting element is in the releasing position, it can be inserted in, or removed from, the respective holes. Once inserted in the holes, the switching of the connecting element from the releasing position to the locking position, preferably by a rotation, advantageously avoids the extraction of the same connecting element and keeps the elements, to which the holes in which the connecting element is inserted belong, constrained.

[0022] According to an embodiment, each shelf of said plurality of shelves has at least one groove for housing said sliding support. Preferably, said groove has a section substantially similar to the section of the bars which compose the sliding support. Advantageously, the presence of at least one groove helps the user assembling the same table and avoids movements of the shelves in a direction transverse to the extension of the sliding support. In the embodiment shown, there are two systems of support bars (formed by central bar and side bars) and the shelves have, in their lower face, two corresponding grooves for housing said bars.

[0023] Preferably, each shelf comprises at least one locking device associated with said at least one groove, with the function of keeping the bars of the sliding support housed in the respective groove and preventing the detachment of the shelf from the sliding support. In the embodiment shown, the locking device is in the form of a lever or rod hinged at one end; said lever is movable and rotatable in a plane parallel to that of the lower surface of the bars between at least one first position for opening the groove, in which said sliding support can be inserted in, or removed from, said groove, and a second position of at least partial occlusion of the groove, in which said sliding support cannot be inserted in, or removed from, said groove. In said second position, when the bars of the sliding support are housed in the groove, the lever engages the bars, in particular the lower surface of the bars, to keep them housed in the same groove.

[0024] Advantageously, the presence of the aforesaid lever, i.e. locking rod, avoids, once the support is housed in the associated groove and the lever has been rotated to engage the bar, that the shelf may disassociate from the table frame and, in particular, that the shelf is lifted.

Brief description of the drawings

[0025] The invention will now be depicted in greater detail with reference to the drawings enclosed by way of non-limiting example, wherein:

- Figure 1 is a perspective view of a table according to the invention, without shelves and in a retracted position;
- Figure 2 is a view of the same table as in figure 1 in an extended position;
- Figures 3 - 5 are side views of the bars in various mutual positions;
- Figure 6 is a top perspective view of a table in an extended condition and housing a plurality of

- shelves; and
- Figure 7 is a schematic section view of a component of the side bars;
- Figure 8 is a bottom perspective view of one of the shelves that compose the shelf of the table of figure 6;
- Figure 9 is a bottom perspective view of one of the table in figure 6;
- Figure 10 depicts two configurations of an element of the table represented in detail A of figure 9;
- Figure 11 depicts a detail of the table in figure 9.

Detailed description of at least one embodiment

[0026] With reference to figure 1, the extendable table 1, according to the present invention, has a frame 2 in which the legs are coupled two by two to form two inverted U-shaped half-frames 3; in order to allow the table to support the inserts and form a single frame, the two half-frames 3 are connected to each other by means of a sliding support 4 of the extendable table underlying the inserts and the table top. As depicted, said sliding support 4 has a main development direction X. Said main development direction X corresponds to the direction joining the two half-frames 3 in an inverted "U" shape. In an embodiment, said main development direction coincides with the longitudinal axis of the table.

[0027] As represented in figures 1-5, the sliding support 4 comprises three tubular elements or bars coaxial to each other and, more particularly, a central bar 5 and two side bars 6 and 7 extending from the central bar 5. The side bars 6 and 7 are sized so that they can be slidably housed inside the central bar 5 from which they project with one end 8 and 9, respectively. The ends 8 and 9 of the bars 7 and 6 are constrained to the half-frames 3.

[0028] In a preferred embodiment shown in the figures, the tubular bars have a quadrangular, preferably square, section. According to an embodiment, the central tubular element (or bar) 5 is provided with at least one slot 10 arranged on one side of the bar; preferably there are two side slots 10 which cooperate with end-stops 11 which are arranged on the ends 12 of the tubular bars 6 and 7 which are housed in the central tubular element 5.

[0029] According to an embodiment, the stops 11 are in the form of a pawl which projects from the side of the end 12 of the side tubular bar 6 or 7. In an embodiment depicted in figure 7, the pawl 11 is assembled in an element 13 which acts as a cap for the ends 12 of the side tubular elements 6 and 7, which are inserted in the central tubular element 5. The pawl can advantageously be elastically stressed outwards, so that it can engage the slots 10 of the central body 5. Other stopping means can be used to avoid that the side tubular bars comes out of the central bar when the table is extended.

[0030] Figure 1 shows a table frame of the invention in a retracted condition, i.e. a condition in which the half-frames are close together and the side bars 6 and 7 have

penetrated the central bar 5 until the pawls 11 (or similar stops) have reached the innermost end of the respective slot 10. In this condition, also shown in figure 4, the half-frames 3 are in a close position.

[0031] When, as shown in figure 2 and in figure 5, the half-frames 3 are spaced apart from each other, the side bars are extracted from the central bar 5 until the stops, i.e. pawls 11, reach the end of their travel thus engaging the outermost end of the respective slot 10 (figure 5). In this condition, the table assumes its greatest length which allows to house the maximum number of shelves 14, as can be seen in figure 6 where, by way of example, four shelves are present. As depicted in figure 6, the shelves 14 that compose the supporting surface of the table are arranged side by side along the longitudinal development direction X of the sliding support 4. In the depicted embodiment, the shelves 14 are side by side with the respective sides of greater extension abutting the adjacent shelves 14.

[0032] Figure 3 shows the ends of the bars 6 and 7 before being inserted in the central bar 5. As can be observed, the ends of the tubular body house an element 13 generally made of thermoplastic material which is hollow inside to house a pawl or other stop. The pawl is stressed outwards so as to pass through the body of the element 13 and project therefrom to engage one of the slots 10. The cap 13 also serves for facilitating the sliding of the side bars inside the central bar.

[0033] A possible embodiment of the elements 13 and 11 is shown in figure 7 where the plug 13 is shown partially in section to highlight the hollow body of the cap element 13 and the pawl 11, which is integral with a spring 15 in turn fastened to the same body 13 at a further point.

[0034] More particularly, the spring 15 is integral with a second pawl 16 which engages a corresponding hole in the body of the cap 13. The portion of the pawl 16 projecting from the cap 13 in turn engages a housing in the tubular element 6 or 7 in which the cap 13 is housed, preferably without projecting from the thickness of the tubular element. This way, the cap 13 remains constrained to the tubular bar in which it is housed, even when the bar 6 or 7 is translated inside the central bar 5. In a preferred embodiment, the pawls 11 and 16 have an identical diameter.

[0035] Figure 8 depicts a shelf 14 which composes the supporting surface of the table 1 and which can be added or removed, respectively, to extend or reduce said supporting surface according to the position assumed by the frame 2.

[0036] Each shelf 14 comprises a flat upper supporting surface 140 which, when the table is assembled, faces upwards, i.e. faces the opposite direction with respect to the legs of the same table 1. The shelf 14 further comprises at least two abutment walls 141, 142, preferably perpendicular to the supporting surface. Specifically, said abutment walls 141, 142 extend from two opposite sides of the perimeter of the supporting surface 140 of the shelf 14 and are configured to be arranged perpen-

dicularly to the sliding support 4 when the table 1 is assembled. In other words, the shelves 14 that compose the table 1 are arranged side by side so that each abutment wall 141 of a shelf 14 faces and contacts, i.e. abuts, an abutment wall 142 of the adjacent shelf 14.

[0037] Likewise, the half-frames 3 also comprise an abutment surface 141 similar to the abutment surfaces of the shelves 14. When the table 1 is assembled, the abutment surface of the half-frame 3 contacts one of the abutment surfaces 141, 142 of the shelves 14 placed at the ends of the supporting surface of the same table 1.

[0038] According to the embodiment shown in figure 8, said abutment surfaces 141, 142 are shaped in such a way as to ensure a shape coupling between adjacent shelves 14 or between a shelf 14 and one of the two half-frames 3. In particular, the abutment surfaces 141, 142 have at least one projection 144 and at least one recess or cavity 145 which cooperate, preferably interlockingly, with the respective at least one recess or cavity 145 and at least one projection 144 of the abutment surfaces 141, 142 which they contact to form the aforesaid shape coupling. In figure 8, each abutment surface 141, 142 comprises two projections 144 and two cavities 145. In use, said projections 144 are configured to be inserted in the recesses or cavities 145 of the abutment surface 141, 142 of an adjacent shelf 14 or half-frame 3.

[0039] Preferably, as depicted in figure 8, said shelf 14 comprises a protection wall 141', 142' connected to said abutment walls 141, 142 at a side opposite to the connection side with the supporting surface 140 of the shelf 14. Said protection walls 141', 142' extend parallelly to the supporting surface 140 of the shelf 14. Advantageously, the presence of said protection walls 141', 142' avoids that a sharp edge of the abutment walls 141, 142 remains exposed, with consequent risks of scratches or injuries for the end user of the table 1. The protection wall 141' and 142' also serves as a stiffening rib to help keep the walls 141 and 142 in contact with each other, without gaps. Moreover, the lever 19 can advantageously be assembled on the walls 141' and/or 142'.

[0040] In the embodiment of figure 9, the table 1 comprises a plurality of connecting elements 17 and the abutment surfaces 141, 142 of the shelves 14 and said half-frames 3 comprise at least one hole 143. As depicted by the arrows in figures 9 and 11, the connecting elements 17 are configured to be inserted in two holes 143 of two adjacent abutment surfaces 141, 142 for an integral fastening of the respective shelves 14 or the respective shelf 14 with one of the two half-frames 3. When the table is assembled, therefore, the holes 143 of two adjacent elements match. In other words, when two adjacent shelves 14 or a shelf 14 and a half-frame 3 are in abutment, the insertion of the connecting elements 17 through the holes 143 avoids the undesired detachment of the respective shelves.

[0041] In the depicted embodiment, the connecting elements 17, once inserted in two holes 143, are movable, preferably in the rotary direction, between a locking po-

sition, in which two adjacent shelves 14 or a shelf 14 and a half-frame 3 are connected integrally, and a releasing position, in which said connecting element 17 can be inserted in, or extracted from, said two holes 143 and the respective elements are disconnected. Once inserted into the respective matching holes 143 of two adjacent shelves 14, the switching of the connecting element 143 from the releasing position to the locking position avoids further movements of the same connecting element 17 and keeps the shelves 14, to which the holes 143 in which the connecting element 17 is inserted belong, constrained.

[0042] In the embodiment depicted, the connecting element 17 is a substantially cylindrical element similar to a plug having, at one end, a knob of increased section shaped to facilitate its actuation, in particular its rotation, between the locking position and the releasing position. At the opposite end, the connecting element 17 has an asymmetrical flange shaped in such a way that it abuts against the abutment wall 141, 142 when the connecting element 17 is in the locking position. In the locking position, the two abutment walls 141, 142, to which the holes 143 crossed by the connecting element 17 belong, are interposed between the knob and the flange of the aforesaid connecting element 17 without the possibility of mutual translation.

[0043] In alternative embodiments, the connecting member 17 may be shaped as a screw with a respective nut, as a two-element plug or as a hook. In figures 9 and 11, the connecting elements 17 are shown, for greater clarity of drawing, slightly spaced apart from the holes 143 which must be engaged by said elements.

[0044] Preferably, each shelf 14 has at least groove 18 for housing said sliding support 4. In the embodiment depicted in the annexed drawings, each shelf 14 comprises two grooves 18. These grooves 18 are sized in such a way that, when the sliding support 4 is housed therein, movements of the shelves 14 in a direction transverse to the development of the sliding support 4 are not possible. Specifically, the grooves 18 have sections substantially identical to the bars 5-7 of the sliding support 4.

[0045] Preferably, as previously described, said at least one slot 10 is arranged on a surface of the central rod 5 facing, in use, laterally, i.e. not upwards or downwards (i.e. the surface on which the table 1 rests). Specifically, said at least one slot 18 is substantially hidden inside the groove 18. Specifically, the walls that define the grooves 18 in which the central rods 5 are housed make the slots 10 inaccessible, which are therefore plugged by the same walls of the grooves 18. It is in fact preferable that the slots 10 do not remain exposed in order to avoid that the sharp edges that define it come into contact with the users' legs. For example, if the slot 10 remains facing downwards, it could pose a risk to the users of the table, who could scratch or ruin their clothes (e.g. tights) by contacting the at least one slot 10 with the legs.

[0046] Preferably, as shown in figure 9 and in greater

detail in figure 10, each shelf 14 comprises at least one lever 19 associated with said at least one groove 18. Said lever 19 is movable and rotatable in a horizontal plane parallel with respect to the lower surface of the bar 6, between at least one first opening position P1 of the groove 18, in which said sliding support 4 can be inserted in, or removed from, said groove 18, and a second position P2 of at least partial occlusion of the groove 18, in which said sliding support 4 is engaged by the lever and held in position in the groove, so that it cannot be inserted in or removed from the groove 18. In the embodiment depicted for example in figure 9, each shelf 19 comprises two levers 19, each associated with one of the two grooves 18, which are preferably arranged at the protection walls 141', 142' in diametrically opposite positions with respect to the extension of the same shelf 14.

[0047] In the embodiment depicted in figure 10, the lever 19 is shaped like a crank rotatable between said first position P1 and said position P2. In an alternative embodiment, the lever 19 can be shaped as a rod which can be translated between said first position P1 and said position P2. In yet another embodiment, the lever 19 can be shaped like a hook whose open shape corresponds to the first position P1 and whose closed shape corresponds to the second position P2.

Claims

1. Table (1) of adjustable length, comprising a basic frame (2) and a plurality of top shelves (14) which can be assembled on and disassembled from said frame, said basic frame comprising two half-frames (3) which include the legs of said table and are connected to each other by at least one sliding support (5-7) to support said plurality of shelves (14), said sliding support extending along a main development direction (X) of the table, said shelves of the plurality of shelves (14) being arranged side by side one another along said main development direction (X) of the at least one sliding support (5-7), **characterised in that** said sliding support includes two side bars (6, 7) and a central bar (5), said side bars having a first end slidably housed in said central bar (5) and a second end (9) constrained to one of said table half-frames (3).
2. Table according to claim 1, wherein said table half-frame (3) comprises two legs connected to each other at the top to form an inverted "U".
3. Table according to claim 1 or 2, wherein said tubular bars (5-7) have a quadrangular, preferably square section.
4. Table according to one of claims 1 to 3, wherein said central bar (5) is provided with at least one, preferably two slots (10) arranged on one side of said bar.
5. Table according to claim 4, wherein said slots (10) cooperate with stops arranged on the ends of the bars (6,7) housed in said central bar (5).
6. Table according to claim 5, wherein the stops are in the shape of a pawl (11) projecting from one side of the end of said tubular side bar (6, 7).
7. Table according to claim 6, wherein said pawl (11) is assembled in an element (13) which acts as a cap for the ends of the side bars inserted in the tubular central bar.
8. Table according to claim 7, wherein said pawl (11) is usually elastically stressed (15) outwards, to engage said slots (10) of the body of the central bar (5).
9. Table according to any one of the preceding claims, wherein each shelf (14) of said plurality of shelves (14) comprises a supporting surface (140) and two abutment surfaces (141, 142) connected to the supporting surface (140) along two opposite sides of a perimeter of said supporting surface (140), and wherein said half-frames (3) comprise an abutment surface (141, 142); said abutment surfaces (141, 142) being arranged, in use, perpendicular to said sliding support (5-7), each abutment surface (141, 142) of a shelf (14) contacting an abutment surface (141, 142) of an adjacent shelf (14) or one of said half-frames (3).
10. Table according to the preceding claim, wherein said abutment surfaces (141, 142) have at least one projection (144) and at least one recess or cavity (145) shaped so as to cooperate, respectively, with the at least one recess or cavity (145) and the at least one projection (144) of the abutment surface (141, 142) of an adjacent shelf (14) or an adjacent half-frame (3) to form a shape coupling.
11. Table according to claim 9 or 10, comprising a plurality of connecting elements (17) and wherein said abutment surfaces (141, 142) comprise at least one hole (143); said connecting elements (17) being insertable in two holes (143) of two adjacent shelves (14) or of a shelf (14) and a half-frame (3) for an integral fastening to constrain to each other two adjacent shelves (14) or a shelf with said half-frame (3).
12. Table according to the preceding claim, wherein said connecting elements (17), once inserted in two holes (143), are movable, preferably by rotation, between a locking position, in which the two adjacent shelves (14) or a shelf (14) and an adjacent half-frame (3) are connected integrally, and a releasing position, in which said connecting element (17) can be inserted in, or extracted from, the aforesaid two holes (143).

13. Table according to any one of the preceding claims, wherein each shelf of said plurality of shelves (14) has at least one groove (18), preferably two grooves (18), for housing said sliding support (5-7).

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14. Table according to the preceding claim, wherein each shelf of said plurality of shelves (14) comprises at least one lever (19) associated with said at least one groove (18), said lever (19) being movable between at least one first opening position (P1) of the groove (18), in which said sliding support (5-7) can be inserted in, or removed from, said groove (18), and a second position (P2) of at least partial occlusion of the groove (18), in which said sliding support (5-7) cannot be inserted in, or removed from, said groove (18).

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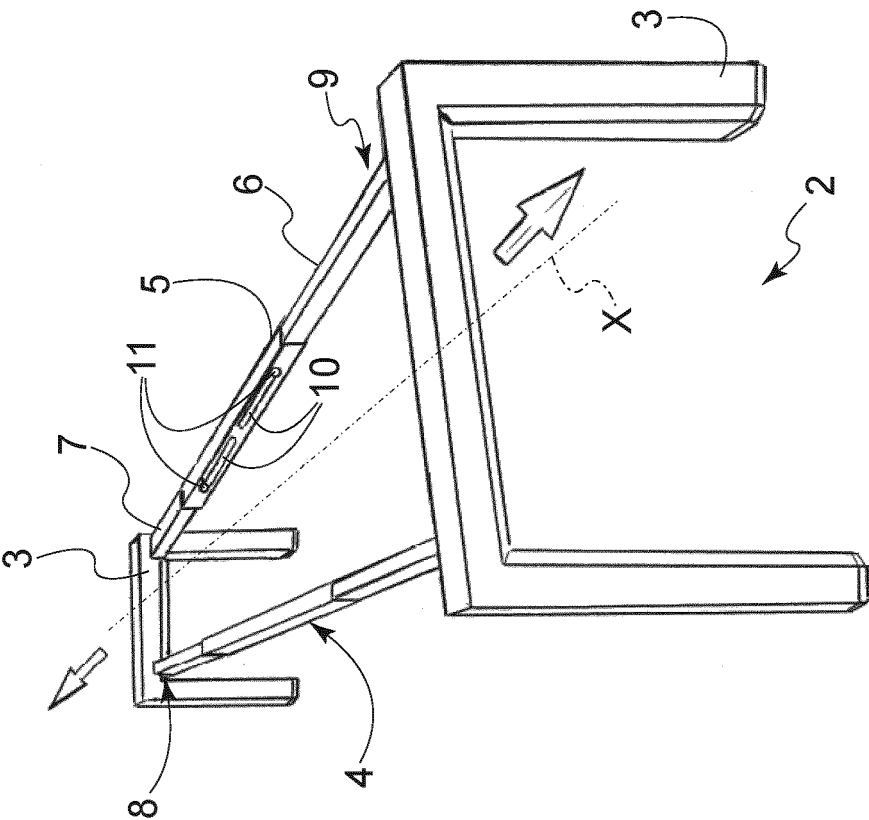


Fig. 2

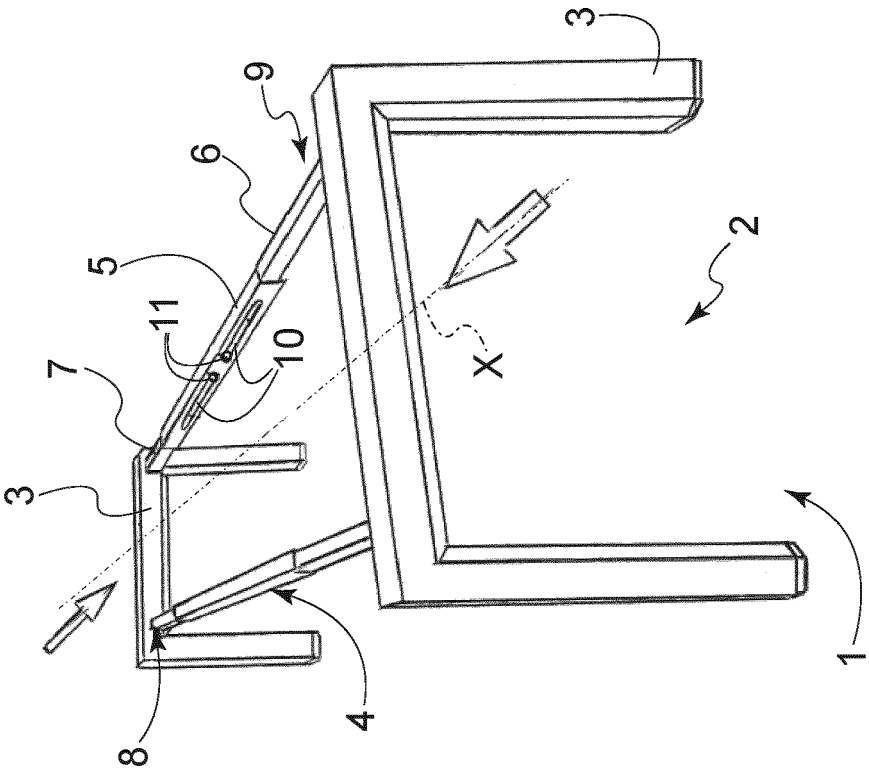


Fig. 1

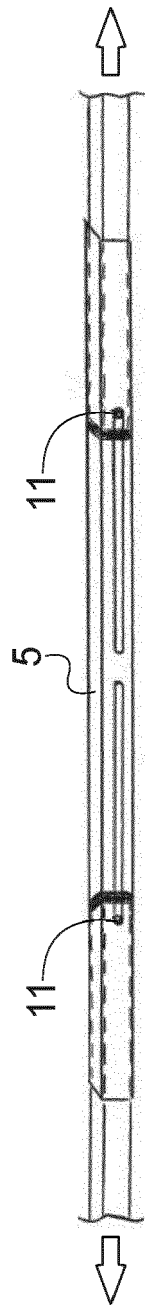


Fig. 5

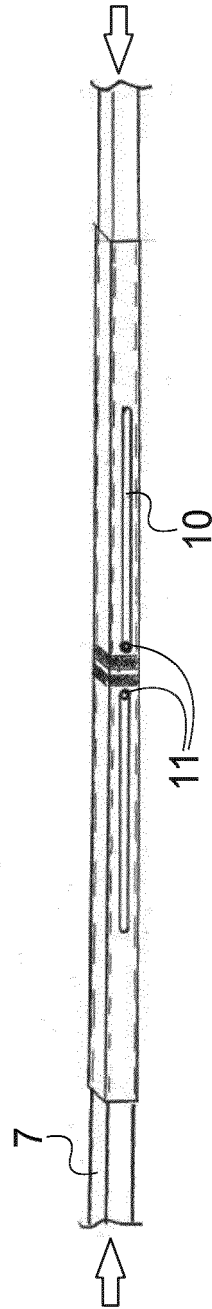


Fig. 4

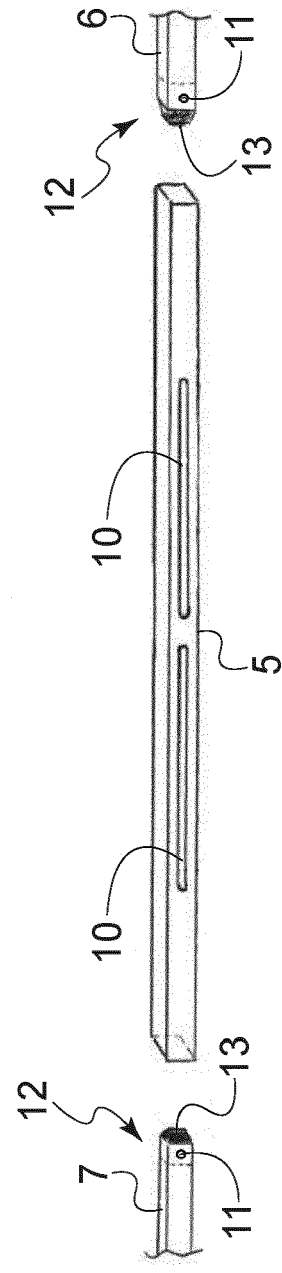


Fig. 3

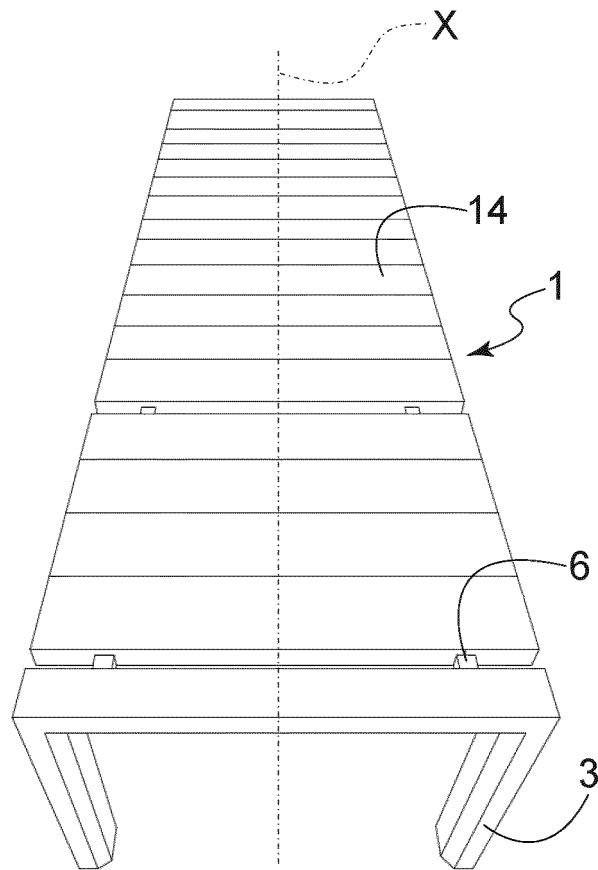


Fig. 6

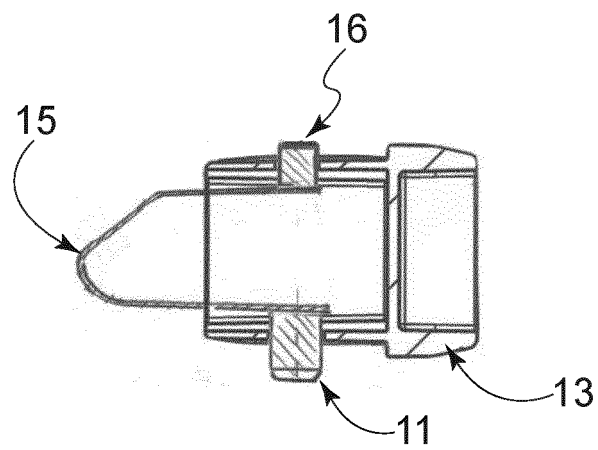


Fig. 7

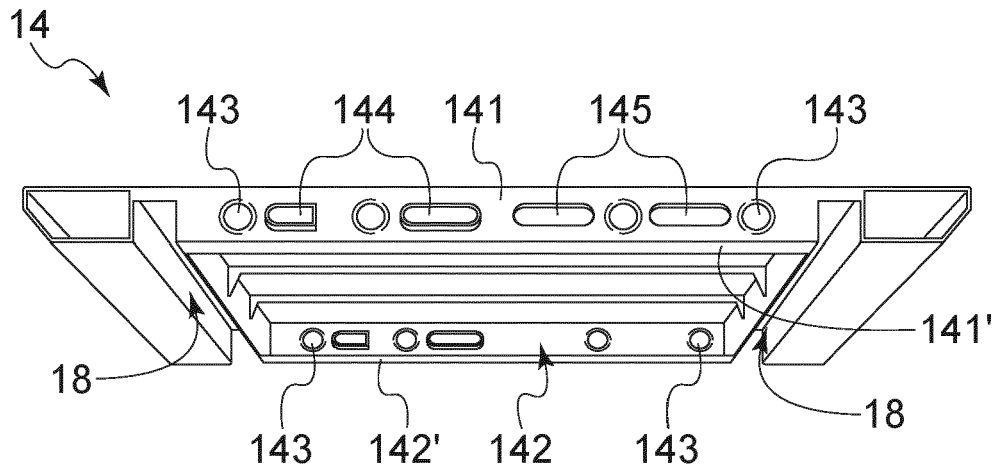


Fig. 8

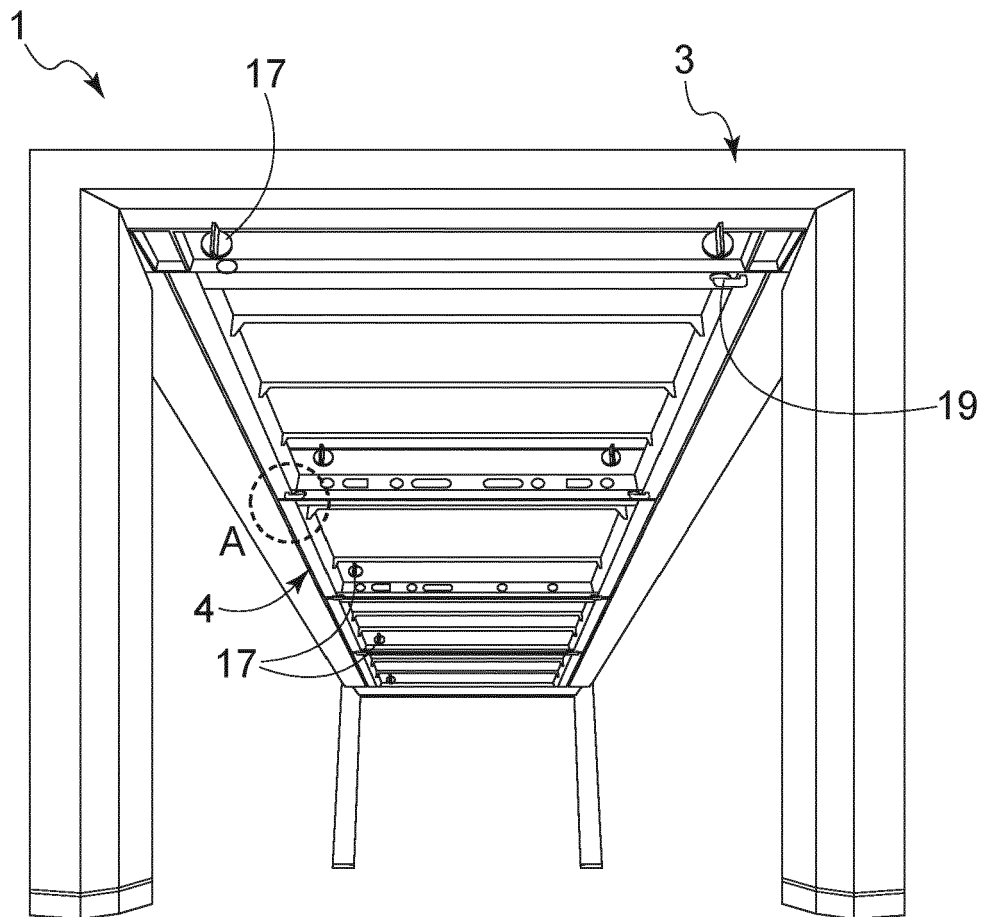
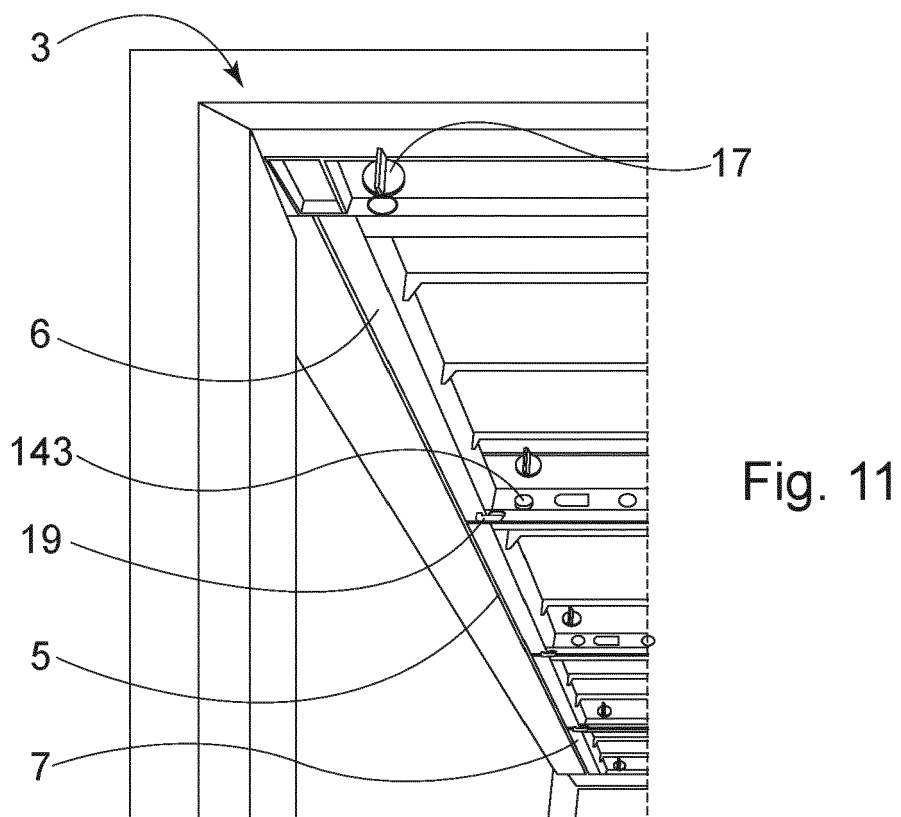
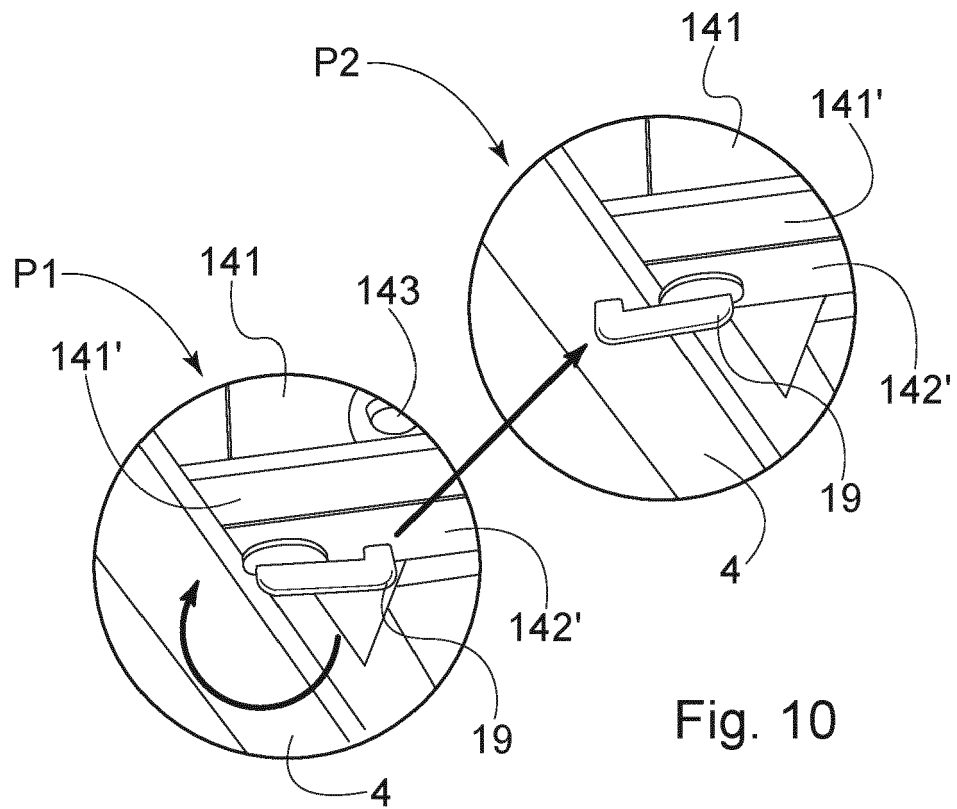


Fig. 9





EUROPEAN SEARCH REPORT

Application Number
EP 21 18 8449

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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Place of search The Hague		Date of completion of the search 25 November 2021	Examiner Kohler, Pierre
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