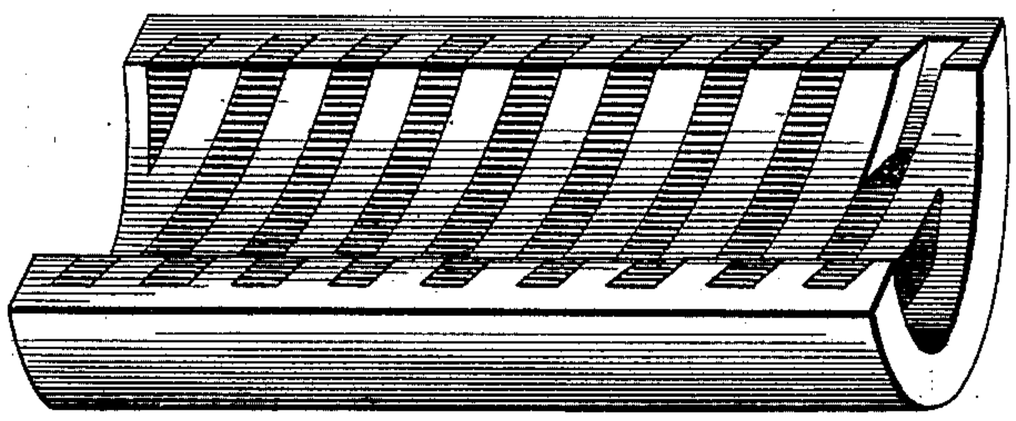
(No Model.)

J. SMALLEY, Dec'd.

W. W. SMALLEY, administrator.

MANUFACTURE OF ANTI-FRICTION BEARINGS.

No. 300,024. Patented June 10, 1884.



Witnesses:
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UNITED STATES PATENT OFFICE.

WILLIAM W. SMALLEY, OF BOUNDBROOK, NEW JERSEY, (ADMINISTRATOR OF JOHN SMALLEY, DECEASED,) ASSIGNOR TO THE GRAPHITE LUBRICATING COMPANY, OF JERSEY CITY, NEW JERSEY.

MANUFACTURE OF ANTI-FRICTION BEARINGS.

SPECIFICATION forming part of Letters Patent No. 300,024, dated June 10, 1884.

Application filed March 7, 1884. (No model.)

To all whom it may concern:

Be it known that JOHN SMALLEY, deceased, late a citizen of the United States, and a resident of Boundbrook, in the county of Somerset and State of New Jersey, did invent certain new and useful Improvements in the Manufacture of Anti-Friction Bearings, of which the following is a specification.

This invention relates to that class of anti-friction bearings consisting in whole or in part of compositions containing generally an anti-friction material, as graphite; and the invention consists in making the composition of such ingredients and heating the same in such manner as to secure greater hardness, toughness, and durability than is possible with ordinary modes of manufacture.

Heretofore it has been common to make such bearings of sheets or blocks of composition, or of metal, with recesses or pockets to receive the composition and to pack the latter to secure the desired hardness. This mode of manufacture has proved to be inefficient, because when said bearings or bushings were subjected to heavy pressure or high rate of speed, or both, the friction generated heat, which softened the composition, causing it to swell and become of a sticky nature, so that it would adhere to the shafting, leaving the grooves of the bearing, and thus impairing the efficiency thereof.

A composition of suitable character is used, containing any available lubricating ingredient, as graphite, and any gum or material capable of "vulcanization," a compound which has been found to be most serviceable consisting of shellac, graphite, and gum-copal or other resinous substances, and formed by combining the graphite with a solution of the gums, drying, and powdering the mixture by grinding the same in any suitable mill or otherwise. The composition thus formed into a powder is packed in pockets, channels, or grooves in a bearing or bushing under a heavy pressure, the said bearing or bushing being heated previous to the composition being pressed into the same, and also subjected to heat while the composition is being pressed into the said bearing or bushing. The bearing and bushing, after being thus prepared and pressed with the composition, is introduced into a chamber or oven, and is then and there subjected to heat by the application of heat, air, or steam surrounding the oven, as in the ordinary process of baking or vulcanizing. The degree of heat will vary according to the character of the composition and the degree of hardness required.

In making bearings, one form of which is shown in perspective in the accompanying drawing, filled and pressed with the composition, as above described, the said bearings or bushings are heated in an air chamber or oven, as above, for about twelve hours, and at a temperature from 212° to 350° Fahrenheit. By this means the character of the material is essentially modified, the mass becomes more homogeneous, solid, tough, and durable, so that it will not soften, swell, or pulverize under the pressure or speed of the journal, but will retain its integrity, the effect of the baking, in fact, being to vulcanize the material.

What is claimed is—

1. The improvement in the manufacture of anti-friction bearings, consisting in subjecting the composition containing anti-friction material and gum to the action of heat, as and for the purpose set forth.

2. The improvement in making anti-friction bearings, consisting in making a composition containing anti-friction material and gum, forming the same under heat and pressure, and then subjecting the same to the action of heat, as and for the purpose set forth.

3. An anti-friction bearing, consisting of anti-friction material combined with a gum and baked, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM W. SMALLEY,
Administrator of John Smalley, deceased.

Witnesses:
A. W. VAN WINKLE, Jr.,
SPENCER WEART.