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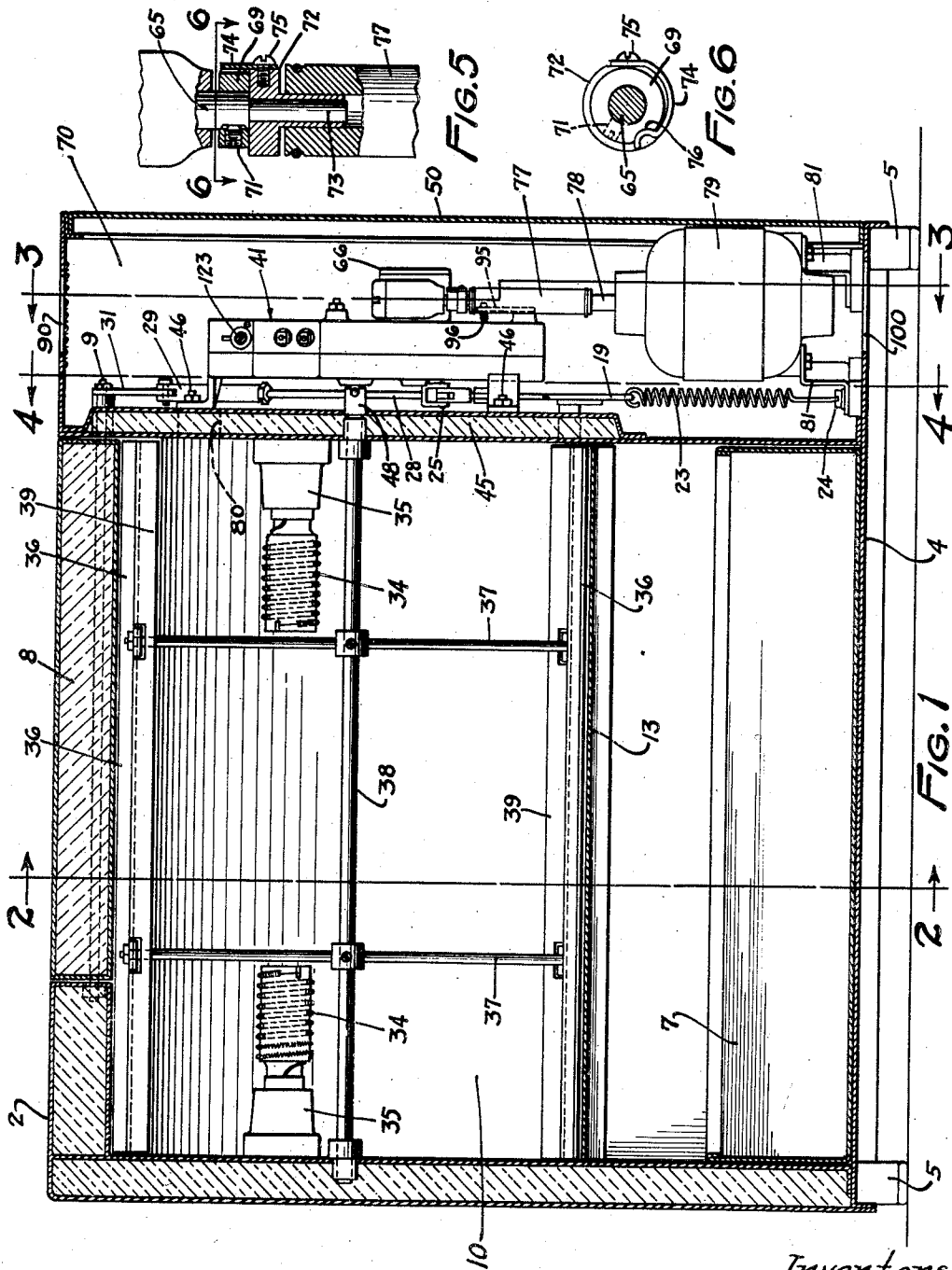
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2,141,586

AUTOMATIC ROASTER

Filed April 19, 1937

6 Sheets-Sheet 1



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6 Sheets-Sheet 2

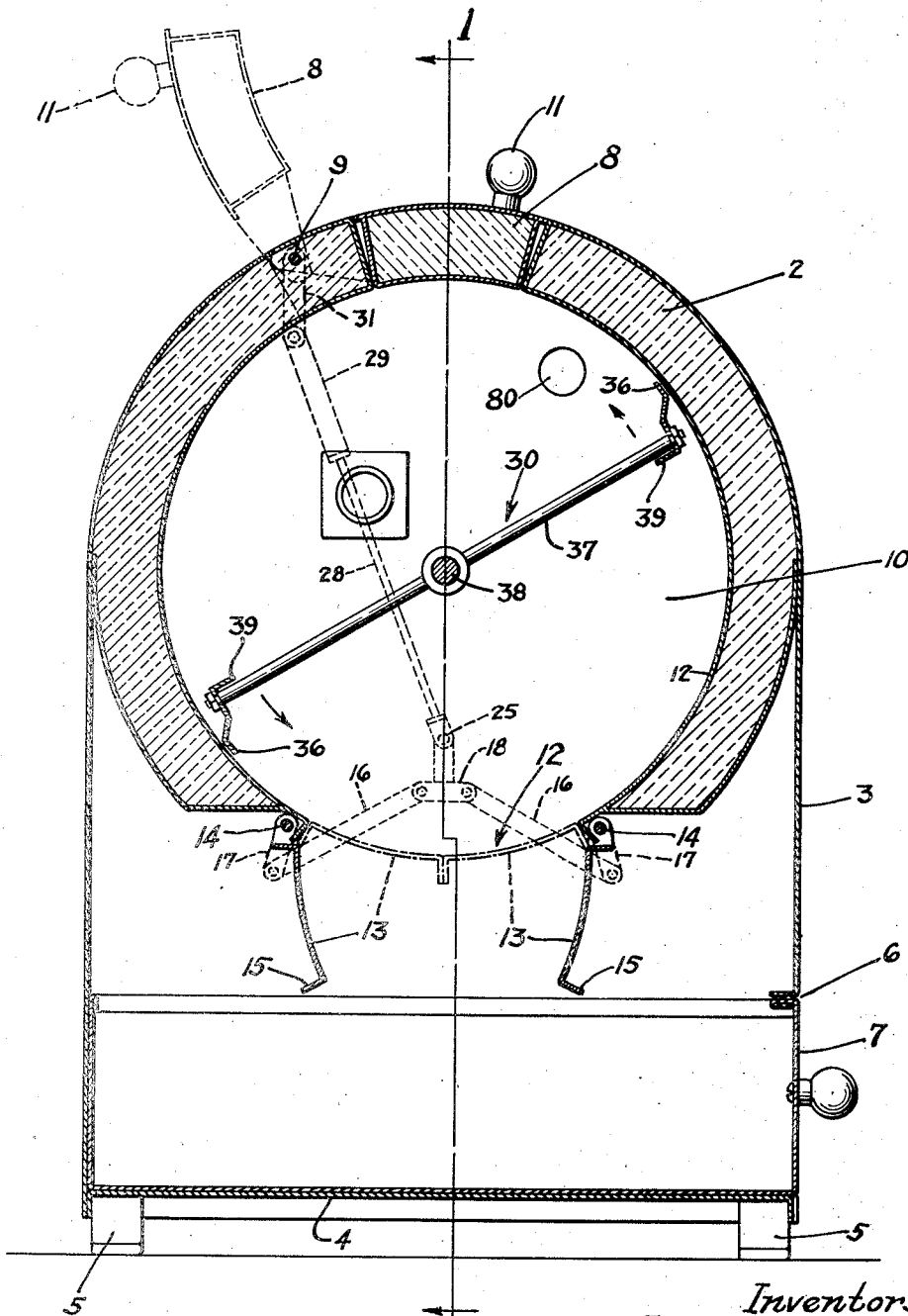


FIG. 2

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6 Sheets-Sheet 4

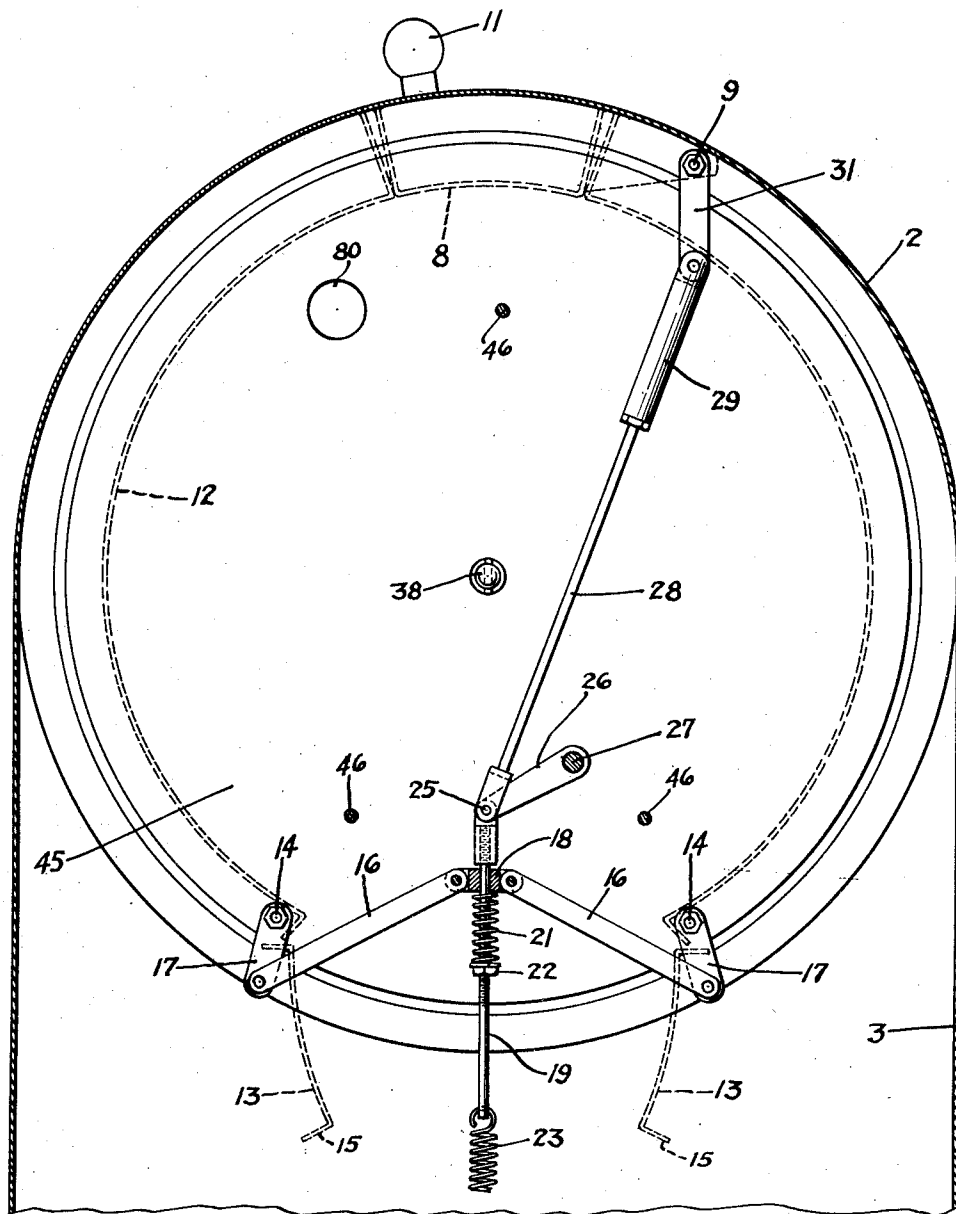


FIG. 4

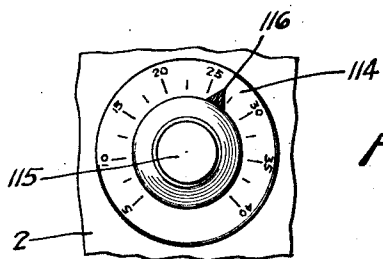


FIG. 13

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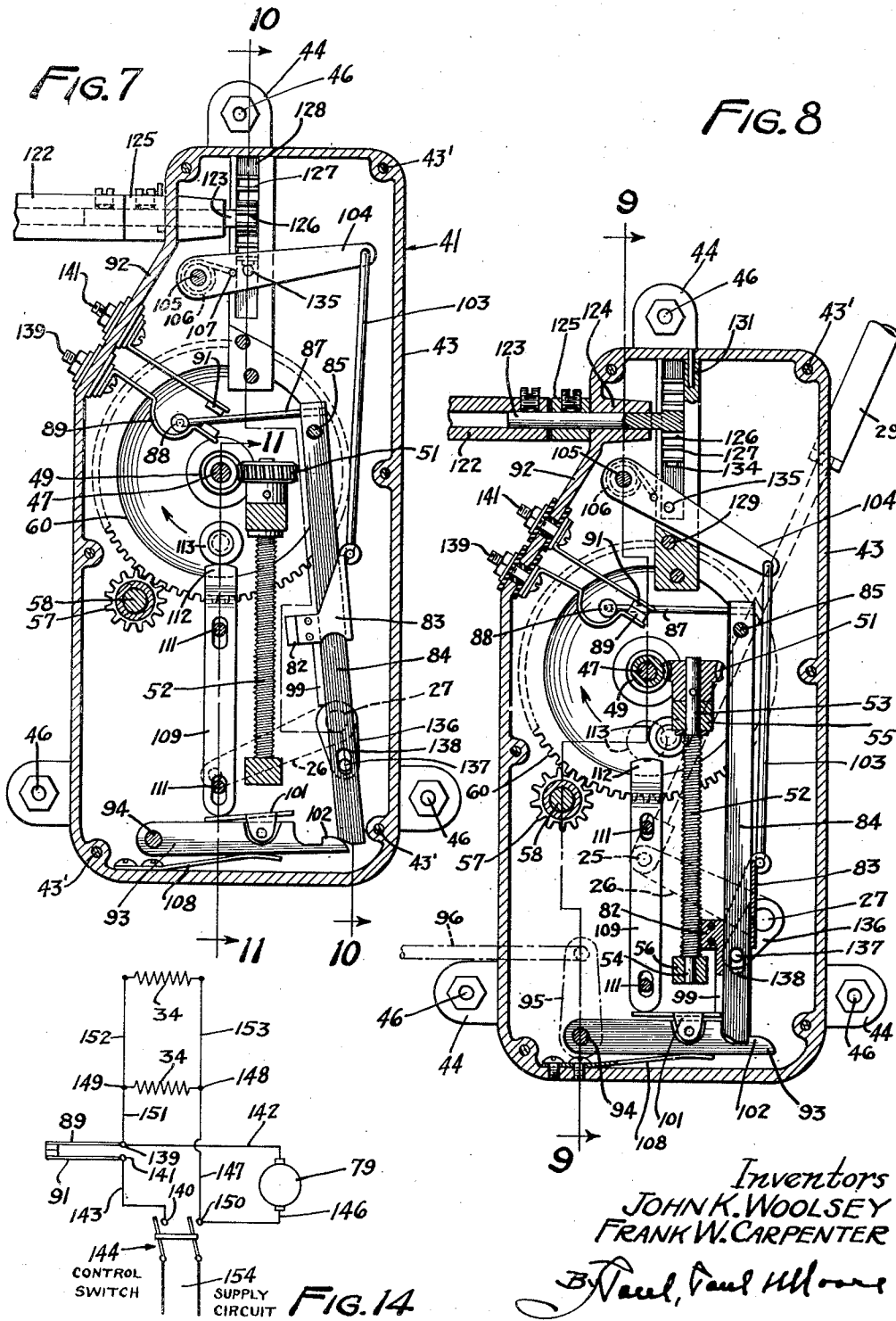
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AUTOMATIC ROASTER

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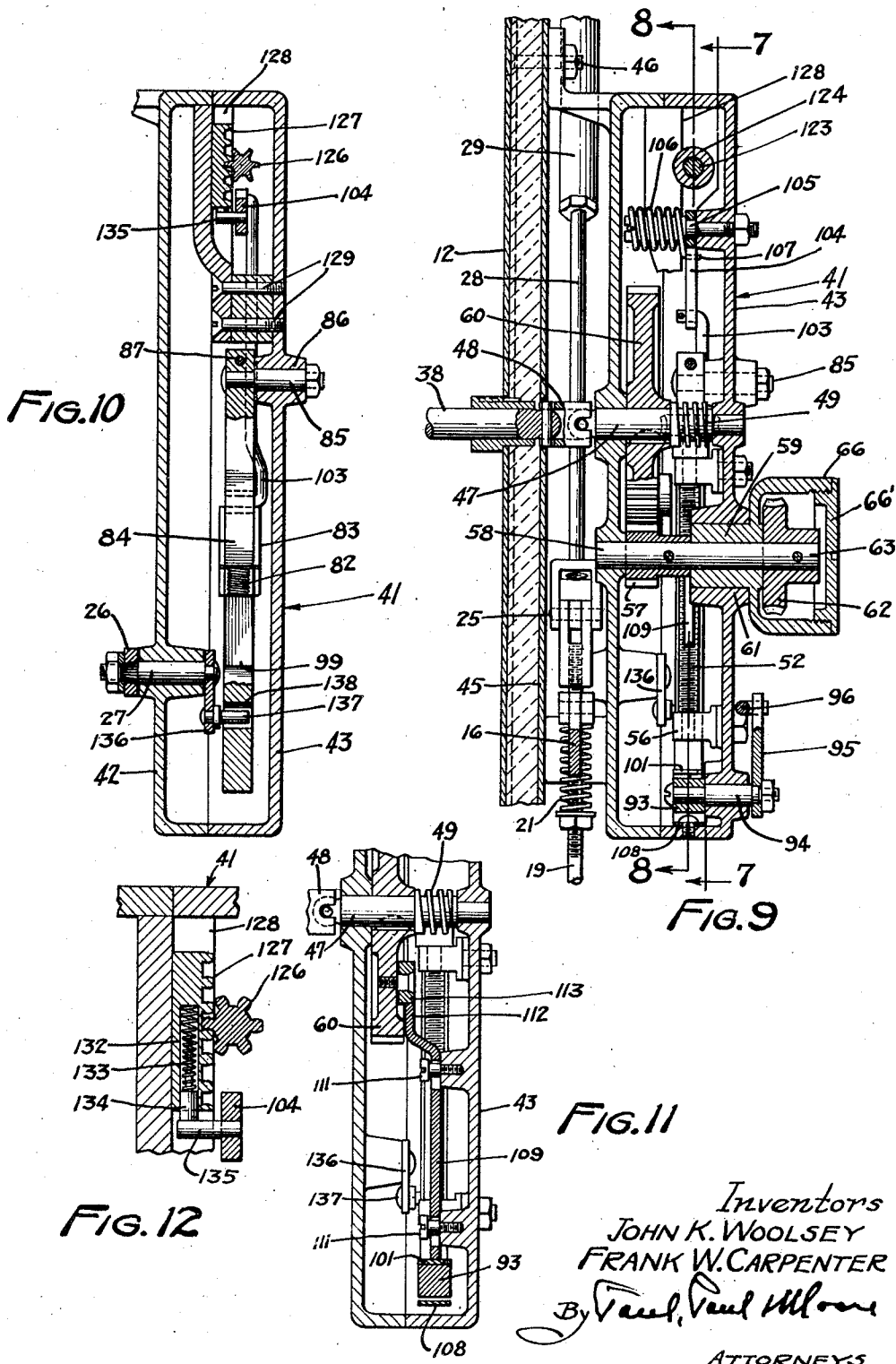
J. K. WOOLSEY ET AL.

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AUTOMATIC ROASTER

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6 Sheets-Sheet 6



UNITED STATES PATENT OFFICE

2,141,586

AUTOMATIC ROASTER

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Application April 19, 1937, Serial No. 137,828

10 Claims. (Cl. 34—7)

This invention relates to new and useful improvements in automatic roasters, and more particularly to roasters adapted for roasting peanuts, although it is to be understood that it may be used for other products, where applicable.

An object of the present invention is to provide an automatic roaster which is electrically operated, and has means for varying the roasting period to suit the condition of the material being roasted.

A further object is to provide a roaster comprising a chamber provided with suitable heating elements and having doors in its upper and lower walls, which doors are so interconnected that when the door in the upper wall of the chamber is opened for the introduction of material therein, the lower doors are automatically closed, and will remain closed when the upper door is closed, and the apparatus is operating, whereby the material will be confined within the chamber during the roasting period, and means being provided for automatically opening the bottom doors at the expiration of the roasting period, whereby the nuts or material is discharged from the oven into a suitable receiving means, positioned therebeneath.

Other objects of the invention reside in the unique arrangement of the agitator within the roasting chamber and the operating means therefor, which is so arranged that when the roasting period terminates, the agitator will come to rest in a position clear of the doors in the chamber wall, whereby it cannot obstruct the discharge opening of the chamber; in the novel construction of the timing mechanism which controls the operation of the agitator and the heating elements within the roasting chamber, and which is confined within a suitable housing supported on one end of the roaster casing; in the provision of a control member whereby the roasting period may be varied during operation of the roaster; in the operative connection between the operating mechanism and the agitator, whereby when the mechanism is tripped to interrupt the operation thereof, the agitator will assume a certain position within the oven; and, in the specific construction of the operating mechanism and control means, which are simple and inexpensive in construction, whereby the apparatus may be manufactured at relatively small cost, and whereby it requires very little attention on the part of the operator, except to supply material thereto, the mechanism being so constructed that its operation will be automatically interrupted after a predetermined time interval, de-

pending upon the adjustment of the control means, and whereby the roasted contents of the chamber are automatically discharged therefrom.

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 longitudinal sectional view on the line 1—1 of Figure 2, showing the general construction of the apparatus;

Figure 2 is a cross-sectional view on the line 2—2 of Figure 1, showing the agitator within the cylinder, and also showing in full and dotted lines, the open and closed positions of the doors at the bottom of the cylinder;

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

Figure 4 is a cross-sectional view on the line 4—4 of Figure 1, showing the door operating mechanism;

Figure 5 is a detail sectional view on the line 5—5 of Figure 3, showing the driving clutch;

Figure 6 is a detail sectional view on the line 6—6 of Figure 5;

Figure 7 is a detail sectional view on the line 7—7 of Figure 9, showing the parts in inoperative position;

Figure 8 is a similar view on the line 8—8 of Figure 9, showing the parts in operative positions;

Figure 9 is a detail sectional view on the line 9—9 of Figure 8;

Figure 10 is a detail sectional view on the line 10—10 of Figure 7;

Figure 11 is a detail sectional view on the line 11—11 of Figure 7;

Figure 12 is a detail sectional view of the adjusting mechanism on a larger scale;

Figure 13 is a view showing a dial for varying the timing of the apparatus; and

Figure 14 is a wiring diagram.

The novel apparatus herein disclosed, is shown comprising a suitable casing 2, the outer wall 3 of which extends downwardly and is secured to a base plate 4 mounted on suitable blocks or feet 5. An opening 6 is provided in the casing wall 3 to receive a suitable drawer 7 arranged to receive

the roasted contents of roasting chamber 10, defined by the walls of the cylinder 2.

The casing 2 is shown provided in its upper portion with a door 8, hinged at 9 and having a suitable hand grip 11, whereby it may be conveniently opened or closed.

A suitable opening 12 is provided in the bottom of the casing 2, through which the roasted peanuts are discharged into the drawer 7. A pair of doors 13 are hinged at 14 to the wall of the casing 2, and are arcuately formed so that when in closed position, as indicated by the dotted lines in Figure 2, they will complete the cylindrical wall of the interior of the roasting chamber. The doors 13 are preferably provided with marginal flanges 15, which stiffen the doors and provide abutment surfaces for the doors, when in closed position.

Means is provided for operatively connecting the upper door 8 to the lower doors 13 whereby when the upper door is opened, as indicated in dotted lines in Figure 2, the lower doors will automatically close, as also indicated in dotted lines in this figure. By so arranging the doors when the upper door is opened for the introduction of peanuts or other material into the roasting chamber 10, the lower doors will always be closed, whereby the unroasted peanuts will not discharge into the drawer 7.

The means provided for thus operatively connecting together the upper and lower doors is best illustrated in Figure 4, and comprises a pair of links 16, each having one end connected to arm 17 secured to the pivot rods 14 of the doors 13. The opposite end of the links 16 are connected to a block 18, slidably supported on the upper end of a rod 19. The block 18 bears against the upper end of a suitable spring 21, coiled about the rod 19, and whose lower end is supported on a suitable nut 22, received in threaded engagement with the rod 19. A spring 23 has one end connected to the lower end of the rod 19 and its opposite end to the base 4, by a suitable bolt or screw 24. The spring 23 constantly urges the rod 19 in a downward direction to close the upper door 8 and open the lower doors 13.

The upper end of the rod 19 has a pivot 25 connecting it to one end of an arm 26 secured to a shaft 27 supported in a suitable bearing, shown in Figure 10. A connecting rod 28 has its lower end connected to the pivot 25 and its upper end slidably supported in a guide 29, pivotally secured to an arm 31, secured to one end of the pivot rod or shaft 9 of the upper door 8. As best illustrated in Figure 3, the upper end of the rod 28 is provided with a head or a collar 32, which slides in the bore in the guide 29 and limits the relative movement of the rod 28 in the guide 29. The slidable connection between the guide 29 and the rod 28 permits the upper door 8 to be opened and closed independently of the lower doors 13, when the lower doors are in closed position. When the lower doors are in open position, as shown in full lines in Figure 2 and dotted lines in Figure 4, the collar or head 32 of the rod 28 will engage the abutment 33 at the lower end of the guide 29, whereby, when the upper door is opened, an upward pull is exerted on the rod 28, thereby to effect the closing of the lower doors 13, as will be readily understood by reference to Figures 3 and 4.

The novel apparatus, as herein disclosed, is adapted for electrical operation, and is shown comprising a pair of suitable heating elements, generally indicated by the numeral 34. These

heating elements are mounted in sockets 35 secured to the end walls of the roasting chamber 10, as best illustrated in Figure 1. The walls of the chamber 10 are suitably insulated, as clearly illustrated in Figures 1 and 2, whereby the heat is retained within the cylinder.

A suitable agitator, generally indicated by the numeral 30, is shown mounted within the chamber 10, and comprises blades 36 secured to the outer terminals of arms 37 which, in turn, are secured to a suitable shaft 38. The agitator 30 constantly agitates the contents of the chamber 10, during the roasting period, whereby all of the peanuts or nuts in the mass of material are uniformly roasted. The blades 36 of the agitator are preferably shaped, as best illustrated in Figure 2, whereby they thoroughly agitate the nuts in the lower portion of the chamber.

The means provided for operating the agitator 30 is best illustrated in Figures 7 to 9, inclusive, and comprises a suitable driving mechanism, shown enclosed within an oil-tight housing, generally indicated by the numeral 41. The housing 41 comprises back and front sections 42 and 43, respectively, suitably secured together in leak-proof relation by bolts 43'. The back section 42 is provided with suitable lugs 44 adapted to be seated against the adjacent end wall 45 of the cylinder 2 and secured thereto by bolts 46.

A shaft 47 is mounted in the housing 41 and has one end connected to the adjacent end of the agitator shaft 38 by a suitable universal coupling 48. A worm gear 49 is also secured to the shaft 47 and meshes with a worm wheel 51, secured to the upper end of a threaded shaft 52, having reduced end portions 53 and 54 received in suitable bearings 55 and 56, respectively, shown provided on the front section 43 of the housing 41, as best illustrated in Figure 9. Because of the threaded shaft 52 being operatively connected to the shaft 47 by the gears 49 and 51, it is rotated synchronously therewith, when the shaft 47 is operated.

The driving means for the shaft 47 is shown comprising a pinion 57 secured to one end of a shaft 58. This pinion meshes with a gear 60 keyed to the shaft 47. The shaft 58 is shown rotatably supported in a hub 59, mounted for rotary adjustment in a bearing 61 provided in the front section 43 of the housing 41. Suitable means, not shown, is provided for securing the hub 59 in adjusted position. A worm gear 62 is secured to the reduced terminal 63 of the shaft 58, and meshes with a worm 64 secured to the upper end of a short shaft 65, mounted in suitable bearings provided in a small housing, generally indicated by the numeral 66. The housing 66 encloses the worm wheel 62 and worm 64, as best illustrated in Figures 3 and 9, and is shown integrally formed with the hub 59. The housing 66 has a removable cover 66'.

The shaft 65 has a clutch collar 69 secured thereto by a suitable screw 71. A supplemental clutch member 72 is mounted for relative rotation on the reduced terminal 73 of the shaft 65, and has a spring element 74 secured thereto by a screw 75. The free end of the spring element 74 is preferably shaped as shown in Figure 6, and engages a notch 76 provided in the periphery of the clutch collar 69. A flexible member 77 connects the coupling member 72 to the shaft 78 of a suitable motor 79, shown mounted on brackets 81, supported on the base 4, as best illustrated in Figure 3. The spring element 74 and notch 76 provide the driving connection between the clutch members 69 and 72, and are so designed that under normal

operation of the apparatus, the two clutch members rotate as a unit. Should an over-load be imposed on the agitator or driving mechanism, the spring element 74 will permit relative rotation between the two clutch members, whereby damage to the parts is avoided.

The walls 3 of the roasting chamber 10 extend beyond the end wall 45 of the cylinder, and are secured to a removable end wall 50, which cooperates with the adjacent ends of the walls 3, to provide a chamber 70 for housing the driving mechanism, as clearly illustrated in Figure 1. A suitable vent hole 80 is provided in the end wall 45 of the roasting chamber 10, and establishes communication between the chambers 10 and 70. The chamber 70 is also provided with suitable vent openings 90 and 100, in its upper and lower walls, respectively, as shown in Figure 1, to permit limited air circulation through the chamber 70.

Means is provided for automatically controlling the operation of the apparatus, whereby, after a predetermined period, the operation of the entire apparatus will be automatically interrupted, including the cutting off of the supply of current to the heating elements 34.

The means provided for thus automatically controlling the operation of the apparatus, is shown comprising what may be termed a "split" nut 82, provided on a slide 83 mounted for sliding movement on a pivoted bar 84. The bar 84 is supported by a shouldered stud 85 secured to its upper end and rotatably supported in a bearing 86 provided in the front section 43 of the housing 41, as best illustrated in Figure 10. A short rod or pin 87 is shown secured to the upper end of the bar 84, and has an offset end portion 88 supported between a pair of flexible contacts 89 and 91, secured in insulated relation to the wall portion 92 of the front section 43 of the housing, as best illustrated in Figure 8. The offset end portion 88 of the rod 87 is suitably insulated, as shown in Figures 7 and 8. When the bar 84 is in the position shown in Figure 8, the offset portion 88 of the rod 87 will be so positioned that the contacts 89 and 91 are in circuit closing position. When the bar 84 is swung outwardly to the position shown in Figure 7, the end portion 88 of the rod 87 will engage the contact 89 and thereby move it out of electrical engagement with the contact 91, for reasons which will subsequently be described.

Means is provided for locking the bar 84 in operative position, as shown in Figure 8, and comprises a suitable latch 93, secured to a shaft 94 provided with an arm 95 located exteriorly of the housing 41, as best illustrated in Figures 3 and 9. One end of a rod 96 is secured to the arm 95, and its opposite end is guidingly supported in an aperture provided in the housing of the apparatus, as illustrated at 97 in Figure 3. A hand grip 98 is secured to the outer end of the rod 96, whereby it may be conveniently operated to move the latch member 93 out of engagement with the bar 84, as will be readily understood by reference to Figure 8.

Means is provided for automatically actuating the latch member 93 to effect the release of the bar 84, after a predetermined time interval. To thus automatically operate the latch, the slide 83 is shown provided with a downwardly extending finger 99, adapted to engage one end of a pivoted member 101 mounted on the latch member 93, when the slide 83 approaches the limit of its downward movement, as best illustrated in Figure 8. When the finger 99 engages the member

101, the latch 93 is moved downwardly until the shoulder 102 thereof moves out of engagement with the lower end of the bar 84, whereupon the latter is swung outwardly to the position shown in Figure 7.

The means for outwardly moving the bar 84 from the position shown in Figure 8, to that shown in Figure 7, is shown comprising a rod 103 having its lower end pivotally connected to the slide 83 and its upper end to an arm 104, shown pivotally supported upon a shouldered stud 105 secured to the front section 43 of the housing 41, as best shown in Figure 9. A suitable spring 106 has one end secured to the arm 104, as shown at 107, and its opposite end suitably secured to the stud 105, whereby said spring constantly exerts an upward force on the arm 104, whereby when the latch 93 is operated to release the bar 84, said spring will move the slide 83 upwardly to a predetermined position, depending upon the adjustment of the timing mechanism, subsequently to be described. A small spring 108 constantly tends to move the latch member 93 upwardly into engagement with the end of the bar 84.

Means is provided, whereby the interruption or complete stopping of the apparatus is brought about only when the agitator is substantially in the position shown in Figure 2. This is desirable, in that it eliminates the possibility of the agitator blades coming to rest over the receiving and discharge openings of the cylinder, or in a position where a portion of the peanuts are prevented from discharging into the drawer 7. To thus prevent the agitator from coming to rest over the openings in the cylindrical wall, a control bar 109 is mounted for limited vertical movement on studs 111 secured to the front section 43 of the housing 41, as best illustrated in Figure 11. The upper end portion 112 of the control bar 109 is offset, as shown in Figure 11, and is adapted to be engaged by a roller 113 secured to the gear 60. The roller 113 is so positioned on the gear 60 with respect to the agitator 30, that when the agitator reaches the position shown in Figure 2, the control bar 109 will engage the pivoted member 101 and depress the latch 93 sufficiently to release the bar 84, whereupon the apparatus immediately comes to rest.

It is to be understood that the control bar 109 has no effect upon the latch 93, until the finger 99 of the split nut 82 engages the adjacent end of the pivoted member 101, as illustrated in Figure 8. When the finger 99 thus engages the adjacent end of the pivoted member 101 and depresses it, the opposite end of the member 101 will be elevated, whereby the control bar 109 will be elevated to the position shown in Figure 8, wherein its upper end 112 is positioned in the path of the roller 113. As the roller passes over the end 112 of the bar 109, said bar will be thrust downwardly, whereby the latch member will be moved downwardly out of engagement with the bar 84 by pressure against the elevated end of the pivoted member 101, by the control bar 109, it being understood that the opposite end of the member 101 is held against upward movement by reason of its engagement with the finger 99 of the split nut 82. When the roller 113 is in the position shown in Figure 7, the agitator will be substantially in the position shown in Figure 2. It is to be further understood that the downward travel of the nut 82 is relatively slow, as compared to the rotation of the gear 60, whereby the split nut 82 does not engage the lower bearing 56 of the shaft 75

52, before the latch 93 has been operated by the control bar 109 to release the bar 84.

The means provided for adjusting or varying the length of the operating period of the roaster, is shown comprising a suitable dial 114 and a finger knob 115 having a pointer 116 which co-operates with means on the dial for indicating the length of the roasting period. The knob 115 is secured to one end of a shaft 117 rotatably supported in a bearing 118 provided in a wall of the casing, as best illustrated in Figure 3. A coupling sleeve 119 is secured to the inner end of the shaft 117 and has a universal connection 121 with a similar sleeve 122 secured to one end of a short shaft 123, shown mounted in a bearing 124 provided in the front section 43 of the housing 41, as best illustrated in Figure 8. A suitable collar 125 may be provided on the shaft 124 to prevent axial movement thereof.

A pinion 126 is secured to the inner end of the shaft 123 and meshes with a rack 127 slidably mounted in a guide 128, shown provided in the housing 41 and preferably secured in position therein by suitable screws 129 and a dowel pin 131. The rack 127 is shown provided with a socket 132 comprising a spring 133, to one end of which engages an abutment plug 134, which normally projects below the lower end of the rack bar 127, as best illustrated in Figure 12.

The arm 104, shown in Figures 7 and 8, carries a pin 135, which is adapted to abuttingly engage the abutment plug 134 of the rack bar, as illustrated in Figure 12, when the bar 84 is released from the latch 93 and the arm 104 is swung upwardly to the position shown in Figure 7, by the spring 106. It will thus be noted, by reference to Figures 7, 10, and 12, that the position of the lower end of the rack bar 127 determines the length of travel of the split nut 82 upon the bar 84. For example, when the rack bar 127 is positioned as shown in Figure 7, and the bar 84 is released, the split nut 82 will be moved upwardly from the position shown in Figure 8, to that shown in Figure 7, by the spring 106, and will come to rest in the position shown in Figure 7, because of the pin 135 engaging the yieldably mounted plug 134 at the lower end of the rack bar. By relatively rotating the shaft 117 by manipulation of the finger grip 115, the rack bar 127 is vertically adjusted in the guide 128, and because of its engagement with the pin 135 of the arm 104, thus limits the upward travel of the split nut 82 on the bar 84 when the nut is released from the threaded shaft 52.

As best illustrated in Figures 7 and 8, the doors 8 and 13 are operatively connected to the bar 84 by means of an arm 136 secured to the shaft 27 to which the arm 26 of the door connecting mechanism is secured. A pin 137 is secured to the outer end of the arm 136 and is received in a slot 138 provided in the bar 84. The arm 136 is so arranged on the shaft 27 that when the lower doors are in closed position and the arm 26 is in the position indicated in dotted lines in Figures 3 and 8, the bar 84 is moved into operative engagement with the latch 93, whereby the split nut 82 is operatively associated with the threaded shaft 52.

From the foregoing, it will thus be noted that the bar 84 is so interconnected with the doors that when the lower doors are swung into closed position, the bar 84 is automatically moved into operative position, as shown in Figure 8, and conversely, when the lower doors are opened, the

arm 136 will swing the bar 84 to its inoperative position, shown in Figure 7.

The electrical connections between the various electric elements are diagrammatically illustrated in Figures 3 and 14, in which it will be noted that the contacts 89 and 91, passing through the wall 32 of the housing 41, and having terminal posts 139 and 141, are disposed exteriorly of the casing 41. A wire 142 leads from the terminal post 139 to one side of the motor and a similar wire 143 connects the post 141 to the post 140 of a suitable control switch, generally indicated by the numeral 144. The control switch, as best illustrated in Figure 3, is provided with an operating handle 145, whereby it may be operated in the usual manner. The other side of the motor 79 is connected by a wire 146 to the contact 150 of the control switch, and a wire 147 leads from the contact 150 to the contact 148 of one of the heating elements 34, as best illustrated in Figure 14. The other terminal 149 of the heating element 34 is connected by a wire 151 to the terminal post 139 of the flexible contact 89. The two heating elements 34 are shown connected in parallel by suitable wires 152 and 153. The current is supplied to the control switch 144 from a supply circuit, generally indicated by the numeral 154, which is connected to a suitable source of electric current.

Operation

In the operation of this novel apparatus, the material to be toasted such, for example, as peanuts or other nuts, is delivered into the chamber or oven 10, through the opening provided in the upper portion thereof, when the door 8 is opened to the dotted line position, shown in Figure 2. When the door 8 is in open position, the lower doors 13 are closed, as indicated by the dotted lines in Figure 2, and as previously described. Before starting the apparatus, the timing dial knob 115 is adjusted to the desired time interval, which adjustment relatively adjusts the position of the limit stop 134 of the rack 127, with respect to the arm 104. Such adjustment of the limit stop 134 limits the upward movement of the split nut 82 as will readily be understood by reference to Figure 7 which, in turn, controls the length of travel of the nut 82 on the threaded shaft 52. In other words, the position of the nut 82 on the bar 84, when the roasting operation is started, determines the length of the roasting period. When the rack is moved upwardly, the roasting period is lengthened and conversely, when it is moved downwardly, the arm 104 is swung downwardly, thereby moving the nut 82 downwardly on the bar 84, whereby its length of travel on the shaft 52 is shortened. Thus, the length of the roasting period may be conveniently varied to suit conditions by simply rotating the finger knob 115 with respect to the dial 114. For convenience, the figures indicated on the dial 114 may represent minutes.

As previously stated, when the bottom doors 13 are swung into closed position, the bar 84, because of its connection with said doors through the crank pin 137, will be swung into the full line position shown in Figure 8, whereby the split nut 82 is engaged with the shaft 52. As shown in Figure 7, as long as the bar 84 is in its inoperative position, the contacts 89 and 91 will be in circuit opening position, whereby the supply of current to the motor and heating elements is cut off, regardless of the position of the control switch 144. The bar 84 must therefore be in its operative

position, as shown in Figure 8, and the doors 13 must be closed before current can be supplied to the motor and heating elements by closing the control switch 144.

5 The roasting period is automatically interrupted when the roller 113 engages the upper end of the slide 109, as shown in Figure 7, and the split nut 82 reaches substantially the limit of its downward movement, whereby the depending
10 finger 99 of the nut 82 engages the adjacent end of the pivoted member 101, and thus makes it possible for the bar 109 to move the latch out of engagement with the bar 84, when said bar 109 is depressed by the roller 113. When the bar 84
15 is thus released from the latch 93, the bottom doors will automatically swing open, and at the same instant, the bar 84 is swung outwardly to the position shown in Figure 7, thereby causing the contacts 89 and 91 to open and cut off the supply
20 of current to the motor and heating elements. Immediately upon release of the bar 84 from the latch 93, the slide 83 carrying the split nut 82 will be moved upwardly upon the bar 84 by the spring 106 acting on the arm 104, in position for
25 the next cycle of operation.

We claim as our invention:

1. In an apparatus of the class described, a chamber having hinged doors on opposite sides thereof, one through which material may be introduced into the chamber, and the other providing a discharge for the material in the chamber, means for interconnecting said doors whereby, when one is opened to permit the introduction of material into the chamber, the other is automatically closed, and means whereby one of said
35 doors may be opened or closed independently of the other without breaking the operative connection between said doors.

2. In an apparatus of the class described, a housing forming a roasting chamber, means for heating said chamber, a pair of doors in the bottom wall of the chamber, a door in the upper wall thereof, an operative connection between the upper door and said lower doors, whereby when the upper door is opened, the lower doors are automatically closed, and a slip-joint in said connection permitting the upper door to be opened or closed independently of the lower doors, when the lower doors are closed.

3. In an apparatus of the class described, a housing comprising a roasting chamber, means for heating said chamber, oppositely disposed doors in the lower wall of the chamber, a door in the upper wall thereof, means operatively connecting together said lower and upper doors, whereby when the upper door is opened, the lower doors, if open, are closed, and means whereby the upper door may be opened or closed independently of the lower doors.

4. In an apparatus of the class described, a housing having a roasting chamber therein, heating elements in said chamber, interconnected doors in the bottom wall of the chamber, a door in the upper wall thereof, an agitator in the chamber, and time controlled means for operating said agitator and lower doors, including a pair of contacts, and means whereby the bottom doors are automatically opened after a predetermined time interval to permit the contents to discharge from the chamber.

5. In an apparatus of the class described, a housing comprising a plurality of insulated walls defining a roasting chamber, heating means in the chamber, doors in the bottom wall of said chamber, a door in an upper wall thereof, an agitator

in the chamber, driving means for operating the agitator, a timing mechanism associated with said driving means and adapted to interrupt operation thereof and automatically open said bottom doors, after a predetermined time interval, and means associated with said driving means and rendered operable by opening of the lower doors, thereby to cause the agitator to come to rest in a predetermined position with respect to the discharge opening.

6. In an apparatus of the class described, a housing having a roasting chamber therein, heating elements in said chamber, an agitator, means for driving the agitator comprising a time controlled mechanism including a pair of contacts, a threaded shaft, and means made operable by said shaft to effect opening of said contacts, after a predetermined time interval, thereby to interrupt operation of the agitator.

7. In an apparatus of the class described, a housing having a roasting chamber therein, heating elements in said chamber, a discharge opening in a wall of the chamber provided with suitable doors, means for retaining the doors in closed position, an agitator, means for driving the agitator comprising a time controlled mechanism including a pair of contacts, a threaded shaft, and means made operable by rotation of said shaft to effect opening of said contacts, after a predetermined time interval, thereby to interrupt operation of the agitator, said shaft-operated means simultaneously causing the release of said door retaining means, whereby the doors may open to permit the contents of the chamber to discharge therefrom.

8. In an apparatus of the class described, a housing comprising a roasting chamber having a door in its upper wall through which the material to be roasted may be introduced, a door in the bottom wall of the chamber, means operatively connecting together said doors, whereby when the upper door is opened, the bottom door is closed, heating elements in the chamber, an agitator in said chamber, a motor for driving the agitator, an electric circuit for the heating elements and said motor, a switch in said circuit, a timing mechanism comprising a threaded shaft associated with said driving means, and a pivoted member operatively associated with said switch and adapted to be actuated by rotation of said shaft, after a predetermined time interval, whereby said pivoted member is automatically moved to an inoperative position, thereby to effect opening of said switch, whereby operation of the entire apparatus is automatically interrupted.

9. In an apparatus of the class described, a housing comprising a plurality of insulated walls defining a roasting chamber, a receiving opening in a wall of said chamber provided with a suitable door, a discharge opening in the lower wall of the chamber, oppositely disposed doors for closing said discharge opening, heating elements in the chamber, an agitator also in the chamber, a driving mechanism for the agitator, a switch for controlling the operation of said driving mechanism and said heating elements, a time controlled mechanism for controlling the operation of said driving mechanism, said time controlled mechanism comprising a threaded shaft, a pivoted member, a slide movable on said pivoted member and adapted to operatively engage said threaded shaft, whereby said slide is longitudinally moved in one direction on the pivoted member, and a latch for retaining the pivoted member in operative relation with respect to said shaft, and means op-

erated by said driving mechanism for actuating said latch to release the pivoted member, after a predetermined time interval, whereby said pivoted member will effect opening of said switch and interruption of the entire apparatus.

10. In an apparatus of the class described, a housing comprising a plurality of insulated walls defining a roasting chamber, a receiving opening in a wall of said chamber provided with a suitable door, a discharge opening in the lower wall of the chamber, oppositely disposed doors for closing said discharge opening, heating elements in the chamber, an agitator also in the chamber, a driving mechanism for the agitator, a switch for controlling the operation of said driving mechanism and said heating elements, a threaded

shaft, a pivoted member, a slide movable on said pivoted member and adapted to operatively engage said threaded shaft, whereby said slide is longitudinally moved in one direction on the pivoted member, a latch for retaining the pivoted member in operative relation with respect to said shaft, means operated by said driving mechanism for actuating said latch to release the pivoted member, after a predetermined time interval, whereby said pivoted member will effect opening of said switch and interruption of the entire apparatus, and means whereby said agitator will come to rest in a position to clear the discharge opening of the chamber.

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