

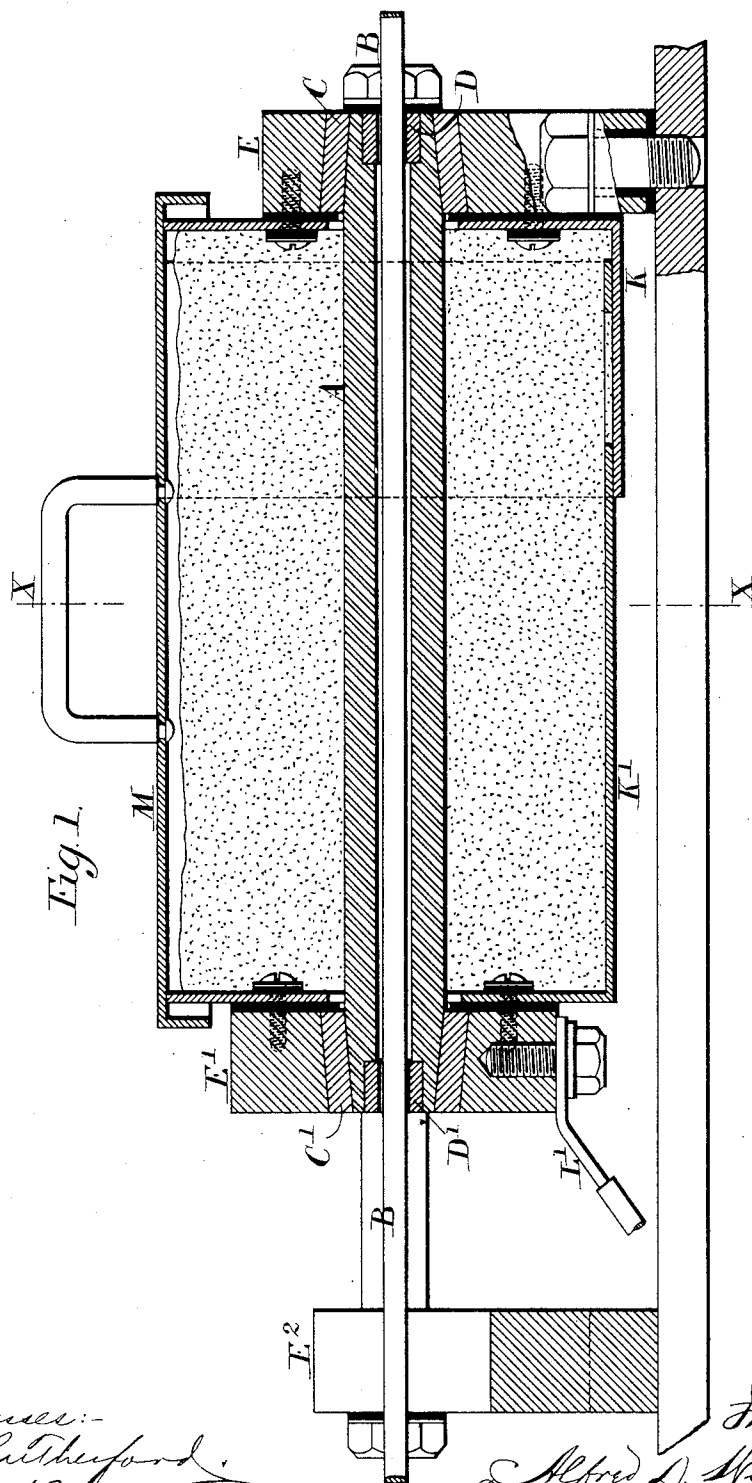
(No Model.)

3 Sheets—Sheet 1.

A. D. WILLIAMSON.
DEVICE FOR HEATING METAL RODS.

No. 475,651.

Patented May 24, 1892.



Witnesses:
J. A. Rutherford,
Robert Garrett.

Inventor:
Alfred D. Williamson,
James W. Norris,
Attorney.

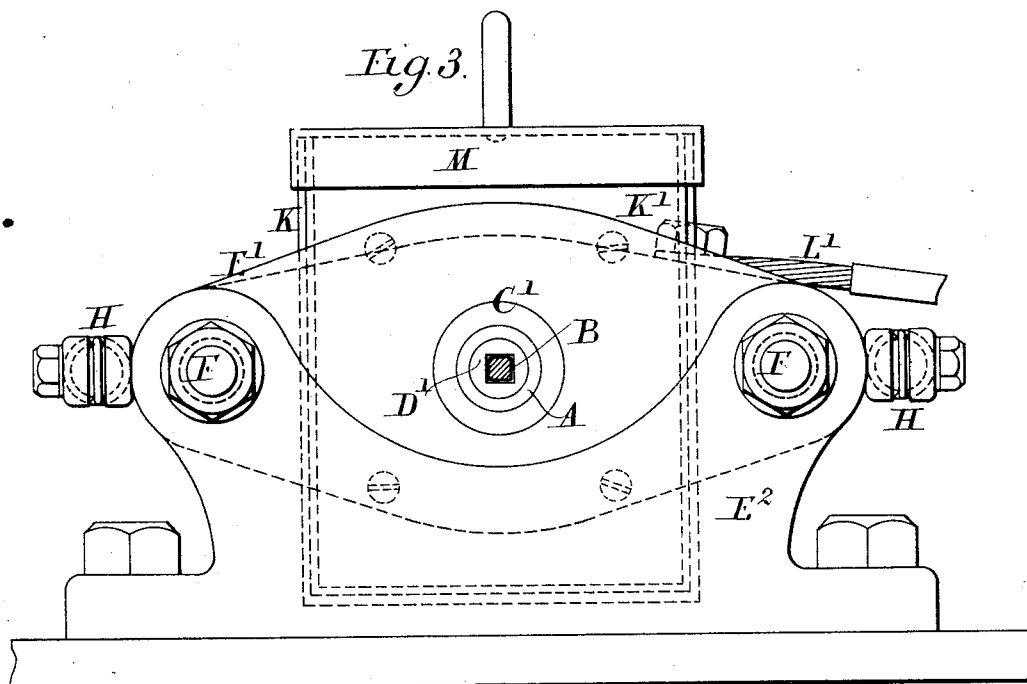
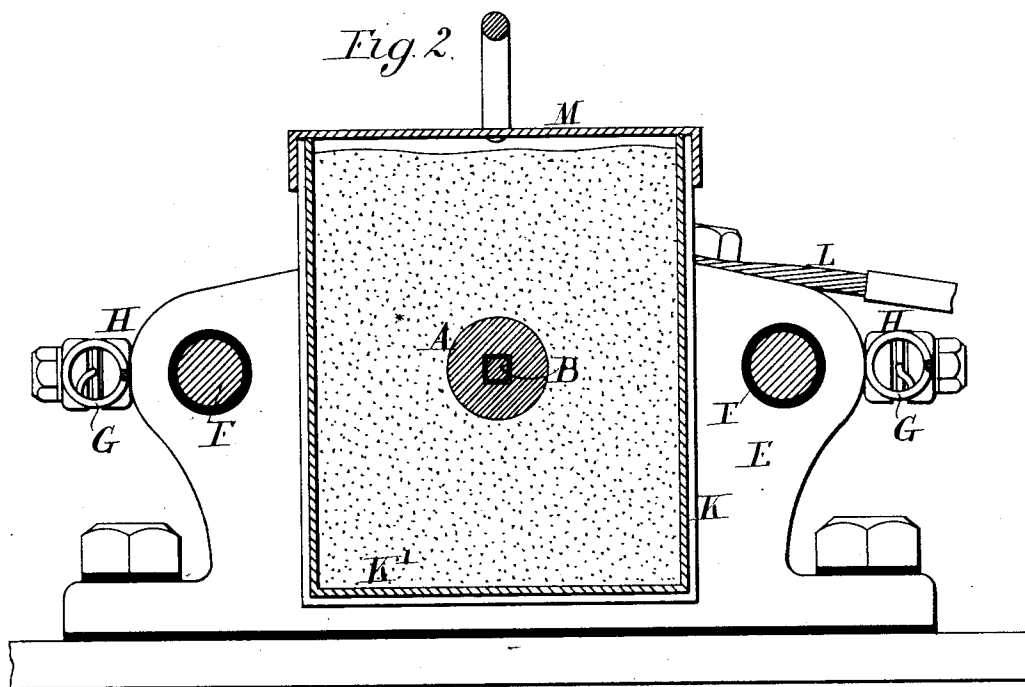
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3 Sheets—Sheet 2.

A. D. WILLIAMSON.
DEVICE FOR HEATING METAL RODS.

No. 475,651.

Patented May 24, 1892.



Witness:
J. A. Rutherford.
Robert Emmett.

Inventor:
Alfred D. Williamson.
By James D. Norris.
Attorney.

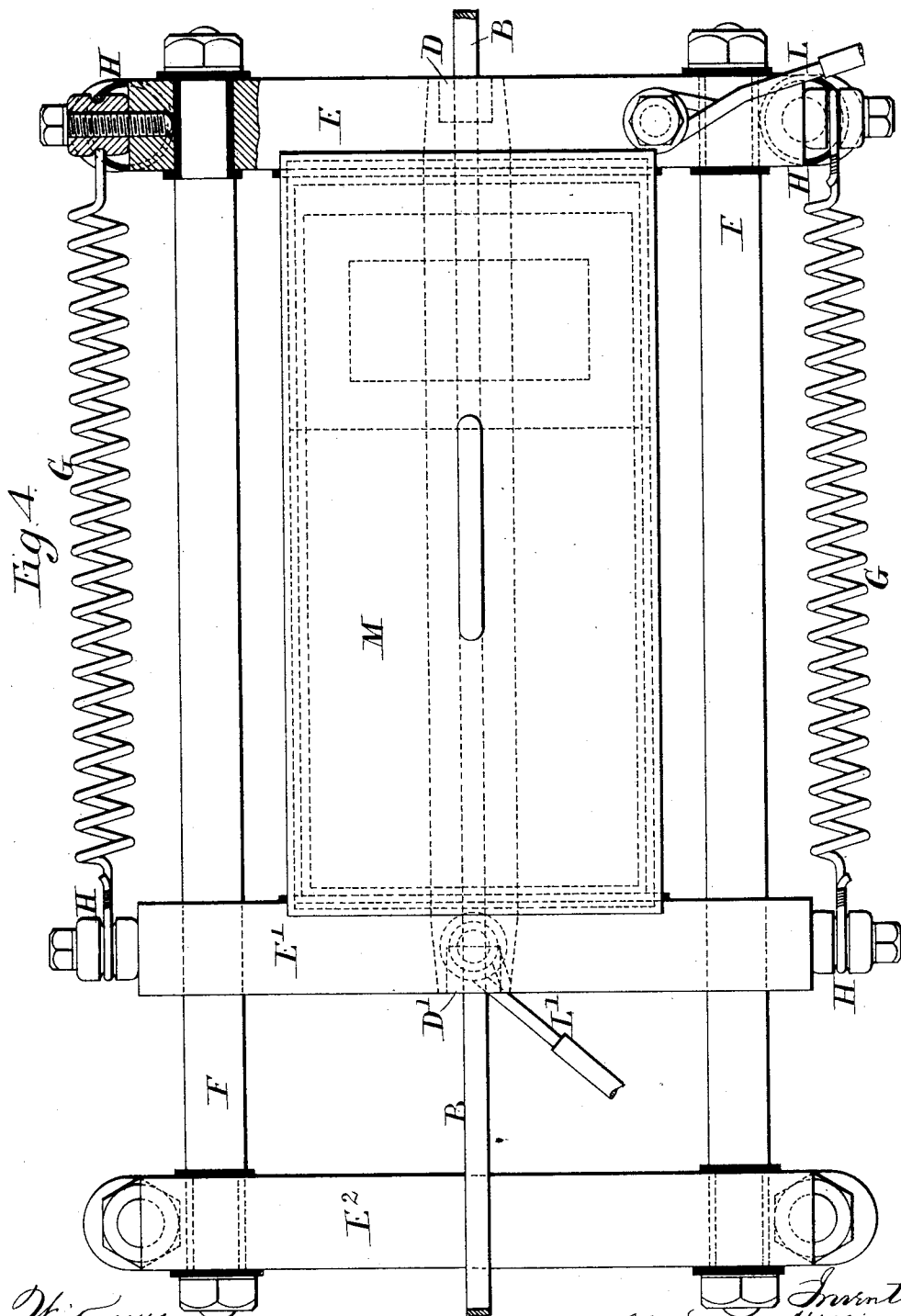
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DEVICE FOR HEATING METAL RODS.

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Robert Emmett

Inventor:
Alfred D. Williamson
By James D. Norris.
Attorney

UNITED STATES PATENT OFFICE.

ALFRED D. WILLIAMSON, OF LONDON, ENGLAND, ASSIGNOR TO THE SIEMENS BROTHERS & COMPANY, LIMITED, OF SAME PLACE.

DEVICE FOR HEATING METAL RODS.

SPECIFICATION forming part of Letters Patent No. 475,651, dated May 24, 1892.

Application filed October 21, 1891. Serial No. 409,419. (No model.) Patented in England May 12, 1891, No. 8,152; in France October 12, 1891, No. 216,679; in Belgium October 12, 1891, No. 96,757; in Switzerland October 15, 1891, No. 4,153; in Norway October 19, 1891, No. 2,458, and in Austria-Hungary February 12, 1892, No. 49,965 and No. 81,648.

To all whom it may concern:

Be it known that I, ALFRED DAVID WILLIAMSON, a citizen of England, residing at 26 Alwyne Road, Canonbury, London, in the county of Middlesex, England, have invented a new and useful Improvement in Apparatus for Heating Metal Rods, &c., (for which I have obtained patents in Great Britain, dated May 12, 1891, No. 8,152; in Switzerland, dated October 15, 1891, No. 4,153; in Norway, dated October 19, 1891, and February 17, 1892, No. 2,458; in France, dated October 12, 1891, No. 216,679; in Belgium, dated October 12, 1891, No. 96,757, and in Austria-Hungary, dated February 12, 1892, No. 49,965 and No. 81,648,) of which the following is a specification.

This invention has for its object to provide a new and improved apparatus for heating a metal rod, bar, or wire which is being fed through a machine for making nails, screws, key-blanks, or the like, to be heated electrically to a high temperature in close proximity to the tools which operate on the heated metal.

To accomplish this object my invention involves the features of construction and the combination or arrangement of devices hereinafter described and claimed, reference being made to the accompanying drawings, in which—

Figure 1 is a longitudinal sectional view of an apparatus embodying my invention. Fig. 2 is a transverse sectional view taken on the line *xx*, Fig. 1. Fig. 3 is an end elevation, and Fig. 4 is a plan view.

In the drawings, the letter A indicates a tube of carbon, which may be, as shown, externally circular and internally of a shape corresponding with that of the metal rod or wire B that is to be heated. It may be made in one piece or built up of segments. Its ends are externally coned to receive coned sleeves C C', of copper, gun-metal, brass, or other metal which is a good conductor of electricity, and within the ends are fixed pieces D D', of slate, kaolin, or other suitable refractory material, to act as guides for the rod B passing

through them. The sleeves C C' are fitted in frames E E', the one frame E being stationary and the other E' free to slide along guide-bolts F, which are fixed to E and to a third stationary frame E². Springs G, attached to insulators H, which may be of porcelain, draw the frame E' toward E and thus cause the sleeves C C' to closely embrace and make good electrical contact with the ends of the carbon tube A. A box made in two parts K K', of which K is attached to E and K' to E', contains slag, wool, sand, or other suitable refractory material that is a bad conductor of heat, completely surrounding and inclosing the tube A and covered by a removable cover M. The various parts are insulated from each other by mica or other suitable non-conducting refractory material, as indicated by the black parts of the drawings, so that when the frames E E' are connected, respectively, by conductors L L' to the terminals of a dynamo-electric machine or other source of electricity the electric current, which may be of moderate tension, but is large in quantity, must pass exclusively through the carbon tube A, heating it to a high temperature. The heat of the tube, radiated on the rod or wire B, raises it to a high temperature, and as this rod or wire is advanced step by step to be operated on by hammers or other tools it issues hot from the front end of the tube at D, near which point the operating-tools may be arranged. The tube A, instead of being of carbon, may be of other refractory material or compound of low electrical conductivity. The interior of the tube may be glazed to prevent it from wasting away, and, besides the bed of sand or the like which it occupies within the box K K', it may be sheathed with asbestos, slag, wool, or such like material. For the springs G may be substituted wire cords passing over pulleys and attached to suitable weights, and instead of fitting the coned ends of the tube with coned sleeves pressed on them, as described, these ends might be held in conducting-clamps of any known kind—such as are used, for example, in holding pieces of metal when they

are being electrically welded together. The interior of the tube might by means of a pipe leading into it laterally be kept supplied with hydrocarbon vapor, nitrogen, or other gas of neutral character, so as to avoid injurious oxidation of the metal rod or wire passing through the tube.

Having thus described the nature of my invention and in what manner the same is to be performed, I claim—

In an apparatus for electrically heating a metal rod, bar, or wire, the combination of a stationary and a movable frame, interiorly-coned conductors carried by said stationary and movable frames, a carbon tube provided with exteriorly-coned ends to engage the interiorly-coned sleeves carried by the stationary and movable frames, and springs con-

nected with said stationary and movable frames to retain the coned conductors and carbon tube in close contact, substantially as described.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 8th day of October, A. D. 1891.

ALFRED D. WILLIAMSON.

Witnesses:

OLIVER IMRAY,
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