

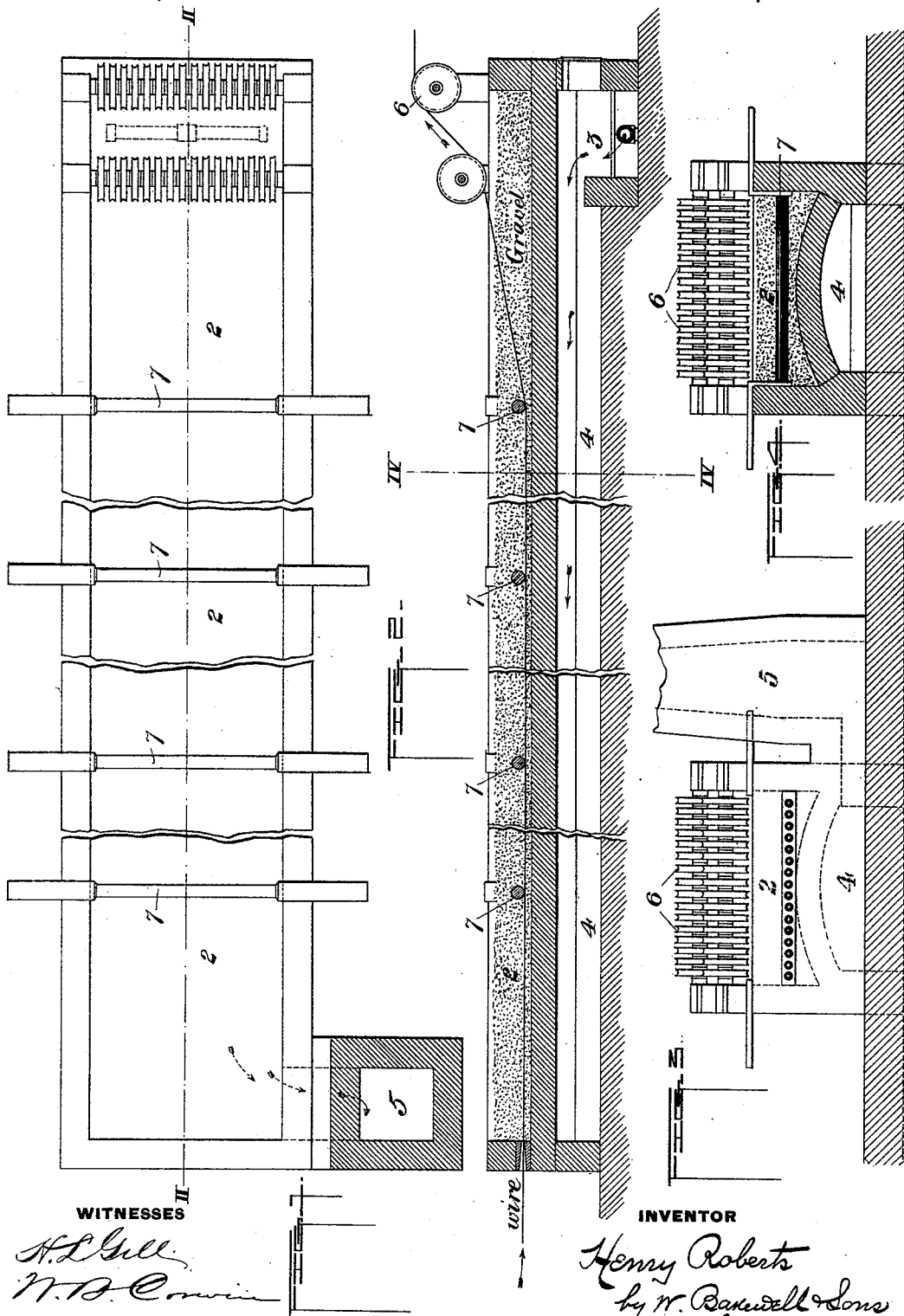
(No Model.)

H. ROBERTS.

PROCESS OF ANNEALING WIRE.

No. 414,122.

Patented Oct. 29, 1889.



UNITED STATES PATENT OFFICE.

HENRY ROBERTS, OF PITTSBURG, PENNSYLVANIA.

PROCESS OF ANNEALING WIRE.

SPECIFICATION forming part of Letters Patent No. 414,122, dated October 29, 1889.

Application filed May 4, 1889. Serial No. 309,548. (No model.)

To all whom it may concern:

Be it known that I, HENRY ROBERTS, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in the Process of Annealing Wire, of which the following is a full, clear, and exact description.

My invention consists in annealing wire by passing it through a body of heated gravel or other abrasive material consisting of small lumps or particles—such as fragments of broken stone or brick—either with or without sand or other similar material. Such abrasive material is maintained in a heated condition, the duration of its passage through such material being sufficient to raise the wire to a proper annealing temperature, which may be from 600° Fahrenheit to 1,000° Fahrenheit. On emerging from the bed of gravel, &c., the wire will be found to be annealed by the heat to which it has been subjected and to be polished on the surface by the abrasion. In this way I am enabled to produce a conjoint result of annealing and polishing at trifling cost, and both annealing and polishing will be found to be performed more efficiently than by any other method known to me. After being treated in this way the annealed and polished wire may be coiled for sale or use, or it may be passed directly through the pickling-vat to the galvanizing apparatus, and the fine polishing and scouring imparted to it by the abrasion fit it especially for receiving an even and proper coat of zinc.

In practice I have found that the abrasive material, to do the work properly, should consist of gravel or similar small lumps or pieces. Sand or other fine material, when used alone, will not answer, both on account of its tendency to vitrify and because it packs and forms a dense bed, through which the wire passes without being subjected to that grinding and attrition which is the distinctive feature of my method. The lumps of gravel, being agitated and tumbled about by motion of the wire, prevent settling and packing of the mass.

The method may be practiced with apparatus of various forms. I have in the accompanying drawings illustrated an appara-

tus especially adapted to its practice, and will now describe it, premising, however, that I do not limit myself to its use, since the invention covered by the patent relates, broadly, to the method of wire-annealing herein described.

In said drawings, Figure 1 represents in plan view the apparatus above mentioned. Fig. 2 is a vertical longitudinal section on the line II II of Fig. 1. Fig. 3 is an end view of the apparatus. Fig. 4 is a vertical cross-section on the line IV IV of Fig. 2.

Like symbols of reference indicate like parts in each.

In the drawings, 2 represents a chamber formed by the extension of the side walls above the arch of a flue 4, which extends from a furnace or combustion-chamber 3 at one end and terminates in a stack-flue 5 at the other end. This chamber may be of any suitable length, but in apparatus which I have used it is about forty feet long. It is filled with gravel, particles of fire-brick, or other abrasive material in lumps, which may, if desired, be mixed with a portion of sand or similar material, which is heated by the underlying flue 4. The wires to be annealed and polished pass through holes at one end of the chamber, through the gravel, and pass from the other end thereof, preferably over suitable rollers 6, to the reel or other apparatus by which they are drawn. To keep the wire well in the gravel and sufficiently near the arch to be properly heated thereby, I prefer to employ cross-bars or rollers 7, which extend from one side wall to the other at suitable intervals near the arch and above the course of the wire.

I am aware that a sand bath or heated body of sand alone has heretofore been used in the annealing of wire, and do not claim the same. Further, in my previous patent, No. 244,146, I have described the use of broken stone, gravel, and sand as a scrubbing medium in the acid bath after the wire has been annealed and previous to tinning, and I do not herein claim the same; but I am not aware that lumps of abrading material have been used as an annealing-bath, either alone or in conjunction with sand, to fill the interstices between the

lumps of abrading material, so as to simultaneously anneal and polish the wire; and, therefore,

I claim—

- 5 An improvement in the art of annealing wire, which consists in passing the wire through a heated body containing small lumps or pieces of abrasive material—such as gravel—whereby the wire is simultaneously

annealed and polished, substantially as and for the purposes described.

In testimony whereof I have hereunto set my hand this 1st day of May, A. D. 1889.

HENRY ROBERTS.

Witnesses:

THOMAS W. BAKEWELL,
W. B. CORWIN.