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Cory

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[54] **CABINET WITH ELEVATOR SUPPORT PLATFORM**

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[52] **U.S. Cl.** ..... **312/7 TV,** 312/21, 312/312

[51] **Int. Cl.**..... **A47b 81/06**

[58] **Field of Search**..... 312/7, 7 TV, 8, 21, 312/29, 312; 108/20, 103, 142; 248/418, 425, 349; 211/1.5, 163; 40/33

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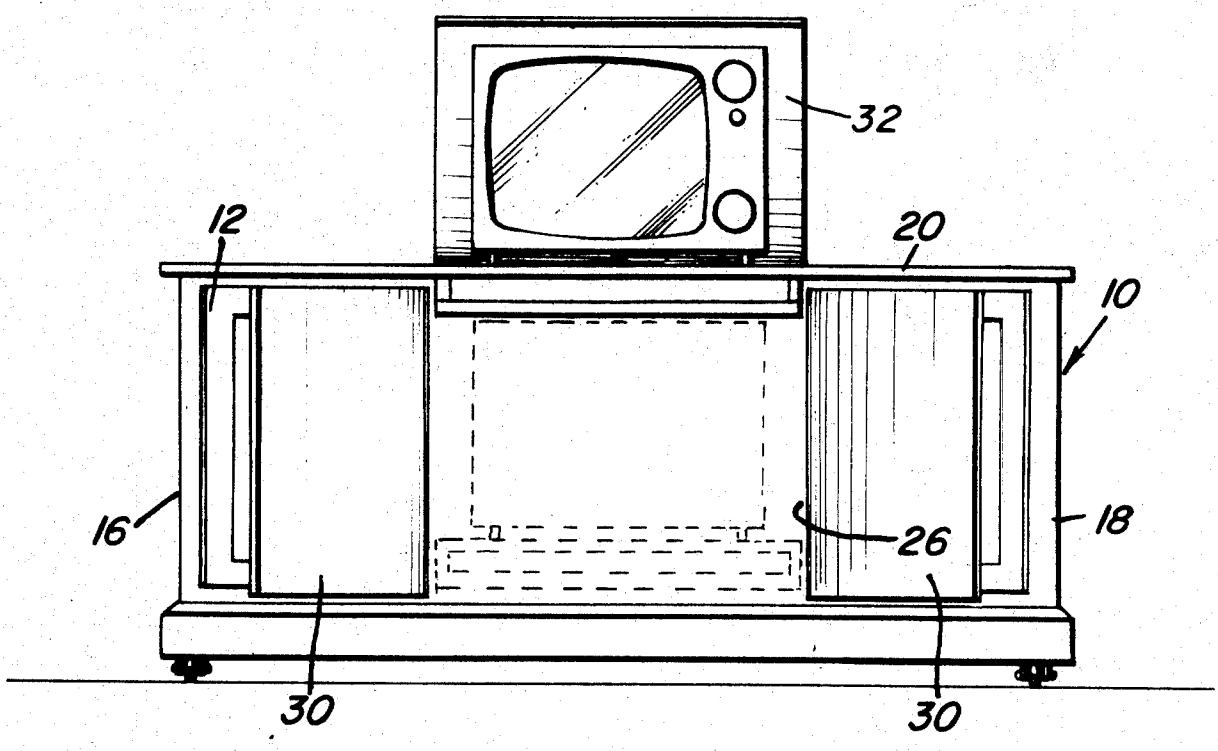
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[57] **ABSTRACT**

A cabinet structure including a storage area therewithin and including front door structure defining the forward extremity of the storage area and shiftable to an open position for exposing the storage area. The cabinet structure further includes top door structure defining the upper extremity of the storage area and the top door structure may also be shifted between a closed position closing the upper extremity of the storage area and an open position to expose the storage area from above. A support platform is mounted within the storage area and is adapted to have an electrical appliance such as a television set or a sewing machine as well as other non-electrically powered structures supported therefrom. The platform is mounted within the storage area for guided vertical shifting and motor means is operatively connected to the support platform for raising and lowering the same. Also, the support platform includes a turntable upon which the associated television set may be rested and in this manner the television set may be viewed through the front of the cabinet when the support platform is in a lowered position and the front door structure is open or viewed from the front with the television set projecting above the top of the cabinet when the support platform is in its raised position and when the platform is in its uppermost position the turntable may be adjusted in order to allow the television set supported therefrom to face in substantially any direction.

11 Claims, 8 Drawing Figures



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SHEET 1 OF 2

Fig. 1

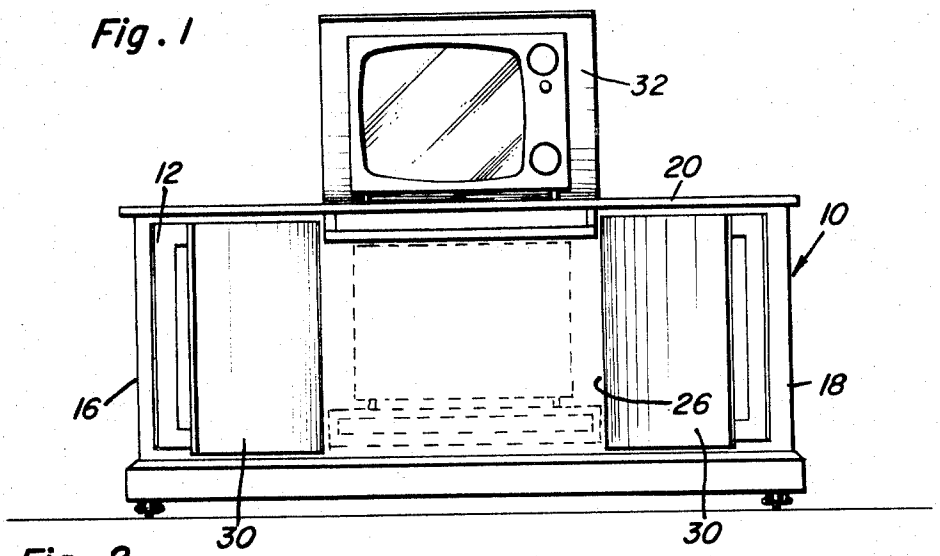
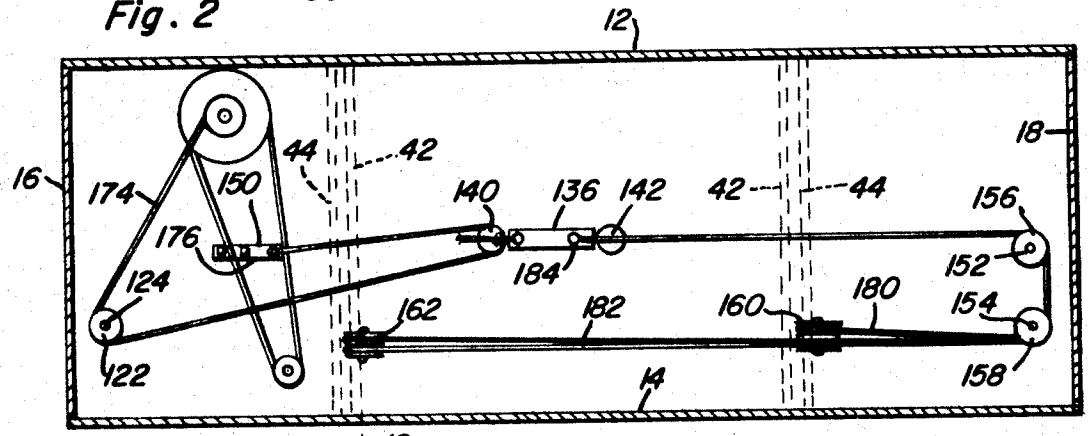


Fig. 2



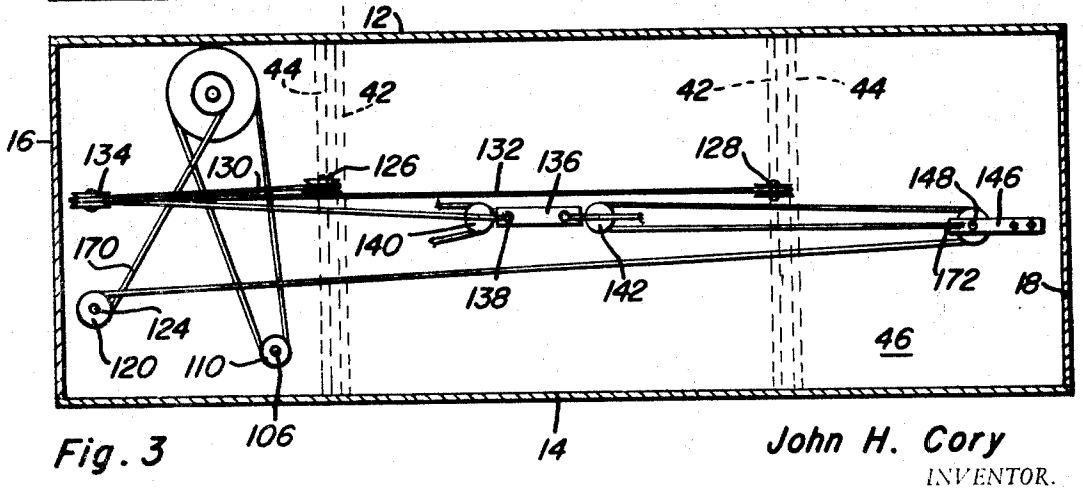


Fig. 3

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Fig. 4

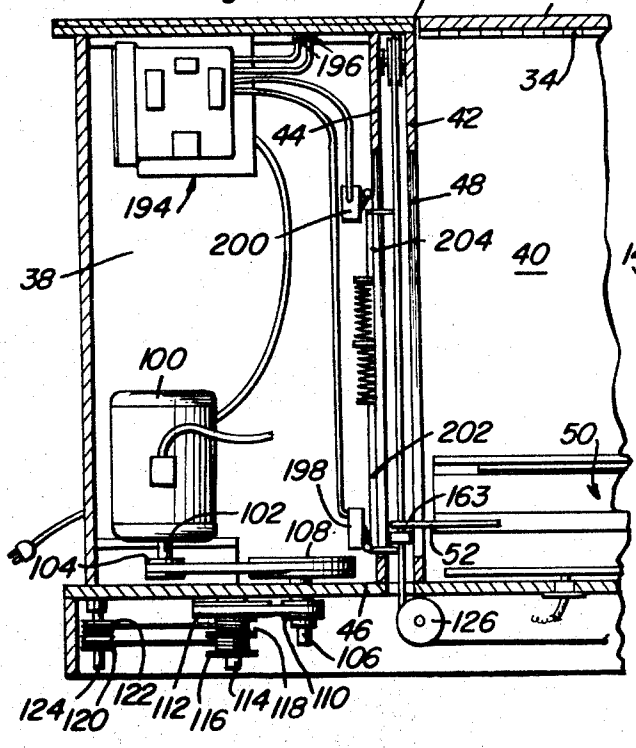


Fig. 5

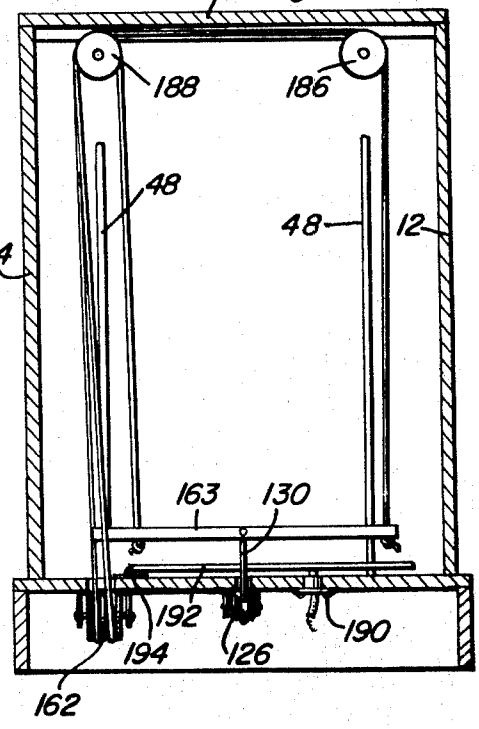


Fig. 6

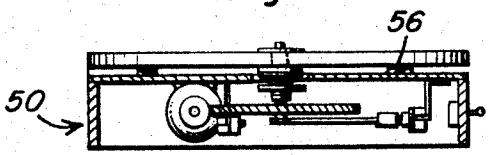


Fig. 7

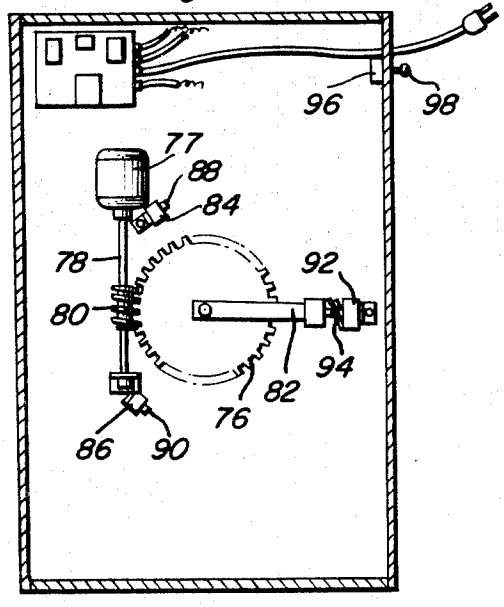
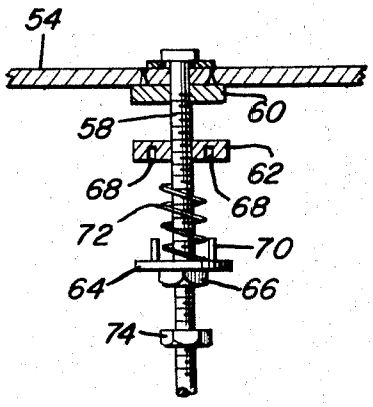


Fig. 8



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CABINET WITH ELEVATOR SUPPORT PLATFORM

The cabinet of the instant invention has been primarily designed to support a television set from the vertically shiftable support platform thereof. However, other electrical appliances such as record changers, stereo receivers and sewing machines as well as non-electrified assemblies such as a bar assembly may be stored within the cabinet.

The main object of this invention is to provide a cabinet for housing a television receiver with the cabinet including not only front doors through which the television set may be viewed but also upper doors which may be opened and a vertically shiftable platform upon which the associated television receiver may be placed in order that the platform may be raised so as to project the associated television receiver upwardly through the open top of the cabinet for viewing while disposed above the top of the cabinet.

Another object of this invention, in accordance with the immediately preceding object, is to provide a support platform with a powered turntable whereby a television set supported from a support platform and elevated above the top of the cabinet may be adjustably rotated so as to face in substantially any horizontal.

Another object of this invention is to provide an apparatus in accordance with the preceding objects and including positive motor means for raising the support platform as well as lowering the support platform.

A final object of this invention to be specifically enumerated herein is to provide a cabinet in accordance with the preceding objects which will conform to conventional forms of manufacture, be of simple construction and easy to operate so as to provide a device that will be economically feasible, long lasting and relatively trouble free in operation.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

FIG. 1 is a front elevational view of the cabinet of the instant invention with a television receiver supported from the vertically shiftable platform of the cabinet and the support platform of the cabinet positioned in its upper limit position, the lower limit position of the platform and associated television receiver being illustrated in phantom lines;

FIG. 2 is an enlarged horizontal sectional view of the cabinet as seen from below and illustrating the motor and drive mechanism utilized in lifting the support platform;

FIG. 3 is a horizontal sectional view similar to FIG. 2 but illustrating the motor and drive assembly utilized to lower the support platform;

FIG. 4 is an enlarged fragmentary vertical sectional view illustrating the motor and drive assembly as well as portions of the associated support platform;

FIG. 5 is a fragmentary transverse vertical sectional view illustrating the manner in which the lifting and lowering cables are operatively connected to the lift members from which the support platform is supported;

FIG. 6 is a fragmentary vertical sectional view taken substantially upon a plane passing through the center of the motor driven turntable portion of the support platform;

FIG. 7 is a horizontal sectional view taken substantially upon a plane passing through the center of the turntable assembly and as seen from below; and

FIG. 8 is an enlarged fragmentary vertical sectional view of the slip coupling by which the turntable motor is drivingly connected to the turntable and with the normally engaged components of the slip coupling illustrated in spaced relation to more clearly illustrate the structural details thereof.

Referring now more specifically to the drawings the numeral **10** generally designates the cabinet of the instant invention. The cabinet **10** includes upstanding front and rear walls **12** and **14** interconnected by means of opposite end walls **16** and **18**. A top wall **20** extends between the upper marginal edge portions of the walls **12, 14, 16** and **18** and the top wall **20** has a central opening **24** formed therein.

In addition, the front wall **14** has an opening **26** therein and the opening **26** may be closed by means of a pair of opposite side horizontally swingable doors **30** hingedly supported from the marginal edge portions of the front wall **14** defining the sides of the opening **26.** Further, a top door **32** is provided and hingedly supported along its rear marginal edge portion as at **34** from the rear wall **14** of the cabinet **10** and the top door **32** is swingable between the closed horizontal position illustrated in FIG. **4** of the drawings and the forwardly and upwardly inclined position illustrated in FIG. **1.**

The interior of the cabinet **10** is divided into opposite end compartments **38** and a central compartment or storage area **40** disposed between the end compartments **38** and in horizontal and vertical registry with the openings **26** and **24,** respectively. The opposite sides of the center compartment or storage area **40** are separated from the end compartments by means of pairs of closely spaced partition walls **42** and **44** extending between the front and rear walls **12** and **14** and the top wall **20** and the bottom wall **46.** Each of the partitions **42** and **44** includes a pair of vertical slots **48** and a support platform referred to in general by the reference numeral **50** is disposed within the storage area **40** and includes endwise outwardly projecting pairs of front and rear support bars **52** which are slidingly received through the corresponding slots **48.**

The support platform **50** further includes an upper turntable **54** journalled from the support platform **50** by suitable bearing means **56** and the turntable **54** loosely receives depending threaded bolt or shaft **58** centrally therethrough. A first friction disc **60** is disposed on the upper end of the bolt **58** immediately beneath and is anchored to the turntable **54.** A second friction disc **62** is rotatably disposed on the bolt **58** beneath the disc **60** and a drive disc **64** including a threaded nut portion **66** is threaded on the bolt **58** below the disc **62.** Disc **62** is also slidable along the bolt **58** and includes a pair of diametrically opposite downwardly opening blind bores **68** which upwardly projecting drive pins **70** carried by the disc **64** are receivable for keying the disc **64** to the disc **62.** Further, a compression spring **72** is disposed about the bolt **58** intermediate the discs **62** and **64** and yieldingly biases the disc **62** upwardly into frictional contact with the disc **60.** A second lock nut **74** is threaded on the bolt **58** below the nut portion **66** and a worm wheel **76** is se-

cured on the bolt **58** below the nut **74** in any conventional manner.

An electric motor **77** is supported within the support platform **50** and includes an output shaft **78** having a worm gear **80** mounted thereon and meshed with the worm wheel **76.** The motor **77** is of the reversible type and accordingly, the turntable **54** may be rotated in either direction.

The worm wheel **76** includes a radially outwardly projecting abutment arm **82** and a pair of limit switches **84** and **86** are supported in a stationary position from the support platform **50** and include actuators **88** and **90,** respectively, engagable by the outer end of the abutment arm **82.** Further, a third microswitch **92** including an actuator **94** is also stationarily supported from support platform **50** and engagable by the outer end of the abutment arm **82,** the microswitch **92** being disposed on a radius of the shaft **58** which bisects the larger angle defined by radii of the shaft **58** passing through the actuators **88** and **90.** Still further, the support platform **50** includes a microswitch **96** including an actuator **98.**

An electric drive motor **100** is mounted on the left hand end compartment **38** and includes an output shaft **102** upon which a drive pulley **104** is mounted. A first upstanding jack shaft **106** is journalled through the bottom wall or floor **46** and includes an input pulley **108** aligned with the drive pulley **104** and an output pulley **110** aligned with an input pulley **112** carried by a winding drum shaft **114** also journalled from the bottom wall **46.** The winding drum shaft **114** has a pair of winding drums **116** and **118** mounted thereon and the winding drums **116** and **118** are horizontally registered with idle pulleys **120** and **122** journalled from a support shaft **124** at the left hand end of the cabinet **10.**

A pair of idle pulleys **126** and **128** are journalled from the bottom wall **46** and a pair of cable sections **130** and **132** are passed beneath the pulleys **126** and **128** and about an idle pulley **134** and are anchored to one end of an anchor plate **136** as at **138.** In addition, the opposite ends of the anchor plate **136** have idle pulleys **140** and **142** journalled therefrom and a stationary anchor plate **146** is supported beneath the right hand end of the bottom wall **46** and has an idle pulley **148** journalled therefrom.

Still further, a second stationary anchor plate **150** is supported from bottom wall **46** and a pair of depending support shafts **152** and **154** similar to the shaft **124** are supported from the right hand end of the bottom wall **46** and have double idle pulleys **156** and **158** journalled therefrom. Further, a double idle pulley **160** is journalled beneath the bottom wall **46** in registry with the vertical spacing between the right hand partitions **42** and **44** and a double idle pulley, similar to the idle pulley **160** and referred to by the reference numeral **162,** is journalled beneath the bottom wall **46** in vertical registry with the spacing between the left hand partitions **42** and **44.**

The cable sections **130** and **132** have one pair of corresponding ends thereof anchored to the midportions of front to rear extending lift bars **163** guidingly disposed in the vertical spacing between the pairs of partitions **42** and **44** and the other pair of ends of the cable sections **130** and **132** are anchored to the plate **136** and **138.** A third cable section **170** has one end thereof wound about the winding drum **116** and the other end thereof passes about the idle pulley **120** and thereafter about the idle pulley **148** and the idle pulley **142** before being anchored to the anchor plate **146** as at **172.**

Still another cable section **174** has one end thereof secured to the winding drum section **118** and the other end of the cable section **174** passes about the idle pulley **122** and thereafter the idle pulley **140** and is secured to the anchor plate **150** as at **176.** Two other pairs of cable sections **180** and **182** are provided and pass beneath the idle pulleys **160** and **162,** respectively, and thereafter about the idle pulleys **156** and **158** and are secured to the anchor plate **136** as at **184.** The ends of each pair of cables **180** and **182** remote from the anchor plate **184** pass over corresponding front and rear idle pulleys **186** and **188** journalled between each pair of partitions **42** and **44** adjacent the top wall **20** of the cabinet **10.** The free ends of the cables **180** and **182** are secured to the opposite ends of the lift bars **163.**

It will be noted that the cable sections **170** and **174** are wound in opposite directions on the winding drum sections **116** and **118** and therefore that while one cable section is being wound on its corresponding winding drum section the other cable section will be unwound from its winding drum section. Therefore, rotation of the motor output shaft **102** in one direction will cause one set of cables to lift upwardly on the lift bars **163** while the other cable sections are being played out and rotation of the motor output shaft **102** in the opposite direction will cause the other cable sections to pull downwardly on the lift bars.

Supported from the bottom wall **46** is a safety switch **190** and a light-weight panel **192** hingedly supported from the bottom wall **46** as at **194** overlies the switch **190** and is operative to open the latter in response to a weight being placed on the panel **192.**

A suitable control assembly referred to in general by the reference numeral **194** is supported in the left hand end compartment **38** and is operatively associated with a pair of terminals **196** to which any adjacent or remote control actuators may be connected.

A pair of limit switches **198** and **200** are supported within the left hand end compartment **38** and a pair of associated spring mounted actuators **202** and **204** are operatively associated with the limit switches **198** and **200** for actuation thereby in response to the actuators **202** and **204** being engaged by the left hand lift bar **163.**

Of course, the limit switch **198** is serially connected in the electrical circuit for actuation of the motor **100** to lower the support platform **50** and the limit switch **200** is serially connected in the circuit for actuation of the motor **100** to raise the support platform **50** thereby insuring that the support platform **50** will not be lowered below a predetermined lower position or raised above a predetermined upper position. Further, the switch **190** is also serially connected in the circuit for controlling operation of the motor **100** to lower the support platform **50** thereby insuring that should a small child crawl into the storage area **40** below the support platform **50** when the latter is in its upper position it will not be possible to lower the support platform. Still further, the switches **84** and **86** are of course serially connected in the circuits controlling operation of the motor **77** in opposite directions and thereby limit turning of the turntable **54.** Also, the microswitch **92** is serially connected in the circuit controlling the operation of the motor **100** to lower the support platform **50** whereby the motor **100** may not be operated until such

time as the turntable **54** is in its centered position. Finally, the microswitch **96** is electrically connected in both of the circuits controlling the operation of the motor **77** whereby the turntable **54** may not be rotated until such time as the support platform **50** is elevated to its uppermost limit position.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention.

What is claimed as new is as follows:

1. An enclosure defining an interior storage area and including an upstanding front wall and an upper generally horizontal top, a first opening formed in said front wall in horizontal registry with said storage area, said top wall having a second opening formed therein in vertical registry with said storage area, a support platform disposed within said storage area, said platform and enclosure including coacting means guidingly supporting said support platform for vertical shifting within said storage area between a lowered position generally horizontally registered with a lower portion of said first opening and a raised position with said platform elevated to a position at least adjacent said top wall, whereby an object supported from said support platform may be projected upwardly through said second opening in response to said platform being raised from its lower position to its upper position, a pressure-sensitive panel disposed within said storage area below the support platform when the latter is in its lower position, motor means operatively connected to said support platform for raising and lowering the latter within said storage area, said pressure panel including motor control means operative to prevent actuation of said motor means to lower said platform in response to an item of a predetermined weight being placed on said pressure-sensitive panel, said support platform including a turntable structure supported for oscillation about an upstanding axis, power means operatively connected between said support platform and said turntable for selectively oscillating the latter about its axis of oscillation between limit positions thereof, said turntable including an intermediate position thereof disposed between said limit positions of oscillation thereof, and turntable positioning sensing means operative to sense the positioning of said turntable in said intermediate position and including control means operative to prevent actuation of said motor means to lower said support platform unless said turntable is disposed in said intermediate position.

2. The combination of claim **1** including front and top door means operatively associated with said first and second openings and shiftable between open and closed positions relative to said openings.

3. An enclosure defining an interior storage area and including an upstanding front wall and an upper generally horizontal top, a first opening formed in said front wall in horizontal registry with said storage area, said top wall having a second opening formed therein in vertical registry with said storage area, a support platform disposed within said storage area, said platform and enclosure including coacting means guidingly supporting said support platform for vertical shifting within said storage area between a lowered position generaly horizontally registered with a lower portion of said first opening and a raised position with said platform elevated to a position at least adjacent said top wall, whereby an object supported from said support platform may be projected upwardly through said second opening in response to said platform being raised from its lower position to its upper position, a pressure-sensitive panel disposed within said storage area below the support platform when the latter is in its lower position, motor means operatively connected to said support platform for raising and lowering the latter within said storage area, said pressure panel including motor control means operative to prevent actuation of said motor means to lower said platform in response to an item of a predetermined weight being placed on said pressure-sensitive panel, said support platform including a turntable, power means operatively connected between said support platform and said turntable for selectively oscillating the latter about an upstanding axis between limit positions of oscillation, said support platform and cabinet including means operative to sense the lowering of said platform from its upper position and including power means control means operative to prevent operation of said power means to oscillate said turntable whenever said support platform is lowered below its upper position.

4. The combination of claim **3** including turntable positioning sensing means operative to sense the positioning of said turntable in an intermediate position disposed between said limit positions, said turntable positioning sensing means including control means for controlling the operation of said motor means and to prevent operation of said motor means to lower said platform from said upper position except when said platform is disposed in said intermediate position.

5. An enclosure defining an interior storage area and including an upstanding front wall and an upper generally horizontal top, a first opening formed in said front wall in horizontal registry with said storage area, said top wall having a second opening formed therein in vertical registry with said storage area, a support platform disposed within said storage area, said platform and enclosure including coacting means guidingly supporting said support platform for vertical shifting within said storage area between a lowered position generally horizontally registered with a lower portion of said first opening and a raised position with said platform elevated to a position at least adjacent said top wall, whereby an object supported from said support platform may be projected upwardly through said second opening in response to said platform being raised from its lower position to its upper position, front and top door means operatively associated with said first and second openings and shiftable between open and closed positions relative to said openings, a pressure-sensitive panel disposed within said storage area below the support platform when the latter is in its lower position, motor means operatively connected to said support platform for raising and lowering the latter within said storage area, said pressure panel including motor control means operative to prevent actuation of said motor means to lower said platform in response to an item of a predetermined weight being placed on said pressure-sensitive panel, said support platform including a turntable structure supported for oscillation about an upstanding axis, power means operatively con-

nected between said support platform and said turntable for selectively oscillating the latter about its axis of oscillation between limit positions thereof, said turntable including an intermediate position thereof disposed between said limit positions of oscillation thereof, and turntable positioning sensing means operative to sense the positioning of said turntable in said intermediate position and including control means operative to prevent actuation of said motor means to lower said support platform unless said turntable is disposed in said intermediate position.

6. An enclosure defining an interior storage area and including an upstanding front wall and an upper generally horizontal top, a first opening formed in said front wall in horizontal registry with said storage area, said top wall having a second opening formed therein in vertical registry with said storage area, a support platform disposed within said storage area, said platform and enclosure including coacting means guidingly supporting said support platform for vertical shifting within said storage area between a lowered position generally horizontally registered with a lower portion of said first opening and a raised position with said platform elevated to a position at least adjacent said top wall, whereby an object supported from said support platform may be projected upwardly through said second opening in response to said platform being raised from its lower position to its upper position, a pressure-sensitive panel disposed within said storage area below the support platform when the latter is in its lower position, motor means operatively connected to said support platform for raising and lowering the latter within said storage area, said pressure panel including motor control means operative to prevent actuation of said motor means to lower said platform in response to an item of a predetermined weight being placed on said pressure-sensitive panel, said support platform including a turntable, power means operatively connected between said support platform and said turntable for selectively oscillating the latter about an upstanding axis between limit positions of oscillation, said support platform and cabinet including means operative to sense the lowering of said platform from its upper position and including power means control means operative to prevent operation of said power means to oscillate said turntable whenever said support platform is lowered below its upper position, turntable positioning sensing means operative to sense the positioning of said turntable in an intermediate position disposed between said limit positions, said turntable positioning sensing means including control means for controlling the operation of said motor means and to prevent operation of said motor means to lower said platform from said upper position except when said platform is disposed in said intermediate position.

7. The combination of claim **6** including a pressure-sensitive panel disposed within said storage area below the support platform when the latter is in its lower position, motor means operatively connected to said support platform for raising and lowering the latter within said storage area, said pressure panel including motor control means operative to prevent actuation of said motor means to lower said platform in response to an item of a predetermined weight being placed on said pressure-sensitive panel.

8. The combination of claim **1** wherein said power means includes a friction resisted slip-type drive coupling with said turntable, whereby the latter may be angularly adjusted according to an object positioned thereon to obtain the desired orientation of the object when said turntable is in said intermediate position and the motor means may continue to operate if an obstruction preventing return of the turntable to its intermediate position is encountered.

9. An enclosure defining an upwardly opening storage area, a support platform disposed within said storage area, said platform and enclosure including coacting means guidingly supporting said support platform for vertical shifting within said storage area between a lowered position disposed in a lower portion of said storage area and a raised position elevated to a position at least adjacent the upper extremity of said storage area, whereby an object supported from said support platform and disposed within said storage area when said platform is in its lowered position may be projected upwardly and at least partially outwardly of the upper extremity of said storage area in response to said platform being raised from its lower position to its upper position, motor means operatively connected to said support platform for raising and lowering the latter within said storage area, said support platform including a turntable structure supported for oscillation about an upstanding axis, power means operatively connected between said support platform and said turntable for selectively oscillating the latter about its axis of oscillation between limit positions thereof, said turntable including an intermediate position thereof disposed between said limit positions of oscillation, and turntable positioning sensing means operative to sense the positioning of said turntable in said intermediate position and including control means operative to prevent actuation of said motor means to lower said support platform unless said turntable is disposed in said intermediate position.

10. An enclosure defining an upwardly opening storage area, a support platform disposed within said storage area, said platform and enclosure including coacting means guidingly supporting said support platform for vertically shifting within said storage area between a lowered position disposed within a lower portion of said storage area and a raised position with said platform elevated to a position at least adjacent the upper extremity of said storage area, whereby an object supported from said support platform within a lower portion of said storage area when said platform is in its lowwred position may be projected upwardly to a position projecting upwardly out of the upper extremity of said storage area in response to said platform being raised from its lower position to its upper position, motor means operatively connected to said support platform for raising and lowering the latter within said storage area, said support platform including a turntable, power means operatively connected between said support platform and said turntable for selectively oscillating the latter about an upstanding axis between limit positions of oscillation, said support platform and cabinet including means operative to sense the lowering of said platform from its upper position and including power means control means operative to prevent operation of said power means to oscillate said turntable whenever said support platform is lowered below its upper position.

11. The combination of claim **10** including turntable positioning sensing means operative to sense the posi-

tioning of said turntable in an intermediate position disposed between said limit positions, said turntable posigioning sensing means including control means for controlling the operation of said motor means and to prevent operation of said motor means to lower said platform from said upper position except when said platform is disposed in said intermediate position.

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