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CABINET HARDWARE FOR LOWERING AND RETRACTING A CONTAINER

Filed Nov. 12, 1963

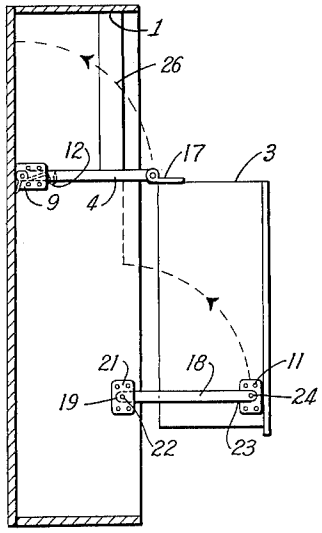


Fig. 2

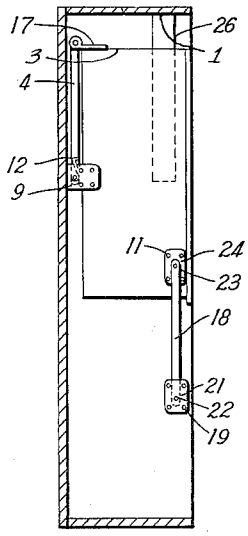


Fig. 3

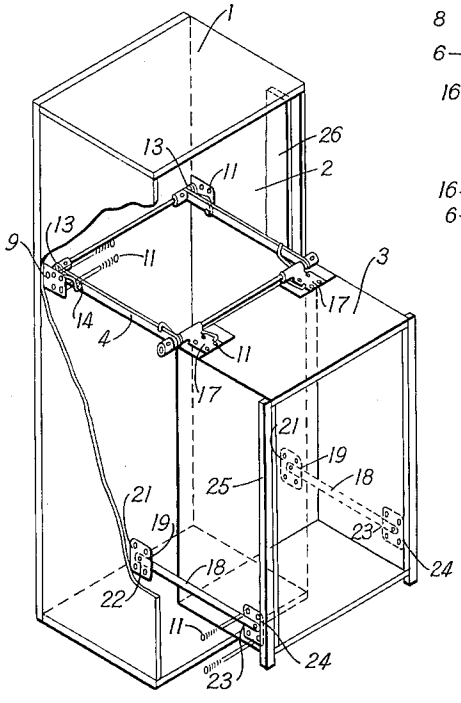


Fig. 1

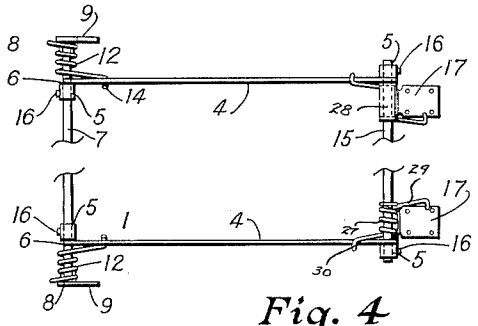


Fig. 4

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CABINET HARDWARE FOR LOWERING AND RETRACTING A CONTAINER

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This invention relates to means for mounting a container in a cabinet and more precisely to hardware used to permit a container to be lowered from an elevated position to a desired height and then returned to its initial position.

Many attempts have been made to design hardware which would permit a container to be lowered from an returned to an elevated position in a cabinet. The purpose of such hardware is to eliminate the need for a ladder or other elevating device to place an individaul within easy reach of articles in the container.

Illustrative of prior art attempts are Boyd 2,473,239, Buschman 1,946,386 and Brack 2,558,416.

These prior efforts have resulted in structures which were either complicated of design, expensive, difficult to install or a combination of the above.

Accordingly, it is an object of this invention to provide hardware which while simple to manufacture, easy to install and inexpensive is extremely useful as means for suspending a container in a cabinet so that it can be lowered to a convenient height and returned to its initial elevated position.

In the accompanying drawings which illustrate an embodiment of my invention:

FIG. 1 is a perspective view of a container lowered from its ordinarily elevated position in a cabinet with a portion of the cabinet side wall proximate to the viewer cutaway.

FIG. 2 is a side elevational view of the container lowered from the cabinet as in FIG. 1 with the side wall of the cabinet proximate to the viewer removed.

FIG. 3 is a side elevational view of the container in its retracted position which like FIG. 2 has the side wall of the cabinet proximate to the viewer removed.

FIG. 4 illustrates a plan view of the harware assembly attachable to the uppermost portion of the cabinet and container with a portion of one of the tongues cutaway to illustrate spring means.

In the drawings reference numerals have been used to indicate parts as follows:

1 cabinet	17 tongues
2 opening	18 struts
3 container	19 strut ends
4 arms	20 not used
5 sleeves	21 plates
6 arm ends	22 pins
7 bar	23 strut ends
8 bar ends	24 plates
9 plates	25 lip
10 not used	26 block
11 screws	27 helical spring
12 helical spring	28 sleeve portion of tongue
13 spring ends	29 spring end
14 spring ends	30 spring end
15 bar	
16 set screw	

While specific terms are herein used to describe one embodiment of my invention they are not intended nor should they be construed to limit the scope of my invention which is defined in the appended claims.

The invention comprises, in general, a first set of parallel arms pivotally mounted at ends to the cabinet and pivotally mounted at opposite ends to the container. Spring means engage at least one of the arms adjacent the cabinet mounted end thereof for urging the arm upward in a vertical arc. A set of parallel struts have ends pivotally mounted in the cabinet and opposite ends pivotally mounted on the container for movement also through a vertical arc upon lowering or retracting of the container.

To be more specific reference is now made to the drawings.

In FIG. 1 a substantially box shaped cabinet 1 has an opening 2 therein through which container 3 can be lowered and retracted.

The hardware attached to the cabinet 1 and container 3 which permits the container 3 to be lowered from its normally elevated position comprises essentially two assemblies, one of which connects the top of the container 3 and cabinet 1 and the other of which connects the bottom of container 3 and cabinet 1.

That assembly of hardware which connects the top of the container 3 and cabinet 1 is illustrated best in FIG. 4. Referring now to FIG. 4, a pair of parallel arms 4 each have sleeves 5 integral therewith and carried on opposite sides thereof. The cabinet oriented ends 6 of arms 4 carry through sleeves 5 a bar 7 which protrudes on both sides of the arms 4. Sleeves 5 are secured to bar 7 by set screws 16.

Bar 7 is pivotally carried at opposite ends 8 by plates 9 which are secured by any suitable means such as screws 11 to the interior side walls of cabinet 1. As is obvious, bar 7 could alternatively be rigidly secured to plates 9, set screws 16 removed, and arms 4 permitted to rotate relative to bar 7 to accomplish pivotal movement of arms 4 relative to cabinet 1, but for stability reasons the first described means for carriage of bar 7 is preferred.

Disposed between plates 9 and arms 4 and carried about bar 7 are helical springs 12 each of which has one end 13 positioned between bar 7 and the back of cabinet 1 to prevent substantial movement thereof and the other end 14 inturned and engaged with the bottom surface of arms 4.

The opposite ends of arm 4 from those just discussed carry a bar 15 which extends at least partially through sleeves 5 to which it may be anchored by suitable means such as set screws 16.

To permit pivotal movement of arms 4 relative to container 3, bar 15 pivotally carries tongues 17 which are fastened by any suitable means such as screws 11 to the top of container 3. To assist springs 12 already described in counterbalancing weight of container 3 and its contents, if any, spring means at the opposite ends of arms 4 may also be provided. In the embodiment of the invention illustrated, such spring means take the form of helical spirngs 27 which are carried about bar 15 under the sleeve portions 28 of tongues 17. Ends 29 of the springs 27 overlap the top surfaces of tongues 17 and the opposite ends 30 overlay the top surfaces of arms 4.

To maintain the container in a substantially erect and level position during lowering and retraction a second assembly of hardware is positioned near the bottom of cabinet 1 and container 3, and while this assembly of hardware carries no springs to counterbalance the weight of container 3, they may obviously be provided.

Referring now to FIGS. 1, 2, and 3 which illustrate this assembly, a pair of struts 18 are pivotally connected at ends 19 to plates 21 through pins 22. Plates 21 are in turn connected by any suitable means such as screws 11 to the interior side walls of cabinet 1. Struts 18 are pivotally connected at their opposite ends 23 through pins 22 to plates 24 which are fastened to the exterior side walls of container 3 by any suitable means such as screws 11.

In operation, the springs 12 and 27 will urge the arms 4 and thus the container 3 to which they are attached by means of bar 15 and tongues 17, upward through a vertical arc into cabinet 1. Container 3 carries lip 25 on its opposite lateral edge to engage block 26 disposed inside cabinet 1 and prevents arms 4 from abutting the back wall of cabinet 1, but any other suitable means may be provided for preventing such abutment.

FIG. 3 illustrates the container in its fully retracted position from which it can be lowered by grasping the bottom of container 3 or a handle which may be affixed thereto and exerting an outward and then a downward force to overcome springs 12 and 29.

Because tongues 17 are pivotally mounted to the container 3 and struts 18 are pivotally mounted to the container 3, the container will maintain an erect and level posture during both lowering from the cabinet 1 and retraction into cabinet 1 to prevent any articles contained therein from falling out.

While one embodiment of the invention has been illustrated and described various modifications and changes may be made therein without departing from the invention.

For example, while two parallel arms and struts are illustrated it is obvious that almost any given number may be used.

Further, while the tongues illustrated are pivotal relative to the bar, it is obvious that they may be secured to the bar and the bar allowed to rotate or pivot relative to the arms. While one spring is shown, either a single spring or a plurality of springs could be used for the same purpose.

What is claimed is:

1. Hardware for permitting a container to be lowered from and retracted into a cabinet comprising:
- a first pair of plates for spaced attachment to interior walls of the cabinet;
- a first bar for carriage by and between the first pair of metal plates;
- a pair of arms for carriage at like ends thereof by the first bar, said arms being pivotal about the axis of the first bar;
- a first helical spring carried by the first bar and engaged with one of the first pair of arms for urging the arms upward through a vertical arc;
- a second bar carried by and between the opposite ends of the first pair of arms;
- tongue means carried by the second bar for attachment near the top of the container, said arms being pivotal about the axis of the second bar;
- a second pair of metal plates for spaced attachment to interior walls of the cabinet;
- a third pair of plates for spaced attachment to the exterior walls of the container;
- and a pair of struts having like ends pivotally connected to the second pair of plates and the opposite ends pivotally connected to the third pair of plates for movement through a vertical arc upon lowering or retraction of the container.

2. Hardware as described in claim 1 including:
- a second helical spring carried around the second bar and having one end disposed against the tongue means and the opposite end disposed against an arm adjacent the container oriented end thereof,
- the second helical spring being provided to assist the first helical spring in urging the container upward through a vertical arc.

3. Hardware for permitting a container to be lowered from and retracted into a cabinet comprising:
- a first pair of plates for spaced attachment to interior walls of a cabinet;
- a first bar for rotatable carriage by and between the first pair of plates;
- a pair of arms fixedly mounted at like ends thereof on the first bar;
- a first helical spring carried by the first bar and disposed to engage with one of the first pair of arms for urging the arms upward through a vertical arc by acting against a cabinet;
- a second bar fixedly carried by and between the opposite ends of the first pair of arms;
- tongue means pivotally carried by the second bar and suitable for attachment near the top of the container;
- a second pair of plates for spaced attachment to the interior walls of the cabinet;
- a third pair of plates for spaced attachment to the exterior walls of the container;
- and a pair of struts having like ends pivotally connected to the second pair of plates and the opposite ends pivotally connected to the third pair of plates for permitting movement through a vertical arc upon lowering or retraction of the container.

4. Hardware as described in claim 3 including:
- a second helical spring carried around the second bar and having one end disposed against the tongue means and the opposite end disposed against an arm adjacent the container oriented end thereof,
- the second helical spring being provided to assist the first helical spring in urging the container upward through a vertical arc.

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