

UNITED STATES PATENT OFFICE.

RICHARD BURLEY, OF LONDON, ENGLAND.

IMPROVED MATERIAL FOR LINING THE BEARINGS OF SHAFTS, AXLES, &c.

Specification forming part of Letters Patent No. 44,583, dated October 4, 1864.

To all whom it may concern:

Be it known that I, RICHARD BURLEY, of the city of London, in the United Kingdom of Great Britain and Ireland, have invented a new and useful Improved Material for Forming or Lining the Bearings of Axles and Shafts and other Rubbing Parts of Machinery; and I do hereby declare that the following is a full and exact description thereof.

The nature of my invention consists in and has for its object an improved material for forming or lining the bearings of axles and shafts and other rubbing parts of machinery. Such being the object and nature of my invention, I will now proceed to describe the manner of carrying the same into effect.

To enable others skilled in the art to make and use my invention, I will proceed to describe the means of manufacturing my improved material, as follows:

In carrying my invention into practical effect I first take from thirty-two to forty parts of copper, then from two to seven parts of iron, then from fifteen to twenty parts of tin, then from one to two parts of sulphur, and from one-half part to one part of arsenic, and mix or combine them together in a crucible or any other suitable vessel by first fusing or melting the copper, then add the iron thereto, well mixing them together, then add the sulphur or the sulphur and arsenic, (as the case may be,) and again well mixing. Afterward add the tin, stirring the whole well together, and cast into ingots. I would here remark that as regards the use of sulphur I do not intend in all cases to employ it in the manufacture of my improved material. For example, in some cases it may be used as a flux to render the amalgamation of the metals or alloys more perfect. In other cases it may be used to render the alloy hard, the quantity of sulphur being varied in the proportions above stated, according to circumstances. I also employ the arsenic, either separately or in conjunction with the sulphur, for the same purposes as above stated for the use of sulphur, varying the proportions as above

stated. I use these materials to form my first alloy or hardening metal; but the above-named quantities may be varied to give this alloy the necessary degree of hardness according to the purpose for which the improved material or alloy is to be applied. This forms the first part of the process I employ in the manufacture of my improved material.

In conducting the second part of my process I take from eight to sixteen parts of the alloy or hardening metal above described and melt it in a crucible or other suitable vessel, and when melted I add thereto from seventy-six to one hundred and two parts of the best foreign spelter or zinc. When that is melted and mixed with the alloy or hardening metal above named I add thereto from twelve to eighteen parts of tin. The whole is then well mixed or combined together in order to make the improved material or alloy complete, then cast it in the usual manner into the various forms as required.

In practice I have found the manner of combination the most effective in preparing this improved material or alloy to first make the alloy or hardening metal as above described, and then to add the other parts thereto as described in the second part of my process, also above stated.

Having now fully described my invention and the manner of operation, I hereby declare that what I claim as my invention of an improved material for forming or lining the bearings of axles and shafts and other rubbing parts of machinery is—

The use of the metals, semi-metals, or alloys as above described, whether formed, mixed, or combined together by two separate processes, as above described, or by one process, as the same may be done.

London, 30th September, 1862.

RD. BURLEY.

Witnesses:

WILLIAM JEWETT,
10 Baringhall St., London.

GEORGE F. WARREN,
No. 2 George Yard, Lombard Street, London.