

**TECHNICAL SOLUTIONS FOR INCREASING
THE PRODUCTIVE LONGEVITY OF DAIRY COWS**

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Prolonging the productive longevity of dairy cows is an important issue in modern livestock production. Premature retirement of milk cows causes significant economic damage to the dairy cattle industry, which does not always pay off due to high animal productivity [1]. Based on our own long-term studies of the health status and productive qualities of Holstein cows in industrial technology [2], we developed a number of technical solutions aimed at increasing the economic use of dairy cattle.

The proposed construction of the installation for active mobility of animals [3] fits into the existing technology of livestock keeping. It allows to simultaneously solve that problem: the provision of physical metered loads (exercise) to animals and to ensure the natural deletion of the hoof horn from the soles of the hooves, thus avoiding the need for regular orthopedic limb treatments. This technical result is achieved due to the fact that the surface of the walking platform is divided into sectors with different abrasiveness of the surface, from a larger value to a smaller

one, taking into account the direction of the animal's fit (Fig. 1). The installation contains an annular platform (1) with a fence (2) and a baffle (3) installed on the site. The arena has a corridor (4) and a gate (5). The surface of the walking platform (1) is divided into sectors I, II, III, IV, having different abrasively of the surface, varying from a larger value (IV) to a smaller (I).

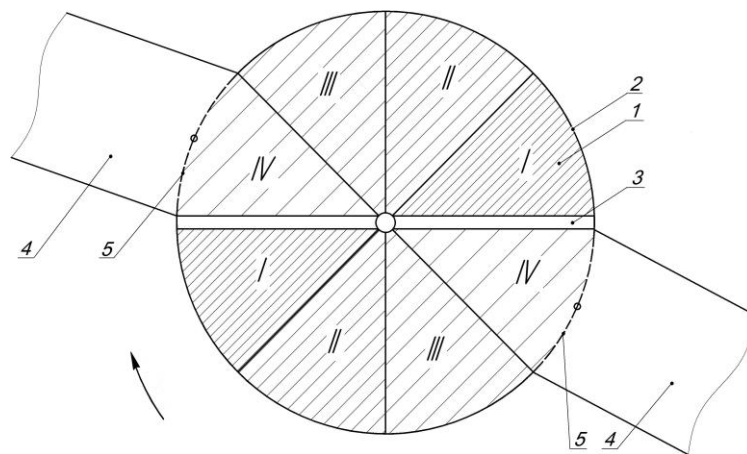


Fig. 1. Installation for active animal walks

The operation of the installation is carried out as follows. A group of animals is driven to the walking platform (1). In this case, the partition is installed in the center of the entrance gate (5) and the animals are distributed in both halves of the platform (1). After filling, the drive of the rotary partition (3) is switched on and the movement of the animals begins. It is desirable to maintain the condition of uniform filling of both halves of the platform. Experts, knowing the normal size of the horny wall, can easily regulate the growth of the hoof horn by setting the desired frequency of running the animals through the installation. Application of the proposed technical solution as one of the methods of preventive prophylaxis will help to ensure simultaneous carrying out of the active dosage exercise and regulation of the degree of deletion of the hoof horn of animals. This makes it possible to improve the herd of animals and prolong the period of their productive use.

Our studies indicate, that in the warm season in the central part of Ukraine there is a high probability of occurrence of heat stress in cows. This can lead to significant loss of milk and poor animal health. To normalize the microclimate in a room during the heat period, it is quite effective to use simultaneously active ventilation with air humidification. The proposed technical solution [4] allows us to regulate the temperature regime and maintain the relative humidity of air in the cattle-breeding premises. This is achieved by creating a water mist from small droplets with a normalized supply of water to the animal zone, and adjusting the time between humidification cycles. A distinctive feature of this device is that the nozzles are placed on a horizontal bar with the possibility of changing their height above the

floor with brackets. They are equipped with electromagnetic valves with an automatic control unit for their operation. Using this device can be effective in the premises for animals of different age and height.

The device (Fig. 2) consists of a circulating water circuit (1), a spray unit (2) with injectors (3), which is equipped with solenoid valves (not shown) and control brackets (4), which are mounted on vertical posts (5) in the corresponding position above the floor surface. The regulation of the water supply and its quantity, as well as the time between humidification cycles, is carried out with the help of the automatic control unit (6).

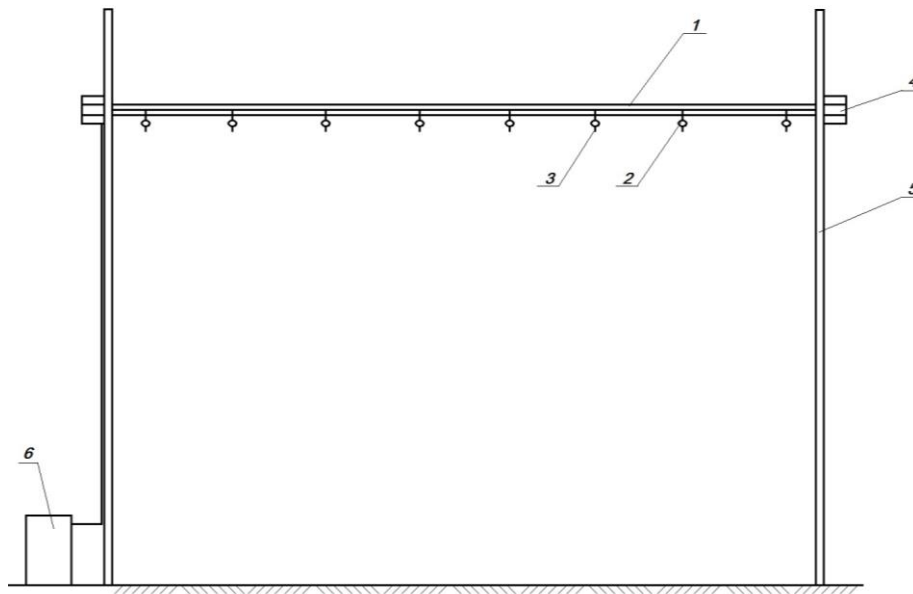


Fig. 2. An apparatus for humidifying and cooling air into the livestock house

The device operates as follows. In hot periods of animal maintenance, when there is a need to reduce the temperature of the air, adjust the height of the brackets (4) above the floor. Water from the main line is fed to the circulation circuit (1), spray units (2). Electro-magnetic valves started or stop the flow of water to the injectors (3) using the automatic control unit (6). When high-pressure water exits, a micro drop mist is formed from the nozzles (droplet sizes of up to 30 microns), which eliminates the risk of wetting the litter material. Due to the evaporation of parts of the water, the cattle-breeding premises are roughly cooled to 4...10 ° C. There is also the possibility of using a set of equipment for disinfection of large-sized premises of an industrial complex [5].

Thus, the technical solutions proposed by the staff of the Dnepropetrovsk State Agrarian and Economic University can be effectively used to maintain the health of the dairy herd of cows and prolong their productive longevity in industrial technology.

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