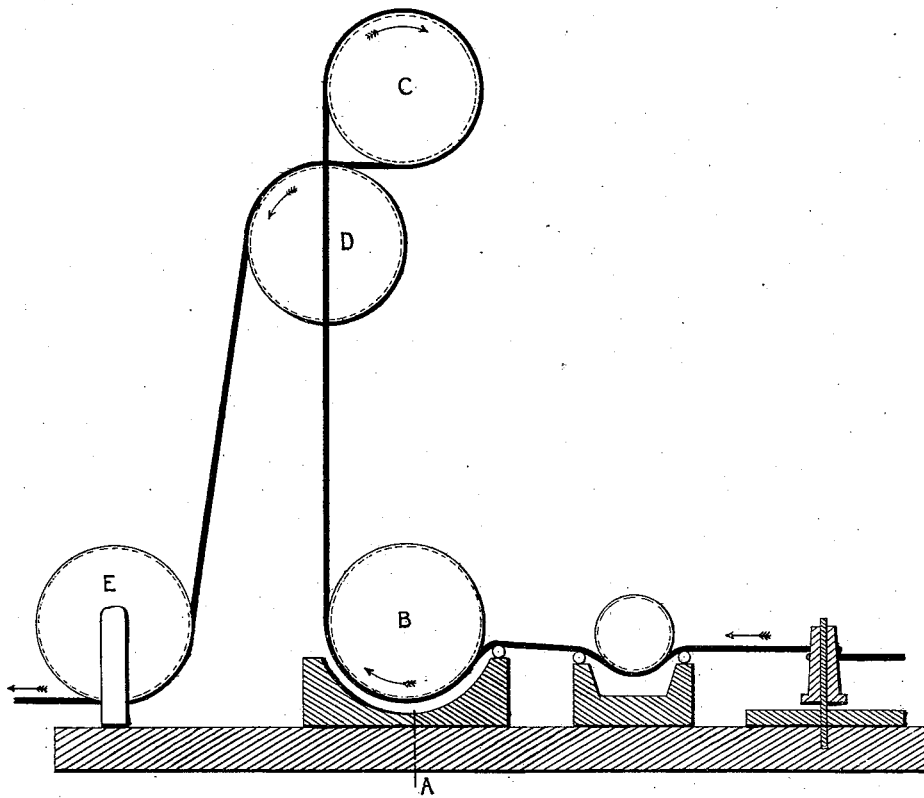


J. L. HAIGH.  
PROCESS OF STRAIGHTENING AND COATING WIRE.  
No. 190,319. Patented May 1, 1877



Witnesses.  
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# UNITED STATES PATENT OFFICE.

J. LLOYD HAIGH, OF NEW YORK, N. Y.

## IMPROVEMENT IN PROCESSES OF STRAIGHTENING AND COATING WIRE.

Specification forming part of Letters Patent No. **190,319**, dated May 1, 1877; application filed February 5, 1877.

### *To all whom it may concern:*

Be it known that I, J. LLOYD HAIGH, of the city, county, and State of New York, have invented a new and Improved Process of Tempering and Coating Steel Wire, which improvement is fully set forth in the following specification and accompanying drawings.

This invention pertains to certain improvements for straightening and coating steel wire; and consists in certain improvements upon the processes set forth in the Letters Patent of the United States to William H. Paine for a similar purpose, in which patents there is provision made for cooling the wire after it has passed the baths, before it is wound upon the reels, whereby it is set in a straight line, and afterward prevented from becoming curved.

In said patents one object of keeping the wire taut is to prevent the diminution of its limit of elasticity; but it has been found, by experiment, that the lateral strain upon the wire due to its own weight has a very material effect upon its limit of elasticity, and to overcome this objection is the object of the invention; and it consists in carrying the wire from the last bath over a large drum or sheave, and conducting the wire upward or downward in a vertical position, or nearly so, to the distance required for cooling it, so that all lateral strain due to the weight of the wire itself is avoided, and at the same time it is held taut to remove all curves, and also is allowed to cool with all its elements or atoms in the same arrangement around the axis of the wire.

The essential feature of my invention consists in an improved process of straightening and coating steel wire by conducting it under tension from the last bath or heater in a substantially vertical direction, and maintaining it in that direction through a sufficient distance to permit the wire to be cooled, as more fully hereinafter set forth.

The drawing represents a vertical section of the apparatus and the position of the wire under treatment.

The apparatus is constructed by mounting a large sheave or drum over the last bath, as at A, the drum B being large enough to avoid setting the wire in a short curve, and then

mounting another sheave or drum over the first at a height sufficiently great to allow the wire to cool before it reaches the receiving-reel. This second sheave or drum is shown at C, and the wire may be wound on it; or it may be carried over it and down around another sheave, as at D, which will tend to return the flexion of the wire if any set over the first drum should be produced, and then the wire is carried down to the reel at E.

Such an arrangement of the sheaves or drums is easily accomplished by placing the upper one on the top of a tower, as in the case of bridge-building, one of the towers of which is generally of a height proportioned to the length of the wire.

I have found by experiment that cooling the steel wire in this manner, or without any lateral strain upon it while being set while it comes from the bath, gives a very material addition to its limit of elasticity, and this is easily understood when it is considered that the lateral weight of a long strand of wire is constantly tending to strain its under, and compress its upper, side.

Another very important advantage of the vertical position of the wire in being coated, as with varnish or melted alloys, &c., is that the coating will be evenly distributed over the entire surface, and will not be allowed to collect on one side, as is often the case when the wire is carried out horizontally.

It is evident that the wire may be inclined slightly from a true vertical position; and it is also evident that the heating apparatus may be placed above the wire, which may be carried down over a second drum without departing from the nature of my invention.

I therefore claim—

The improved process of straightening and coating steel wire by conducting it under tension from the last bath or heater in a substantially vertical direction, and maintaining it in that direction through a sufficient distance to permit the wire to be cooled, as set forth.

J. LLOYD HAIGH.

Attest:

H. C. COOPER,  
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