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O T T A W A March 3, 1945.

REPORT
of the
ORE DRESSING AND METALLURGICAL LABORATORIES.

Investigation No. 1803.

A Process for Acid Pickling Brass Castings
to Improve Their Appearance.

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Origin of Request and Object of Investigation:

On February 28, 1945, a verbal request was received from Mr. Wm. Bond, Foundry Manager, Ottawa Car and Aircraft Limited, Ottawa, Ontario, to supply him with a pickling process for improving the appearance of brass valve castings. The composition of the brass was given as:

	<u>Per Cent</u>
Tin -	4.40 to 4.75
Zinc -	3.25 to 3.75
Lead -	2.50 to 3.25
Copper -	Balance.

Two brass castings were supplied for the experimental work.

Proposed Process:

After a number of experiments the following procedure was found to give good results:

1. Dip the brass castings in water at ordinary temperatures, making sure that all parts of the surfaces become wet. A considerable number of the castings could be placed in a strong wire basket and dipped at the same time.
2. Allow excess water to drain away from the castings.
3. Dip the castings in a bath of the following composition (contained in an earthenware jar):

	<u>Parts by volume</u>
Sulphuric acid (specific gravity, 1.84) -	4
Nitric acid (specific gravity, 1.42) -	2
Water -	1

In making up the acid bath the best method is to add the nitric acid to the water and finally add the sulphuric acid. Allow the bath to cool to room temperature before beginning to dip the castings. Keep the castings in motion in the bath for about 15 seconds.

4. Rinse the castings thoroughly in clean running water until the desired appearance has become evident over the whole surface.
5. Dip the castings in clean hot water for a sufficient length of time so that, on removal, they will dry by themselves in the air.

This process not only improves the appearance of

(Proposed Process, cont'd) -

the castings but removes undesirable abrasive materials, such as sand and silicates, from the surface.

Remarks:

1. If it is desired to make the casting surfaces even more resistant to tarnishing it is quite possible that a more suitable process could be worked out. However, this would involve at least one extra step in the process.

2. Good ventilation is necessary in operating this process.

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