(No Model.)

J. COFFIN.

PROCESS OF COATING WIRE WITH OTHER METAL.

No. 455,529. Patented July 7, 1891.

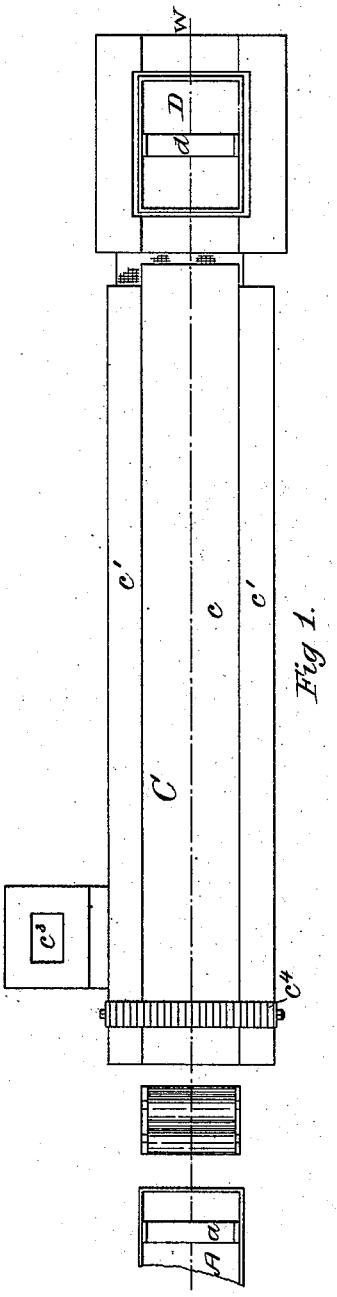

Fig 1.

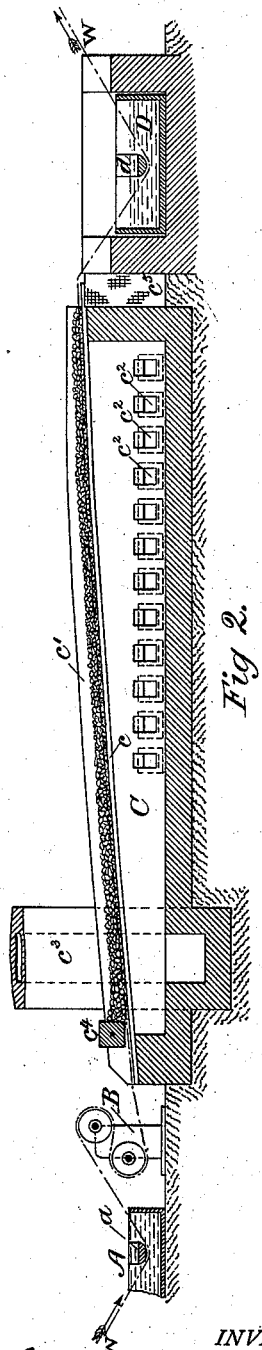

Fig 2.

WITNESSES.

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PROCESS OF COATING WIRE WITH OTHER METAL.

SPECIFICATION forming part of Letters Patent No. 455,529, dated July 7, 1891.

Application filed March 16, 1889. Serial No. 303,519. (No model.)

To all whom it may concern:

Be it known that I, JOHN COFFIN, a citizen of the United States, residing at Johnstown, in the county of Cambria and State of Pennsylvania, have invented certain new and useful Improvements in the Process of Coating Wire with other Metals; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improvement in the process of coating wire with metal, commonly called "galvanizing," and relates more especially to an improved method of preheating the wire prior to its passage through the plating metal.

The object of my invention is to reduce the cost of plating wire by making it possible to run at an increased speed and by using a smaller plating-bath, whereby an economy is effected in the amount of plating metal wasted, and the further object of my invention is to accomplish the plating in a superior manner, as will be set forth.

Preheating wire to be coated has been heretofore practiced. I know of two methods of preheating which have been resorted to. In the first method the wire passes through a tubular heating-chamber prior to its entrance into the plating metal. In the other method the wire passes through a bath of molten lead prior to its entrance into the plating metal. In my improved process the wire, after passing through the cleaning-acid, passes through a mass of hot gravel or other scouring material, and thence into and through the plating-bath. The action of the gravel or scouring material on the wire is to effectually scour and clean it at a time when the acid is being driven off and is rendered most active by the heat. While the scouring action of the gravel is most efficient at this time, still the scouring action continues, though in lesser degree, until the wire emerges from the preheating bath at a temperature suitable to its rapid and thorough coating while passing through the plating-bath.

The apparatus I use to carry my invention into effect consists in an acid-tank, through which the wire passes, suitable guides over which it passes, a preheating-pan, and a tank containing molten zinc or other plating metal. The preheating-pan consists in a fire-brick construction having a bottom and two sides. The bottom is made of thin brick supported by longitudinal walls and the sides are formed by brick walls. The bottom of the pan is inclined toward the end at which the wires enter. The object of this incline is to more effectively hold the gravel, as the advancing wires tend to carry the gravel with them. The bottom, together with being inclined, is made of a somewhat curved shape, as there is a tendency in the wires to work up to the top of the gravel, and if the bottom were made a straight incline they would obey this tendency; but by making the form of the bottom slightly convex in a longitudinal direction the tension of the wires due to pulling them through the bath assists in holding them closely to the bottom thereof. Fire is applied to the under side of the brick bottom and heats the mass of gravel through this bottom. At the end of the pan where the wires enter a dam composed of brick bolted together is placed across the pan, leaving sufficient space between the dam and the bottom of the pan for the wires to pass. The object of this dam is to prevent the gravel from coming out of the end of the pan either by gravity or when the operator is leveling it with a shovel.

To make my invention more clear, I will now refer to the annexed sheet of drawings, which forms part of this specification, in which—

Figure 1 is a plan of my invention, and Fig. 2 a longitudinal sectional elevation thereof.

Like letters of reference refer to like parts throughout.

A is the acid-tank through which the wire passes, *a* being the sinker contained therein.

B represents a stand of driven rolls, which form guides for the wire after it emerges from the acid and prior to its entrance into the preheater.

C is the preheater.

c represents the bottom thereof, and *c'* the side walls. The bottom *c* is inclined and curved, as shown in Fig. 2.

c^2 represents the firing places, where gas-burners are applied to heat the bottom of

the pan, and c^3 represents the smoke-stack through which the products of combustion pass.

c^4 represents a dam composed of fire-bricks bolted together, as shown in Fig. 1, and placed across the pan, resting in notches in the side walls c' and located a slight distance above the bottom of the pan, as shown in Fig. 2.

c^5 represents a screen placed at the end of the preheating-pan at which the wires pass out. This screen is inclined, and the bottom c of the pan extends slightly past the main body of the pan, as shown in the drawings, terminating about over the center of the screen c^5. As the wires slightly work along the gravel, it falls on the screen c^5, which screen separates the clean gravel from the small particles which have been worn off in scouring the wire, whereupon an operator shovels it up from the floor and places it in the pan against the dam c^4.

D represents the bath of plating metal, and d the sinker located in this bath.

W represents a wire in transit, the arrows indicating the direction it travels.

It is understood that a series of wires pass through the bath at the same time. The wire as it leaves the preheating bath may be at a temperature of 400° Fahrenheit.

I have used various kinds of gravel. Washed sea-gravel gives excellent results; but I believe I have attained the best results by using crushed ganister, which is prepared by first crushing, then sifting and washing. The size of gravel I prefer is that which will pass through a No. 3 sieve, but not through a No. 20.

The apparatus for coating wire which is used in connection with my above-described process is made the subject of another application for Letters Patent, Serial No. 303,520.

Having fully described my invention, what I claim as my invention, and wish to secure by Letters Patent, is—

1. In the process of coating wire with other metal, the improvement consisting in first passing the wire through an acid bath; second, through a bath of hot gravel or other equivalent scouring material, and finally through a bath of molten zinc or other coating metal, substantially as specified and set forth.

2. In the process of coating wire with other metal, the improvement consisting in first passing the wire through a bath of acid; second, through a hot bath of crushed ganister, and finally through a bath of plating metal, substantially as specified and set forth.

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

JOHN COFFIN.

Witnesses:
SIDNEY POSTLETHWAITE,
CYRUS ELDER.