

UNITED STATES PATENT OFFICE.

HELEN L. MACKER, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN ALLOYS OR BELL-METALS.

Specification forming part of Letters Patent No. **130,814**, dated August 27, 1872; antedated August 20, 1872.

Specification describing a certain compound to be used in the manufacture of bells, and termed "An Improved Bell-Metal," invented by HELEN L. MACKER, of Boston, in the county of Suffolk and State of Massachusetts.

To prepare my compound melt one pound nickel; add six pounds copper; melt and cool; add two pounds zinc and one-half ounce aluminium; melt and cool; add, after melting the above, one-half ounce quicksilver and six pounds melted copper; or cool the above before adding the copper if thought best. In large bells fifty to a hundred per cent. nickel additional may be added, making the nickel one and one-half to two pounds, and in that proportion, instead of one pound, as above mentioned. To make the composition of a more deeply yellow color add a pound or so of zinc, or in that proportion.

My advantages over the common "bell-metal" are, first, this composition will not tarnish as much as will "bell-metal" generally, and the tarnish that does appear may be easily removed with a woollen rag without hard rubbing or scouring, as is now necessary; second, my composition, when manufactured into bells, produces a better vibration, and consequently a more satisfactory tone; third, bells made from this compound are less liable to crack with violent ringing, as the material is softer than ordinary "bell-metal;" fourth, a bell made from

this composition of the same size as a bell made of "bell-metal" weighs from twenty-five to fifty per cent. less than that made of "bell-metal," while the cost per pound of the two bells is about the same; hence my bell can be made cheaper in the same proportion.

The above-described method of mixing the ingredients is the best, probably, but not the only method. It may or may not be rigidly adhered to.

In order to render the compound above described somewhat harder and tougher I may vary it slightly by leaving out the second lot of six pounds copper and by reducing the quantity of zinc to one and one-half ounce, making the composition as follows: six pounds copper, one pound nickel, one-half ounce aluminium, one and one-half pound zinc, one-half ounce quicksilver. This modification will make it valuable where a tougher metal is needed, and perhaps for some other purposes besides making bells.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

The above-described compound, substantially as and for the purposes hereinbefore set forth.

HELEN L. MACKER.

Witnesses:

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