

(No Model.)

W. H. SAWYER.
PROCESS OF ANNEALING WIRE.

No. 360,732.

Patented Apr. 5, 1887.

Fig. 1.

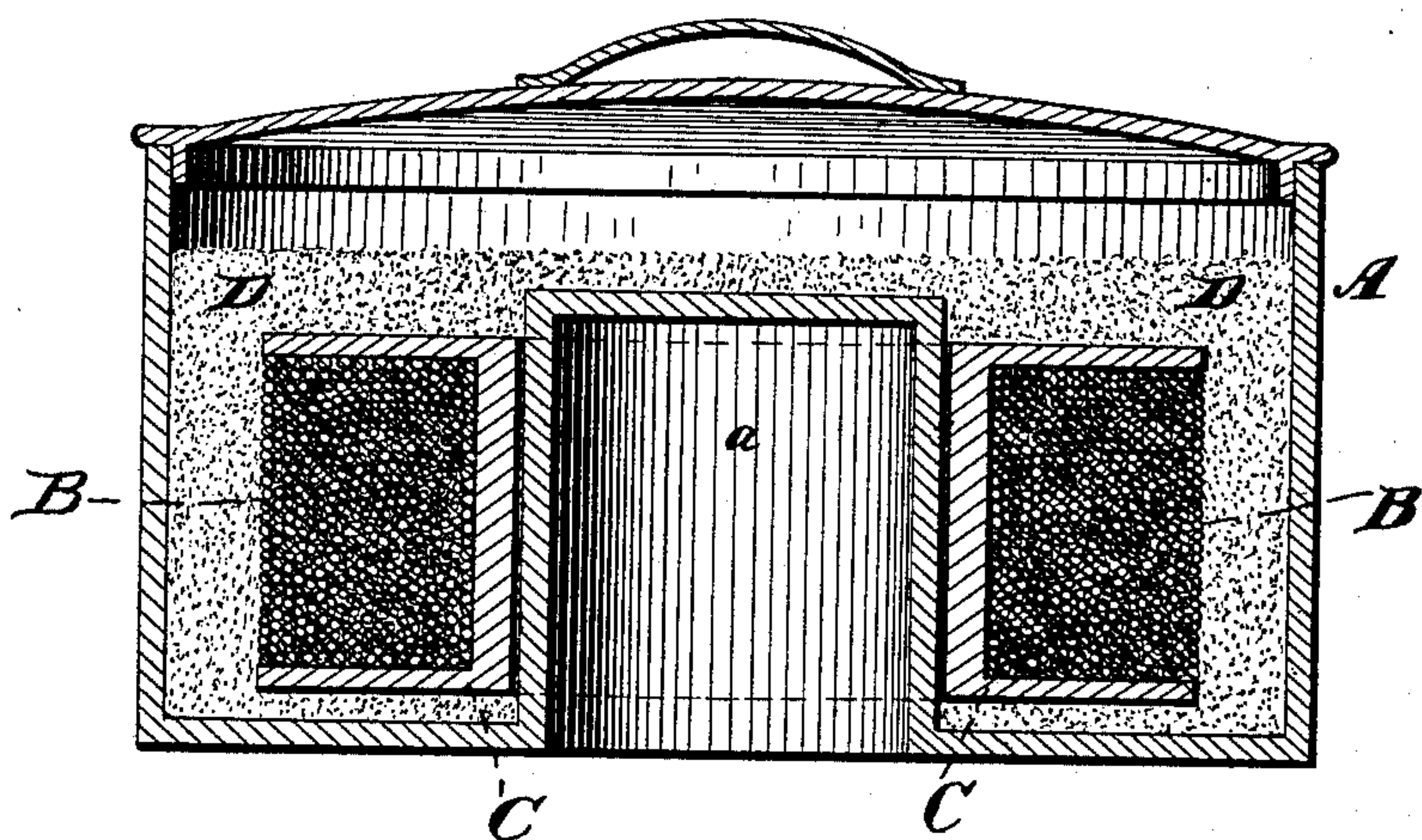
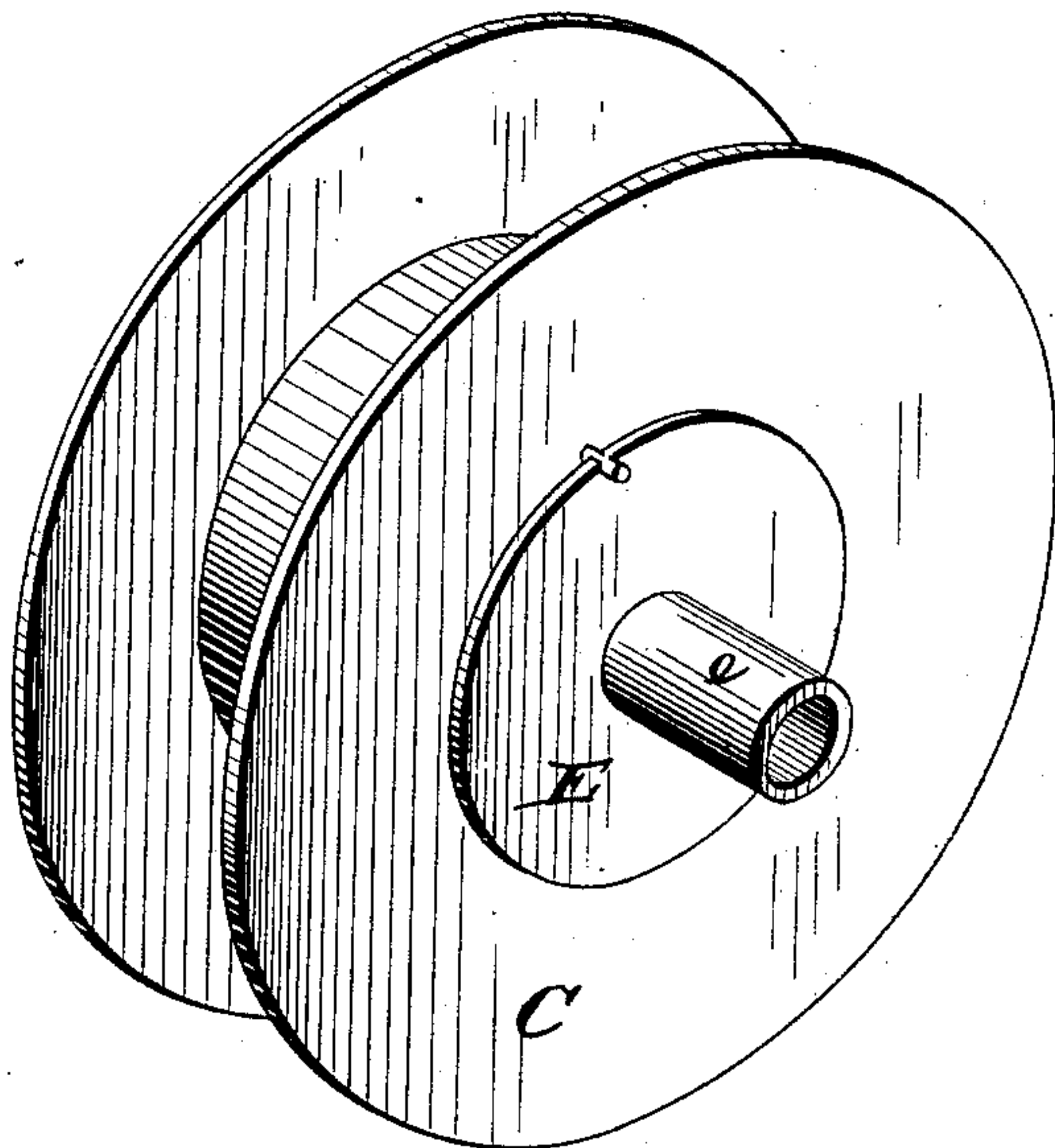


Fig. 2.



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WILLIAM H. SAWYER, OF PROVIDENCE, RHODE ISLAND.

PROCESS OF ANNEALING WIRE.

SPECIFICATION forming part of Letters Patent No. 360,732, dated April 5, 1887.

Application filed August 6, 1883. Renewed January 21, 1887. Serial No. 225,043. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. SAWYER, a citizen of the United States, residing at Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Processes of Annealing Wire, of which the following is a specification, reference being had therein to the accompanying drawings.

10 The object of my invention is to anneal wire in such a way that it will not require polishing before use after it has been annealed.

It has heretofore been customary to place wire in loose coils or hanks in the annealing-box and place the box in the annealing-furnace after closing it. Wire so annealed becomes tarnished and covered with a coating of oxide, so that it must be polished before it is in a fit state for use or placing on the market. Endeavor has been made with partial success to preserve the brightness of wire during the process of annealing by packing it in an annealing-pot inclosed in a larger one and filling the space between the two pots with sand to exclude the air from the interior of the inner pot and the wire. The imperfect result attained by this latter process has led me to devise an improved method of annealing wire, which consists in winding the wire in close layers upon a metallic core or cylinder, embedding the wire and core in dry sand in an annealing-pot, and then subjecting the pot and contents to the usual degree of heat for annealing, and allowing the wire to cool before removing it from the core. For the core I prefer to use a brass or iron drum or cylinder having end flanges or heads between which to coil the wire. Such a drum I make with a large central aperture in which a removable center piece or core may be secured, being provided with suitable means for mounting it upon a spindle or in bearings, so that it may be conveniently rotated for winding the wire upon the drum. The large central aperture of the drum is for allowing free access of heat to the interior of the coil of wire when the center piece is removed and the drum is placed in the annealing-pot. This central opening also permits a practically uniform cooling of the wire, which is of considerable importance in view of the mode of cooling

which I prefer to use, which is by dipping the annealing-pot intermittently in cold water nearly to its top before opening, after heating. The reduction of temperature takes place simultaneously at both the interior and exterior of the coil of wire, and therefore there is no undue straining of the wire by unequal contraction.

In the accompanying drawings, Figure 1 is an axial section of the annealing-pot and its contents when ready to be placed in the furnace. Fig. 2 is a perspective view of an empty drum with its center piece.

The letter A designates the annealing-pot; B, the wire; C, the headed metallic drum upon which the wire is coiled, and D the sand, which should be packed closely against the outer layer of wire and both below and above the drum, so as to thoroughly exclude the air from the wire. The annealing-pot has a hollow central boss or chamber, *a*, around which the drum is placed, this chamber being open at the bottom to admit heat freely to the center of the drum and its coil of wire.

In Fig. 2 the empty drum is shown with its center piece, E, in place, and provided with a tubular shaft, *e*, which may be secured upon a rotary spindle for winding the wire.

The annealing-pot and drum are simply here shown for the purpose of fully illustrating my new process of annealing wire, and may hereafter be the subject-matter of one or more applications for patent.

Instead of sand in the annealing process, I may use pulverized charcoal, iron filings, or any similar dry powder.

On removing the wire from the pot the outer surface of the outer layer will sometimes be slightly tarnished if the material in which it has been embedded was not perfectly dry, but all the rest will be as bright as before annealing.

What I claim, and desire to secure by Letters Patent, is—

1. The herein-described process of annealing wire, the same consisting in coiling the wire upon a hollow metallic core or drum, embedding the wire and core in sand or its equivalent, surrounding a central open space, subjecting the whole to heat with the wire thus embedded, and then allowing the whole

to cool before removing the wire from the embedding material, essentially as set forth.

2. The method of annealing wire by subjecting it to heat while coiled and embedded
5 in sand or its equivalent inclosed in a vessel, and then dipping the vessel intermittently into a cooling-liquid to cool the wire before removing it from the embedding material, essentially as set forth.

In testimony whereof I affix my signature in the presence of two witnesses.

WILLIAM H. SAWYER.

Witnesses:

JOHN C. PURKIS,

JOHN O. DARLING.