S. W. BALDWIN.

METHOD OF STRAIGHTENING BARS OF IRON.

No. 187,957. Patented March 6, 1877.

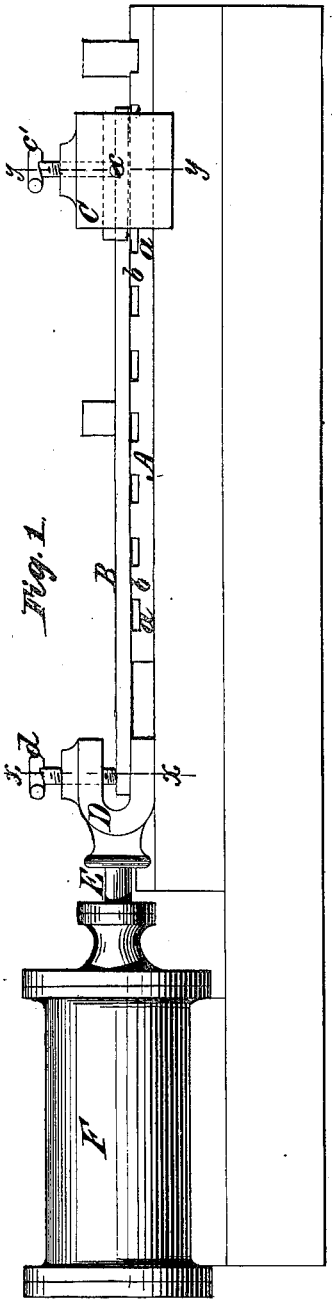

Fig. 1.

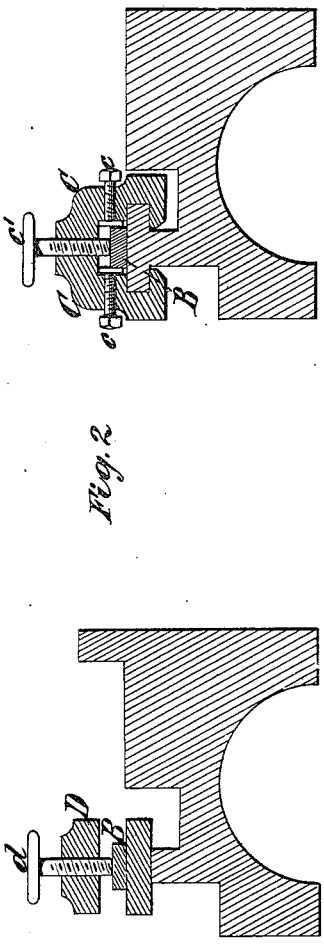

Fig. 2.

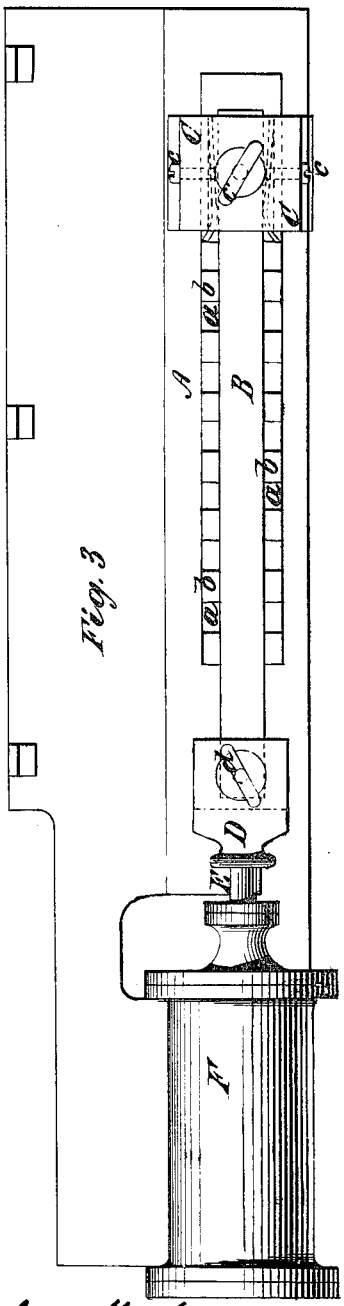

Fig. 3.

Witnesses:
Nelson White
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UNITED STATES PATENT OFFICE.

STEPHEN W. BALDWIN, OF JERSEY CITY, NEW JERSEY.

IMPROVEMENT IN METHODS OF STRAIGHTENING BARS OF IRON.

Specification forming part of Letters Patent No. **187,957**, dated March 6, 1877; application filed January 4, 1877.

To all whom it may concern:

Be it known that I, STEPHEN W. BALDWIN, of Jersey City, in the county of Hudson and State of New Jersey, have invented a new and Improved Mode or Process for Straightening Bars or Rods of Iron or Metal; and I do hereby declare that the following is a full, clear, and exact description thereof, and of its mode or manner of operation, reference being had to the accompanying drawings, and to the letters of reference marked thereon, and making a part of this specification.

As is well known, rods or bars of iron or other metal which are drawn out between and by means of rolls are, as they leave the rolls more or less bent or curved and crooked, and some means have to be resorted to afterward to straighten such bars or rods, so as to fit them for use.

The ordinary means or processes used to straighten such rods or bars are either hammering them until they are rendered straight, or pressing them, by means of suitable mechanism and with sufficient power, against and between straight edges or surface. Both these processes are, however, imperfect and unsatisfactory in their results.

By my process or invention, I take the bar or rod as it leaves the rolls, and straighten it while warm, when the temperature of the whole rod or bar is substantially uniform, so that every part of the rod or bar will be about equally acted upon, or one part not more than another.

My invention consists in taking the rod or bar immediately after the same leaves the rolls, at which time it is sufficiently warm and yielding for such purpose, and its temperature being substantially uniform, and pulling or stretching the same lengthwise with sufficient force to take out any curves or bends that may be in it.

Power or force may be applied in many different ways to effect such object. One of the most convenient ways is by placing the bar or rod in a horizontal or inclined position upon any suitable support and fastening one end and applying any sufficient power to the other end, which power may be by means of a hydraulic or other engine, or by a lever or any other mechanical device.

The drawings illustrate one mode of applying power by a hydraulic pump or engine to effect the straightening of such rod or bar.

Figure 1 is a side view of such a mechanical arrangement. Fig. 2 is an enlarged cross-section through the lines *x x* and *y y* of Fig. 1. Fig. 3 is a plan view of the same.

A represents a bed-piece to support the rod or bar, with elevations *a* thereon, on which the rod or bar B rests, and spaces *b* between such elevations to allow circulation of the air underneath the rod, to secure uniform cooling. At one end of such bed-piece A is a slide, C, into which one end of the warm rod or bar is inserted, and there held tightly by means of screws *c c c'* or their equivalents, such slide being movable, so as to adapt the machine to receive bars of different lengths. The side screws *c c* are more particularly for adjusting the bar so that the pressure of the screw *c'* may be central upon the bar, and to enable bars of different widths being acted on by the same machine.

At the other end of such bed is a clamping device, D, which receives the other end of the rod or bar, and in which it is fastened by the screw *d*, or other means, and which connects with a piston-rod, E, connecting with a piston in the cylinder F. The slide C and clamp D are placed in line with each other, so that as the latter is moved the bar or rod will be stretched or pulled in a straight line. As power which may be either hydraulic or steam is applied to move the piston, in the cylinder F, the bar or rod will be pulled or stretched lengthwise, and by such action all curves, warps, or bends, will be wholly removed, and the bar left entirely straight. If power is applied by means of a lever or gearing, the piston and cylinder will be dispensed with, and such operative mechanism connected with the clamp D.

Experiment has demonstrated that bars or rods of iron, if thus taken as they leave the rolls, and subjected to strain, can be easily and effectually straightened without the necessity of any reheating, and that such rods or bars can be straightened much more rapidly and cheaply than by any other known process. And if such bars or rods have become cold, after having been rolled, they can

be reheated by any convenient and suitable means, and then straightened much quicker and more cheaply than by hammering or forcing them against any straight edge or surface.

What is claimed as new is—

1. The mode or process herein described, of straightening bars or rods of metal, by pulling or stretching the same lengthwise, as they leave the rolls by which they are formed.

2. The mode or process of straightening rods or bars of metal by pulling or stretching the same, while warm, lengthwise, substantially as described.

STEPHEN W. BALDWIN.

Witnesses:
S. D. LAW,
HUGH JONES.