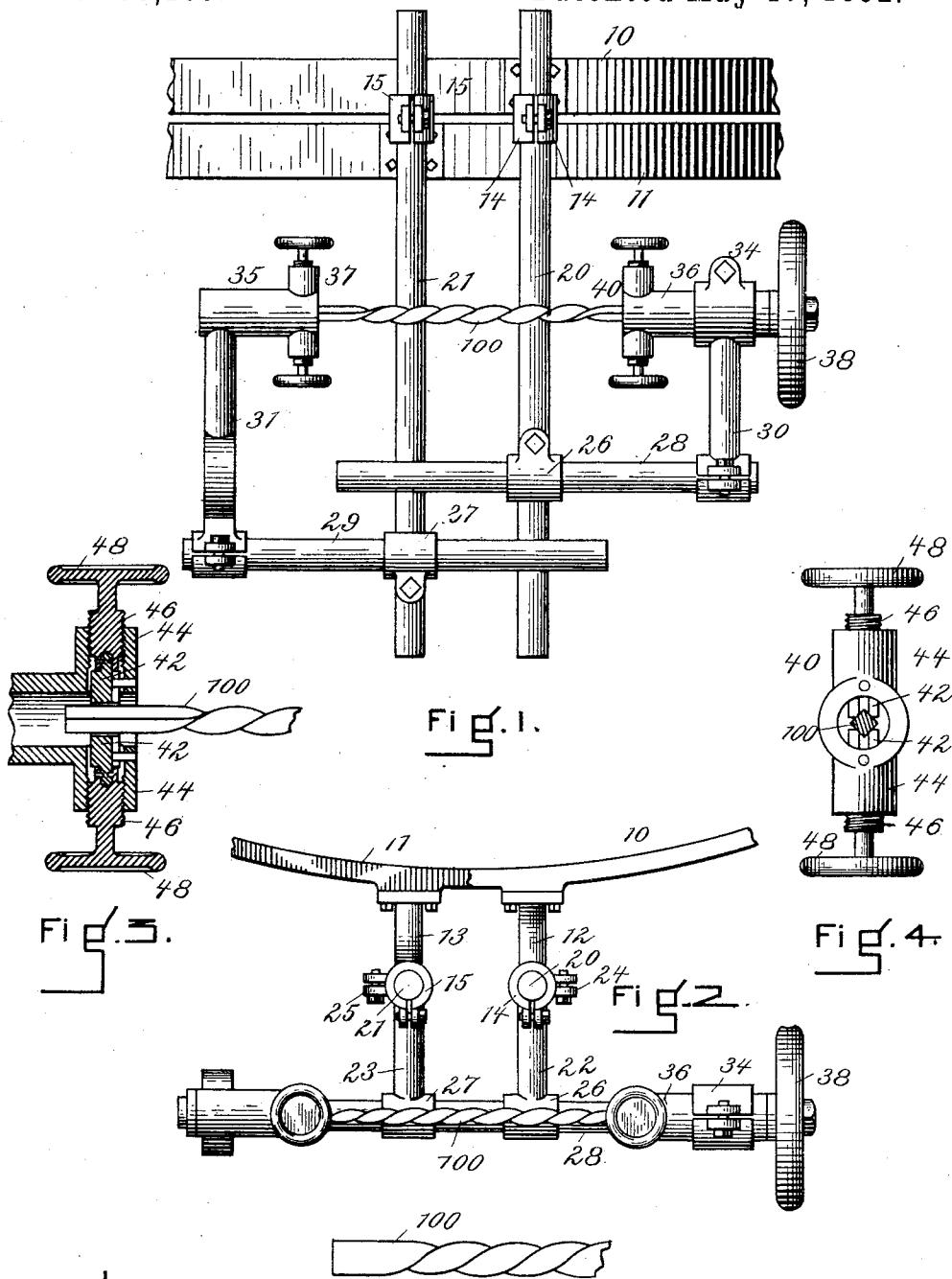


(No Model.)

G. D. BURTON & E. E. ANGELL.
ELECTRIC WIRE TWISTER.

No. 475,193.

Patented May 17, 1892.



WITNESSES

E. De Puy
C. Wood

Fig. 5.



Fig. 6.

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UNITED STATES PATENT OFFICE.

GEORGE D. BURTON, OF BOSTON, AND EDWIN E. ANGELL, OF SOMERVILLE,
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ELECTRIC WIRE-TWISTER.

SPECIFICATION forming part of Letters Patent No. 475,193, dated May 17, 1892.

Application filed August 22, 1891. Serial No. 403,453. (No model.)

To all whom it may concern:

Be it known that we, GEORGE D. BURTON, residing at Boston, in the county of Suffolk, and EDWIN E. ANGELL, residing at Somerville, in the county of Middlesex, State of Massachusetts, citizens of the United States of America, have invented certain new and useful Improvements in Electric Apparatus for Twisting Metallic Bars, of which the following is a specification.

This invention relates to an apparatus for the production of ornamental spirally-convoluted metallic bars for use in the manufacture of ornamental bank and office railings, window-gratings, and other purposes.

The object of the invention is to produce bars of this character in an economical manner.

Figure 1 of the accompanying drawings represents a front elevation of this improved electric twisting apparatus in connection with a current-converter. Fig. 2 represents a plan view thereof. Fig. 3 represents a vertical section of one of the clamps for clamping the bar to be heated and twisted. Fig. 4 represents an end elevation of said clamp. Fig. 5 represents a specimen of the work produced. Fig. 6 represents another specimen having large convolutions.

Similar numerals of reference indicate corresponding parts in the different figures.

This electric twisting apparatus is represented in connection with an electric converter for transforming a current of high voltage and small volume into a current of large volume and low voltage.

A ring 10, composed of copper or other highly-conductive material, constitutes the positive pole of the electric converter, and the ring 11, also composed of copper or other highly-conductive material, constitutes the negative pole thereof. The construction of the converter does not constitute a part of this invention, and need not therefore be herein shown or described. Any suitable current-converter or source of heating currents may be employed.

A short bracket 12, provided with curved clamping-jaws 14, depends from the ring 10, and a short bracket 13, provided with curved clamping-jaws 15, is attached to the ring 11

and projects upward therefrom into the same horizontal plane with the bracket 12. These brackets are composed of copper or other suitable conductive material. A vertical bar 20 is supported near its upper end in the jaws 14 of the bracket 12, being vertically adjustable in said jaws, and a vertical bar 21 is supported in the jaws 15 of the bracket 13 and is vertically adjustable therein. A horizontal arm 22 is connected at its inner end by means of a clamp 24 with the bar 20 near the lower end thereof, and a similar arm 23 is connected by a clamp 25 with the bar 21 near the lower end thereof. The outer end of the bar 22 is provided with a clamp 26, and the outer end of the bar 23 is provided with a clamp 27. A horizontal arm 28 is adjustably supported in the clamp 26 at right angles to the bar 22, and an arm 29 is adjustably supported in the clamp 27 at right angles to the bar 23. Standards 30 and 31 are connected, respectively, to the outer ends of the arms 28 and 29. The upper end of the standard 30 is provided with a bearing 34, in which a tubular shaft 36 is journaled. The outer end of this shaft is provided with a hand-wheel or power-pulley 38 and the inner end thereof with a bar holder or clamp 40. This bar holder or clamp consists, as shown, of clamping-jaws 42, adapted to slide in lateral sockets 44 at the inner end of the tubular shaft. These clamping-jaws are connected with and actuated by screw-plungers 46, which turn in the sockets 44, said plungers being provided with hand-wheels 48. The standard 31 has a fixed tubular arm 35, the inner end of which is provided with a bar holder or clamp 37, which may be similar to the clamp 40 of the shaft 36.

In the use of this apparatus a bar 100 to be heated, whether square, angular, or cylindrical in form, is inserted in the apparatus so as to span the space between the bar holder or clamp, one end thereof being held by the clamp 40 and the other end by the clamp 37. The bar may be inserted by passing it through the tubular arm 35. The current, being switched on, passes from the positive ring 10 of the current-converter through the bracket 12, thence through the bar 20, thence through the bar 22, thence through the bar 23, thence through the standard 30, and thence through

the tubular shaft 36 and its jaws into the bar 100 to be twisted, thence through said bar to the jaws of the tubular arm 35, thence through said arm, thence through the standard 31, 5 thence through the arm 29, thence through horizontal bar 23, thence through the vertical bar 21, and thence through the bracket 13 to the negative ring 11 of the converter. The bar 100 becomes heated in a few seconds, 10 owing to its electrical resistance, to a forging temperature, and then the shaft 36 is rotated either by hand or power. This rotation causes a twisting of the bar. As the bar is twisted it becomes somewhat shortened, and 15 the shaft 36 is adapted to slide in its bearing, so as to approach the tubular arm 35 as the bar shortens. When the bar is sufficiently twisted, the jaws are released therefrom and the bar may be withdrawn through the tubular arm 35. 20

The current may be switched off during the twisting or its volume may be reduced when the proper heat is reached, so as to retain a uniform heat of the bar throughout the twisting operation. 25

The twisting of the bar by this apparatus with electric heat avoids scaling of the bar and permits it to retain its smooth surface.

We claim as our invention—

1. In an electric bar-twisting apparatus, the combination of two standards or supports 30 connected with opposite electric poles, two tubular bar-holders disposed in alignment in said supports, each of said holders being open at both ends for the free passage of a bar to be 35 heated and having a conductive bar-clamp for grasping the bar, and means for rotating one of said tubular bar-holders.

2. In an electric bar-twisting apparatus, the combination of two converter-rings constituting opposite electric poles, a fixed clamp, a 40 rotary clamp, and conductors mounted on said rings and supporting said clamps.

3. In an electric bar-twisting apparatus, the combination of a current-converter, brackets 45 connected with the positive and negative poles thereof, bars adjustable in said brackets, arms connected with said bars, standards supported on said arms, a shaft provided with a bar-holder and supported in one of said 50 standards, a tubular arm attached to the other standard and provided with a bar-holder, and means for rotating said shaft.

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Witnesses:

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