

(No Model.)

J. COFFIN, Dec'd.

2 Sheets—Sheet 1.

E. F. COFFIN, Executrix.

APPARATUS FOR ANNEALING WIRE.

No. 451,221.

Patented Apr. 28, 1891.

Fig. 2.

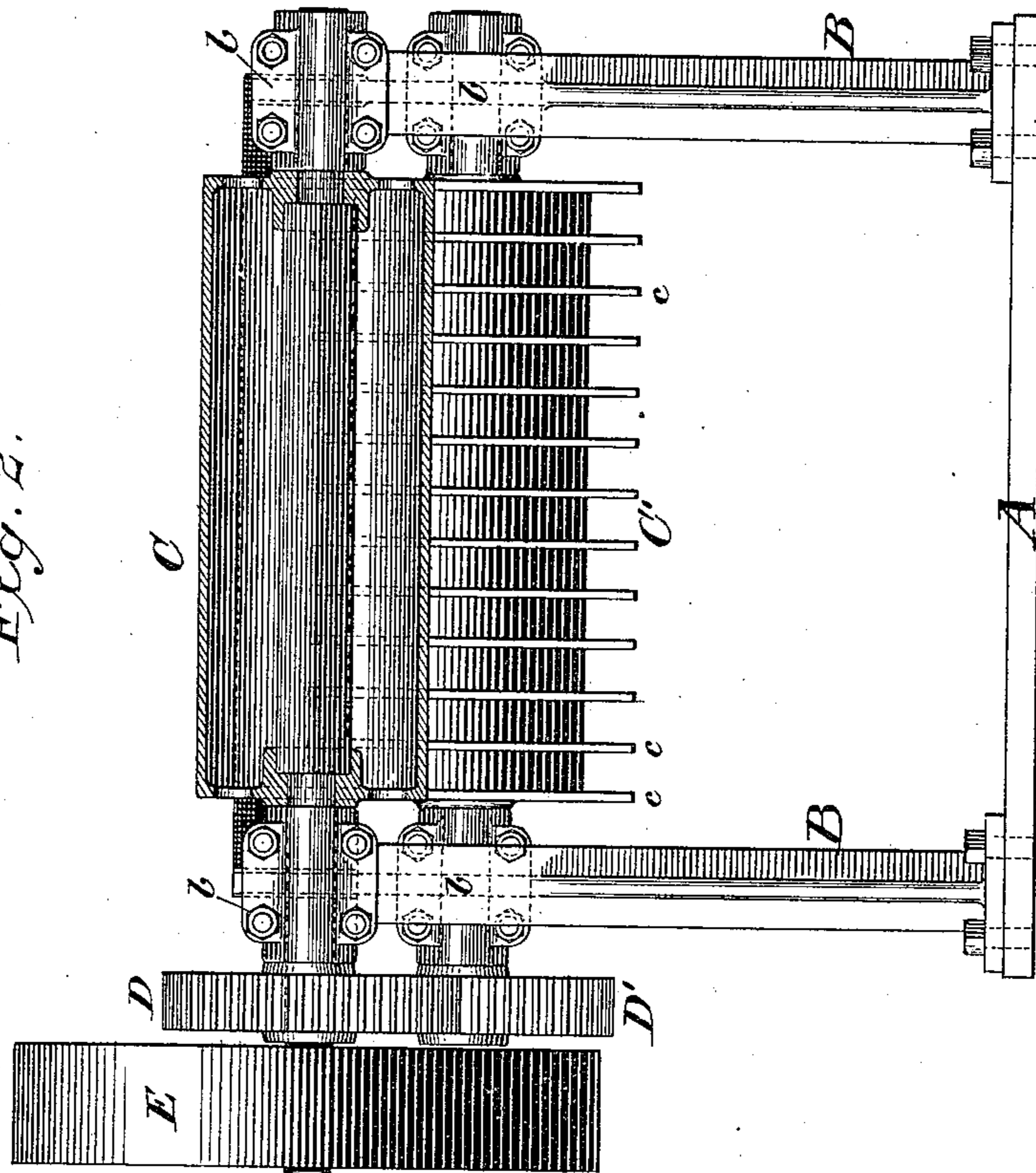
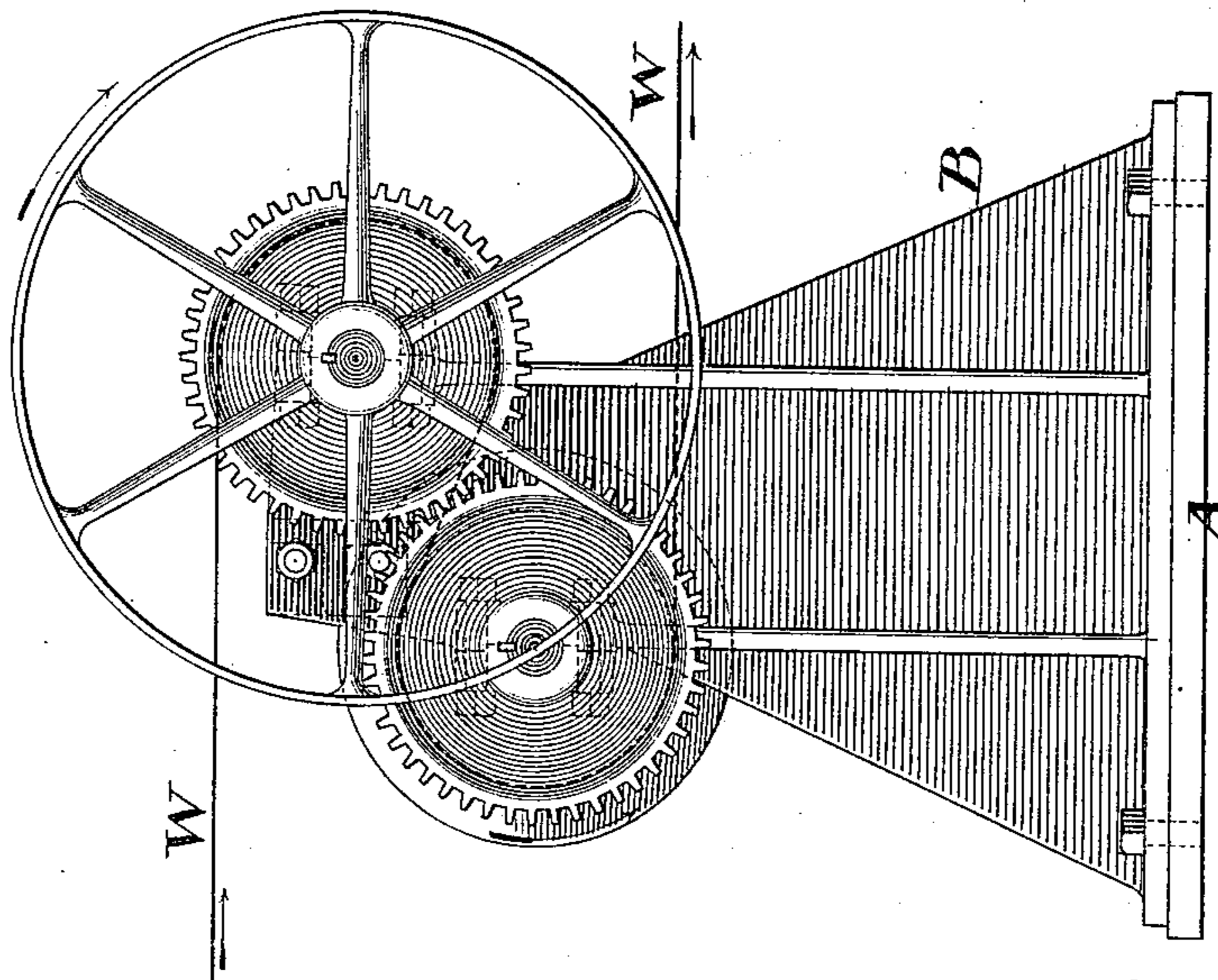


Fig. 1.



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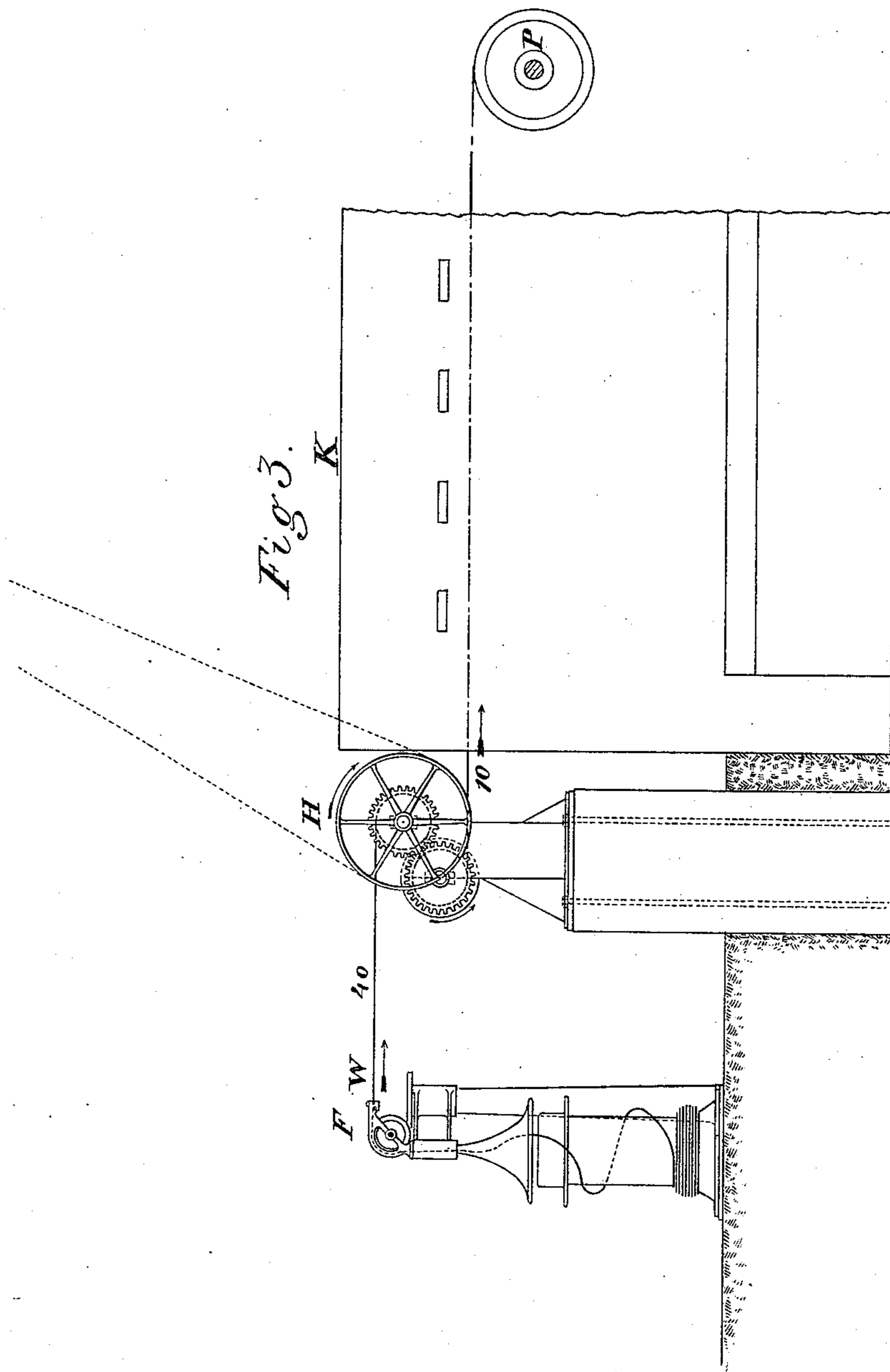
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Witnesses

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UNITED STATES PATENT OFFICE.

JOHN COFFIN, OF JOHNSTOWN, PENNSYLVANIA; ELIZABETH F. COFFIN
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CAMBRIA IRON COMPANY.

APPARATUS FOR ANNEALING WIRE.

SPECIFICATION forming part of Letters Patent No. 451,221, dated April 28, 1891.

Application filed May 20, 1889. Serial No. 311,450. (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 Apparatus for Annealing Wire; 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 means for urging along strands of wire in their transit from the bundles in which they are coiled to an annealing-furnace.

The object of my invention is to relieve the tension on the wire while it is in the annealing-furnace and prevent its being pulled in two while at the red heat necessary to properly anneal it in the furnace.

My improvement consists in interposing between the paying-off reels and the furnace a suitable driving mechanism consisting of a series of driving-rolls, the surface velocity of the rolls being greater than the wire, and the surface of the rolls being traveled in the direction in which the wire is moving. The wire is wrapped around these rolls in such a way that the friction of the rolls urges it onward.

To make my invention clear, I will now refer to the annexed two sheets of drawings, in which—

Figure 1 represents a side elevation of my apparatus; Fig. 2, a front elevation of the same, and Fig. 3 my apparatus in place between the paying-off reels and the annealing-furnace.

Like letters of reference refer to like parts throughout.

A represents the foundation-plate on which my apparatus rests.

B B represent brackets bolted to the foundation-plate, upon which are formed the bearings *b b b b*.

C C' represent the rolls around which the wire passes.

W represents the wire which travels in the direction of the arrows.

The arrows in Fig. 1 represent the direction of revolution of the rolls. The roll C' has formed upon it a series of flanges represented by *c*. The office of these flanges is to separate a series of wires, so that they will not tangle with each other. The rolls C and C' are made of cast-iron with shafts passing through them. They are made by casting upon the shafts, which are previously prepared and which consist in a square central portion terminating in round ends. This construction is clearly shown in Fig. 2. These shafts extend to form journals for the rolls. At one end the shaft of roll C' extends past the journal to receive the pinion D'. The shaft of the roll C also extends past its journaled portion to receive the pinion D, which meshes with the pinion D'. This last-mentioned shaft also extends farther to receive outside of the pinion D a pulley E, which is adapted to receive the driving-belt. Motion being communicated from the belt is transmitted through the shaft to the roller C and through the engaging-pinions D D' and shaft of the roller C' to the roller C'.

Referring to Fig. 3, F represents the paying-off reel. H represents the driving mechanism complete, and K the annealing-furnace, W being the wire in transit traveling in the direction of the arrows. P represents a reel driven in the direction of the arrow for receiving the wire as it issues from the furnace K. I do not limit myself, however, to the use of such a reel for receiving the wire, as it may be led from the furnace to any other machinery for further manipulation, or it may be led through baths for treating it, or it may be led away by power or otherwise in a straight, curved, or broken line, or in any other suitable manner, whereby the wire is caused to travel onward at a speed less than the surface speed of the driven roller. The wire in paying off from the reel F from some kink may catch and offer some resistance, which added to the ever-present frictional resistance might cause the wire to break in the furnace where it is red-hot, were it not for the interposing driving mechanism H. The wire passes from the reels around the

rollers of the driving mechanism H and thence through the furnace. Suppose this accidental resistance offered by the reels to be equal to forty pounds, the tension of the wire at the figure 40 will be forty pounds. Suppose the ratio of wire-tension at the ingoing and outgoing sides of my driving mechanism be four to one, then it would require a force of ten pounds applied at the figure 10 in the direction of the arrow to overcome a resistance of forty pounds at the figure 40—that is, a force of ten pounds applied at the figure 10 in the direction of the arrow tightens the wire upon the driving-rolls, so that the force due to the friction of the surface of the driving-rolls added to the ten pounds of force applied to the wire at the figure 10 will overcome a resistance of forty pounds at the figure 40. I will suppose that the red-hot wire in the furnace K will offer a resistance to breaking of, say, twenty pounds. Without my driving mechanism the wire would be broken if the reels offered a resistance of forty pounds, while with my mechanism it would not be broken because the wire in the furnace would only be subjected to a stress of ten pounds in order to overcome a resistance of forty pounds at the wire.

In operating my invention the wire is taken from the reel F and passed around the roller in the manner shown in Figs. 1 and 3, thence through the furnace, and thence may be directly coiled on coils or passed through any other machinery or baths to treat the wire in any proper manner.

My invention might be modified by using only one roll and wrapping the wire several times around it, or more than two rolls might be used; and while I believe the particular construction shown to be the best for the pur-

pose, I do not wish to confine myself specifically to this construction, but wish my invention to cover broadly any arrangement of friction-rolls which is an evident mechanical equivalent of my invention as I have represented it.

Having fully described my invention and the manner of operating the same, what I claim as new, and desire to secure by Letters Patent, is—

1. In an apparatus for annealing wire, the combination of a paying-off reel, an annealing-furnace, means for conveying the wire at a predetermined velocity from said reel through said furnace, a roll arranged between the reel and the furnace and constructed to bear on the wire, and means for imparting to this roll a surface velocity greater than that of the wire in contact therewith, substantially as and for the purpose set forth.

2. In an apparatus for annealing wire, the combination of a paying-off reel, an annealing-furnace, means for conveying the wire at a predetermined velocity from said reel through said furnace, a roll or rolls arranged between the reel and the furnace, one of said rolls being provided with a series of flanges to separate the several wires from each other and prevent them from becoming entangled, said roll or rolls being so constructed as to bear upon the wire, and means for imparting to said roll or rolls a surface velocity greater than that of the wire in contact therewith, substantially as and for the purpose set forth.

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

JOHN COFFIN.

Witnesses:

E. J. BURKHART,
H. A. SHIELDS.