

Troubleshooting Methods crane Trolley

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Abstract: In the article, the analysis of the working processes of the cargo carts showed that as a result of the operation of the cranes, due to a sharp change in the height of the cross-section of the beam in all directions, tensile furnaces appear. A constructive solution to this problem is proposed. The problem was solved by developing wheel blocks and installing them on the crane's metal structures. At the same time, the development of holes in the wheel blocks in different directions allows it to be placed in different versions in the metal structure of the crane.

Keywords: Crane trolley, wheel block, tension point, crane-box.

Introduction

Analysis of crane defects when using cranes in production processes [1,2] showed that in existing metal structures in production, a change in the height of the cross-section of the cross-section leads to the formation of loads in different directions where it is. not great. In the process of fastening the cargo carriage of the overhead crane to the metal structure of the crane [3], the installation of the bushing on the curved transitions of the upper plate presents great difficulties. The resulting gaps are filled with additional melting and metal welding, which leads to the appearance of welding defects. The design of the joints of fastening the wheels to the metal structure of the crane does not allow the creation of high-quality welded seams.

Main Part

The stress concentration in the node under consideration is reduced due to the use of walking devices, including cylindrical bushings. This type of box is flanged and interacts with the beam webs over a large area. This leads to an even distribution of stress (Figure 1).

Wheel block designs are common in overhead crane construction (Figure 2). The wheel unit is a separate assembly unit consisting of a housing 1 and rolling bearings 2 and an axle 3 on which the steering wheel is mounted.

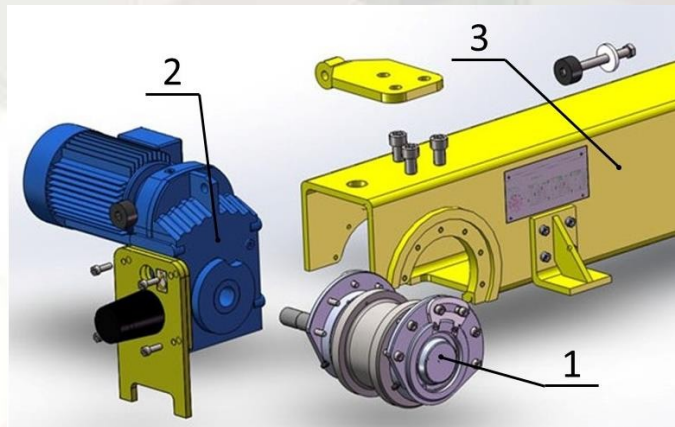


Figure 1. Arrangement of a cylindrical bushing on a longitudinal girder of an overhead crane: 1 - cylindrical box; 2 - gear motor; 3-longitudinal beam

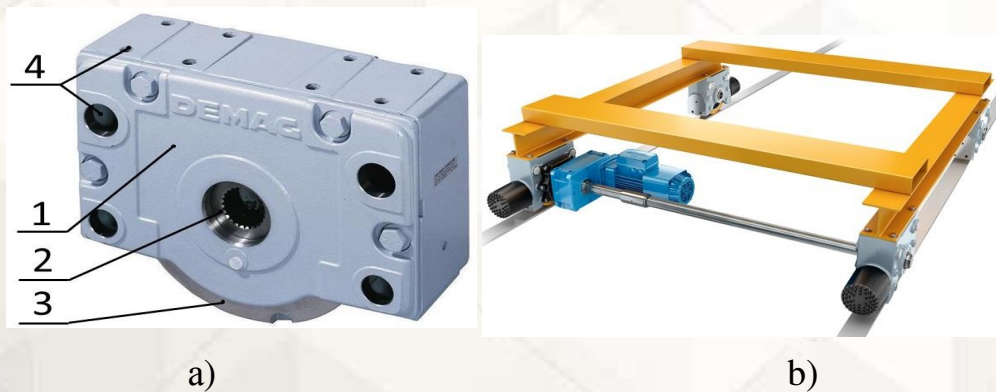


Figure 2. Wheel blocks used in cargo carts: a - general view of the wheel unit; b - fastening the wheel block to the metal structure (1 - housing; 2 - bearing assembly; 3 - wheel; 4 - mounting hole)

There are design solutions with the direct installation of a geared motor on the wheel unit. One of the main advantages of wheel units is their versatility.

The presence of a large number of holes on the surface of the body allows the unit to be attached to the metal structure of the cargo trolley in various versions (Fig. 3).



Figure 3. Variants of fastening wheel blocks to metal structures of transport vehicles

Conclusion

As a result of the analysis, it is possible to derive design solutions that are characteristic of many modern crane trolleys.

1. Speeds up the assembly process and simplifies installation. In addition, the modular design allows changing its basic parameters by quickly replacing individual modules.
2. Cylindrical bushings are common. Their use reduces the stress concentration that occurs in the upper part of the axle beam.

REFERENCES:

1. Goncharov, K.A., (2017). Analysis of defects in metal structures of cargo carts of bridge cranes, Problems of research of systems and means of road transport. *Collection of materials Intern. part-time scientific technical conference*. Tula: Publishing house of Tula State University, 2: 309-315.
2. Zamuruev, N.V., (2016). Causes of defects in metal structures of bridge and gantry cranes, *Innovative science*, (2-3)79-83.
3. Rustamov, K., Komilov, S., Kudaybergenov, M., Shermatov, S., & Xudoyqulov, S. (2021). Experimental study of hydraulic equipment operation process. In *E3S Web of Conferences* (Vol. 264, p. 02026). EDP Sciences.
4. Alimukhamedov, S. P., Sharifhodjaeva, H. A., Rustamov, K. J., & Abdukarimov, A. (2020). Structural and kinematic analysis of gear and lever differential mechanisms by symmetric movement of rotation centers for driving and slave gear wheels. *International Journal of Psychosocial Rehabilitation*, 24(1), 1573-1581.
5. Juraboevich, R. K. (2020). Technical solutions and experiment to create a multipurpose machine. *International Journal of Scientific and Technology Research*, 9(3), 2007-2013.