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Improving the process of long products cutting by disc knife

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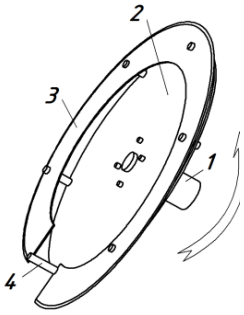
Improving the process performed on the basis of the analysis of contemporary articles from scientific journals and patents that belong to the world's leading producers of cutting equipment.

There are several types of cutting devices with circular knives for cutting long food. For slicing baguettes using a device with a planetary motion disk blade. Disadvantage - a complex structure of the planetary gear.

For gastronomic products is used the cutting equipment in which coulter has a round shape which is attached to movable or immovable axis and supply of the product by hand or by additional mechanisms. The disadvantage is manual product feeding or the need for feeder, insufficient safety.

The cutting mechanism for cutting long rusks products, which consists of a table that provides vibrational motion-arms, which fixed band saw. The disadvantage is the need for a device for supplying the product. The product moves in curvilinear cutting zone, and the surface is uneven cut.



Spiral knife:
1 - shaft, 2 – drive, 3 - cutting edge, 4 - finger

A common disadvantage of these designs - the product is deformed when cutting without stopping during the passage of the knife and knife between surfaces and the product arise efforts friction and adhesion to overcome them consumes additional energy product on the cut surface is ground, destroyed and formed crumbs.

To address the shortcomings proposes to improve the design of disk knife. Knife has a variable diameter, minimum diameter is equal to the height difference of the product is cut and made in the form of one or more spirals, axial displacement which the plane of rotation of the disk equal to the thickness of a piece of the product. It allows to capture product that is cut while moving and slicing it. Design simplifies by eliminating the feeding mechanisms or similar product manual operations. The product is moved to the feeding direction simultaneously with the cutting edge without interruption and product is not deformed during the passage of the knife.