

Oct. 7, 1941.

F. W. CARPENTER

2,258,482

ROASTER

Filed Dec. 22, 1938

5 Sheets-Sheet 1

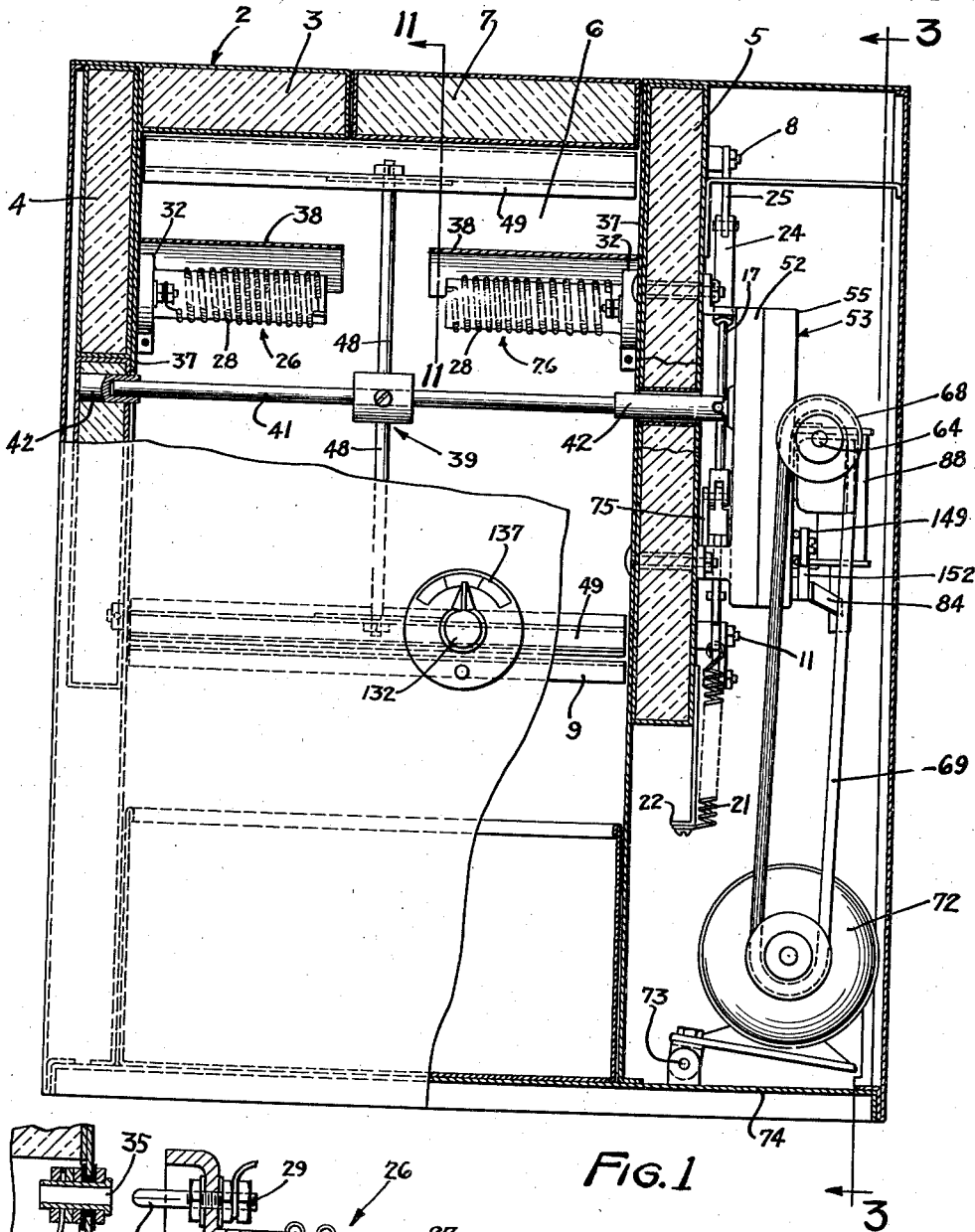


FIG. 1

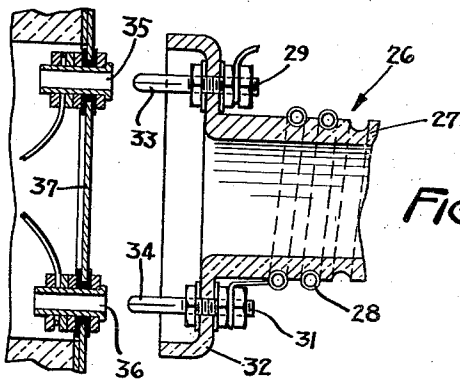


FIG. 2

INVENTOR
FRANK W. CARPENTER
By Paul, Paul & Moore
ATTORNEYS

Oct. 7, 1941.

F. W. CARPENTER

2,258,482

ROASTER

Filed Dec. 22, 1938

5 Sheets-Sheet 2.

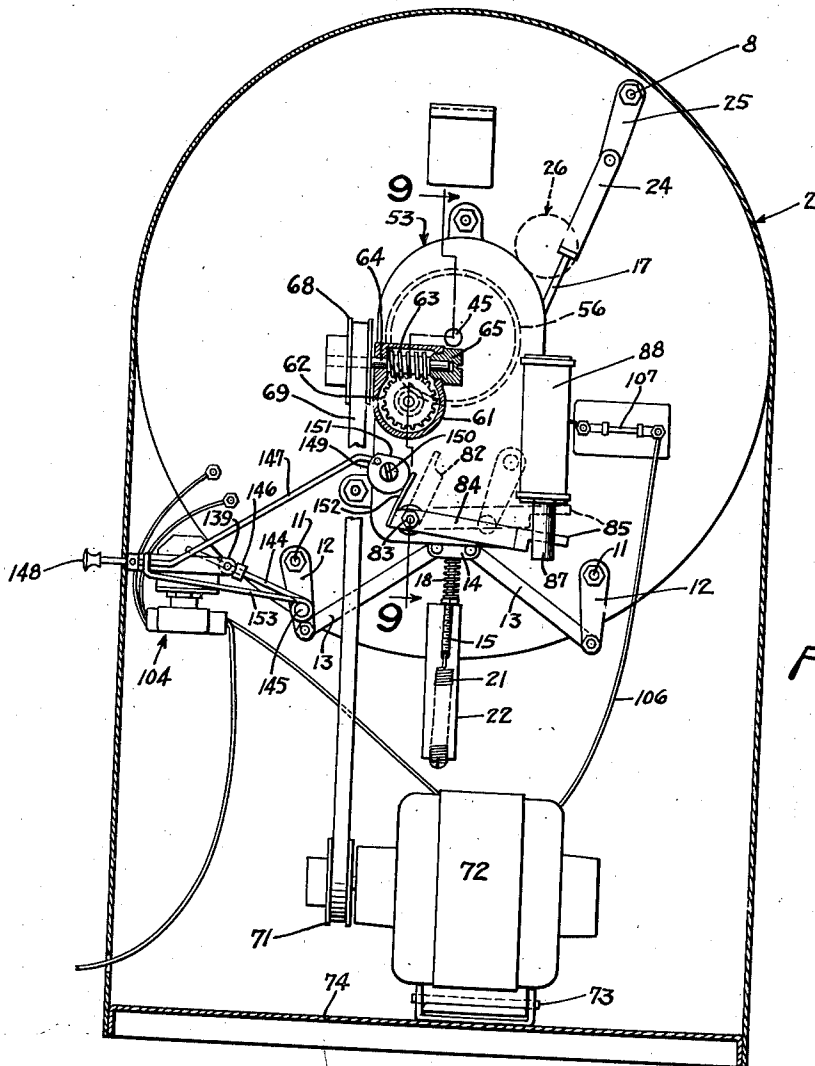


FIG. 3

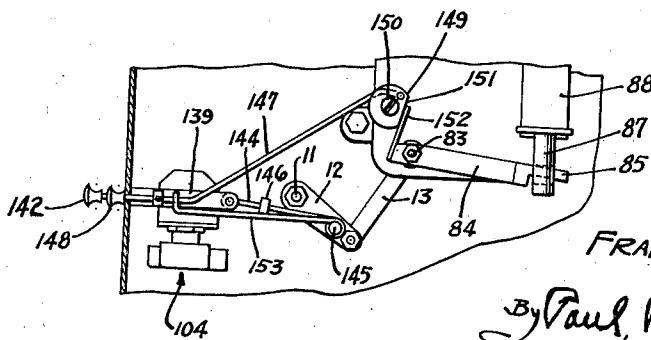


FIG. 4

INVENTOR
FRANK W. CARPENTER

By Paul, Paul Moore & Sons
ATTORNEYS

Oct. 7, 1941.

F. W. CARPENTER

2,258,482

ROASTER

Filed Dec. 22, 1938

5 Sheets-Sheet 3

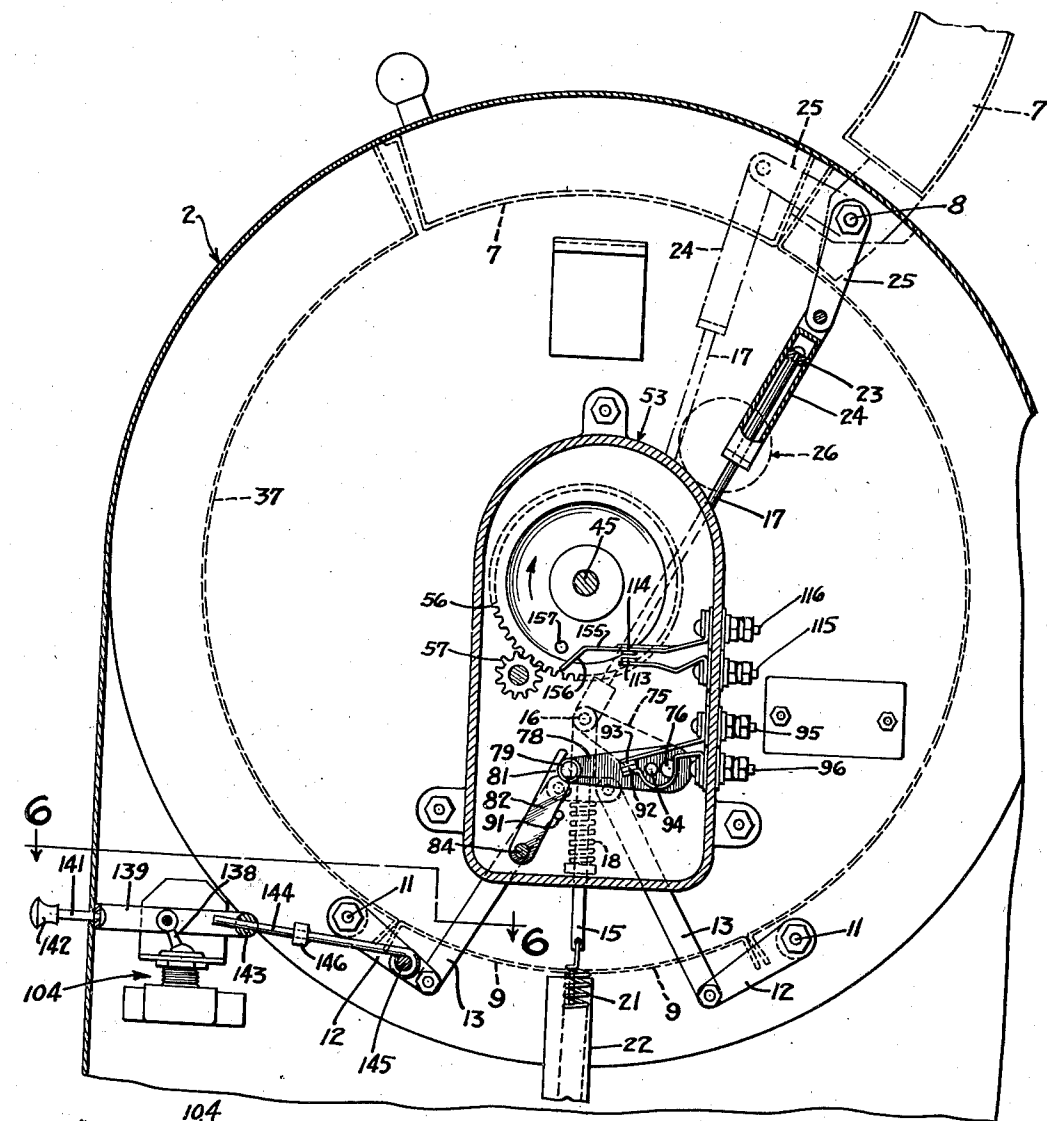


FIG. 5

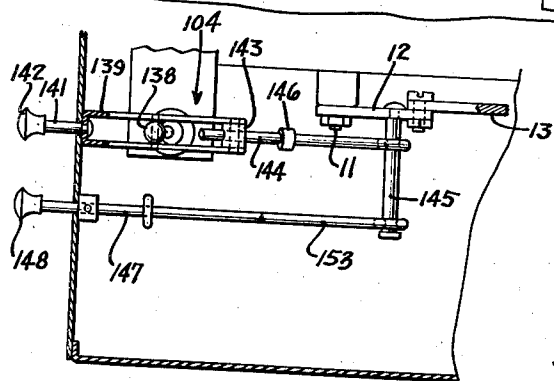


FIG. 6

INVENTOR
FRANK W. CARPENTER
By Paul, Paul, Moore & Gine
ATTORNEYS

Oct. 7, 1941.

F. W. CARPENTER
ROASTER

2,258,482

Filed Dec. 22, 1938

5 Sheets-Sheet 4

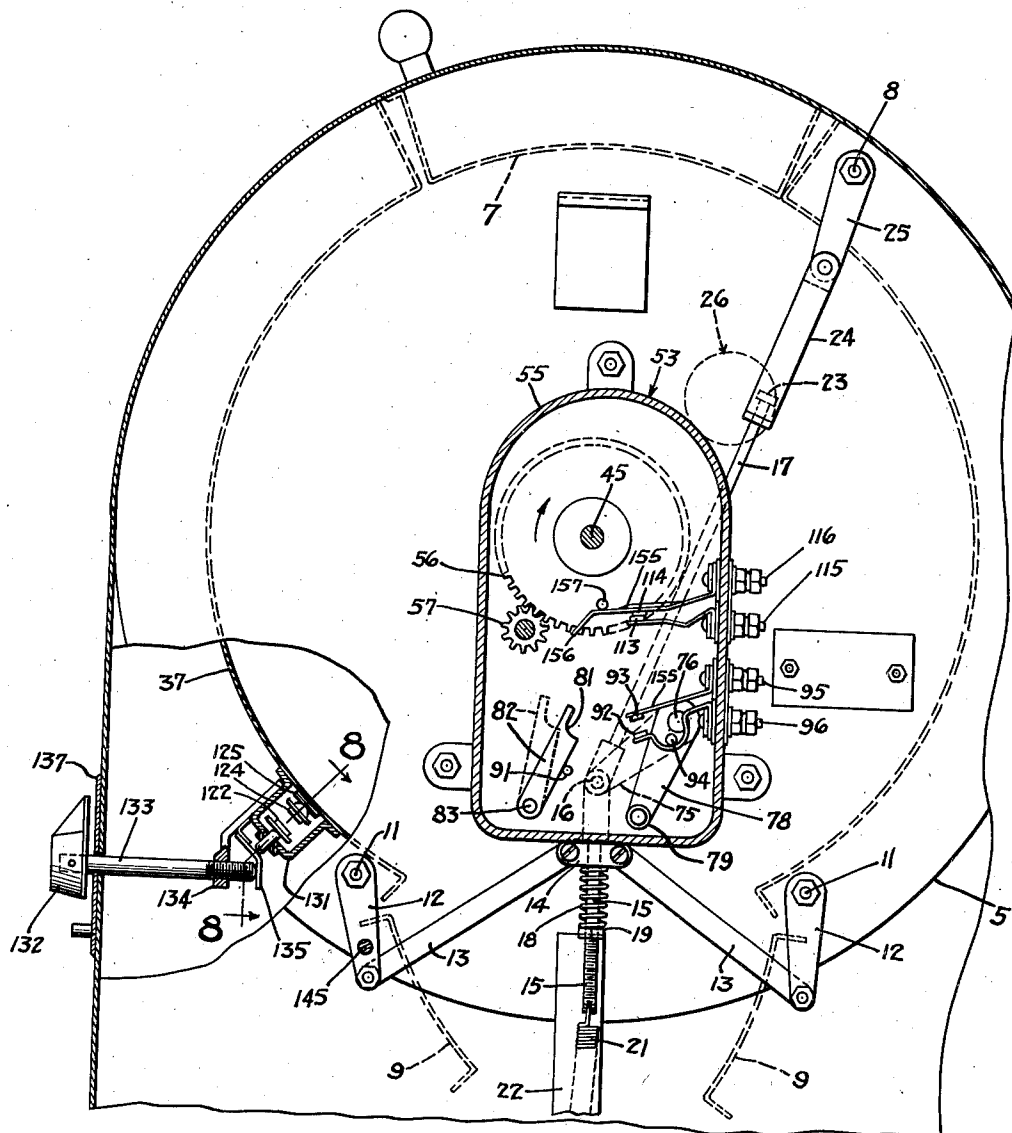


FIG. 7

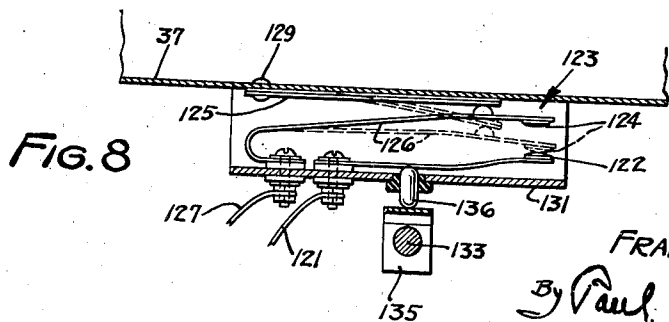


FIG. 8

INVENTOR
FRANK W. CARPENTER
By Paul, Paul & Moore
ATTORNEYS

Oct. 7, 1941.

F. W. CARPENTER

2,258,482

ROASTER

Filed Dec. 22, 1938

5 Sheets-Sheet 5

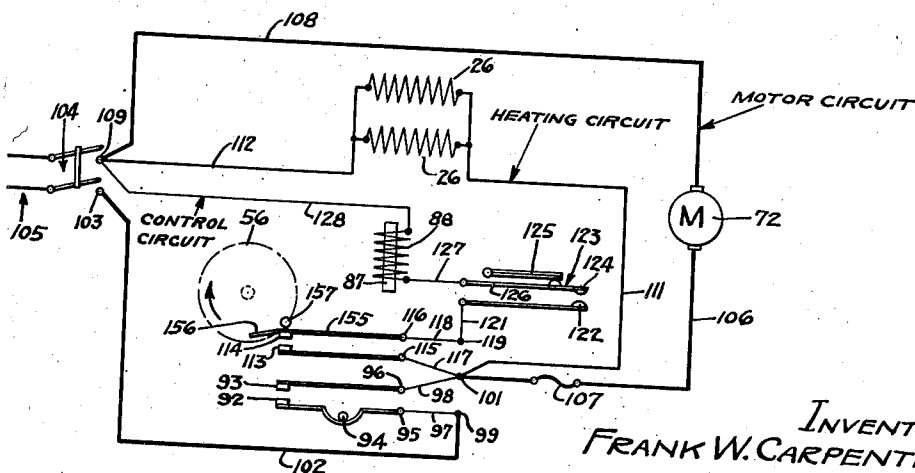
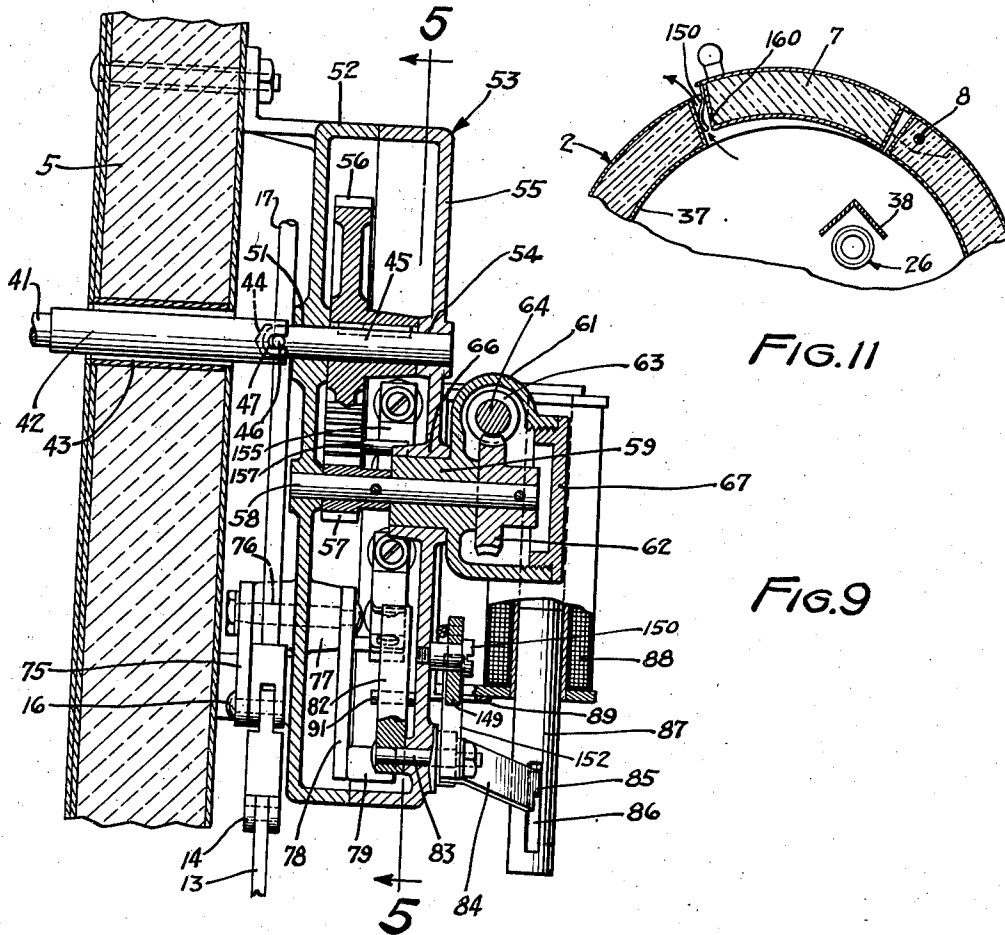


FIG. 10

INVENTOR
FRANK W. CARPENTER
By Paul, Paul Moore & Giers
ATTORNEYS

UNITED STATES PATENT OFFICE

2,258,482

ROASTER

Frank W. Carpenter, Minneapolis, Minn., assignor
to Woolsey Manufacturing Company, Minneapolis,
Minn., a corporation of Minnesota

Application December 22, 1938, Serial No. 247,200

4 Claims. (Cl. 34-44)

This invention relates to new and useful improvements in portable roasters and more particularly to such an apparatus for roasting peanuts and various other commodities such, for example, as coffee.

An object of the present invention is to provide a roaster which is substantially automatic in operation and has means for controlling the roasting period.

A further object is to provide an electrically operated roaster having means for automatically interrupting the operation of the entire apparatus at the end of the roasting period.

Other objects of the invention reside in the simple and inexpensive construction of the control means; in the unique arrangement and construction of the heating elements within the oven, whereby they may readily be removed therefrom when necessary; in the mechanism for automatically opening the main line switch when the roasting period is terminated; in the construction of the means for arresting the movement of the agitator and simultaneously opening the doors, whereby the roasted peanuts may discharge from the oven into a suitable receiving means, said arresting means opening the main line switch and also the circuit to the heating elements; in the means for preventing the mechanism from automatically opening the bottom doors of the oven, in the event that a fresh supply of peanuts is introduced into the oven before the oven has cooled sufficiently to permit the thermostatically controlled switch to open; and in the simple means for varying the length of the roasting period.

Other objects of the invention will appear from the following description and accompanying drawings and will be pointed out in the annexed claims.

In the accompanying drawings, there has been disclosed a structure designed to carry out the various objects of the invention, but it is to be understood that the invention is not confined to the exact features shown as various changes may be made within the scope of the claims which follow.

In the drawings:

Figure 1 is a side elevation of the roaster partially in section to show the arrangement of the heating elements in the oven;

Figure 2 is an enlarged detail sectional view showing how the heating elements are detachably supported within the oven;

Figure 3 is a sectional view on the line 3-3 of Figure 1, showing the driving mechanism;

Figure 4 is a detail sectional view showing the manually operable means for preventing the doors of the oven from opening, in the event that a fresh supply of peanuts is introduced into the oven, while the oven is still at roasting temperature;

Figure 5 is a sectional view on the line 5-5 of Figure 9, showing the main operating switch, and the means for automatically operating it to shut off the current at the end of the roasting period;

Figure 6 is a sectional plan view on the line 6-6 of Figure 5;

Figure 7 is a view similar to Figure 5 partially in section with the parts positioned as when the doors are opened;

Figure 8 is a detail sectional view on the line 8-8 of Figure 7, showing the thermostat;

Figure 9 is an enlarged detail sectional view substantially on the line 9-9 of Figure 3, showing the means for driving the agitator and other associated parts;

Figure 10 is a wiring diagram; and

Figure 11 is a detail sectional view on the line 11-11 of Figure 1, showing a means for retaining the upper door partially open to vent the oven.

The casing of the novel roaster herein disclosed, generally indicated by the numeral 2, is similar in some respects to the one shown and described in Patent No. 2,141,586, granted to John K. Woolsey and Frank W. Carpenter, on December 27, 1938, and comprises a cylindrical wall 3, and end walls 4 and 5. These walls are constructed of a suitable non-conductive material, so as to prevent the conduction of heat from the oven 6, defined by said walls.

A suitable door 7 is provided in the upper portion of the casing and is pivotally supported upon a suitable pivot 8, as shown in Figure 5. Suitable doors 9-9 are provided in the bottom of the oven, whereby the contents of the oven may readily be discharged therefrom at the end of the roasting period. The bottom doors 9 are supported on suitable pivots 11 and have arms 12 secured thereto, to which the lower ends of a pair of links 13 are connected. The upper ends of the links are pivotally connected to a cross head 14 supported on a rod 15. This rod carries a pivot 16 at its upper end, to which one end of a connecting rod 17 is pivotally connected.

A coiled spring 18 is shown coiled about the rod 15 between the cross head 14 and a nut 19 received in threaded engagement with the rod. A tension spring 21 has one end connected to the lower end of the rod 15 and its opposite end to

a bracket 22 secured to the end wall 5 of the oven, as best shown in Figure 1.

The upper end of the rod 17 has a head 23 which is slidable in a guide 24. The guide 24 has its upper end pivotally connected to an arm 25 secured to the pivot 8 of the upper door 7. The above described mechanism operatively connects together the upper doors 7 and lower doors 9—9, so that when the upper door is opened, as indicated in dotted lines in Figure 5, the lower doors are closed. Thereafter, the upper door 7 may readily be closed and locked in such position without transmitting any motion to the lower doors 9. The above described mechanism is shown and described in detail in the patent herebefore mentioned.

A feature of the present invention resides in the novel means provided for heating the oven 6. As best shown in Figures 1 and 2, a pair of heating elements, generally indicated by the numeral 26, are mounted upon the end walls 4 and 5 of the oven. These heating elements are alike in construction, and but one will therefore be described in detail. Each heating element comprises a body portion 27 of a suitable non-conductive material such, for example, as porcelain. The periphery of the body portion 27 is spirally grooved to receive the resistance wire 28 of the heating element. The ends of this resistance wire are electrically connected to a pair of terminal posts 29 and 31, mounted in the base 32 of the heating element. The terminal posts 29 and 31 have split terminals 33 and 34, respectively, adapted to be detachably received in sockets 35 and 36, respectively, shown mounted in the lining 37 of the end walls of the oven and suitably insulated therefrom. By thus constructing the heating elements, it will readily be noted, by reference to Figure 2, that they may readily be detached or removed from the oven, when desired, for repairs or replacement. A suitable shield 38 is preferably provided over each heating element 26 to prevent the material being roasted from contacting therewith, during the roasting period. The shields 38 also prevent the peanuts from coming in contact with the heating elements during the loading operation.

Means is provided within the oven for constantly agitating the peanuts or other products within the oven during the roasting period. The means provided for thus agitating the peanuts is shown comprising a suitable agitator, generally indicated by the numeral 39. This agitator comprises a shaft 41, one end of which is mounted in a bearing 42 provided in the wall 4 of the oven. The opposite end of the shaft 41 is shown provided with an enlarged portion 42 which passes through an opening 43 in the end wall 5 of the oven. The terminal of the enlarged portion 42 of the shaft 41 has a socket 44 adapted to receive the adjacent terminal of a drive shaft 45, having a transverse driving pin 46 received in oppositely disposed slots or notches 47 provided in the wall of the socket 44.

The agitator is shown comprising a pair of arms 48 having suitable blades 49 secured to the ends thereof adapted to engage and agitate the material in the oven when the agitator is rotated.

The shaft 45 is shown having one end mounted in a suitable bearing 51 provided in a fixed portion 52 of a suitable housing, generally indicated by the numeral 53. The opposite end of the shaft 45 is supported in a bearing 54 provided in the removable part or cover 55 of the

housing 53. A gear 56 is keyed to the shaft 45 and meshes with a pinion 57 secured to a shaft 58, one end of which is mounted in the wall of the part 52 of the housing 53. The opposite or intermediate end portion of the shaft 58 is shown rotatably supported in a cylindrical portion 59 of a gear casing 61, and has a worm gear 62 secured thereto, which meshes with a worm 63 provided on a shaft 64, one end of which is mounted in a bearing provided in the gear casing 61 and its opposite end in a removable bearing 65 received in threaded engagement with the gear casing 61, as best shown in Figure 3.

A cylindrical portion 59 of the gear casing 61 is received in a hub 66 provided in the wall of the cover 55 of the housing 53, and is secured against movement therein by suitable means, not shown. The gear casing 61 has a removable cover 67, whereby access may be had to the interior thereof. A flanged pulley 68 is shown secured to the drive shaft 64. The pulley 68 is driven by a belt 69 engaged with a pulley 71 provided upon a suitable motor 72, the base of which is supported on a suitable pivot 73 provided on the bottom wall 74 of the outer enclosing casing of the roaster. By thus pivotally supporting the motor, the belt 69 is constantly under tension by the weight of the pulley.

The means for controlling the operation of the roaster will next be described. As best shown in Figures 5, 7 and 9 the pivot 16 connecting the rods 15 and 17, is supported in an arm 75 secured to a short shaft 76 mounted in a suitable bearing 77 provided in the rear wall of the housing 52. An arm 78 is secured to the shaft 76 within the housing 53, and has a roller 79 secured to the outer end thereof adapted to be received in a notch 81 provided in a latch 82, secured to a shaft 83. The shaft 83 may be mounted in a bearing provided in the front wall or cover 55 of the housing 53. An arm 84 is secured to the shaft 83 exteriorly of the housing 53, and has a finger 85 received in a slot 86 provided in the armature 87 of a suitable solenoid coil 88. The solenoid is suitably supported on the cover 55 by such means as a bracket 89.

The latch 82 serves to lock the lower doors 9 in closed position, as shown in Figure 5, wherein it will be seen that the roller 79 of the arm 78 is engaged with the notch 81 in the arm 82. A suitable stop pin 91 may be provided for limiting swinging movement of the latch 82 in a direction towards the right, when viewed as shown in Figures 5 and 7. When the arm 78 is swung into locking engagement with the latch 82, the spring 21 will be placed under tension because of the rod 15 being moved upwardly, as the arms 12—12 of the doors swing upwardly, in the operation of closing the lower doors.

The electric control means comprises a pair of contacts 92 and 93 which are in electrical contact with each other, when the lower doors are closed as shown in Figure 5. These contacts are adapted to be opened when the lower doors are swung open, by a pin 94 secured to the arm 78, and which pin is shown positioned between the resilient arms of the contacts 92 and 93, as shown in Figures 5 and 7. When the lower doors are closed, as shown in Figure 5, the pin 94 is out of contact with the lower arm 92. When the doors 9 are released and the arm 78 swings downwardly to the position shown in Figure 7, the pin 94 will engage the arm of the contact 92 and move it downwardly, thereby breaking the circuit through the contacts 92 and 93.

The resilient or flexible arms of the contacts 92 and 93 are shown electrically connected to suitable terminals 95 and 96, respectively, mounted in the wall of the housing 53 and suitably insulated therefrom. Wires 97 and 98 connect the terminals 95 and 96 to a pair of binding posts 99 and 101, respectively, as best shown in the wiring diagram, Figure 10. A wire 102 electrically connects the binding post 99 to the contact 103 of a main control switch, generally indicated by the numeral 104. This switch may be of conventional design, and is preferably of the double pole, toggle type. The main line circuit is indicated by the numeral 105. The terminal 101 has a wire 106 connecting it to one side of the motor 72, and a suitable fuse 107 is preferably interposed in the wire 106. The wire 108 connects the other side of the motor to the terminal 109 of the main switch 104. Thus, when the contacts 92 and 93 are in electrical contact with one another, a complete circuit is provided for the motor 72, whereby the apparatus may be started.

The motor circuit thus includes wire 102, terminals 99 and 101, contacts 92 and 93, terminals 95 and 96, wires 97 and 98, fuse 107, wire 106, motor 72, and wire 108.

The heating circuit comprises the heating elements 26, and wires 111 and 112, connecting them to the terminal posts 101 and 109, respectively as shown in Figure 10.

Means is provided for automatically interrupting the operation of the roaster by opening the circuits to the motor and heating elements at the end of each cycle of operation and whereby the parts will always come to rest in the same relative positions. Such means is shown comprising a pair of contacts 113 and 114 supported upon flexible arms secured to terminal posts 115 and 116, respectively, similar to terminal posts 95 and 96. A wire 117 connects the terminal post 115 to the binding post 101, and a similar wire 118 connects the terminal post 116 to a binding post 119, the latter having a wire 121 connecting it to a contact 122 of a suitable thermostat, generally indicated by the numeral 123.

The thermostat 123 comprises a movable contact 124 adapted to be actuated by a bi-metal bar 125, secured at one end to the cylindrical wall 37 of the casing, as best shown in Figures 7 and 8. The swingable end of the bi-metal bar 125 is adapted to engage the flexible arm 126, carrying the movable contact 124, when the oven has been heated, and thereby moves the contact 124 into electrical engagement with the relatively fixed contact 122 of the thermostat. A wire 127 connects the arm 126 of the thermostat to one end of the solenoid coil 88, the opposite end of which has a wire 128 connecting it to the contact 109 of the main line switch 104.

The above described circuit, including the wire 117, terminal 115, contacts 113 and 114, terminals 116 and 119, wires 118 and 121, contacts 122 and 124, wire 127, solenoid 88, and wire 128, will hereinafter be referred to as the control circuit.

The bi-metal bar 125 of the thermostat is so mounted as to be influenced by the heat of the oven, and for practical purposes, may be mounted directly on the inner lining 37 of the cylindrical wall of the drum to which it may be secured by such means as a rivet 129. A housing 131, shown open at both ends, shields the contacts 122 and 124, and also serves to confine the heat around the bi-metal bar 125, so that it

readily responds to variations in the temperature within the oven.

Means is provided for varying the gap between the contacts 122 and 124 to vary the roasting period. The means provided for thus varying the gap between said contacts is shown comprising a finger knob 132, mounted exteriorly of the casing and having a shaft 133 received in threaded engagement with a fixed bracket 134, shown secured to the shield or housing 131 of the thermostat. The inner end of the shaft 133 engages a resilient finger 135 which contacts a spacing element 136, one end of which engages the finger 135 and its opposite end the arm of the fixed contact 122 of the thermostat. By rotating the shaft 133, the finger 135 is flexed and imparts axial movement to the spacing element 136, whereby the contact 122 may be moved towards or away from the movable contact 124, thereby to vary the roasting period, as will readily be understood. A suitable dial 137 is secured to the outer end of the shaft 133 as shown in Figures 1 and 7. This dial is provided with suitable indicia to indicate the position of the movable contact 124 of the thermostat 123.

The main control switch 104 may be of conventional design, and is shown comprising a toggle lever 138, pivotally connected to a yoke 139 having a rod 141 secured to one end which is slidable in a guide opening in a wall of the casing. A suitable finger grip 142 is secured to the rod 141 to facilitate operating it. A block 143 is pivotally connected to the inner ends of the yoke 139, and has one end of a rod 144 slidably mounted therein. The opposite end of the rod 144 is pivotally connected to a pin 145 secured to the adjacent arm 12 of the door operating mechanism. A collar 146 is secured to the rod 144 and is adapted to engage the block 143, when the lower doors are opened, whereby the fork 139 is moved outwardly to the position shown in Figures 5 and 6, wherein the main switch 104 is opened to interrupt the supply of current to the apparatus.

Means is also provided whereby the control mechanism may be rendered inoperative to open the bottom doors 9, should the oven be sufficiently hot, when a fresh supply of peanuts is introduced therein, to retain the contacts of the thermostat in closed position.

The means provided for thus preventing the doors from opening, when a fresh supply of peanuts is introduced into the oven, while the latter is still at roasting temperature, comprises an auxiliary rod 147, one end of which is slidably supported in a wall of the casing and has a finger knob 148. The opposite end of the rod 147 is pivotally connected to a cam element 149 rotatably supported on a stud 150 secured to the cover 55 of the housing 53, as best shown in Figures 4 and 9. The cam element 149, as best shown in Figures 3 and 4, is provided with a low spot 151 in its periphery. A resilient finger 152 is secured to one end of the arm 84 and engages the periphery of the cam element 149. In Figure 4, the cam element is shown in its normal position, wherein it will be seen that the knob 148 is depressed. When this knob is pulled outwardly to the position shown in Figures 3 and 6, the flat or low spot of the cam element 149 will move out of contact with the finger 152, whereby the latter will be flexed so as to exert an increased downward pressure on the finger 85 at the outer end of the arm 84. The downward pressure thus exerted on the outer end of the

arm 84 is sufficient to overcome the magnetic pull of the solenoid coil 88, whereby when the contacts 113 and 114, and also the contacts 122 and 124 are closed, the solenoid cannot release the latch 82 and permit the lower doors 9 to open. The finger knob or button thus serves as a safety button or device for preventing premature opening of the lower doors, in the event the oven is charged with a fresh supply of peanuts immediately after dumping its load, and before the contacts of the thermostat have cooled sufficiently to break the circuit therethrough. The temperature of the oven immediately drops when a fresh supply of peanuts is introduced therein, whereby the contacts of the thermostat are opened. The safety button 148 may then be pushed inwardly, as shown in Figure 4, whereby the cam face 151 is moved into contact with the finger 152 of the arm 84, thereby to lessen the downward pressure on the armature 87 of the solenoid 88.

The rod 147 is operatively connected to the main cutout switch 104 by a rod 153, one end of which is slidably connected with the rod 147 and its opposite end pivotally connected to the pin 145 of the arm 12. Under normal operating conditions, the push button 148 is retained in its depressed position, shown in Figure 4, whereby the cam element 149 has no effect upon the arm 84.

In some instances it may be found necessary to vent the oven, when the apparatus is initially started, because of moisture in the peanuts or other products to be roasted. To thus vent the oven, a suitable spring 150 is shown secured to the edge 160 of the upper door 7. The free end of this spring frictionally engages the adjacent edge of the door opening with sufficient pressure to retain the door 7 in the position shown in Figure 11. By thus slightly cracking the door, any vapor generated within the oven may readily escape therefrom, as indicated by the arrows in Figure 11.

Operation

The novel roaster herein disclosed is very simple to operate. When in its normal position, the lower doors 9 may be open, as shown in dotted lines in Figure 7, as these doors assume the positions indicated in dotted lines in this figure when the current supply to the motor and heating elements is cut off by the control means. Such opening of the bottom doors, however, does not affect the upper door 7.

Before starting the roaster, the bottom doors are closed by opening the top door. This results because of the operative connection between the upper and lower doors through the connections 13, 14, 17, 24 and 25. When the lower doors are closed, the pin 94 carried by the arm 78 moves upwardly out of engagement with the flexible arm of the movable contact 92, whereby the contacts 92 and 93 of the motor circuit electrically engage each other to permit the flow of current therethrough. When the contacts 92 and 93 thus electrically engage one another, current is supplied to the motor 72 through the wire 106 and also to the heating elements 26 through the wire 111, as these two wires are electrically connected to the terminal post 101, to which current is supplied to the motor through the closed contacts 92 and 93. The motor and heating circuits are completed by the wire 108 and 112 which respectively connect the motor 72 and heating elements 26 to the contact post 109 of the main switch 104.

It is to be understood that the main switch is closed prior to starting the roaster.

When desired, a quantity of peanuts or other material to be roasted is delivered into the oven, the top cover 7 is closed and the main switch 104 is then closed, whereby current will immediately be supplied to the motor 72 and heating elements 26, as will readily be understood by reference to the wiring diagram Figure 10. When current is thus supplied to the motor and the heating elements, the roasting operation is under way and the agitator will be constantly rotated by the motor simultaneously as the heating elements raise the temperature in the oven sufficiently to roast the peanuts. When the temperature of the oven reaches a predetermined figure, the heat transmitted through the casing wall 37 will warp the bi-metal bar 125 until it eventually forces the movable contact 124 of the thermostat into electrical engagement with the relatively fixed contact 122, whereby the control circuit is conditioned for operation. The control circuit, however, is not completed until the movable contact 114 is eventually moved into electrical engagement with the contact 113 by the pin 157 on the gear wheel 56. When the solenoid is energized, it raises its armature 87 with sufficient force to impart a hammer-like blow to the finger 85 of the arm 84, whereby the arm 84 is moved upwardly to the dotted line position, shown in Figure 3. Such upward movement of the arm 84 will throw the latch 82 out of engagement with the roller 79 of the arm 78, whereupon the spring 21 will pull the rod 15 downwardly and thereby open the lower doors 9, as indicated in dotted lines in Figure 7.

The solenoid 88, however, cannot be energized until the contacts 113 and 114 are closed, regardless of the condition of the thermostat 123. In other words, before current can be supplied to the solenoid 88, the contact 124 of the thermostat 123 must engage the contact 122 and, in like manner, the contacts 113 and 114 must be in contact with one another.

The contact 114 is secured to a flexible arm 155 having its end portion 156 positioned in the path of a pin 157 secured to the gear wheel 56, so that each time the gear 56 makes one revolution, the pin 157 will engage and move the contact 114 into electrical engagement with the contact 113 to close the circuit therebetween.

Thus, when the roaster is initially started, the contacts 92 and 93 are engaged, whereby current is supplied to the motor and heating elements, as hereinbefore stated. The roaster will continue to operate until the temperature in the oven reaches a predetermined figure, whereupon the thermostatic bar 125 will warp sufficiently to move the contact 124 into electrical engagement with the contact 122. When this occurs, a circuit will be presented to the solenoid coil 88. This circuit, hereinbefore referred to as the control circuit, will not be completed, however, until the pin 157 in the gear wheel 56 engages the arm 155 of the movable contact 114, and moves the contact 114 into engagement with the contact 113. At the instant the contact 114 engages the contact 113, the solenoid is energized and moves the latch 82 out of engagement with the end of the arm 78, whereby the rod 15 is pulled downwardly by the spring 21, and thereby opens the lower doors 9, and interrupts the operation of the entire apparatus, because of the main line switch 104 being automatically

opened, as a result of its connection with the door operating mechanism through the rod 144 as hereinbefore stated.

If a fresh supply of peanuts is delivered into the oven immediately after it has discharged a load, the oven may be sufficiently hot to prevent the thermostatic bar 125 to return to its normal position and permit the contact 124 of the thermostat to move out of engagement with the fixed contact 122. If the thermostatic bar does not release the contact 144 from the contact 122, each time the pin 157 engages the contact arm 155 and momentarily closes the circuit through the contacts 113 and 114, the solenoid will be energized and thus cause the doors to open. This, obviously, would be objectionable, because the peanuts in the oven might be discharged or dumped therefrom before being sufficiently roasted.

To prevent the doors from opening before the peanuts have been sufficiently roasted, the manually operated button 148 is pulled outwardly, as hereinbefore stated, whereby the arm 84 will be held downwardly with sufficient tension by the action of the finger 152, to prevent the solenoid 88 from actuating the arm 84. As soon as the oven has cooled sufficiently to permit the contacts of the thermostat to open, the operator will push the button 148 inwardly to the position shown in Figure 4, whereby closing of the circuit through the contacts 113 and 114 by the pin 157 will have no effect upon the solenoid coil 88 because of the circuit being open through the thermostat. The roasting period will then continue until the thermostatic bar or element 125 moves the contact 124 into engagement with the contact 122 and thereby completes the circuit to the solenoid whereupon the cycle of operation is completed, and the entire operation of the roaster is interrupted.

The novel roaster herein disclosed has been found very practical and economical in operation. It is very attractive in appearance and is so constructed that the toasting period may be accurately controlled to provide the desired results. It may be used for roasting peanuts, coffee and various other materials requiring such treatment, as the adjustment of the thermostat makes it possible to vary the roasting period to suit almost any commodity of the class usually requiring roasting.

I claim as my invention:

1. A roaster comprising an oven having a door in its upper wall, a door in the lower wall of the oven through which the product may be discharged when roasted, an agitator for agitating the product during the roasting period, driving means for the agitator including a member mounted for rotary movement, a motor having a driving connection with said member, a circuit for the motor including a cutout switch, means for heating the oven associated with the motor circuit, a control circuit including a pair of normally open contacts, a thermostatic device associated with said contacts and responsive to variations in the temperature in the oven, whereby when the oven attains a predetermined temperature, said device will close said contacts and partially complete the control circuit, cutout switch opening means associated with the control circuit and adapted to be operated to open the cutout switch, when the control circuit is completed, and means carried by said rotatable member adapted to complete the control circuit sub-

sequent to the closing of said contacts by the thermostatic device, whereby the cutout switch opening means is rendered operative to open the cutout switch and thereby automatically interrupt the operation of the apparatus.

2. A roaster comprising an oven having a door in its upper wall, a door in the lower wall of the oven through which the product may be discharged when roasted, an agitator for agitating the product during the roasting period, driving means for the agitator including a member mounted for rotary movement, a motor having a driving connection with said member, a circuit for the motor including a cutout switch, a heating circuit electrically associated with the motor circuit, a control circuit including a pair of normally open contacts, a thermostatic device associated with said contacts and responsive to variations in the temperature in the oven, whereby when the oven attains a predetermined temperature, said device will close said contacts and partially complete the control circuit, cutout switch opening means associated with the control circuit for opening the cutout switch, when the control circuit is closed, a pair of secondary contacts in the control circuit, and means carried by said rotatable member adapted to close said secondary contacts to complete the control circuit subsequent to the closing of said first mentioned contacts by the thermostatic device, whereby the cutout switch opening means is rendered operative to open the cutout switch and thereby automatically interrupt the operation of the apparatus.

3. A roaster comprising an oven having a door in its upper wall, a door in the lower wall of the oven through which the product may be discharged when roasted, means for retaining the lower wall door in closed position during the roasting period, an agitator for agitating the product in the oven, driving means for the agitator including a member mounted for rotary movement, a motor having a driving connection with said member, a circuit for the motor including a cutout switch operatively associated with said retaining means, a heating circuit electrically associated with the motor circuit, a control circuit including a solenoid adapted to operate said retaining means, said control circuit also including a pair of normally open contacts, a thermostatic device associated with said contacts and responsive to variations in the temperature in the oven, whereby when the oven attains a predetermined temperature, said device will close said contacts, and a pair of normally open secondary contacts also in the control circuit adapted to be closed by said rotary member, subsequent to the closing of said thermostatically actuated contacts, whereby the control circuit is completed to the solenoid and causes the latter to release said retaining means and permit the lower wall door to open, and whereby the cutout switch is opened to automatically interrupt the operation of the entire apparatus.

4. A roaster comprising an oven having a door in its upper wall, and a door in its lower wall through which the contents of the oven may be discharged at the termination of the roasting period, an agitator in the oven, means for driving the agitator including a member mounted for rotary movement and a motor having a driving connection with said member, a latch for retaining the lower door in closed position, a circuit for the motor including a pair of contacts, means for heating the oven associated with the

motor circuit, an arm operatively connected to the lower door and having means adapted to engage one of said contacts to open the motor circuit, when the door is opened at the end of the roasting period, said means permitting said contacts to close when the lower door is closed, whereby current may be supplied to the motor, a main control switch for the motor circuit operatively associated with the latch, and a control circuit comprising a solenoid having an armature operatively connected with said latch, said control circuit also including a normally open thermostatically controlled switch adapted to respond to variations in the oven temperature,

whereby when the oven attains a predetermined temperature, said thermostatically controlled switch will close and partially complete the control circuit, a pair of normally open secondary contacts in the control circuit, and means carried by said rotary member adapted to close said secondary contacts subsequent to the closing of said thermostatically controlled switch, whereby the solenoid is energized and actuates said latch, whereby the lower door is automatically opened and the motor circuit simultaneously opened to interrupt operation of the entire apparatus.

FRANK W. CARPENTER.