

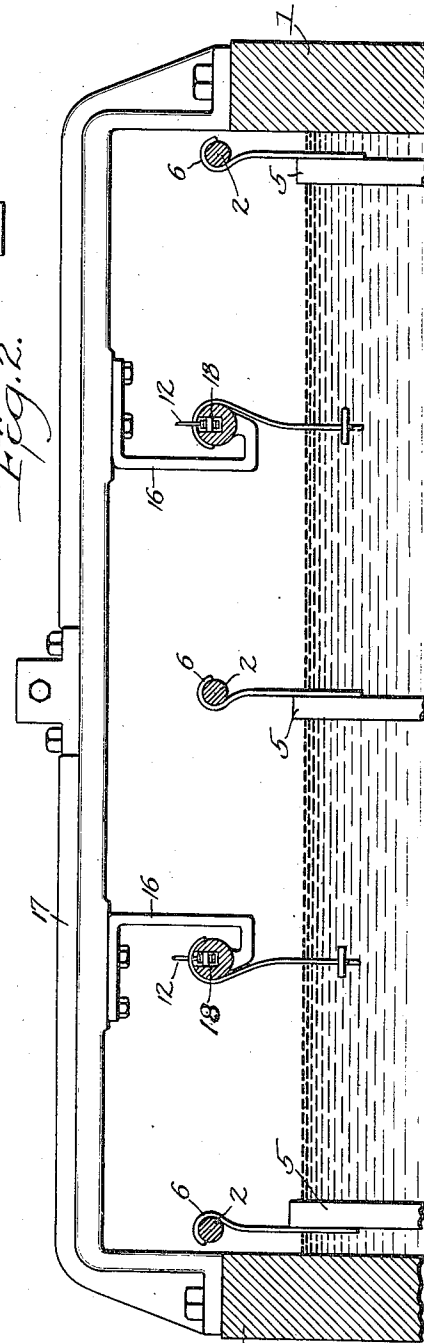
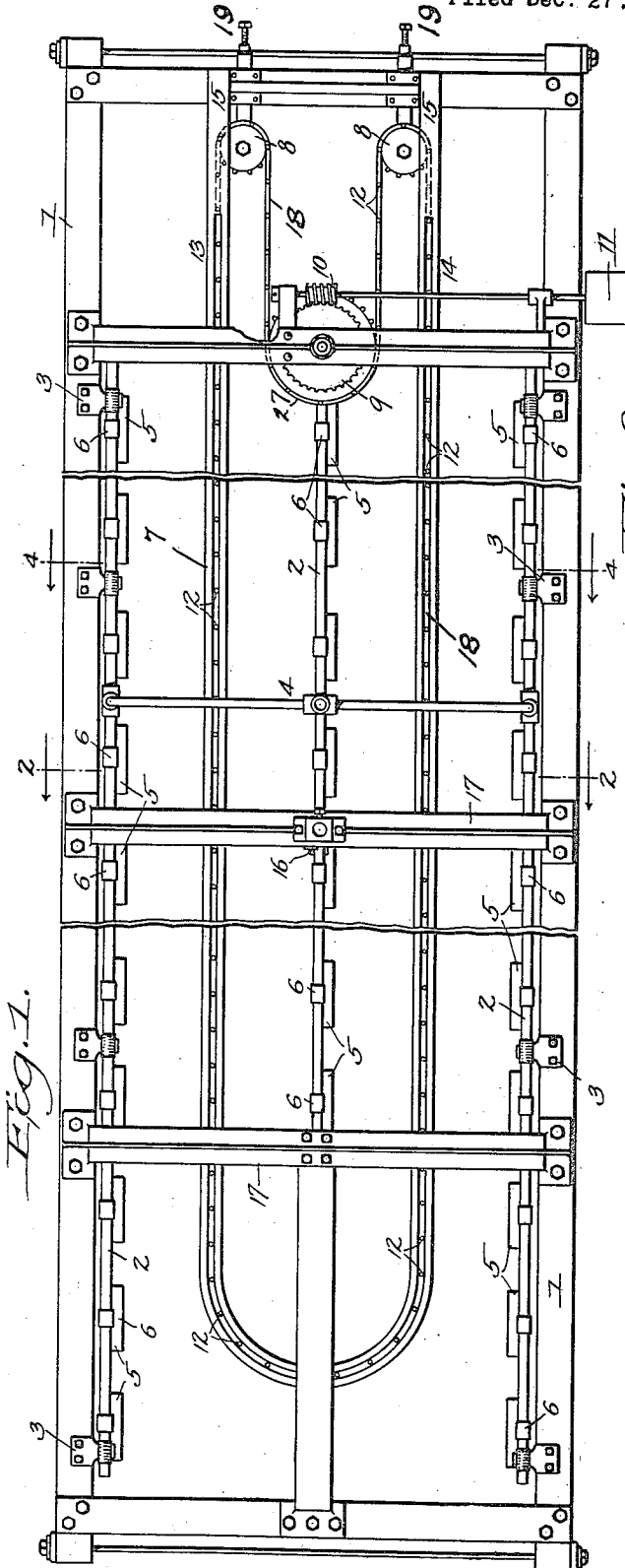
Sept. 25, 1923.

1,468,764

VAN WINKLE TODD  
ELECTROPLATING APPARATUS

Filed Dec. 27, 1922

2 Sheets-Sheet 1



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Fig. 3.

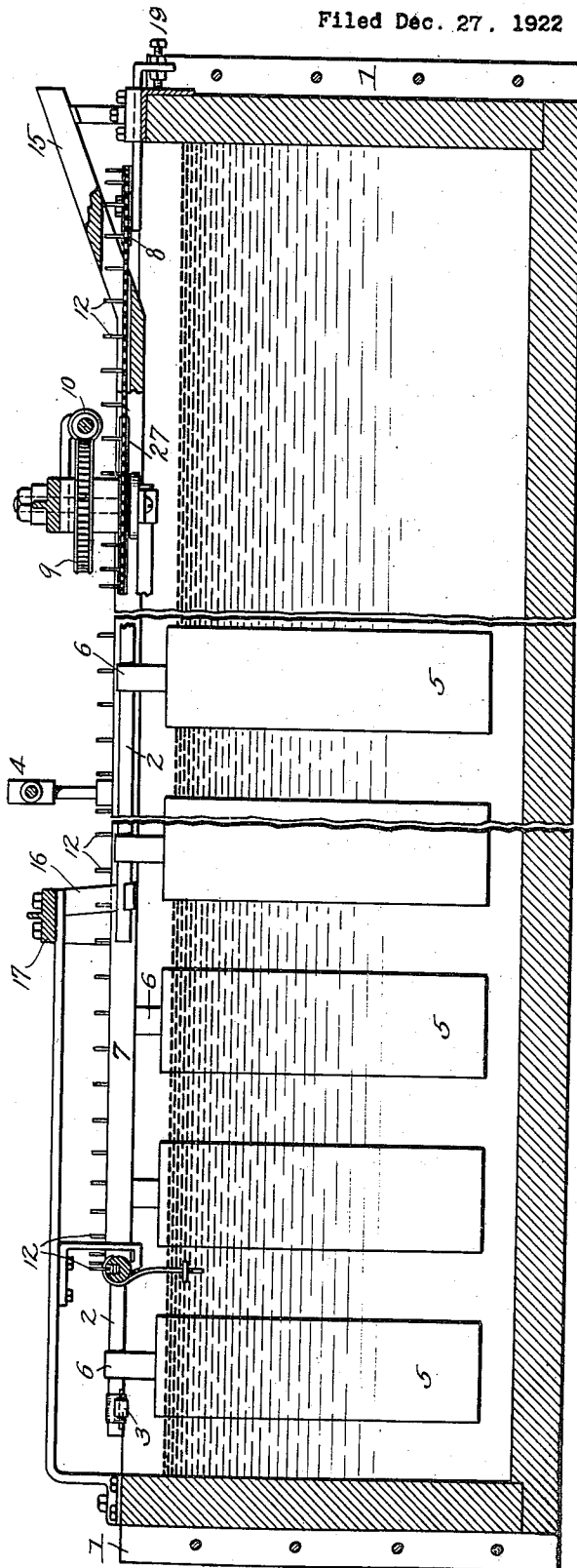


Fig. 5.

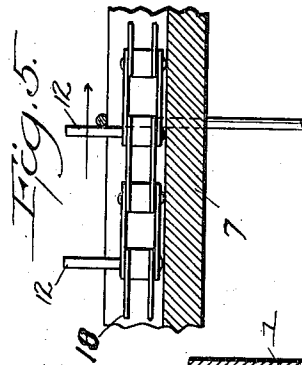
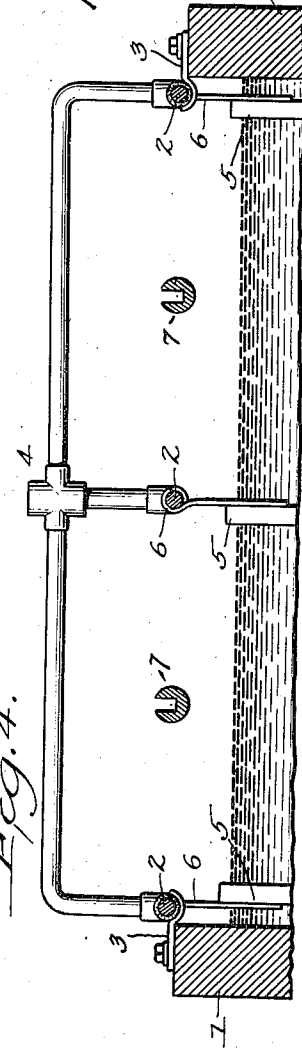


Fig. 4.



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# UNITED STATES PATENT OFFICE.

VAN WINKLE TODD, OF MILBURN, NEW JERSEY, ASSIGNOR TO THE HANSON & VAN WINKLE COMPANY, OF NEWARK, NEW JERSEY, A CORPORATION OF NEW JERSEY.

## ELECTROPLATING APPARATUS.

Application filed December 27, 1922. Serial No. 609,289.

*To all whom it may concern:*

Be it known that I, VAN WINKLE TODD, a citizen of the United States, residing at Milburn, county of Essex, and State of New Jersey, have invented certain new and useful Improvements in Electroplating Apparatus, of which the following is a full and clear specification.

My invention relates to apparatus for subjecting articles to electrodepositions or other electrochemical or chemical action and more particularly to apparatus on which the objects are carried through the bath in a regular and orderly manner from a point of introduction to a point where they are removed. The objects of my present invention are to supply certain mechanical devices for simplifying and rendering more efficient the operation of such apparatus.

An electroplating apparatus in which the principles of my invention are embodied is shown by way of example in the accompanying drawings, in which—

Figure 1 is a top plan view of the apparatus.

Figure 2 is a vertical cross-section thereof on line 2—2 of Figure 1.

Figure 3 is a vertical longitudinal section thereof.

Figure 4 is a vertical cross-section on line 4—4 of Figure 1.

Figure 5 is a detail of the conveyer as shown by a longitudinal section.

In this embodiment of the invention, a vat 1 is provided for containing the bath of the electrolyte or other liquid in which the articles are to be immersed. The anode bars 2 are arranged in three lines, one on each side of the tank and one down the middle, those on the side being supported by brackets 3 and the middle one being supported by transverse supports 4 (see Figure 4). From these anode bars the anodes 5 are hung by means of hooks 6.

My invention relates more particularly to the arrangement of the cathode bar 7 and its associated parts. This cathode bar may, for example, extend down one side and then be curved around and extended down the other side of the bath, occupying thus an intermediate position in the two lanes formed by the three sets of anodes. The cathode bar provides a channel or groove opening upward and in this groove a suitable flexible conveyer such as chain 18 is

made to travel, being propelled in this instance by a sprocket wheel 27 around idlers 8, the sprocket wheel being in turn driven by worm-wheel 9 and screw 10 from any suitable source of power at 11. At intervals along the chain, I provide pins 12 or the like, that project above the edges of the channel of the cathode bar so that any article being hung on the cathode bar by means of the usual hooks will be pushed along the same by the nearest pin and in this way the articles to be plated are propelled from the point of introduction, say at 13, to a point 14 where they are to be removed. To facilitate the introduction of the articles into the bath and the removal therefrom and to release them from engagement with the pins when they come to the end of the travel, I cause the conveyer chain and its pins to disappear through and under the cathode bar and this is accomplished by inclining the ends of the cathode bar upwardly as at 15 so as to elevate the same above the top of the propelling pin, and by cutting the groove through the inclined portions of the bars, as clearly shown in Figure 3. The cathode bar is supported by brackets 16 from transverse supports 17 (see Figure 2) which rests upon the sides of the vat. At 19 are shown take-up screws for the idle sprockets 8, whereby the chain may be kept taut.

It will be observed that the cathode bars are stationary and merely act as supports for the cathodes and that they are of a very simple form. The propelling conveyer chain is also the simplest form of conveyer, and is completely housed in the channel of the cathode bar, except at its drive connections, only the pins projecting therefrom so as to engage with the hooks on which the articles to be plated are suspended, and push them along while still allowing them to remain in continuous sliding contact with the cathode bar. It will also be noted that this form of conveyer is well adapted to turn corners so that the articles being treated may, if desired, be returned to the same end of the vat where they are introduced, as in the present example.

In practice, the usual positive and negative connections being made with the anode and cathode parts, and the conveyer chain being driven, the articles to be plated are placed on the cathode hooks which latter are

slipped over the inclined end of the cathode bar 15 at the side 13, for example, and as they slide down they are engaged by the pins 12 and carried along in obvious manner until discharged from the conveyer at the end 14. The articles suspended from the hooks being submerged in the bath are subjected to the plating during their travel, and with the conveyer operating at uniform speed, and new articles being introduced as the plated articles are removed, the plating may be kept uniform on all the articles. The direct electrical and mechanical connection of the work with the cathode rod, with the constant sliding of the hooks along the rod, provides good electrical connection at all times, this contact being maintained with a stationary supporting member, the cathode rod, whereas the moving part of the apparatus, the conveyer chain, is not employed for making the electrical contact, but is contained within the cathode rod.

I claim:—

1. In an electroplating machine the combination of a channel shaped cathode bar upon the vertical flanges of which work may be slidably supported, and a conveying means in said channel adapted to engage with work hung upon the flanges of the channel to effect a longitudinal movement of said work along and in contact with said bar.

2. In an electroplating machine the combination of a channel shaped cathode bar upon the vertical flanges of which work may be slidably supported, and projections extending from said conveying means above the flanges of the channel adapted to engage with work hung upon the flanges of the channel to effect a longitudinal movement of said work along and in contact with said bar.

3. In an electroplating machine the combination of a vat, a channel shaped cathode

bar supported above the vat, conveying means in said channel adapted to propel work slidably supported upon and in electrical contact with the flanges of the channel and means adapted to release the work from the propelling means before the work reaches the end of the vat.

4. In apparatus of the character described, a work supporting bar having a channel, and conveying means located in the channel for propelling the work along the bar, the said bar having an inclined perforated end portion rising above the conveyer, and said conveyer extending through said perforated end portion.

5. In an apparatus of the character described, the combination of a vat, three lines of anodes in said vat forming two longitudinal lanes, a continuous work supporting channel shaped cathode bar having two straight portions, one over each lane, and a curved portion uniting two ends of said straight portions, a continuous propelling member following the line of said work supporting bar, and mechanism for driving the same, the terminals of the bar being inclined upward so that the work will slide into and out of engagement with the driving mechanism.

6. In an electroplating machine the combination of a vat, a support for cathode bars mounted on the vat, channel shaped cathode bars closed at the bottom and open at the top supported on brackets from the cathode supports, conveying means in the channel with projections extending above the flanges of the channel and cathode hooks hung on the flanges of said cathode bar on the side opposite the supporting brackets and adapted to be engaged by the extensions of the conveying means to be pushed along thereby in sliding electrical contact with said bar.

VAN WINKLE TODD.