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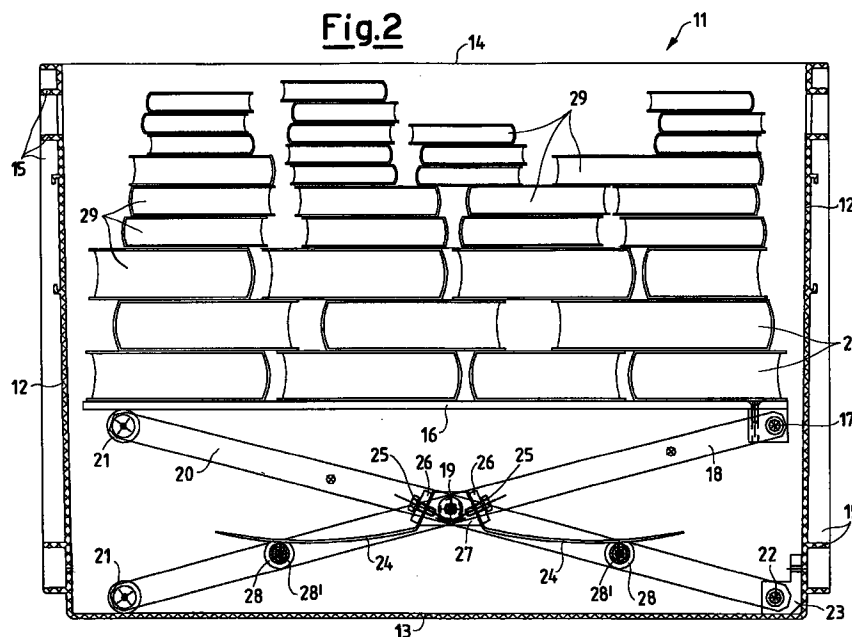
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(54) Editorial products container with self-adjustable floor

(57) An editorial products container with self-adjustable floor consisting of an upwardly open (at 14) box-like containing element (11) comprising within its interior a flat resting element (16) downwardly and upwardly movable on support elements (18, 20) which can be variably positioned and are at least partially secured to the containing element, there being provided at least one reaction element (24, 124) which determines the

position in height and the controlled descent of the flat resting element (16), which when unloaded is in its raised position and when under maximum load is in its completely lowered position within the containing element. In this manner the loading and unloading surface for the products (29) is always maintained in proximity to a mouth (14) of the container (11).

Fig.2



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Description

This invention relates to an editorial products container with self-adjustable floor, for preordered withdrawal.

In those industries which produce or distribute editorial products, such as books or the like, the requirements of the various customers, such as bookshops, are fulfilled by placing the various requested products in appropriate containers. These containers, known as baskets, are generally of box shape and the editorial products are arranged in them stacked one on another.

Such an operation is performed in accordance with preordered withdrawal known as picking, the containers being known as picking baskets.

Such an arrangement presents certain problems, both for the publisher or distributor, and during unloading by the customer, for example an individual bookshop.

In this respect, in the first case, in depositing books of different types in the required number within the container there is a certain difficulty in their placing, especially for the initial products which have to lie on the container base. Unless accompanied while being inserted, these products fall onto the base and can be ruined. Moreover during their fall within the container they lose their ordered arrangement, they abandon the initial pile and consequently inadequately occupy the entire container in a disordered manner.

This requirement for order and the maintaining of order arises from the fact that the editorial products inserted therein are of different dimensions. For this reason the space within the container must be properly utilized, and this can be achieved by manual placing only with great difficulty. This difficulty in product insertion results in a lengthy time necessary for achieving the required suitable arrangement.

A further requirement is to be able to insert the editorial products directly by means of a mechanical manipulator. In current containers this is not possible because, as already to some extent stated, the initially inserted products fall onto the base, they deteriorate and they are also very difficult to take out by the final customer, who receives such a container with a totally disordered product arrangement.

An object of the present invention is therefore to define and provide a container which solves the technical problem of achieving easy and always correct product insertion.

A further object is to provide a container which likewise facilitates the withdrawal of the editorial products piled in it one on another.

A further object, strictly related to the others, is to provide a container which can receive in its interior several editorial products of the most varied dimensions and maintain them in the most ordered manner possible.

These and further objects are attained according to

the present invention by an editorial products container with a self-adjustable floor, in the form of an upwardly open box-like containing element, characterised by comprising within its interior a flat resting element downwardly and upwardly movable on support elements which can be variably positioned and are at least partially secured to said containing element, there being provided at least one reaction element which determines the position in height and the controlled descent of said flat resting element, which when unloaded is in its raised position and when under maximum load is in its completely lowered position within said containing element.

A container according to the invention hence achieves automatic descent of the floor within the container as the products are gradually inserted into it. This insertion is extremely easily achieved and virtually always at the same height, ie at the upper mouth of the container. In this manner, according to the present invention, insertion can even be effected by a motorized lifter or by any mechanical manipulator.

One embodiment of a container according to the invention is described in greater detail hereinafter by way of non-limiting example with reference to the accompanying drawings, on which:

Figure 1 is a front elevational section through the interior of a container according to the invention in its totally raised position, unloaded and ready to receive said editorial products;

Figure 2 is a section similar to the preceding showing the container of Figure 1 with editorial products such as books inserted into it and being nearly in its completely lowered position;

Figure 3 is a side elevation of the container of Figure 1, shown partially in section and in the same position as Figure 1; and

Figure 4 is a front elevational section similar to that of Figure 1, in which the interior of the container of the invention, shown unloaded in its totally raised position, is provided with a different reaction element.

With reference to the drawings, these show an editorial products container with a self-adjustable floor, constructed in accordance with the invention and indicated overall by 11.

Such a container 11 consists of a box-like containing element comprising side walls 12 and a base 13 and is open upwards in correspondence with a mouth 14. The constituent parts of the container 11 can be of simplified form by being constructed of wood, plastic or another similar suitable material. The side walls and the base 13 can comprise strengthening and stiffening elements, such as ribs 15, applied to or formed integrally with them.

Within the container 11 of the present invention there is provided a flat resting element 16 which can be

lowered and raised. The flat resting element 16 can be rotated at one end on a pivot 17, relative to a first support element in the form of a pair of parallel bars 18 positioned in proximity to opposite side walls (only one of these being shown).

Secured to an intermediate region of the bars 18 of the first support element by a pivot shaft 19, there is a second support element also comprising a pair of parallel bars 20 located in proximity to opposite side walls (only one of which is shown). In this manner a double cross-shaped or parallelogram arrangement is formed, the position of which can be varied in height, while maintaining the resting surface horizontal, even with an off-centre load. This height-variable positioning is determined by the fact that those ends of the constituent pair of bars 18 of the first support element which face the base 13 each carry a rolling element or wheel 21 freely slidable on the base 13 of the container 11. The two bars 20 of the second support element carry a rolling element or wheel 21 also freely slidable and similarly arranged on that end lying below the flat resting element 16. At their opposite end the two bars 20 of the second support element are secured by respective further pivots 22 to extensions 23 of a side wall 12 and of the base 13 of the containing element of the invention.

Further according to the present invention, there is provided at least one reaction element which determines the position of the flat resting element 16 in height, in that when the flat resting element is unloaded it maintains it in the raised position, whereas when it is fully loaded it maintains it in a completely lowered position within the containing element.

In the embodiment shown by way of example on the drawings, the element which determines the position in height and the controlled descent of the flat resting element 16 consists of a pair of leaf springs 24.

The leaf springs 24 have one end fixed by locking screws 25 and plates 26 to an enlarged central region 27 rigid with the pivot shaft 19. Towards their opposite end, beyond their middle point, the springs 24 slide on idle rollers 28 secured to cross-members 28' which join each pair of bars 18 and 20 together. In this manner, by acting on the rollers 28 transverse to the two pairs of bars 18 and 20, the springs 24 become loaded or unloaded depending on the relative position of the bars. The springs 24 are nearly unloaded when the flat resting element 16 is in its raised position, ie when there is no product present on it. In contrast, when the flat resting element 16 is under maximum load and carries a plurality of editorial products 29, ie when in its completely lowered position within the containing element, the springs 24 are almost completely loaded. The springs can be of various types with different elasticity coefficients depending on the specific weight of the products to be supported on the resting element 16.

Figure 4 shows a front elevational section, similar to Figure 1, through the interior of the container of the invention. It can be seen that the flat resting element 16

is shown in its totally raised unloaded position and with a different reaction element.

This reaction element is a telescopic cylinder 124 which acts between a first cross-member 30, positioned between the two facing bars 18, and a second cross-member 31 positioned between the two facing bars 20. The cylinder 124 can contain a reaction fluid or an elastic element of progressive force which performs the same function as the leaf springs 24 of the aforescribed first embodiment.

It is hence apparent that the invention provides in a simple and comfortable manner a solution to the problem of positioning, inserting and extracting products such as books or the like, within a container for editorial products of the aforesaid type.

This ease of positioning arises from the guided automatic descent undergone within the container by the flat resting element on which individual products or groups of products are placed one after another. This is enabled by the fact that the upper free surface of the resting element remains virtually constantly in the vicinity of the container mouth by virtue of the reaction element, so facilitating all loading and unloading of single products or groups of products.

Figure 1 shows by dashed lines a further characteristic of the container of the present invention.

In this respect, the flat resting element 16 can be rotated through 90° about that end comprising the pivot 17. In this manner the container interior can be easily cleaned, and maintenance or adjustments can be carried out on the parts contained within it. It should also be noted that this facility for rotating the flat resting element 16 through 90° relative to the pair of bars 18 is advantageous in particular for assembling all the parts which have to be mounted within the container of the present invention. The resting element 16 can be advantageously constructed of transparent material to enable the container interior to be viewed.

Claims

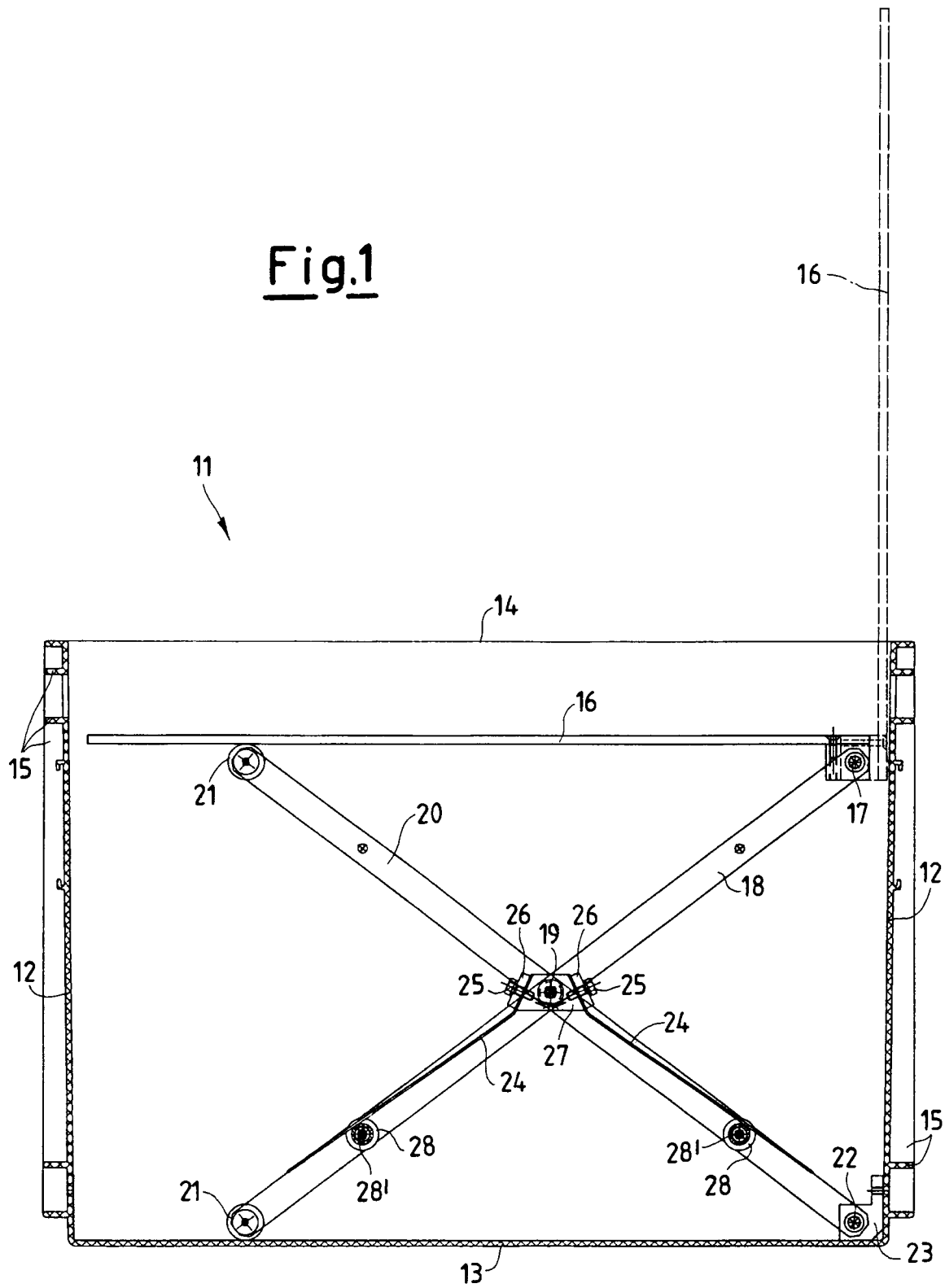
1. An editorial products container with self-adjustable floor, consisting of an upwardly open (at 14) box-like containing element (11), characterised by comprising within its interior a flat resting element (16) downwardly and upwardly movable on support elements (18, 20) which can be variably positioned and are at least partially secured to said containing element, there being provided at least one reaction element (24, 124) which determines the position in height and the controlled descent of said flat resting element (16), which when unloaded is in its raised position and when under maximum load is in its completely lowered position within said containing element.
2. A container as claimed in claim 1, characterised in that said support elements (18, 20) consist of pairs

of parallel bars located in proximity to opposite side walls (12) of said container (11), said bars (18, 20) being hinged together in an intermediate region (19) thereof, at least one pair of said bars (20) being pivoted at one end (22) to a side wall (12) and/or to the base (13) of said container (11). 5

3. A container as claimed in claim 2, characterised in that said reaction element consists of at least one leaf spring (24) which interacts between an intermediate hinging region of said pair of bars (18, 20) and cross-members (28') which connect together at least one pair of said bars (18, 20). 10
4. A container as claimed in claim 3, characterised in that said cross-members (28') carry idle rollers (28) on which said leaf springs (24) slidably act. 15
5. A container as claimed in claim 2, characterised in that a first pair of said bars (18) is pivoted at a first end to said flat resting element (16), and at its second end carries a rolling element (21) which is freely slidable on said base (13), said second pair of said bars (20) being pivoted at a first end to a said side wall (12) and/or to said base (13) of said container (11), and carrying at its second end a rolling element (21) which is freely slidable below said flat resting element (16). 20 25
6. A container as claimed in claim 2, characterised in that said reaction element consists of at least one cylinder (124) which interacts between said pair of bars (18, 20) and their cross-members (30, 31) which join said pairs of said bars (18, 20) together. 30 35
7. A container as claimed in claim 1, characterised by being of wooden construction.
8. A container as claimed in claim 1, characterised by being of plastic construction and provided with strengthening ribs (15) at least on its side walls (12). 40
9. A container as claimed in claim 1, characterised in that said flat resting element (16) is rotatable through 90° about an end (17) thereof pivoted to said support elements (18, 20) so as to free an upper mouth (14) of said container (11). 45
10. A container as claimed in claim 1, characterised in that said flat resting element (16) is constructed of transparent material. 50

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Fig.1



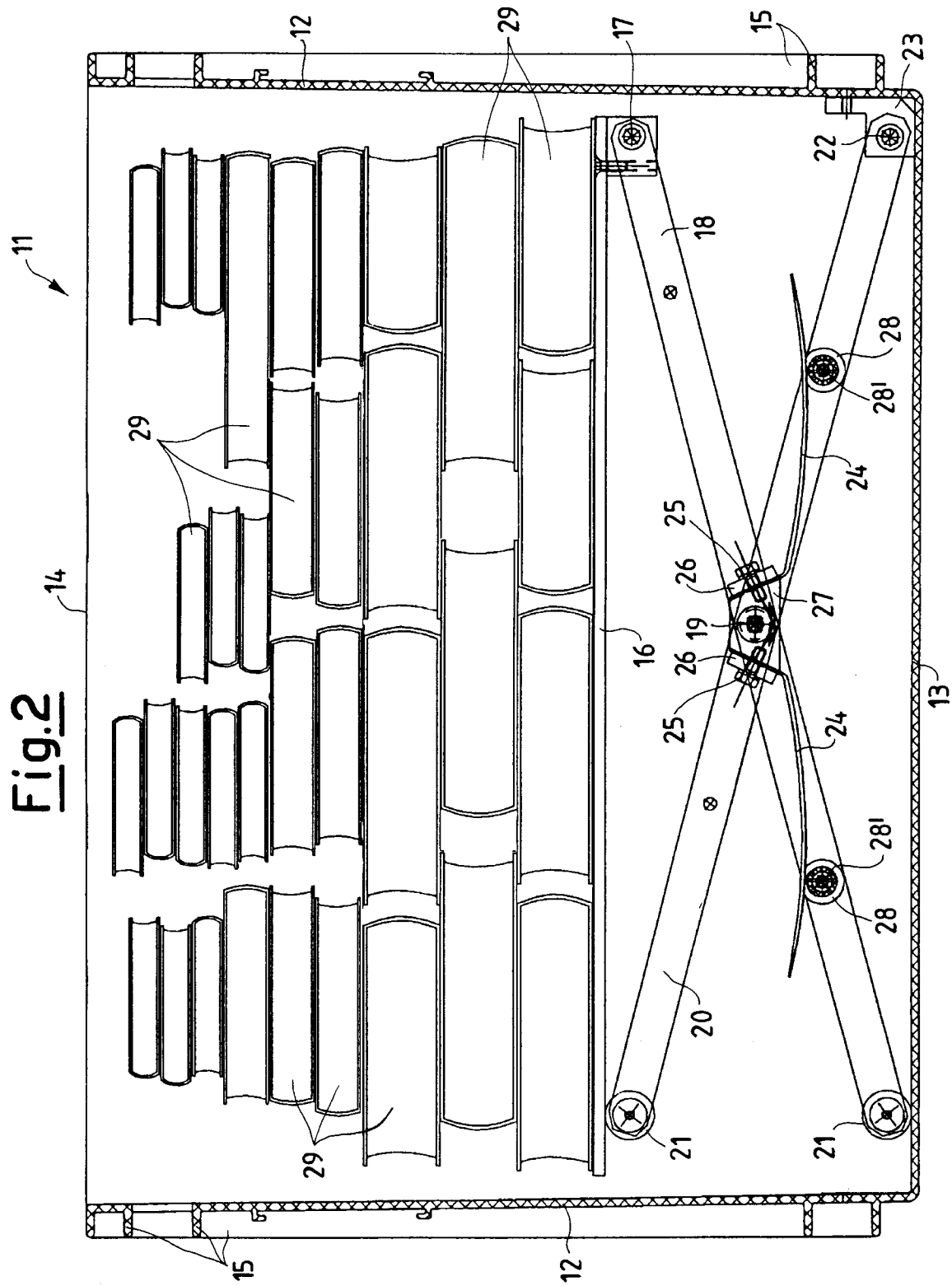


Fig.3

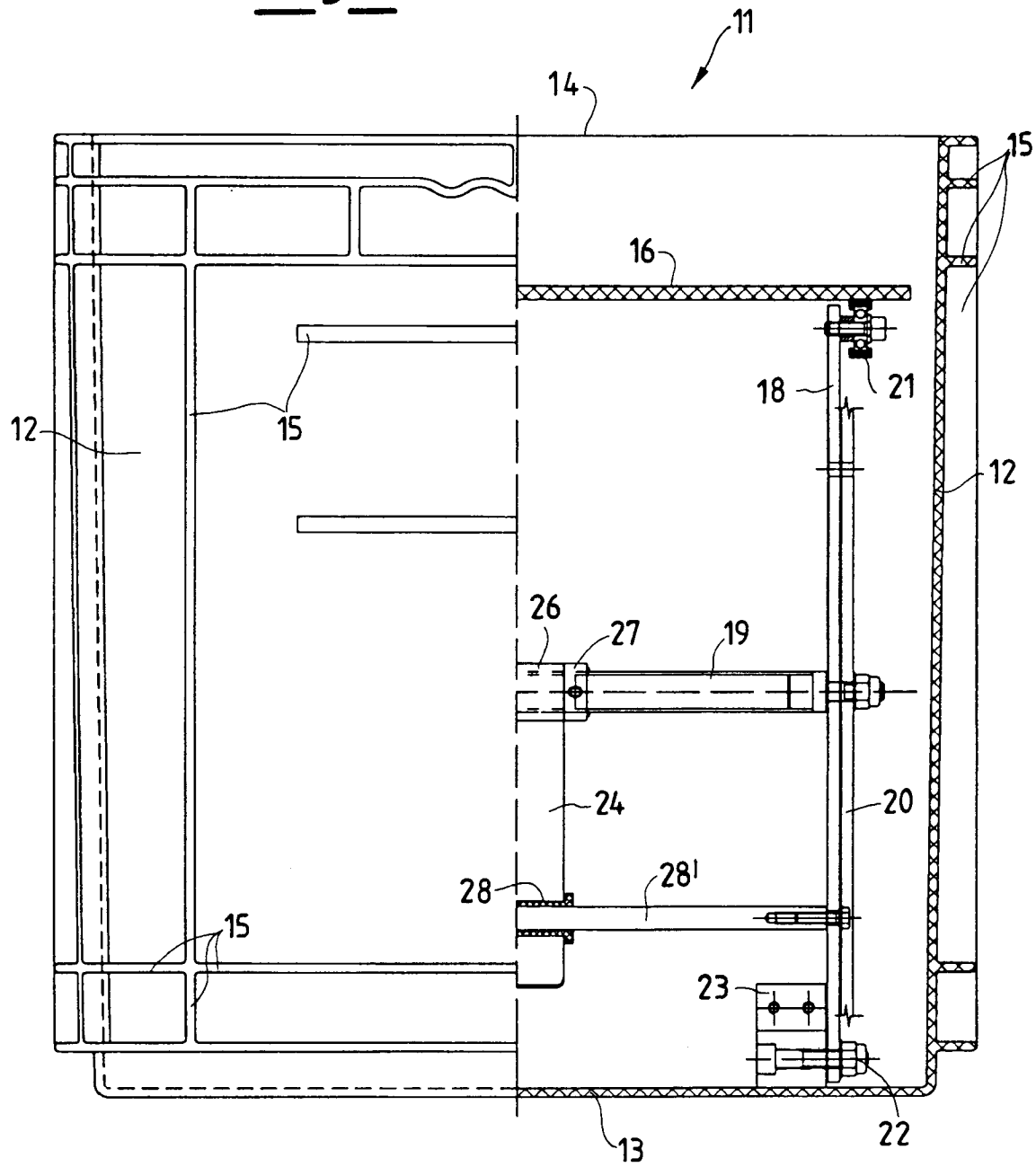


Fig.4

