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ADAPTIVE TOASTING DEVICE TO THE TYPE OF BREAD

Patent
ES2735313

Code

INDUS_UAH_04

Application areas

- Industrial technologies
- Agrofood industry



Type of Collaboration

- Manufacturing agreement
- Franchise agency agreement
- License agreement

Main Researchers

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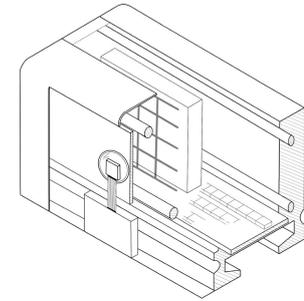
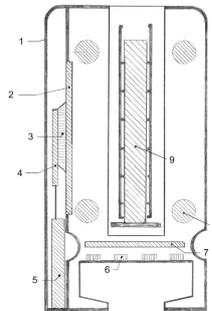
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ABSTRACT

Adaptive roasting device that changes according to the type of food consisting of an artificial vision perception system composed of an insulating glass window, a wide-angle lens, a low-cost color sensor camera and a homogeneous illumination system, itself consisting of insulating glass and an illumination system. The images collected by the sensing system are processed in a microcontroller capable of detecting the food and its color tone constantly in an intuitive way, ejecting it from the toasting chamber when the toasting tone set by the user through the toasting tone selection interface is reached.

Traditional bread toasting devices have a timer to regulate the toast browning shade of the toast. It is tricky for the user to determine the shade to be obtained since it is common to find different sliced bread that require different toasting strengths and toasting times.

For these reasons, the need arises to propose a substantial improvement in the electric toaster's original design. The proposed invention consists of a device that prompts the user to determine the desired shade of toast in food through a shade selection inter-face. This device can automatically detect the slice of bread and eject it when the toast reaches the toast shade selected by the user.

Thanks to the device described in the present invention, a very efficient and low-cost sensing system is available, with a much higher resolution of the toast shade than can be provided by photodiode-based systems or the like.

ADVANTAGES AND INNOVATIONS

- The perception system can analyze the toastiness of the entire surface of the bread rather than at a single point described in other patents.
- The system uses a machine vision-based perception system comprised of a low-cost color sensor camera instead of LDR sensors proposed in other patents.
- The system is entirely autonomous; there is no need to reconfigure different roasting times beforehand.
- In addition to identifying the inserted slice of bread and its type to adjust the toasting settings to the optimal ones, the system can monitor how the toasting evolves and stop it at the user's desired point.
- The user experience is entirely redesigned by introducing a toast color selector instead of time or power numbers.