Creation of the newest structures of the inclined bucket elevators through the modernization of the existing ones

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New designs of buckets with the inclined bucket elevators, which have buckets with movable bottoms of different shapes, are developed. High efficiency of such structures’ work is theoretically justified and practically confirmed.

Elevators are used in metallurgy, machine building, chemical production, in concentrating factories and grain storage facilities, in enterprises of various industries, in bases, stores, warehouses, and in particular, in the form of mobile shelf stand for products’ storage and delivery.


The design of buckets with movable elements in the form of bottoms of various shapes, combined with selected parameters of the elevator, proposed in the article, would significantly improve the quality of material unloading, which would help reduce the energy overexpenditure, improve the quality of transported material, and improve working conditions of maintenance personnel. Therefore, this article, devoted to the improvement of productivity of the inclined bucket elevators, is very relevant.

These investigations can also be used for the improvement of the efficiency of any elevator-type loading and unloading machinery.

Thus, movable element of the ladle is the bottom of a certain shape (abbreviated IF or PF) and additional devices to them are small design changes introduced into the elevator design that will allow the following: increase bucket volume due to depressions in the middle part, which will improve unloading material from the ladle; increase bucket filling ratio; to influence the material from the rotation of its movable bottom, leading the material into motion; increase the unloading path of the recessed part with respect to the additional device; reduce the chance of material sticking in the deepest part of the bucket, without changing the bucket pitch fixed on chains, and thus increase productivity of the elevator plant.

Keywords: modernization, elevator, bucket with a semicircular movable bottom (SM), bucket with a curved movable bottom (CM).