

(19)



(11)

EP 4 400 005 A1

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
17.07.2024 Bulletin 2024/29

(51) International Patent Classification (IPC):
A47F 7/00 (2006.01) A47B 47/00 (2006.01)
A47F 1/08 (2006.01)

(21) Application number: **24150914.0**

(52) Cooperative Patent Classification (CPC):
A47F 7/0007; A47B 47/0091; A47F 7/0042;
A47F 1/08

(22) Date of filing: **09.01.2024**

(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 ME MK MT NL
NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA
Designated Validation States:
KH MA MD TN

(71) Applicant: **The West Retail Group Limited**
Barton-upon-Humber
North Lincolnshire DN18 5RL (GB)

(72) Inventor: **WATTS, Darren**
Barton-upon-Humber, DN18 5RL (GB)

(74) Representative: **Haseltine Lake Kempner LLP**
Cheapside House
138 Cheapside
London EC2V 6BJ (GB)

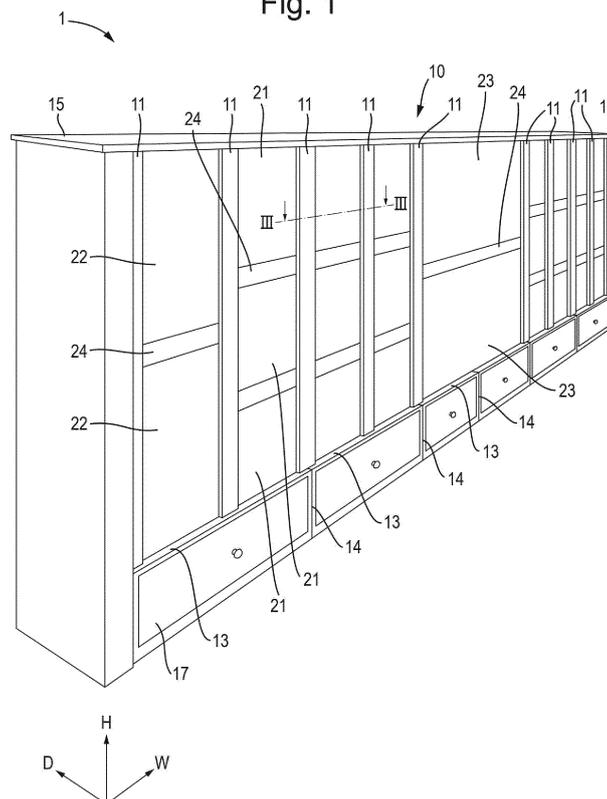
(30) Priority: **11.01.2023 GB 202300411**

(54) **A STORAGE SYSTEM AND METHOD**

(57) A storage system 1 for storing items 20, the storage system comprising: a frame 10 having a plurality of columns 11 spaced apart, each column comprising a track extending at least partially in a vertical direction, the tracks of adjacent columns together

defining a slot for slidably receiving a plurality of items, wherein the frame is configured to retain the items such that a first item at least partially bears the weight of a second item. A method of using said storage system.

Fig. 1



EP 4 400 005 A1

Description

Technical Field

[0001] The present disclosure relates to a storage system and method and is particularly, although not exclusively, concerned with a storage system in which items are retained in a stacked arrangement.

Background

[0002] It is common to store items on a wall or a stand such that the whereabouts of each item can be determined and the items readily accessed. Similarly, it is common to display items (e.g., in a shop) on a display stand such that those items can be viewed, removed, inspected and replaced.

[0003] Such items to be stored or displayed may have a variety of dimensions, such that the means for storing the items may be bespoke to the items stored. Accordingly, when the items are replaced by other items of differing dimensions, and/or when the arrangement of the items changes, this may entail the replacement of the existing bespoke storage means by a further bespoke storage means. The previous storage means may therefore become redundant which can lead to material waste.

[0004] Additionally, it is often time-consuming to assemble a storage means (e.g., when fitting-out a new retail premises). Further, it is often time-consuming to exchange or rearrange items stored by a storage means (e.g., when a range of products is changed in part or in full).

[0005] Improvements are therefore desired in the art of storage.

Statements of Invention

[0006] According to an aspect of the present disclosure, there is provided a storage system (e.g., for storing items). The storage system may comprise a display system. The storage system may comprise a frame. The frame may have a column, e.g., a plurality of columns, optionally spaced apart. One or more columns may comprise a track, e.g., extending at least partially in a vertical direction. The tracks of adjacent columns may together define a slot for receiving (e.g., slidably receiving) an item (e.g., a plurality of items). The frame may be configured to retain items such that a first item at least partially bears the weight of a second item. This aspect may form part of and/or be used in conjunction with any other aspect.

[0007] According to an aspect of the present disclosure, there is provided a storage system for storing items, the storage system comprising: a frame having a plurality of columns spaced apart, each column comprising a track extending at least partially in a vertical direction, the tracks of adjacent columns together defining a slot for slidably receiving a plurality of items, wherein the frame

is configured to retain the items such that a first item at least partially bears the weight of a second item. This aspect may form part of and/or be used in conjunction with any other aspect.

[0008] According to an aspect of the present disclosure, there is provided a storage system for storing items, the storage system having a frame comprising: a base defining a plurality of recesses for receiving columns; a plurality of columns spaced apart and received in at least some of the recesses, each column comprising a track extending at least partially in a vertical direction, the tracks of adjacent columns together defining a slot for receiving an item, wherein the base is configured to bear the weight of an item received in a slot. This aspect may form part of and/or be used in conjunction with any other aspect.

[0009] Each column may extend vertically. Each column may comprise a track (e.g., a continuous track) extending substantially vertically (e.g., vertically). The columns may be discrete from one another (e.g., separate components, not unitary, non-contiguous, not directly in contact and/or not connected), optionally discontinuous along the width direction of the system. The columns may be provided in parallel with one another. The columns may be spaced apart along a width direction of the system (e.g., perpendicular to the height dimension of the columns). The columns may be translated along the width direction relative to one another. The columns may be spaced apart in the width direction by a distance greater (e.g., significantly greater) than a width dimension of each column. Each column may comprise a vertical dimension at least twice that of the items when received.

[0010] Each column may comprise a uniform transverse cross section. Each track may have a uniform cross section, optionally a uniform right-angular U-shaped cross section. Each track may comprise a front lip and a rear lip extending away from a central web portion. The front and rear lips may both extend in the width and height directions. The front and rear lips may oppose one another along the depth direction. The front and rear lips may extend partially over a respective major surface of each received item. The central web portion may extend in the depth and height directions. Each track may not comprise obstructions or any features which may restrict the passage of an item down the track, e.g., to bear the weight of an item.

[0011] Adjacent columns (e.g., pairs of columns) may comprise opposing tracks which together define a slot (e.g., a vertical slot) for receiving one or more items. The opposing tracks of adjacent columns may be substantially aligned and in parallel.

[0012] At least one column may comprise two tracks facing away from one another. The at least one column may be configured to define a slot on either side, in cooperation with two further columns. The frame may comprise at least three columns, at least one column of which may comprise a uniform H-shaped cross section (extending uniformly in a vertical direction). The H-shaped cross

section may comprise a U-shaped track disposed either side of a central web portion.

[0013] The or each slot may be defined only by the tracks of adjacent columns. The slot may comprise a front lip of both opposing tracks. The slot may comprise a rear lip of both opposing tracks. The front lips of opposing tracks may not directly connect. The rear lips of opposing tracks may not directly connect. Alternatively, columns may be joined to the rear of the items, but not join at the front.

[0014] The or each slot may be configured to receive the plurality of items sequentially or in series (e.g., not in parallel or at the same time). The or each slot may be configured to retain items such that there is only a single item or spacer element at any height co-ordinate, e.g., such that the items are spaced apart along the height direction.

[0015] The frame may comprise a base (e.g., at a lowermost end of the columns). The frame may comprise an upper support element (e.g., at an uppermost end of the columns) or lid or roof. Each column may be supported by the base and the upper support element (e.g., supported by the base and the lid only). The columns may not be connected to one another other than via the base and upper support element.

[0016] The base may define a plurality of recesses for receiving columns. The recesses may be spaced apart by a fixed separation (e.g., the base may define a regular series or linear array of recesses). The base may comprise sections. Each section of the base may comprise a recess (e.g., at or towards a midline) for receiving a column. Adjacent base sections may co-operate (e.g., at an interface) to define a recess for receiving a column. The base sections may define a series of recesses (e.g., a regular series of recesses having equal spacing) for receiving columns. The recesses (e.g., and optionally the columns) may be spaced apart by a width dimension which substantially equal to an integer multiple of half of the width dimension of a base section. The base may bear the weight (e.g., the full weight) of any/all items received by, retained in or stored in a slot.

[0017] The system may be modular. The frame may be modular. The frame may be formed from modules. The columns may be modular. Each slot may be modular. The base and/or the lid may be modular. For example, each column, base section and/or lid section may be removable independently e.g., independently of other components of the same type. The frame may be extended, e.g., so as to support further items, by adding further columns, base sections and/or lid sections. Slot dimensions may be varied by removing or adding intermediate columns. The frame may comprise end columns and at least one intermediate column.

[0018] The frame may be reconfigurable by the addition or removal of a column. The frame may be reconfigurable such that the removal of an intermediate column may combine slots (e.g., combines two adjacent slots into a single slot of greater dimensions). The frame may

be reconfigurable such that the addition of an intermediate column divides a slot (e.g., divides a single slot into two slots of smaller dimensions). The frame may be reconfigurable to store items of quantised dimensions (e.g., width dimensions). The columns may be reconfigurable to define slots of quantised dimensions. The quantised dimensions may be substantially equal to integer multiples of the spacing between adjacent base recesses. The storage system may comprise slots of different dimensions. At least some of the recesses may be occupied by a column. Some of the recesses may be unoccupied by a column. The unoccupied or vacant recesses may be obscured or made inaccessible by an item received in a slot extending over the unoccupied recess. The plurality of recesses may coincide with the plane defined by the slots and/or columns.

[0019] The frame may be configured to receive the items such that the items are spaced apart along the tracks/slot (e.g., in the height direction). The frame may be configured to receive items such that a major face of each item faces outwardly (e.g., is not obscured, obstructed and/or supported and is thereby visible). Received items may be unsupported along their vertically extending midline. A major face of each item may be unobscured from an uppermost edge to a lowermost edge of the item. Received items may be unsupported other than at the tracks/columns. The frame may be configured to receive the items such that only the edges of the items extending vertically are obscured/obstructed, e.g., the item is supported only at its sides and its lowermost minor edge where it rests on either the base or a further item or a spacer element). The frame may not comprise cross-struts. A front surface of the frame may be defined solely by the tracks (e.g., the front lips). The frame may be configured to receive items such that they are retained substantially vertically.

[0020] A minor face of one item may abut a minor face of a spacer element and/or a minor face of a further item. The frame may be configured to receive items such that items are stacked end-on, optionally interspersed by spacer elements. The frame may be configured to receive the items such that the received items extend between adjacent columns. The frame may not comprise a horizontally extending component between the base and the lid (e.g., other than the base and the lid). The frame may not comprise a lateral component between items and/or between columns which may obscure, obstruct or support bottom or top edges of the items. Multiple slots may comprise similar dimensions (e.g., the same dimensions) such that items may be interchanged between slots.

[0021] The items may be substantially planar. Items within the same slot may comprise the same width. Items within the same slot may have the same height. Items within the same slot may comprise substantially identical dimensions. The items may be right-angular. The items within a slot may have a thickness dimension (smallest dimension) which is substantially equal to a depth of the

tracks defining the slot. The items may comprise quartz, granite or wood worktop samples. The items may comprise a density in excess of 2 g/cm³ (e.g., at least 2.5 g/cm³). The items may form a planar contact with one another and/or the spacer elements once received within a slot. Once received within a slot, each item may contact both tracks of the slot, e.g. with a planar contact.

[0022] The slots may be configured to receive spacer elements being slidably receivable within the slot and providable between items in the same slot.

[0023] According to another aspect of the present disclosure, there is provided a storage system for storing items, the storage system comprising: a frame having a plurality of columns spaced apart, each column comprising a track extending at least partially in a vertical direction, the tracks of adjacent columns together defining a slot for slidably receiving a plurality of items; and a plurality of items slidably receivable within the slot, the system configured such that upon receipt, a first item bears the weight of a second item. This aspect may form part of and/or be used in conjunction with any other aspect.

[0024] The items may be receivable within the slot so that the sides (e.g., only the sides) of the items are received in slot. The rest of each item may be visible, not obscured by and/or received in the tracks.

[0025] The system may further comprise a spacer element slidably receivable within the slot. The spacer element may have a width dimension substantially equal to the separation between adjacent columns (e.g., substantially equal to a width of the items within the slot) and a length dimension substantially less than the length dimension of the items. The spacer element may be providable between adjacent items (e.g., between in the height direction). The spacer element may thereby bear the weight of the at least one item provided at a higher elevation. The spacer element may be right-angular. The spacer element may be receivable such that it is flush with the major front surfaces of the first item and the second item, such that it does not obscure the front surfaces thereof. The first item and the spacer element may form an at least linear contact, optionally in the width direction of the system (e.g., a planar contact). In a storage configuration, each item may be stored such that its full height dimension is visible, unobscured and/or unobstructed.

[0026] According to an aspect of the present disclosure, there is provided a display comprising a modular frame and at least two elements for display, the modular frame comprising spaced apart columns, each column having a substantially vertical track, and at least one cross member which is configured to slide along the tracks, the elements for display also being configured to slide along the tracks, each pair of elements for display being separated by a respective cross member. The elements for display may comprise a structural part of the display and retaining the or each cross member in position relative to the columns. This aspect may form part of and/or be used in conjunction with any other aspect.

[0027] According to another aspect of the present dis-

closure, there is provided a method. The method may be a method of assembly of a system of the present disclosure, and/or a method of interchanging items of the present disclosure. The method comprises providing the storage system of any aspect. This aspect may form part of and/or be used in conjunction with any other aspect.

[0028] The method may further comprise sliding a first item into the slot. The method may further comprise sliding a second item into the slot, e.g., such that the first item bears the weight of the second item.

[0029] The method may further comprise providing a spacer element between the first item and the second item and/or sliding a spacer element into the slot prior to the second item

[0030] According to another aspect of the present disclosure, there is provided a method. The method may be a method of interchanging items of the present disclosure. The method may comprise providing the storage system of any aspect; removing a first item from a first slot; and/or inserting a second item into the first slot. This aspect may form part of and/or be used in conjunction with any other aspect. This method may be performed after the previous aspect. The method may comprise inserting the first item into a second slot. The method may comprise removing the second item from the second slot.

[0031] According to another aspect of the present disclosure, there is provided a method. The method may be a method of reconfiguring a storage system according to the present disclosure. The method may comprise adding a column. The method may comprise removing a column. The method may comprise adding a base section. The method may comprise removing a base section. The method may comprise exchanging items of different width and/or height dimensions.

[0032] To avoid unnecessary duplication of effort and repetition of text in the specification, certain features are described in relation to only one or several aspects or embodiments of the invention. However, it is to be understood that, where it is technically possible, features described in relation to any aspect or embodiment of the invention may also be used with any other aspect or embodiment of the invention.

Brief Description of Drawings

[0033] For a better understanding of the present invention, and to show more clearly how it may be carried into effect, reference will now be made, by way of example, to the accompanying drawings, in which:

Figure 1 is a perspective view of a storage system of the present invention;

Figure 2 is an upper left perspective view of a part of the storage system of Fig. 1;

Figure 3 is a cross-sectional view of the storage system of Fig. 1 along the line III-III shown in Fig. 1; and

Figures 4 and 5 are example methods according to the present invention.

Detailed Description

[0034] The Figures described below are exemplary not limiting, the scope of the invention being limited only by the claims.

[0035] With reference to Figs. 1 to 3, a storage system 1 for storing items 21, 22, 23 (collectively, items 20) is described. As denoted by the axes, the storage system 1 extends in a height direction, H, a depth direction, D, and a width direction, W.

[0036] The storage system 1 comprises a frame 10 having a plurality of columns 11 extending along the height direction H between a base 13 and an upper support element or lid 15. Each column 11 is rigidly attached to the base 13 and the lid 15, such that the columns 11, the base 13 and the lid 15 form a rigid structure.

[0037] The base 13 comprises a substantially flat and planar upper surface which is configured to support (e.g., bear the weight of) the items 20 when received within the slots (described later). Beneath the base 13 may be drawers 17 provided adjacent one another along the width direction W.

[0038] The base 13 comprises sections provided adjacent one another along the width direction, W. The sections extend along the depth and width dimensions of the system 1 and are joined together along interfaces 14 extending in the depth and height directions of the system 1. Each section of the base 13 extends from one side of the system 1 to the other along the depth direction. In the embodiment shown, each section of the base 13 is configured to receive a column 11 at a midpoint proximate a front edge. Further, each section of the base 13 is configured to co-operate with an adjacent base section along the mutual interface 14 to receive a column 11 at the interface 14. Accordingly, in the embodiment shown, each section of the base 13 is able to at least partially support three columns 11. The base 13 thereby defines a regular series of recesses (not shown) for receiving a bottom end of a column, the recesses being spaced apart by half the width dimension of a base section.

[0039] The upper support element or lid 15 is substantially flat and planar and provided in a plane parallel to the base 13. The lid 15 is removable in order to permit items 20 to be added to or removed from the system 1. In a preferred example the lid 15 may comprise sections in a similar manner to the base 13. However, the sections of the lid 15 may be offset along the width direction W from those of the base 13 such that the interfaces 14 between base sections do not align with the interfaces of the lid 15. The overall rigidity of the frame 10 may thereby be improved.

[0040] The lid 15 may comprise recesses for receiving upper ends of columns 11. Additionally or alternatively, the lid 15 may be secured to the columns by fasteners (e.g., screws or bolts).

[0041] Fig. 3 shows a cross-section through the system 1 along the line III-III of Fig. 1. For simplicity, the front and rear lips 12a, 12b of only one track 12 are shown in Fig. 3, but it will be appreciated that each track 12 shown will comprise the same features. Similarly, for simplicity, an item 20 has been omitted from the track 12 having the annotations 12a, 12b.

[0042] Each column 11 comprises a substantially uniform cross section along its height dimension such that an item 20 may slide within the track 12 between the uppermost and lowermost ends of the column 11 without encountering an obstruction. Each track 12 comprises a vertically extending front lip 12a and rear lip 12b opposing one another and defining boundaries of the track 12 in the depth direction. In particular, the tracks 12 comprise a right-angular U-shaped cross section, configured to receive an edge or side of a right-angular item 20 as shown in Fig. 3.

[0043] With the optional exception of the columns 11 provided at the ends of the system 1, each column 11 comprises an H-shaped cross section such that a track 12 is provided on either side of a central web portion 12c. Accordingly, with the exception of the columns 11 at the ends of the system, the columns 11 are substantially identical to one another, such that they comprise uniform dimensions and geometry. The columns 11 provided at the end of the system 1 may comprise only a single track 12, such that these columns 11 may comprise a cross section similar to the columns 11 of Fig. 3 but halved along the central web portion 12c.

[0044] The columns 11 are spaced apart by a selected distance according to a corresponding width dimension 20 of items which are to be stored in the slot. In particular, the columns 11 are translated relative to one another along the width direction, such that they are provided in the same orientation and substantially aligned. The columns 11 are therefore parallel with one another and exist substantially in the same vertical plane which extends along the height and width directions H, W.

[0045] Accordingly, adjacent columns 11 comprise opposing tracks 12 which are substantially aligned with one another and together define a slot for receiving items 20. The slots are therefore modular and complex in construction as they are formed by the co-operation between separate components which are not unitary and may not be directly connected.

[0046] In the embodiment shown, adjacent columns 11 are spaced apart by integer multiples of half of the width dimension of the sections of base 13. For example, towards the near side of the system of Fig. 1, and in Fig. 2, the columns are spaced apart by a dimension substantially equal to half of the width of a single section of base 13, whereas either side of items 23 (Fig. 1), the columns 11 are spaced apart by a dimension substantially equal to twice the width of a base section 13. This may be achieved by the omission of an intermediate column 11 at the interface between two base sections 13, and the omission of two mid-point columns 11. Accord-

ingly, the recesses on the midlines of the two base sections, and the recesses at the interface between the two base sections, bearing the weight of the items 23 are vacant but obscured and inaccessible by virtue of the items 23.

[0047] The items 20 are right-angular and comprise two major faces, and four minor faces or edges perpendicular to and extending between the major faces. In the embodiments shown, the items 20 are slabs (e.g., made from quartz, granite, wood, etc.) of worktop sample (e.g., for a kitchen, bathroom or workshop), which may be on the order of 5 cm in thickness. In particular, the items 20 shown are flat and comprise a uniform thickness (e.g., in the depth direction).

[0048] The items 20 are retained within the slot such that a major face of each item faces outwardly (i.e., along the depth direction). In particular, an edge of each item and a small portion of each major face is received within the respective track 12. As the tracks 12 extend vertically, each item is thereby retained in an upright orientation, resting on a minor face or edge. In effect, the system 1 retains items 20 in a stacked arrangement on edges which, in the absence of the system 1, the items would not be able to stack in a stable manner. As such, the full height dimension of a major face of each item 20 facing outwardly is completely unobstructed and thus visible.

[0049] The items are stacked within the slot such that they are spaced apart along the height direction. For example, only one item 20 (or spacer element 24 described later) may be provided at any co-ordinate in the height direction.

[0050] Within the tolerance provided by the front and rear lips 12a, 12b, items retained within the same slot will have substantially the same width dimension.

[0051] As shown in Fig. 1, the system 1 may store items 20 of a range of dimensions. For example, each slot may receive three items 21 having, in a stored configuration, a height dimension which is greater than a width dimension. Additionally or alternatively, each slot may be configured to receive two items 22 having, in a stored configuration, a height dimension which is significantly greater than (e.g., double) a width dimension. Additionally or alternatively, each slot may be configured to receive two items 23 which, in a stored position, have a length dimension significantly greater than a height dimension.

[0052] The dimensions of the lips 12a, 12b extending in the width dimension define the range of item widths which are receivable within a slot. For example, an item 20 which has a width less than the minimum dimension between front lips 12a of opposing tracks 12 may not be securely retained by the opposing tracks 12. Similarly, a dimension between central web portions 12c of opposing tracks 12 may define a maximum width dimension of items 20 which may be retained by the opposing tracks 12.

[0053] For each plurality of items receivable within a slot, the items 20 comprise a thickness or depth dimension which does not exceed that of the track 12 between

the front and rear lips 12a, 12b, at least in the portion of the item 20 that is receivable within the track 12. For example, all items having a side or edge received within a track 12 of the same slot necessarily comprise a maximum thickness in the depth direction at the location of the side or edge receivable within the track 12. It will be understood by the skilled person that thickness dimensions which are closer to the depth dimension of the respective track 12 will permit the items 20 to be retained closer to the vertical.

[0054] Although item thicknesses may vary, due to the stacked nature of items 20, it is preferable that items within the same slot have similar thickness dimensions.

15 Spacer elements

[0055] The system 1 optionally comprises spacer elements 24 provided between stacked items 20. The spacer elements 24 are configured to improve the appearance of the display, by providing a decorative border between each item in the stack. If made of a resilient or slightly flexible material they may prevent impact damage to items which are placed carelessly in the display. Finally the spacers may serve to distribute the weight of higher items in the stack (e.g., to prevent the weight of higher items 10 from being borne unevenly by the upper minor face of lower items 10). Further, the spacer elements 24 may protect the lower items from the surface of any higher items (e.g., the upper face of a wooden sample from the lower face of a granite sample).

[0056] In each slot, the spacer elements 24 comprise substantially the same width and depth dimensions as the items 20 stored in the slot. Accordingly, the dimensions of the spacer elements 24 may be varied in accordance with the dimensions of the items 20 to be stored. The spacer elements 24 comprise a height dimension which is significantly less than the height dimensions of the items 20 within the same slot.

[0057] As shown in Fig. 2, the front lips 12a of the columns 11 extend forward of the received items 20, whilst the items 20 and the spacer elements 24 remain flush with one another. Accordingly, along the height direction within the slot (e.g., along the midline of the slot), the items 20 and the spacer elements 24 form the forward-most surfaces of the system 1. For example, the frame 10 does not comprise lateral components extending between adjacent columns 11. A user may thereby grasp an item (e.g., from the lowermost position within the slot), and lift the item upwards out of the top of the slot in a continuous motion (e.g., without having to alternate hands or change hand-position due to the presence of lateral components proximate or within the slot).

55 Modular structure

[0058] It will be evident from the foregoing that the system 1 is modular. For example, the system 1 comprises components which can be added or removed in order to

vary the dimensions of a slot (and thus items receivable by the system 1), as well as the overall dimensions of the system 1.

[0059] A user may add a further base section, a further two columns 11, and a further lid section in order to extend the width of the system 1. Additionally or alternatively, a user may remove an intermediate column in order to provide a slot of approximately double width and/or add a column to divide a larger slot into two smaller slots. Similarly, a user may add columns of different height dimensions to define slots of different heights.

[0060] As the base and/or the lid receive the columns by means of recesses, when a column is not received in a particular recess, the recess may be obscured or otherwise made inaccessible by the item received in the slot. In other words, the slots defined by the columns coincide with the recesses formed in the base and/or lid.

Assembly & interchange

[0061] Fig. 4 shows an example method 40 according to the present invention. The method 40 optionally comprises removing 41 a lid 15 of the system 1 (if not already removed) and inserting 42 an item 20 (e.g., in an orientation having an edge or minor face of an item 20 lowermost) into the uppermost opening of two opposing tracks 12 of adjacent columns 11 and sliding (e.g., resisting the fall of the item 20 due to gravity) the item 20 down the slot formed by the opposing tracks 12, until the item 20 reaches the base 13. The method 40 further comprises sliding 43 a spacer element 24 down the tracks 12, until it rests upon an uppermost surface of the first item 20.

[0062] The method 40 further comprises sliding 44 in a second item 20 in a similar manner, until it rests on an upper surface of the spacer element 24. The method may further comprise inserting 45 further pairs of spacer elements 24 and items 20 until the slot is filled in the height dimension. It is optional whether an item 20 or a spacer element 24 is uppermost (e.g., closest to the lid 15) within a filled slot.

[0063] Any adjacent slots provided within the system 1 (e.g., under the same lid 15 or lid section) may be filled 46 in a similar manner. The method 40 may further comprise replacing 47 the lid 15.

[0064] Fig. 5 shows a further example method 50 of the present invention. The method 50 may be performed after the method 40. The method 50 comprises removing 52 a first item 20 from a first slot; inserting 53 a second item 20 into the first slot. The method 50 may additionally comprise inserting 54 the first item 20 into a second slot. Optionally, the method 50 comprises removing 51 the second item 20 from the second slot (e.g., prior to removal of the first item 20 from the first slot). For example, the method 50 may move items 20 from one slot to another, and/or rearrange items 20 within the same slot.

Alternatives

[0065] Although the figures suggest that items 20 within the same slot may have the same height dimension, it will be understood that this is only one example of the present invention. For example, items 20 within the same slot may have different height dimensions. However, items 20 within the same slot must have substantially the same width at the location of the same track 12, within the tolerance provided by the front and rear lips 12a, 12b.

[0066] Although Fig. 3 suggests that all items have uniform thickness, it will be understood by the skilled person that items within a slot may have different thicknesses. For example, items 20 within a slot may have edges which have a smaller thickness dimension than the centre of the item. These items 20 may be provided flush with the forwardmost surface of a column 11.

[0067] Further, an item may have different thickness dimensions on different edges, so as to fit into opposing tracks 12 having different thickness dimensions. For example, a column 11 may comprise tracks 12 of differing depth dimensions either side of a central web portion 12c such that items 20 of different thicknesses may be stored. The tracks 12 may also have different depth and lip dimensions.

[0068] With reference to Fig. 1, the far side of the system 1 extending in the width direction may also comprise a storage arrangement as described.

Statements

[0069] The invention may additionally be described by the following statements which form part of the present disclosure:

Statement 1. A storage system for storing items, the storage system comprising:
a frame having a plurality of columns spaced apart, each column comprising a track extending at least partially in a vertical direction, the tracks of adjacent columns together defining a slot for slidably receiving a plurality of items,
wherein the frame is configured to retain the items such that a first item at least partially bears the weight of a second item.

Statement 2. The storage system of statement 1, wherein each column comprises a continuous track extending substantially vertically.

Statement 3. The storage system of any preceding statement, wherein the columns are discrete from one another.

Statement 4. The storage system of any preceding statement, wherein the frame comprises a base and an upper support element, each column being supported by the base at its lowermost end and by the

upper support element at its uppermost end.

Statement 5. The storage system of statement 4, wherein the base bears the weight of all items in the slot

Statement 6. The storage system of any preceding statement, wherein the slot is configured to receive the plurality of items sequentially.

Statement 7. The storage system of any preceding statement, wherein the of track each column comprises a right-angular U-shaped transverse cross-section.

Statement 8. The storage system of any preceding statement, wherein the system comprises at least three columns, at least one column comprising a uniform H-shaped cross section having a track on either side of a central web portion.

Statement 9. The storage system of any preceding statement, wherein the tracks of adjacent columns are substantially aligned and in parallel.

Statement 10. The storage system of any preceding statement, wherein the or each slot is defined only by the columns.

Statement 11. The storage system of any preceding statement, wherein the frame is modular.

Statement 12. The storage system of any preceding statement, wherein the frame comprises a modular base and adjacent base sections co-operate to receive a column at an interface therebetween.

Statement 13. The storage system of statement 12, wherein the columns are spaced apart by an integer multiple of half the width dimension of a base section.

Statement 14. The storage system of any preceding statement, wherein the frame is configured to receive the items such that only the lateral edges of the items are received in the tracks.

Statement 15. The storage system of any preceding statement, wherein the frame is configured to receive the items such that a major surface of each item is unobscured from an uppermost edge to a lowermost edge of the item once received.

Statement 16. The storage system of any preceding statement, wherein the frame is configured to receive the items such that the items are spaced apart within the slot along the height direction.

Statement 17. The storage system of any preceding

statement, comprising a spacer element slidably receivable within the slot and providable between items within the slot.

Statement 18. The storage system of any preceding statement, comprising a plurality of items slidably receivable within the slot such that upon receipt, a first item bears the weight of a second item.

Statement 19. The storage system of statement 18, wherein the spacer element has a width dimension substantially equal to the separation between the columns of the slot and a height dimension substantially less than the height dimension of the items.

Statement 20. The storage system of any preceding statement, comprising columns spaced apart by different distances.

Statement 21. A method comprising:
providing the storage system of any preceding statement.

Statement 22. The method of statement 22, comprising:

sliding a first item into the slot;
sliding a second item into the slot such that the first item bears the weight of the second item.

Statement 23. The method of statement 22, further comprising:
providing a spacer element between the first item and the second item.

Statement 24. A method comprising:

providing the storage system of any of statements 1 to 20;
removing a first item from a first slot;
inserting a second item into the first slot.

Statement 25. The method of statement 24 comprising:

inserting the first item into a second slot; and
optionally, removing the second item from the second slot.

[0070] It will be appreciated by those skilled in the art that although the invention has been described by way of example, with reference to one or more exemplary examples, it is not limited to the disclosed examples and that alternative examples could be constructed without departing from the scope of the invention as defined by the appended claims.

Claims

1. A storage system for storing items, the storage system having a frame comprising:
- a base defining a plurality of recesses for receiving columns;
- a plurality of columns spaced apart and received in the recesses, each column comprising a track extending at least partially in a vertical direction, the tracks of adjacent columns together defining a slot for receiving an item, wherein the base is configured to bear the weight of an item received in a slot.
2. The storage system of claim 1, wherein the tracks of adjacent columns together define a slot for slidably receiving a plurality of items, wherein the frame is configured to retain the items such that a first item at least partially bears the weight of a second item.
3. The storage system of claims 1 or 2, wherein the frame is modular and reconfigurable by the addition or removal of a column.
4. The storage system of any preceding claim, wherein the frame is reconfigurable such that:
- the removal of an intermediate column combines adjacent slots;
- the addition of an intermediate column divides a slot.
5. The storage system of any preceding claim, wherein the storage system is reconfigurable to store items of quantised dimensions, the quantised dimensions being substantially equal to integer multiples of the spacing between adjacent base recesses.
6. The storage system of any preceding claim, wherein the base is modular.
7. The storage system of any preceding claim, wherein the frame comprises a modular base and adjacent base sections co-operate to define a recess at an interface therebetween.
8. The storage system of claim 7, wherein the recesses are spaced apart by half the width dimension of a base section.
9. The storage system of any preceding claim, wherein the system comprises at least three columns, including at least one intermediate column comprising a uniform H-shaped cross section having a track on either side of a central web portion.
10. The storage system of any preceding claim, wherein the tracks of adjacent columns are substantially aligned and in parallel.
11. The storage system of any preceding claim, comprising a spacer element slidably receivable within the slot and providable between items within the slot.
12. The storage system of any preceding claim, comprising slots of different dimensions.
13. A method comprising:
- providing the storage system of any preceding claim.
14. The method of claim 13, comprising:
- sliding a first item into the slot;
- optionally, sliding a second item into the slot such that the first item bears the weight of the second item.
15. The method of claims 13 or 14, comprising:
- adding or removing a column; and/or
- adding or removing a base section.

Fig. 1

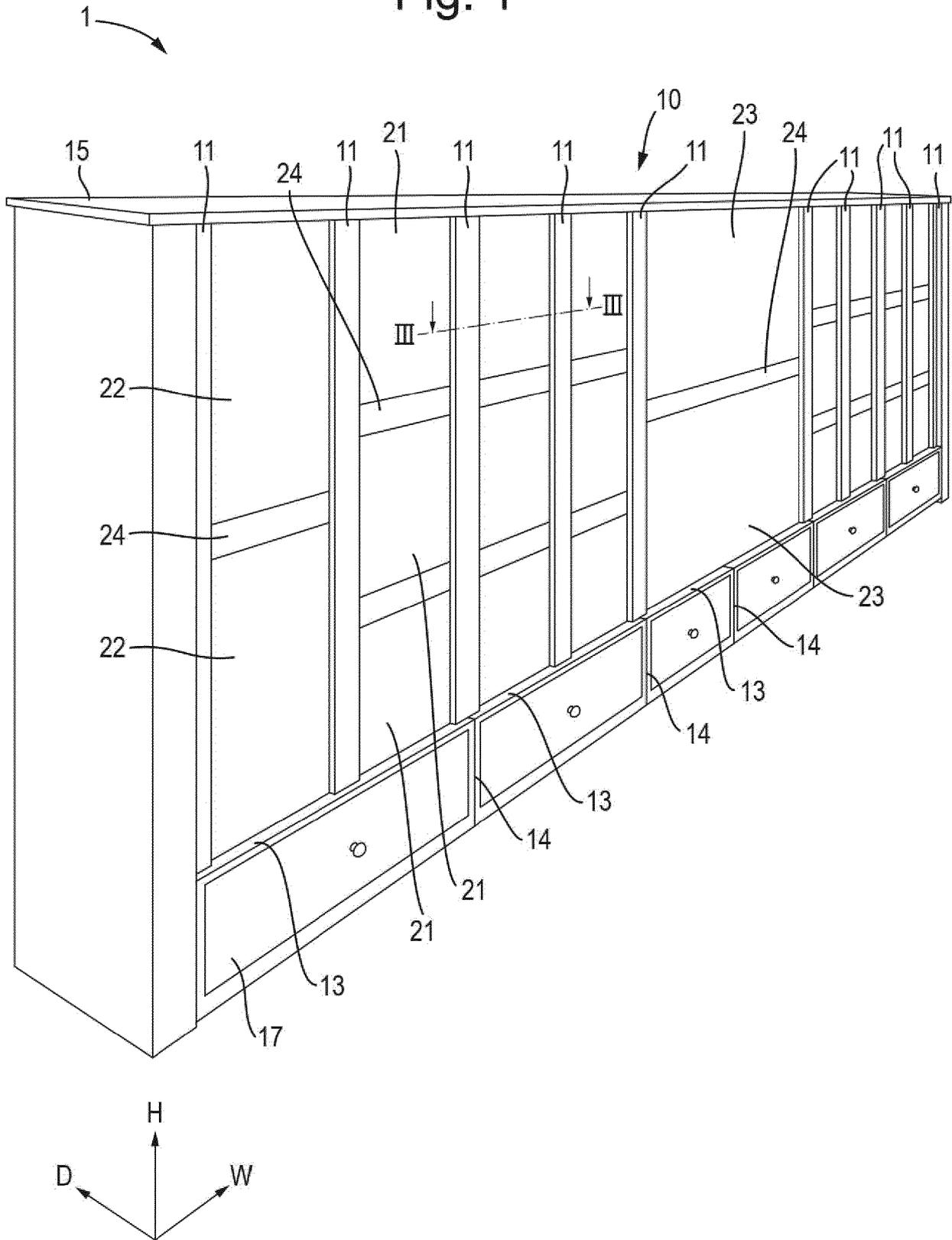


Fig. 2

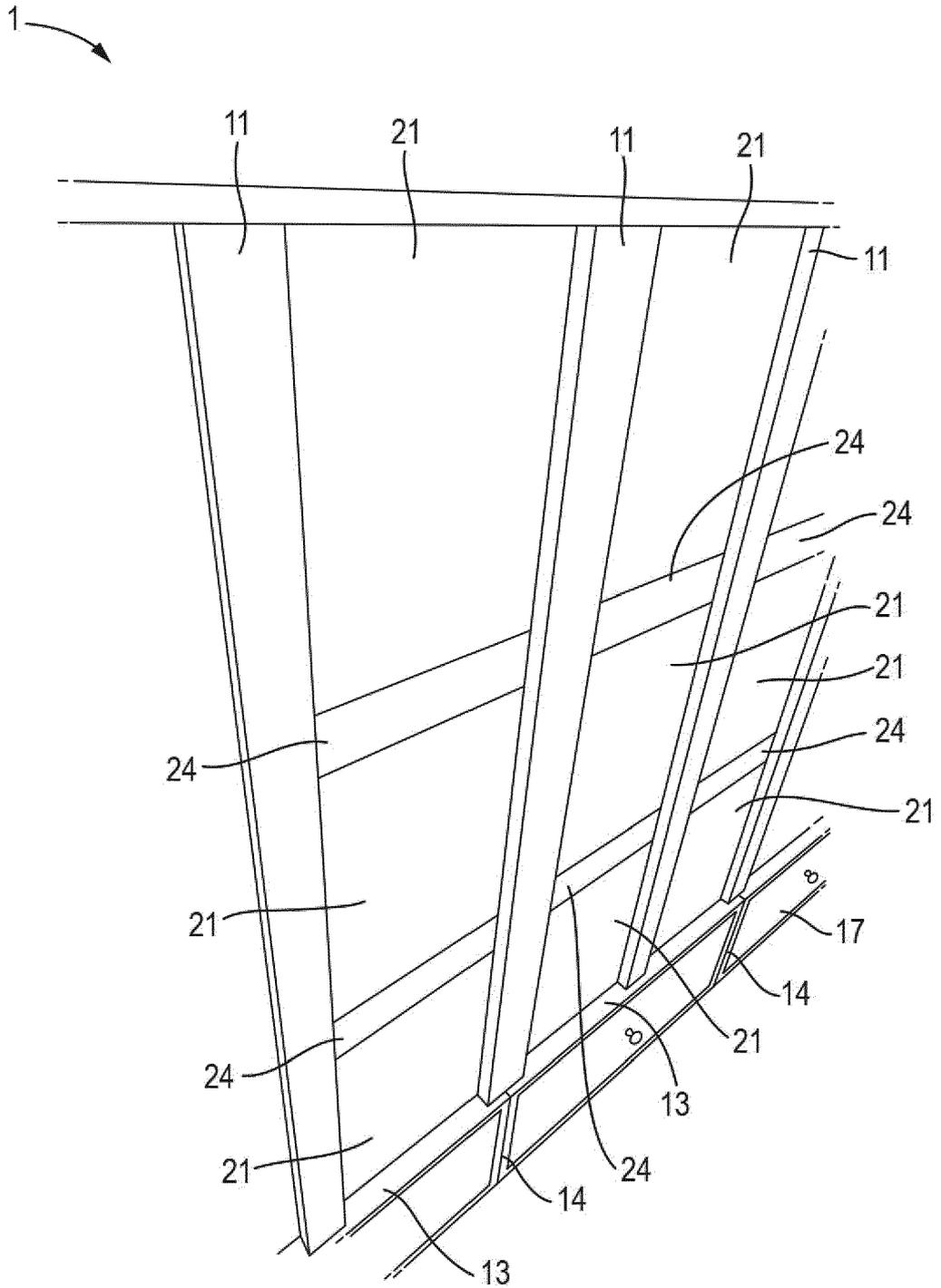


Fig. 3

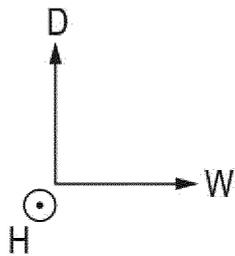
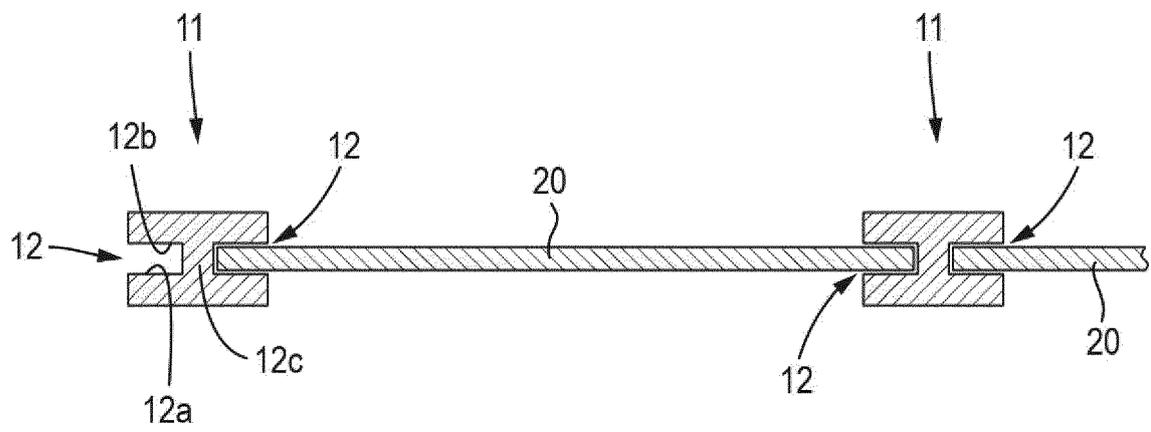


Fig. 4

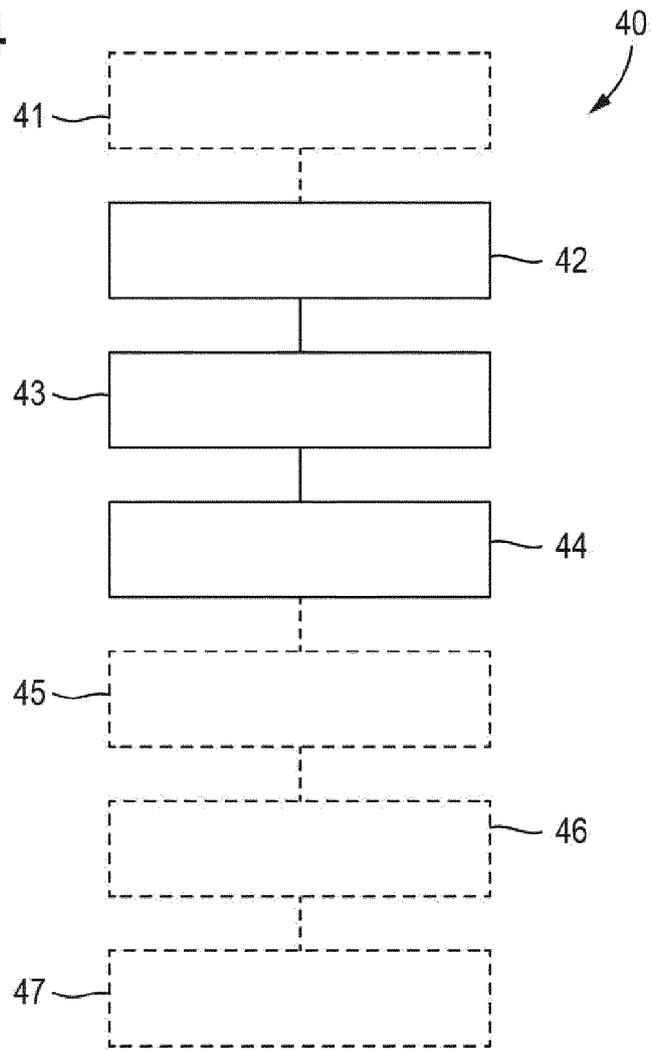
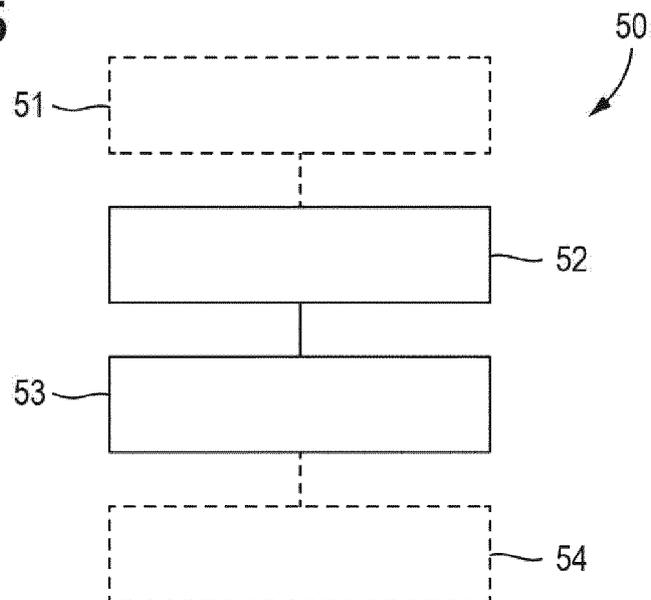


Fig. 5





EUROPEAN SEARCH REPORT

Application Number

EP 24 15 0914

5

DOCUMENTS CONSIDERED TO BE RELEVANT

10

15

20

25

30

35

40

45

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 3 938 666 A (CASTLEBERRY WILLIAM R) 17 February 1976 (1976-02-17) * column 5, line 14 - column 7, line 26; figures 7-14 *	1-5,9-15	INV. A47F7/00 A47B47/00 ADD. A47F1/08
X	DE 20 2006 006164 U1 (MKT MARKETINGKOMMUNIKATIONS TE [DE]) 12 October 2006 (2006-10-12) * the whole document *	1,2,6,7, 10,13	
A	US 2020/178705 A1 (BARZEE SID [US]) 11 June 2020 (2020-06-11) * the whole document *	1-15	
A	DE 296 11 116 U1 (DWT DEKO DEKORATIONS WORK TEAM [DE]) 26 September 1996 (1996-09-26) * the whole document *	1-15	

TECHNICAL FIELDS SEARCHED (IPC)

A47B
A47F
A47G

1

The present search report has been drawn up for all claims

50

Place of search The Hague	Date of completion of the search 31 May 2024	Examiner van Hoogstraten, S
-------------------------------------	--------------------------------------------------------	---------------------------------------

55

EPO FORM 1503 03:82 (F04C01)

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons
.....
& : member of the same patent family, corresponding document

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 24 15 0914

5 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
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

31 - 05 - 2024

10	Patent document cited in search report	Publication date	Patent family member(s)	Publication date
	US 3938666 A	17-02-1976	NONE	

15	DE 202006006164 U1	12-10-2006	NONE	

	US 2020178705 A1	11-06-2020	NONE	

	DE 29611116 U1	26-09-1996	NONE	
20	-----			
25				
30				
35				
40				
45				
50				
55				

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82