

JUSTIFICATION OF THE DESIGN OF THE OM-1A MILK COOLER-PURIFIER

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Steamed milk has the optimal temperature for the reproduction of most microorganisms. Therefore, if it is not cooled in a timely manner, they multiply rapidly, which leads to an increase in acidity and souring of the milk. [1].

The OM-1A (Fig. 1) milk cooler-cleaner is designed for centrifugal cleaning and continuous cooling of milk. It consists of a centrifugal cleaner, a plate water cooler, hoses for milk and water. The centrifugal cleaner includes a cleaning drum, a receiving and discharging device, and a drive mechanism. The drum consists of a base, a cover, a plate holder, a plate pack, and a guide disk. The gap between the plates is 1 mm. [2].

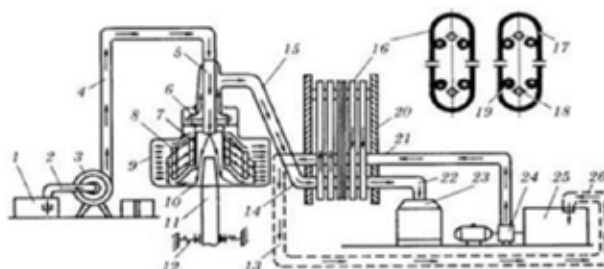


Figure 1 – Structural and functional diagram of the OM-1A milk purifier-cooler: 1 - milk container; 2 - pipe; 3 - milk pump; 4 - hose; 5 - milk tube; 6, 14 - purified milk pipes; 7 - guide disc; 8 - plate holder; 9 - cleaning drum; 10 - cover; 11 - base; 12 - spindle; 13 - spring support; 15, 18 - water pipes; 16 - chilled milk pipe; 17 - milk tank; 19 - water pump; 20 - cold water pipeline; 21 - plate; 22 - plates; 23 - transition hole; 24 - hole for the rod; 25 - rubber gasket; 26 – bath

The drive mechanism includes an electric motor, a gearbox, a vertical shaft (spindle), a horizontal shaft with a friction-centrifugal clutch, and a pulsator that controls the drum rotation speed. A plate cooler has a plate pack and two plates. Two rods pass through the holes in the plates and plates. Each plate has four process holes: two upper and two lower. The distribution plate installed inside the pack has only the two upper holes.

The working process of the purifier-cooler is as follows. Milk is fed into the purifier by a pump. From the receiving and discharging device, milk enters the purifier drum. Through the central milk tube and the plate holder channel, milk enters the space between the drum plate pack and the lid.

Under the action of centrifugal force, all impurities are separated from the milk and thrown to the drum cover, and the milk under the pressure of new portions rises up through the vertical channels between the plate holder and the drum cover. As the milk passes between the plates, it is additionally cleaned of impurities. The impurities slide off the plates and stick to the wall of the drum cover. The cleaned milk enters the cooler. The cooled milk exits through the pipe.

List of sources used.

1. Utility model patent 123161. Ukraine, IPC (2006): A23N 12/08 (2006.01), A23L 3/005 (2006.01), B01D 1/00, F26B 9/00, A23B 7/00, A23B 9/00, A01D 41/00. Purifier-cooler OM-1A. No. u201709431; appl. 26.09.2017; publ. 12.02.2018; Bull. No. 3/2018.

2. Yalpachyk V.F. Zagorko N.P., Palyanychka N.O., Budenko S.F., Samoychuk K.O., Kyurchev S.V., Verkholtantseva V.O., Oleksienko V.O., Tsib V.G. Technological equipment for processing livestock products: Laboratory workshop. Melitopol: Publishing house of Melitopol city printing house, 2017. – 274.

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