

April 3, 1962

L. H. HINKEL ETAL

3,028,209

MOVABLE KITCHEN UNITS AND CONTROL MEANS THEREFOR

Filed July 25, 1957

5 Sheets-Sheet 1

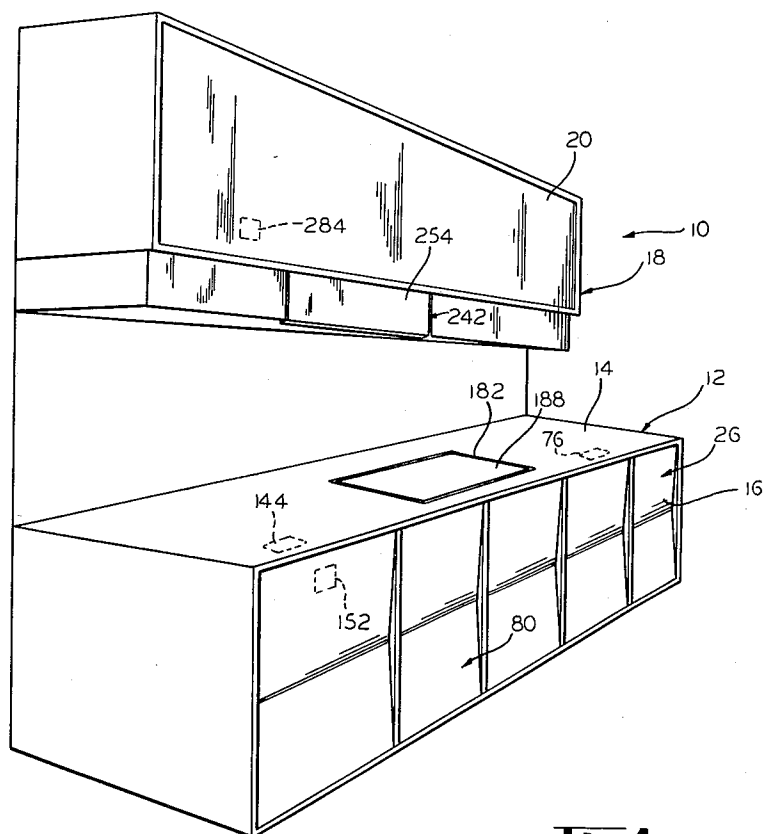


Fig. 1

INVENTORS
LESTER H. HINKEL
MONTGOMERY FERAR
BY

Hill, Sherman, Myers, Carter & Simpson
ATTORNEYS

April 3, 1962

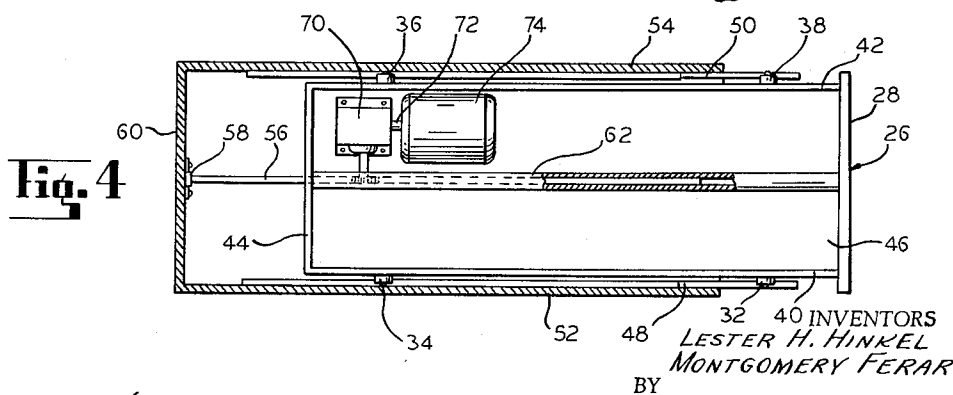
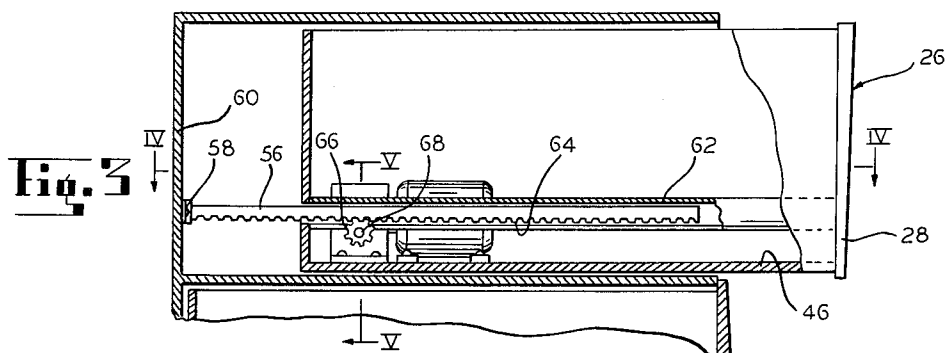
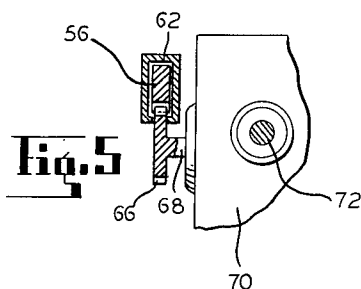
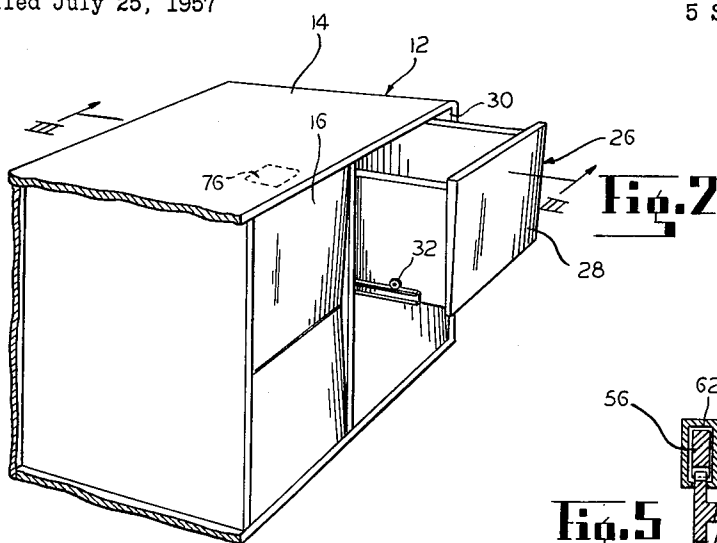
L. H. HINKEL ET AL

3,028,209

MOVABLE KITCHEN UNITS AND CONTROL MEANS THEREFOR

Filed July 25, 1957

5 Sheets-Sheet 2



INVENTORS
LESTER H. HINKEL
MONTGOMERY FERAR
BY

Hill, Sherman, Mason, Gaud & Rimpf
ATTORNEYS

April 3, 1962

L. H. HINKEL ETAL

3,028,209

MOVABLE KITCHEN UNITS AND CONTROL MEANS THEREFOR

Filed July 25, 1957

5 Sheets-Sheet 3

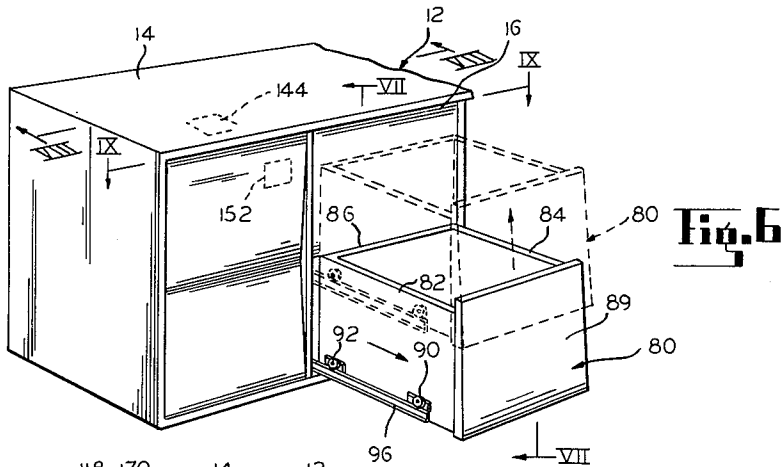


Fig. 6

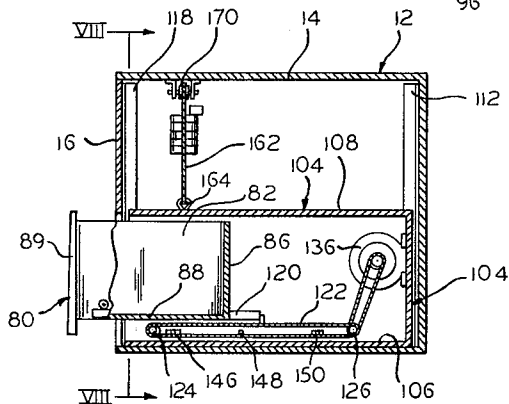


Fig. 7

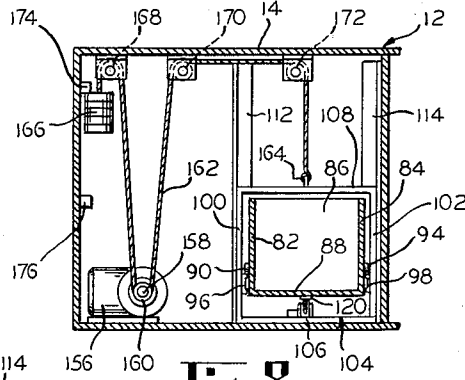


Fig. 8

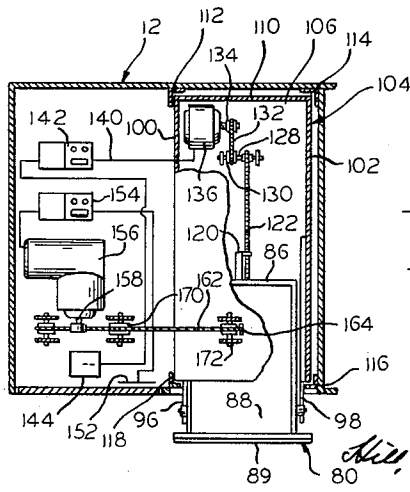


Fig. 9

INVENTORS
LESTER H. HINKEL
MONTGOMERY FERAR

BY

Will Sherman, Merrill Goodwin
ATTORNEYS

April 3, 1962

L. H. HINKEL ETAL

3,028,209

MOVABLE KITCHEN UNITS AND CONTROL MEANS THEREFOR

Filed July 25, 1957

5 Sheets-Sheet 4

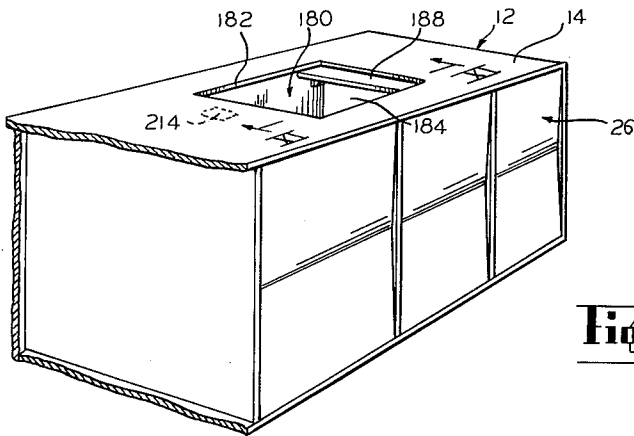


Fig. 10

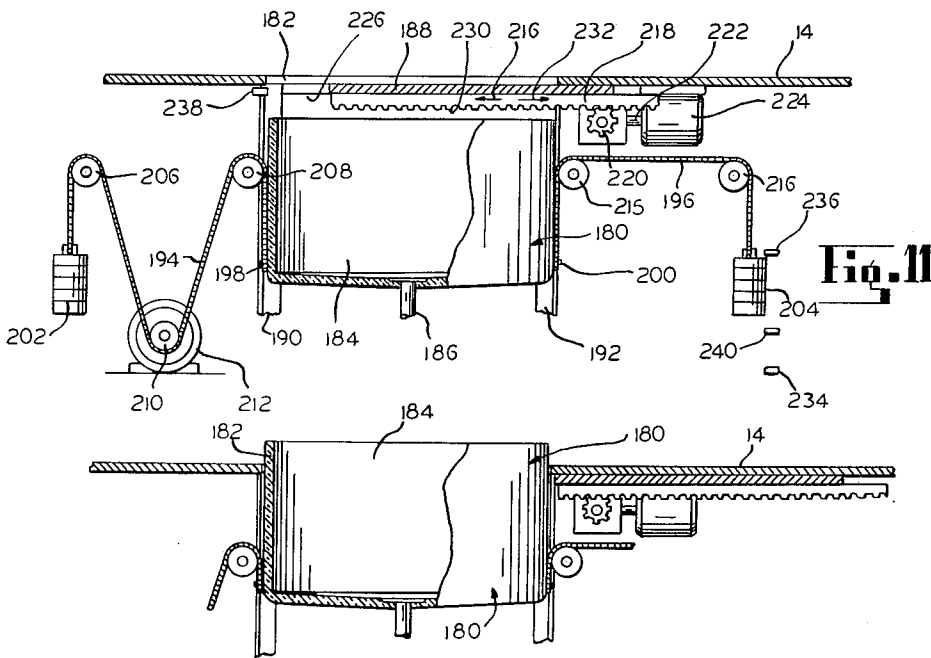


Fig. 11

Fig. 12

INVENTORS
LESTER H. HINKEL
MONTGOMERY FERAR
BY

Hill, Sherman, Morris, Chase & Simpson
ATTORNEYS

April 3, 1962

L. H. HINKEL ET AL

3,028,209

MOVABLE KITCHEN UNITS AND CONTROL MEANS THEREFOR

Filed July 25, 1957

5 Sheets-Sheet 5

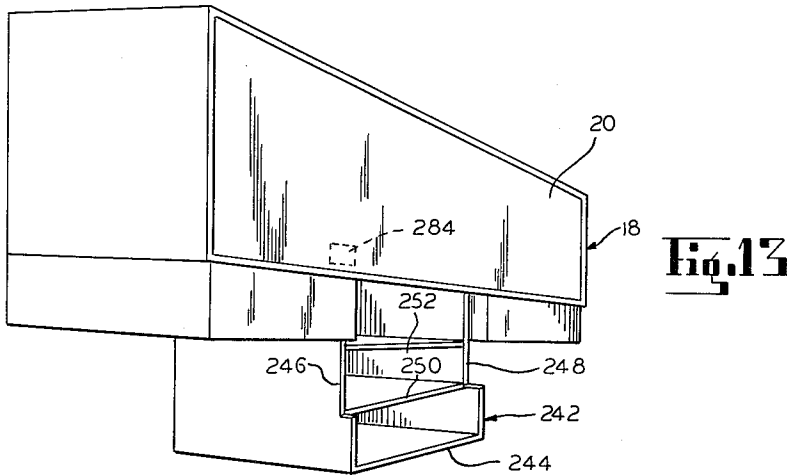


Fig. 13

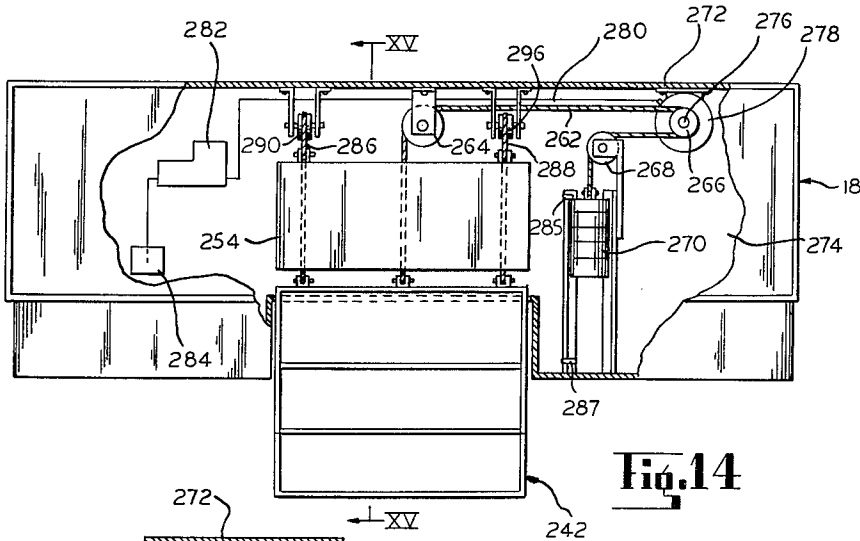


Fig. 14

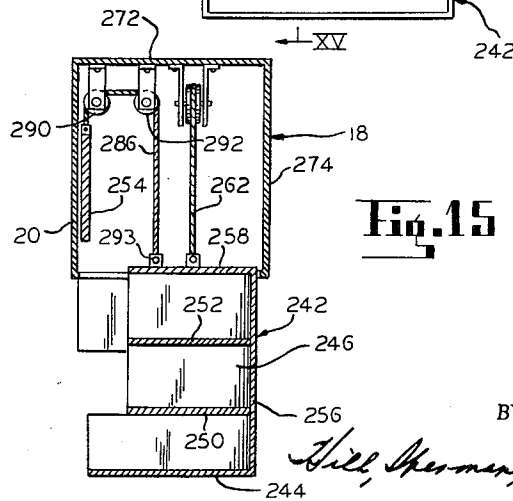


Fig. 15

INVENTORS
LESTER H. HINKEL
MONTGOMERY FERAR
BY

Will Sherman, Morris Greenberg
ATTORNEYS

1

3,028,209

MOVABLE KITCHEN UNITS AND CONTROL
MEANS THEREFOR

Lester H. Hinkel, Benton Harbor, and Montgomery
Ferar, Birmingham, Mich., assignors to Whirlpool Cor-
poration, St. Joseph, Mich., a corporation of Delaware
Filed July 25, 1957, Ser. No. 674,187
6 Claims. (Cl. 312—223)

The present invention relates to improvements in auto-
matic appliances for the home, and more specifically to
cabinet installations for a work center in the home, such
as a kitchen, which are adapted to house appliances,
utensils and food stuffs or the like and automatically
bring storage and housing units out of the cabinets into
operative position.

An object of the invention is to provide a cabinet in-
stallation well adapted for use in a home which has com-
partments for the protection and storage of utensils and
appliances wherein these compartments automatically be-
come accessible through a manually actuated control.

Another object of the invention is to provide a cabinet
installation for the home capable of the storage of ap-
pliances and utensils in compartments in the cabinet,
wherein the compartments are provided with powered ac-
tuating means for automatically moving the compartments
or making them accessible for the removal or operation
of the appliances, utensils, or materials stored therein.

A further object of the invention is to provide a storage
cabinet installation with storage compartments therein
which will move out from the cabinet into operating po-
sition automatically and by unique movements.

Another object of the invention is to provide the cabinet
installation having a power operated automatically con-
trollable drawer arrangement for moving the drawer be-
tween open and closed position.

A further object of the invention is to provide a cabi-
net installation having lower storage compartments or
drawers, wherein the drawers are automatically operable
to be moved outwardly to be accessible and to be moved
upwardly to a height wherein the operator does not have
to bend or stoop to reach the contents.

A further object of the invention is to provide a stor-
age arrangement having a plurality of drawers wherein
each of the drawers is accessible as the rest, regardless of
its height.

A further object of the invention is to provide a cabinet
for installation in a kitchen and having a sink wherein
the sink is automatically operable to be moved between
an operating position projecting above the counter of the
cabinet and a recessed position below the counter of the
cabinet, wherein a closure panel moves into a counter
opening through which the sink moves to make the sink
recess space available for work area.

A still further object of the invention is to provide a
wall-mounted type of cabinet for the home provided with
a storage or housing compartment which is capable of
automatically moving downwardly to a position of easy
access for the operator, and provided with a protective
door panel which is automatically arranged to expose
the compartment when actuated.

A still further object of the invention is to provide a
cabinet installation for a work area in a home wherein
a plurality of stored operating units and appliances are
provided which automatically become accessible by ac-
tuation of individual control switches designated for in-
dividual appliances.

Other objects and advantages will become more ap-
parent with the teaching of the principles of the inven-
tion in connection with the disclosure of preferred em-
bodiments thereof and the specification, claims and draw-
ings, in which:

2

FIGURE 1 is a perspective view of a floor and wall
cabinet installation for a kitchen work center employing
the features of the present invention;

FIGURE 2 is a perspective view of a lower portion of
a cabinet installation having a work counter and having a
storage compartment in the form of an upper sliding
drawer;

FIGURE 3 is a vertical sectional view taken through
the drawer along line III—III of FIGURE 2;

FIGURE 4 is a horizontal sectional view taken along
line IV—IV of FIGURE 3;

FIGURE 5 is an enlarged vertical fragmental sectional
view taken along line V—V of FIGURE 3, illustrating
the details of the drive construction for the drawer;

FIGURE 6 is a perspective view of a part of the lower
section of the cabinet illustrating the action of a lower
drawer within the cabinet;

FIGURE 7 is a vertical sectional view taken along
line VII—VII of FIGURE 6;

FIGURE 8 is a vertical sectional view taken along
line VIII—VIII of FIGURE 6 and showing the lower
drawer and its operating mechanism and counterweights
from the front of the cabinet;

FIGURE 9 is a horizontal sectional view taken along
line IX—IX of FIGURE 6 and illustrating the drawer op-
erating mechanism;

FIGURE 10 is a perspective view of the lower cabinet
section and illustrates the position of the sink within the
working surface area;

FIGURE 11 is a vertical sectional view taken along
line XI—XI of FIGURE 10;

FIGURE 12 is another sectional view similar to FIG-
URE 11, but illustrating the sink in elevated position;

FIGURE 13 is a perspective view of the upper section
of the cabinet installation illustrating a storage compart-
ment therein in lowered position;

FIGURE 14 is a front elevational view of the cabinet
of FIGURE 13 with portions broken away to illustrate
the details of construction of the interior thereof; and,

FIGURE 15 is a vertical sectional view taken along
line XV—XV of FIGURE 14.

While the drawings and description disclose the inven-
tion in structures which embody the principles thereof,
it will be understood that the features of the invention
may be utilized in various environments, taking advantage
of the inherent properties thereof. In FIGURE 1, a cabi-
net installation is shown of the type to be used in a
work center, such as a kitchen in the home. The cabinet
10 has a lower section 12 provided with an upper work
area 14 and a drawer front 16. The cabinet installation
10 also has an upper section 18 with a front 20. The
work area 14 of the lower cabinet section 12 will nor-
mally be at working height for the operator or housewife,
and the upper section 18 of the cabinets will be located
above the work area 14.

In accordance with the principles of the present in-
vention, the cabinet sections 12 and 18 are provided with
storage compartments for appliances or utensils with the
compartments or elements thereof being automatically
movable to grant access to the appliances and utensils.
Dependent upon the type of compartment or the type of
appliance used, access may be granted by movement of
the appliance itself, or by movement of the compartment,
or further by movement of a door or covering panel.

The movement of the compartment elements to avail
access to the appliances and utensils therein is obtained
by actuation of a control. The control may take different
forms, such as a manually operated switch, or may be
responsive to certain conditions for automatic operation
of the control. Preferably, the controls take the form
of devices which are responsive to the presence of the
operator. Such a control may be known as a proximity

switch which actuates an electrical circuit whenever a part of the human body is brought in proximate relationship to the area which acts as the proximity switch surface. For example, in FIGURE 1 the areas indicated by the dotted line enclosures 144 and 152 may be by construction proximity areas which when touched or when the human hand is brought near these areas will cause automatic actuation of the storage compartment. Different proximity areas will be designated to operate different compartments.

Not only will the compartments operate automatically to avail access to the appliance or utensil therein, but the compartments are designed so as to automatically move with a unique path of movement to an operative location which positions the compartment in ideal operating location for the operator. The position of the operator will be determined by the position of the proximity switch and the location in which he must stand to operate the switch. The compartment will then move into his operating range so that he will not have to make unnecessary movements or stretch, bend, stoop or squat to reach the compartment. The compartments are movable to an ideal position with respect to the operator, thereby making it possible to utilize the storage compartments over the entire storage wall areas 16 and 20 of the cabinets without having any compartments inaccessible to the operator.

In FIGURE 2, a portion of the lower section 12 of the cabinet assembly is shown. The drawer front 16 is provided with a plurality of storage compartments which are filled with supports or with drawers. The mechanism of FIGURES 2 through 5 is especially adapted for operating an upper drawer 26 of the cabinet section 12.

The upper drawer 26 is provided with a front 28 which conforms in appearance and shape to an opening 30 provided in the front 16 of the cabinet. The drawer is provided with supporting rollers 32, 34, 36 and 38, with two rollers being located on each of the sides 40 and 42 of the drawer.

The drawer sides 40 and 42 are suitably attached to the drawer front 28, FIGURE 4, at their front ends and to a back 44 at their back ends. The sides 40 and 42 and ends 28 and 44 are suitably secured to a drawer bottom 46 to complete the compartment space provided by the drawer.

The drawer is carried on the rollers 32, 34, 36 and 38 which are suitably supported on the telescoping side rails 48 and 50 in order that the drawer may be moved out to its extended open position. The rails are suitably secured to two side walls 52 and 54 within the sliding space provided for the drawer 26.

Power drive means are provided for moving the drawer between a closed position and an open position. The drive means includes a rack 56 secured at 58 to the back 60 of the cabinet. The rack extends through a tubular guide 62, as shown in FIGURES 3, 4, and 5, and is provided with teeth 64 on its lower face which are in mesh with a driving pinion gear 66. The pinion is carried on the drive shaft 68 of a gear reduction 70, which is driven by a drive shaft 72 of an electric motor 74. For purposes of illustration the motor 74 is shown carried within the drawer mounted on the bottom 46 thereof. Suitable electrical leads are provided for operating the motor and when energized, the motor will drive the reduction gearing 70 to rotate the pinion 66 and move the drawer by pushing on the teeth 64 of the rack 56.

It will be readily recognized that different arrangements of the power drive for the drawer may be adapted. For example, the rack may be mounted on the drawer and the drive motor stationarily secured to the cabinet.

The motor is actuated by an automatic control means which closes a relay switch to complete the electrical circuit to the motor. The relay switch for operating the motor will be actuated by a proximity switch with a proximity plate 76 being provided beneath the surface 14 of

the cabinet. The proximity plate is so located that the operator will be standing in a position beside the drawer 26 for conveniently placing his hand on the proximity area 76 to thereby cause the drawer to open beside him. The proximity switch arrangement and electrical circuitry is not shown in detail, since conventional wiring arrangements may be utilized which are readily applied by those skilled in the art.

In FIGURES 6 through 9, the construction and operation of a lower drawer is illustrated. A drawer 80 illustrates a support or a storage compartment for an appliance or utensils or the like, and is provided with sides 82 and 84, and a back 86, each connected to a floor 88. The drawer 80 is also provided with a front panel 89, which is connected to the side panels 82 and 84 and to the bottom 88, and has a finish which will conform with the front 16 of the cabinet 12. The drawer is supported on rollers 90 and 92, connected to the side 82, and roller 94 and another roller, not shown, connected to the side 84, as shown in FIGURE 8. The rollers carry the drawer between a closed position, as shown in FIGURE 1, and an open position, as shown in the solid line position of FIGURE 6. The drawer 80 is also shown in elevated position in the dotted line position of FIGURE 6.

For moving the drawer between the closed and open position, the rollers are supported on rails or tracks 96 on the left of the drawer, and 98 on the right, with the tracks being of the telescoping type.

The rails 96 and 98 are secured to the sides 100 and 102 of an elevator housing 104 for the drawer.

The drawer 80 is thus carried within the elevator housing 104, and moves outwardly to extended position in a first movement, as shown in the solid line arrangement of FIGURE 6, and moves upwardly to an elevated position in a subsequent motion, as shown in the dotted line position of FIGURE 6. For the upward elevation, the elevator housing 104 is lifted vertically to carry the drawer and its supporting and its operating mechanism.

The elevator housing has side walls 100 and 102 and bottom and top walls 106 and 108, and a rear wall 110. The front end of the elevator housing is open to permit the drawer to move between storage and extended position. The elevator housing is guided in its vertical movement by angle-shaped vertical tracks 112, 114, 116 and 118 mounted at the four corners of the housing.

The mechanism for moving the drawer between storage position and extended or open position is shown in FIGURES 7, 8 and 9. The drawer is secured by a connector 120 to a drawer moving chain 122, which passes endlessly over sprockets 124 and 126 at its ends. The sprockets are supported by suitable brackets on the bottom 106 of the elevator housing 104. The sprocket 126 drives the chain, and for this purpose is mounted on a shaft 128 which carries another sprocket 130. The sprocket 130 is driven by a chain 132 passing over a drive sprocket 134 mounted on the drive shaft of a motor 136.

The motor is energized by an electrical line 140 leading from a control relay box 142. The relay is actuated by a proximity switch plate 144 which is mounted beneath the top surface 14 of the cabinet 12. Thus, any time the operator lays his hand on the surface of the cabinet in the neighborhood of the proximity plate 144, the controls within the relay box 142 will energize the motor 136 to move the drawer to open position. When the operator again places his hand on the plate, the drawer will reverse its movement, and move to closed position. This is accomplished by an automatic reversing relay in the relay box 142.

Limit switches may be provided to stop the travel of the drawer 80 when it reaches open position, and when it reaches closed position. Limit switch 146 will be engaged by a switch actuating pin 148 secured to the chain 122 when the drawer is moving to closed position to break

5

the electrical circuit to the motor. When the proximity switch is again energized, the drawer will move to open position and the stop pin 148 will engage limit switch 150 to stop the motor 136 to thereby stop the outward movement of the drawer.

The drawer is shown raised to its elevated position by a separate control actuated by the proximity plate 152 on the front face 16 of the cabinet, as shown in FIGURE 6. After the drawer has reached the extended open position, the operator touches the area opposite the proximity plate 152 and the drawer will move to elevated position. An interlock of a suitable nature is provided between the controls so that the drawer will not accidentally be raised when in the closed or storage position. If desired, the drawer may be operated off one proximity control which will cause it to automatically move to an extended position and subsequently automatically move to elevated position without the actuation of another control switch.

When the operator actuates the proximity plate 152, a relay within a control box 154 closes an electrical circuit to an elevating motor 156. The motor has a drive shaft 158 carrying a drive pulley 160, which operates an elevator cable 162.

It will be understood that other operating mechanism may be used for operating the drawers and compartments. Also, the preferred type of mechanism shown may be made more compact and is shown in a manner for simplicity of description.

As may be seen in FIGURES 7, 8 and 9, the elevator cable is connected at one end 164 to the elevator housing 104. The other end is connected to counterbalancing weights 166, which are approximately equal to the weight of the drawer 80 and its operating mechanism including the elevator housing 104. The cable 162 passes over idler sheaves 168 and 170, which permit it to be looped around the drive pulley 160, and the cable also passes around the idler sheave 172 which positions it vertically above the elevator housing 104. The sheaves are mounted on suitable bearing supports beneath the counter surface 14 of the cabinet 12. The raising and lowering of the elevator housing 104 is terminated by stop switches 174 and 176 which are engaged by the counterweights 166 in its movement. When the elevator housing 104 raises to its uppermost position, the counterweights 166 will strike switch 176 to break the circuit to the elevator motor 156, and when the elevator housing 104 reaches its lowermost position, the counterweights 166 will actuate switch 174 to break the circuit to the elevator motor 156.

Thus, in operation, the operator actuates the proximity switches to open the drawer, and the drawer will move outwardly by operation of the drawer extension motor 136 until it reaches its fully extended position. The drawer will then be automatically raised either by sequential control or by actuation by the operator of the proximity plate 152, to its elevated position. This will be caused by the entire elevator housing 104 raising within its guide tracks 112, 114, 116 and 118. As will be observed in FIGURE 7, the drawer will be extended sufficiently far so that the rear wall 86 of the drawer will clear the front 16 of the cabinet, when the drawer moves to elevated position.

Again the proximity control plates 144 and 152 are located so that the drawer will move to an easily accessible position relative to the position of the operator when he actuates the proximity plates.

In addition to the upper drawer 26 and the lower drawer 80, the cabinet 12 contains other appliances and other compartments, such as the sink 180, which is shown in FIGURES 1 and 10 through 12. The sink is movable between a recessed storage position within an opening 182 in the counter top 14 and an operating position, as shown in FIGURE 12, wherein it projects above the counter top 14. The sink is employed as an appliance for washing

6

dishes and other household chores and for this purpose, forms a container with a hollow interior 184 for containing fluids. The interior 184 is provided with a drain 186 which connects to a flexible drain conduit leading to a sewer connection. The sink 180 will also be provided with water supply faucets, not shown, which are preferably mounted on the sink 180, and are supplied water through flexible lines so as to permit vertical elevation and lowering of the sink.

The sink 180 is shown in recessed or storage position in FIGURES 1, 10 and 11, and in elevated or operative position in FIGURE 12. In FIGURE 1, a sink-protecting cover 188 is in closed position in the opening 182. In this position, it is flush with the upper surface 14 of the work counter, so as to provide a continuation of the counter and provide extra available work surface space. The cover is shown as being moved to an out-of-the-way position in FIGURES 10 and 11 in preparation for elevating the sink to operative position.

For vertical movement of the sink 180, it is guided in tracks such as 190 and 192 which are positioned opposite its corners and additional tracks, not shown, are located opposite the other corners to suitably guide the sink. The sink is supported and driven in vertical movement by elevating chains 194 and 196 secured to the sides of the sink at their ends 198 and 200. The other end of the chains are secured to counterweights 202 and 204 to counterbalance the weight of the sink. The elevating chain 194 passes over idler sprockets 206 and 208 which are suitably mounted for free rotation. Chain 194 is driven to elevate or lower the sink by passing over a drive sprocket 210 mounted on the drive shaft of an elevating motor 212. Chain 196 is not driven, but supports the weight of the opposite side of the sink and passes over idler sprockets 215 and 216 which are suitably mounted for free rotation.

The elevator motor 212 is operated through a suitable electrical control circuit, not shown, which is actuated by a control mechanism operated by a proximity control switch. The control switch has a proximity actuating plate 214 mounted beneath the counter top 14. To elevate the sink into operative position, the operator places his hand upon the area in the neighborhood of the proximity control plate 214 and the sink automatically elevates. The operator again places his hand over the area 214 at the end of sink operation, and the sink automatically lowers. Suitable limit switches may again be provided engaged by the sink itself, or by one of the counterweights 202 or 204 similar to the manner of actuation of the limit circuit for the drawer of FIGURES 6 through 9.

The sink closing panel 188 is automatically operated to recess out of the way before the sink is elevated, and to automatically move up into the opening 182 when the sink is lowered.

When the sink is lowered to the position of FIGURE 11, the panel will automatically be slid laterally in the direction of the arrow 216. For this purpose, the panel carries a rack 218 on its lower surface which is driven by a pinion 220. The pinion is driven through a suitable gear reduction from the drive shaft 222 of the panel operating motor 224. When the panel, which slides on rails such as 226 connected beneath the counter surface 14, is slid beneath the opening 182, the sink 180 will again be partially elevated to push the panel 188 up into the opening 182 until it is flush with the counter top 14 in the position shown in FIGURE 1.

When the sink is again to be placed in operative position and the proximity plate 214 actuated, the sink 180 will first lower itself to drop the panel 188 against its rails 226. This will also drop the teeth 230 of the rack 218 onto the teeth of the sprockets 220. The sprocket will then drive the panel 188 in a lateral direction, as indicated by the arrow 232 to the position of FIGURE 12

where it is out of the way of the sink 180. The sink will then be elevated to the position of 212.

When the sink is again to be recessed to storage position, it will be dropped to the location of FIGURE 11, whereupon the panel will be slid across beneath the opening 182. The sink will then be partially raised to lift the panel into closed position.

The motor 224 for laterally sliding the panel may be connected by controls to be synchronized to the sink elevating motor 212. These controls may be in the form of the limit switches for limiting the movement of the sink. For example, a lower limit switch 234 may be positioned to be engaged by the counterbalancing weight 204 to limit the elevational movement of the sink and stop it in the position of FIGURE 12. When the sink is lowered the counterweight may engage limit switch 236 to stop its lowering movement and this limit switch 236 may actuate the panel drive motor 224. Through a time delay, or by a limit switch such as 238, which is engaged by the panel 188, the movement of the panel 188 may be stopped and the sink 180 partially elevated to be stopped by an intermediate limit switch 240. It will be recognized that control of the movements of the sink may be obtained through various means, and the circuitry arranged to control the drive motors 212 and 224 in the necessary manner, and, therefore, circuit details need not be shown.

The upper section 18 of the cabinet assembly is also provided with storage compartments and, as shown in FIGURES 13 through 15, the compartments are arranged to automatically become accessible to the operator.

A compartment 242 is illustrated as being movable in a vertical direction between open accessible position, as shown in FIGURE 13, and a closed position, as shown in FIGURE 1. The compartment is illustrated as being provided with a bottom wall 244 and connected side walls 246 and 248. Shelves 250 and 252 may be provided to compartmentalize the compartment 242. A door or vertical sliding panel 254 is provided to drop down in front of the compartment and close it in the position of FIGURE 1.

As illustrated in FIG. 15, the compartment 242 is also provided with a rear wall 256 and a top wall 258 which are connected to the side walls 246 and 248. The compartment 242 is lifted by an elevating cable 262 connected to the top wall 258. The elevating cable 262 passes over pulleys 264, 266 and 268 to connect to a counterbalancing weight 270. Pulleys 264 and 268 are idler pulleys and are suitably mounted for free rotation on the top wall 272 and back wall 274 of the cabinet 18.

Pulley 266 drives the elevating cable 262 and is mounted on the drive shaft 276 of an elevating motor 278. The motor is supplied with electricity through an electrical circuit 280 connecting to a control box 282. The control for the operating switches within the control box 282 is obtained through a proximity plate 284 operating a proximity switch within the control box 282. Thus, when the operator places his hand on the cabinet in the neighborhood of the proximity plate 284, the compartment 242 will automatically lower itself to be accessible to the position of the operator. When the operator again places his hand on the cabinet area in the adjacency of the proximity plate 284, the compartment 242 automatically is raised. The operation of the elevating motor 278 may be terminated by the usual limit switches 285 and 287, which are engaged by the counterbalancing weight 270.

The closing panel 254 which drops down in front of the compartment in its raised position, as may be seen in FIGURE 1, is automatically operated by the raising and lowering of the compartment 242. The ends of the panel are connected to panel operating cables 286 and 288. Cable 286 passes over idler pulleys 290 and 292, which are suitably supported from the top wall 272 of the cabi-

net. The end of the panel operating cable is connected to the top wall 258 of the compartment 242 at 293. The panel operating cable 288 likewise passes over idler pulleys 296, only one of which is shown.

It will be seen from FIGURE 15, that as the compartment raises or lowers, the suspended closure panel 254 will automatically move in an opposite direction. When the compartment 242 is elevated into storage position, the panel 254 will automatically drop over the front of the compartment, and when the compartment is lowered into operating position where its contents are accessible, the panel 254 will automatically be raised to a recessed position behind the front wall 20 of the cabinet.

Thus, it will be seen that we have provided an improved installation for a home work center which meets the objectives and advantages hereinbefore set forth. The cabinet assembly is shown as specifically employing upper and lower drawers, a sink, and an upper storage compartment, each of which is automatically controlled to move from a storage position to an operative position wherein the unit is easily accessible to the operator. The system thus presents an operating unit for a home work center which not only saves the operator's efforts in moving the storage compartments to an accessible position, but automatically operates to move the units to a position of improved access. When the units are in a storage position, the cabinet presents a compact attractive entity which fully protects the appliances in the storage compartment. Each of the appliances and compartments is fully automatic, becoming accessible upon operation of its control circuit which in the embodiment illustrated, is actuated by the presence of the operator.

We have, in the drawings and specification, presented a detailed disclosure of the preferred embodiments of our invention, but it is to be understood that we do not intend to limit the invention to the specific forms disclosed, but intend to cover all modifications, changes and alternative constructions and methods falling within the scope of the principles taught by our invention.

We claim as our invention:

1. An installation for a food preparation center of a home comprising in combination a storage cabinet adapted to be installed at a food preparation location, a work space on the upper surface of the storage cabinet, an opening in the work space providing a sink housing recess, a sink having a size whereby it may be elevated upwardly through said opening into operating position, power operated elevator means for moving the sink between storage position and operating position, a panel for closing the opening in the work space after the sink has been moved to storage position, a support for said panel for guiding it in lateral reciprocation beneath the work surface of the cabinet, reciprocating drive means adapted to be engaged by the panel when it is beneath said work surface, means on said sink for elevating the panel into position over said opening, and control means for operationally actuating the reciprocating drive means and the elevator means whereby the panel will be first withdrawn from the opening with the sink moving in a descending direction and the panel will be withdrawn by the reciprocating power means, and the sink will subsequently be elevated through said opening, said control means operating the drive means and elevator means whereby the sink will be lowered after use and panel moved across said opening and the sink raising to move the panel upwardly into said opening flush with the working surface of the cabinet.

2. In a cabinet installation for an activities center such as in a home, a housing cabinet adapted to be suspended in a working position, an appliance housed within said cabinet and mounted for reciprocatory elevation between a storage position wherein the appliance is housed and an operative position wherein the appliance is being moved vertically between said positions, a protective door panel over the front of said appliance and movable between

a covering position and an uncovering position, power means for driving the appliance in said vertical movement, control means for manually actuating the power means, and means responsive to actuation of said power means and automatically opening said protective door panel and moving it to uncovering position when the power means is actuated to move the appliance to operative position.

3. An improved cabinet installation for a work center in a home comprising in combination a cabinet storage unit spaced above a floor area, a storage compartment recessed within the cabinet, power operating means for the storage cabinet adapted to lower the compartment to an operative position or to raise the compartment to a storage position, control means for automatically operating the power means, a panel adapted to move down over the compartment, and means connected to operate simultaneously with movement of the storage compartment and moving the panel in a vertical direction opposite the direction of movement of the compartment.

4. A kitchen unit providing coordinated operation of a plurality of kitchen devices from a predetermined central location comprising, a cabinet having a working surface defining a sink opening, a sink in said sink opening, a storage means in said cabinet, power means for said sink and said storage means respectively for moving said sink and said storage means between an operative and an inoperative position selectively, and a proximity control for each of said power means located in said kitchen unit for ready access from said predetermined central location to energize said power means, said proximity controls being hidden beneath said working surface of said cabinet.

5. A kitchen unit comprising a cabinet, a recessed space in said cabinet, a kitchen device movably received in said recess, electric motor means for moving said device from an operative to an inoperative position and vice versa, selectively, including pulley means connected to said device and counter-balance means for balancing the weight of the device, said pulley means being arranged in said cabinet to afford selective raising and lowering of the device, and a proximity control beneath the sur-

face of said cabinet, said proximity control being effective to energize said motor means.

6. A kitchen unit comprising a cabinet, a recessed space in said cabinet, a kitchen device movably received in said recess, electric motor means for moving said device from an operative to an inoperative position and vice versa, selectively, including pulley means connected to said device and counter-balance means for balancing the weight of the device, said pulley means being arranged in said cabinet to afford selective raising and lowering of the device, said cabinet having a working surface extending horizontally therealong, and a proximity control beneath said working surface of said cabinet and accessible from a central location in front of said cabinet to energize said motor means.

References Cited in the file of this patent

UNITED STATES PATENTS

1,320,553	Hominuk	Nov. 4, 1919
1,778,510	Richardson	Oct. 14, 1930
1,778,857	James	Oct. 21, 1930
2,003,302	Miller et al.	June 4, 1935
2,185,763	De Lisle	Jan. 2, 1940
2,288,822	McCarron	July 7, 1942
2,349,541	Earle	May 23, 1944
2,382,354	Wales	Aug. 14, 1945
2,429,523	Murphy	Oct. 21, 1947
2,478,145	Weber	Aug. 2, 1949
2,525,767	Bruns	Oct. 17, 1950
2,525,769	Bruns	Oct. 17, 1950
2,549,545	Thibieroz	Apr. 17, 1951
2,554,124	Salmon	May 22, 1951
2,561,358	Gipple	July 24, 1951
2,696,417	Jouk	Dec. 7, 1954
2,707,142	Waite	Apr. 26, 1955
2,782,308	Rug	Feb. 19, 1957
2,810,066	Green	Oct. 15, 1957
2,817,094	Lessley	Dec. 24, 1957
2,829,022	Lewis	Apr. 1, 1958
2,861,857	Lee	Nov. 25, 1958
2,873,159	Becker	Feb. 10, 1959
2,875,012	Riley	Feb. 24, 1959