

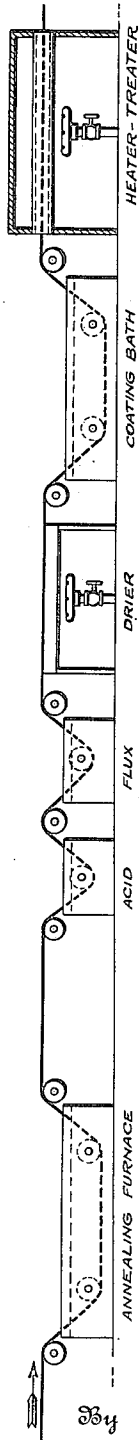
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J. L. HERMAN

PROCESS OF COATING AND TREATING MATERIALS

Filed March 25, 1922



Inventor

*Joseph L. Herman*

*Charles H. Harte*  
Attorney

## UNITED STATES PATENT OFFICE.

JOSEPH L. HERMAN, OF PEORIA, ILLINOIS.

## PROCESS OF COATING AND TREATING MATERIALS.

Application filed March 25, 1922. Serial No. 546,705.

*To all whom it may concern:*

Be it known that I, JOSEPH L. HERMAN, a citizen of the United States, a resident of Peoria, in the county of Peoria and State of Illinois, have invented new and useful Improvements in Processes of Coating and Treating Materials, of which the following is a specification.

This invention has reference to a process of coating and treating materials having an iron base, such as wire, nails, pipe, sheets and like materials, and, while not restricted to such use, more particularly relates to a process of treating such materials after having been galvanized or coated with zinc.

The invention has for its principal object to heat-treat such coated materials in order to permit a heavier and more flexible coating to be obtained than can be obtained from the use of ordinary coating methods.

The invention has for a further object the heat-treatment of the coating at temperatures above 788 degrees F. said temperature being the approximate melting point of zinc (spelter). Such heat-treatment may be employed for coatings where the annealing of the coated material is done simultaneously with the heat-treating in air or in an air-free atmosphere; or where the annealing of the material is done simultaneously with the coating; the temperature of the coating bath being sufficient to anneal the material at the same time; or where the material is immersed in the coating bath while in a highly heated state substantially as set forth in my companion applications bearing Serial Numbers 535,660; 541,561; 541,562 and 541,563.

In the accompanying drawing there is illustrated diagrammatically the usual or ordinary continuous galvanizing or coating apparatus including the "annealing furnace," "acid" bath, "flux" bath, "coating" or galvanizing bath, and my "heat-treater" associated therewith, by means of which my process may be carried out. The temperature of the "heat-treater" being carried at or above 788° F., the latter being approximately the melting point of zinc.

I have discovered that any material having an iron base and coated with zinc (spelter) may be treated by my process in such

a manner as to permit a heavy coating of zinc to remain upon said material and at the same time making this heavy coating flexible, if said material after being coated is subjected to temperatures at or above 788 degrees F., and maintaining the heated materials at or above such temperature for a definite length of time. This time interval varies, depending upon the temperature to which the materials are heated and the nature of the material undergoing treatment, the heat-treating period being shorter for higher temperatures and vice versa. Material coated by this means has a heavy, durable protective coating against atmospheric rusting and corroding conditions and at the same time is flexible enough to allow the material to be subjected to fabricating or forming machines without such coating cracking or flaking off, as is the case with materials having a heavy coating and coated by ordinary processes. For example I have subjected galvanized wire the diameter of which was 0.198 to a heat-treatment such as I have described, by subjecting the galvanized wire to a temperature of about 1500 degrees F. for a period of about twenty seconds and obtained a smooth heavy, flexible coated wire, which when not subjected to my heat-treatment is brittle and uneven. I have obtained similar results at about 1300 degrees F. and have reached temperatures in my heat-treater as high as 2200 degrees F. in which latter case the length of time the wire was exposed to the heat-treatment was only a few seconds. I, do not, of course, limit myself to the temperatures and time intervals above specified as they are only given as examples of what I have done as I have produced many tons of such heat-treated materials.

I am aware that there are processes described where coatings have been subjected to heat-treatment at low temperatures for long intervals of time, whereas by my process I use very short intervals of time for my heat-treatment and use very high temperatures, namely, those at or above 788 degrees F. I can, thus, if I desire, make use of continuous processes for coating materials.

What I claim is:—

The process of coating materials having an iron base which consists in subjecting the same to a coating bath and then heat-treating such coated material at temperatures at  
5 or above 788 degrees F., for a certain interval of time, the time varying with the nature of the material heat-treated and the tem-

perature to which the material is subjected, such time interval varying inversely with  
10 the temperatures.

In witness whereof, I have hereunto affixed my hand and seal this 18th day of March, 1922.

JOSEPH L. HERMAN.