United States Patent

Longmire, Sr.

[15] **3,650,591**

[45] **Mar. 21, 1972**

[54] ELEVATOR SHELF UNIT

[72] Inventor: **Ernest B. Longmire, Sr.,** 2505 South Rowell St., Mobile, Ala. 36606

[22] Filed: **Apr. 8, 1970**

[21] Appl. No.: **26,716**

[52] **U.S. Cl.** **312/312,** 312/306

[51] **Int. Cl.** **A47b 57/06**

[58] **Field of Search** 312/312, 306, 319, 135, 21, 312/22, 30

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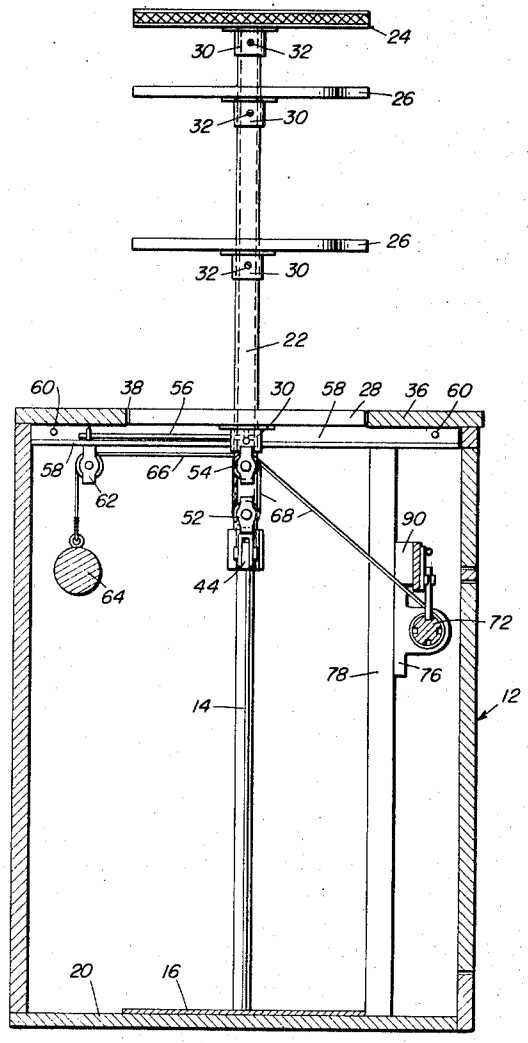
Primary Examiner—James T. McCall

Attorney—Gustave Miller

[57] **ABSTRACT**

This elevator shelf unit is used in combination with a cabinet. It consists of a plurality of vertically spaced apart shelves rotatably mounted on a sleeve telescopically liftable on an upstanding rod on a base on the floor of the cabinet, the shelves being extendable through an opening in the top of the cabinet. A winch, rotatable by a crank handle through a side of the cabinet, operates a cable and pulley system for lifting the shelves, and a latch near the crank handle serves to hold the shelves in a desired elevated position. A counterweight system is optionally provided for use with heavy shelf loads. It may be used as concealable liquor shelves, or other household needs, for example, with a bathroom cabinet for toilet articles, with a kitchen cabinet for spices and other cooking essentials, etc.

2 Claims, 5 Drawing Figures



Patented March 21, 1972 3,650,591

3 Sheets-Sheet 1

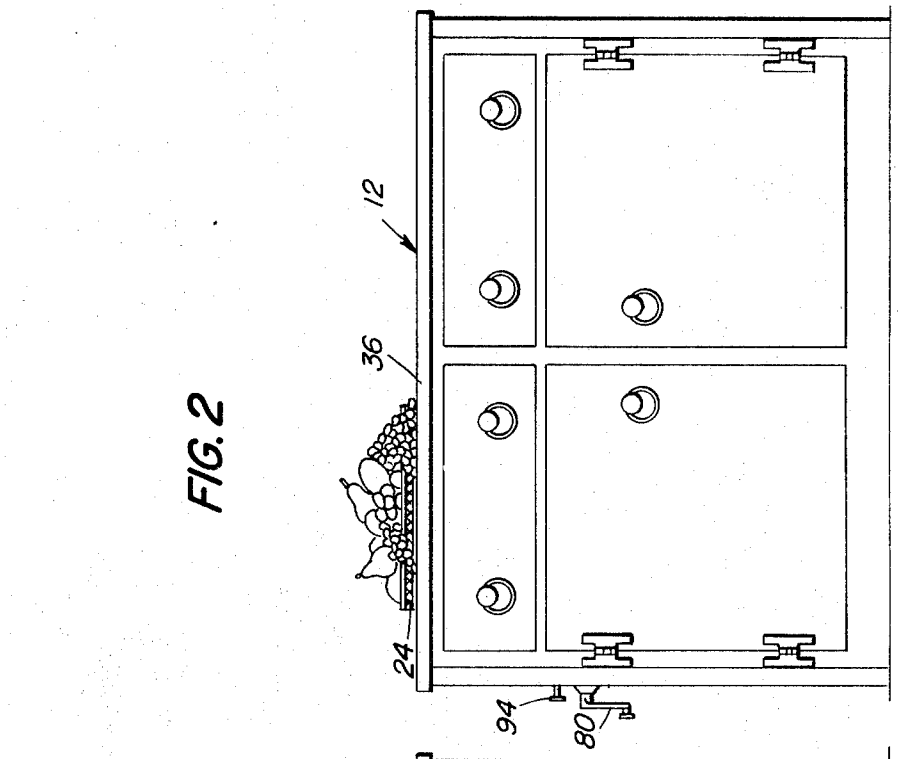


FIG. 2

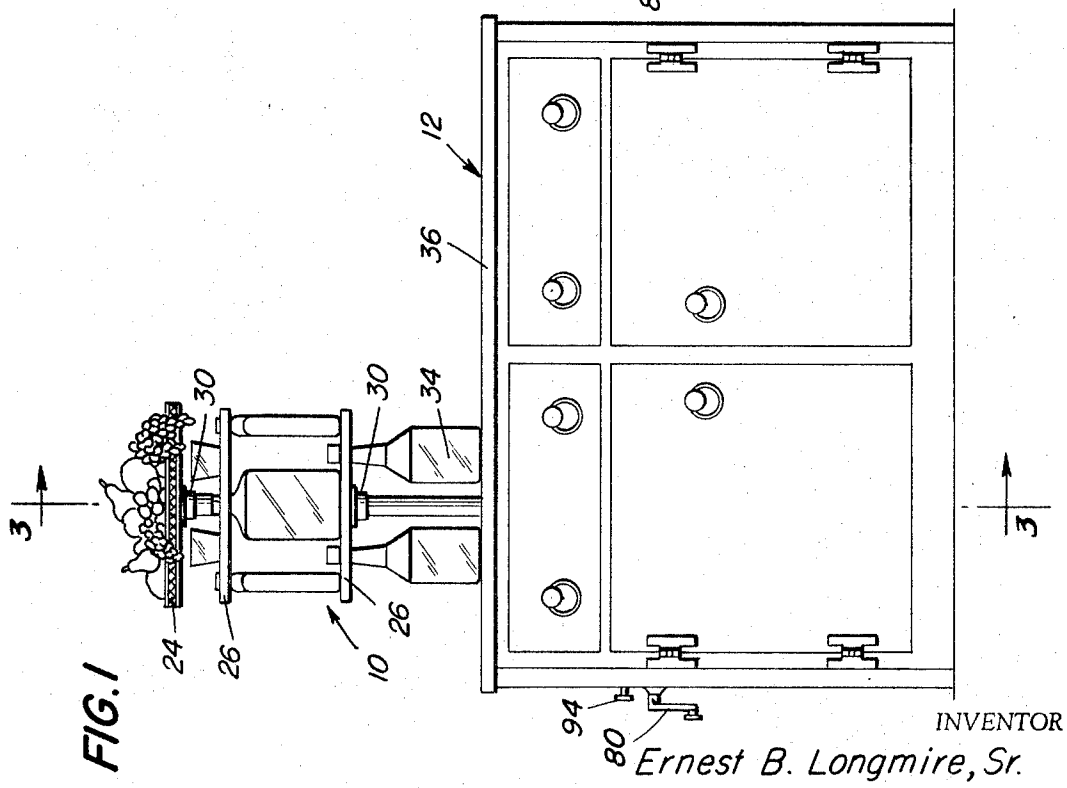
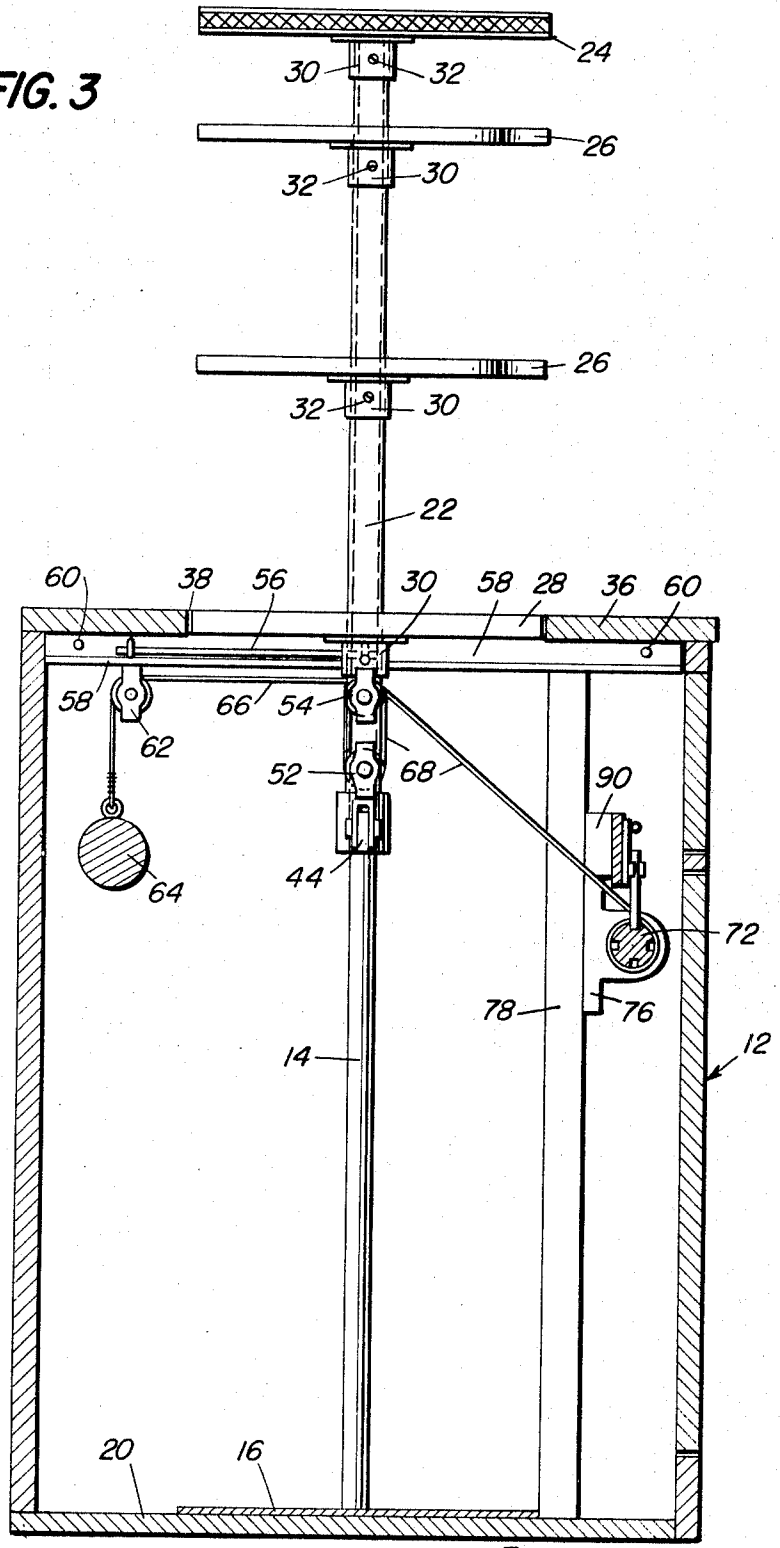


FIG. 1

INVENTOR
Ernest B. Longmire, Sr.

BY Gustav Miller
ATTORNEY

FIG. 3



INVENTOR

Ernest B. Longmire, Sr.

BY Gustave Miller

ATTORNEY

FIG. 4

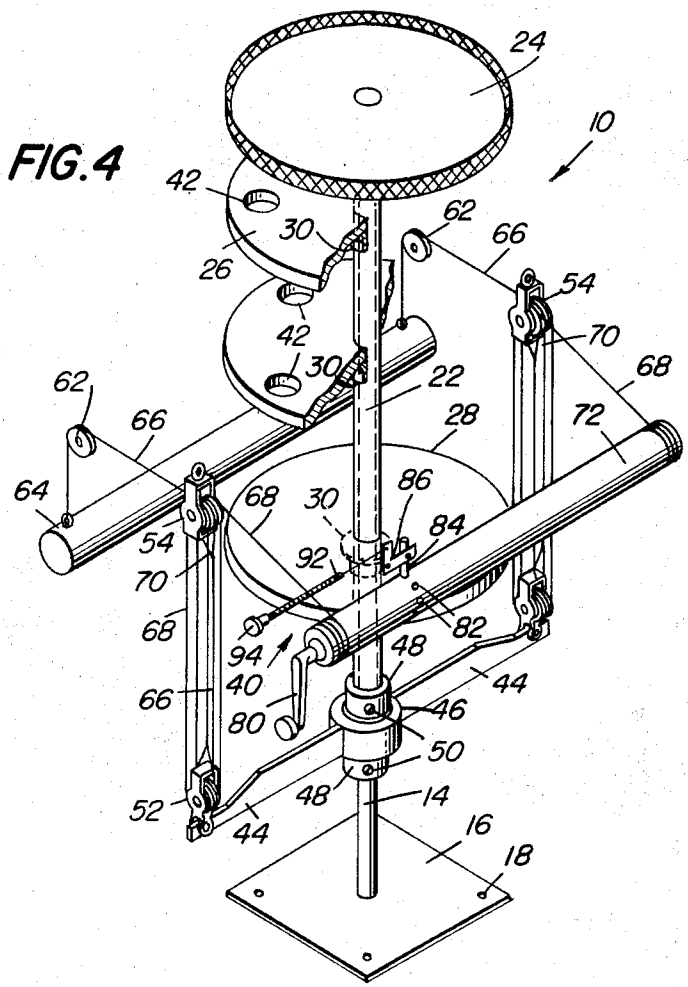
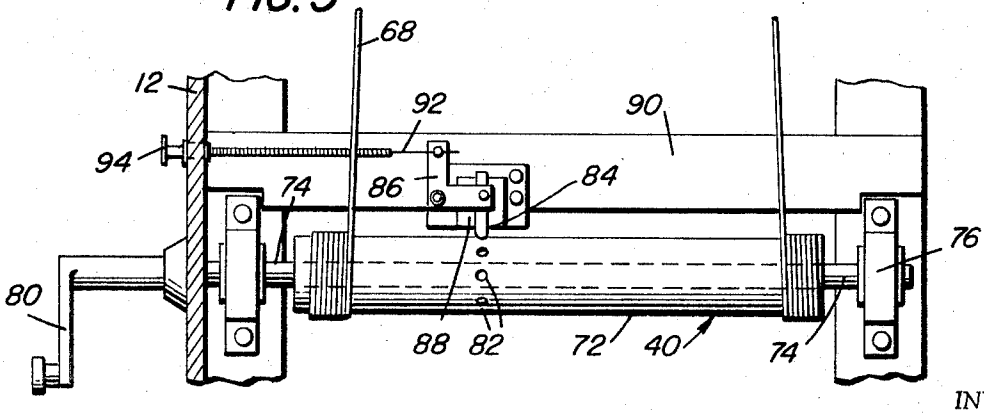


FIG. 5



INVENTOR

Ernest B. Longmire, Sr.

BY Gustave Miller

ATTORNEY

ELEVATOR SHELF UNIT

OBJECTS OF THIS INVENTION

It is an object of this invention to provide a cabinet with an elevator shelf unit which may be lifted above the cabinet top, carrying usable and removable articles on the shelves, or retracted down into the cabinet along with the articles thereon for storage and concealment in the cabinet.

A further object of this invention is to provide an elevator shelf unit which is to be installed in a cabinet on a telescopic mount and elevatable through an opening in the cabinet shelf to lift articles on the shelves from storage position within the cabinet to usable position above the cabinet top.

Still a further object of this invention is to provide a compact elevator shelf unit which may be made in various sizes to fit various existing cabinets within which it is to be installed.

Yet a further object of the invention is to provide an elevator shelf unit which may be lifted by winch and pulley system, but which may also be lifted by any conventional lifting means, such as hydraulic means, a two way electric motor, etc.

BRIEF DESCRIPTION OF THE FIGURES

With the above and related objects in view, this invention consists in the details of construction and combination of parts, as will be more fully understood from the following description, when read in conjunction with the accompanying drawing, in which:

FIG. 1 is a front elevation of a cabinet with the elevator shelf unit of this invention installed therein and extended thereabove.

FIG. 2 is a similar view with the shelf unit in retracted position.

FIG. 3 is a sectional view, on an enlarged scale, on line 3—3 of FIG. 1.

FIG. 4 is a perspective view, partly broken away, of the operating details of the elevator shelf unit.

FIG. 5 is a top plan view of the details of the winch and operating mechanism.

DETAILED DESCRIPTION OF THE INVENTION

There is shown at **10** the elevator shelf unit of this invention mounted in a more or less conventional cabinet **12** somewhat modified for operatively mounting this shelf unit **10** therein.

The shelf unit consists of an upstanding rod **14** welded or otherwise securely fastened to a base plate **16**, here shown as being rectangular and provided at its corners with apertures **18** through which fastening studs or bolts may extend to secure the rod **14** to the cabinet floor **20**. Telescopically liftable on rod **14** is a sleeve **22** on which are secured a plurality of vertically spaced apart shelves **24**, **26** and **28**, here shown as four in number, but which may be more or less in number. Each shelf is secured on the sleeve **22** by a flanged collar **30** and set screw **32** of sufficient strength to bear the weight of the shelves and the articles **34** of any nature that may be placed thereon. The cabinet top **36** has an opening **38** through which the shelves lift up. The elevating mechanism **40**, hereinafter described, may be so adjusted that the upper shelf **24** will be in the same plane as the plane of the cabinet top **36** as in FIG. 2 when the shelves are down, and the lower self **28** is in the plane of the cabinet top **36** when the shelves are up as in FIGS. 1 and 3. Holes **42** may be provided in the middle shelves **26** for stabilizing the articles **34** when such articles are bottles which may have their upper ends extend therethrough.

The elevating mechanism **40** include a pair of bracket arms **44** extending from opposite sides of a pillow bearing block **46** in which the sleeve **22** is rotatably supported between opposed flanged collars **48** secured by set screws **50** to the sleeve **22**. Secured to each of the outer ends of bracket arms **44** is double pulley **52**, and a pair of similar double pulleys **54** are supported on a rod **56** supported on an angle iron **58** secured on an inner side of the cabinet **12** at **60**, there being two such angle irons **58**, one for each of the upper double pulleys **54**. A single pulley **62** is also supported by each rod **56**, over which a

counterweight **64** is supported on the end of a parachute cord or cable **66** reeved through the single pulleys **62**, the other end of the counterweight cables **66** being reeved through one pulley wheel of the upper double pulleys **54** and anchored to the block of lower double pulleys **52**. Such counterweight **64** and its cable **66** and single pulley **62** may be omitted except when fairly heavy loads are expected to be placed on the shelves.

For controllable lifting and lowering the shelves, a lifting cable **68** is anchored at **70** to the block of the upper pulley **54**, then reeved twice through the lower and upper double pulleys **52** and **54** and then wound about and anchored to the winch **72** fixed on a shaft **74** which is rotatable in pillow block bearings **76** mounted on upright stanchions **78** mounted in the cabinet **12**. One end of winch shaft **74** extends through a side of the cabinet **12** and has fixed thereon the crank handle **80** for controllably rotating the same.

The winch **72** has a number of circumferentially spaced radially extending latch holes **82** for receiving a latch pin **84** on the end of a latch crank arm **86** pivoted on a bracket **88** mounted on a cross bar **90** fixed in the cabinet **12**. The latch crank arm **86** is controlled by a Bowden cable **92** extending through the side of cabinet **12** adjacent the crank arm **80** and terminating in a control knob **94**.

Obviously, a pawl and ratchet may be used instead of the latch crank arm **86** and pin **84** and the latch holes **82**. The ratchet wheel would be placed around the winch in place of the latch holes **82**, and the pawl would be attached to the Bowden cable **92** for releasing the rachet permitting the lift to be lowered, but it would automatically engage and hold the ratchet when the shelf unit is lifted.

OPERATION OF THE INVENTION

In operation, the angle irons **58**, the stanchions **78** and the cross arm **90** may all be secured together as part of a framework and be an independent frame unit for mounting in a cabinet **12**, as well as being secured in the cabinet as already described. To install the elevator shelf unit **10** in a cabinet **12**, the framework unit or elements are mounted in the cabinet, a suitable hole or opening **38** being first cut through the cabinet top **36**, and openings are also cut to receive the crank handle **80** and the Bowden cable **92** for the latch knob **84**. If only light loads are to be placed on the shelves, the counterweight **64** and its cable **66** and pulley **62** my be omitted. To lift or lower the shelves, the latch knob **94** is pulled out, permitting the crank handle **80** to be rotated to raise or lower the shelves by winding or unwinding the lifting cable **68** on the winch **72**. Then, when the shelves are in the desired position, the latch knob **94** is pushed in latching the shelves in desired position.

When a pawl and ratchet is present, the unit can be lifted by rotating the crank handle **80**, without touching the release knob **94**. To lower the unit, the knob **94** is pulled to hold the pawl disengaged, permitting the crank handle **80** to lower the unit.

ABSTRACT OF THE DRAWINGS

In the drawings, like numbers refer to like parts, and for the purposes of explication, set forth below are the numbered parts of the improved Elevator Shelf Unit:

10 elevator shelf unit
12 cabinet
14 upstanding rod
16 base plate for **14**
18 apertures in **16**
20 cabinet floor
22 telescopic sleeve
24 top shelf
26 two middle shelves
28 bottom shelf
30 flanged collar for shelves
32 set screws for **30**
34 articles placed on shelves
36 cabinet top
opening in **36** for shelves to pass through

40 elevating mechanism
42 stabilizing holes in middle selves **26**
44 bracket arms
46 pillow block bearing on **22** for **44**
48 opposed flanged collars for **46**
50 set screws in **48**
52 lower double pulleys
54 upper double pulleys
56 upper pulley supporting rod
58 angle iron support for **56**
60 securement of **58** to inner side of cabinet **12**
62 single pulleys for counterweight
64 **10** pound counterweight
66 counterweight cable
68 lifting cable
70 anchor of **68**
72 winch
74 shaft of winch **72**
76 pillow block bearings for winch shaft **74**
78 stanchions for **76**
80 crank handle for winch shaft **74**
82 latch holes
84 latch pin
86 latch crank arm
88 latch bracket
90 cross arm for **88**
92 Bowden cable for latch pin
94 latch knob

Although this invention has been described in considerable detail, such description is intended as being illustrative rather than limiting, since the invention is to be determined as claimed.

Having thus set forth and disclosed the nature of this invention, what is claimed is:

1. For insertion within a cabinet (**12**) having floor (**20**), a top (**36**) and an opening (**38**) through said top (**36**); an elevator shelf unit (**10**) comprising an upstanding rod securable on said floor (**20**) beneath said top opening (**38**), a sleeve (**22**) telescopically mounted on said upstanding rod (**14**), a shelf (**24**) secured on said sleeve (**22**), said shelf (**24**) closing said top opening (**38**) when said sleeve (**22**) is telescoped down on said upstanding rod (**14**) in lowered position, controllable means (**72**, **80**, **68** and **94**) for elevating said sleeve (**22**) to raise said shelf (**24**) above said cabinet top (**36**), additional shelves (**26**,**28**) spaced vertically apart on and secured on said sleeve (**22**) beneath said first named shelf (**24**) and liftable with said sleeve (**22**), at least one of said upper shelves (**26**) having means (**42**) complementary to an article (**34**) supportable on a lower shelf for stabilizing such article, means (**46**,**48**) rotatably mounting said telescopic sleeve (**22**) on said upstanding rod (**14**), said controllable elevating means comprising bracket means (**44**) secured on a lower portion of said telescopic sleeve (**22**), bracket means (**58**) securable thereabove within said cabinet, pulley means (**52**,**54**) cooperatively mounted on both said bracket means (**44**,**58**), a winch (**72**) rotatably mountable within said cabinet lifting cable means (**68**) extending from said winch and reeved through said pulley means (**52**,**54**) and anchorable within said cabinet, a crank handle (**80**) on said winch (**72**) extendable through a side of said cabinet, means (**94**) for latching said winch (**72**) against rotation, said latching means (**94**) being extendable through a side of said cabinet adjacent said crank handle (**80**), and a base plate (**16**) on which said upstanding rod (**14**) is secured, said base plate being securable to said cabinet floor (**20**).

2. The unit (**10**) of claim **1**, a shelf counterweight, (**64**) additional pulley (**62**) means mounted in said bracket, and counterweight (**64**) cable means (**66**) securable at one end to said counterweight, reeved through all said pulley means, and anchored at its other end.

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