

June 4, 1929.

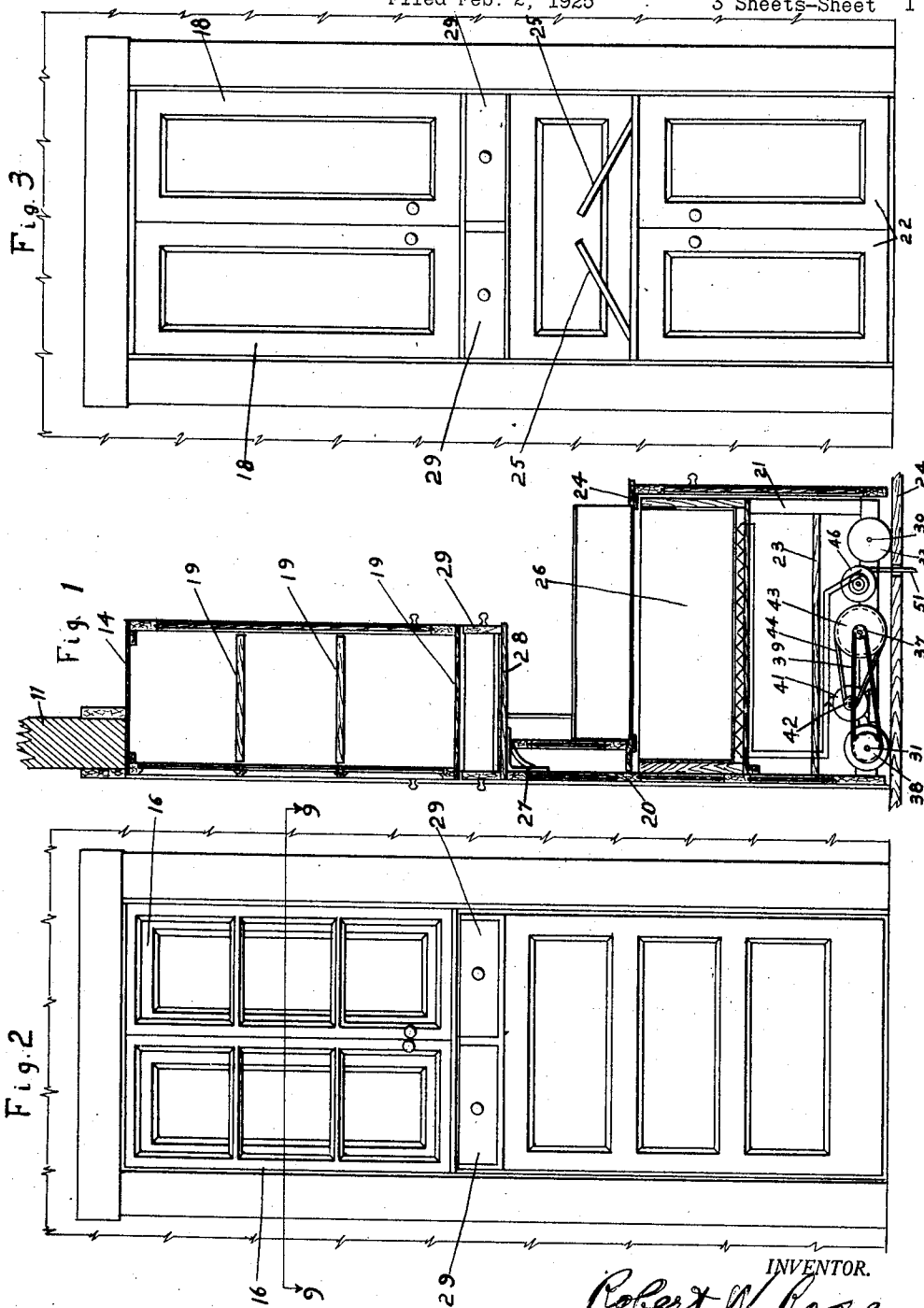
R. W. ROSE

1,715,951

MECHANICAL MAID.

Filed Feb. 2, 1925

3 Sheets-Sheet 1



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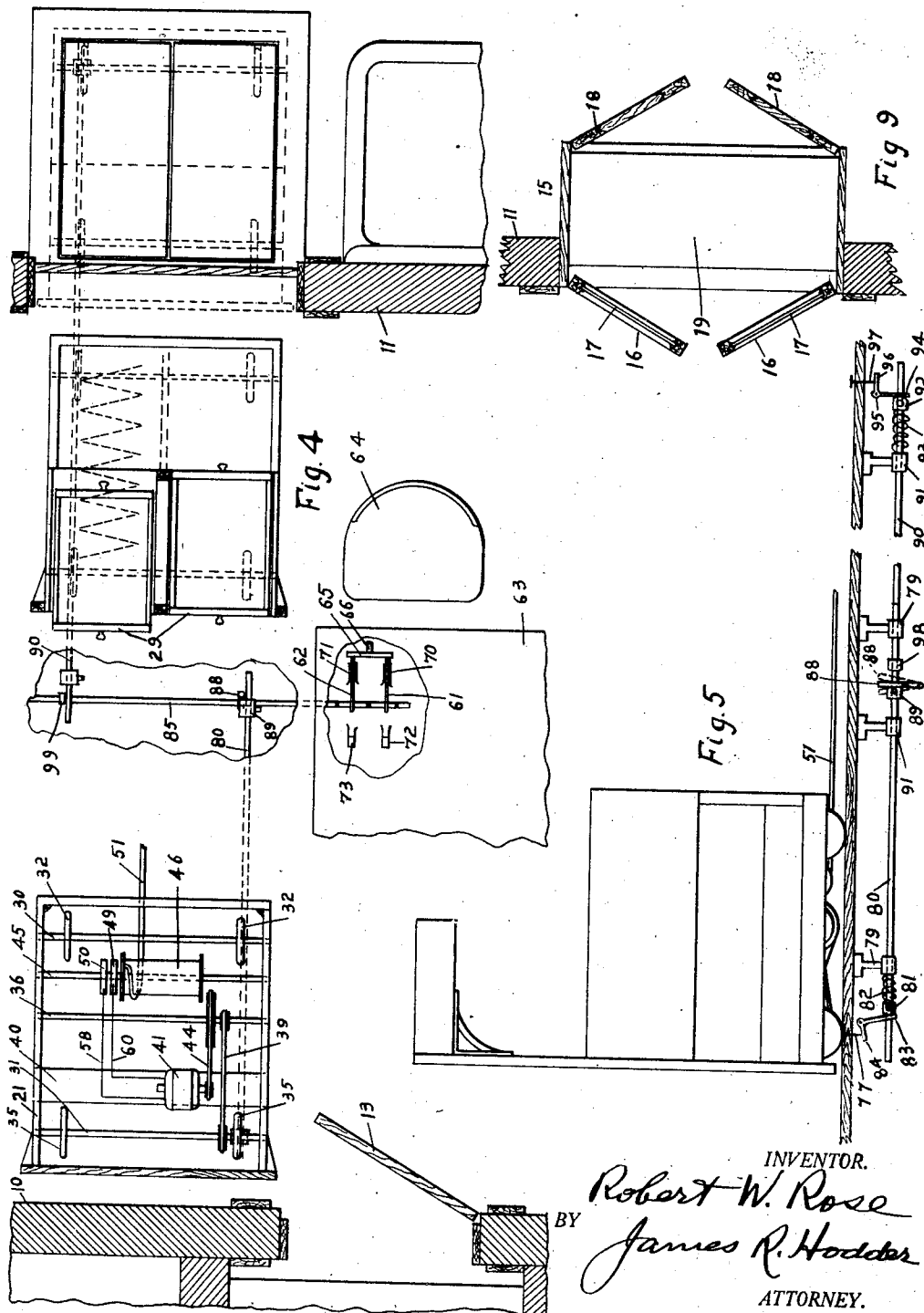
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3 Sheets-Sheet 2



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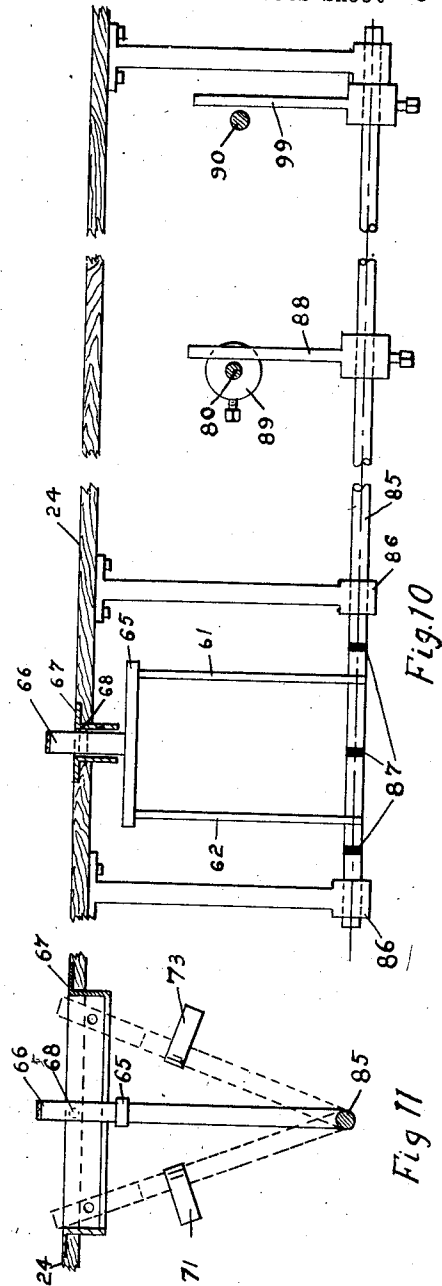
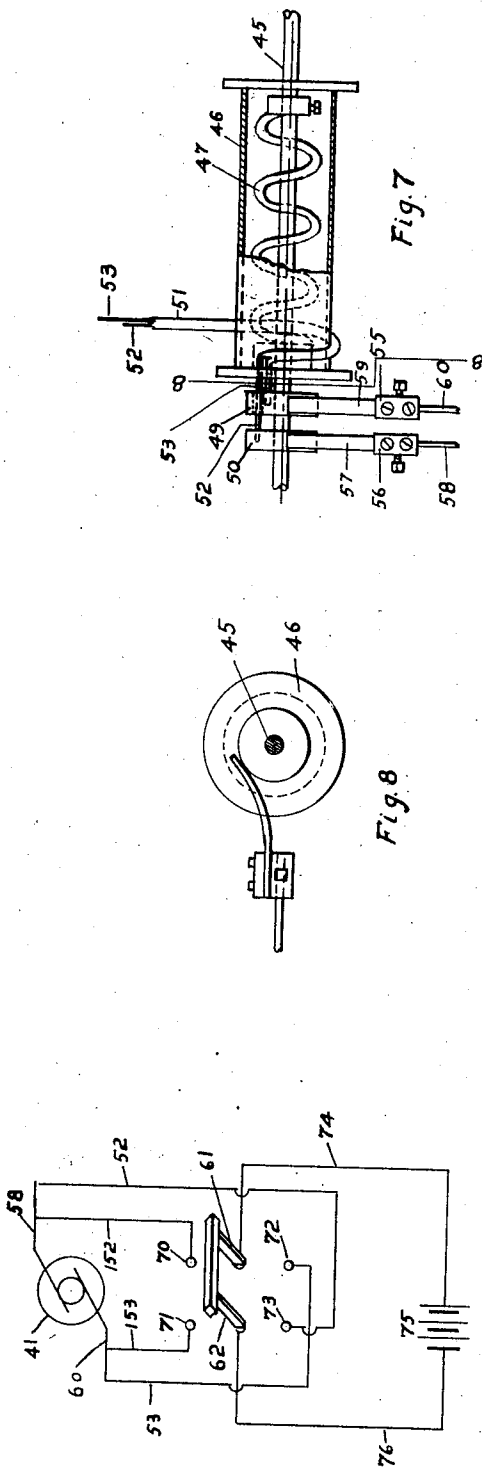
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3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE.

ROBERT W. ROSE, OF CLIFTON, MASSACHUSETTS.

MECHANICAL MAID.

Application filed February 2, 1925. Serial No. 6,348.

My present invention is a novel and improved form of dirigible and controllable carrying device, which I have termed a "mechanical maid".

5 The object of the invention is primarily to provide means, apparatus and controlling mechanism therefor so that the operator, such for example, as the housewife, seated at a dining room table, can as for example, by
10 pressing a button, cause the dirigible serving cabinet to travel either from a remote portion of the room or from another room, as from the kitchen, into the dining room, and adjacent to the housewife. Thereupon
15 the articles on the dirigible cabinet may be removed to the table and the articles on the table placed on the cabinet, the button again pressed and the mechanical maid travels from the dining room out into the
20 kitchen or to other predetermined point. Thus the object of my invention, as above briefly explained, is primarily to provide for my mechanical maid device to be summoned to the dining room, carrying plates, food or
25 the like, which had been placed therein, and awaiting use, permit removal of the contents to the table and the replacement from the table to the dirigible cabinet of the plates or dishes of a preceding course, and then
30 remove the same to the kitchen or a remote part of the dining room, all without the housewife arising from the table, or any manual proceeding other than the pressing of the button for the control of the move-
35 ments and travel of the dirigible cabinet. Automatic stops at the point desired in the kitchen or other place, and adjacent to the seat of the operator in the dining room, effect proper stopping of the movement of
40 the mechanical maid at predetermined desired points.

A further feature of my present invention consists in the provision of a plurality of sections in the dirigible cabinet, one section
45 for example having a heating coil positioned therein to keep food hot, and another partition, without the heat, to maintain the articles contained therein cool. I may also have one or more shelves to contain several courses, and to permit repeated
50 travel of the mechanical maid from kitchen to dining room and return without manual interruption or loading and unloading, excepting at the dining table, when successive
55 courses are removed from the container and the preceding dishes placed therein.

Furthermore, I contemplate the utilization of such a portable dirigible cabinet in combination with a china closet which is usually interposed between the kitchen and dining room, whereby the mechanical maid may be employed as a lower portion or door to shut off the passageway between kitchen and dining room, as a part of the china closet, while also utilizing said passageway as its
60 own doorway, to permit line of travel from kitchen to dining room and return. This furthermore enables me to provide a practically straight line of travel, and to position automatic stops, circuit breakers or the
70 like to limit the movement of the dirigible cabinet at either end of the line of travel desired.

In carrying out my present invention I preferably provide a dirigible apparatus
75 which is suitable in size, capacity and compartments for the particular work desired. Also I mount the same on a plurality of rollers, wheels or the like, preferably with means to set the same at an angle or curved to allow for movement of the dirigible cabinet
80 other than in a straight line. A suitable electric motor is mounted in the cabinet and geared to one of the driving axles of the wheels to provide automotive power. A
85 winding device to wind up the current supplying cord and yet to permit unwinding of same as the device traverses its courses to and from the desired points, is also provided, and a suitable circuit connection from the
90 desired point of operation in the dining room or other location in combination with automatic stops or circuit breakers, is arranged. The current supplied is intended to be sufficiently large to actuate the motor
95 and also the heating element to maintain such desired compartment in a degree of heat as may be desired.

Referring to the drawings illustrating a preferred embodiment of the present invention,

Fig. 1 is a sectional view through a partition wall in a house showing a china closet located therein between, and with my improved mechanical maid below, the china
105 closet;

Fig. 2 is an elevation looking from the left of Fig. 1;

Fig. 3 is an elevation looking from the right of Fig. 1;

Fig. 4 is a plan view of a portion of a house showing a dining room and kitchen and
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showing, also, my improved mechanical maid in various positions in such rooms;

Fig. 5 is a sectional elevation of a portion of the floor of the dining room shown in Fig. 4 and with my mechanical maid in position thereon and in engagement with circuit controlling devices secured to the under side of the floor;

Fig. 6 is a diagram of the controlling circuit;

Fig. 7 is a plan view of a portion of the cable winding mechanism;

Fig. 8 is a sectional elevation on the line 8—8 of Fig. 7;

Fig. 9 is a sectional plan view on the line 9—9 of Fig. 2;

Fig. 10 is a front sectional elevation showing the switch and operating mechanism therefor, and

Fig. 11 is an end view of Fig. 10.

Referring to the drawings, and particularly to Figs. 1, 2, 3, and 4, 10 designates one wall and 11 another wall of a dining room designated generally by the reference numeral 12. This dining room 12 has an entrance door 13 leading thereto, and at the end of the room remote from the door 13 is placed the usual type of china closet 14. As will be seen by reference to Fig. 1, this china closet 14 extends into the kitchen designated by the numeral 15, and in the particular china closet utilized, one face or end thereof is flush, or substantially so, with the dining room wall 11. The china closet is provided with, on the dining room side, a pair of hinged doors 16 provided with glass 17 while the end or face extending into the kitchen 15 is provided with a pair of hinged panel doors 18. Also, the china closet is provided with a plurality of shelves 19 on which may be placed various articles. Instead of extending the china closet down to the floor of the dining room, or making a blank wall under the china closet, I preferably leave the space below the china closet open to provide a passageway for my improved mechanical maid and the mechanical maid is of such dimensions as to substantially fill the space referred to.

The mechanical maid is shown in cross section in Fig. 1 and in front and rear elevations in Fig. 2 and 3 respectively, and, referring to these figures and also to Figs. 4 and 5, my improved mechanical maid comprises an end wall 20 of a width equal to the width of the china closet 14 and of a height substantially equal to the distance from the floor to the lower shelf 19. The end wall 20 is adapted to be, when the device is in use, directly under the door 16 or substantially flush with the wall 11 of the dining room. The end wall 20 is secured to a skeleton framework 21, such framework being substantially rectangular in form and having secured to the end remote from the

wall 20 a pair of hinged doors 22 through which access may be had to the interior of the framework 21 and to shelves 23 secured therein. The framework 21 is provided with side walls which may be of any suitable construction. The upper end of the rectangular framework 21 is provided with a cover 24 to which is fitted a pair of hinged doors 25 which may be swung upwardly, as shown in Fig. 3, to provide access to a compartment 26 as will be hereinafter described. Secured to the rear face of the end wall 20 and adjacent to the top thereof by bracket 27 is a shelf 28, such shelf being divided into two compartments and in each compartment is slidably mounted a drawer 29. As will be seen from an inspection of Figs. 1, 2, and 3, such drawers 29 are capable of being moved to the left or to the right, as viewed in Fig. 1, and thus such drawers may be used by either a person in the dining room or by a person in the kitchen.

Rotatably mounted in suitable bearings in the framework 21 parallel to each other and adjacent to each end of the framework are shafts 30 and 31 respectively. Secured to the shaft 30 adjacent to the ends thereof are wheels 32 of any suitable diameter and preferably these wheels are shod with rubber or resilient material tires in order that the mechanical maid in its passage over the floor 34 of either the dining room 12 or kitchen 15 respectively may be practically noiseless. Secured to the shaft 31 adjacent to each end thereof are wheels 35, such wheels being similar in character and in diameter to the wheels 32. Rotatably mounted in suitable bearings in the frame 21 parallel to and between the shafts 30 and 31 is a shaft 36 and on this shaft 36 is a pulley 37. This pulley 37 is in alignment with a pulley 38 secured to the shaft 31, this pulley 38 being greater in diameter than the pulley 37. Over the pulleys 37 and 38 runs a belt 39. Secured to the frame 21 is a platform and mounted on the platform in any convenient manner is an electrical motor 41. The pulley 42 of the motor 41 is in alignment with a pulley 43 secured to the shaft 36 and over the pulleys 42 and 43 passes a belt 44 and by means of which power is transmitted from the motor 41 to the shaft 36 and thence through the belt 39 to the shaft 31. Secured in the framework 21 and parallel to the shaft 30, for example, is a shaft 45, and rotatably mounted on the shaft 45 is a reel or drum 46. Surrounding the shaft 45 within the drum 46 and having one end secured to the shaft 45 is a spring 47, the other end of this spring being secured to one end of the drum 46. Secured to the drum 46 and extending outwardly therefrom at one end, but surrounding the shaft 45, is a sleeve 48, this sleeve being of insulating material. Secured to the sleeve 48, but

spaced apart from each other, are collecting rings 49 and 50 respectively. Secured to the drum 46 near one end thereof is a cable 51, such cable being wound on the drum 46 and containing conducting wires 52, 53, 152 and 153 respectively. The conducting wires 52 and 152 are connected with the ring 50, the conducting wires 53 and 153 being connected to the ring 49. Secured to the shaft 45 is a supporting member 54 and mounted on said member, but spaced apart from each other, are brush blocks 55 and 56 respectively. Secured to one end of the block 55 is a brush 57 which engages with the ring 50 and to the other end of the block 55 is connected a conductor 58 which is one of the power leads to the motor 41. Connected to one end of the block 56 is a brush 59 and to the other end of this block is connected a conductor 60 which constitutes the other power lead for the motor 41.

The cable 51 containing the conductors 52, 53, 152, and 153 passes along under the floor 24 of the room to a double pole double throw switch. The double pole double throw switch engages with the switch blades 61 and 62 arranged parallel to each other and connected at their free ends to a block of insulating material 65. Formed integral with, and extending upwardly from the insulating block 65 is an extension 66 which protrudes upwardly through a slot in a floor plate 67 secured to the floor 24. One side of the slot is provided with a plurality of depressions 68 into which fits the spring pressed button 69 mounted in the extension 66. The double pole double throw switch also includes pairs of contacts 70, 71 and 72, 73 respectively. The switch blade 61 is connected through conductor 74 to the positive pole of a source of current 75 while the switch blade 62 is connected by conductor 76 to the negative pole of such source of current 75. The conductor 52 has its end connected to the contact 73 while the conductor 152 is connected to the contact 70. The conductor 53 is connected to the contact 72 while the conductor 153 is connected to the contact 71. It will be obvious from an inspection of Fig. 6, which is a diagrammatic circuit arrangement, that if the switch blades 61 and 62 are thrown into engagement with the contacts 70 and 71 respectively, current will flow from the positive pole of the source of current 75, through conductor 74, switch blade 61, contact 70, conductor 152, through conductor 58, and thence through the motor 41, conductor 60, conductor 153, contact 71, switch blades 62, conductor 76, and back to battery and the motor armature will rotate in a specified direction. If the switch blades 61 and 62 are now thrown into engagement with the contacts 72 and 73 respectively, a circuit is closed through the motor 41 from positive

terminal of the source of current 75, conductor 74, switch blade 61, contact 62, conductor 73, conductor 60, through the motor 41, conductor 58, conductor 52, through the motor 41, conductor 58, conductor 52, contact 73, switch blade 62, conductor 76, and back to battery, and it is evident that, under these latter conditions, the motor armature will rotate, but in a reverse direction from that described above. Further, that, when the switch blades 61 and 62 are out of engagement with the pair of contacts 70, 71 and 72, 73 no current will flow through the motor 41.

The mechanical maid is adapted to move from the position shown in full lines adjacent to the wall 10 of the dining room to the position shown at the right of Fig. 1, and by a proper setting of the wheels 35 and 35', the line of travel of the mechanical maid will be either in a straight line or in any desired curved line. For the sake of simplicity of illustration it will be assumed that the mechanical maid travels in a straight line. In the floor 24 and adjacent to the wall 10 and in alignment with the line of travel of one of the wheels 35 of the mechanical maid is arranged a plunger 77. Beneath the floor 24 and adjacent to the lower end of the plunger 77 is pivotally mounted a bell crank lever 78. Parallel to the floor 24 is mounted for sliding movement in suitable bearing 79 a shaft 80. Secured to the shaft 80 near one end thereof is a stop 81 and between the stop 81 and the adjacent bearing block 79 is a coil spring 82. The block 81 is adapted to be engaged by one arm 83 of the bell crank lever 78 while the other arm 84 thereof is adapted to be engaged by the plunger 77. The pivotal mounting for the switch blades 61 and 62 comprises a shaft 85 which is rotatably mounted in suitable bearings 86 secured to the under side of the floor 24. The shaft 85 is made in sections insulated from each other by the insulating blocks 87. Secured to the shaft 85 adjacent to the shaft 80 is an arm 88 which lies in the path of movement of a stop 89 that is secured to the shaft 80. The arm 88 lies in the same plane as lies the switch blades 61 and 62. Arranged parallel with the shaft 80, but spaced apart therefrom is a shaft 90, which is slidably mounted in the bearing blocks 91, and adjacent to one end of such shaft is a stop 92. Between the stop 92 and the bearing block 91 adjacent thereto is a coil spring 93. The stop 92 is adapted to be engaged by one arm 94 of a bell crank lever 95 which is pivotally mounted in suitable bearings on the under surface of the floor 24. The other arm 96 of the bell crank lever 95 is adapted to be engaged by a plunger 97 which extends upwardly through the floor 24 at a point adjacent to the wall 11 and in the path of

movement of the other wheels 35 of the mechanical maid. Secured to the shaft 90 adjacent to the end remote from the stop 92 is a stop 98 which is adapted to engage with an arm 99 secured to the shaft 85 and spaced apart from, but parallel to, the arm 88.

In the illustration of the device, Figs. 4 and 5 show the mechanical maid in such a position as to have the wheels 35 of the mechanical maid rest on the plunger 77 which therefore rotates the bell crank lever about its pivot, causing a movement of the shaft 80 to the right, as viewed in Fig. 5 thus moving the switch blades 61 and 62 from engagement with the contacts 70 and 71 respectively, thereby stopping the motor 41 and bringing the mechanical maid to rest in the position shown in Fig. 4 adjacent to the wall 10. By reference to Fig. 5 it will be seen that it is, under these conditions, impossible for a person sitting in the chair 64 to operate the switch arms 61, 62 so as to energize the motor 41 to cause a movement of the mechanical maid toward the wall 10. The operator can, however, control the switch blades 61 and 62 so as to move the same into engagement with the contacts 72 and 73, this movement closing a circuit to operate the motor 41 in such a manner as to move the mechanical maid away from the wall 10 and toward the wall 11. If, during this onward movement of the mechanical maid, the operator wishes to bring the mechanical maid to a stop, she does so by throwing the switch out of engagement with the contacts 72 and 73. Immediately the wheel 35 of the mechanical maid moved off the plunger 77, the spring 82 caused a movement of the shaft 80 to the left, as viewed in Fig. 5, and moving the arms 83 and 84 of the bell crank lever 78 into the same relative position as is now occupied by the arms 94 and 96 respectively of the bell crank lever 95. When the operator moved the switch blades 61 and 62 into engagement with the contacts 72 and 73, the upwardly extending arms 88 and 90 moved into the dotted position indicated by the reference numeral 88 in Fig. 5, and, assuming that the operator has no desire to stop the mechanical maid adjacent to the table 63, such mechanical maid moves onward until one of the wheels 35 thereof engages with

the plunger 97. This action causes a rotative movement of the bell crank lever 95 and a movement to the left of the shaft 90, thus bringing the stop 98 thereon into engagement with the upwardly extending arm 90 which causes a rotative movement of the shaft 85 and moves the switch blades 61 and 62 away from the contacts 72 and 73, thus stopping the motor 41 and the mechanical maid comes to rest in the position shown to the right of Fig. 4.

The controlling means for the mechanical maid have been made simple in order to clarify the description and understanding of the device. There is shown, therefore, but one controlling means at each end of the expected travel of the mechanical maid. It is obvious, however, that any number of controlling stops similar to the plungers 77 and 97 with their associated mechanisms can be employed so as to stop the mechanical maid in any desired position. Further, the form of controlling switch is adopted in this disclosure for convenience only and any suitable form of controlling switch may be employed.

While the invention has been described as a motor driven or dirigible mechanical maid, it is obvious that I may, should I so desire, dispense with the driving mechanism and utilize simply manual means, such as a hook, for pulling or pushing the mechanical maid to any portion of the rooms desired.

My present invention is further described and defined in the form of claims as follows:

1. A dirigible cabinet of the kind described, having compartments therein, a self-propelling motor carried thereby, means to supply heat to the cabinet, current supplying means adapted to be connected to a source of power and to travel with the cabinet, and mechanism to control the movement of said cabinet from a predetermined point.

2. The combination in a building, of dirigible carriers therein, means at one point in the building to operate electrical controls for said carriers, automotive devices on the carrier, and power connections from the controlling means to the carrier.

In testimony whereof, I have signed my name to this specification.

ROBERT W. ROSE.