

UNITED STATES PATENT OFFICE

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ALLOY

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4 Claims. (Cl. 75—155)

My invention relates to novel brass alloys and to the working of the same and is especially concerned with the hot rolling of brass containing approximately 64% to 68% copper, balance substantially zinc, and especially about 64% copper and about 36% zinc.

It has heretofore been recognized that high brass containing approximately 64% to 68% copper and balance substantially all zinc can be hot rolled satisfactorily only if the lead content thereof is exceedingly low. For example, if such brass contains 0.02% lead, it may be hot rolled at any temperature between about 1500 degrees F. and about 1650 degrees F. With 0.1% lead, this temperature range of rolling is reduced to 1550 degrees F. to 1625 degrees F. while with 0.18% lead, there is no temperature above room temperature at which the said brass can be fully successfully rolled.

In accordance with my present invention, I have discovered that the addition of from about 1% to about 3% of manganese to brass containing approximately 64% to 68% copper and balance substantially all zinc permits a satisfactory range for hot rolling even when the lead content is as high as 0.35%. By the use of my invention, a suitable rolling range is from about 1450 degrees F. to about 1550 degrees F. This increase in hot rollability, by the addition of from 1% to 3% of manganese, is brought about without adversely affecting other physical properties of the brass.

In accordance with my invention, the use of 2% of manganese in a brass of the character hereinabove described results in the production of hot rolled sheets wherein the tensile strength is between 45,000 pounds and 50,000 pounds per square inch even though the lead content is between 0.15% and 0.35%. In addition, the elongation of such an alloy, made in accordance with my invention, is 58% in two inches in the hot rolled condition, which is substantially equal to the elongation of an alloy of 64% copper and 36% zinc and which is substantially free from lead or manganese.

The advantages which the practice of my invention brings about are several. In the first place, the hot rolling technique, which is a faster method of producing sheets, may be carried out without the necessity of using the highest purity

zinc in the manufacture of the alloy. In the second place, the hot rolling technique is not only cheaper than the cold rolling practice but, in addition, it enables economies in operation since it permits the use of ordinary spelter where the manganese is utilized to offset the difficulties brought about by the presence of the lead impurities present in the cheaper ordinary spelter.

In order to produce the most satisfactory results, I prefer to employ a high purity manganese in the practice of my invention, that is, a manganese having a purity of at least about 99.0%. I have found that electrolytic manganese having a purity of 99.9% is especially satisfactory and, therefore, its use represents the particularly preferred embodiment of my invention.

What I claim as new and desire to protect by Letters Patent of the United States is:

1. A hot rollable brass containing the following elements in substantially the indicated percentages by weight:

Copper	64 to 68
Lead	0.1 to 0.35
Manganese	1 to 3
Zinc	Balance

2. A hot rollable brass containing the following ingredients in substantially the following percentages by weight:

Copper	64 to 68
Lead	0.1 to 0.35
Electrolytic manganese	2
Zinc	Balance

3. A hot rollable brass containing the following elements in substantially the indicated percentages by weight:

Copper	64
Lead	0.1 to 0.35
Manganese	1 to 3
Zinc	Balance

4. A hot rollable brass containing the following elements in substantially the indicated percentages by weight:

Copper	64
Lead	0.1 to 0.35
Electrolytic manganese	2
Zinc	Balance

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