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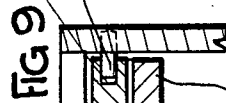
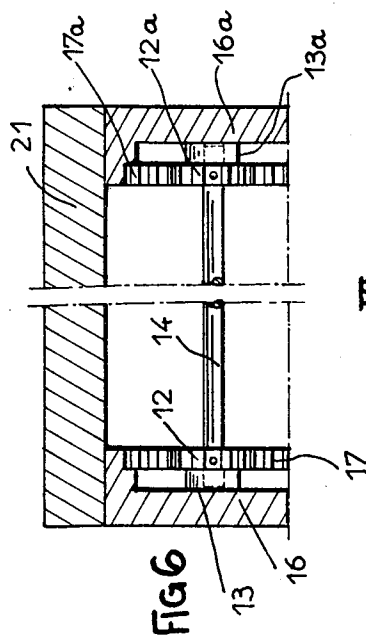
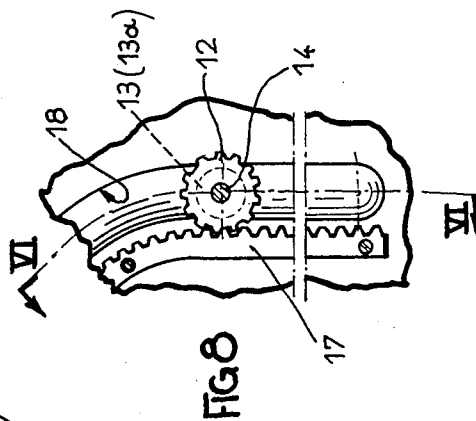
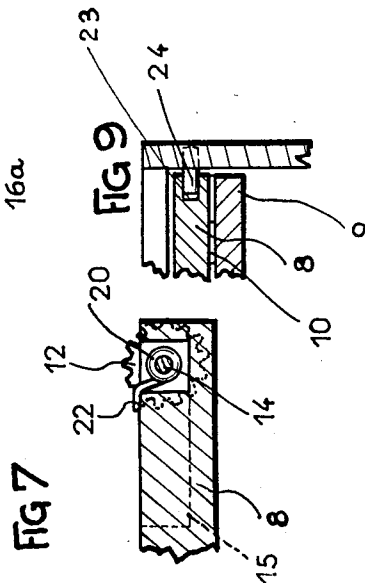
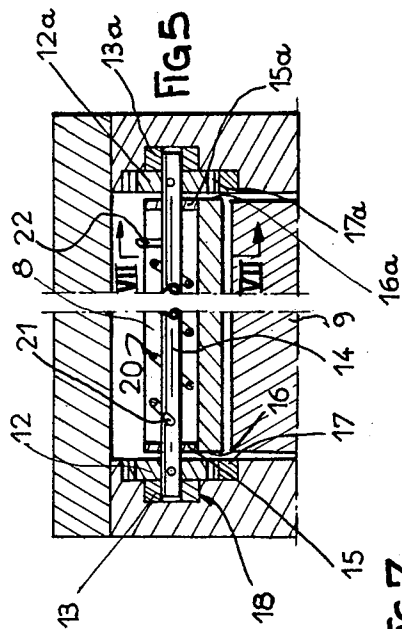
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HINGED DOORS FOR WALL-CUPBOARDS AND THE LIKE

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2 Sheets-Sheet 2



1

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HINGED DOORS FOR WALL-CUPBOARDS AND THE LIKE

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The present invention relates to doors in general and refers more particularly to doors for wall-cupboards which are of the type comprising two panels hingedly interconnected along their adjacent edges and adapted, in their open position, to be folded back completely and parallel to each other near one of the inner walls of the wall-cupboard, means being provided on the walls of the wall-cupboard and on said panels for supporting and guiding the edges of said panels that are perpendicular to said hingedly interconnected edges.

This door is remarkable notably in that the first panel of the pair, that is, the one nearest to the wall against which the panels are stowed, comprises along each one of said perpendicular edges a first guiding device co-acting with guide tracks formed in or carried by the corresponding parallel walls of the wall-cupboard, and a second guiding device movable in relation to a fixed point of said walls.

According to another feature characterizing this invention the first aforesaid guiding device consists of a pair of associated rollers and pinions mounted on a common shaft and co-acting with racks and plain roller tracks formed in said guide tracks, the latter comprising a curved main portion.

According to a further characteristic feature of this invention, said second guiding device associated with said first panel consists of a pair of parallel slideways formed on or carried by each one of said perpendicular edges and sliding each about a pin rigid with the relevant side walls of said wall-cupboard.

Finally, it is another feature of this invention to pivotally mount the outer or last panel on an arm pivoted in turn on one of the walls of the wall-cupboard or like space.

Other features and advantages of this invention will appear as the following description proceeds with reference to the accompanying drawings illustrating diagrammatically by way of example a typical form of embodiment of the invention. In the drawings:

FIGURE 1 illustrates in front elevational view a wall-cupboard or like structure equipped with a door constructed according to the teachings of this invention and shown in its open condition.

FIGURES 2, 3 and 4 are cross sections taken along the line IV-IV of FIGURE 1 and showing three different positions of the door, that is, closed, semi-open and open.

FIGURE 5 is an enlarged section taken upon the line V-V of FIGURE 4.

FIGURE 6 is a fragmentary section showing on a larger scale the pinion and guide rack arrangement of the door the section being taken along the line VI-VI of FIGURE 8.

FIGURE 7 is a section taken upon the line VII-VII of FIGURE 5.

FIGURE 8 shows on a larger scale the detail A of FIGURE 3, and

FIGURE 9 shows also on a larger scale the detail B of FIGURE 4.

In the drawings, there is shown a parallelepipedic wall-cupboard comprising a bottom 2, a top or ceiling 3, a bottom or floor 4, and side walls 5, 6.

2

According to this invention, this wall-cupboard is closed by a door 7 comprising two panels 8, 9 hingedly interconnected along their adjacent edges by one or more hinges 10.

The first panel 8 comprises in the vicinity of the hinge 10 a guiding device 11 illustrated more in details in FIGURES 5 to 8.

This device, in the example illustrated, comprises two pinion and roller assemblies 12, 13 and 12a, 13a each mounted on a common shaft 14 journaled in bearings 15, 15a carried by the panel 8.

The pinions 12, 12a are locked on the shaft 14 for example by means of pins, and the rollers 13, 13a are mounted for free rotation on this shaft.

These pinion and roller assemblies 12, 13 and 12a, 13a project from either side 16, 16a of the panel 8 and engage racks 17, 17a and plain guide tracks 18, 18a, respectively, formed in the walls 5, 6 of the wall-cupboard.

These racks and guide tracks have a main curved portion 19, 19a so that during the panel movements the pinions and rollers 12, 13 (12a, 13a) co-acting therewith will determine movements of translation of the shaft 14 which are parallel to this shaft.

A different guiding device may be used if desired for the lower portion of panel 8 without departing from the basic principles of the invention. However, the use of pinions 12, 12a rigid with a common shaft 14 is particularly advantageous in that it provides a reliable and accurate guiding action while avoiding any risk of jamming.

There is shown in detail in FIGURES 5 and 7 a typical return device adapted to be associated with the shaft 14 for facilitating the door opening movement. This device may consist, as shown, of a coil spring 20 wound on shaft 14 and having one end 21 rigid with this shaft and its other end 22 locked on the panel 8. The spring 20 is so mounted as to be normally prestressed or unstressed, when the door is fully open, and stressed as the door is closed, due to the rotation of shaft 14.

The panel 8 is also provided along its edges 16, 16a with another guiding device consisting of two slideways or grooves 23, 23a adapted to slide about pins 24, 24a secured on each wall 5, 6 of the wall-cupboard at the intersection of the two planes occupied by the panel 8 in the closed and open positions, respectively.

The panel 9 mounted through hinges 10 on panel 8 is guided only by an arm 25 on which it is pivoted by means of a pin 26, said arm 25 being pivoted in turn on a pin 27 carried by the wall 5 (or 6).

This panel 9 is provided along its lower edge with one or two handles 28.

The door described hereinabove operates as follows:

In the closed position (FIGURE 2) the door is parallel to the bottom 2 of the cupboard or like recess or space, the arm 25 is inclined downwards, and the roller and pinion assemblies 12, 13 (12a, 13a) are located at the lower ends of the corresponding racks and tracks 17, 18 (17a, 18a); furthermore, the spring 20 is stressed and the pins 24, (24a) are located at the upper end of the slideways or grooves 23 (23a).

When the handle 28 is raised, the lower edge of panel 9 moves in the direction of the arrow F due to the presence of the arm 25, and the rollers and pinions 12, 13 (12a, 13a) engage the relevant guide tracks 17, 18 (17a, 18a) and then the curved portions 19 (19a).

Thus, the slideways or grooves 23 (23a) move along the pins 24 (24a) until these pins are located near the bottom of these slideways or grooves (see FIGURE 3).

Then the rollers and pinions 12, 13 (12a, 13a) continue to rise along the curved portion 19 (19a) with the assistance of spring 20, the slideways 23 (23a) travel in the opposite direction to the position shown in FIGURE 4.

3

Under these conditions, the panel 9 guided and supported by the arm 25 is caused to pull up against the panel 8.

In the above description reference is made to a door comprising two hingedly interconnected panels adapted in the open position to be placed close to the top or ceiling of a wall-cupboard or the like, but it will be readily understood by anybody conversant with the art that the same means may be used for stowing a door along a lateral wall of the cupboard or the like.

Of course, this invention should not be construed as being limited to the specific form of embodiment shown and described herein, as many modifications and variations may be brought thereto without departing from the spirit and scope of the invention as set forth in the appended claims.

What we claim is:

1. A cupboard comprising two lateral parallel walls, an upper wall and a lower wall, a door for closing said cupboard, said door being formed of two panels hingedly interconnected along their adjacent edges and adapted, in their open position, to be folded back parallel to and against each other along said upper wall of said cupboard, the first of said panels, that is, the one nearest to said upper wall against which it is to be stowed, comprising on each of its lateral edges perpendicular to said hinge means a first guiding device which consists of a pair of rollers with pinions associated therewith that are mounted on a common shaft, said first guiding device co-acting with racks and plain tracks formed in guide tracks provided on said lateral parallel walls, said first panel comprising also a second guiding device movable in relation to a fixed point of said parallel walls.

2. A cupboard as claimed in claim 1 wherein said shaft is provided with a return member stressed by the opening movement of said panels and constantly urging said panels to their open position, said return member consisting of a spring wound about said common shaft and having one end rigid with said shaft, its other end being solid with said first panel.

3. Cupboard as claimed in claim 1 wherein said pinions are locked on said common shaft, the latter being journaled in bearings carried by said first panel.

4. Cupboard as claimed in claim 1 wherein said rollers are mounted for free rotation on the ends of said common shaft.

5. Cupboard as claimed in claim 1 wherein said rollers are disposed inwards with respect to said pinions and have dimensions smaller than those of said pinions.

4

6. A cupboard comprising two lateral parallel walls, an upper wall and a lower wall, a door for closing said cupboard, said door being formed of two panels hingedly interconnected along their adjacent edges and adapted, in their open position, to be folded back parallel to and against each other along said upper wall of said cupboard, the first of said panels, that is, the one nearest to said upper wall against which it is to be stowed, comprising on each of its lateral edges perpendicular to said hinge means a first guiding device, said first guiding device co-acting with guide tracks provided on said lateral parallel walls, said first panel comprising also a second guiding device movable in relation to a fixed point of said parallel walls, said second guiding device for said first panel consisting of two parallel slideways formed on each of said perpendicular edges respectively and sliding each about a pin rigid with said lateral walls of said cupboard.

7. Cupboard as claimed in claim 6 wherein said pins are located at the intersection of the planes occupied by said first panel in the open and closed positions respectively.

8. A cupboard comprising two lateral parallel walls, an upper wall and a lower wall, a door for closing said cupboard, said door being formed of two panels hingedly interconnected along their adjacent edges and adapted, in their open position, to be folded back parallel to and against each other along said upper wall of said cupboard, the first of said panels, that is, the one nearest to said upper wall against which it is to be stowed, comprising on each of its lateral edges perpendicular to said hinge means a first guiding device, said first guiding device co-acting with guide tracks provided on said lateral parallel walls, said first panel comprising also a second guiding device movable in relation to a fixed point of said parallel walls, said second panel being pivotally connected to an arm pivoted in turn on one wall of said cupboard.

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