

No. 830,093.

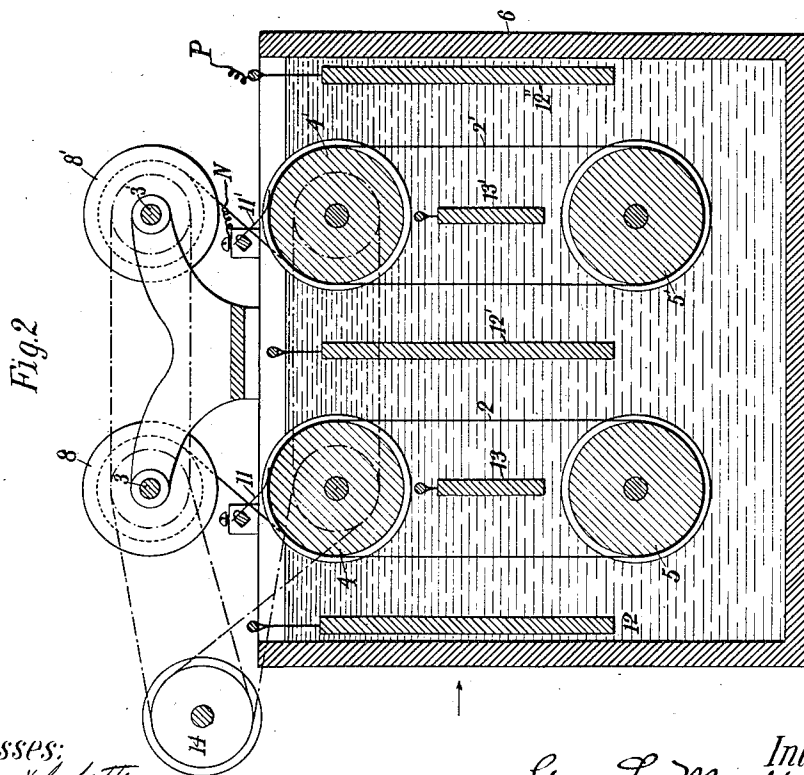
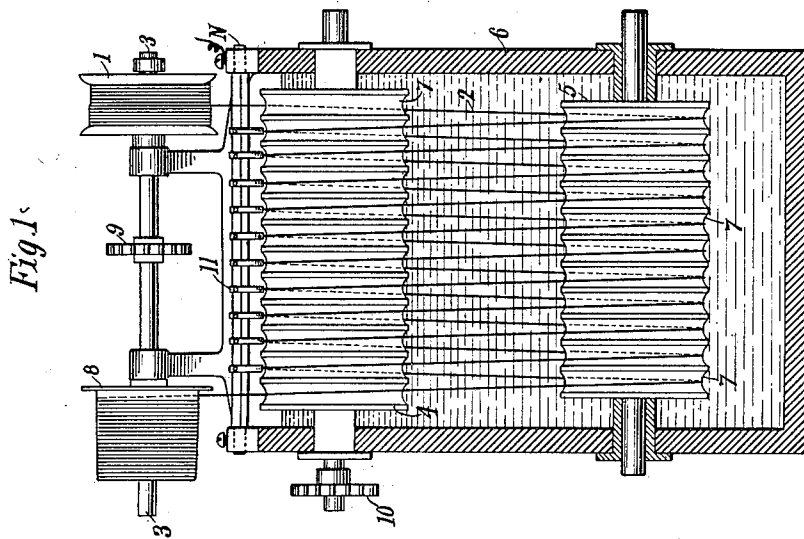
PATENTED SEPT. 4, 1906.

G. L. MEAKER.

APPARATUS FOR GALVANIZING WIRE.

APPLICATION FILED JUNE 18, 1902.

2 SHEETS—SHEET 1.



Witnesses:
Raphael Ketter
J. E. Hutchinson, Jr.

Inventor
Guy L. Meaker
By
Rumert Goldborough Attys.

G. L. MEAKER.
APPARATUS FOR GALVANIZING WIRE.

APPLICATION FILED JUNE 18, 1902.

2 SHEETS—SHEET 2.

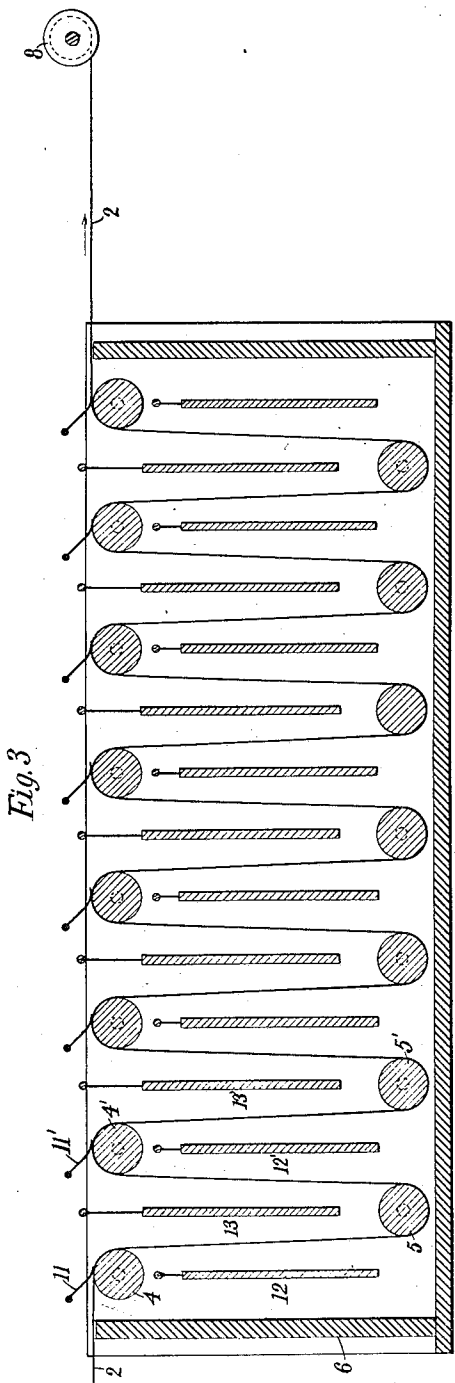


Fig. 3

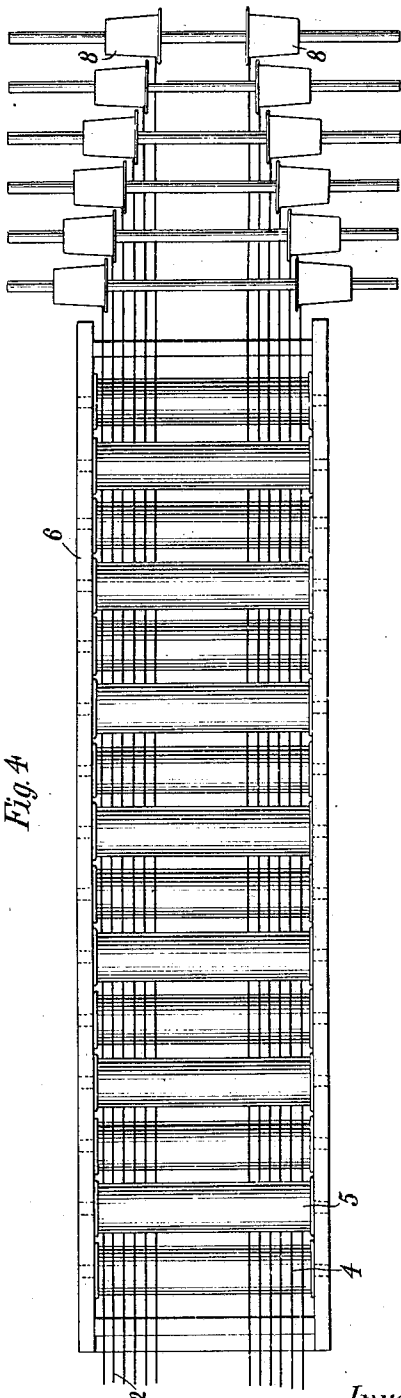


Fig. 4

Witnesses:
Raphael Vetter
J. E. Hutchinson Jr.

Inventor
Guy L. Meaker
By
Rennie & Goldsborough Attys

UNITED STATES PATENT OFFICE.

GUY L. MEAKER, OF EVANSTON, ILLINOIS, ASSIGNOR TO THE AMERICAN
STEEL AND WIRE COMPANY OF NEW JERSEY.

APPARATUS FOR GALVANIZING WIRE.

No. 830,093.

Specification of Letters Patent.

Patented Sept. 4, 1906.

Application filed June 18, 1902. Serial No. 112,169.

To all whom it may concern:

Be it known that I, GUY L. MEAKER, a citizen of the United States, residing in the city of Evanston, county of Cook, State of Illinois, have invented a certain new and useful Apparatus for Galvanizing Wire, of which the following is a specification, reference being had to the drawings accompanying and forming part of the same.

My invention relates to an apparatus in which wire is electrogalvanized by drawing the wire through a solution of the metal to be deposited and subjecting the same to the action of an electric current.

Heretofore in electroplating or electrogalvanizing wire a long vat or tank having a series of anodes at the top and bottom or along the sides and filled with the electrolyte has been used for this purpose, the tank being from ten to fifty feet long, depending on the conditions. A tank of this description not only takes up a large amount of space, but has other disadvantages, such as requiring a large amount of plating solution, and consumes a large quantity of the electric current by reason of the length of wire through which the current passes and the number of anodes required for the purpose. By my improved apparatus I consume a smaller quantity of the electrical energy by reason of the fact that the entire current consumed is used in plating the wire instead of overcoming the resistance in a long length of wire, such as is necessary in the apparatus used heretofore, and I am able to galvanize a greater length of wire in an apparatus which occupies very small space. The consumption of current in my improved apparatus is further lessened by the fact that I am enabled to use a comparatively small number of anodes.

Referring to the drawings, Figure 1 is an end elevation, partly in section; Fig. 2, a side elevation, partly in section, showing two units, while Figs. 3 and 4 show a modification.

1 is a reel of wire 2, properly pickled and cleaned preparatory to being galvanized, the reel running loose on the shaft 3.

4 and 5 are cylinders or drums properly journaled in the sides of the tank 6, having grooves 7 in their surfaces.

8 is a winding-drum keyed to the shaft 3, which shaft is driven from a convenient source of power by means of a belt or chain

passing over the driving-pulley 9, or it may be driven by a series of gears. The wire passes from the reel around the drums or cylinders, being led from groove to groove until it is finally drawn from the last groove onto winding-drum 8, where it is removed in bundles or coils. The winding-drum alone may be driven if the wire to be galvanized is sufficiently strong, and a small number of loops or coils are made in the tanks; but it may be necessary to drive one or both of the cylinders or drums by driving-pulleys 10, keyed to their shafts. Furthermore, it may be necessary to use more than two drums or cylinders.

In order to accomplish the electroplating or galvanizing, the tank is filled with solution or electrolyte nearly to the top of the upper cylinder or drum, so that a small portion of the wire is thus out of the solution or electrolyte at this point. Electrical connection with some or all of the coils or loops at the points where they emerge from the solution is made by means of brushes 11, which brushes are electrically connected to the negative pole of the source of electric current. Anodes 12 and 13 are suspended in the solution, each being electrically connected to the positive pole of the same source of electric current. The anode 13 is suspended inside the loop or coil, while the anodes 12 are suspended outside of the loops, so that the wire is thoroughly plated on all sides.

The operation of my apparatus, therefore, is as follows: Wire from the reel is drawn round and round the cylinders or drums in short coils or loops, and the electric current being supplied to each one of these loops greatly reduces the resistance to be overcome. Furthermore, by passing the wire through the electrolyte in coils and supplying the current to each coil separately a more perfect and even deposit is obtained, and, as before noted, the apparatus occupies a very small space. As the wire is passing through the electrolyte the current in passing through the solution from the anodes to the wire electrically deposits the metal base of the solution upon the surface of the wire.

In Fig. 2 I have shown a tank in which there are two units, such as shown in Fig. 1, each being complete and independent in and by itself. Any part of these units may be used in a long tank; but it is to be observed

that each unit is the equivalent, so far as capacity is concerned; of the long tanks now in use.

In Fig. 2, 14 is a driving-pulley which drives the two winding-drums 8 and 8' and also drives the top cylinders or drums 4 and 4'. The wire is supplied to each unit in the manner heretofore described, and the operation of each unit is substantially the same as described and shown in Fig. 1.

In Figs. 3 and 4 are shown a modification in which a series of cylinders or drums are used, and instead of each pair of drums forming a separate unit the wire is carried around the entire series of drums, passing over each drum only once, however, so that if there are, say, thirty grooves in each drum thirty wires could be fed through and the units, therefore, instead of being across the tank, would be lengthwise of the tank; otherwise the operation of this modification is substantially as heretofore described.

Instead of supplying the wire to each unit from a reel the wire may be fed to the cylinders directly from the furnace, passing, however, through pickling and cleaning vats between the furnace and the galvanizing-tank.

Having described my invention, what I claim is—

1. In a wire-galvanizing apparatus, the combination of a plurality of drums or cylinders adapted to pass the wire through an electrolyte in loops or coils, one or more of said drums or cylinders having grooves upon the surface thereof, a tank in which said drums or cylinders and the electrolyte are contained, brushes contacting with the loops or coils above the surface of said electrolyte and electrically connected to the negative pole of the source of electric energy, anodes suspended in the electrolyte and electrically connected to the positive pole of the source of electric energy, a shaft on said tank, a reel on said shaft containing the wire to be treated, and a second reel on said shaft to take up the wire passing through the tank.

2. In a wire-galvanizing apparatus, the combination of a plurality of drums or cylinders adapted to pass the wire through an electrolyte in loops or coils, one or more of said drums or cylinders having grooves upon the

surface thereof, a tank in which said drums or cylinders and the electrolyte are contained, brushes contacting with the loops or coils above the surface of said electrolyte and electrically connected to the negative pole of the source of electric energy, anodes suspended in the electrolyte and electrically connected to the positive pole of the source of electric energy, a shaft on said tank, a reel loose on said shaft and containing the wire to be treated, a second reel fast on said shaft to take up the wire passing through the tank, and means for driving said shaft.

3. In a wire-galvanizing apparatus, the combination of pairs of drums or cylinders adapted to pass the wire through the electrolyte in loops or coils, one or more of said drums or cylinders having grooves upon the surface thereof, a tank in which said drums or cylinders and the electrolyte are contained with the upper ones of said pairs of drums or cylinders partly above the surface of the electrolyte, brushes contacting with the loops or coils upon the drums or cylinders above the surface of said electrolyte and electrically connected to the negative pole of the source of electric energy, anodes suspended in the electrolyte and electrically connected to the positive pole of the source of electric energy, and a source of electric energy.

4. In a wire-galvanizing apparatus, the combination of pairs of drums or cylinders adapted to pass the wire through the electrolyte in vertical loops or coils, a tank in which said drums or cylinders and the electrolyte are contained with the upper ones of said pairs of drums or rollers partly above the surface of the electrolyte, brushes contacting with the loops or coils above the surface of the electrolyte and electrically connected to the negative pole of the source of electric energy, anodes suspended in the electrolyte and electrically connected to the positive pole of the source of electric energy, and a source of electric energy.

In witness whereof I have hereunto set my hand this 16th day of June, A. D. 1902.

GUY L. MEAKER.

Witnesses:

HILLARY C. MESSIMER,
GEORGE H. SONNEBORN.