Oct. 5, 1937. C. G. MILLER 2,094,712

ELECTROPROCESSING MACHINE

Original Filed June 29, 1936 2 Sheets-Sheet 1

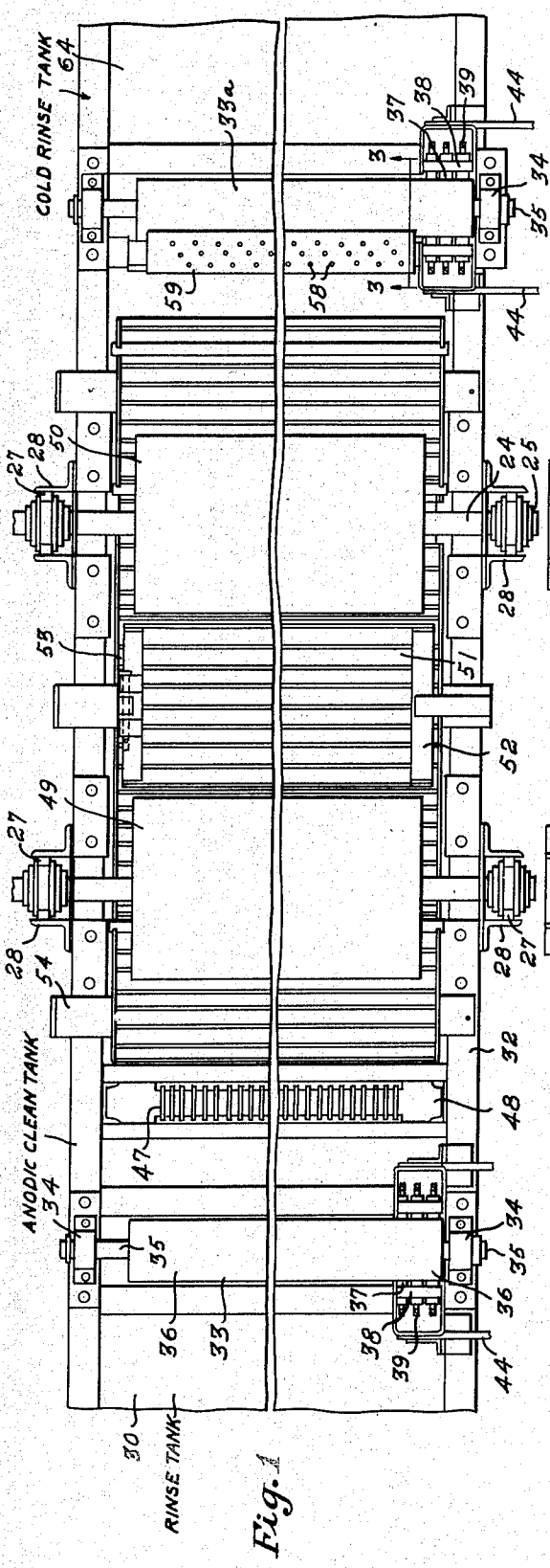



Fig. 1

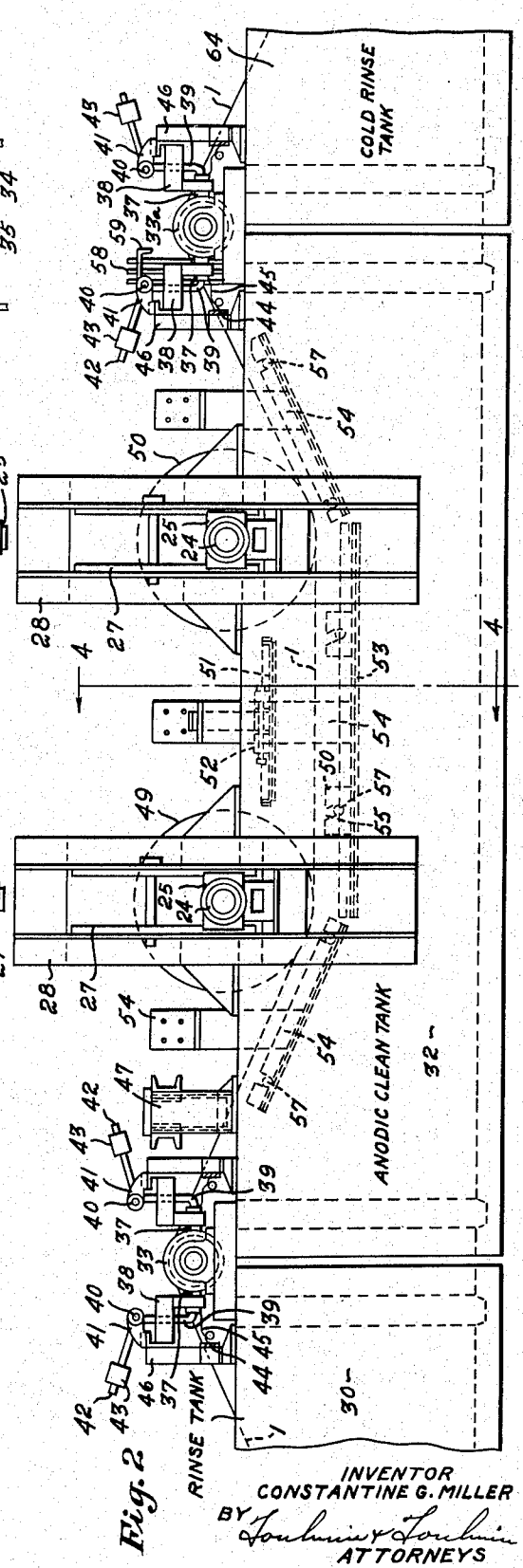



Fig. 2

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Fig. 3

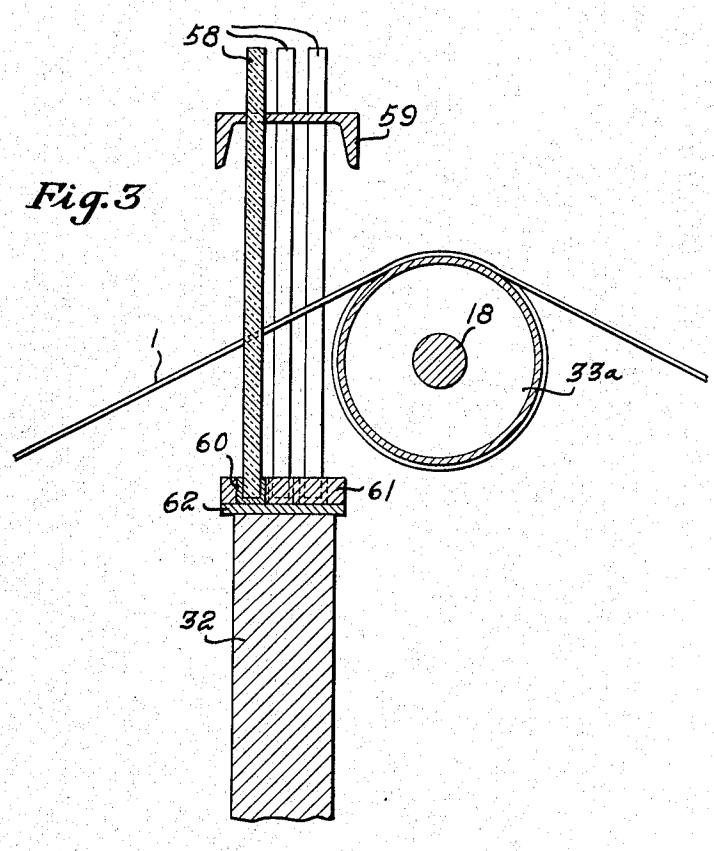
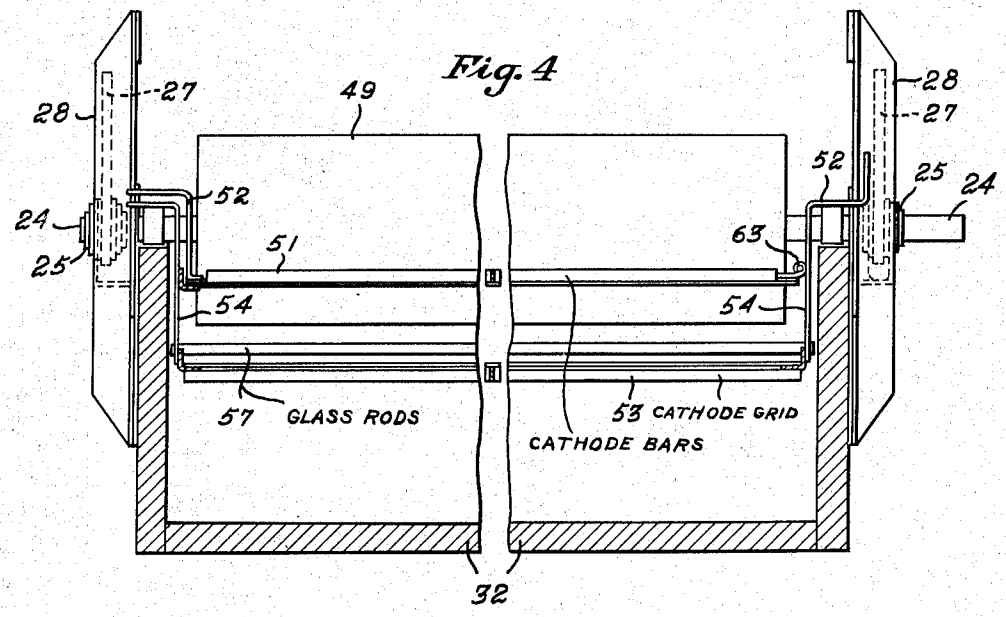



Fig. 4




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Patented Oct. 5, 1937 2,094,712

# UNITED STATES PATENT OFFICE

2,094,712

## ELECTROPROCESSING MACHINE

Constantine G. Miller, Chicago, Ill., assignor to The Meaker Company, Chicago, Ill., a corporation of Illinois

Original application June 29, 1936, Serial No. 87,850. Divided and this application January 6, 1937, Serial No. 119,314

5 Claims. (Cl. 204—5)

My invention relates to an apparatus for anodic cleaning and electroprocessing, particularly for continuously moving articles and material such as wire.

It is the object of my invention to provide means for continuously treating wire to prepare it for anodic cleaning, for imparting anodic cleaning and for electroplating, preferably electro-galvanizing the wire.

It is an object of my invention to provide an apparatus which is capable of selectively treating the wire according to its condition after it is drawn, of rendering the surface of the wire passive and chemically and metallurgically clean, and thereafter imparting either to the passive surface or to a subsequently depassified surface the desired electroplating so that it will be bonded permanently to the work piece.

It is my object to provide an apparatus for such a purpose.

Referring to the drawings:

Figure 1 is a top plan view of the anodic cleaning tank.

Figure 2 is a side elevation thereof.

Figure 3 is a section on the line 3—3 of Figure 1 looking in the direction of the arrows showing the method of guiding wires between vertical glass rods.

Figure 4 is a section on the line 4—4 of Figure 2 looking in the direction of the arrows.

Referring to the drawings in detail, the continuously moving wires 1, of which there may be any number passing through the anodic cleaning tank, are continuously drawn through the anodic cleaning tank between the electrodes. This anodic cleaning process is described more fully and claimed in the application of Ernest H. Lyons, Jr., Ser. No. 80,571, filed May 19, 1936.

The present application is directed specifically to this tank and its associated mechanism, of which the following is a detailed description. The incoming wires 1 pass over a brass roll 33 which is journaled in the bearings 34 through its shaft 35 on either side of the tank 32. The end of the roll is smooth as at 36 to receive the contact brushes 37 mounted in the brush holder 38. There is a set of three brushes on either side of the roll as indicated in Figures 1 and 2. These brushes are yieldingly pressed against the roll 33 by the fingers 39, which are pivoted at 40 on the bracket 41. To each of the fingers 39 is connected an arm 42 having a weight thereon. The brushes are connected to a bus bar 44 by wires 45. The bus bar is carried on the bracket 46 which supports the brush guides 38 and pivotally supports the fingers 39.

The wires then pass between glass guide plates 47 in a frame 48 serving as a spacer frame or glass plate guide. The wires pass beneath the stoneware rolls 49 and 50 which are adjustably supported. Thereafter the wires pass upwardly over a brass roll 33a which is provided with a similar brush system as that heretofore described as to roll 33.

It will be observed that the cathode bars 51 are suspended by the cathode bracket 52 on either side of the tank so that there are a plurality of cathode bars 51 extending across the tank in equi-distant relationship to the wires passing through the tank. The upper electrodes 51 are carried in a frame that is hinged as at 63. There is provided in spaced relationship the cathode grid below the wires designated 53, which grid is supported on the frame work 54. Above this grid resting in slots 55 in frames 56 are a plurality of transverse glass rods 57 to keep the wire from dropping on the cathode grid 53.

When the wires leave the tank, they pass between a series of vertically disposed glass rods 58 which are mounted in an upper perforated frame member 59 and are inserted in holes 60 in a wooden support 61, which is mounted on an insulation plate 62 on top of the tank wall of the tank 32. Thence they pass over the brass roll 33a.

The wires are moved through the tank under tension in order that they may be held on top of the rolls 33 and 33a and against the bottom of the rolls 49 and 50.

This application is a division of my application Ser. No. 87,850, filed June 29, 1936.

It will be understood that I desire to comprehend within this invention such modifications as may be necessary to adapt it to varying conditions and uses.

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

1. In an anodic cleaning tank, a tank, means of suspending a plurality of cathode bars above and below wires travelling through said tanks, rolls of inert material adapted to maintain said wires in submerged condition between said electrodes, vertically-disposed spaced guide members of inert material adapted to guide said wires, metal guide rolls at either end of said tank, and means of electrolytically energizing said guide rolls, said vertically-disposed spaced guide members being

located between said metal rolls and said rolls first named.

2. In an anodic cleaning tank, a tank, means of suspending a plurality of cathode bars above and below wires travelling through said tanks, rolls of inert material adapted to maintain said wires in submerged condition between said electrodes, vertically-disposed spaced guide members of inert material adapted to guide said wires, metal guide rolls at either end of said tank, and means of electrolytically energizing said guide rolls, said vertically-disposed spaced guide members being located between said metal rolls and said rolls first named, said means comprising brushes engaging said guide rolls.

3. In an anodic cleaning tank, a tank, means for moving work pieces through the tank, cathode bars arranged horizontally and diagonally within said tank along the path of movement of the work pieces, horizontal insulation bars allowing substantially unimpeded circulation of the liquid within said tank associated with certain of said cathode bars and spaced therefrom for preventing work pieces from engaging with the cathode bars, and guide rolls adapted to be superimposed upon the work pieces and to guide them through the tank.

4. In an anodic cleaning tank, a tank, means for moving work pieces through the tank, cathode bars arranged horizontally and diagonally within said tank along the path of movement of the work pieces, horizontal insulation bars associated with certain of said cathode bars and spaced therefrom for preventing work pieces from engaging with the cathode bars, adjustable guide rolls adapted to be superimposed upon the work pieces and to guide them through the tank, rolls at either end of the tank for guiding the work pieces, contact brushes engaging said rolls to bring the work pieces anodically in circuit, and vertically spaced guide members adapted to guide said work pieces and separate them from each other.

5. In an anodic cleaning tank, a tank, means of suspending a plurality of cathode bars above and below, wires traveling through said tanks, rolls of inert material adapted to maintain said wires in submerged condition between said electrodes, metal guide rolls having guide means of inert material associated therewith, at either end of said tank, said guide means being located between said metal rolls and said rolls first named, and means of electrolytically energizing said guide rolls in circuit with said cathode bars whereby said wires are guided while electrically energized through an electrolyte in said tank in a predetermined relationship with respect to the cathode bars and to one another.

CONSTANTINE G. MILLER.