

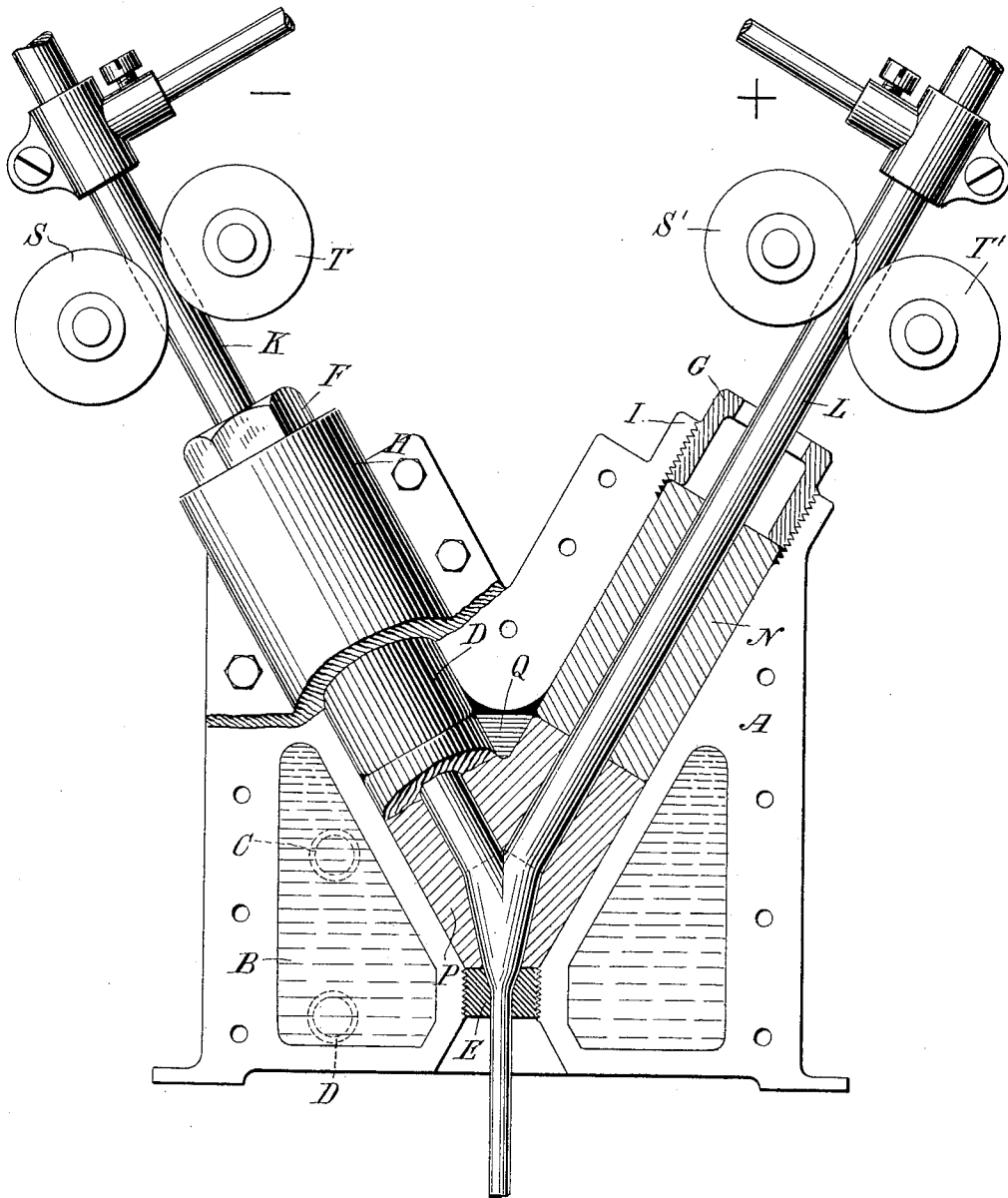
(No Model.)

J. D. BISHOP.

APPARATUS FOR ELECTRICALLY WORKING METALS.

No. 604,137.

Patented May 17, 1898.



WITNESSES:

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APPARATUS FOR ELECTRICALLY WORKING METALS.

SPECIFICATION forming part of Letters Patent No. 604,137, dated May 17, 1898.

Application filed May 6, 1897. Serial No. 635,379. (No model.)

To all whom it may concern:

Be it known that I, JAMES DRAPER BISHOP, a subject of the Queen of Great Britain, residing in New York, in the county and State of New York, have invented certain new and useful Improvements in Apparatus for Electrically Working Metals, of which the following is a specification.

This invention relates to the electrical treatment of metals by which they may be formed into any desired length of any desired cross-sectional shape. It is particularly adapted to the production of continuous lengths of electrical conductors.

In carrying out the invention a plurality of thick rods of the metal to be worked is led to a chamber containing a die, in which chamber their opposed ends meet, the chamber having an opening of the shape and size of the conductor or wire to be formed, and an electric current is led through the rods and across their ends, the current being of sufficient volume to develop a degree of heat at the contact-surface sufficient to soften the metal and permit it to be forced through the die by pressure applied to the rods from behind. The chamber behind the die is lined with a heat-refractory insulating material, and suitable gripping and feeding devices are provided for forcing the softened metal through the die.

The invention therefore comprises a method of working metals consisting in leading an electric current through them sufficient to soften a body of the same and then forcing the softened mass through a die.

It comprises also apparatus for carrying out the method, consisting of feeding devices for forcing the metal against a die, a heat-refractory chamber to hold the metal, and means for leading an electric current through the metal.

It comprises also other features, which will be particularly hereinafter described, and will be definitely pointed out in the claims annexed to this specification.

In the accompanying drawing is shown in elevation, partly in section and part broken away, an apparatus embodying my improvements.

A represents a hollow steel vessel provided with a water-jacket at B and suitable pipes

(indicated at C D) for leading water there-through. The vessel A is preferably V-shaped and lined throughout with a heat-refractory and electrically-insulating material, such as fire-clay or ganister. This material may be molded in sections and then introduced into the steel vessel. A steel die E may be secured in the bottom of the heating-chamber and nuts F G screwed into the necks H I to hold the refractory lining N O P Q firmly in place. The metal rods K L are led through gripping-rolls S T S' T' into the necks. The latter are preferably at an angle to each other, so that the metal rods or bars from which the conductor or wire is to be formed meet at a point near the die or in the closed chamber above the latter and are insulated from one another at all other points and are insulated also from the metal walls of the vessel A by the refractory lining. A heavy electric current is led through the metal rods by way of clamps U V, which may be shifted back from time to time as the bar advances, said current being of sufficient volume to soften the metal at and around the surface of junction. After a short period of application of the current the metal becomes sufficiently soft to be easily forced or squirted through the die, whence it may be led through water or an annealing-chamber to a reel. Thus a continuous rod or wire of any desired size, shape, or length may be formed.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. Means for making electric conductors or metal wire, consisting of a refractory chamber containing a die, means for feeding bars of metal therein and forcing them into contact with one another at or near the die, by pressure applied behind the die, and connections for leading an electric current through the bars.

2. Means for making electric conductors or metal wire, comprising a heat-refractory chamber containing a die, a plurality of openings into said chamber for bars of the metal to be worked, feed devices for forcing the bars into the chamber, and connections for leading an electric current through the bars.

3. Means for making electric conductors or metal wire, comprising a metal chamber hav-

ing a heat-refractory lining said chamber containing a die and water-jacket around the same, openings for feeding in bars of the metal to be worked, feeding devices, for forcing the bars toward the die, and connections
5 for leading an electric current through the bars.

In testimony whereof I have hereunto subscribed my name this 26th day of March, A. D. 1897.

J. D. BISHOP.

Witnesses:

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