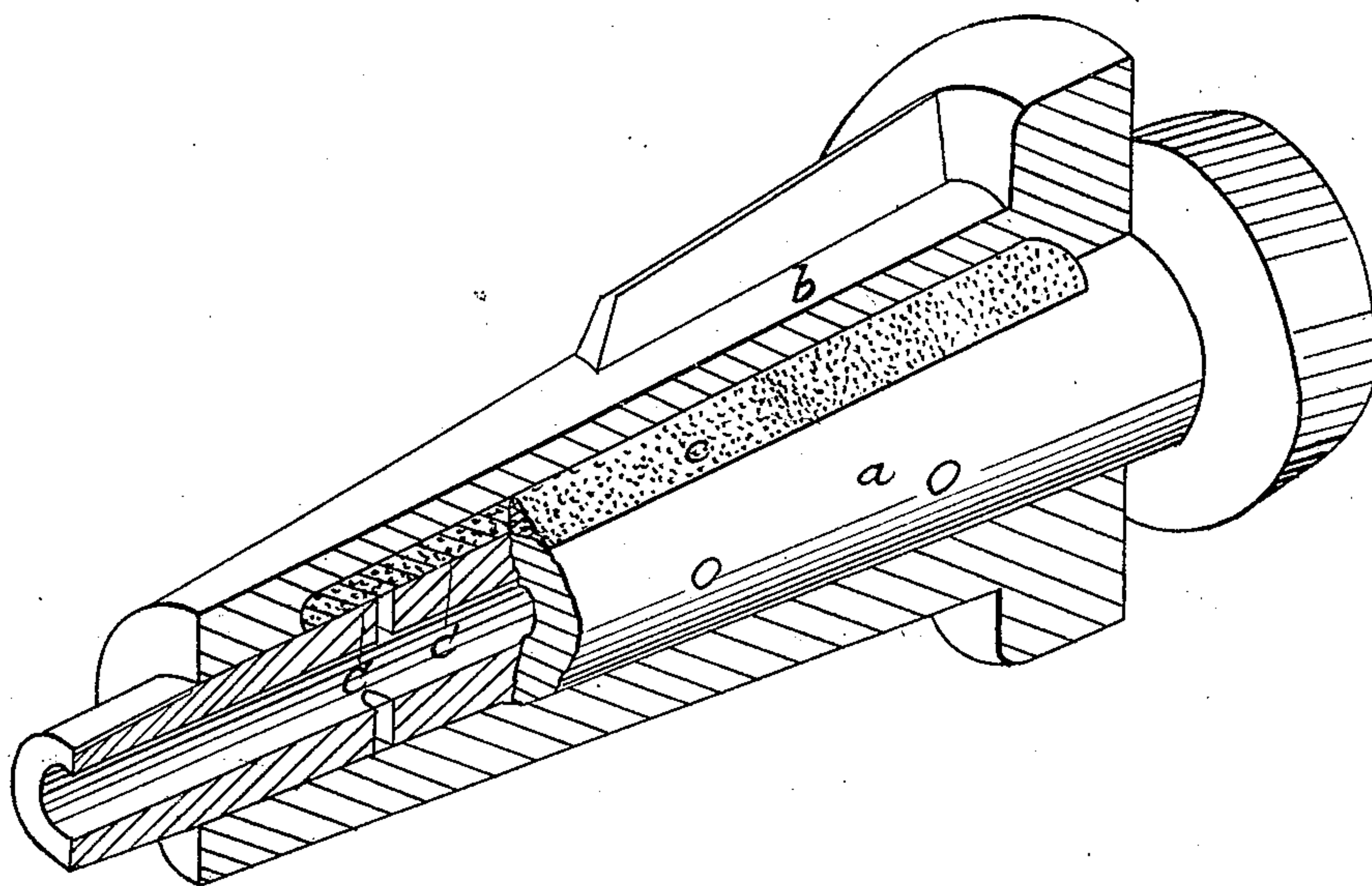


*E. Rees,*  
*Molder's Material.*  
*N<sup>o</sup> 7,843.      Patented Dec. 17, 1850.*



# UNITED STATES PATENT OFFICE.

EDWARD REES, OF CINCINNATI, OHIO.

## IMPROVED COMPOSITION FOR MAKING CORES FOR CASTINGS.

Specification forming part of Letters Patent No. 7,843, dated December 17, 1850.

*To all whom it may concern:*

Be it known that I, EDWARD REES, of Cincinnati, Ohio, have invented a new and useful Improvement in the Composition of Loam for Cores, &c., especially adapted for chilled castings; and I do hereby declare the following to be a full, clear, and exact description of the component ingredients and the relative proportions of the same as I have found them best adapted for the purpose desired, together with the method of mixing the same.

I have likewise illustrated the result of using the composition by a drawing, which is made part of this specification, and represents a chill, *a*, and axle-box *b*, with longitudinal oil-chambers *c c* in its concavity, thus effecting most easily what has been hitherto deemed excessively difficult if not impracticable.

The object of my invention is to enable the ordinary loam when used for cores to resist the action of molten metal sufficiently long to let the metal set before it has any tendency to blow, slip, or wash, even if it is fixed upon a smooth chill—such as those, for instance, around which axle-boxes are cast—and yet leave it sufficiently porous in its character to allow the passage through its substance of the gases generated in the ordinary loam by the contact of the hot metal.

In the manufacture of chilled axle-boxes or journal-bearings, for example, it is very desirable to provide in the concave surface of the box, especially, a series of recesses or chambers parallel with its axis. All attempts to do this by cores made in the ordinary way have hitherto failed, in consequence of the blowing and washing away of the material of the core from the polished surface of the chill. The bad effects of the partial removal of the particles which go to form these banks of loam is evident, as they become distributed over the smooth surface of the chill, and form sharp grinding points impossible to remove and destructive of the axle or journal bearings. Pure albumen, more commonly known as "white of egg," I have discovered is endowed with the capacity of being instantaneously rendered solidly contact with molten metal and of resisting sufficiently long to let the metal set any tendency in the other ingredients forming "loam" for chilled castings to slip, wash, or blow with injurious effect. Albumen is adhesive, porous, and in addition

solidifies first and then only crisps under excessive heat, although, after the metal has set, it matters not what action goes on within the core or through the blow-holes. White of egg or albumen has long been known and used as an ingredient in cement and as a covering for drawings, &c., but its capacity for effectually resisting the abrading action of molten metal sufficiently long to let the metal set is to me new, and the practical result exhibited in chilled pipe-boxes with longitudinal oil-chambers proves its utility, inasmuch as it enables me to furnish the market with an article hitherto unattainable at a selling price. The composition of the loam which I prefer for this description of casting is as follows: good loam sand, eight parts; horse-dung, (fresh,) six parts; common clay, one part; total, fifteen parts, to be mixed with water to the consistency of loam used in ordinary molding. Mix up half a bushel at a time and reserve for use as it may be wanted. The horse-dung forms a bond for the other ingredients.

When about to make the cores, I take as much of the above as I require, and to each pint of it I add the following mixture: the white of one egg and quick-lime of the bulk of a nutmeg, which must be previously well beaten together and intimately combined. The whole of the material thus proportioned is then well amalgamated together and it is ready for use.

To illustrate my invention by its adaptation to casting chilled axle-boxes with longitudinal oil-chambers, I take a hollow chill with holes drilled in its periphery in lines longitudinally, and upon this and over these holes I make little banks of this composition, which has sufficient toughness to resist the flow of the molten metal, is sufficiently porous to allow the escape of the gases, &c., which are evolved, and by the intimate intermixture of the loam with the white of egg, which not only acts as cement to the mixture, but which, when in contact with the hot metal, is not subject to blistering or being converted into steam, as has been the case with many compositions heretofore assayed, into which glue or some such simple cementing article are introduced. This mixture while wet and soft has considerable adhesion and tenacity, and as it becomes dry retains a firm hold on the chill. The saving of expense in casting



by this method of making cores—to pursue the illustration of the chilled axle-box—is very great, as the whole expense of the box thus cast is not much greater than the cost of case-hardening them when cast upon a common unchilled core.

Having thus fully, clearly, and exactly described the nature of my improvement, and illustrated it by its adaption to the method of casting chilled axle boxes with longitudinal oil-chambers, what I claim therein as new, and desire to secure by Letters Patent, is—

The use of white of egg as a component in the preparation of loam for cores and other

similar things intended for contact with molten metal, in the manner herein described, limiting myself to that use of white of egg, but not limiting myself to the precise proportions mentioned, while the same result is obtained by the said addition to the ingredients ordinarily used in loam for cores.

To the above specification of my improvements in composition for casting I have set my hand this 11th of April, 1850.

EDWARD REES.

Witnesses:

SAMUEL WILLIAMSON,  
EDWARD H. KNIGHT.