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(54) **Method for manufacturing a wicket door in sectional door**

Verfahren um eine Schlupftür in ein Sektionaltor herzustellen

Méthode pour fabriquer une porte de passage dans une porte sectionnelle

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Description

[0001] The present invention relates to a method in which a sectional door, which is built up of hinged panels and a wicket door, is manufactured by making cuts in the material of the respective panel at the location where the wicket door is to be provided.

[0002] Such a method is generally known. According to said method, cuts are made in the panels such that parts are cut out of the panels. At the location of the cut-out parts, the wicket door is to be provided. Assembling the various parts of the panels and the wicket door in a dimensionally stable manner at the production site involves a lot of measuring work and the drilling of holes at the measured locations. This method is time consuming because of the required dimensional accuracy of the positions of the hinges to be provided, and because the panels of the sectional door after installation at the customer's location must pivot well and also the wicket door must open and close smoothly. Moreover, the sectional door in combination with the wicket door must not exhibit warpage or torsion during opening and closing of the sectional door. DE 88 03 220 U1 is used to delimit claim 1 from.

[0003] It is an object of the present invention to provide an improved, yet quick, method of manufacturing one or more wicket doors in overhead or sectional doors, which, in addition, must be readily installable at the customers' location.

[0004] To achieve this, the method according to the invention is characterized in that the cuts are interrupted by material bridges via which the part to be cut out of the panel remains connected to a neighbouring part of the panel,

- after which coupling members are fixed across the cuts and onto neighbouring parts of the panel, and the material bridges are severed,
- after which the peripheries of the parts are finished and the parts of the panel are assembled together.

[0005] An advantage of the method according to the invention resides in that the parts are not cut entirely, but initially, partly from the panels. By virtue thereof, the shape and integrity of the relevant panel remains intact, and in this condition the holes for the coupling members - in practice mostly the hinges- which coupling members are also used to interconnect the parts, can be drilled directly in the proper positions without fitting or measuring and the coupling members can then be provided in said drilled holes. When, subsequently, the material bridges are severed and the parts are entirely cut out of the panels, then, when said parts are provided again, the coupling members present cause the neighbouring panels to remain in place and further finishing of the wicket door and the respective parts of the panels can take place while the required dimensional tolerance is maintained. As the parts do not have to be kept in place each time, either manually or in a yoke, when the various holes are being formed in the parts for the purpose of the coupling members, the method according to the invention is very time saving for the manufacturer in the post-production stage of the sectional door.

[0006] An additional advantage resides in that the sectional doors can be marketed as a building kit, since all necessary holes have been pre-drilled in all parts with sufficient dimensional accuracy. Therefore, during final assembly, the consumer does not have to perform any measuring or drilling operations on the wicket door parts and sectional door parts. By virtue thereof, sectional door building kits for the handy do-it-yourselfer can be brought to market; which was hitherto unthinkable.

[0007] A preferred embodiment of the method according to the invention is characterized in that coupling members comprise hinges which form part of a multiple, four-part hinge which mutually couples the sectional door parts and wicket door parts of the panel as well as the panels of the sectional door.

[0008] The method according to the invention can advantageously be used in combination with a four-part hinge as disclosed in EP-2267262 A1 in the name of the current applicant.

[0009] Further, detailed, possible embodiments explained in the remaining claims are mentioned together with the associated advantages in the description given hereinbelow.

[0010] The method according to the present invention will be explained in greater detail with reference to the figures mentioned below, in which corresponding parts are provided with the same reference numerals. In the figures:

Figure 1 is a view of a sectional door composed of hinged panels, in which door a wicket door is provided;
Figure 2 shows a bottom panel of the sectional door of figure 1, which is successively subjected to steps 1-7 in the method according to the invention;
Figure 3 is a middlemost panel of the sectional door of figure 1, which is successively subjected to steps 1-4 in the method according to the invention; and
Figure 4 is a top panel of the sectional door of figure 1, which is successively subjected to steps 1-7 in the method according to the invention.

[0011] Figure 1 shows a sectional door 1 which is built up of mutually hinged panels 2-1, 2-2, and 2-3. In the upward or downward folding, movable sectional door 1, a wicket door 3 is schematically indicated in the figure. In the lowered position of the sectional door 1, the wicket door 3 can be opened and closed in a normal way, generally for allowing passage of people without it being required to open and close, respectively, the sectional door as a whole. At the location where the wicket door 3 is to be provided in the panels, indicated by means of reference numeral 2, cuts 4 are made in the material of a

relevant panel of the sectional door. These cuts are usually made by means of milling or cutting. A practical width of said cuts is for example 23 mm.

[0012] The cuts 4 are provided in such a way that material bridges 5 remain intact via which the part to be cut out of the panel remains connected to a neighbouring part of the panel 2.

[0013] Based on the panels 2-1, 2-2 en 2-3 shown in the figures 2, 3 en 4, two or three parts of each panel are obtained, which parts preserve their integrity via the material bridges 5.

[0014] Figure 2 shows the bottom panel 2-1 of the sectional door 1, which is subjected to various schematically shown steps 1-7 in the method to be elucidated hereinbelow. The middlemost panel 2-2 which is subjected to steps 1-4 is shown in figure 3, and figure 4 shows the steps 1-7 for the top panel 2-3. For conciseness of the description, the following description of the steps of the method will be combined as much as possible. The reference numerals in figures 2-4 referring to the represented steps are encircled.

[0015] In step 1 of figure 2, coupling members 6 are provided across the cuts 4 and fixed to neighbouring parts 2-1a, 2-1b en 2-1c of the panel 2-1. The upper coupling members 6 shown here are, in this case, hinges 6a and 6b and the lower coupling members are corner pieces H to be provided on the lower angular points of the wicket door 3. In this case, the pivot holes concerned are drilled without having to be measured and the hinges 6a and 6b are screwed down in the pivot holes. This also applies to the middlemost and top panels 2-2, 2-3 shown in figures 3 and 4.

[0016] In step 2 of figures 2-4, the coupled hinges 6a and 6b are fixed. With reference to figure 2, first the lower strip 7 is attached under the wicket door 3 (steps 2 and 3), after which, in this case, doorstep 8 -as ultimate coupling member 6- is secured under the panel 2-1 (step 4). As a result, the neighbouring parts, such as 2-1a, 2-1b, 2-1c shown in fig. 2, are also interconnected now via the coupling members, or hinges. If, next, the material bridges 5 are severed, for example by means of cutting or milling, the respective parts 2-1b, 2-2b en 2-3b can be removed after the coupling members 6 have been disconnected (see steps 5, 3 and 3 van figures 2, 3 and 4, respectively).

[0017] Subsequently, the peripheries of the various parts can be finished by providing the remaining strips 7 to the panel parts and the sectional door parts (step 6 in fig. 1, steps 4 in fig. 3, and step 4, 5, 6 in fig. 4), after which the parts of each panel are assembled together.

[0018] The coupling members 6 and the various strips 7 are usually fixed onto the various parts by means of screwing, glueing or pop riveting.

[0019] When the sectional door 1 is assembled as a whole, it is advantageous if the hinges 6a/6b of the coupling members form part of a multiple hinge. Such hinges are capable of independently hinging along two mutually perpendicular shafts. The multiple hinge 6a/6b, 6a/6b couples, and enables hinging of, the sectional door parts and wicket door parts of the panel 2, and it couples and allows hinging of the panels 2-1, 2-2, 2-3 of the sectional door 1 with respect to one another.

[0020] Preferably, the hinge 6 is a four-part hinge comprising four mouldings or castings made of a lightweight material such as, respectively, synthetic resin or light metal, for example aluminium or magnesium.

Claims

1. A method in which a sectional door (1), which is built up of hinged panels (2; 2-1, 2-2, 2-3) and a wicket door (3), is manufactured by making cuts (4) in the material of the respective panel at the location where the wicket door (3) is to be provided,
characterized in that the cuts (4) are interrupted by material bridges (5) via which the part to be cut out of the panel (2; 2-1, 2-2, 2-3) remains connected to a neighbouring part of the panel,

   - after which coupling members (6) are fixed across the cuts (4) and onto neighbouring parts of the panel (2; 2-1, 2-2, 2-3), and the material bridges (5) are severed,
   - after which the peripheries of the parts are finished and the parts of the panel (2; 2-1, 2-2, 2-3) are assembled together.

2. The method according to claim 1, **characterized in that** the cuts (4) are made or the material bridges (5) are severed by means of cutting and/or milling.

3. The method according to claim 1 or 2, **characterized in that** the coupling members (6) comprise hinges (6a, 6b).

4. The method according to claim 3, **characterized in that** the hinges (6a, 6b) form part of a multiple hinge which mutually couples the sectional door parts and wicket door parts of the panel as well as the panels of the sectional door.

5. The method according to claim 4, **characterized in that** the multiple hinge is a four-part hinge (6a/6b, 6a/6b).

6. The method according to claim 4 or 5, **characterized in that** the multiple hinge (6a/6b, 6a/6b) is at least partly made of a lightweight material, such as synthetic resin or light metal, for example aluminium or magnesium.

7. The method according to any one of claims 1 to 6, **characterized in that** the peripheries of the parts of the panel are finished by providing strips (7).

8. The method according to claim 7, **characterized in that** the strips (7) are fixed by means of screwing, glueing or pop riveting.

9. The method according to any one of claims 1 to 8, **characterized in that** the coupling members (6) are fixed onto the neighbouring parts of the panel by means of screwing, glueing or pop riveting.

10. The method according to any one of claims 1 to 9, **characterized in that** the sectional door (1) is an overhead door or a folding door.

Patentansprüche

1. Verfahren, in dem ein Sektionaltor (1), das aus drehbar angebrachten Platten (2; 2-1, 2-2, 2-3) und einer Schlupftür (3) aufgebaut ist, hergestellt wird, indem Schnitte (4) in dem Material der jeweiligen Tafel an dem Ort hergestellt werden, an dem die Schlupftür (3) bereitgestellt werden soll,
dadurch gekennzeichnet, dass die Schnitte (4) durch Materialbrücken (5) unterbrochen werden, über die der Teil, der aus der Platte (2; 2-1, 2-2, 2-3) herausgeschnitten werden soll, mit einem benachbarten Teil der Platte verbunden bleibt,

   - danach werden Kopplungselemente (6) quer über den Schnitten (4) und auf den benachbarten Teilen der Platte (2; 2-1, 2-2, 2-3) befestigt, und die Materialbrücken (5) werden abgetrennt;
   - danach werden die Ränder der Teile fertiggestellt und die Teile der Platte (2; 2-1, 2-2, 2-3) werden zusammengebaut.

2. Verfahren nach Anspruch 1, **dadurch gekennzeichnet, dass** die Schnitte (4) hergestellt werden oder die Materialbrücken (5) abgetrennt werden mittels Schneiden und/oder Abtragen.

3. Verfahren nach Anspruch 1 oder 2, **dadurch gekennzeichnet, dass** die Kopplungselemente (6) Gelenke (6a, 6b) umfassen.

4. Verfahren nach Anspruch 3, **dadurch gekennzeichnet, dass** die Gelenke (6a, 6b) Teil eines Mehrfachgelenks bilden, das sowohl die Teile des Sektionaltors und Teile der Schlupftür der Platte als auch die Platten des Sektionaltors gegenseitig miteinander verbindet.

5. Verfahren nach Anspruch 4, **dadurch gekennzeichnet, dass** das Mehrfachgelenk ein vierteiliges Gelenk (6a/6b, 6a/6b) ist.

6. Verfahren nach Anspruch 4 oder 5, **dadurch gekennzeichnet, dass** das Mehrfachgelenk (6a/6b, 6a/6b) mindestens teilweise aus einem leichtgewichtigen Material hergestellt ist wie etwa aus einem synthetischen Harz oder aus Leichtmetall, zum Beispiel Aluminium oder Magnesium.

7. Verfahren nach einem der Ansprüche 1 bis 6, **dadurch gekennzeichnet, dass** die Ränder der Teile der Platte fertiggestellt werden, indem Bänder (7) bereitgestellt werden.

8. Verfahren nach Anspruch 7, **dadurch gekennzeichnet, dass** die Bänder (7) mittels Schrauben, Kleben oder Pop-Nieten befestig werden.

9. Verfahren nach einem der Ansprüche 1 bis 8, **dadurch gekennzeichnet, dass** die Kopplungselemente (6) auf den benachbarten Teilen der Platte mittels Schrauben, Kleben oder Pop-Nieten befestig werden.

10. Verfahren nach einem der Ansprüche 1 bis 9, **dadurch gekennzeichnet, dass** das Sektionaltor (1) ein Überkopftor oder eine Falttür ist.

Revendications

1. Méthode dans laquelle une porte sectionnelle (1) constituée de panneaux articulés (2; 2-1, 2-2, 2-3) et d'un portillon (3) est fabriquée en réalisant des découpes (4) dans le matériau du panneau respectif, à l'endroit où le portillon (3) est censé se trouver,
caractérisée en ce que les découpes (4) sont interrompues par des ponts de matériau (5) à l'aide desquels la partie à découper dans le panneau (2 ; 2-1, 2-2, 2-3) reste reliée à une partie voisine du panneau,

   - suite à quoi des éléments d'accouplement (6) sont fixés en travers des découpes (4) et sur des parties voisines du panneau (2; 2-1, 2-2, 2-3), et les ponts de matériau (5) sont rompus,
   - suite à quoi les périphéries des parties sont finies et les parties du panneau (2; 2-1, 2-2, 2-3) sont assemblées entre elles.

2. Méthode selon la revendication 1, **caractérisée en ce que** les découpes (4) sont réalisées ou les ponts de matériau (5) sont rompus par découpage et/ou par fraisage.

3. Méthode selon la revendication 1 ou 2,
caractérisée en ce que les éléments d'accouplement (6) comprennent des articulations (6a, 6b).

4. Méthode selon la revendication 3, **caractérisée en ce que** les articulations (6a, 6b) font partie d'une articulation multiple accouplant mutuellement les parties de la porte sectionnelle et les parties du por-

tillon du panneau, ainsi que les panneaux de la porte sectionnelle.

5. Méthode selon la revendication 4, **caractérisée en ce que** l'articulation multiple est une articulation en quatre parties (6a/6b, 6a/6b).

6. Méthode selon la revendication 4 ou 5, **caractérisée en ce que** l'articulation multiple (6a/6b, 6a/6b) est au moins partiellement constituée d'un matériau léger, tel qu'une résine synthétique ou un métal léger, par exemple de l'aluminium ou du magnésium.

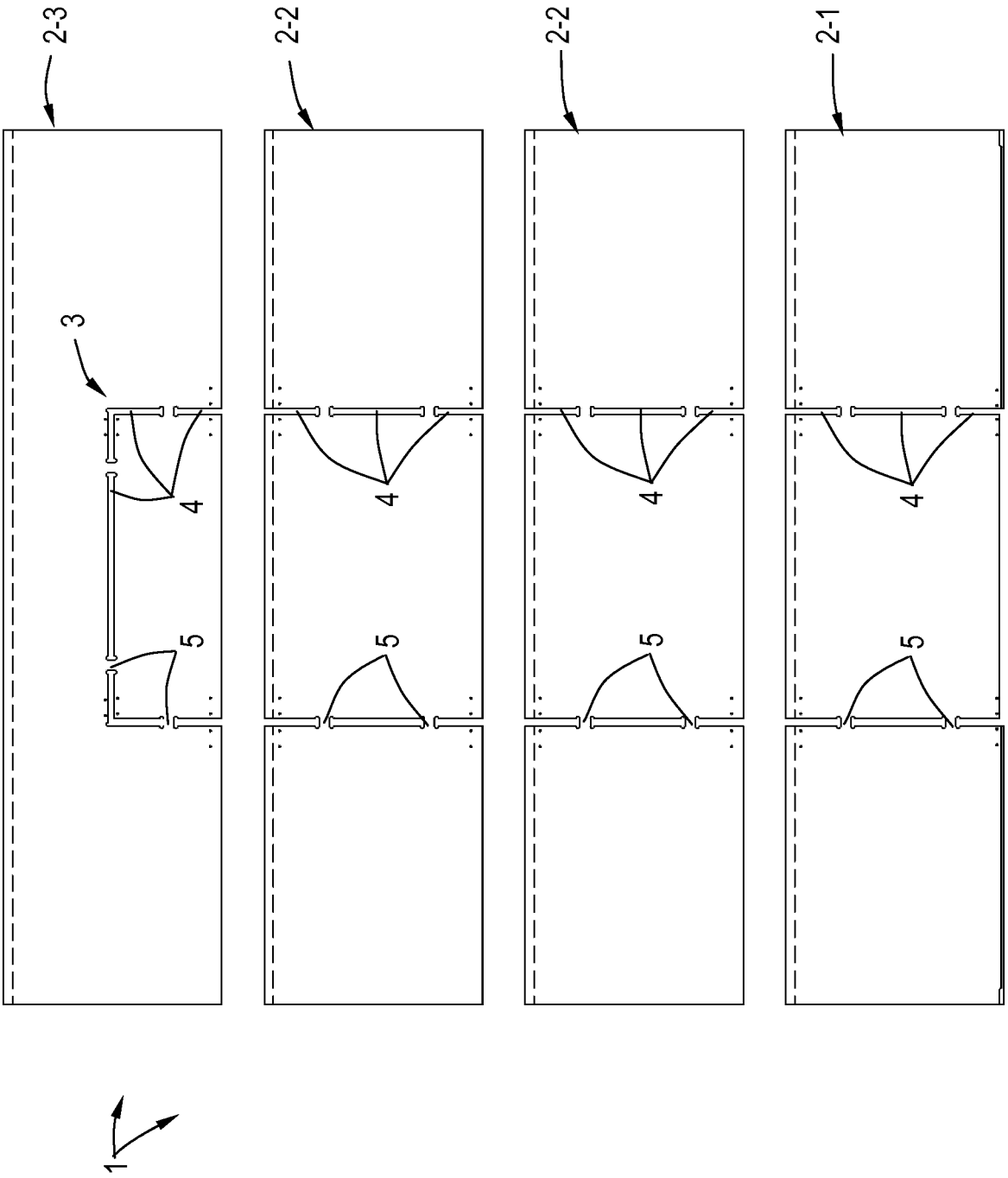
7. Méthode selon l'une quelconque des revendications 1 à 6, **caractérisée en ce que** les périphéries des parties du panneau sont finies en fournissant des bandes (7).

8. Méthode selon la revendication 7, **caractérisée en ce que** les bandes (7) sont fixées par vissage, par collage ou par des rivets pop.

9. Méthode selon l'une quelconque des revendications 1 à 8, **caractérisée en ce que** les éléments d'accouplement (6) sont fixés sur les parties voisines du panneau par vissage, par collage ou par des rivets pop.

10. Méthode selon l'une quelconque des revendications 1 à 9, **caractérisée en ce que** la porte sectionnelle (1) est une porte basculante ou une porte pliante.

Fig.1



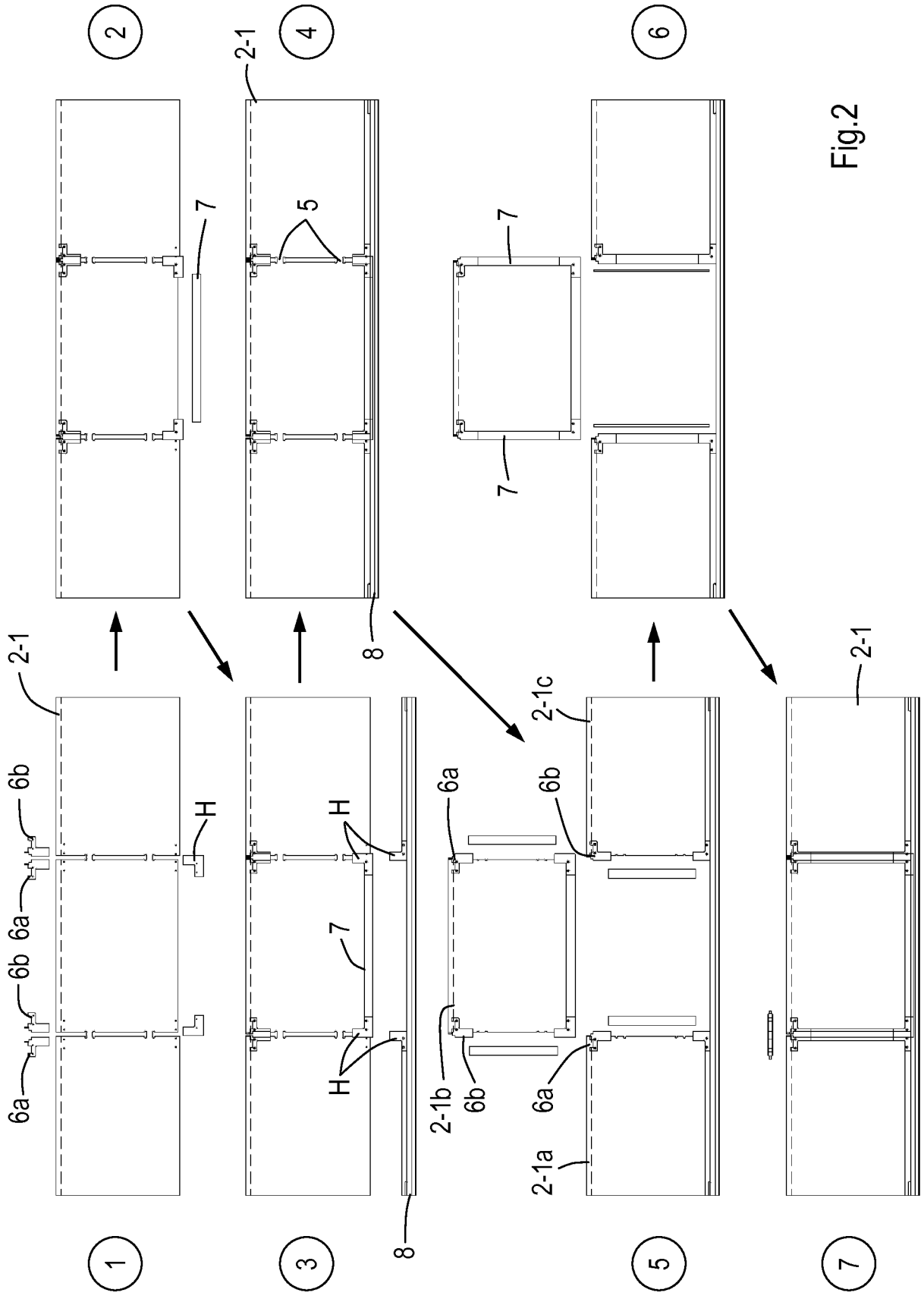


Fig.2

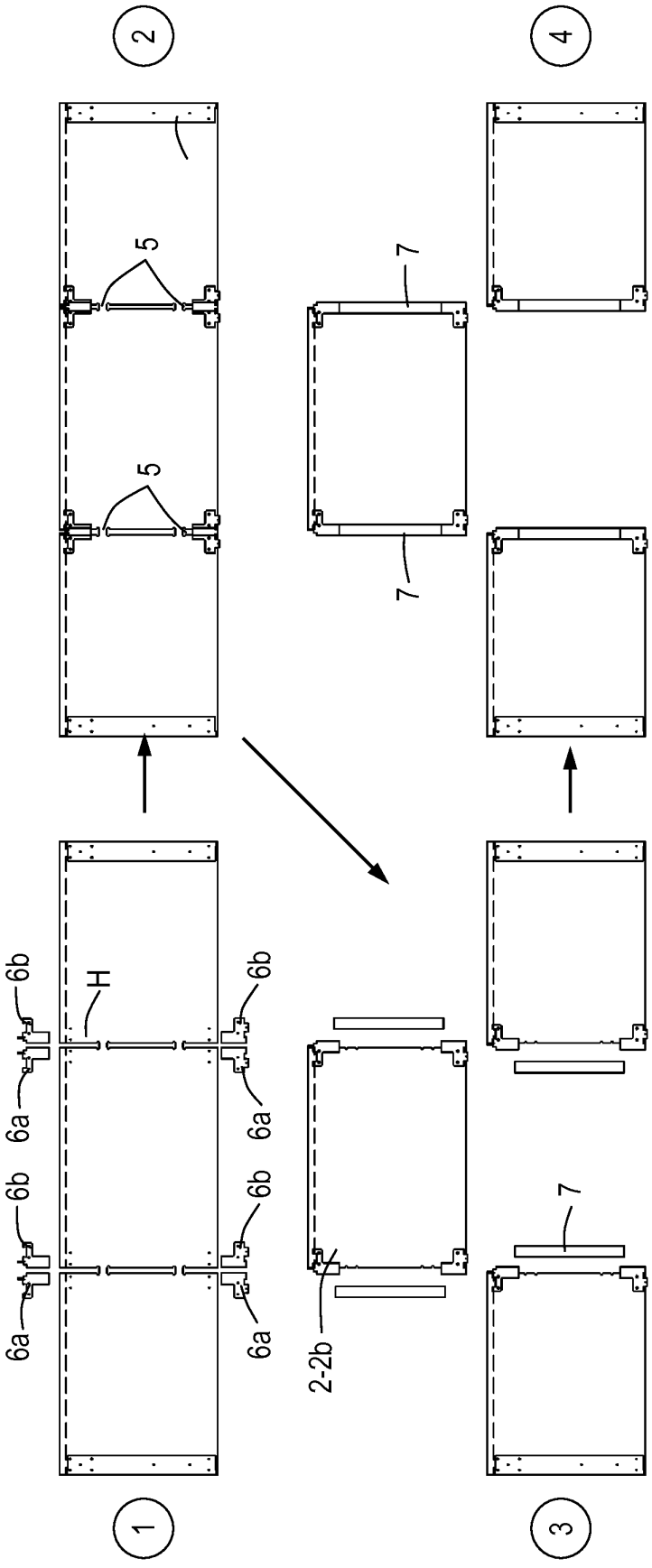


Fig.3

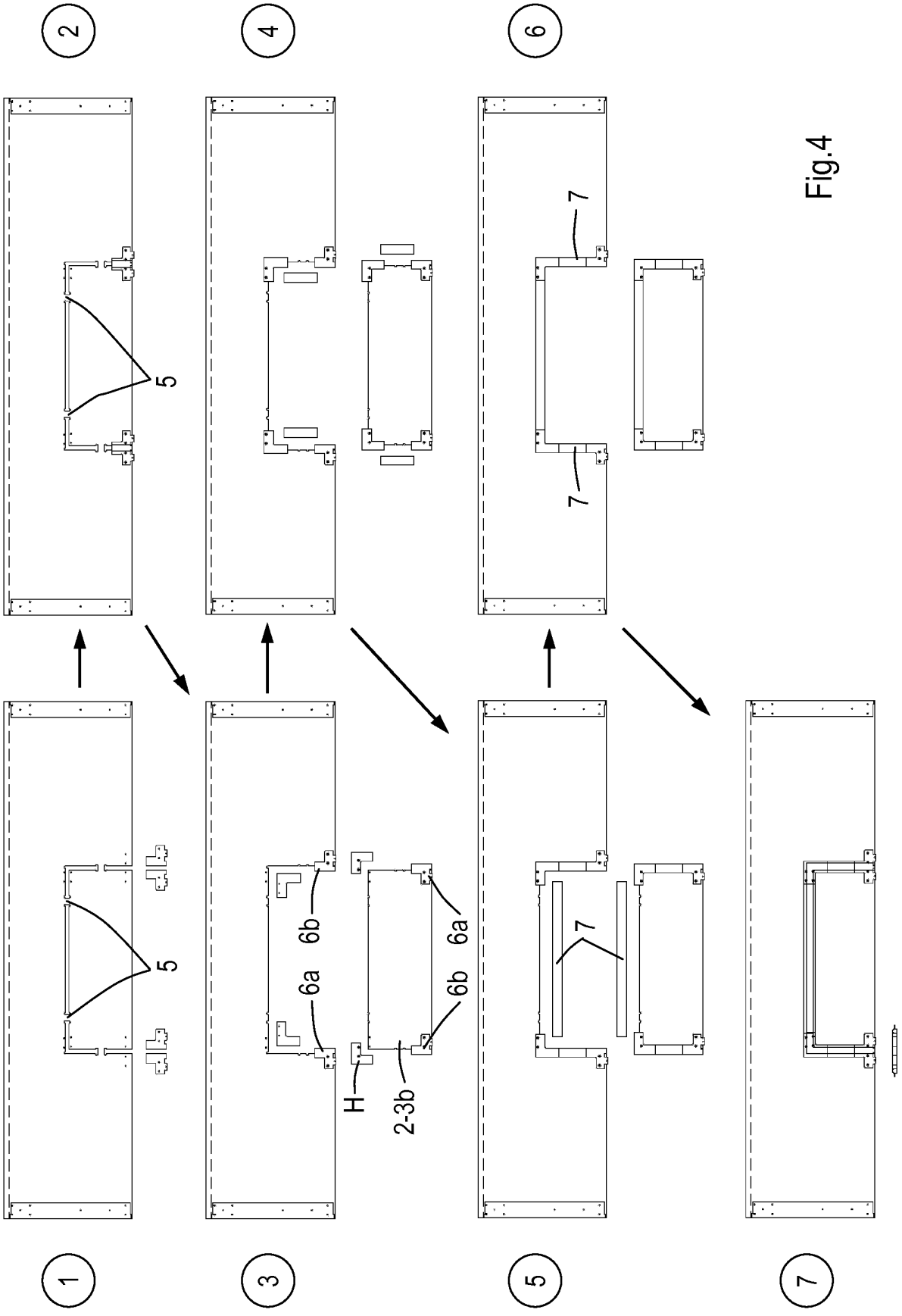


Fig.4

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- DE 8803220 U1 **[0002]**
- EP 2267262 A1 **[0008]**