At pos. XII, the slide is placed on the movable inspection table 21 by manipulator 20 and a worker uses a gage to check for parallelism of the stone relative to the sliding surface of the slide. After this, the slide is set in the body of the gate by the manipulator and the stool is moved to pos. XIII. The operator presses the appropriate button to start the magnetic transporter 6. The transporter is moved to the storage area 5, removes the top frame from the same storage site where the given batch of gates is stored, and places the frame above the slide.

At pos. XIV, a worker uses the wrench 22 to twist the nut a certain amount on the bolts (stored in the containers on the stool) and sends the stool to test stand 23. Here, the quality of assembly of the gate is checked. The stool is then moved by transporter 24 to pos. XVI. From the latter position, the gate is set on a cart by the jib crane for delivery to the shop. The empty stool is sent to pos. II and is used to assemble the next gate.

The line has made it possible to maximize mechanization of slide-gate assembly, increased productivity by 30%, ensured continuous production, significantly improved working conditions, and reduced losses from rejected metal during teeming operations.

ECONOMICAL METHOD OF REPAIRING THE BRIDGE OF A HOT-METAL CHARGING CRANE

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The "Zaporozhstal" combine has adopted several technical and organizational measures which have significantly reduced accidents with hot-metal charging cranes. The experience accumulated in the operation of such cranes has allowed the combine to develop a simple and reliable method of repairing damaged crane bridges. Previously, depending on the extent and location of the damage and the experience of the repair personnel, the girders of the bridge were removed and repaired on the shop floor on a special platform. Other courses of action often taken involved cutting out the damaged section and welding a new section with the girder

Fig. 1. Diagram of the load-bearing structures for repair of the bridge girders.

in place or replacement of the damaged girder by a new girder. All of these repairs required considerable time and equipment and led to frequent losses of output. The crane was inoperable during the preparation of a new girder, and its duties had to be assumed by adjacent cranes.

When the girders are installed, the loads on them are reduced by using columns supported by the working platform. This technique, commonly used in repairing crane bridges, creates obstructions for other transport operations in the shop.

Described below is an economical method of repairing damaged girders of the bridge of the auxiliary trolley of a hot-metal charging crane with a capacity of 125 ± 30 tons. The method has two distinctive features: the bearing structures are secured to the bridge girders of the main trolley; the repair weld is designed so as to permit the damaged section of the girder to be welded with the required accuracy without overhead welds and without removal of the girder while still meeting the requirements of Gosgortekhnadzor (State Committee of the Council of Ministers for Supervision of Industrial Safety and Mining Inspection) in regard to methods of inspection. Figure 1 shows a diagram of the bending of the bridge girders of the auxiliary trolley (Fig. 1a) and the placement of the load-bearing structures for repairing these girders (Fig. 1b).

The repair was made from the runway girders. The crane was positioned above opposite columns under the runway and was made level by using gibbs and a levelling instrument. The levelness of the crane was checked at four different elevations. The crane was then fixed in position on the runways by welded stops, while both trolleys of the crane — the main trolley 1 and the auxiliary trolley 2 — were placed in one of their extreme positions.

The bearing structures 5 were four rods and two levels of beams: the top beams rested on the bridge girders of the main trolley, while the bottom beams formed a platform with a railing 6. Hydraulic jacks 7 were used to rest the deformed girders 4 of the auxiliary trolley on the platform.

At the beginning of the repair, the damaged girders were freed of additional constraints — the trolleys and rails were cut off at the damage site. This site was then first cut from below with an oxy-acetylene torch, the cut being made to within 30-50 mm of the top chord. The girder was then lowered by the jacks to the design position (with allowance for bridge chamber). Here, the top chord was not dismantled, so steps were taken to keep it from being damaged.

Figure 2 shows the repair joint on the girder. The deformed parts of the bottom chord and the webs of the bridge girder 4 were cut out and lateral inserts 1 were butt-welded to the