J. C. BRYAN.

## Machine for Bending Horseshoe-Magnets.

No. 160,153. Patented Feb. 23, 1875.

Fig. 1.

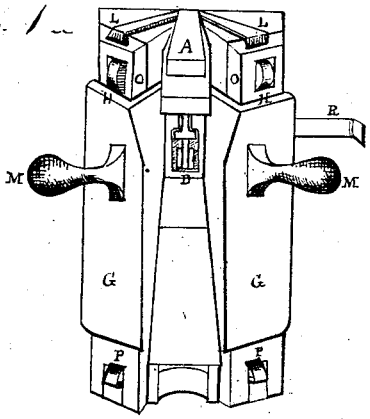


Fig. 2.

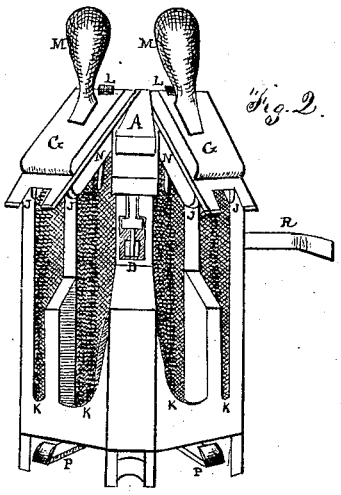


Fig. 3.

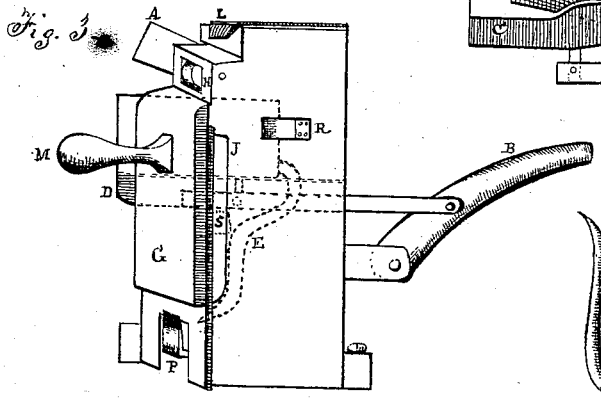


Fig. 4.

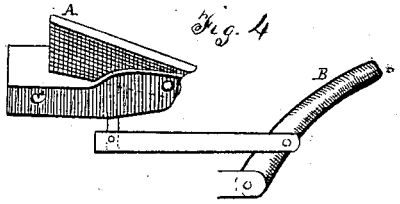


Fig. 5.


Witnesses.

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# UNITED STATES PATENT OFFICE.

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## IMPROVEMENT IN MACHINES FOR BENDING HORSESHOE-MAGNETS.

Specification forming part of Letters Patent No. **160,153**, dated February 23, 1875; application filed September 8, 1874.

*To all whom it may concern:*

Be it known that I, JAMES CHAPMAN BRYAN, of the city of Philadelphia, State of Pennsylvania, have invented a new and useful Machine for Bending Steel, that I style the "Steel-Point Bender," for making curved steel horseshoe-magnets; and I do hereby declare the following to be an exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification, in which—

Figure 1 represents a front elevation of the machine, with the levers down. Fig. 2 represents a front elevation with the front levers raised, and exhibiting the grooves into which the flanges of the front levers fit when pressed down upon the steel rod to be shaped. Fig. 3 exhibits a side of the machine and the rear lever. Fig. 4 shows the rear lever as attached to the traveling-carriage. Fig. 5 shows the shape of the curved steel magnet, as bent from a heated straight rod, that is inserted first at one side of the machine, under the front levers, when raised, and across the carriage-track to the gage-bar on the opposite side of the machine, and then pressed to its required shape.

The nature of my invention consists in the construction and combination of the levers, flanges, grooves, carriage, gage, roadway, and guides, as hereinafter described, for bending curved steel horseshoe-magnets for points for electric lightning-rods.

My machine is made of metal, and when the hot steel rod is inserted at the one side of the machine the lever A is closed upon the rod to center it and hold it firm. The lever B is then drawn back, and draws the carriage C with it, that passes through (back and forth) a roadway, D, from the front; and the pointed end of the carriage pressing against the center of the rod E makes the center bend of an acute angle in the rod. The two levers G G in front operate on hinges H above, and on their insides they have two flanges, J J, that fit in corresponding grooves K K in the frame of the machine; and as the levers G G are raised when the rod is inserted they are held up in their places by spring-catches L L, until after the acute angle has been centered and made in the rod E, when the levers G G are forced down by their weight and handles M M upon the rod E, pressing the rod into the grooves K K by the flanges J J and projecting pin-guides N N. The rod is then bent at two right angles near the center, and two obtuse angles or curves at the points, and the levers G G are held firmly fast by two spring-catches, P P, below.

At the side of the machine is a projecting arm or bar, R, by which the rod E is centered, after being passed across the roadway, from the opposite side of the machine. A block, S, between the flanges J J, projects so as to press or keep the rod against the guide-pins N N, to aid in forming the downward angle.

What I claim as my invention, and desire to secure by Letters Patent, is—

The arrangement, construction, and combination of the upper centering traveling lever A, the rear lever B, the carriage C, roadway D, front levers G G, with their flanges J J, grooves K K, guides N N, and centering-gage R, as herein described, and for the purposes set forth.

JAS. CHAPMAN BRYAN.

Witnesses:

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