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(71) Applicant: **Holding Stamhuis B.V.**
3542 AX Utrecht (NL)

(72) Inventor: **Stamhuis, Hendrik**
1231 LJ Loosdrecht (NL)

(74) Representative: **EP&C**
P.O. Box 3241
2280 GE Rijswijk (NL)

(54) **Method for preassembling and placing of shelving units, and assembly of interconnected shelving units**

(57) A method for setting up shelving units 15 in a department store, comprising the step of preassembling said shelving units such that free-standing adjustable units are obtained each having a pair of vertical supporting pillars 1, forwardly projecting foot organs 2, one or more cross-connection elements, in particular back panel elements 8, extending in between the pillars, forwardly projecting supporting brackets 12, and shelves 14 extending in between the brackets. Subsequently at least two of such preassembled shelving units are transported by the piece to the department store, and are placed there side by side on a floor with a right one of the pair of supporting pillars of a first shelving unit and a left one of the pair of supporting pillars of a second shelving unit standing against each other and getting releasably connected with each other by means of one or more pillar coupling organs 18.

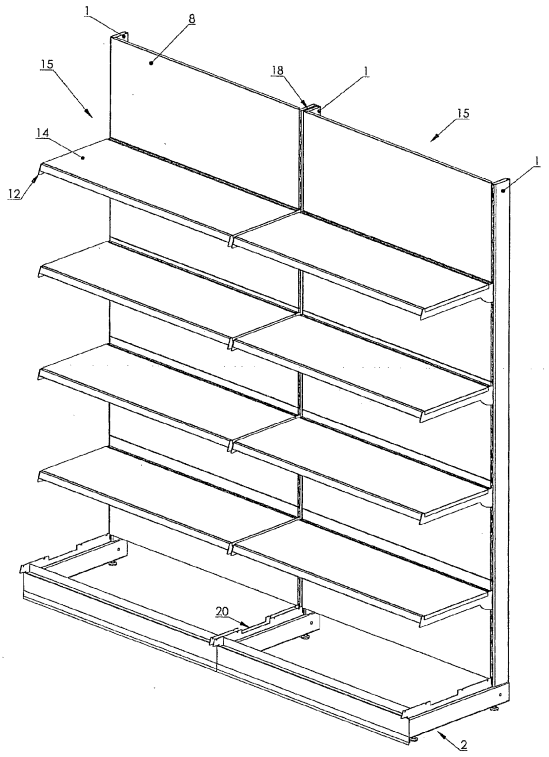

Fig. 2

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Description

[0001] The invention relates to the field of free-standing adjustable shelving units for departments stores on the shelves of which all kinds of articles can be displayed, stored and/or offered for sale. With free standing it is meant that such shelving units are able to stand upon a floor all by themselves with merely a set of pillars and/or forwardly projecting foot organs provided at or near lower ends of such pillars, without needing additional support from for example a wall or the like. With adjustable it is meant that the shelves can be supported upon forwardly projecting brackets which can be releasably coupled at various heights to the pillars. Such free-standing adjustable shelving units are commonly available and known in many variants.

[0002] For example EP-0 873 703 shows a free-standing adjustable shelving unit known in the field under the branch name "Tegometall". This shelving unit comprises a pair of supporting pillars made out of rectangular hollow metal profiles of which front walls are perforated with a double row of slots. The pillars extend in the vertical direction and are positioned interspaced from each other in a sideways direction at a distance of approximately 1 m. At or near lower ends of the two pillars, height adjustable foot organs are provided which are releasably hooked with suitably shaped hook organs in respective ones of the lowermost slots and which project in a forward direction. In between the two pillars a number of back panel elements are releasably hooked with suitable hook organs in respective ones of the slots. The back panel elements are positioned one above the other, extend in the vertical direction and together form a substantially closed rear wall. Brackets are releasably hooked at a plurality of heights into respective ones of the slots. Those brackets project in a forward direction. Shelves are releasably hooked with their outer ends over each pair of levelled brackets and extend in the horizontal direction. The back panel elements, brackets and shelves are all made out of suitably bent metal plate material.

[0003] When it is desired to place this shelving unit at the floor of a department store, then firstly the pillars, foot organs, back panel elements, brackets and shelves are transported disassembled towards the department store. Subsequently the shelving unit is assembled there on site, that is to say directly there upon the floor where it is aimed to be standing. Depending on available lengths inside the department store, the shelving unit can be expanded in both sideways directions with additional sets of pillars, back panel elements, brackets and shelves. Since the slots of each pillar are designed to support two respective sets of back panel elements and brackets side by side, each pillar is able to support back panel elements and shelves extending from the pillar in opposite sideways directions. For this the slots in this particular case are made as H-shaped slots. Each vertical slot leg is able to take up both a hook organ of a back panel element and a hook organ of a bracket side by side. Thus, if necessary, a total of two sets of hook organs can be releasably coupled into the left and right vertical slot legs of each H-shaped slot. With this the H-shape of each slot as it were connects a pair of elongated vertically orientated slots with each other, which makes it possible to only perform one cutting operation per slot. Since the vertical slot legs of each H-shaped slot are interspaced, a fixed distance is being formed in between left and right sets of hook organs. This is necessary in order to be able to guarantee that precisely sufficient clearance is left free between two adjacent brackets in order for being able to releasably hook the shelves with their outer ends over the brackets without leaving a clearance between the adjacent levelled shelves. It is noted that each foot organ is provided with a double set of hook organs which are releasably hooked into both the left and right vertical slot legs of their respective ones of the H-shaped slots. This provides stability in the sideways direction for the foot organ relative to their pillar.

[0004] A disadvantage with this known type of shelving unit is that it is only possible to preassemble a single shelving unit and that it is not possible to already expand this during preassembling. An expanded set simply would become too big to get it transported. This makes it necessary to perform the expanding operation of a single shelving unit at the floor of a department store. In the alternative one can also try to preassemble a number of such single shelving units, transport those by the piece towards the department store and there position them interspaced at very precise distances from each other at the floor such that a set of intermediate back panel elements, brackets and shelves can be hooked between them. Such a precise interspaced positioning however is difficult and time-consuming. Furthermore, the coupling of the intermediate components in between them still requires a substantial amount of assembling work to be done at the department store, for which the time, space and personnel are not always available. Also the intermediate components then need to be transported separately towards the store, which also requires time, space and personnel.

[0005] Instead of using pillars with a double row of vertical slot legs forming part of H-shaped slots, it is also known to use pillars with other shapes, forms and dimensions of mounting openings for foot organs, back panel elements and brackets. For example it is also known to provide the pillars with a pair of distinctive rows of vertically orientated rectangular slots. See WO 2006/032222 in which vertically orientated rectangular slots are provided in pairs which have been separated by means of a forwardly projecting web. Each row then is intended to be used for a distinctive set of brackets for supporting shelves extending in both sideways directions.

[0006] A disadvantage here also is that it is not possible to preassemble a large expanded shelving unit at another location and then transport it to a store.

[0007] Another type of known free-standing adjustable shelving unit, which is known from for example US

3,484,810, has two pillars with brackets mounted at certain heights, of which the pillars and brackets are positioned at one quarter and three quarters along the length of shelves supported upon the brackets. Thus the shelves project sideways in opposite directions with quarters of their lengths past by the pillars and extend with the remainder of their length in between the pair of pillars. Each of those pillars comprises a single row of vertically orientated rectangular slots for the brackets to be releasably coupled thereto. This type of shelving unit can be preassembled at a certain location and then be transported towards a store. If a larger length of floor space needs to be covered, then it is possible to preassemble a plurality of those shelving units, transport them towards the store and there place them side by side on the floor.

[0008] A disadvantage here however is that no back panel elements are provided but merely a cross of hinged connection organs. Even if one would try to replace those connection organs by back panel elements or if one were to try to mount back panel elements in front or behind those connection organs, then this would only be possible during preassembling for those back panel elements which come to extend in between the pillars of each unit. A number of back panel elements, that is to say those ones which need to come to extend in between pillars of two adjacent units, then still would need to be mounted to the shelving units after they were positioned at their aimed location on the floor of the store. This is a difficult and time-consuming operation. For example the sideways projecting shelf quarters stand in the way and need to be dismantled. Also an accurate positioning of the units is required for the back panel elements to fit in. Another disadvantage is that this type of shelving unit is not compatible with the "Tegometall"-type of shelving unit. This is particularly disadvantageous since the "Tegometall"-type of shelving unit at present is widespread and one of the most used systems.

[0009] US 3,044,632 shows an assembly of two coupled shelving units. Each unit comprises a back panel element. Those back panel elements are formed by front and rear plates with end columns integrated at the vertical side edges thereof, and internally strengthened with cross braces. In the end columns brackets can be hooked on top of which shelves can be laid. A first one of this shelving unit can be assembled together on site, after which a subsequent second one of this shelving unit can be assembled against it. For this a common intermediate foot organ is first hooked to a lower side of a back panel element of the first unit. After that a lower side of a back panel element of the second unit can be hooked to the same common intermediate foot organ. After that the panel elements of both units can be hooked together by means of a clip and the other components of the second unit can be mounted.

[0010] Thus this US 3,044,632 shows another example of an assembly of shelving units which is destined to be assembled on site after having been transported thereto in a disassembled state. For example the use of the intermediate foot organ makes it necessary to perform an expanding operation of the first one of the shelving units with the second one after the first one has already been fully assembled. This expanding operation is a heavy and difficult operation since the coupling of the intermediate foot organ to both of the adjacent pillars requires some skill including a partial lifting of the first shelving unit and the back panel element of the second shelving unit in order to be able to hook them to the intermediate foot organ.

[0011] Another example of an assembly of coupled shelving units is shown in US 2,739,777. This shelving unit has pillars with U-shaped profiles welded to the sides thereof for sliding side edges of back panel elements therein. In order to prevent the pillars from moving away from each other which would lead to the back panel elements falling out of the U-shaped profiles, the pillars are kept distanced by means of spacer bars. Those spacer bars at the same time serve the purpose of connecting two pillars of the first and second shelving units together. For this the spacer bars are to get hooked through two aligned hooking openings in the pillars in such a way that they keep them locked together.

[0012] Thus this US 2,739,777 also relates to an assembly of shelving units which is destined to be assembled on site after having been transported thereto in a disassembled state. It is necessary to first assemble the first shelving unit and then perform an expanding operation of this first shelving unit with the individual components of the second shelving unit. A preassembling of both shelving units, transport those by the piece towards a department store and there position them next to each other at the floor while having the spacer bars couple them together, is not possible. This is because this would require a simultaneous lifting up of a no less than four of the spacer bars such that they are able to also get hooked into the corresponding hooking openings of the adjacent pillar, while at the same time the units would then have to be moved towards each other in the sideways direction.

[0013] The present invention aims to overcome the abovementioned disadvantages at least partly or to provide a usable alternative. In particular the invention aims to provide a user-friendly shelving unit of the free-standing and adjustable type which is compatible with shelving units of the "Tegometall" type, and which makes it possible to quickly and efficiently be able to preassemble, transport and set up those shelving units in a department store.

[0014] This aim is achieved by means of a method for setting up shelving units in a department store according to claim 1. The method comprises the step of preassembling free-standing adjustable shelving units which each have a pair of interspaced vertical supporting pillars, forwardly projecting foot organs, cross-connection elements extending in between the pillars, forwardly projecting supporting brackets, and shelves extending in between the brackets. Preferably but not necessarily back

panel elements are used as cross-connection elements. Simple cross-bars or the like can also be used as cross-connection elements. Subsequently the preassembled shelving units are transported by the piece to a department store, where at least two of such preassembled shelving units are placed side by side on a floor of the department store in such a way that a right one of the pair of supporting pillars of a first shelving unit and a left one of the pair of supporting pillars of a second shelving unit come to stand against each other. Then those left and right ones of the pairs of supporting pillars are connected with each other by means of one or more pillar coupling organs.

[0015] This method offers the big advantage that the only mounting step which needs to be taken at the floor of the department store itself is to place the pillar coupling organs in between the abutting pillars. This is an easy step which does not require specific skills and which can be performed rather quickly. Another advantage is that now for the first time it is possible to start to fully preassemble, transport and set up shelving units already having back panel elements as cross-connection elements extending over the entire length of the units and with pillars positioned truly at the outer ends of the units instead of at intermediate positions. Also the positioning of the units relative to each other on the floor has become simple. The separately transported units only need to be placed with two pillars coming to stand abutting against each other. A certain specific interspacing between two units is no longer required, nor is it required to couple cross-connection elements, back panel elements, brackets and/or shelves in the store in between two pre-assembled units. The main action that needs to be taken at the store is to connect the units with each other. For this relative cheap, simple and compact pillar coupling organs can be used.

[0016] A store can now very quickly be furnished with shelving units. If desired even the pricing labels and other display or advertising material can already be put upon the shelves and back panel elements during preassembling thereof. For example the front edge of the shelves under the articles to be placed there upon may be used to display the name, product number, pricing, and other information about the articles. Inside the store one only has to connect the respective units with each other and put articles on the shelves.

[0017] In an advantageous embodiment shelving units are preassembled and transported by the piece which have lengths in the sideways direction of between 0.5-2 meter, in particular substantially 1 meter. This can be obtained by using cross-connection elements, like the mentioned back panel elements, and shelves, which have lengths in the sideways direction of between 0.5-2 meter, in particular substantially 1 meter. This medium length of the unit makes it possible to easily transport it over the road by means of a truck towards a store and there move it towards an aimed floor location without having difficulties in passing through small spaces like corridors and door openings.

[0018] In a preferred embodiment at least one of the pillar coupling organs acts upon upper ends of the two adjacent pillars. This provides stability for the assembly of units and is an easily reachable place for a workman. In a preferred embodiment the pillars are formed by hollow profiles such that U-shaped connection organs can be placed with two leg portions inside adjacent upper ends of the hollow profiles.

[0019] In addition or in the alternative it is also possible to have at least one foot coupling organ act upon adjacent foot organs, in particular by means of U-shaped connection organs having two legs gripping over wall parts of the foot organs. This provides sideways stability, locally for the foot organs, and in o broader perspective for the assembly of units. Also the foot organs are easily reachable for a workman.

[0020] The pillar coupling organ and/or the foot coupling organ may comprise a spring clamp, in particular a steel spring clamp. This offers some flexibility during mounting and can easily be taken away again when it is desired to reposition or disassemble one or more of the shelving units.

[0021] In a further embodiment a filling strip is placed in between each pair of adjacent and levelled shelves of connected units. This filling strip has a length which is substantially equal to the width or depth of the shelves. Advantageously the filling strip is able to fill up a gap which may remain between adjacent shelves. Thus the strip enlarges the available shelving area and prevents small articles, dust and the like to accumulate in between the shelves which otherwise could easily form infection hazards there.

[0022] Preferably the filling strip is made out of the same material as the shelves, in particular out of metal plate material. In a variant other materials can also be used for the strips like plastic. The strips preferably have a width which lies between 15-30mm, in particular approximately 23mm.

[0023] In a preferred embodiment the invention is used with specifically designed pillars. Those supporting pillars are then designed to releasably couple the cross-connection elements, brackets and shelves of solely one respective shelving unit thereto. For this those specifically designed pillars each have a single row of mounting means positioned one beneath the other. The mounting positions of each supporting pillar are then designed to releasably couple the cross-connection elements, brackets and shelves of solely one respective shelving unit thereto.

[0024] The supporting pillars can be made out of various materials, can have all kinds of cross-sections, and can be made massif or hollow. Preferably each supporting pillar is made out of a substantially rectangular hollow profile, in particular made out of metal, wherein a front wall of each hollow profile is perforated with a single row of vertically orientated elongated slots as mounting means. Thus it is possible keep the specifically designed

pillar compatible with present shelving unit systems and to even re-use various components which already may be in the possession of a client, for example "Tegometall" type of back panel elements, brackets and shelves. By using this specifically designed type of pillar, the gaps arising in between pairs of adjacent levelled shelves can be kept relative small. Furthermore the specifically designed type of pillar can be kept slender and lightweight since it no longer has to be able to support two distinctive sets of back panel elements, brackets and shelves.

[0025] In a variant the invention can also be used for already existing types of shelving units having pillars with doubly-purposed slots perforated in hollow profiles thereof, like the ones of "Tegometall". By fully pre-assembling those already existing types of shelving units, then transporting them to a store and there place them side by side with a right one of the supporting pillars of a first shelving unit and a left one of the supporting pillars of a second shelving unit standing against each other, it is also possible to releasably connect those left and right ones of the supporting pillars with each other by means of one or more pillar coupling organs. In this case however a relative broad filling strip is needed to fill up the gap which arises in between pairs of adjacent levelled shelves.

[0026] The foot organs can form an integral part of the pillars or be fixedly or releasably connected to the pillars. For example the foot organs can be releasably coupled to same mounting means provided on the pillars for mounting the cross-connection elements, back panel elements and brackets to. In the alternative the pillar can also be coupled with a lower end to a complementary coupling part of the foot organ, for example by means of insertion.

[0027] During the steps of transporting and/or placing of the shelving units on the floor of the department store, they can advantageously be lifted up by lifting means which are designed to act on the pillars and/or foot organs. For this special measures need to be taken in order to prevent the individual preassembled units to partly fall apart or get damaged.

[0028] In an embodiment the lifting means are formed by a specially designed lifting frame which for example can be slid underneath the preassembled unit while intergripping with complementary lifting organs which have been provided on lower ends of the pillars. For example those lifting organs can be formed by insertion braces provided at the pillars, in particular at lower ends thereof, while projecting inwards in the sideways direction towards the other pillar of the unit. The lifting means then can comprise insertion parts which are able to project into the braces such that the unit gets to be reliably held during picking up and placing.

[0029] Those braces for example can be releasably connected to the pillar organs, in particular by being hooked with upwardly projecting hook parts in slots of the pillars. This upwards orientation of the hook parts has the advantage that an upwards lifting force exerted upon the braces then shall not lead to the braces getting decoupled from the pillars. In the alternative the braces can also be fixedly connected to the pillars or integrally formed therewith.

[0030] In the alternative or in addition thereto each foot organ can be fixedly connected, in particular welded, or integrally formed to its respective pillar. In contrast to known releasable foot organs this has the great advantage that the lifting means then are also able to exert an upwards lifting force on the foot organs during a lifting operation, without running the risk of the foot organs getting deformed or loosened from the pillars.

[0031] During the steps of transporting and/or placing the shelving units on the floor of the department store, the brackets and/or shelves can advantageously be temporarily fixated relative to their respective pillars by means of releasable fixation organs. This helps to prevent that the brackets and/or shelves may accidentally get loose from their mounting points during the steps of transport and placing. Preferably those fixation organs are designed such that can easily be inserted, in particular with a snap connection, into respective ones of slots provided in the pillars right above the mounting positions with the brackets and/or shelves.

[0032] The invention also relates to a specifically designed U-shaped cove which can be coupled releasably to respective ones of the mounting positions on the pillars of the units. According to the inventive thought this cove is a foldable cove with hinge means between corner sections of the three main legs of its U-shape. The foldability of the cove has the advantage that it can be led through a printer and thus directly be provided with a text/logo/colouring instead of having to bring this on to the cove later on in a traditional manner like with carton plates or plastic frames or the like. Also the foldability of the cove makes it possible to have it shipped in a flat state. This may save a lot of transportation space.

[0033] In a further embodiment the cove is made out of a composite flat panel, in particular a sandwich panel comprising a plastic core and two or more outer sheets.

[0034] In a further embodiment the hinge means are formed by film hinges. In the case of using a composite panel, those film hinges preferably are made out of a flexible one of the layers, for example the plastic core, while the other layer(s)/outer sheets are cut through.

[0035] The above described embodiments with the specific lifting organs provided on the pillars, the fixation organs for fixation of the brackets and/or shelves, as well as the foldable cove can not only be advantageously used in combination with a setting up of preassembled individual shelving units which after placing are to be coupled with each other. They can also be used when it is desired to set up one or more shelving units which do not (immediately) need to be coupled with other ones.

[0036] Further advantageous embodiments are stated in the dependent subclaims.

[0037] The invention also relates to an assembly of two shelving units of a free-standing adjustable type, and to a pillar, a filling strip and a connection organ for use in

such an assembly, as well as to lifting organs, fixation organs and a foldable cove for use in such an assembly or individual shelving unit.

[0038] The invention shall be explained in more detail below with reference to the accompanying drawings, in which:

Fig. 1a-e schematically shows the steps of preassembling one single shelving unit according to the invention;
Fig. 2 schematically shows the placing and interconnecting of two of the shelving units of fig. 1e side by side on a floor;
Fig. 3 schematically shows an enlarged view of the connecting of the pillars of the shelving units of fig. 2;
Fig. 4 schematically shows an enlarged view of the connecting of the foot organs of the shelving units of fig. 2;
Fig. 5 schematically shows the placing of bottom edge plates, bottom shelves, filling strips and upper edge plates;
Fig. 6 shows an enlarged view of fig. 5;
Fig. 7 shows an enlarged view of the filling strip of fig. 5;
Fig. 8a-b shows a variant of a lower part of a preassembled shelving unit with a lifting brace connected thereto;
Fig. 9 shows a traditional lift truck with a specifically designed lifting frame for lifting up a preassembled shelving unit;
Fig. 10 shows a side view of fig. 8b with part of the lifting frame inserted into the brace;
Fig. 11 shows a schematic view of one of the pillars with brackets hooked in slots and with fixation organs ready to be inserted in those same slots; and
Fig. 12 shows a preassembled shelving unit with a foldable cove connected thereto.

[0039] In fig. 1a a pair of interspaced L-shaped supporting organs are shown of which pillars been given the reference numeral 1 and of which foot organs have been given the reference numeral 2. The foot organs 2 are fixedly connected to the lower ends of the pillars 1, in particular by means of welding. The pillars 1 are placed upright and extend in the vertical direction. The foot organs 2 project forwardly in the horizontal direction. Each pillar 1 is formed by a hollow metal rectangular profile of which at least a front wall is perforated with a single row of rectangular slots 3. The pillar has a length L1 of between 1000-1500mm. The front and back wall of the pillar 1 has a width A of approximately 20mm, whereas the side walls of the pillar 1 have a width B of approximately 80mm. The slots 3 are vertically orientated and have their longitudinal axes extend in the vertical direction while each having a length Y of approximately 29mm. Further the slots 3 each have a width X of approximately 6mm. The slots 3 lie at intervals Z of approximately 50mm from each other.

[0040] The foot organs 2 are partly made out of the same metal hollow profile as the one which is used for the pillars 1. This hollow profile part 2' at its lower side is provided with height adjustable threaded feet 2" (see fig. 4) which can screwed to a bigger or lesser degree into complementary threaded openings in the profile 2'. At the upper side of the hollow profile 2' a mounting strip 2"' is mounted. This mounting strip 2"' is made out of steel plate material having a thickness of approximately 3mm. The upper sides of the mounting strips 2"' are provided with a number of small slits 5 and a large slit 6 of which the functions shall be explained later on. The foot organs 2 and mounting strips 2"' project forwardly with a length L2 of approximately 400-500mm relative to the pillars 1.

[0041] Fig. 1b shows that as a next step a number of back panel elements 8 are hooked into the slots 3. The back panel elements 8 have lengths L3 of approximately 1 m. The back panel elements 8 are made out of steel plate which at opposite edge sides is provided with backwardly bent hook organs.

[0042] Fig. 1c shows that as a next step a bottom shelf 10 is placed upon the foot organs 2. The bottom shelf 10 is made out of steel plate material and has downwardly bent circumferential side walls.

[0043] Fig. 1d shows that as a next step pairs of brackets 12 are hooked into the slots 3. The brackets 12 are made out of steel plate material which at one of their outer ends have pairs of hook organs. The hook organs of the brackets 12 fit into respective ones of the slots 3 in which hook organs of the back panel elements 8 are already seated. Together the hook organs fit side by side without too much play into these slots 3. That is to say the slots 3 have widths X which substantially correspond to the thicknesses of both hook organs added together.

[0044] Fig. 1e shows that as a next step shelves 14 are placed upon the brackets 12. The shelves 14 are made out of steel plate material and have downwardly bent circumferential side walls. Advantageously the bottom shelf 10 and the shelves 14 can be the same.

[0045] Thus a shelving unit 15 is obtained which is able to stand free upon a floor without needing further support, and of which the heights of the respective shelves 14 can easily be adjusted by taking out pairs of brackets 12 and hooking them into other ones of the slots 3.

[0046] A plurality of such shelving units 15 can be fully preassembled at a certain location, for example inside a factory, and then be transported separately by the piece towards another location, in particular a floor of a department store.

[0047] Fig. 2 shows that two of such units 15 have been placed side by side against each other. In this position at least parts of the adjacent pillars 1 and adjacent foot organs 2 abut against each other.

[0048] Fig. 2 and 3 shows that as a next step a U-shaped steel spring clamp 18 has been inserted from above into the adjacent hollows of the upper end parts of the pillars 1. With this the clamp 18 firmly presses the two pillars 1 against each other.

[0049] Fig. 2 and 4 shows that as a next step a U-shaped steel spring clamp 20 has been placed over the adjacent mounting strips 2"', and in particular at the position of the slits 6 thereof. For being able to do this, the bottom shelves 10 needed to be temporarily removed. With this the clamp 20 firmly clamps the two foot organs 2 against each other.

[0050] Owing to the clamping actions of the clamps 18 and 20, the units 15 are firmly connected with each other at lower and upper sides. If desired additional coupling organs may be provided which for example are positioned at lower levels along the adjacent pillars 1.

[0051] Fig. 5 shows that as a next step the bottom shelves 10 are put back in place again, and that bottom edge plates 22 are releasably placed between the floor and the bottom shelves 10 such that they close of the spaces underneath the bottom shelves 10 and in between the pairs of interspaced foot organs 2 of the units 15. Furthermore, upper edge plates 23 are releasably placed on top of the units 15 such that they close of the spaces behind the back panel elements 8 and in between the pairs of interspaced pillars 1 of the units 15.

[0052] More importantly fig. 5, and also fig. 6 in more detail, show that filling strips 25 are releasably placed in between each pair of shelves 10, 14. The filling strips 25 are made out of steel plate material which at its front end has a downwardly bent front wall 26, and which at its back end has two downwardly bent lips 27. Together the front wall 26 and the lips 27 make it possible to click the filling strip 25 in between the shelves 10, 14. Thus an assembly of two firmly interconnected shelving units 15 is obtained which is ready for use and which can be expanded in a similar manner with other preassembled shelving units as many times as is desired.

[0053] In fig. 8a and 8b a variant is shown of a lower part of a preassembled shelving unit in which a brace 30 is hooked with upwardly projecting hook parts 31 into a complementary set of slots which have been provided in a lower part of a side wall of the pillar 1. In the mounted position a lower insertion part 32 of the brace 30 gets positioned right next to the inner wall of the foot organ 2. In those fig. 8a and 8b it can also clearly be seen that the foot organ 2 is fixedly connected with the pillar 1.

[0054] In fig. 9 a substantially rectangular lifting frame 35 is shown which can be mounted on top of forks 36 of a conventional pallet truck 37. The frame 35 comprises insertion hooks 38 which can be hooked into the braces 30 of the preassembled shelving unit (see fig. 10). Furthermore the frame 35 is equipped with centration clamps 39 which are destined to lie against free end parts of the forwardly projecting foot organs 2 in a situation in which the lifting frame 35 has been slid underneath the shelving unit in between its two foot organs 2.

[0055] When it is desired to have a preassembled shelving unit picked up and placed elsewhere, then the forks 36 of the truck 37 together with the frame 35 can easily be rolled underneath the bottom shelve 10 of the unit until the insertion hooks are properly inserted into the braces 30. In this position the centration clamps 39 have come to lie against the free end parts of the foot organs 2. The truck 37 then can be operated to lift up the entire shelving unit by having its forks 36 pumped upwards. The pillars 1 and foot organs 2 then take along the other components of the shelving unit and gets to float freely above the floor. It then can easily be rolled towards another location, where it can be lowered again after which the frame can be removed from underneath the shelving unit. This particularly is useful during transportation of the preassembled unit for example by means of a truck over the road or the like from a factory where the shelving unit has been preassembled towards a department store where it needs to be placed.

[0056] In order to further improve such a transport of the shelving unit use can be made of fixation organs as shown in fig. 11. Such a fixation organ 40 comprises a gripping head 41 and a flexibly compressible connection part 42. The connection part 42 is dimensioned such that it is able to be inserted manually into and fill up a free upper part of one of the slots 3 into which one of the brackets 12 has already been hooked. The head 41 is dimensioned such that in the inserted position of the organ 40 it gets to lie above both the bracket 12 as well as above the shelve 14 placed on top of this bracket 12. Thus the bracket 12 and shelve 14 can be temporarily fixated to the pillar 1.

[0057] In fig. 11 it can also be seen that a similar type of fixation organ 40' can be used to temporarily fixate one of the back panel elements 8.This fixation organ 40' for this has been given a somewhat more slender connection part 42' such that it is able to fill up a free side part of one of the slots 3 into which one of the back panel elements 8 has already been hooked. The head 41' in this case gets to lie in front of the back panel element 8.

[0058] In fig. 12 the preassembled shelving unit is equipped with a foldable cove 45. The cove 45 is hooked into the slots 3 with suitably shaped hook organs and comprises two side legs 46 and a front leg 47. Between the legs 46, 47, film hinges 48 are provided. When the cove 45 is not hooked onto the pillars 1, it can be folded up for storage or transportation purposes. It is also possible to fold the cove 45 entirely open such that it can more easily be provided with a desired overprint. This type of foldable cove can be used in all kinds of shelving units, but advantageously can be used in the shown type of shelving units.

[0059] Besides the embodiment shown numerous variants are possible. For example the various components may be given other shapes and dimensions, and may be made out of other materials. The pillars may not only be equipped at their front walls with slots but also at their back walls. This makes it possible to mount brackets at both sides of the pillars and thus to provide shelves at both sides. Instead of releasably mounting the back panel elements into the slots provided in the front walls of the pillars, it is also possible to provide the side walls of the pillars with suitable mounting means with which the back

panel elements can be releasably coupled. The slots in the front walls then would be exclusive for the brackets to be hooked into them. The slots can also have other shapes and dimensions. Instead of slots it is also possible to provide other types of complementary mounting means between the pillars and the brackets. Instead of back panel elements forming a closed rear wall other types of panels can be releasably coupled to the pillars, for example ones with a plurality of openings for hanging articles or the like upon. Instead of using spring clamps other kinds of pillar coupling organs and/or foot coupling organs can be used, for example coupling pens or bolts which can be inserted into suitable openings provided in the pillars and/or foot organs.

[0060] Thus the invention provides an economic shelving system which can easily and efficiently be preassembled in compact and easy to handle units at a location elsewhere from the floor of a department store where an assembly of such units is needed. The various components of the inventive system can advantageously be designed such that they even can be made fully compatible with components of other shelving systems without having to be confronted with a lesser functionality or quality.

[0061] Embodiments of the invention can also be described by one or more of the following clauses:

1. Method for setting up shelving units in a department store, comprising the steps:

- preassembling said shelving units such that free-standing adjustable units are obtained each having a pair of vertical supporting pillars, forwardly projecting foot organs, one or more cross-connection elements, in particular back panel elements, extending in between the pillars, forwardly projecting supporting brackets, and shelves extending in between the brackets;
- transporting at least two of such preassembled shelving units by the piece to the department store; and
- placing the at least two preassembled shelving units side by side on a floor of the department store;

characterized by

placing the at least two preassembled shelving units side by side with a right one of the pair of supporting pillars of a first shelving unit and a left one of the pair of supporting pillars of a second shelving unit standing against each other, and

releasably connecting those left and right ones of the respective pairs of supporting pillars with each other by means of one or more pillar coupling organs.

2. Method according to clause 1, comprising the step of placing one of the pillar coupling organs inside adjacent upper ends of hollow profiles which form the left and right ones of the supporting pillars.

3. Method according to clause 1 or 2, comprising the step of placing the at least two preassembled shelving units side by side with a right one of the foot organs of the first shelving unit and a left one of the foot organs of the second shelving unit lying against each other, and

releasably connecting those left and right ones of the respective foot organs with each other by means of one or more foot coupling organs.

4. Method according to one of the preceding clauses, comprising the step of releasably placing a filling strip in between two adjacent shelves positioned at same heights of the respective connected shelving units.

5. Method according to one of the preceding clauses, comprising the step of using supporting pillars which are designed to releasably couple the cross-connection elements, brackets and shelves of solely one respective shelving unit thereto.

6. Method according to one of the preceding clauses, comprising the step of putting consumer information like pricing labels on the shelves during preassembling of the shelving units.

7. Method according to one of the preceding clauses, comprising the preassembling and subsequently transporting of respective shelving units having lengths in the sideways direction of substantially 1 meter.

8. Method according to one of the preceding clauses, wherein the step of preassembling said shelving units comprises:

- taking a pair of supporting pillars, each supporting pillar being made out of a substantially rectangular hollow profile, in which a supporting foot organ is provided at or near a lower end of the supporting pillar, which foot organ projects in a forward direction, and in which at least a front wall of each supporting pillar is perforated with a number of elongated slots provided at different heights;
- placing the pair of supporting pillars interspaced at a distance in a sideways direction from each other;
- coupling, in particular by means of hooking, one or more cross-connection elements, in particular back panel elements, releasably in respective ones of the slots of the pair of interspaced supporting pillars such that they extend in between them;
- coupling, in particular by means of hooking, at least a pair of supporting brackets releasably in respective ones of the slots of the pair of interspaced supporting pillars such that the brackets project in the forward direction from them; and
- coupling, in particular by means of hooking, a shelf releasably to the pair of brackets such that the shelf is carried by the brackets and extends with a longitudinal direction in between the brackets.

9. Method for setting up a shelving unit in a department store, in particular for use in a method according to one of the preceding clauses 1-8, comprising the steps:

- preassembling said shelving unit such that a free-standing adjustable unit is obtained having a pair of vertical supporting pillars, forwardly projecting foot organs, one or more cross-connection elements, in particular back panel elements, extending in between the pillars, forwardly projecting supporting brackets, and shelves extending in between the brackets;
- transporting the preassembled shelving unit to the department store; and
- placing the shelving unit on a floor of the department store,

characterized in that
the preassembled shelving unit, during the steps of transporting and/or placing it on a floor of the department store, is lifted up by means of lifting means acting on the pillars and/or foot organs.

10. Method according to at least the preamble of clause 9, wherein the supporting brackets and/or shelves of each preassembled shelving unit, during the steps of transporting and/or placing them on a floor of the department store, are fixated relative to the pillars by means of releasable fixation organs.

11. Assembly of two shelving units of a free-standing adjustable type comprising:

- a first and second pair of interspaced supporting pillars, each supporting pillar being equipped with a foot organ at or near a lower end of the supporting pillars, which foot organs project in a forward direction, and in which a front wall of each supporting pillar has a number of mounting positions provided at different heights;
- cross-connection elements, in particular back panel elements, coupled releasably to respective ones of the mounting positions and extending in a sideways direction in between each pair of interspaced supporting pillars;
- pairs of supporting brackets coupled releasably to respective ones of the mounting positions and projecting in a forward direction; and
- shelves coupled releasably to the pairs of supporting brackets and extending in between them,

characterized in that
a right one of the first pair of supporting pillars of a first one of the shelving units and a left one of the second pair of supporting pillars of a right one of the shelving units stand against each other and have been connected releasably with each other by means of one or more pillar coupling organs.

12. Assembly according to clause 11, wherein each pillar coupling organ comprises two leg portions which are placed inside upper ends of hollow profiles forming the supporting pillars.

13. Assembly according to clause 11 or 12, wherein a right one of the foot organs of the first shelving unit and a left one of the foot organs of the second shelving unit lie against each other and have been connected releasably with each other by means of one or more foot coupling organs.

14. Assembly according to clause 13, wherein each foot coupling organ comprises two leg portions which is placed over two adjacent foot organs.

15. Assembly according to one of the preceding clauses 11-14, wherein each pillar coupling organ and/or foot coupling organ comprises a spring clamp, in particular a steel spring clamp.

16. Assembly according to one of the preceding clauses 11-15, wherein a filling strip is releasably placed in between two adjacent and levelled shelves of respective shelving units.

17. Assembly according to one of the preceding clauses 11-16, wherein the mounting positions of each supporting pillar are formed by a single row of mounting means positioned one beneath the other.

18. Assembly according to clause 17, wherein the mounting positions of each supporting pillar are designed to releasably couple the cross-connection elements, brackets and shelves of solely one respective shelving unit thereto.

19. Assembly according to clauses 17 and 18, in which each supporting pillar is made out of a substantially rectangular hollow profile, and wherein a front wall of each hollow profile is perforated with a single row of elongated slots as mounting means.

20. Assembly according to one of the preceding clauses 11-19, wherein the brackets and outer ends of the shelves are provided with complementary shelf coupling means such that the shelves do not project outside their pair of interspaced supporting pillars of the respective shelving units in the sideways direction.

21. Assembly according to one of the preceding clauses 11-20, wherein the respective shelving units have lengths in the sideways direction of substantially 1 m.

22. A shelving unit of a free-standing adjustable type, in particular for use in an assembly according to one of the preceding clauses 11-21, comprising:

- a pair of interspaced supporting pillars, each supporting pillar being equipped with a foot organ at or near a lower end of the supporting pillars, which foot organs project in a forward direction, and in which a front wall of each supporting pillar has a number of mounting positions provided at different heights;
- cross-connection elements, in particular back

panel elements, coupled releasably to respective ones of the mounting positions and extending in a sideways direction in between each pair of interspaced supporting pillars;

- pairs of supporting brackets coupled releasably to respective ones of the mounting positions and projecting in a forward direction; and
- shelves coupled releasably to the pairs of supporting brackets and extending in between them,

characterized in that

the pillars are equipped with lifting organs for coupling with lifting means during steps of transporting and/or placing them on a floor of the department store.

23. A shelving unit according to clause 22, wherein the lifting organs are formed by braces provided at lower ends of the pillars and projecting in the direction of the other pillar.

24. A shelving unit according to clause 23, wherein the braces are releasably connected to the pillar organs, in particular by being hooked with upwardly projecting hook parts in slots of the pillars.

25. A shelving unit according to one of the preceding clauses 22-24, wherein each foot organ is fixedly connected, in particular welded, to its respective pillar, such that lifting means are able to act on the foot organs during a lifting action.

26. A shelving unit according to at least the preamble of clause 22, wherein the supporting brackets and/or shelves are fixated relative to the pillars by means of releasable fixation organs.

27. A shelving unit according to clause 26, in which at least a front wall of each supporting pillar is perforated with a number of elongated slots provided at different heights, and in which the supporting brackets are coupled, in particular by means of hooking, releasably in respective ones of the slots of the pair of interspaced supporting pillars such that the brackets project in the forward direction from them,

wherein the fixation organs comprise an insertion part which has been inserted, in particular with a snap connection, into the respective ones of the slots.

28. A shelving unit according to at least the preamble of 22, in which a U-shaped cove has been coupled releasably to respective ones of the mounting positions and projecting in a forward direction,

wherein the cove is a foldable cove with hinge means at corner sections of its U-shape.

29. A shelving unit according to clause 28, wherein the cove is made out of a composite flat panel, in particular a sandwich panel comprising a plastic core and two outer sheets.

30. A shelving unit according to clause 28 or 29, wherein the hinge means are formed by film hinges.

31. Supporting pillar for use in a method or assembly according to one of the preceding clauses.

32. Filling strip for use in a method or assembly according to one of the preceding clauses.

33. Pillar coupling organ for use in a method or assembly according to one of the preceding clauses.

34. Lifting organs for use in a method, assembly or unit according to one of the preceding clauses.

35. Fixation organs for use in a method, assembly or unit according to one of the preceding clauses.

36. Foldable cove for use in a method, assembly or unit according to one of the preceding clauses.

Claims

1. Method for setting up shelving units in a department store, comprising the steps:

- preassembling said shelving units such that free-standing adjustable units are obtained each having a pair of vertical supporting pillars, forwardly projecting foot organs, one or more cross-connection elements, in particular back panel elements, extending in between the pillars, forwardly projecting supporting brackets, and shelves extending in between the brackets;
- transporting at least two of such preassembled shelving units by the piece to the department store; and
- placing the at least two preassembled shelving units side by side on a floor of the department store;

characterized by

placing the at least two preassembled shelving units side by side with a right one of the pair of supporting pillars of a first shelving unit and a left one of the pair of supporting pillars of a second shelving unit standing against each other, and

releasably connecting those left and right ones of the respective pairs of supporting pillars with each other by means of one or more pillar coupling organs.

2. Method according to claim 1, comprising the step of placing the at least two preassembled shelving units side by side with a right one of the foot organs of the first shelving unit and a left one of the foot organs of the second shelving unit lying against each other, and

releasably connecting those left and right ones of the respective foot organs with each other by means of one or more foot coupling organs.

3. Method according to one of the preceding claims, comprising the step of releasably placing a filling strip in between two adjacent shelves positioned at same heights of the respective connected shelving units.

4. Method for setting up a shelving unit in a department store, in particular for use in a method according to one of the preceding claims 1-3, comprising the steps:

- preassembling said shelving unit such that a free-standing adjustable unit is obtained having a pair of vertical supporting pillars, forwardly projecting foot organs, one or more cross-connection elements, in particular back panel elements, extending in between the pillars, forwardly projecting supporting brackets, and shelves extending in between the brackets;
- transporting the preassembled shelving unit to the department store; and
- placing the shelving unit on a floor of the department store,

characterized in that

the preassembled shelving unit, during the steps of transporting and/or placing it on a floor of the department store, is lifted up by means of lifting means acting on the pillars and/or foot organs.

5. Method according to at least the preamble of claim 4, wherein the supporting brackets and/or shelves of each preassembled shelving unit, during the steps of transporting and/or placing them on a floor of the department store, are fixated relative to the pillars by means of releasable fixation organs.

6. Assembly of two shelving units of a free-standing adjustable type comprising:

- a first and second pair of interspaced supporting pillars, each supporting pillar being equipped with a foot organ at or near a lower end of the supporting pillars, which foot organs project in a forward direction, and in which a front wall of each supporting pillar has a number of mounting positions provided at different heights;
- cross-connection elements, in particular back panel elements, coupled releasably to respective ones of the mounting positions and extending in a sideways direction in between each pair of interspaced supporting pillars;
- pairs of supporting brackets coupled releasably to respective ones of the mounting positions and projecting in a forward direction; and
- shelves coupled releasably to the pairs of supporting brackets and extending in between them,

characterized in that

a right one of the first pair of supporting pillars of a first one of the shelving units and a left one of the second pair of supporting pillars of a right one of the shelving units stand against each other and have been connected releasably with each other by means of one or more pillar coupling organs.

7. Assembly according to claim 6, wherein a right one of the foot organs of the first shelving unit and a left one of the foot organs of the second shelving unit lie against each other and have been connected releasably with each other by means of one or more foot coupling organs.

8. Assembly according to one of the preceding claims 6-7, wherein a filling strip is releasably placed in between two adjacent and levelled shelves of respective shelving units.

9. A shelving unit of a free-standing adjustable type, in particular for use in an assembly according to one of the preceding claims 6-8, comprising:

- a pair of interspaced supporting pillars, each supporting pillar being equipped with a foot organ at or near a lower end of the supporting pillars, which foot organs project in a forward direction, and in which a front wall of each supporting pillar has a number of mounting positions provided at different heights;
- cross-connection elements, in particular back panel elements, coupled releasably to respective ones of the mounting positions and extending in a sideways direction in between each pair of interspaced supporting pillars;
- pairs of supporting brackets coupled releasably to respective ones of the mounting positions and projecting in a forward direction; and
- shelves coupled releasably to the pairs of supporting brackets and extending in between them,

characterized in that

the pillars are equipped with lifting organs for coupling with lifting means during steps of transporting and/or placing them on a floor of the department store, wherein in particular the lifting organs are formed by braces provided at lower ends of the pillars and projecting in the direction of the other pillar.

10. A shelving unit according to claim 9, wherein each foot organ is fixedly connected, in particular welded, to its respective pillar, such that lifting means are able to act on the foot organs during a lifting action.

11. A shelving unit according to at least the preamble of claim 9, wherein the supporting brackets and/or shelves are fixated relative to the pillars by means of releasable fixation organs.

12. A shelving unit according to claim 11, in which at least a front wall of each supporting pillar is perforated with a number of elongated slots provided at

different heights, and in which the supporting brackets are coupled, in particular by means of hooking, releasably in respective ones of the slots of the pair of interspaced supporting pillars such that the brackets project in the forward direction from them,
wherein the fixation organs comprise an insertion part which has been inserted, in particular with a snap connection, into the respective ones of the slots.

13. A shelving unit according to at least the preamble of 9, in which a U-shaped cove has been coupled releasably to respective ones of the mounting positions and projecting in a forward direction,
wherein the cove is a foldable cove with hinge means at corner sections of its U-shape.

14. A shelving unit according to claim 13, wherein the cove is made out of a composite flat panel, in particular a sandwich panel comprising a plastic core and two outer sheets, and/or wherein the hinge means are formed by film hinges.

15. Supporting pillar, filling strip, pillar coupling organ, lifting organ, fixation organ and/or foldable cove for use in a method, assembly or unit according to one of the preceding claims.

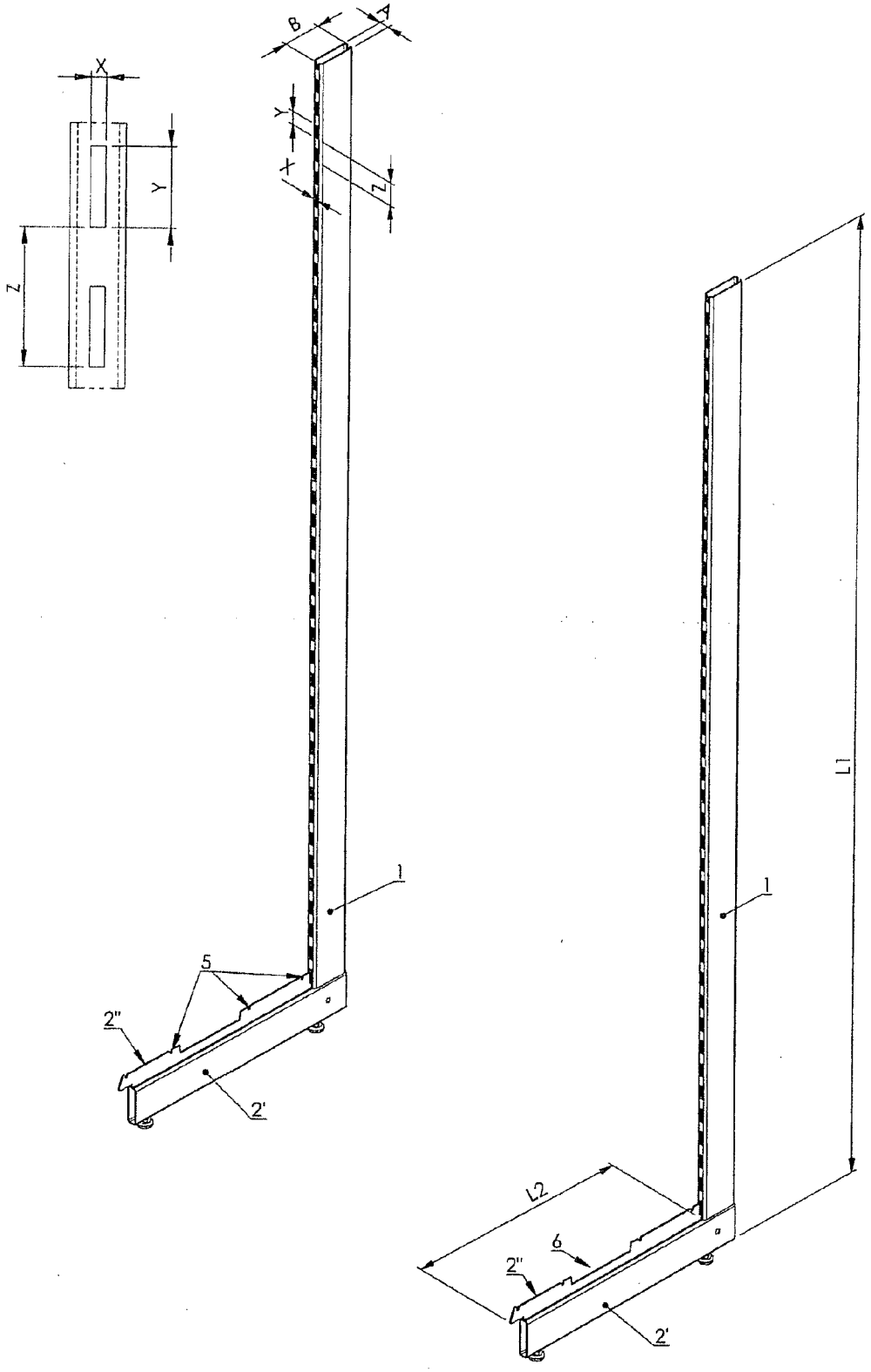


Fig. 1A

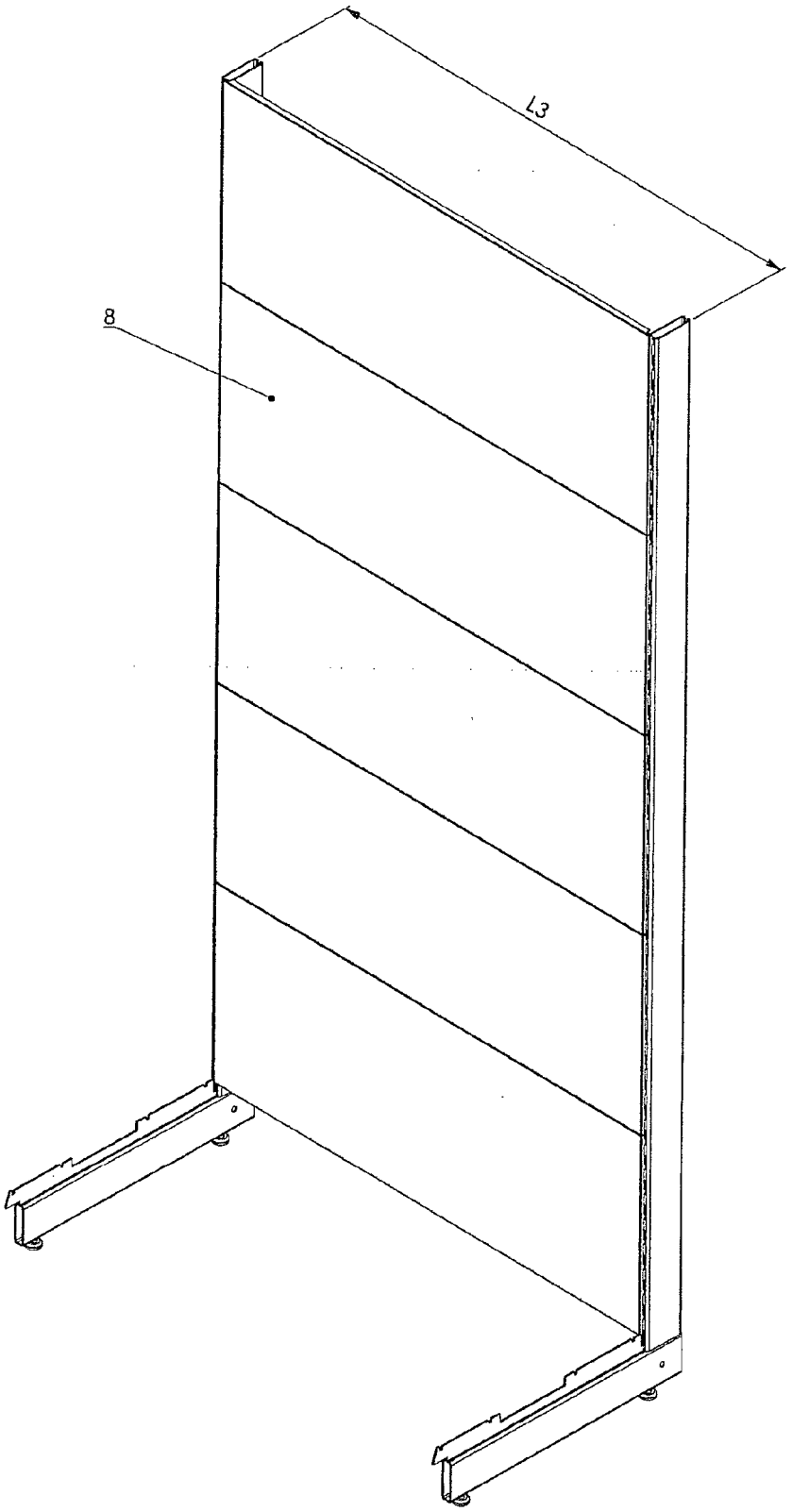


Fig. 1B

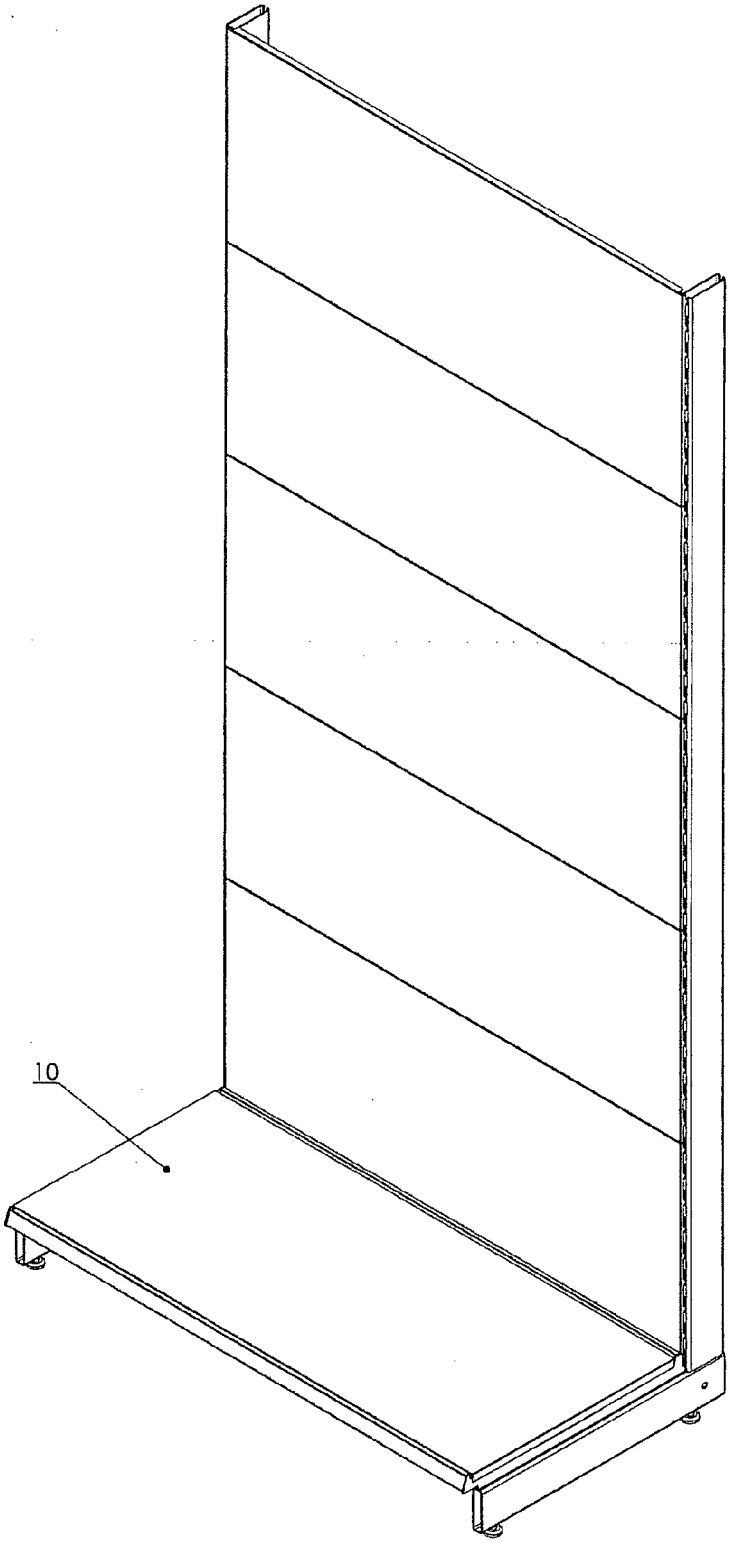


Fig. 1C

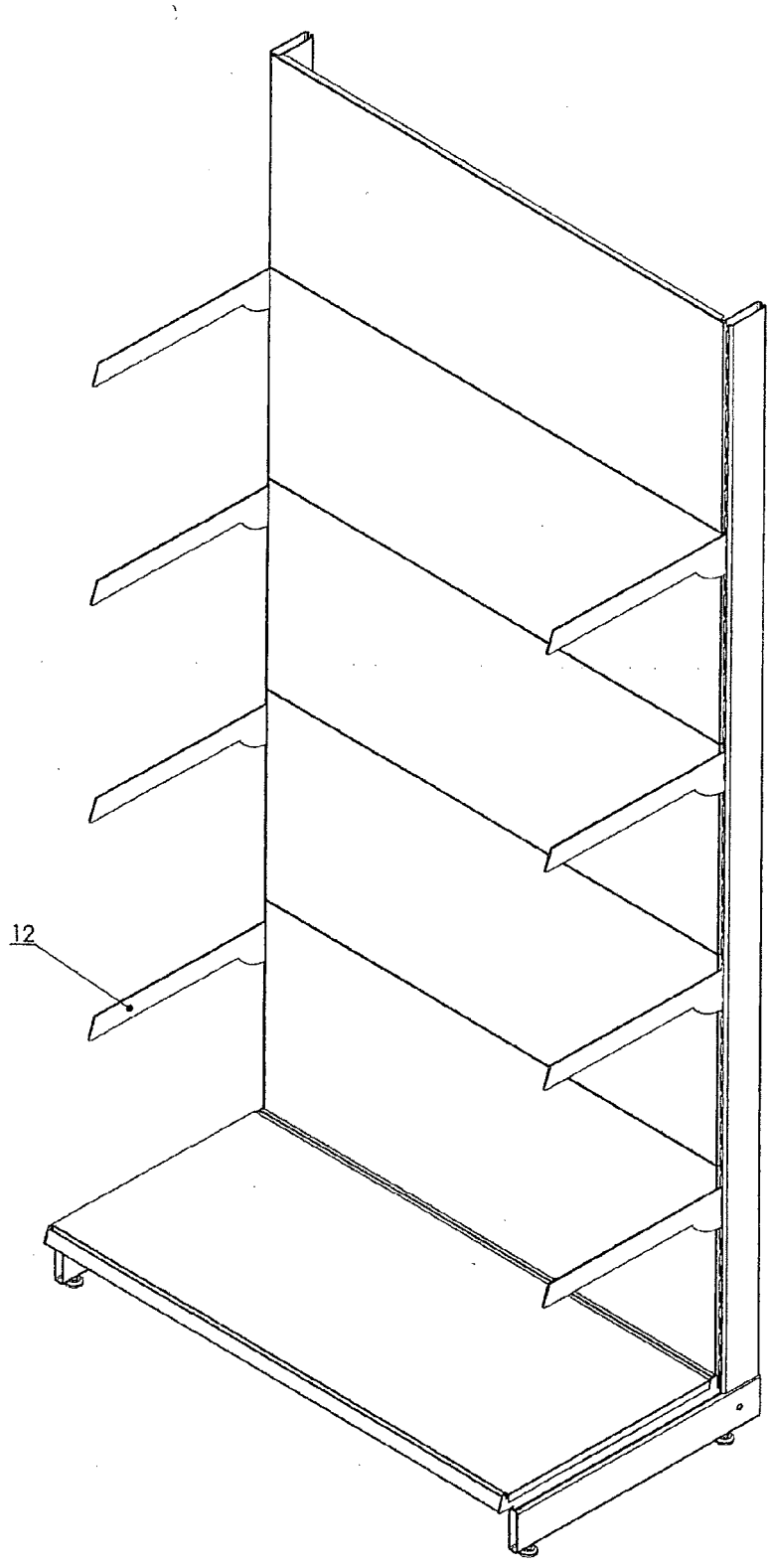


Fig. 1D

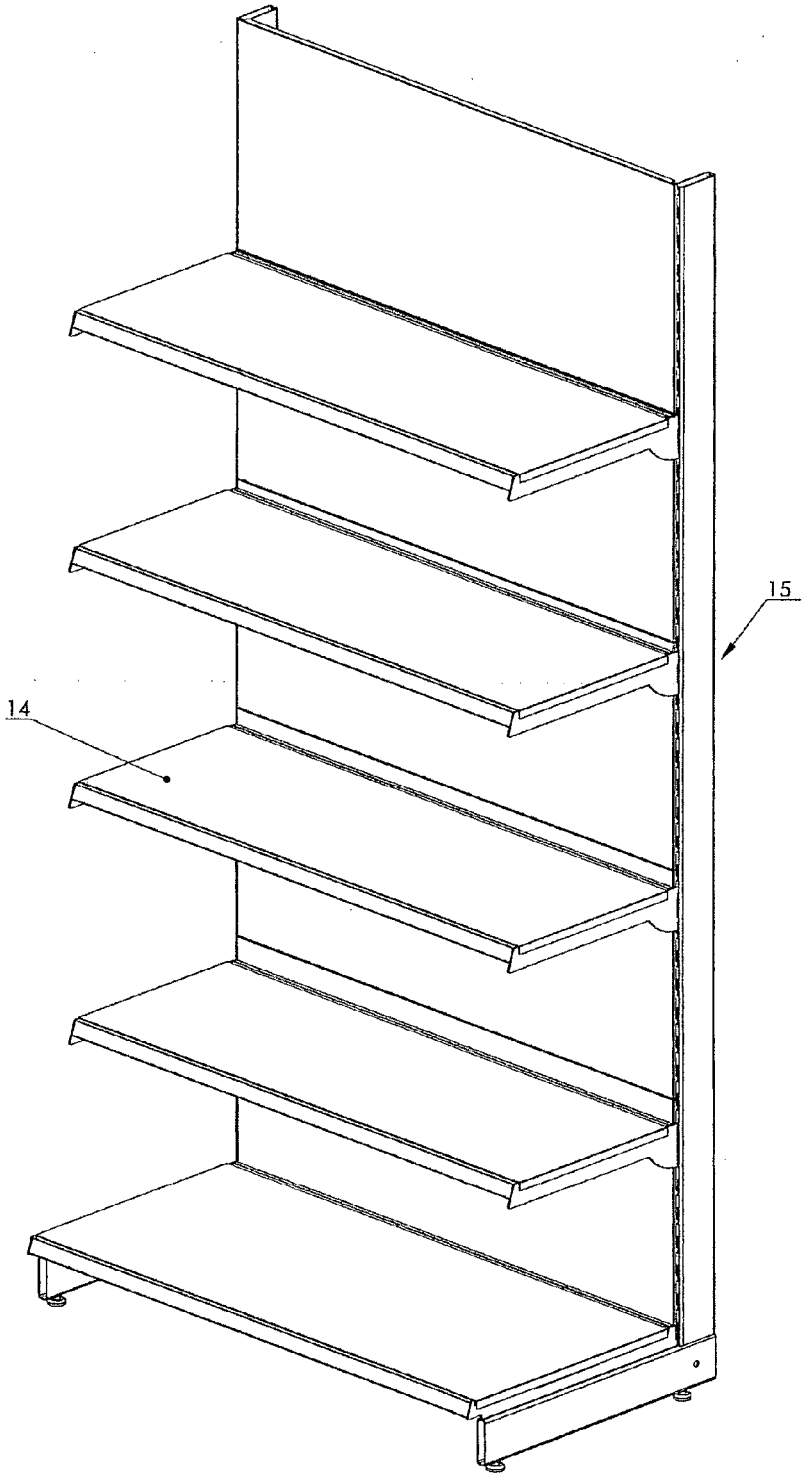


Fig. 1E

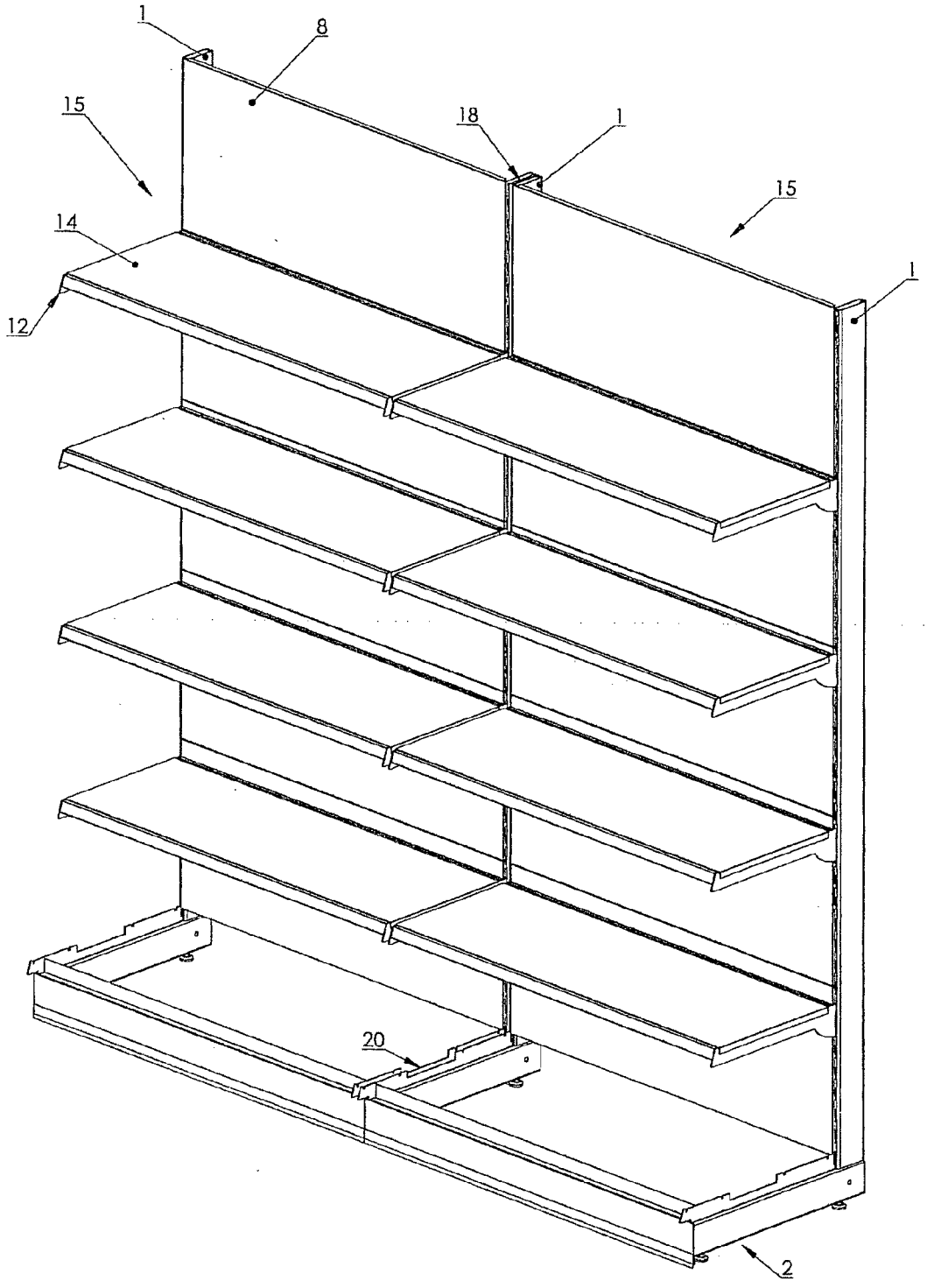


Fig. 2

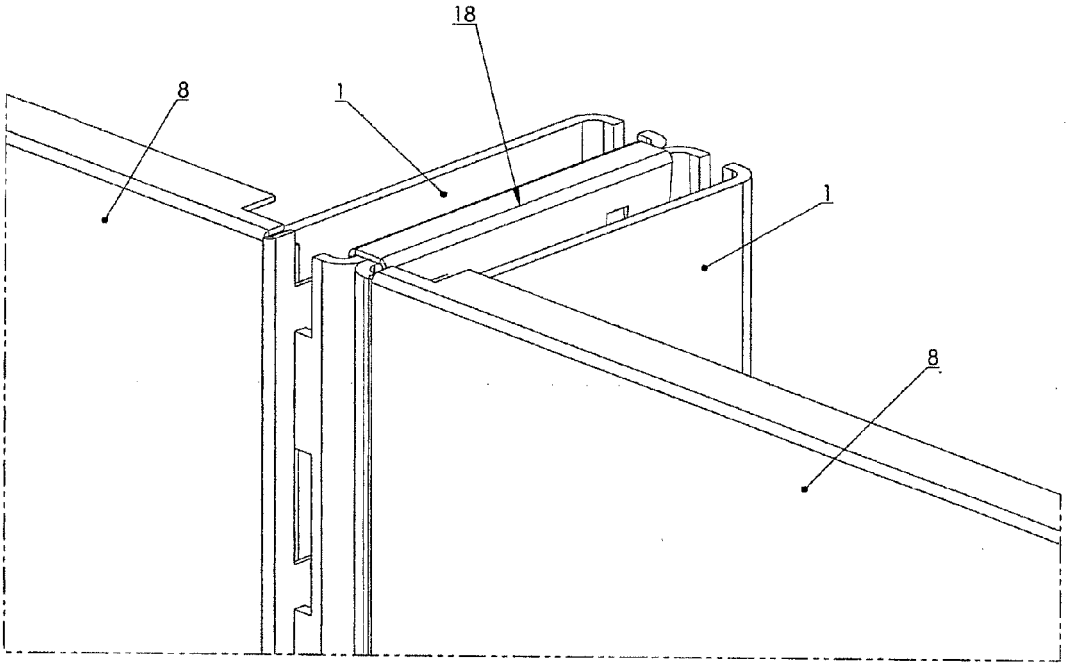


Fig. 3

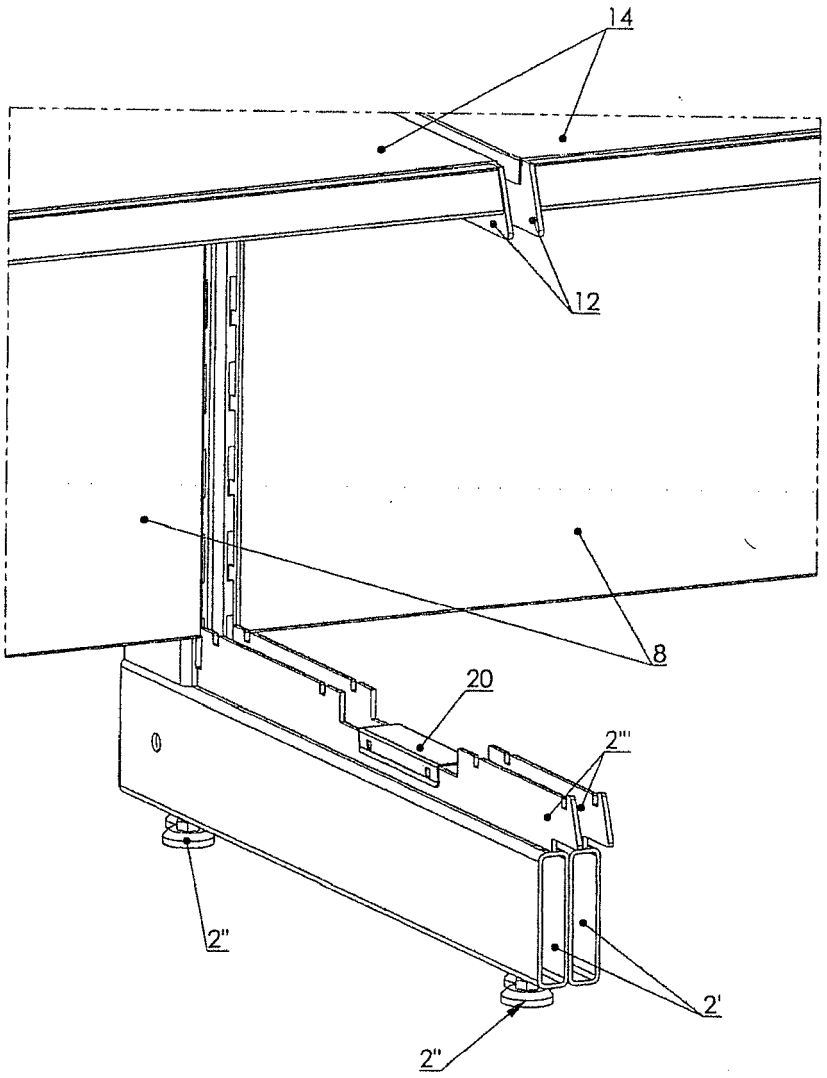


Fig. 4

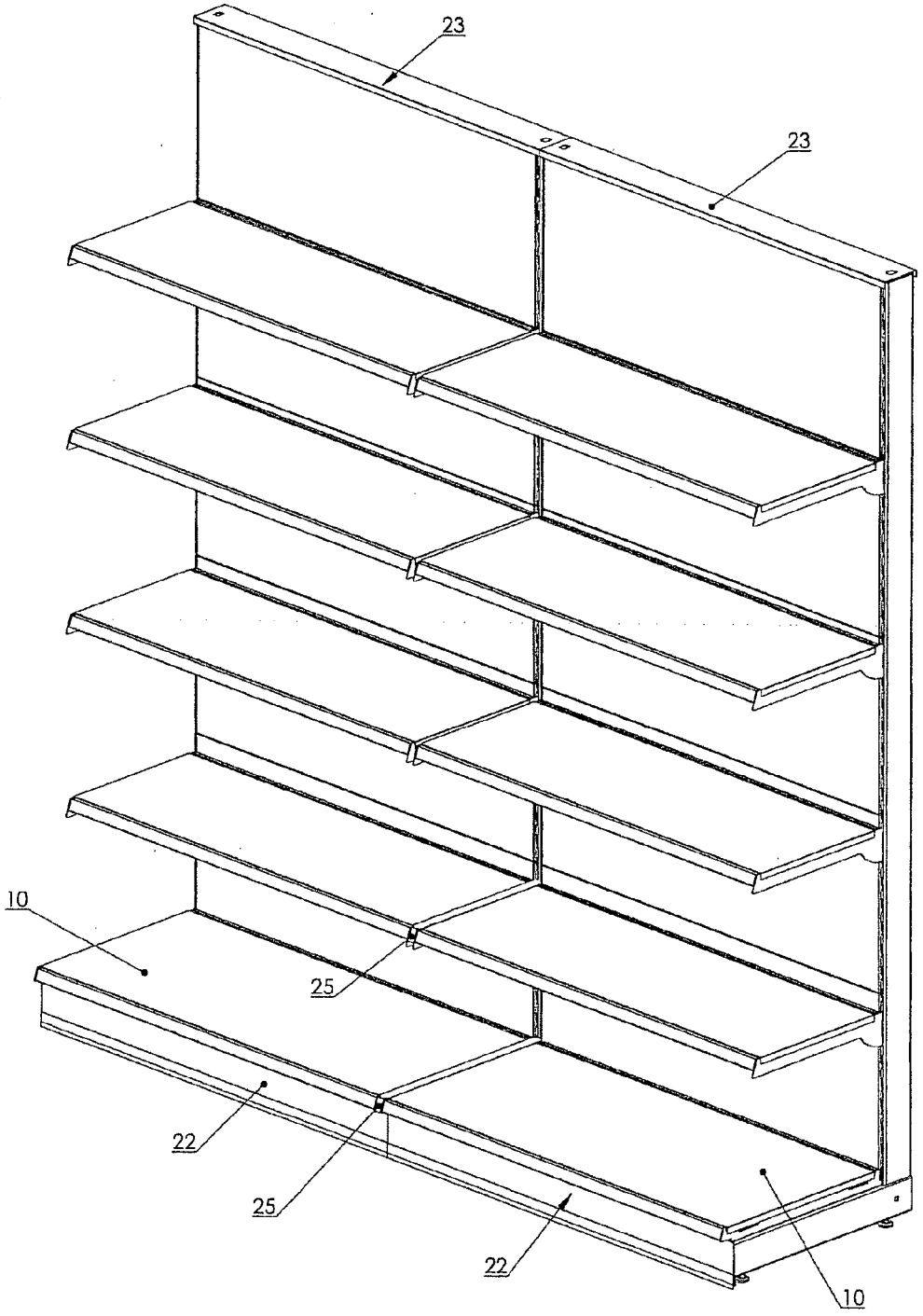


Fig. 5

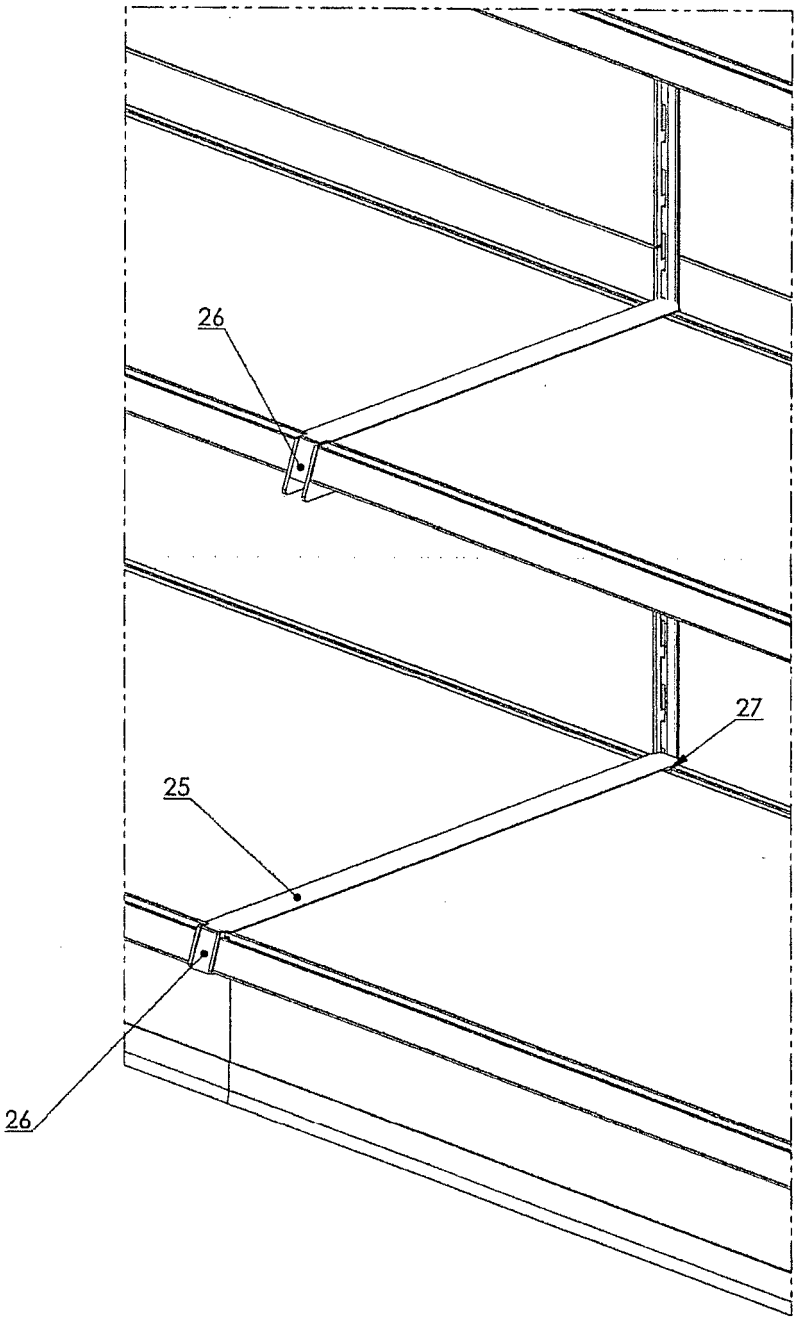


Fig. 6

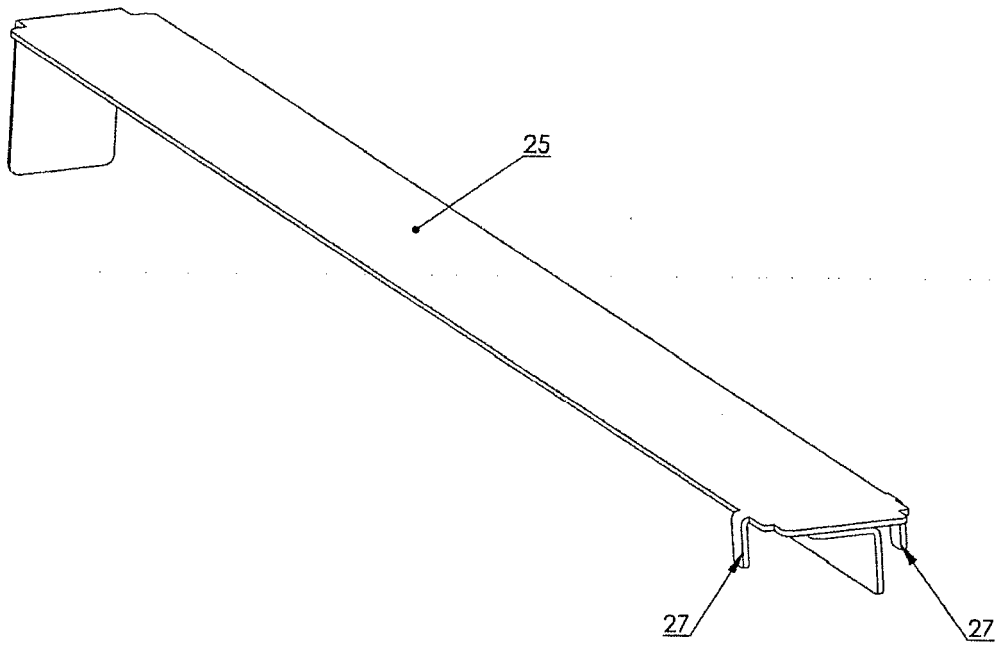


Fig. 7

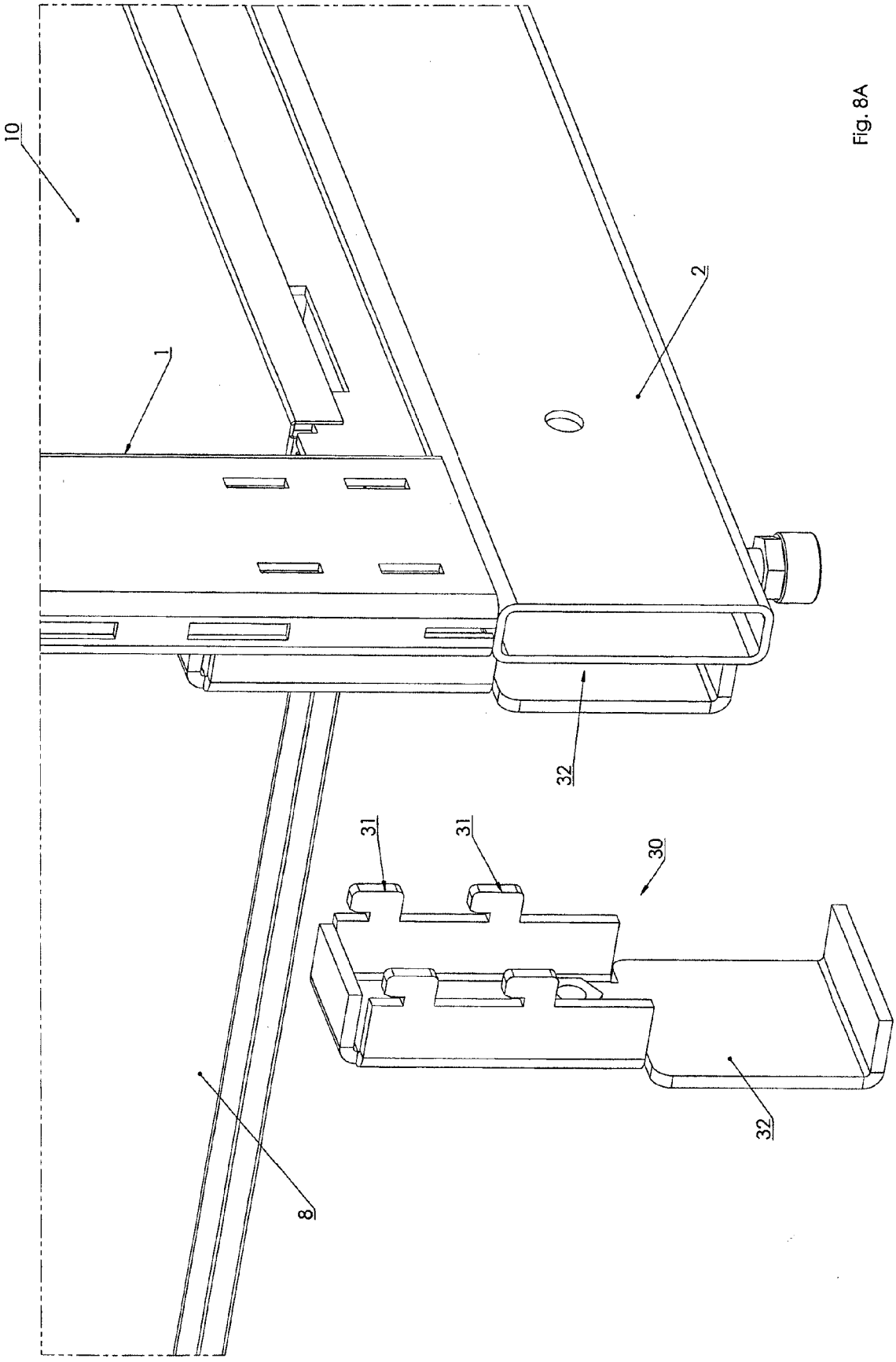


Fig. 8A

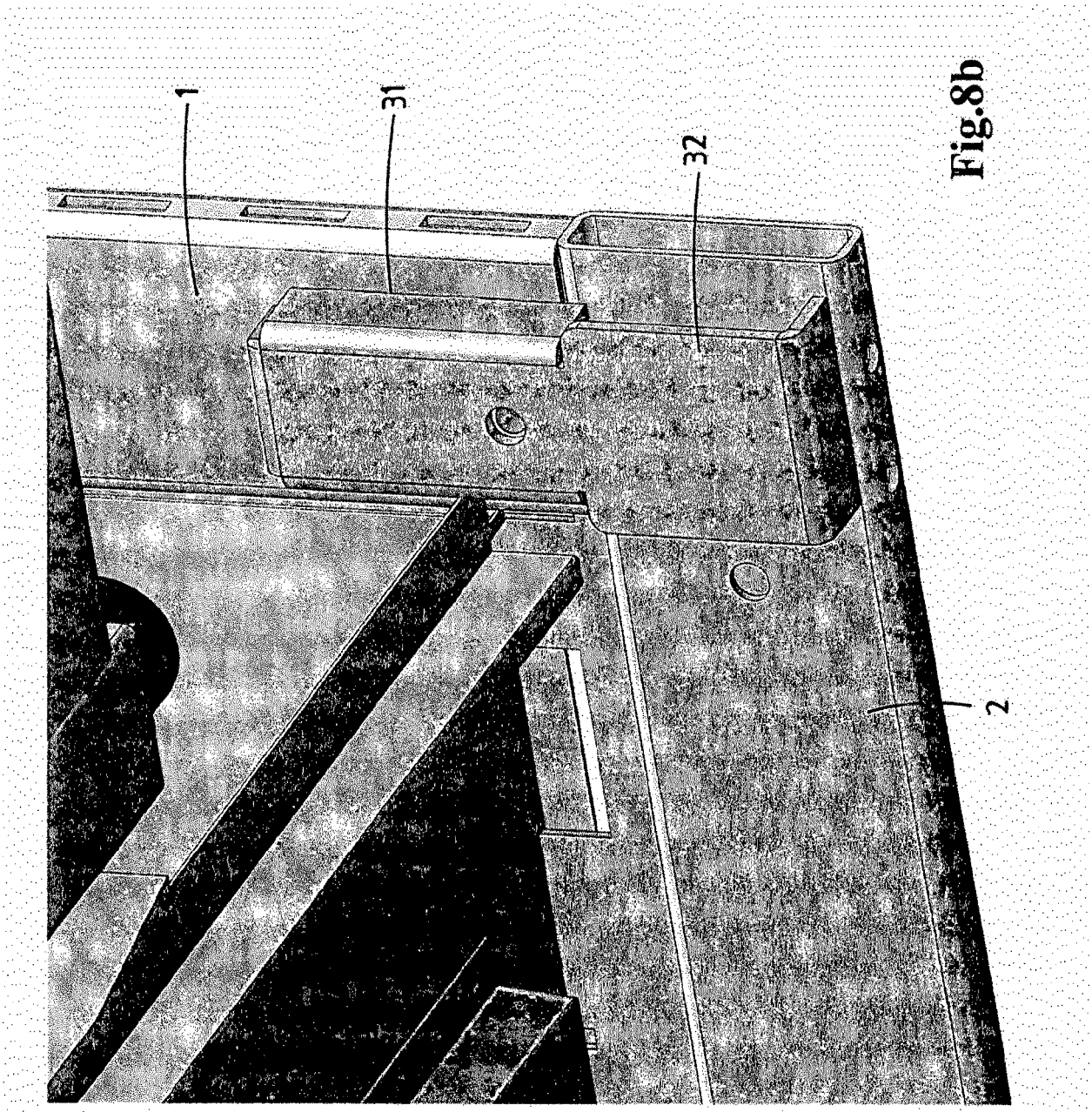


Fig.8b

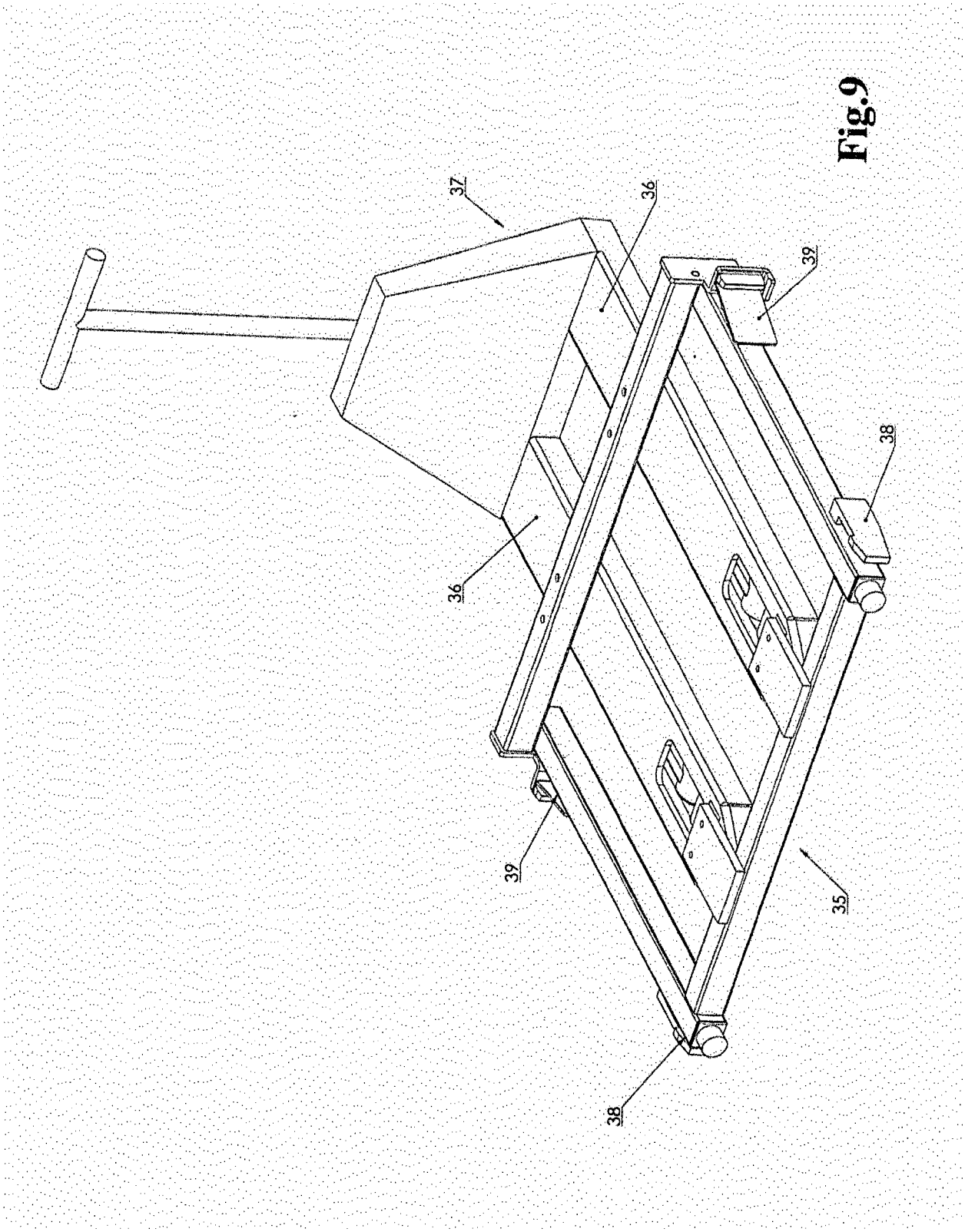


Fig.9

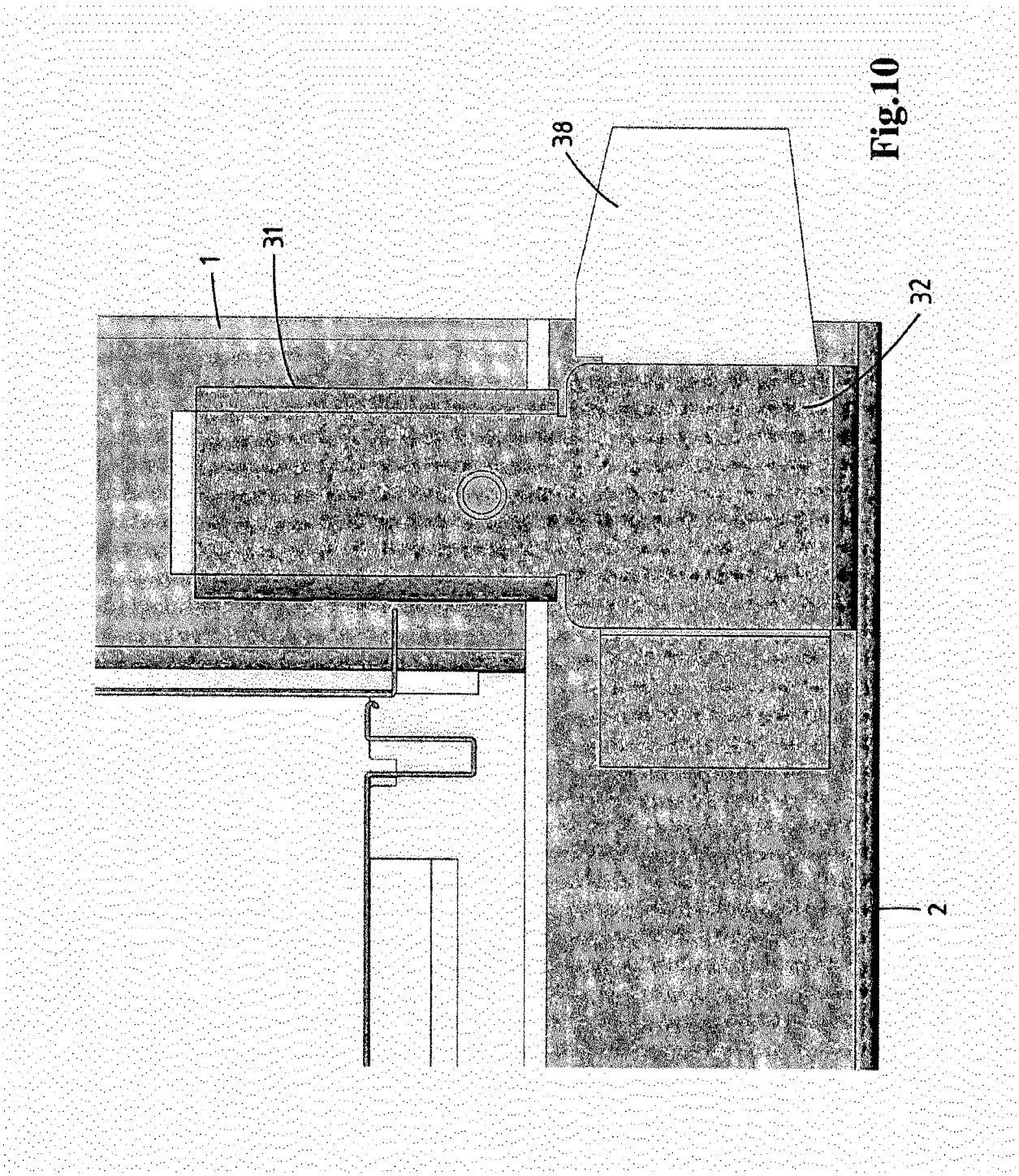


Fig.10

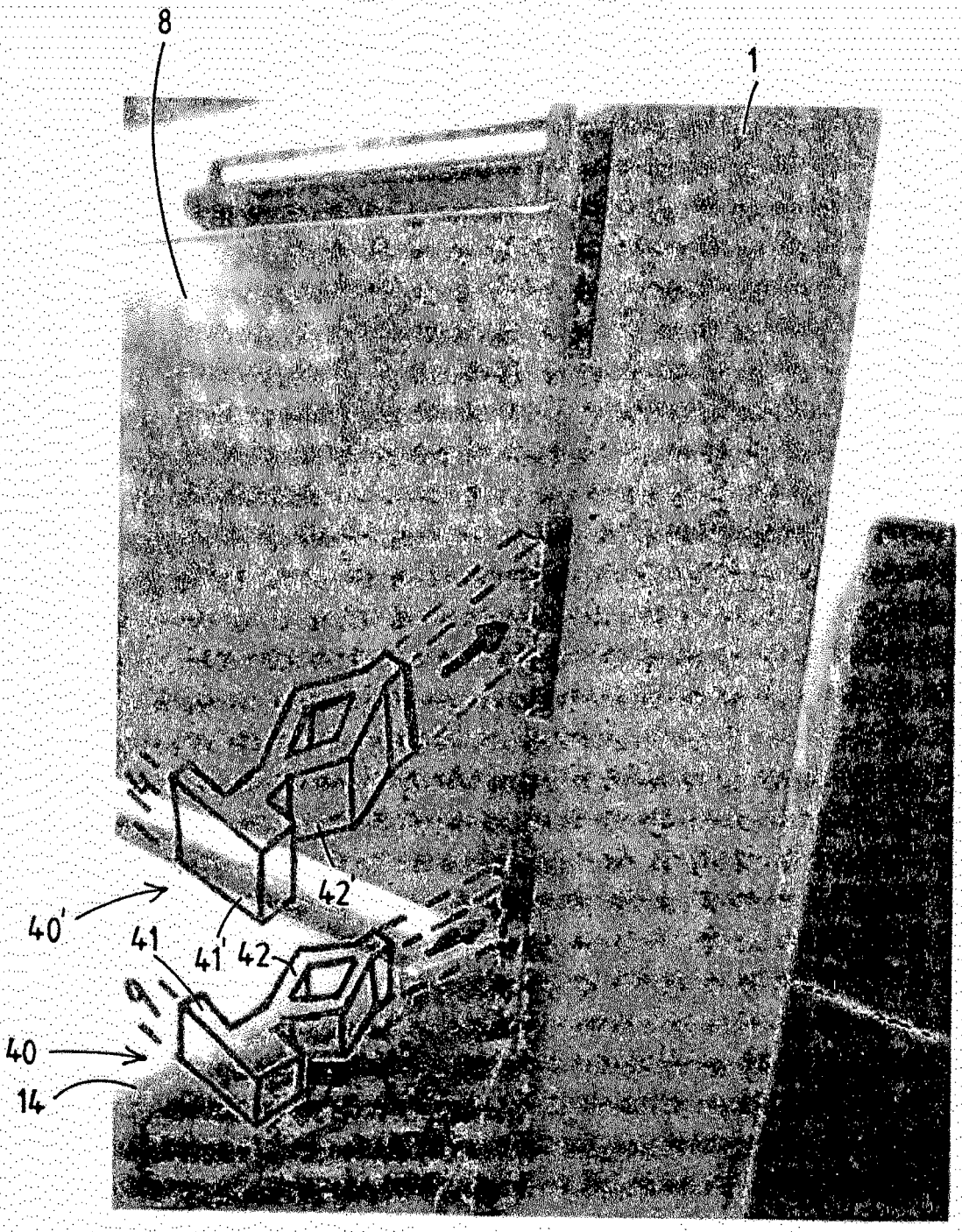
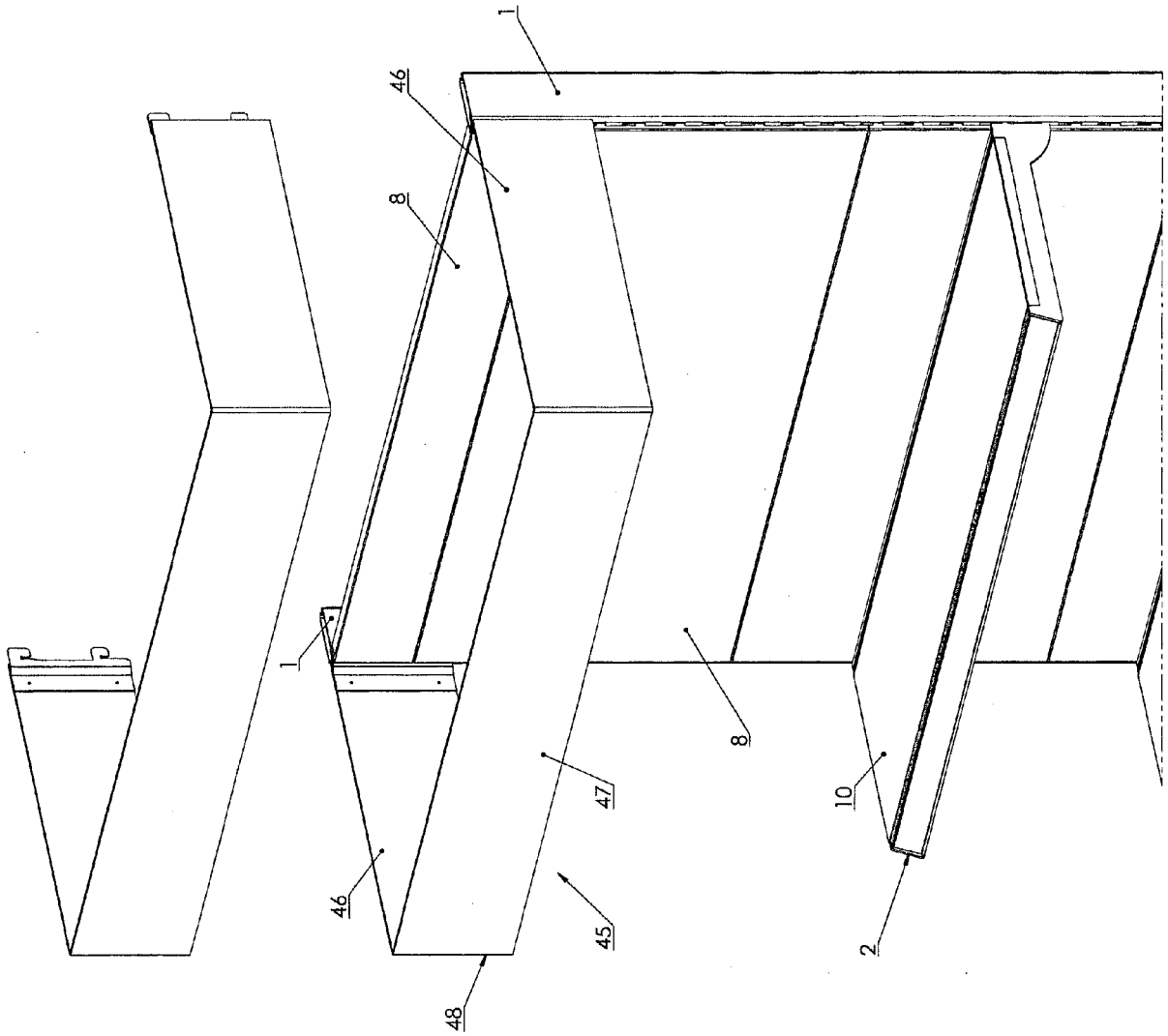


Fig.11

Fig.12



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EUROPEAN SEARCH REPORT

Application Number
EP 13 17 1087

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 3 044 632 A (SCHILD EDWIN F) 17 July 1962 (1962-07-17) * column 2, line 2 - column 5, line 75; figures 1-8 *	1-15	INV. A47F5/00 A47F5/10
X	US 2 739 777 A (GEORGE SCHOENHARDT) 27 March 1956 (1956-03-27) * column 1, line 58 - column 4, line 12; figures 1-8 *	1-15	
A	EP 0 908 120 A1 (TEGOMETALL INT AG [CH]) 14 April 1999 (1999-04-14) * paragraph [0013] - paragraph [0018]; figures 1-4 *	1-15	
A	EP 1 629 744 A1 (HMY INVESTISSEMENTS SA [FR] HMY GESTION SAS [FR]) 1 March 2006 (2006-03-01) * paragraph [0018] - paragraph [0045]; figures 1-6 *	1-15	
A	DE 201 04 590 U1 (STORECONCEPT LADENBAU GMBH [DE]; FRIEDRICH GERHARD [DE]; FRIEDRICH REN) 25 July 2002 (2002-07-25) * page 7, line 8 - page 13, line 23; figures 1-29 *	1-15	TECHNICAL FIELDS SEARCHED (IPC) A47F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	30 September 2013	Klintebäck, Daniel

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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A : technological background
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EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 13 17 1087

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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