A microwave emitting system (10) which comprises a source of microwaves (20), a longitudinal wave guide (30) connected at a first end (31) to the source such as to receive the microwaves generated thereby and provided with a slot (34) from which the microwaves are irradiated and a short circuit (42) slidably associated to the second end (31) of the wave guide and mobile such as to vary a length of the wave guide (30), characterised in that the short circuit (42) is mobile in alternating motion between a near and distanced position from the second end of the wave guide (30) continuously and discontinuously during emission of microwaves by the source of microwaves (20).
A MICROWAVE EMITTING SYSTEM

TECHNICAL FIELD

The present invention relates to a microwave emitting system for a microwave oven, the relative microwave oven and the functioning method of the microwave emitting system.

In more detail, the invention relates to a microwave emitting system provided with a slotted wave guide and destined for use in a continuous or discontinuous microwave oven, for example suitable for heating manufactured items containing asbestos in order to render them inert, as well as the functioning method of the microwave oven itself.

PRIOR ART

Microwave ovens are known which are provided with microwave generators, which comprise a microwave source, for example a magnetron, which, when electrically supplied, generates electromagnetic waves which are channelled along a wave guide, for example realized in an appropriate material reflective the microwaves, for example tubular and having a quadrangular, a circular or any other section.

One (or more) slots are made on a wall of the wave guide, which slot is either open or screened by a suitable wall transparent to microwaves, through which the microwaves are emitted, such that they enter the treatment chamber of the microwave oven where the material to be subjected to heating is placed.

A short circuit is located at the other end of the wave guide to the position where the magnetron is situated, the distance of which from the magnetron, for example, can be adjusted in certain applications, so that the short circuit can be located in various configurations which remain fixed during the use of the oven, i.e. during emission of the microwaves by the magnetron.

A drawback encountered in these microwave ovens of known type is the fact
that while the material to be subjected to heating remains or transits internally of the treatment chamber and is exposed to one or a multiplicity of microwave generators, the heating of the material does not appear homogeneous and uniform.

This drawback is still more relevant when the material to be subjected to heating is a manufactured item of large dimensions, having a low heat conductivity or containing a dangerous material to be thermally treated for inertisation, as the lack of uniformity of the heating necessarily translates into a low heating efficiency of all the volume of the item and into a low efficiency of inertisation, with a consequent failure to render the material innocuous.

For example, the use of microwave ovens is known for inertisation of manufactured items containing asbestos. Heating methods for inertising asbestos include treatments at temperatures of higher than 800°C such as to induce a transformation of the magnesium silicates into a form that is no longer dangerous for the health and re-usable in the production of cement within limits of 5%, in accordance with standard UNI ENV 197/1.

Heating methods however encounter problems relating to the low heat conductivity of asbestos, which required long process times so that the heat reaches the internal portions of the material, especially if the material is, as often happens in the case of items containing asbestos, conformed as large slabs also having a significant thickness.

Greater homogeneity of the treatment can be achieved at the expense of heat efficiency, and indeed renders the use of microwave ovens for inertising the materials uneconomical.

An example of a microwave emitting system, according to the preamble of the independent claim 1, is shown in German patent nr. DE 10 2004 052871. An aim of the present invention is to obviate the above-mentioned drawbacks
of the prior art, with a solution that is simple, rational and relatively inexpensive.
The aims are attained by the characteristics of the invention as related in the independent claims. The dependent claims delineate preferred and/or especially advantageous aspects of the invention.

DISCLOSURE OF THE INVENTION
The invention in particular discloses a microwave emitting system which comprises a source of microwaves, a wave guide connected at a first end to the source such as to receive the microwaves generated thereby and which is provided with a slot from which the microwaves are irradiated, and a short circuit slidably associated to the second end of the wave guide and mobile in such a way as to vary the length of the wave guide.
In the invention, the short circuit is mobile in alternating motion between a neared and a distanced position to and from the second end of the wave guide, continuously or discontinuously during the emitting of microwaves by the source.
With this solution, the distribution of the electromagnetic field in the wave guide can be continuously altered during the emitting of the microwaves by the microwave emitting system, and consequently in the treatment chamber of the microwave oven. At the same time, thanks to this solution, and possibly in combination with the variation of the operating parameters of the microwave emitting system (for example the source of microwaves), the power reflected towards the microwave source can be minimized, thus maximizing the energy efficiency of the microwave emitting system.
In this way a microwave emitting system can be realised which enables obtaining different configurations of the electromagnetic field and with a consequent greater homogeneity of the heating of the item to be thermally heated in the microwave oven, as a superposing of various configurations of
the electromagnetic field is generated, which enables compensating any
dishomogeneities of generation of heat in the material of the manufactured
item to be treated.

In practice, the item which is subjected to heat treatment by a microwave
emitting system as described above is as though continually brushed by a
spatially-variable electromagnetic field that changes configuration
continuously, enabling a more uniform heating of the time, deep and rapid at
the same time.

In an aspect of the invention, the microwave emitting system comprises
actuator means associated to the short circuit and able to move the system
alternatively between the neared position and the distanced position.
The actuator means, for example, are located externally of the wave guide.
Thanks to this, it is possible to simply and effectively command the
movement of the short circuit following a predetermined and appropriate law
of motion according to the requirements of the heat treatment.
The microwave emitting system advantageously comprises a control unit
operatively connected to the actuator means and configured such as to
command the activating of the actuator means continuously or
discontinuously during the emitting of microwaves by the microwave source.

For example, the actuator means comprise at least an invertible electric
motor connected to transformation means of rotary motion of the drive shaft
of the electric motor into translating motion of the short circuit.
Alternatively, the actuator means comprise at least a double-acting jack on
the mobile stem of which the short circuit is keyed.

In a further aspect of the invention, protectable also independently with
respect to the above, the wave guide advantageously includes a hollow
tubular body having a substantially quadrangular section and a straight
longitudinal axis, provided with a single elongate slot realized on one of the
walls (for example, one of the wide walls) of the tubular body and arranged with a longitudinal axis substantially parallel to the central longitudinal axis of the wave guide and offset (or not coaxial) with respect thereto. With this configuration of the wave guide a microwave beam can be generated that is emitted by the wave guide and is strongly directed and concentrated, and which substantially lies on a prevalent plane according to the geometry of the slot. For example, the slot exhibits a straight longitudinal axis. Alternatively, the slot can exhibit a longitudinal axis that is substantially curved, for example with a corrugated extension. The width of the slot can advantageously vary along the length thereof, so that the microwave emitting system can be configured such as to vary the power density along the longitudinal axis of the slot. In a further aspect of the invention a microwave oven is provided which comprises at least a treatment chamber delimited by walls for containing electromagnetic radiation internally of the treatment chamber, at least one of which can comprise at least a window that is transparent to the electromagnetic radiations, and at least a microwave emitting system, as described above, fixed to at least one of the walls, for example such that the slot is substantially superposed on the transparent wall, such that the microwave beam emitted by the microwave emitting system enters the treatment chamber, for example via the transparent window. With this solution a high-performance microwave oven can be realized, also having high thermal efficiency and high homogeneity of heating, especially for heating items having large dimensions and/or thermal inertia, as well as particularly suitable for heat treatment for inertisation of manufactured items containing asbestos. Further, the oven advantageously comprises a plurality of the microwave
generators fixed to at least one of the walls of the treatment chamber. With this solution the heating efficiency and the variation of the electromagnetic field to which the item to be heated can be further improved. Still more advantageously, the microwave oven can be modular in type and continuous, i.e. it comprises a plurality of flanked treatment chambers in communication with one another, able to define overall a longitudinal treatment chamber, and transport means of items to be heated along the longitudinal channel.

In this way, according to requirements the length of the treatment chamber can be varied and a large quantity of items at a time can be treated rapidly and continuously, without for this reason increasing the thermal inertia.

In a further aspect of the invention, a functioning method of a microwave emitter system is provided, as described above, which comprises a step of electrically supplying the microwave source such as to create a microwave beam that crosses the wave guide and is emitted through the slot.

In the invention, the method comprises a step of commanding a variation of the configuration of the electromagnetic field relating to the beam of microwaves emitted from the slot continuously during the step of electrical supply to the microwave source.

In particular, the step of commanding the variation of the electromagnetic field occurs by commanding the movement of the short circuit during the step of electrical supply of the microwave source. Alternatively or additionally, the step of commanding the variation of the electromagnetic field occurs during the commanding of the variation of the operative frequency of the microwave source during the step of supplying the microwave source with electricity.

BRIEF DESCRIPTION OF THE DRAWINGS

Further characteristics and advantages of the invention will emerge from a
reading of the following description, provided by way of non-limiting example, with the aid of the figures illustrated in the accompanying tables of drawings. Figure 1 is an axonometric view from above of an emitting system of microwaves according to the invention.

Figure 2 is an axonometric view from below of figure 1.
Figure 3 is a lateral view of figure 1.
Figure 4 is a plan view from above of figure 1.
Figure 5 is a view of a detail in larger scale of figure 4 with the mobile short circuit associated to a first variant of the actuator means.

Figure 6 is a view of the detail in larger scale of figure 4 with the mobile short circuit associated to a second variant of the actuator means.
Figure 7 is a plan view from below of figure 1.
Figure 8 is a plan view from below of a second embodiment of the microwave emitting system of the invention.

Figure 9 is a plan view from below of a third embodiment of the microwave emitting system of the invention.

Figure 10 is a schematic axonometric view of a microwave oven of the invention.

**BEST WAY OF CARRYING OUT THE INVENTION**

With particular reference to the figures of the drawings, 10 denotes in its entirety a microwave emitter system, suitable for generating a beam of microwaves that can be directed internally of a treatment chamber of a microwave oven, denoted in its entirety by reference numeral 100.
The microwave emitter system 10 comprises, in particular, a source of microwaves, for example a magnetron 20, or a solid state generator, or a klystron, which when supplied with electric current emits a beam of microwaves.
The magnetron 20 (or the solid state generator or klystron) is for example of
a type that varies the operating frequency.
The magnetron 20 is connected to a wave guide 30, which comprises a
longitudinally-developing tubular body 31, in the example having a
rectangular section, made of at least a metal material, the internal cavity of
which is able to receive the microwave beam emitted by the magnetron 20
and convey the beam along the longitudinal axis A of the wave guide 30.
The section of the wave guide 30 could be, alternatively, a further
quadrangular or circular shape, or any shape according to constructional
requirements.

Further, the internal cavity of the wave guide 30 could be empty or filled or
partially filled with a transparent material with respect to the microwaves,
such that the microwave beam emitted by the magnetron 20 is reflected from
the internal walls of the tubular body 31 and conveyed along the longitudinal
axis A of the tubular body 31.
The tubular body 31 exhibits a first open end 311 constrained to the
magnetron 20, by means of an interposing of a first connecting section 32 of
the wave guide 31 to the magnetron, and a free second end 312.
The first connecting section 32 is filled by a dielectric material which functions
as a battery.

Further, between the first connecting section 32 and the wave guide 31,
impedance adapting means are interposed, for example comprising a triple
stub and/or an E-H tuner, as known to a technician in the field.
In a wall of the tubular body 31, for example in one of the larger walls thereof,
a slot 34 is fashioned, having a longitudinal development, which extends for
example substantially over a part or all of the length of the tubular body 31
from the first end 311 to the second end 312.
In practice, a microwave beam exits from the slot 34, which first conveyed by
the wave guide 30 is then emitted through the slot substantially on a plane
depending on the geometry of the slot.
The slot 34 is of such dimensions as to enable exit of the microwave beam emitted by the magnetron 20; in practice the slot 34 is the only part of the microwave emitting system 10 in communication with the outside thereof, i.e. the only part of the wave guide 30 which irradiates microwaves.
The slot 34 can be opened or occluded by a window made of material that is transparent to microwaves.
The slot 34 is arranged with the longitudinal axis B substantially parallel to the longitudinal axis A of the wave guide 30 and, for example, offset (not coaxial and not aligned in plan view) with respect thereto; in practice, the slot 34 is realised in a non-central zone of the wall of the tubular body 31.
In a first embodiment of the microwave emitting system 10, shown in figures from 1 to 7, the slot 34 exhibits a straight longitudinal axis and exhibits a substantially rectangular shape.
In a second and alternative embodiment of the microwave emitting system 10, illustrated in figure 8, the slot 34 still exhibits a straight longitudinal axis (in the illustrated example dealigned in plan view with the central longitudinal axis of the tubular body 31) and exhibits a substantially trapeze shape, with the long sides curved in a logarithmic profile.
In practice, in the second embodiment the dimension (width) of the slot 34 varies along the length thereof.
In the example, the tapered end of the slot 34 is placed at the first end 311 of the tubular body 31, though it can also be, on the contrary, located at the second end 312 thereof.
In a third embodiment of the microwave emitting system 10, shown in figure 9, the slot 34 exhibits a longitudinal axis B that is substantially curved.
In the example, the longitudinal axis of the slot 34 exhibits a substantially corrugate progression, for example irregular with one or more curves having
a differentiated radius or a regular radius, substantially sinusoidal or the like.
In this third embodiment too the size of the slot 34 can be variable along the
length thereof or the slot 34 is overall substantially centred (median axis
substantially centred) in the wall of the tubular body 31 or offset with respect
thereto.

The second end 312 of the tubular body 31 which makes up the wave guide 30 is fixed to a second hollow connecting section 40, which for example is
substantially beaker-shaped with a polygonal section (for example rectangular, identical to the section of the tubular body 31), the open end
whereof is fixed to the second end 312 of the tubular body 31 (in practice
forming a single body therewith), the internal cavity of which substantially
axially extends the internal cavity of the wave guide 30 and exhibits a bottom
wall 40 able to close the wave guide.

The second connecting section 40 is also made of a metal material able to
contain internally thereof the beam of microwaves emitted by the magnetron
20.

The second connecting section 40 exhibits a substantially straight
longitudinal extension in the illustrated embodiment; however it can have a
substantially bent conformation, L-shaped, or even have other appropriate
shapes.

A short circuit 42 is slidably associated internally of the second connecting
section 40, as can be seen in the figures 5 and 6.

The short circuit 42, for example, comprises a metal block exhibiting a
parallelepiped shape having a rectangular base (or in any case alike the
internal shape of the cavity of the second connecting section 40), which can
slide (by virtue of a small radial play), for example without rotating, internally
of the second connecting section 42.

The microwave emitting system 10 further comprises actuator means 50 for
activating the short circuit 42 in translation along the axis of the second connecting section 40, for example with an alternating motion between a neared position to the second end 312 of the tubular body 31 and a distanced position from the second end 312 (i.e. neared to the bottom wall 41 of the second connecting section 40), for example in a continuous or discontinuous way during the emission of microwaves by the magnetron 20. In practice, the short circuit 42 defines a mobile closing wall of the wave guide 30, such as to enable a variation, continuously and controlledly in a predeterminable law of motion (which can include steps of motion in the two directions continuously or intervalled by static pauses according to needs), when the short circuit 42 is in the neared position, and a maximum length, when the short circuit 42 is in the distanced position. The variation of the position of the short circuit 42 at the same time as the generation of the microwaves by the microwave source 20 defines a continuous variation of the configuration of the electromagnetic field generated by the microwave beam and emitted by the wave guide 30 via the slot 34.

In a first variant, shown in figure 5, the actuator means 50 comprise an invertible electric motor 51, on the drive shaft 510 of which a drive pulley 511 is keyed, which transfers the motion to a driven pulley 512 by means of a looped flexible transmission organ wound on the driven pulley 512 and on the drive pulley 511 itself, for example a belt 513. The driven pulley 512 is keyed on an external end of an endless screw 514 which rotatably inserts, for example supported by appropriate bearings, in a hole made in the bottom wall 41 of the second connecting section 40. The short circuit 42 comprises a threaded hole into which the endless screw 514 is screwed. The rotation in the two directions of the endless screw 514 imposed by the
electric motor 51 imparts the translation of alternating motion of the short circuit 42 to inside the second connecting section 40.

In a second variant, shown in figure 6, the actuator means 50 comprise a double-acting jack 52, for example pneumatic or mechanical or of another type, provided with a cylindrical body 520 in which a stem 521 runs, the free end of which inserts in a hole made in the bottom wall 41 of the second connecting section 40 and is fixed (directly or by means of extending and connecting elements) to the short circuit 42, such as to impart the alternating motion translation of the short circuit internally of second connecting section 40.

The actuator means 50 could also be different and equivalent with respect to those illustrated and described and in any case destined to give the short circuit 42 an alternating to and fro motion along the second connecting section 40 or equivalently along the wave guide 30.

The microwave oven 100 comprises a treatment chamber 110 delimited by a plurality of metal walls 111, 112 able to contain the electromagnetic radiation internally of the treatment chamber for example, as known to a technical expert in the sector.

In particular, the treatment chamber 110 is delimited by a lower wall (not visible in the figures) which can be arranged substantially horizontal, a parallel and like upper wall 111 and two (identical) lateral flanks 112 joined inferiorly and superiorly, respectively to the lower and upper wall 11 and substantially located at right angles with respect thereto.

In practice, the walls 111, 112 are able to delimit and define a treatment chamber substantially in a tunnel form.

Further, the microwave oven 100 comprises a continuous transporter, for example a belt translator 120, which is located with the advancing axis substantially parallel to the longitudinal axis of the treatment chamber 110.
(tunnel shaped) and is able to internally cross the treatment chamber.
In practice, the conveyor belt 120 defines a mobile rest plane along the
longitudinal axis of the treatment chamber 110 located slightly above the
lower wall of the treatment chamber at a distance from the upper wall 111.
The items M to be subjected to heat treatment by the microwave oven 100
are rested on the conveyor belt 120, and cross the internal volume of the
treatment chamber 110 with a set velocity, or with a non-moving permanence
in the oven 100, able to guarantee the completion of the desired heating
cycle for the item M itself.
At least a microwave emitting system 10 is fixed to at least one of the walls
111, 112 of the treatment chamber 110, such that the slot 34 is facing
towards the inside of the treatment chamber.
In practice, the wave guide 30 is fixed externally to one of the walls 111, 112,
with the wall comprising the slot 34 substantially rested and meeting with the
wall 111, 112 of the treatment chamber 110.
The wall 111, 112, at the zone destined to be superposed on the slot 34
exhibits a window (not shown), -open or closed by a protecting element
transparent to the electromagnetic radiations, having an elongate shape and
for example alike the slot 34 itself, which enables entry of the microwave
beam emitted by the microwave emitting system 10 to inside the treatment
chamber 110, as known to the technical expert in the field.
For example, the wave guide 30 can be arranged with the longitudinal axis A
substantially perpendicular to the longitudinal axis of the treatment chamber
110 or with the longitudinal axis A substantially parallel to the longitudinal
axis of the treatment chamber 110.
Further, more than one microwave emitting system 10 can be fixed on a wall
111, 112 of the treatment chamber, for example placed with the longitudinal
axes A parallel to one another and, for example, equidistant.
In the illustrated example, the microwave oven 100 comprises a plurality of microwave emitting systems 10 fixed to the upper wall 11, in the example 4 in number, located with the longitudinal axis A perpendicular to the longitudinal axis of the treatment chamber 110. The contiguous microwave emitting systems 10 are staggered with respect to one another, i.e. they exhibit the magnetron 20 located on opposite sides with respect to the lateral walls 112 of the treatment chamber 110. Further, the microwave oven 100 comprises a plurality of microwave emitting systems 10 fixed to at least one of the lateral walls 112 of the treatment chamber 110, in the example 2 in number, located with the longitudinal axis A parallel to the longitudinal axis of the treatment chamber 110 (for example offset).

The arrangement and the number of microwave emitting systems 10 can be different from the one illustrated and any according to the constructional requirements and/or the type of heat treatment which is destined to supply the microwave oven 100 as well as the dimensions of the item M to be heat-treated.

For example, the microwave emitting systems 10 might also be arranged internally of the treatment chamber 110.

The microwave oven 100, for example, can be modular, or can be made of a plurality of treatment chambers 110, as described above, fixed and aligned along a common longitudinal extension axis such as to form a treatment channel or not according to needs.

Further, the microwave oven 100 comprises a control and command unit, not illustrated, which is operatively connected to each magnetron 20 and to each of the actuator means 50, as well for example as to the conveyor belt 120, for automated and controlled management of the thermal cycles of heating/treatment imparted by the microwave oven to the items M.
Lastly, the microwave oven 100 can be provided with infrared radiation emitters, laser sources, electron sources, plasma sources, radiofrequency sources, combustion groups of gases or liquids or other heating systems of known type, able to add to the heating of the item M.

In particular, the microwave emitting system 100 can comprise injection means of at least an ionisable gas internally of the wave guide 30.

For example, the injection means comprise at least a nozzle (not illustrated) fixed to at least a wall of the tubular body 31, in which the dispensing mouth of the nozzle opens into the tubular body.

The nozzle is also in communication with a supply circuit of the ionisable gas.

In the light of the foregoing, the functioning of the microwave emitting system 10 and the microwave oven 100 is as follows.

Each microwave emitting system 10, when the magnetron 20 is electrically supplied, generates a microwave beam which crosses the wave guide 30 and is emitted through the slot 34.

At the same time as the electrical supply of the magnetron 20, a system is activated for variation of the configuration of the electromagnetic field relating to the microwave beam emitted from the slot 34.

In practice, the variation of the operating frequency of the magnetron 20 can be commanded during the step of electrical supply to the magnetron 20, in this way varying the electromagnetic field caused by the microwave beam internally of the treatment chamber 110, i.e. downstream of the slot 34.

Alternatively or additionally to this the actuator means 50 can be activated such as to command the alternating motion of the short circuit 42, according to a predetermined law of motion, during the step of electrical supply to the magnetron 20.

The microwave oven 100 can be programmed such that each microwave emitting system 10 is substantially independent of the others.
Microwave emitting systems 10 that are different to one another can also be present in a single microwave oven 100, for example of the above-described type according to the first, second and third embodiments.

The invention as it is conceived is susceptible to numerous modifications and variants, all falling within the inventive concept.

Further, all the details can be substituted by other technically-equivalent elements.

In practice the materials used, as well as the contingent forms and dimensions, can be any according to needs without forsaking the protective scope of the following claims.
CLAIMS

1. A microwave emitting system (10) which comprises
- a source of microwaves (20),
- a longitudinal wave guide (30) connected at a first end (31) to the source
  such as to receive the microwaves generated thereby and provided with a
  slot (34) from which the microwaves are radiated,
- a short circuit (42) slidably associated to a second end (312) of the wave
  guide and mobile such as to vary a length of the wave guide (30), wherein
  the short circuit (42) is mobile in alternating motion between a neared and
  distanced position to and from the second end of the wave guide (30) during
  emission of microwaves by the source of microwaves (20) and
- actuating means (50) associated to the short circuit (42) and able to move
  the short circuit (42) alternatively between the neared position and the
  distanced position
  characterised in that it comprises at least a control unit operatively connected
  to the actuator means (50) and configured such as to command activation of
  the actuator means continuously or intermittently-continuously during
  emission of microwaves by the source of microwaves (20).

2. The emitting system (10) of claim 1, wherein the actuator means (50)
comprise at least an invertible electric motor (51) connected to transformation
means (51-514) from rotary motion of the drive shaft (510) of the electric
motor (51) into a translating motion of the short circuit (42).

3. The emitting system (10) of claim 1, wherein the actuator means (50)
comprise at least a double-acting jack (52) on a mobile stem (521) of which
the short circuit (42) is fixed.

4. The emitting system (10) of claim 1, wherein the wave guide (30)
comprises a hollow tubular body (31) having a substantially quadrangular
section and a straight longitudinal axis (A), provided with a single elongate
slot (34) realized on one of the walls of the tubular body (31) and arranged
with a longitudinal axis (B) thereof substantially parallel to the central
longitudinal axis (A) of the wave guide (30) and offset with respect thereto.
5. The emitting system (10) of claim 4, wherein the slot (34) exhibits a
straight longitudinal axis (B).
6. The emitting system (10) of claim 4, wherein the slot (34) exhibits a
longitudinal axis (B) that is substantially curved.
7. The emitting system (10) of claim 6, wherein the slot (34) exhibits a
longitudinal axis (B) that has a substantially corrugated extension.
8. The emitting system (10) of claim 4, wherein the size of the slot (34)
varies along a length thereof.
9. The emitting system (10) of claim 1, wherein impedance adjusting
means (33) are interposed between the source of microwaves (20) and the
wave guide (30).
10. A microwave oven (100) comprising:
  - at least a treatment chamber (110) delimited by walls (111, 112) able
to internally contain electromagnetic radiation,
  - at least an emitting system of microwaves (10), according to one or
more of claims from 1 to 9, fixed to at least one of the walls (111, 112)
in such a way as to emit a beam of microwaves internally of the
treatment chamber (110).
11. The oven (100) of claim 10, characterised in that it comprises a plurality
of the emitter systems of microwaves (10) fixed to at least one of the walls
(111, 112) of the treatment chamber (110).
12. The oven (100) of claim 10 or 11, characterised in that it comprises a
plurality of treatment chambers (110) flanked to and communicating with one
another, able to overall define a longitudinal treatment chamber, and
transport means (120) of manufactured items (M) to be heated along the
longitudinal channel.

13. A functioning method of a microwave emitting system (10), according to one or more of claims from 1 to 9, which comprises a step of electrically supplying the source of microwaves (20) such as to create a beam of microwaves which crosses the wave guide (30) and is emitted through the slot (34), characterised in that it comprises a step of commanding a variation of the configuration of the electromagnetic field relative to the beam of microwaves emitted by the slot (34) continuously during the step of electrically supplying the source of microwaves (20) wherein the step of commanding the variation of the electromagnetic field is achieved by means of commanding the movement of the short circuit (42) during the step of electrically supplying the source of microwaves (20).

14. The method of claim 13, wherein the step of commanding the variation of the electromagnetic field is done by commanding the continuous variation of the operating frequency of the source of microwaves (20) during the step of electrically supplying the source of microwaves.
INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER
INV. H05B6/70 H05B6/64 H05B6/78
ADD.

B. FIELDS SEARCHED
Minimum documentation searched (classification system followed by classification symbols)
H05B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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Further documents are listed in the continuation of box C. See patent family annex.

Date of the actual completion of the international search: 13 June 2014
Date of mailing of the international search report: 03/07/2014

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Authorized officer: Garcia Congosto, M
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