

STUDIES AND RESEARCHES ON THE RECOVERY OF ANTIFRICTION ALLOYS FROM BIMETALLIC PIECES

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Abstract: recovery of antifriction alloys from bimetallic pieces through melting with high frequency currents, using the equipment and sov needed for executing these pieces.

Keywords: bimetal, melting with high frequency currents

1. THEORETICAL CONSIDERATIONS

This research refers to a procedure and device for the recovery of antifriction alloys from bimetallic pieces. As a result of expanding the use of the bimetallic pieces there has appeared the problem related to the recovery of the antifriction alloys from the used pieces as well as from the menders. Some markers are rejected even from the casting stage, taking into consideration some faults due to steel support cracking (rolling defects), the excentricity of the deposited layer, inclusions of nonmetalical materials, segregations, freezing cracks.

These alloys' recovery is possible through introducing the bimetallic pieces in the alloy bath of the antifriction material.

Following the research it has been found that this method had several inconveniences:

- it requires an alloy bath with the same composition as the antifriction alloy;
- there is the possibility of dissolving the steel support to a certain extent in the antifriction alloy bath, which up to certain concentration (above 0.2% fe) deteriorates the antifriction properties;
- the mentioned bath must be overheated;
- in the case of more pieces the overheating temperature must be maintained;
- bath impurity if the pieces are not clean.

Another possibility tested for the recovery of antifriction alloys from bimetallic pieces was through cutting (their turning from tubular pieces), but we found out at this method the following disadvantages:

- the recovered material is obtained as scrapings;
- it does not allow complete recovery (see the interface);
- it is possible that the material from the steel support will remain in the antifriction alloy if the two materials are not perfectly concentrical;

- high manual labor for the recovery works and getting ready for using.

2. THE PROPOSED TECHNOLOGY, CONSTRUCTIVE SOLUTIONS

Following this research, we reached the conclusion that the most certain and cheapest recovery variant is the recovery of antifriction alloy from the steel support by melting with high frequency currents. In this case the melted alloy flows into a cast-iron chill provided with semicylindrical slots.

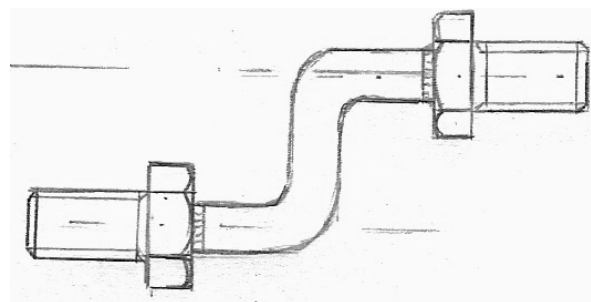
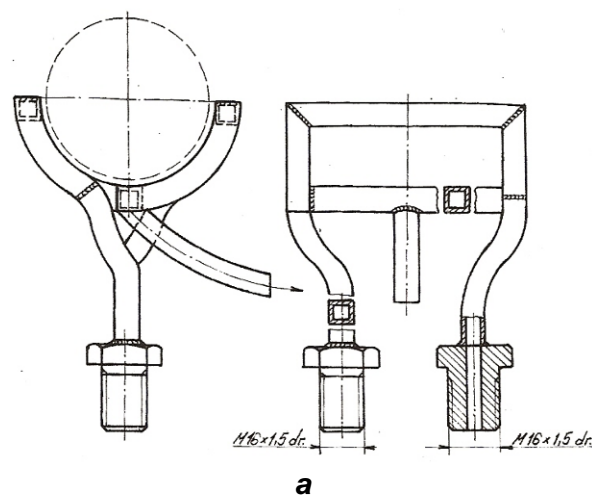


Fig.1.

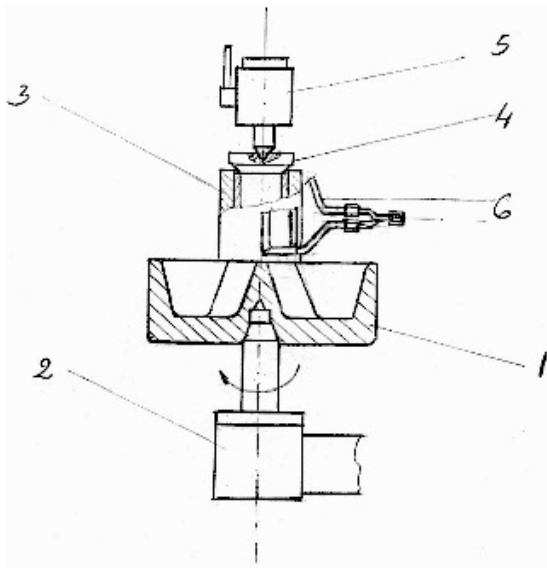


Fig.2.

The mentioned chill 1 (fig.2.) will be fixed on the (engine) driving 2 device used for the spindles hardening (fig.3). For melting, there will be used the same types of inductors which were used for the execution of the bimetallic bearings, after these have been provided with an intermediary distance piece (fig.1.b) between the active part (fig.1.a) and the conducting part, which allows the changing of the operating position from the horizontal position to the vertical position.



Fig.3. Workplace no.2 of heating installation IMCA-2-110E.



Fig.4. Universal machine for chill by induction type IMCA

On the chill, on this support the bimetallic bearing -3 it is fixed, the centering it is made through the flanges -4 utilized for the centering and driving of the bearings in the case of the bimetallic pieces, with the help of the fixing cone -5 of the driving device. The

piece, in the vertical position, is rotated in the inductor -6 at small speed, which allows the melted antifriction alloy's flowing in the chill painted with the B1 retraction paint according to the fig.2.

3. CONCLUSIONS

Following our research, by accomplishing this work there has been obtained the following advantages:

- ✓ the recovery is not conditioned by the alloy quantity, as there it is not required the alloy bath;
- ✓ the complete recovery of the antifriction alloy from bimetallic pieces;
- ✓ it is eliminated the alloy's impurity with other materials;
- ✓ there is the possibility of alloys recovery based on qualities, as well as the possibility of individual recovery;
- ✓ reducing the manual labour
- ✓ consumption at recovery;
- ✓ device of simple construction and easy to be accomplished.

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