

AUTOMATIZED SYSTEM FOR THERMAL TREATMENT OF BOILED MEAT PRODUCTS WITHOUT CASINGS

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During the last 10-15 years different methods and machines for the production of sausages without casings have been invented in some countries. The basic moment in that production is the thermal treatment of meat sources, during which different heat carriers are used.

A line for the production of sausages in block cassettes with 10 square forms 82x82 mm /, 900 mm long, has been designed in Hungary. There exists the ability to change their places according the technological process at the moment: filling, heat treatment, cooling etc, by boiling conducted with hot water. A similar method and a machine has been designed in the united scientific research institute for meat industry - Moscow. All the processes are carried on in a single line. It works at a high degree of automatization, which requires precise maintenance and high coefficient of exploiting spences. In this field definite results were reached in GDR.

The "firm " Peter Ecken and Sons Inc " produces boiledsausages without casings 100 mm in diameter or 100x100 mm in square form, 1000 mm long/1/.

The production of those meat articles aims not only to mechanization of the technological process and economy of artificial and natural casings, but also to accelerate the whole process of thermal treatment. An ability for accelerating that treatment is applying unconditional methods of heating - dielectric, inductiv, elektrocontact/3/. Similar methods are used successfully in the production of sausages thin in diameter. In GFR, USA and the USSR are designed automatized lines for

non-stop production of sausages, where by surface coagulation, using electrocontact heating, the sausage gets a definite form /4/.

The application of the listed methods and machines for the production of sausages thick in diameter has some shortcomings to a certain extent. The filling of the pulp in the separate forms and the next coming transport for heat treatment, cooling, emptying the forms and their cleaning is largely connected with the use of additional machines with complex construction and great use of metal. Which is more, they require highly qualified technicians. The effectivity of those machines is greatly affected by heat spences at high value.

Having in mind the well known methods and machines from literature for the production of sausages without casings, we laid the ziel of creating an automatized system for thermal treatment and the production of meat articles without casings, which could mechanize and automatize to an optimum the production process and at the same time to be with little consumption of metal and heat, also with high exploitation qualities and easy maintenance.

For the ziel in the institute for meat industry - Sofia, a successfully experimented machine was designed for the production of meat articles without casings. The scheme of the device is shown on fig.1. The principle of working is the following:

The ready is taken in a filling machine. It is possible to give the sausage circular, oval, square, triangular form. The thermal treatment is conducted in the very accepting machine. Hot water or steam is used according the kind of sausage. The end of the thermal treatment is controled by a censor, which by reaching the previously fixed temperature in the center of the sausage cuts the process. Another censor follows the filling of the accepting machine and gives command to the filling machine. The next operation - cooling is conducted in the accepting machine. The moving forwards of the ready product from the sector of thermal treatment to the sector of cooling is dun by the fresh pulp to be filled. After finishing cooling / using different cooling agents /the ready meat product is cut into pieces in dimensions as desired. At first it is dun in big pieces from 400 to 600 mm long by the special device for cutting. There follows a second cutting into small pieces. A combination with vacuum packing machine can be dun.

The new machine works in multicycle regime of heat and cold in a closed circle. The construction gives the chance to use the heat during cooling the sausage for some other purpose.

Technical characteristics:

Productivity of sausages \varnothing 100

3000 kg/h

Dimensions of the machine:

length 8000 mm

width 2000 mm

height 1800 mm

El. power 0,6 kW

The machine is operated by one man.

The ready sausage products can be put on a further technological treatment as oversmoking, rinsing in various mixtures of spices.

LITERATURE:

1. Некоторые вопросы развития техники и технологии мясной промышленности 1979, - ЦНИИТЭИ, Москва
2. Сафченко АФ., Алманах ВНИИМП, Москва, 1977
3. Современная технология переработки мяса и мясных продуктов с применением новых физических методов обработки, 1980, Информационный обзор Институт мясной и жировой промышленности, Варшава
4. Оборудование и аппараты для переработки продуктов убоя скота. Справочник изд. 1975, "Пищевая промышленность", Москва
5. Geipel G., Blüher G., Nitsche W., - ERFahrungen bei der PRODUCTION VON DARMLOSER BRÜHWURST IN PLASTFORMROHREN IM VEB DRESDEN FLEISCHKOMBINAT, "Fleisch", 1982, 8, 151. - 153

