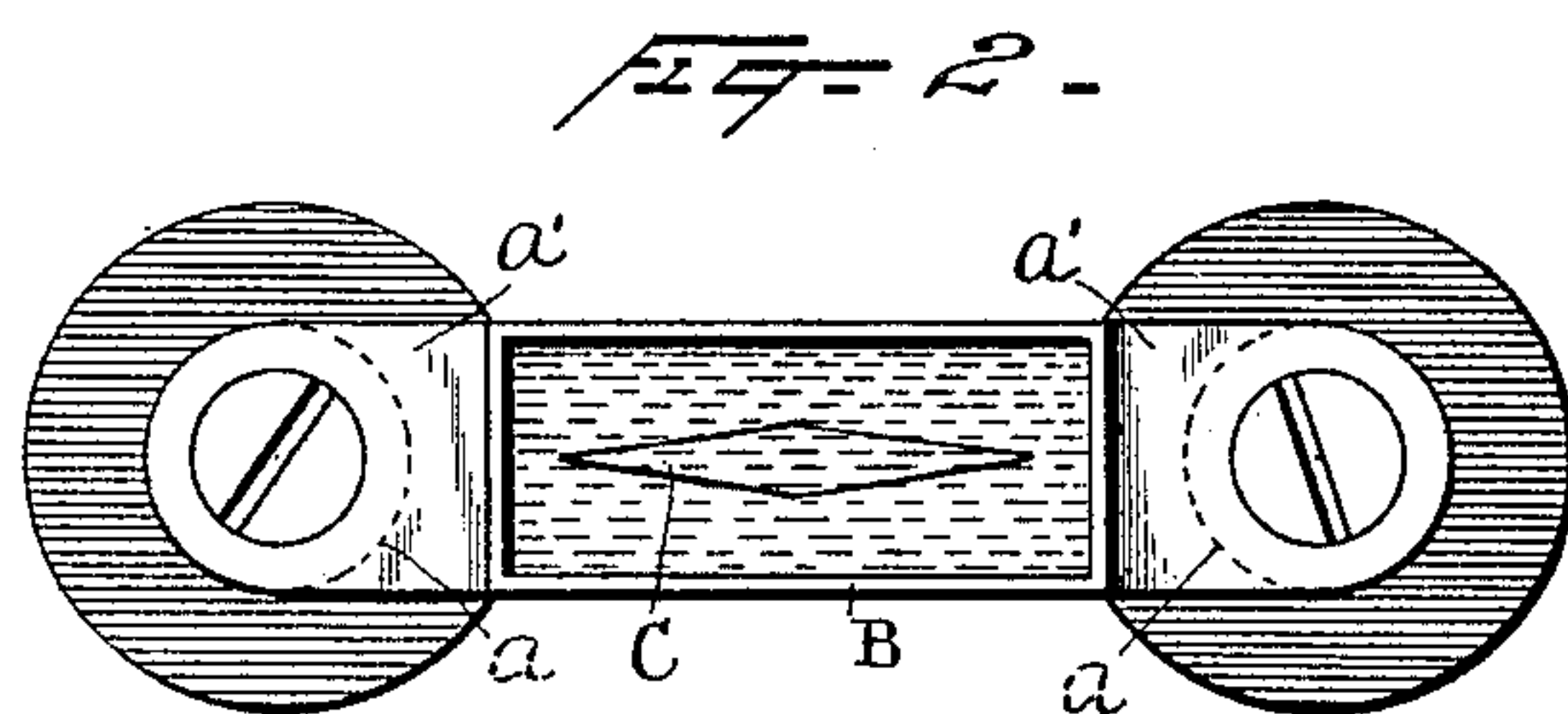
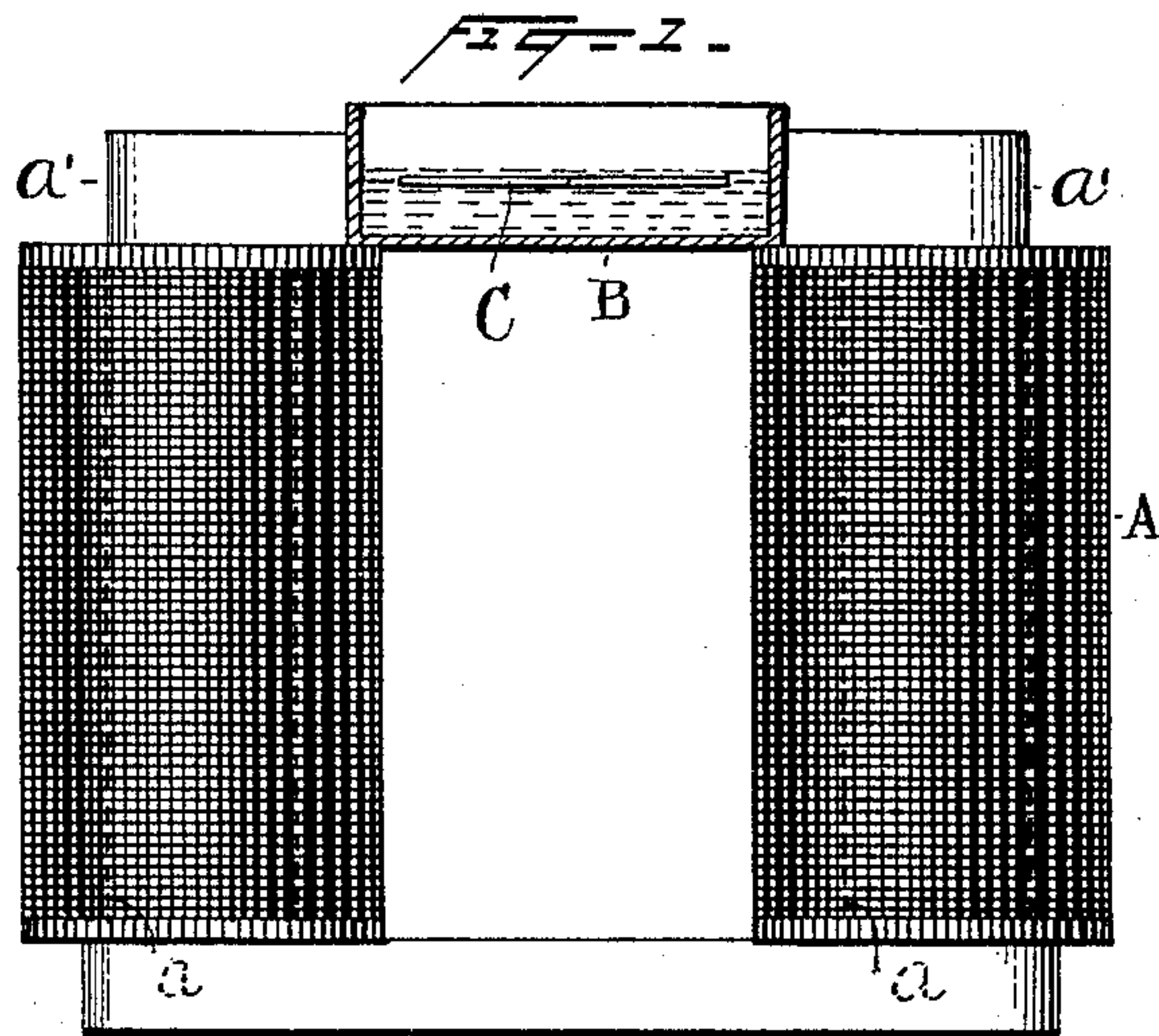


(No Model.)

W. D. MARKS.
METHOD OF MAGNETIZING.

No. 591,081.

Patented Oct. 5, 1897.



WITNESSES:

Horris A. Clark.

W. P. Clark

INVENTOR

William D. Marks

BY

Syer & Dunsell

ATTORNEYS

UNITED STATES PATENT OFFICE.

WILLIAM D. MARKS, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO THE
AMERICAN ELECTRIC METER COMPANY, OF SAME PLACE.

METHOD OF MAGNETIZING.

SPECIFICATION forming part of Letters Patent No. 591,081, dated October 5, 1897.

Application filed August 3, 1897. Serial No. 646,895. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM D. MARKS, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia, State of Pennsylvania, have invented a certain new and useful Improvement in the Method of Magnetizing, of which the following is a specification.

My method of magnetizing consists in heating the steel to high heat—say up to red heat—by means of a melted-lead bath, Bunsen burners, or otherwise, and then immersing the steel in a water, mercury, or oil tempering-bath located between the poles of a strong electromagnet, thus simultaneously tempering and magnetizing the steel. By this method a molecular polarization of the steel is obtained while red-hot, and while in this condition and in the field of force of the magnet the steel is tempered glass-hard. This avoids superficial magnetism and the consequent rapid deterioration of the permanent magnet or magnetic needle when put in use or laid aside.

The accompanying drawing illustrates a form of apparatus which may be employed to carry my method into effect.

Referring to the drawing, A indicates a strong electromagnet whose cores *a* are provided with two pole-pieces *a'*. Between the pole-pieces is supported a tank B, made of porcelain, zinc, rubber, or other suitable non-magnetic material. This tank contains a tempering-bath of water, mercury, oil, or other suitable fluid.

C represents the object to be treated, which may be a piece of steel to be transformed into a permanent magnet or it may be a steel needle to be magnetized. The piece of steel will be held in proper position between the poles

of the magnet and in its field both while red-hot and when plunged in the tempering-bath in an axial position.

A permanent magnet may be employed instead of the electromagnet if of sufficient strength.

What I claim is—

1. The method of tempering and magnetizing steel, consisting in first heating the steel to a sufficient degree then simultaneously subjecting the heated steel to the influence of a magnet and immersing the heated steel in a tempering-bath, substantially as set forth.

2. The method of tempering and magnetizing steel, consisting in first heating the steel to a red heat and while red-hot subjecting the steel to the influence of a magnet and immersing the steel in a tempering-bath while red-hot and in the field of force of the magnet, substantially as set forth.

3. In apparatus for tempering and magnetizing steel, the combination of a magnet and a tank made of non-magnetic material located between the poles of the magnet and containing a suitable tempering fluid, substantially as set forth.

4. In apparatus for tempering and magnetizing steel, the combination of an electromagnet provided with pole-pieces, and a tank made of non-magnetic material located between the pole-pieces and containing a suitable tempering fluid, substantially as set forth.

This specification signed and witnessed this 30th day of July, 1897.

WM. D. MARKS.

Witnesses:

EDWARD P. HIPPLE,
F. E. HIPPLE.