

# Introducing the SmartMicrowave™

Automating the  
Microwave Oven

By Klos Technologies, Inc.

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# Introducing the SmartMicrowave™

- Features of the SmartMicrowave™:
  - Helps people with various limitations to use a microwave effectively and safely without assistance
  - Conveys instructions by voice – no reading necessary
  - Every food product already has a unique UPC barcode
  - No direct involvement of product manufacturer is required, but is encouraged
  - Supports a “learning” mode for products that are not in the database
  - Cooking instructions automatically adjusted to microwave power
  - May be updated via the Internet
  - Language selectable

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- How it works:
  - The user scans the UPC barcode from the product's packaging using the reader on microwave oven
  - The microwave oven speaks the product name and instructions to the user (“remove tray from package; cut slit in film; place tray into microwave oven and close door”)
  - The microwave oven automatically sets power and timer and starts cooking when the user closes door
  - The microwave oven alerts and instructs the user verbally at various stages of the cooking process

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- Who can benefit from these capabilities?
  - Elderly people who are not comfortable with programming a microwave oven
  - Blind and visually impaired people who cannot read the instructions on the product packaging
  - Special needs people (autism, brain injured, ADHD, etc.)
  - Parents who prefer the oven not be manually programmed by their young children
  - Anyone who doesn't want to read the instructions on the package and program the microwave oven
  - Anyone that can not read the printed language

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- Potential markets (United States of America)
  - 39 million are blind and 246 million have low vision
    - <http://www.who.int/mediacentre/factsheets/fs282/en/>
  - 46million people are age 65 and older
    - [http://www.agid.acl.gov/DataGlance/Pop\\_State/](http://www.agid.acl.gov/DataGlance/Pop_State/)
  - 32 million people can't read at a functional level
    - <http://www.statisticbrain.com/number-of-american-adults-who-cant-read/>
  - 25.6 million people speak English less than well
    - <http://www.washingtonexaminer.com/record-63.2-million-non-english-speaking-residents-surge-in-arabic-chinese-spanish/article/2573476>

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- Technology requirements - the microwave oven already has a microprocessor for controlling the timer and various operations of the microwave oven. The following components will need to be added:
  - A bar code reader
  - A speaker
  - A storage device for the database of instructions
  - An upgraded microprocessor
  - Optionally, a WiFi device can be added to access the Internet for updates



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- The database will be made up of all known products based on their UPC barcode and will include the name of the manufacturer, the name of the product, and the instructions for the SmartMicrowave™ to follow to prepare the product. May also include additional information, including ingredients, nutritional information or more.
- The database can be created without the manufacturer's participation. Manufacturers will be encouraged to support the database so that their products are fully supported for all their customers in a complete and timely manner.

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Feature comparison of similar products (Scan-to-cook and/or Alexa based)

	SmartMicrowave™	Whirlpool Scan-To-Cook	GE Scan-To-Cook	AmazonBasics Microwave
Standalone	Yes	No	No	No
MSRP	Depends on model	\$639.00 - \$869.00	\$139.99	\$59.99
Requires Internet	No	Yes	Yes	Yes
Scan-To-Cook requires a smartphone	No	Yes	Yes	Not available
Alexa Support	Depends on model	Yes	Yes	Yes
Google Assistant	Depends on model	Yes	No	No
"Learning" capability	Yes	No	No	No
Power / Capacity	Depends on model	1100 watts / 1.9 cu. Ft.	900 watts / .9 cu. Ft.	700W / 0.7 cu. Ft.

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## Example product encoding



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## Example product encoding



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# The SmartMicrowave™

[description]

UPC 717854105729

brand "Michelina's"

product "Cheese manicotti"

[steps]

say "Lift cover of lid to vent. Do not fully remove cover"

say "Place in center of microwave and close the door"

wait doorclose

power 100

timer 210

start

wait timer

say "Remove tray from microwave oven"

wait dooropen

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```
say "Open lid. Spoon sauce over manicotti."  
say "Recover and return tray back to microwave oven."  
wait doorclose  
power 100  
timer 60  
start  
wait timer  
say "Letting stand for 1 minute"  
power 0  
timer 60  
start  
wait timer  
say "Remove lid. Cooking complete."  
done
```

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- United States Patent Number 9,436,683

<http://www.smartmicrowave.net/SmartMicrowavePatent.pdf>



US009436683B2

(12) **United States Patent**  
Klos et al.

(10) **Patent No.:** US 9,436,683 B2  
(45) **Date of Patent:** Sep. 6, 2016

(54) **METHODS AND SYSTEMS OF ASSISTIVE FOOD PREPARATION**

(58) **Field of Classification Search**  
USPC ..... 235/375  
See application file for complete search history.

(71) Applicants: **Patrick Klos**, Bedford, NH (US);  
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(56) **References Cited**

(72) Inventors: **Patrick Klos**, Bedford, NH (US);  
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U.S. PATENT DOCUMENTS

(\*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 244 days.

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(21) Appl. No.: 14/095,943

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Primary Examiner — Michael G Lee

Assistant Examiner — David Tardif

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Robert A. Gurr

**Related U.S. Application Data**  
(60) Provisional application No. 61/732,503, filed on Dec. 3, 2012.

(57) **ABSTRACT**

(51) **Int. Cl.**  
G06F 17/30 (2006.01)  
G06Q 10/06 (2012.01)

An assistive food preparation system and method configured to match a code with at least one signal within a database for facilitating food preparation and transmit the signal associated with the numerical code for receipt by a user seeking food preparation assistance.

(52) **U.S. Cl.**  
CPC ..... G06F 17/30 (2013.01); G06Q 10/06 (2013.01)

13 Claims, 3 Drawing Sheets

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# The SmartMicrowave™

- Requirements of the Microwave Manufacturers
  - Basic Unit: Minimal cost - just add a slot to support a third-party SmartMicrowave™ Module
  - Complete Unit: Integrated into the microwave
    - Retail cost differential should be \$40.00 or less per microwave in production (based upon the premise that a tablet computer has far more functionality than needed and it currently sells for \$40.00 retail)
    - System: 1GHz Atom or ARM, 1 GB RAM, 8GB Flash, 802.11 module, camera, speaker

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# The SmartMicrowave™

- Benefits to the Food Manufacturers
  - Cooking instructions kept up to date
  - Language selection opens products up to more people
  - Potential data analysis for Internet connected SmartMicrowaves:
    - Scan data: scans, selections, times, location...
    - Can offer coupons to customers as appropriate
    - Demographic data

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# The SmartMicrowave™

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