(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 1 453 361 B1

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
28.12.2005 Bulletin 2005/52

(51) Int Cl.[7]: **H05B 6/76**, H05B 6/80

(21) Application number: **03011246.0**

(22) Date of filing: **16.05.2003**

(54) **Microwave oven having a locking assembly for protecting a child**

Mikrowellenofen versehen mit Verriegelungseinrichtung für Kinderschutz

Four à micro-ondes ayant un dispositif de verrouillage pour la protection d'enfants

(84) Designated Contracting States:
DE ES FR GB

(30) Priority: **28.02.2003 KR 2003012907**

(43) Date of publication of application:
01.09.2004 Bulletin 2004/36

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Printed by Jouve, 75001 PARIS (FR)

Description

BACKGROUND OF THE INVENTION

1. Field of the Invention

[0001] The present invention relates to a microwave oven, and more particularly, to a locking assembly of a microwave oven capable of preventing a child from operating the microwave oven, in which a stopper can swing within a range of predetermined angle by an operation of a switch so as to restrict a rotation of a timer knob.

2. Prior Arts

[0002] Generally, a microwave oven is a cooking device which cooks food by using the microwave, which is widely used for cooking the food these days.

[0003] In the microwave oven, a magnetron emits microwave to the food to allow the microwave to accelerate the molecular movement of the food, thereby cooking the food.

[0004] The document US 5,300,745 describes an apparatus for placing a microwave oven in a standby condition. Accordingly, the device is characterized in that the locking element is constituted by a wheel which is positioned on a plate fixed transversely to the forward internal surface of the microwave oven and is fixed to this plate by a shaft parallel to said forward surface and about which the wheel can rotate, said wheel comprising a first surface having two abutment lugs, a first abutment lug located in the path of the nose and a second abutment lug angularly offset and adapted after rotation of said wheel by the action of the nose on the first lug, to come into engagement with the catch of the hook as well as a security lock comprising a blocking finger which is adapted to come into abutment with an arresting boss integral with the plate and disposed facing the second surface of the wheel, and which is movably mounted for this purpose under the influence of elastic means on said second surface of the wheel, said blocking finger being controlled by a safety spur which projects through an opening transversely to the first surface of the wheel, and which is disposed between the two abutment lugs so as to occupy two positions, either a standby position in which it is actuated by the nose of the hook and in which it retracts the blocking finger thereby permitting predetermined rotation of the wheel so as to permit subsequent closing of the operating switch, or an active position in which, in the absence of action of the nose, ist comes into abutment against the stop abutment and prevents the rotation of said wheel thereby prohibiting closing the switch.

[0005] FIG. 1 is a perspective view of a microwave oven 10 according to the conventional art.

[0006] As shown in FIG. 1, the microwave oven 10 according to the conventional art includes a casing 12 having a cooking chamber therein and a door 14 pivotally installed thereto, a magnetron (not shown) which is disposed at a side portion of the casing 12, for emitting microwave to the cooking chamber to cook the food, and a control panel 16 which is attached to the front of the casing 12, through which a timer knob 20 and a power control knob 22 are respectively connected to a timer (not shown) and a power controller (not shown).

[0007] In the microwave oven 10 constructed as described above, the food to be cooked is placed on a turntable (not shown) in the cooking chamber, and then the power control knob 22 is operated to control the intensity of microwave emitted from the magnetron. Further, the timer knob 20 is rotated to set the time to cook the food.

[0008] Thus, the microwave oven 10 operates so that the microwave is emitted from the magnetron to heat the food on the turntable.

[0009] However, children occasionally operate the microwave oven 10 when food is not placed on the turntable. In this state, his/her hand is put into the cooking chamber of the microwave oven 10. As the result, they get burned due to the microwave. Furthermore, there is a problem in that a fire can occur if the microwave oven is operated when there is no food.

SUMMARY OF THE INVENTION

[0010] Therefore, the present invention has been developed to solve the above-mentioned problems.

[0011] It is an object of the present invention to provide a microwave oven having a locking assembly for protecting a child, in which a timer knob can be prevented by means of the locking assembly from rotating so that the child cannot easily operate the microwave.

[0012] In order to accomplish the objects of the present invention, there is provided a microwave oven having a locking device for protecting a child comprising: a casing having a cooking chamber therein and a door pivotally installed thereto; a magnetron which is disposed at a side portion of the casing, for emitting microwave to the cooking chamber to cook the food; a control panel which is attached to a front of the casing, through which a timer knob and a power control knob are respectively connected to a timer and a controller, the timer knob having a wedge-shaped groove on a periphery surface thereof; and a locking assembly which is mounted on a back surface of the control panel, for selectively locking a rotation of the timer knob.

[0013] The locking assembly includes a stopper which is installed to the back surface of the control panel to swing within a range of a predetermined angle and an elastic spring which comes in contact with the stopper, for supporting the stopper elastically.

[0014] The stopper has one end extending toward an oval through-hole formed in a sidewall of the control panel and the other end received by the wedge-shaped groove on the peripheral surface of the timer knob, which is distanced at a predetermined angle from the

one end of the stopper to pivot about an axis of the stopper by operation of the one end of the stopper.

[0015] The elastic spring extends between mounting projections integrally formed on the back surface of the control panel, while coming in contact with the stopper elastically to provide elasticity for the stopper.

[0016] The stopper further includes a supporting plate which comes in tight contact with the stopper to receive the elasticity from the elastic spring.

[0017] The locking assembly further comprises a switch which receives the one end of the stopper, making the stopper to pivot about the axis of the stopper within the range of the predetermined angle.

[0018] The switch has flange portions which extend in parallel from a surface thereof to receive the one end of the stopper, and a handling portion which is projected from the other surface thereof to operate the switch.

[0019] A pair of restrictor is formed on an inner surface of the sidewall of the control panel to restrict an upward and downward movement of the switch.

[0020] The handling portion of the switch is disposed in the oval through-hole of the sidewall of the control panel to move upwardly and downwardly.

[0021] In the microwave oven constructed as described above, the stopper of the locking assembly is initially positioned so that one end of the stopper is inserted between the flange portions of the switch while the other end of the stopper is placed in the wedge-shaped groove on the peripheral surface of the timer knob. The elastic spring urges the stopper not to rotate about its axis by an outer impact.

[0022] Accordingly, it is possible to restrict the child from operating the timer knob so that the microwave oven is prevented from being operated.

BRIEF DESCRIPTION OF THE DRAWINGS

[0023] Other features and advantages of the present invention will become more apparent from the following description taken in connection with the accompanying drawings, wherein:

FIG. 1 is a perspective view of a microwave oven according to the conventional art;

FIG. 2 is a perspective view of a microwave oven having a locking assembly for protecting a child according to the present invention, in which a door is partially cut;

FIG. 3 is an exploded perspective view of a control panel of the microwave oven having the locking assembly for protecting a child according to the present invention, in which the control panel and the door are partially cut;

FIG. 4 is an enlarged front view of the locking assembly of the microwave oven according to the present invention, in which the one end of the stopper of the locking assembly is received by the wedge-shaped groove on the periphery of the timer knob;

FIG. 5 is an enlarged front view of the locking assembly of the microwave oven according to the present invention, in which one end of a stopper of the locking assembly is released from the wedge-shaped groove on a periphery of a timer knob; and

FIG. 6 is an enlarged front view of the locking assembly of the microwave oven according to the present invention, in which the one end of the stopper of the locking assembly is moved along the periphery of the timer knob.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0024] Hereinafter, a microwave oven having a locking assembly according to the present invention will be described in detail with reference to the accompanying drawings.

[0025] FIG. 2 is a perspective view of a microwave oven 100 having a locking assembly 160 for protecting a child according to the present invention, in which a door 120 is partially cut, and FIG. 3 is an exploded perspective view of a control panel 130 of the microwave oven 100 having the locking assembly 160 for protecting the child according to the present invention.

[0026] As shown in FIGS. 2 and 3, the microwave oven 100 having the locking assembly for protecting the child according to the present invention comprises a casing 110 having a cooking chamber therein and a door 120 pivotally installed thereto, a magnetron (not shown) which is disposed at a side portion of the casing 110, for emitting microwave to the cooking chamber to cook the food, a control panel 130 which is attached to a front of the casing 110, through which a timer knob 140 and a power control knob 150 are respectively connected to a timer (not shown) and a power controller (not shown), the timer knob 140 having a wedge-shaped groove 144 on a periphery surface 142 thereof, and a locking assembly 160 which is mounted on a back surface 132 of the control panel 130, for selectively locking a rotation of the timer knob 140.

[0027] The casing 110 is made of synthetic resin or steel plate, which has a turntable (not shown) disposed in the cooking chamber to receive a dish or bowl in which food to be cooked is placed.

[0028] At a front of the casing 110 installed pivotally is a door 120 which closes an opening of the casing 110 through which the dish or bowl having the food is placed in the cooking chamber.

[0029] The magnetron is disposed at a back of the control panel 130 and at a side of the cooking chamber to emit the microwave toward the food in the cooking chamber. The microwave emitted from the magnetron is transmitted through a wave-guide (not shown) to the cooking chamber, which accelerates a molecular movement of the food in the dish or bowl, thereby cooking the food.

[0030] The control panel 130 is attached to a front portion of the casing 110, which has through holes 134 and 136 formed therein at a predetermined distance from each other. The power control knob 150 and the timer knob 140 are respectively combined with the power controller (not shown) and the timer (not shown) to control the intensity of power of the magnetron and to set the time to operate the magnetron.

[0031] Meanwhile, the control panel 130 has an oval through-hole 138a formed at a sidewall 138 thereof in which a switch 162 is movably inserted to operate the locking assembly 160, as shown in FIGS. 2 and 3.

[0032] A pair of mounting projections 164a and 164b is integrally formed at a desired distance from each other on the back surface 132 of the control panel 130. The mounting projections 164a and 164b are apart from the through-hole 136 in which the timer knob 140 is inserted, which are positioned between the through-holes 134 and 136 in which the timer knob 140 and the power control knob 150 are inserted.

[0033] The mounting projections 164a and 164b generally have cylindrical shape, in which cutoff portions are respectively formed opposite to each other.

[0034] Also, a shaft 166 is integrally formed on the back surface 132 of the control panel 130, on which a stopper 168 of the locking assembly 160 is mounted.

[0035] Two restrictors 170a and 170b are formed on an inner surface of the sidewall 138 of the control panel 130, which are respectively spaced apart from the oval through-hole 138a at equal distance. The restrictors 170a and 170b extend at a desired distance from the inner surface of the sidewall 138 of the control panel 130 toward the mounting projections 164a and 164b.

[0036] Referring to FIG. 3, the locking assembly 160 includes the stopper 168, which is installed to the back surface 132 of the control panel 130 to swing within a range of a predetermined angle, and an elastic leaf spring 164c which comes in contact with the stopper 168, for supporting the stopper 168 elastically.

[0037] The stopper 168 has one end 168a extending toward an oval through-hole 138a formed in a sidewall 138 of the control panel 130 and the other end 168b received by the wedge-shaped groove 144 on the peripheral surface 142 of the timer knob 140.

[0038] Also, the stopper 168 has an aperture formed at a center thereof in which the shaft 166 on the back surface 132 of the control panel 130 is inserted to be combined with the stopper 168.

[0039] The one end 168a and the other end 168b of the stopper 160 are formed at an acute angle to pivot about the shaft 166 of the stopper 168 within a range of a desired angle by operation of the switch 162.

[0040] The stopper 168 further includes a supporting plate 168c which comes in tight contact with the stopper 168 to receive the elasticity from the elastic leaf spring 164c.

[0041] The supporting plate 168c has a dovetail shape in the front view, which includes a contact portion directly contacting with the elastic leaf spring 164c and a guide portion preventing the elastic leaf spring 164c from being released from the contact portion.

[0042] The contact portion of the supporting plate 168c is urged by means of the elastic leaf spring 164c to make the stopper 168 not to be released from the shaft 166.

[0043] The elastic leaf spring 164c extends between mounting projections 164a and 164b integrally formed on the back surface 132 of the control panel 130, while coming in contact with the stopper 168 elastically to provide elasticity for the stopper 168.

[0044] Both ends of the elastic leaf spring 164c are respectively and fixedly inserted to each cavity of the mounting projections 164a and 164b.

[0045] The elastic leaf spring 164c provides a sliding surface to the supporting plate 168c in order that when the stopper 168 pivots around the shaft 166 within the range of the desired angle, the stopper 168 can pivot while the supporting plate 168c of the stopper 168 makes a point contact with the elastic leaf spring 164c.

[0046] The elasticity of the elastic leaf spring 164c is the largest when the peak of the contact portion of the supporting plate 168c comes in a point contact with the elastic leaf spring 164c, so that the elastic leaf spring 164c can urge the stopper 168 to the shaft 166 strongly.

[0047] The microwave oven 100 further comprises a switch 162 receiving the one end 168a of the stopper 168 to make the stopper 168 to rotate about the axis of the stopper 168 within the range of the predetermined angle.

[0048] The switch 162 has flange portions 162a and 162b which extend in parallel from a surface thereof to receive the one end 168a of the stopper 168 and a handling portion 162c which is projected from the other surface thereof to operate the switch 162.

[0049] The switch 162 is disposed between the restrictors 170a and 170b on the inner surface of the sidewall 138 while the handling portion 162c is inserted into the through-hole 138a of the sidewall 138 of the control panel 130.

[0050] On the other hand, the switch 162 comes in sliding contact with the inner surface of the sidewall 138 of the control panel 130 by means of the one end 168a of the stopper 168 received between the flange portions 162a and 162b as the elastic leaf spring 164c urges the stopper 168.

[0051] The flange portions 162a and 162b, which receive the one end 168a of the stopper 168 between them, rotate the one end 168a of the stopper 168 in a clockwise or counterclockwise direction within the range of the desired angle as a user pushes up or down the handling portion 162c of the switch 162.

[0052] The movement of the switch 162 is restricted by means of the restrictors 170a and 170b which are arranged about the oval through-hole 138a on the inner surface of the sidewall 138 of the control panel 130.

[0053] On the other hand, the timer knob 140 has a

wedge-shaped groove 144 formed on the periphery 142 thereof, which is positioned so that the groove 144 can receive the other end 168b of the stopper 168 at the initial position. In the state, when the user pushes down the switch 162, the switch 162 rotates the stopper 168 clockwise so that the other end 168b of the stopper 168 enters the wedge-shaped groove 144 of the timer knob 140 to prevent the timer knob 140 from rotating, as shown in FIG. 4.

[0054] To the contrary, when the user pushes up the switch 162, the switch 162 rotates the stopper 168 counterclockwise so that the other end 168b of the stopper 168 leaves the wedge-shaped groove 144 of the timer knob 140 to allow the timer knob 140 to rotate, as shown in FIGS. 5 and 6.

[0055] Hereinafter, an operation and an effect of the microwave oven 100 having the locking assembly 160 for protecting the child according to the present invention will be described with reference to the accompanying drawings.

[0056] FIG. 4 is an enlarged front view of the locking assembly 160 of the microwave oven 100 according to the present invention, in which the one end 168a of the stopper 168 of the locking assembly 160 is received in the wedge-shaped groove 144 on the periphery 142 of the timer knob 140, FIG. 5 is an enlarged front view of the locking assembly 160 of the microwave oven 100 according to the present invention, in which the one end 168a of a stopper 168 of the locking assembly 160 is released from the wedge-shaped groove 144 on a periphery 142 of a timer knob 140, and FIG. 6 is an enlarged front view of the locking assembly 160 of the microwave oven 100 according to the present invention, in which the one end 168a of the stopper 168 of the locking assembly 160 is moved along the periphery 142 of the timer knob 140.

[0057] As shown in FIGS. 4 to 6, the switch 162 is disposed on the inner surface of the sidewall 138 of the control panel 130 to slide along the inner surface of the sidewall 138 so that the handling portion 162c of the switch 162 is movably inserted into the through-hole 138a formed in the sidewall 138 of the control panel 130.

[0058] The one end 168a of the stopper 160 is inserted between the flange portions 162a and 162b of the switch 162, so as to be rotated within the range of the desired angle by means of the switch 162. Meanwhile, the other end 168b of the stopper 168 is removably received by the wedge-shaped groove 144 on the periphery 142 of the timer knob 140.

[0059] When the switch 162 moves upwardly, therefore, not only the one end 168a of the stopper 168 rotates in the counterclockwise direction, but also the other end 168b of the stopper 168 rotates in the same direction as the one end 168a of the stopper 168.

[0060] To the contrary, when the switch 162 moves downwardly, the one end 168a of the stopper 168 rotates in the clockwise direction and also the other end 168b of the stopper 168 rotates along with the one end 168a in the same direction.

[0061] Meanwhile, the elastic leaf spring 164c urges the stopper 168 not to be released from the switch 162 while operating the switch 162. Furthermore, since the elastic leaf spring 164c provides the stopper 138 with the strong elasticity, it prevents the stopper 168 from easily rotating even if the child pushes down the switch 162 to release the stopper 168 from the wedge-shaped groove 144. Thereby, the stopper 168 cannot be released from the timer knob 140.

[0062] With the microwave oven 100 having the locking assembly 160 as described above, the locking assembly 160 can lock the timer knob 140. As the result, it is possible to prevent the child from operating the microwave oven 100 by rotating the timer knob 140 for amusement.

Claims

1. A microwave oven (100) having a locking assembly (160) for protecting a child comprising:

a casing (110) having a cooking chamber therein and a door (120) pivotally installed thereto;
a magnetron which is disposed at a side portion of the casing (110), for emitting microwave to the cooking chamber to cook a food;
a control panel (130) which is attached to a front of the casing (110), through which a timer knob (140) and a control knob (150) are respectively connected to a timer and a controller, the timer knob (140) having a wedge-shaped groove (144) on a periphery surface (142) thereof;

characterizing in that,

the microwave oven (100) comprises a locking assembly (160) which is mounted on a back surface (132) of the control panel (130), for selectively locking a rotation of the timer knob (140).

2. The microwave oven having a locking assembly for protecting the child as claimed in claim 1, wherein the locking assembly (160) includes a stopper (168) which is installed to the back surface (132) of the control panel (130) to swing within a range of a predetermined angle and an elastic leaf spring (164c) which comes in contact with the stopper (168), for supporting the stopper (168) elastically.

3. The microwave oven having a locking assembly for protecting the child as claimed in claim 2, wherein the stopper (168) has one end (168a) extending toward an oval through-hole (138a) formed in a sidewall (138) of the control panel (130)

and the other end (168b) received by the wedge-shaped groove (144) on the peripheral surface (142) of the timer knob (140), which is dis-

tanced at a predetermined angle from the one end (168a) of the stopper (160) to pivot about an axis of the stopper (168) by operation of the one end of the stopper (168).

4. The microwave oven having a locking assembly for protecting the child as claimed in claim 3, wherein the elastic leaf spring (164c) extends between mounting projections (164a and 164b) integrally formed on the back surface (132) of the control panel (130), while coming in contact with the stopper (168) elastically to provide elasticity for the stopper (168).

5. The microwave oven having a locking assembly for protecting the child as claimed in claim 4, wherein the stopper (168) further includes a supporting plate (168c) which comes in tight contact with the stopper (168) to receive the elasticity from the elastic leaf spring (164c).

6. The microwave oven having a locking assembly for protecting the child as claimed in claim 4, further comprising a switch (162) which receives the one end (168a) of the stopper (168), making the stopper (168) to pivot about the axis of the stopper (168) within the range of the predetermined angle.

7. The microwave oven having a locking assembly for protecting the child as claimed in claim 6, wherein the switch (162) has flange portions (162a) which extend in parallel from a surface thereof to receive the one end (168a) of the stopper (160), and a handling portion (162c) which is projected from the other surface thereof to operate the switch (162).

8. The microwave (100) oven having a locking (160) assembly for protecting the child as claimed in claim 7, wherein a pair of restrictors (170a and 170b) is formed on an inner surface of the sidewall (138) of the control panel (130) to restrict an upward and downward movement of the switch (162).

9. The microwave (100) oven having a locking (160) assembly for protecting the child as claimed in claim 7, wherein the handling portion (162c) of the switch (162) is disposed in the oval through-hole (138a) of the sidewall (138) of the control panel (130) to move upwardly and downwardly.

Patentansprüche

1. Mikrowellenofen (100) mit einer Verriegelungseinrichtung (160) zum Schützen eines Kindes mit:

einem Gehäuse (110) mit einem Kochraum darin und einer schwenkbar daran installierten Tür (120);

einer Magnetfeldröhre, die an einem Seitenteil des Gehäuses (110) zum Aussenden von Mikrowellen in den Kochraum zum Zubereiten von Essen angebracht ist;

einer Bedienungseinheit (130), die auf einer Vorderseite des Gehäuses (110) angeordnet ist, durch welche ein Zeitschalterknopf (140) und ein Bedienknopf (150) jeweils mit einem Zeitschalter und mit einer Steuerung verbunden sind, wobei der Zeitschalterknopf (140) auf seiner Außenseite (142) eine keilförmige Nut (144) aufweist;

dadurch gekennzeichnet,

dass der Mikrowellenofen (100) eine Verriegelungseinrichtung (160) aufweist, die auf einer Rückseite (132) der Bedieneinheit (130) zur selektiven Sperrung einer Rotation des Zeitschalterknopfes (140) angeordnet ist.

2. Mikrowellenofen (100) mit einer Verriegelungseinrichtung (160) zum Schützen des Kindes nach Anspruch 1, wobei die Verriegelungseinrichtung (160) eine Sperre (168) aufweist, welche auf der Rückseite (132) der Bedieneinheit (130) installiert ist, wobei die Sperre (168) zum Drehen in einem Bereich eines vorbestimmten Winkels vorgesehen ist und eine elastische Blattfeder (164c), welche mit der Sperre (168) zum elastischen Spannen der Sperre(168) in Kontakt kommt, aufweist.

3. Mikrowellenofen (100) mit einer Verriegelungseinrichtung (160) zum Schützen des Kindes nach Anspruch 2, wobei die Sperre (168) ein Ende (168a) aufweist, welches sich auf ein ovales Durchgangsloch (138a), ausgebildet in einer Seitenwand (138) der Bedieneinheit, hin erstreckt und ein anderes Ende (168b), das in einer keilförmigen Nut (144) in der Außenfläche (142) des Zeitschalterknopfes (140) aufgenommen wird, wobei das andere Ende (168b) unter einem vorbestimmten Winkel zu dem einen Ende (168a) der Sperre (160) beabstandet ist, zum Drehen um eine Achse der Sperre (168) mittels Betätigung eines Endes der Sperre (168).

4. Mikrowellenofen (100) mit einer Verriegelungseinrichtung zum Schützen des Kindes nach Anspruch 3, wobei sich die elastische Blattfeder (164c) zwischen Befestigungsüberkragungen (164a) und (164b) erstreckt, die integral auf der Rückseite (132) der Bedieneinheit (130) ausgebildet sind, und dabei elastisch mit der Sperre (168) zum Bereitstellen von Elastizität für die Sperre (168) in Kontakt kommt.

5. Mirkowellenofen (100) mit einer Verriegelungseinrichtung (160) zum Schützen des Kindes nach Anspruch 4, wobei die Sperre (168) weiterhin eine Stützplatte (168c) aufweist, welche in engen Kontakt mit der Sperre (168) zur Aufnahme der Elastizität der elastischen Blattfeder (164c) kommt.

6. Mikrowellenofen (100) mit einer Verriegelungseinrichtung (160) zum Schützen des Kindes nach Anspruch 4, der weiterhin einen Schalter (162) aufweist, welcher das eine Ende (168a) der Sperre (168) aufnimmt und die Sperre (168) zum Drehen um die Achse der Sperre (168) im Bereich eines vorbestimmten Winkels veranlasst.

7. Mikrowellenofen (100) mit einer Verriegelungseinrichtung (160) zum Schützen des Kindes nach Anspruch 6, wobei der Schalter (162) Flanschteile (162a), welche parallel von einer Oberfläche abstehen, zum Aufnehmen des einen Endes (168a) der Sperre (160) und ein Bedienteil (162c) zum Bedienen des Schalters (162), welches von der anderen Seite absteht, aufweist.

8. Mikrowellenofen (100) mit einer Verriegelungseinrichtung (160) zum Schützen des Kindes nach Anspruch 7, wobei ein Paar Anschläge (170a) und (170b) auf einer Innenseite der Seitenwand (138) der Bedieneinheit (130) zur Beschränkung einer Aufwärts- oder Abwärtsbewegung des Schalters (162) ausgebildet ist.

9. Mikrowellenofen (100) mit einer Verriegelungseinrichtung (160) zum Schützen des Kindes nach Anspruch 7, wobei das Bedienteil (162c) des Schalters (162) zum Aufwärts- oder Abwärtsbewegen in dem ovalen Durchgangsloch (138a) der Seitenwand (138) der Bedieneinheit (130) angeordnet ist.

Revendications

1. Four à micro-ondes (100) ayant un dispositif de verrouillage 160) pour la protection des enfants comprenant :

un boîtier (110) ayant une chambre de cuisson à l'intérieur et une porte (120) montée pivotante sur celui-ci ;
un magnétron qui est disposé sur une partie latérale du boîtier (110), pour l'émission de micro-ondes vers la chambre de cuisson pour cuire un aliment ;
un panneau de commande (130) qui est fixé à l'avant du boîtier (110), par l'intermédiaire duquel un bouton de minuterie (140) et un bouton de commande (150) sont respectivement connectés à une minuterie et à un dispositif de commande, le bouton de minuterie (140) présentant une rainure en forme de coin (144) sur une surface périphérique (142) de celui-ci ;

caractérisé en ce que,
le four à micro-ondes (100) comprend un dispositif de verrouillage (160) qui est monté sur une surface arrière (132) du panneau de commande (130), pour verrouiller sélectivement une rotation du bouton de minuterie (140).

2. Four à micro-ondes (100) ayant un dispositif de verrouillage pour la protection des enfants selon la revendication 1, dans lequel le dispositif de verrouillage (160) comprend une butée (168) disposée sur la surface arrière (132) du panneau de commande (130) pour osciller dans un domaine d'angle prédéterminé et une lame de ressort élastique (164c) qui vient en contact avec la butée (168), pour supporter élastiquement la butée (168).

3. Four à micro-ondes (100) ayant un dispositif de verrouillage pour la protection des enfants selon la revendication 2, dans lequel la butée (168) présente une extrémité (168a) s'étendant en direction d'un trou de passage ovale (138a) formé sur une paroi latérale (138) du panneau de commande (130),
et l'autre extrémité (168b) logée dans la rainure en forme de coin (144) sur la surface périphérique (142) du bouton de minuterie (140), laquelle est éloignée d'une distance angulaire prédéterminée de l'extrémité (168a) de la butée (168) pour pivoter autour d'un axe de la butée (168) par l'opération de l'extrémité de la butée (168).

4. Four à micro-ondes (100) ayant un dispositif de verrouillage pour la protection des enfants selon la revendication 3, dans lequel la lame de ressort élastique (164c) s'étend entre des bossages de fixation (164a et 164b) formés d'une seule pièce sur la surface arrière (132) du panneau de commande (130), pendant qu'elle vient en contact élastique avec la butée (168) pour donner de l'élasticité à la butée.

5. Four à micro-ondes (100) ayant un dispositif de verrouillage pour la protection des enfants selon la revendication 4, dans lequel la butée (168) comprend en outre une plaque de support (168c) qui vient en contact étroit avec la butée pour recevoir l'élasticité provenant de la lame de ressort élastique (164c).

6. Four à micro-ondes (100) ayant un dispositif de verrouillage pour la protection des enfants selon la revendication 4, comprenant en outre un interrupteur (162) qui reçoit l'extrémité (168a) de la butée (168), faisant pivoter la butée (168) autour de l'axe de la butée (168) dans un domaine d'angle prédéterminé.

7. Four à micro-ondes (100) ayant un dispositif de verrouillage pour la protection des enfants selon la revendication 6, dans lequel l'interrupteur (162) présente des parties de rebord (162a) qui s'étendent parallèlement depuis la surface de celui-ci pour recevoir l'extrémité (168a) de la butée (160), et une partie de manoeuvre (162c) qui fait saillie depuis l'autre surface de celui-ci pour actionner l'interrupteur (162).

8. Four à micro-ondes (100) ayant un dispositif de verrouillage (160) pour la protection des enfants selon la revendication 7, dans lequel une paire de limiteurs (170a et 170b) est formée sur une surface intérieure de la paroi latérale (138) du panneau de commande (130) pour limiter un mouvement de l'interrupteur (162) vers le haut et vers le bas.

9. Four à micro-ondes (100) ayant un dispositif de verrouillage (160) pour la protection des enfants selon la revendication 7, dans lequel la partie de manoeuvre (162c) de l'interrupteur (162) est disposée dans le trou de passage ovale (138a) sur la paroi latérale (138) du panneau de commande (130) pour se déplacer vers le haut et vers le bas.

FIG. 1

Prior Art

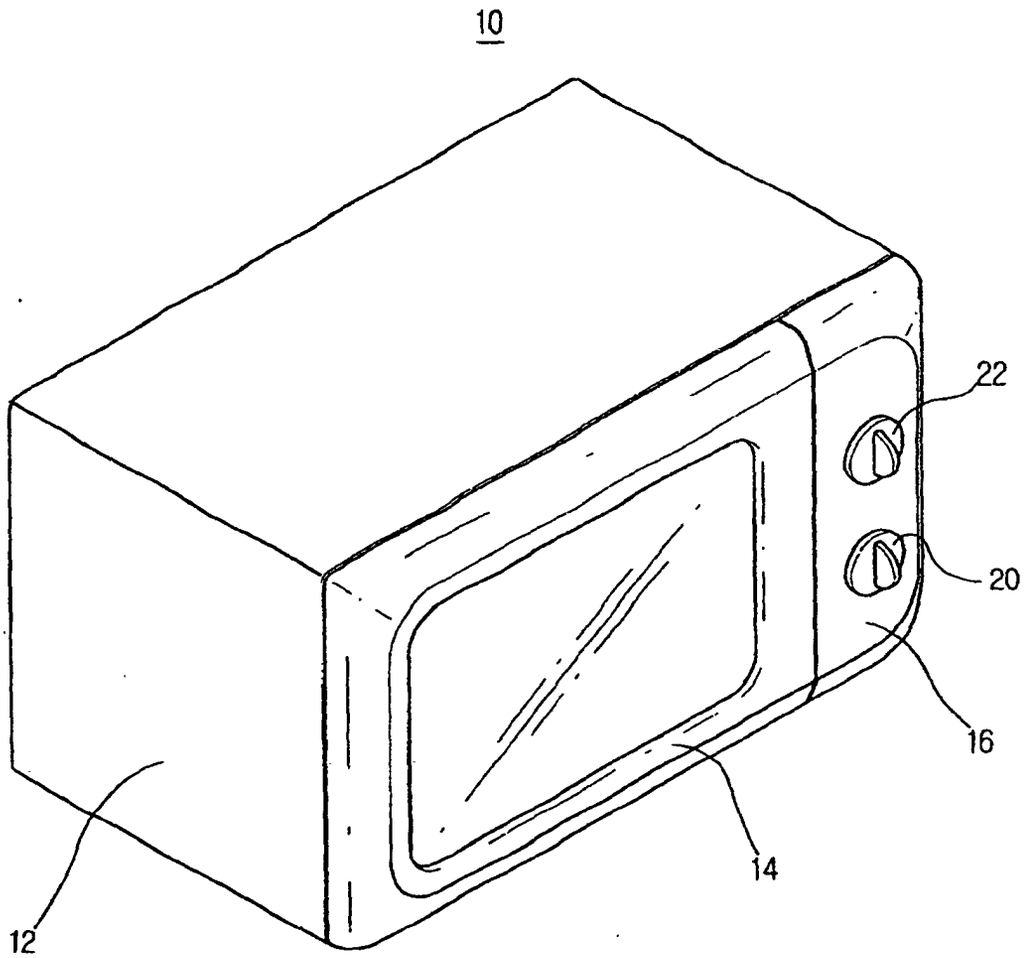


FIG. 2

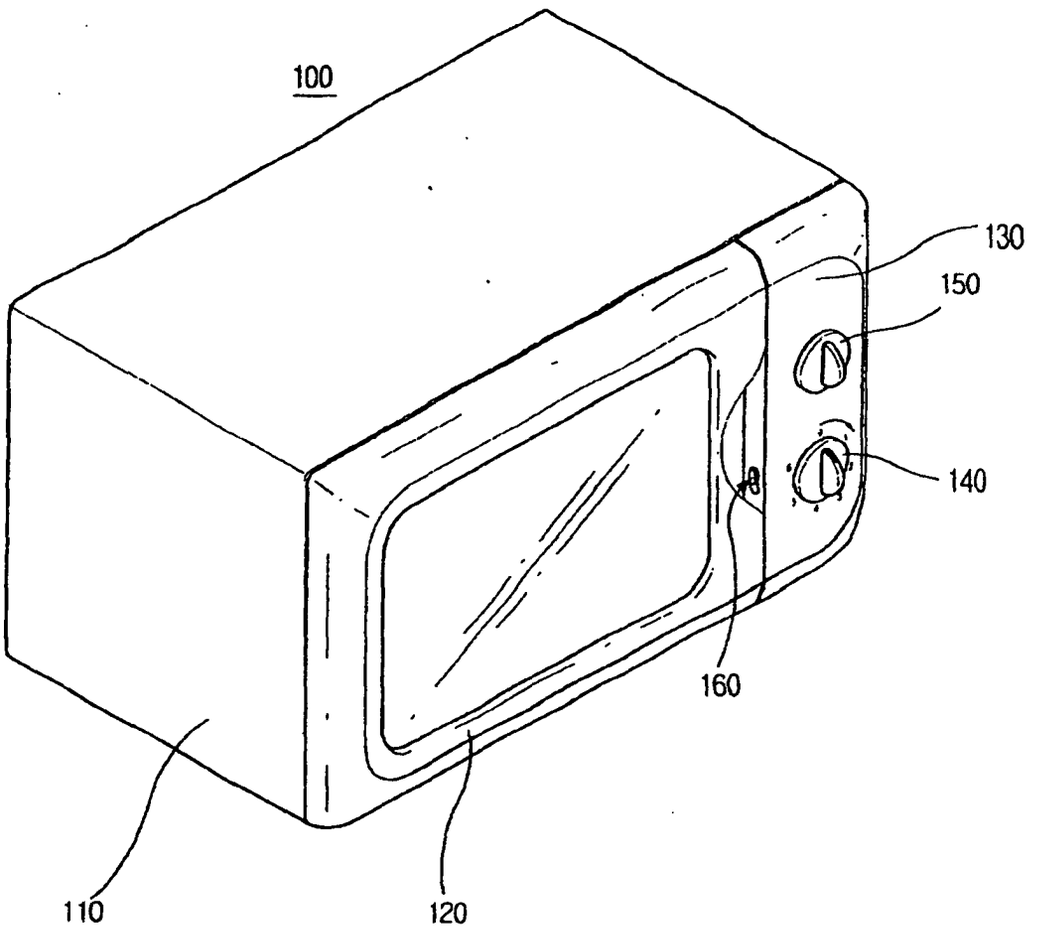


FIG. 3

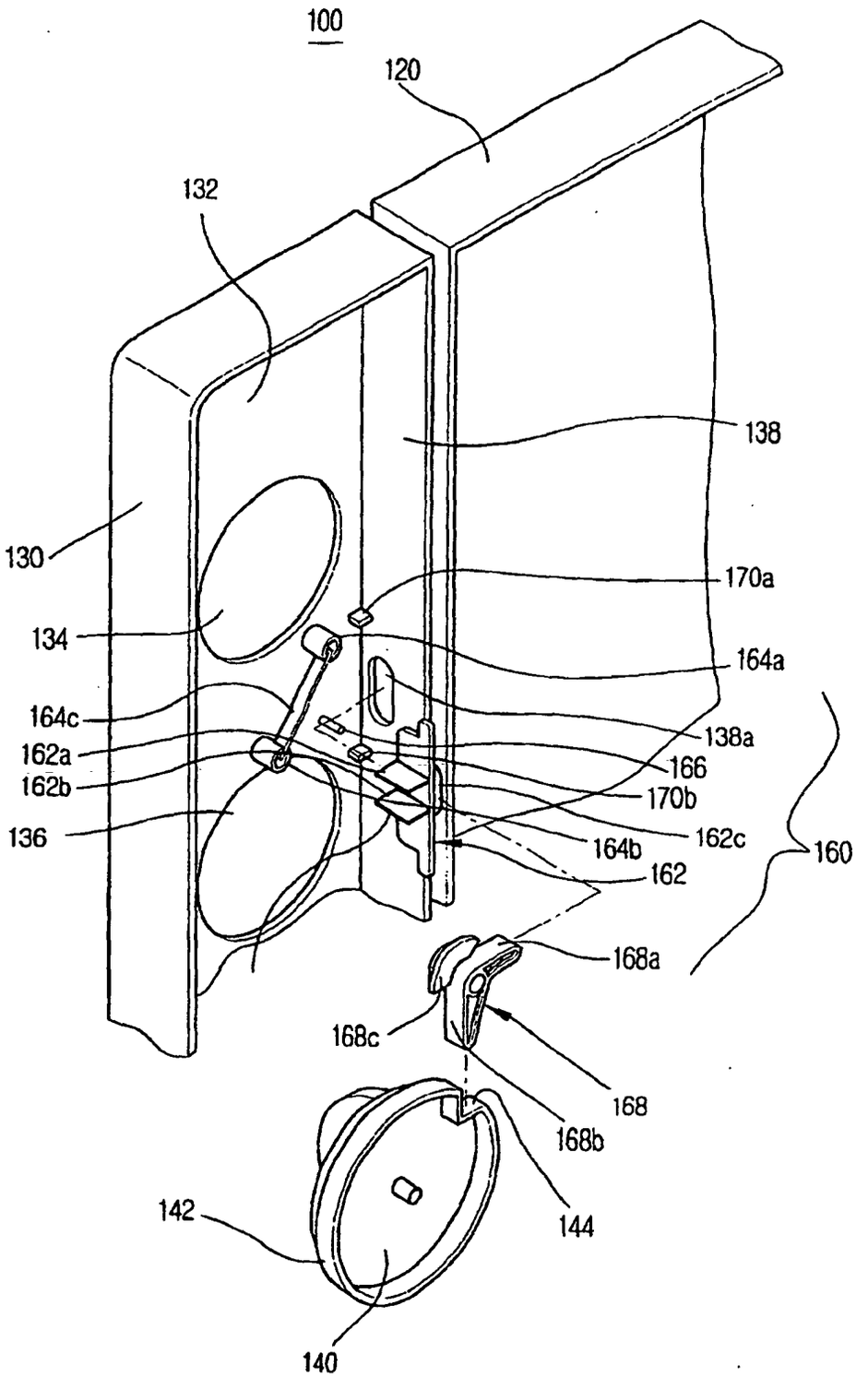

100
120
132
138
130
170a
134
164a
164c
138a
162a
166
162b
170b
136
162c
160
164b
162
168a
168c
168
168b
142
144
140

FIG. 4

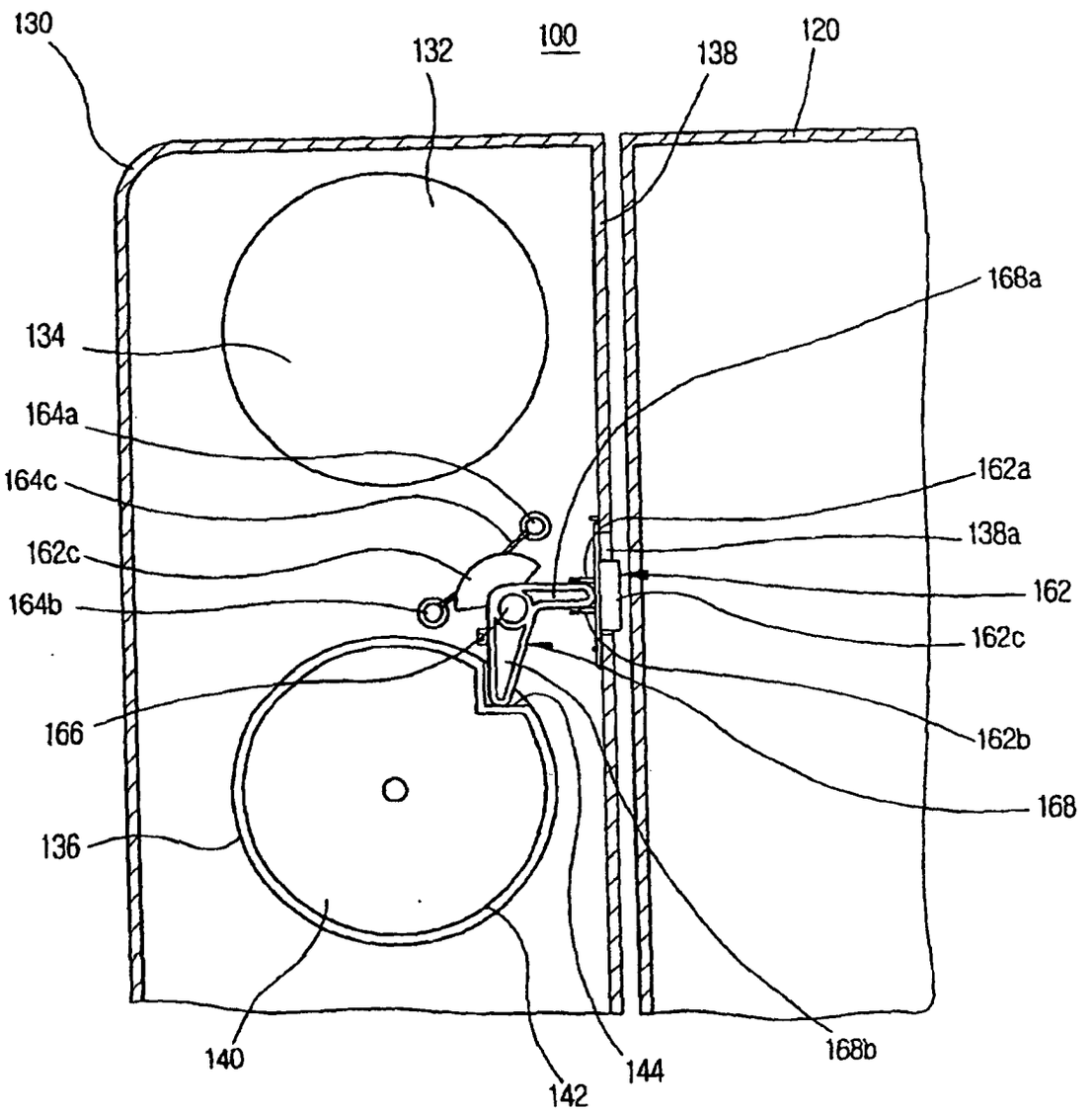

130
132
100
138
120
168a
134
164a
164c
162a
138a
162c
162
164b
162c
166
162b
168
136
140
142
144
168b

FIG. 5

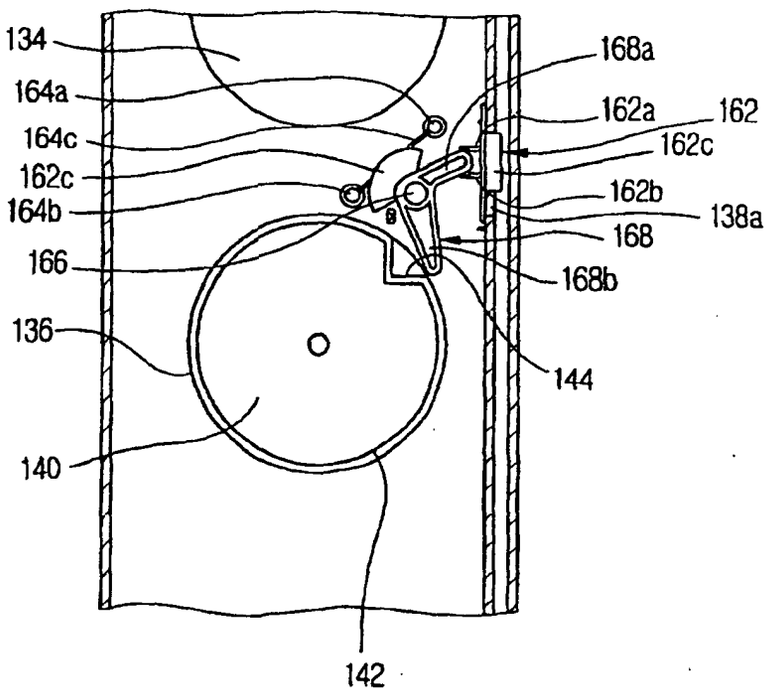
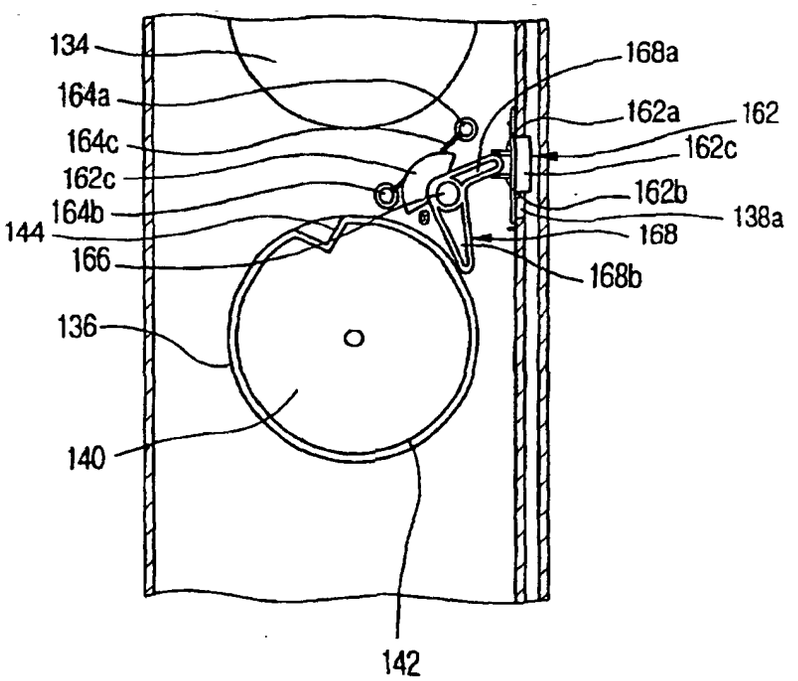

134
164a
164c
162c
164b
166
136
140
142
168a
162a
162
162c
162b
138a
168
168b
144

FIG. 6


134
164a
164c
162c
164b
144
166
136
140
142
168a
162a
162
162c
162b
138a
168
168b