

Jan. 31, 1928.

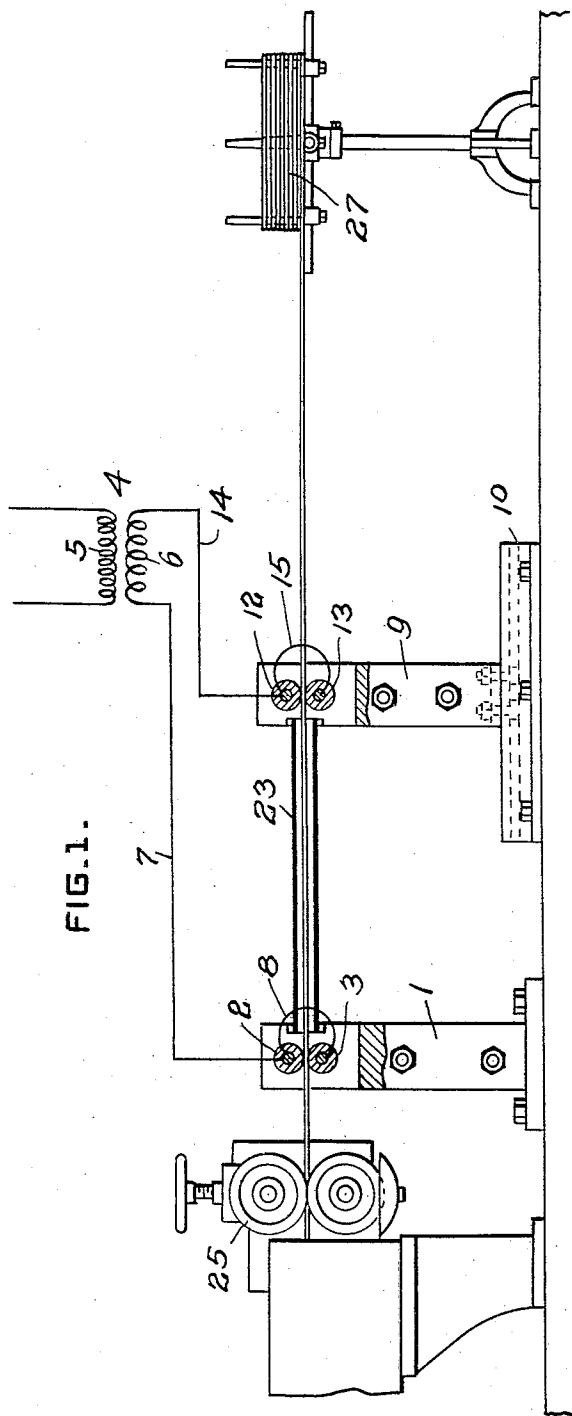
1,657,643

J. H. RENIERS*

ELECTRIC HEATING MEANS

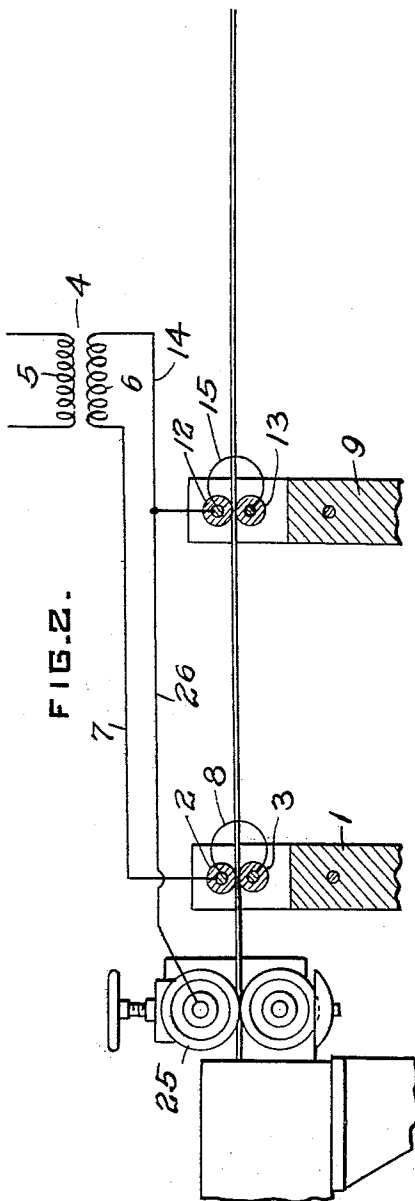
Filed May 15, 1923

2 Sheets-Sheet 1



WITNESSES

J. Herbert Bradley



INVENTOR

James Hunter Reniers
by Green & McClellan
attorney

Jan. 31, 1928.

1,657,643

J. H. RENIERS

ELECTRIC HEATING MEANS

Filed May 15, 1923

2 Sheets-Sheet 2

FIG. 4.

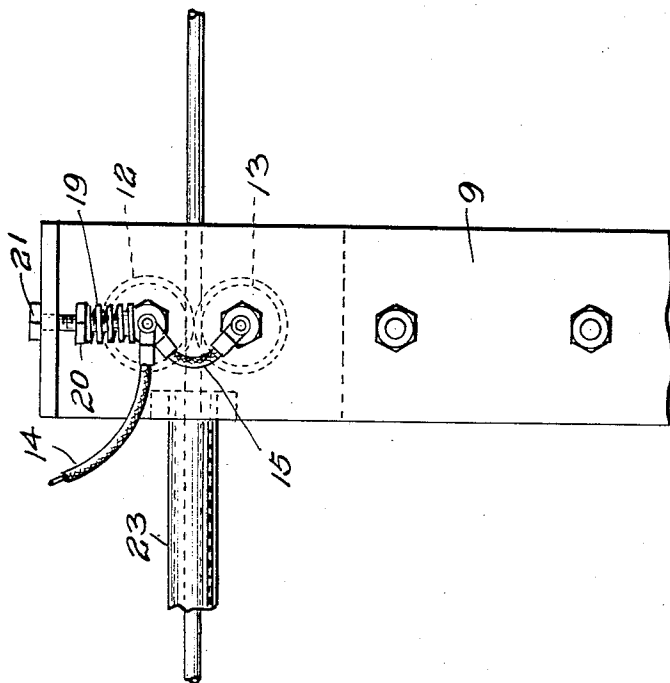
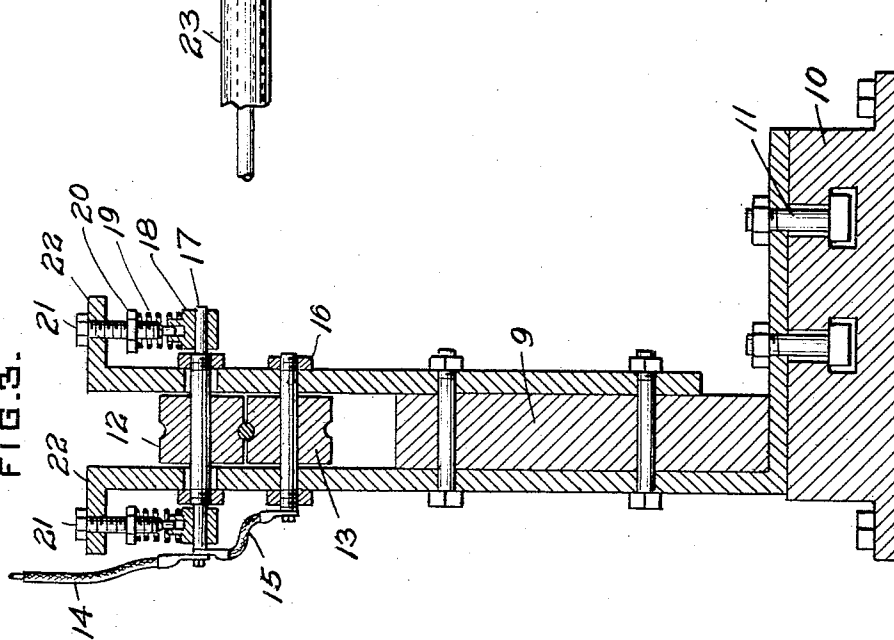


FIG. 3.



WITNESSES

J. Herbert Bradley.

INVENTOR

James Hunter Reniers
by Green & McCallister
attorneys

UNITED STATES PATENT OFFICE.

JAMES HUNTER RENIERS, OF BEN AVON, PENNSYLVANIA, ASSIGNOR, BY MESNE ASSIGNMENTS, TO PITTSBURGH SCREW AND BOLT CORPORATION, A CORPORATION OF PENNSYLVANIA.

ELECTRIC HEATING MEANS.

Application filed May 15, 1923. Serial No. 639,033.

My invention relates to heating means and more particularly to an electric heating means for stock such as rods, bars, wire and the like.

Heretofore it has been customary to heat rod or wire stock for use in a bolt or nail making machine in a furnace to raise it to forging temperature. This has necessitated rehandling the heated rod or wire to feed it to the bolt or nail machine with the attendant disadvantages and danger to the operator in handling the heated material.

An object of my invention is to provide a simple, easily controlled heating means which is adapted to heat the stock as it is used and while it is being fed to such a machine of this type. A further object is to provide a heating means which is adapted to raise the stock to forging temperature as it is fed from a supply reel to the bolt or nail machine without any intermediate handling of the stock.

One embodiment of my invention is shown in the accompanying drawing in which Figure 1 is a side elevation of one form of my heating means, partly in section. Fig. 2 is a similar view, showing the feeding rolls for the forging machine included in the heating circuit. Fig. 3 is a vertical section through one of the brackets supporting one set of contact rolls and Fig. 4 is a side elevation thereof.

In carrying out my invention I use contact rolls past which the wire or rod stock moves as it is being fed to the forging machine. These contact rolls are supplied in sets and are adapted to pass an electric heating current through the material between different sets of rolls for the purpose of raising the stock to a forging temperature.

As illustrated, my invention comprises a stationary bracket 1 on which is supported a set of upper and lower bronze contact rolls 2 and 3, respectively. A transformer 4 is provided having the usual primary coil 5 and secondary coil 6. One terminal of the secondary is connected to the contact rolls 2 and 3 through wires 7 and 8.

Spaced from the first bracket 1 is a second bracket 9 supported upon a bed 10 and secured thereto by means of a slot and bolt connection 11 which renders this bracket adjustable to vary the distance between it and the first bracket 1. This bracket 9 sup-

ports a second set of upper and lower bronze contact rolls 12 and 13 respectively, which are in line with the contact rolls 2 and 3 and which are connected to the second terminal of the secondary through wires 14 and 15.

As shown in Fig. 3, the lower roll of each set is supported upon a stationary brass axle 16 through which heating current is transmitted to the roll while the upper contact roll is supported upon a relatively movable brass axle 17. The upper axle is supported in journals 18 which are spring pressed downwardly by springs 19 seating on the journals at one end and pressing at the other end against a nut 20 which is adjustable on a bolt 21 extending downwardly and threaded through an outwardly extending flange 22 on each side of the bracket. As shown in Fig. 3 the spring 19 surrounds the lower end of the bolt 21 and by rotating the nut in one direction or the other the amount of spring pressure for pressing the upper roll downwardly toward the lower roll may be varied. This provides for a close contact between the rolls and the stock and maintains such contact in spite of possible irregularities in the stock.

The bronze rolls and brass axles are provided in order to prevent any welding of these parts together, due to a heating by the current which traverses them. It is obvious that any desired non-welding metals may be used.

Supported between the two sets of contact rolls is a heat insulating or retaining tube 23 through which the stock travels as it is being fed. This tube is provided to prevent loss of heat by radiation.

As shown in Fig. 2 the feed rollers 25 which usually form a part of the metal working machine may also be used as contact rolls, and I have shown them as connected by means of a wire 26 to the same terminal of the secondary as the adjustable set of contact rolls 12 and 13.

My apparatus is installed between the usual reel 27 for the stock and the forging machine.

As the stock travels to the machine it passes through the sets of contact rolls and a heating current is passed through that part of the stock between said rolls whereby the temperature is raised to the desired degree due to the resistance of the stock

to the current's passage. The amount of stock heated may be regulated by varying the distance between the roll supporting brackets by means of the slot and bolt connection 11. The heat generated is maintained by the provision of the heat insulating tube 23 through which the hot stock travels.

The transformer may be of any desired type having, for example, a high tension primary operating on a 440 volt 60 cycle circuit and a low tension secondary giving 2 volts or more or 600 amperes or more as desired, or any other current source may be used.

Having thus described one embodiment of my invention what I claim is:—

1. A continuous electric heating means including spaced members having outwardly extending horizontal flanges, upper and lower rollers positioned between said members, an axle for said upper roller extending through said members below said flanges and provided with journals adjacent the ends thereof, a bolt secured to each of said

flanges and extending downwardly toward the associated journal, a spring associated with each of said bolts for pressing said journals downwardly, nuts on said bolts for varying the pressure of said springs and means for conveying a heating current to said work through said rollers.

2. A continuous electric heating means including spaced members having outwardly extending horizontal flanges, upper and lower contact rollers positioned between said members, an axle for said upper roller extending through said members below said flanges and provided with journals adjacent the ends thereof, a pin secured to each of said flanges and extending downwardly toward the associated journal, adjustable means on said pin for yieldingly pressing said journals downwardly and means for conveying a heating current to said work through said rollers.

In testimony whereof, I have hereunto subscribed my name this 9th day of May, 1923.

JAMES HUNTER RENIERS.