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Report No. 342/10
Watertown Arsenal December 7, 1939

BROKEN CLAMPS - HIGH FREQUENCY

5000 Lb. FURNACE - BLDG. 421 (Ex.O. 56)

Two clamps from the above furnace were submitted to ascertain the nature of failure and the quality of the brass composing the clamps. One clamp was badly covered with greenish salts (identified by laboratory as "C"), the other had only a small amount of corrosion deposit (identified by laboratory as "X").

Conclusions

1. Embrittlement was caused by strain corrosion by some corrosive agent.

2. Intergranular cracks (many) extended nearly two-thirds through the cross section of the clamp badly covered with corrosion deposits.

3. Intergranular cracks (few in number) extended nearly two-thirds through the cross section of the clamp which was only slightly covered by the corrosion deposits.

4. The brass was apparently of satisfactory quality - fairly clean, worked and annealed, (grain size about .045-090 mm. A.S.T.M. Standard).

5. There was considerable evidence of strain in the clamps (presence of slip lines) which might have been produced when the clamps were formed.

6. The illustration is representative of the cracks found in both clamps.

Respectfully submitted,

H. G. Carter,
Associate Metallurgist.

Typical Crack (Intergranular)