No. 799,402. PATENTED SEPT. 12, 1905.

L. POTTHOFF.

ELECTROPLATING APPARATUS.

APPLICATION FILED APR. 30, 1904.

Fig. 1.

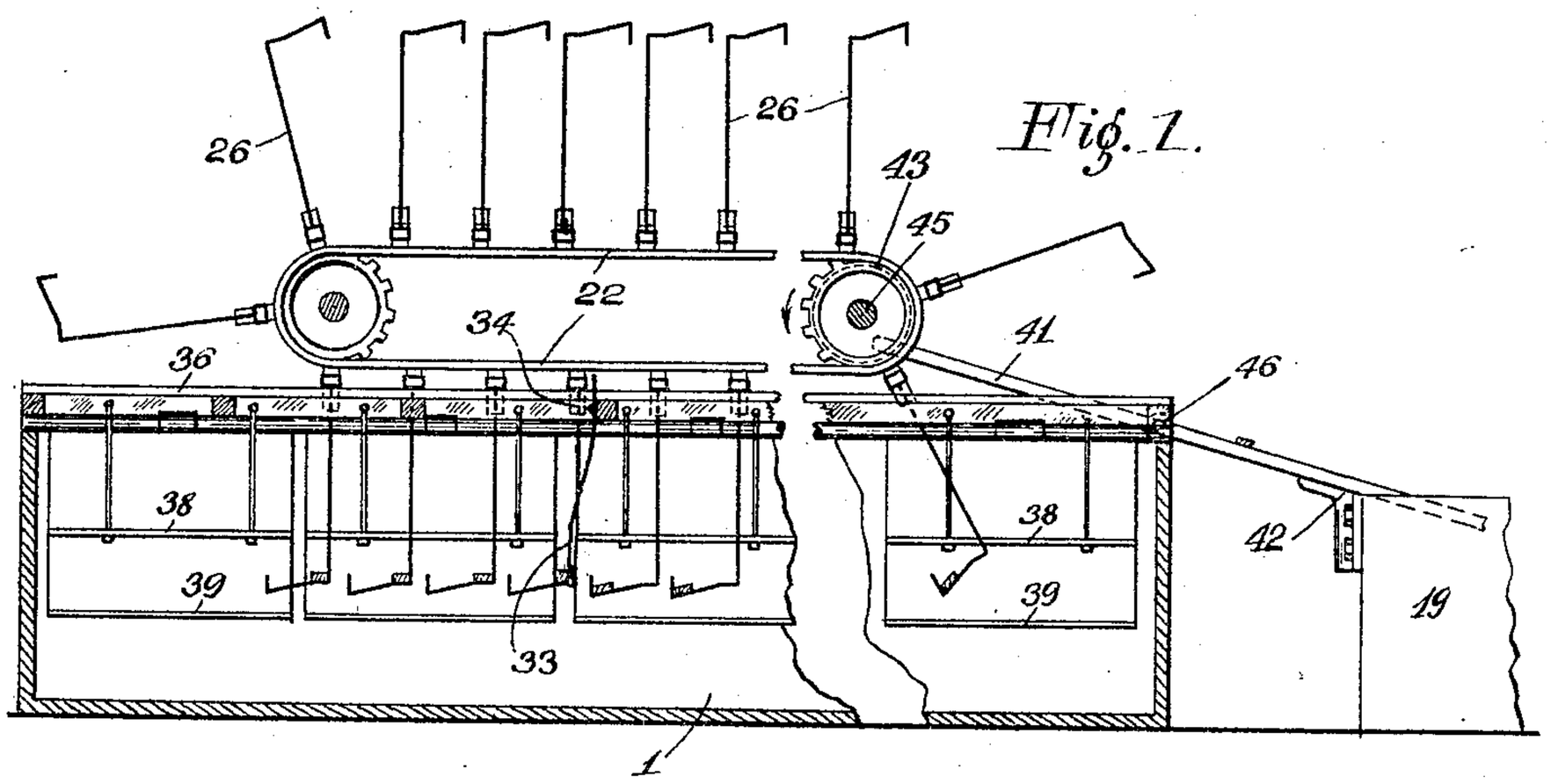
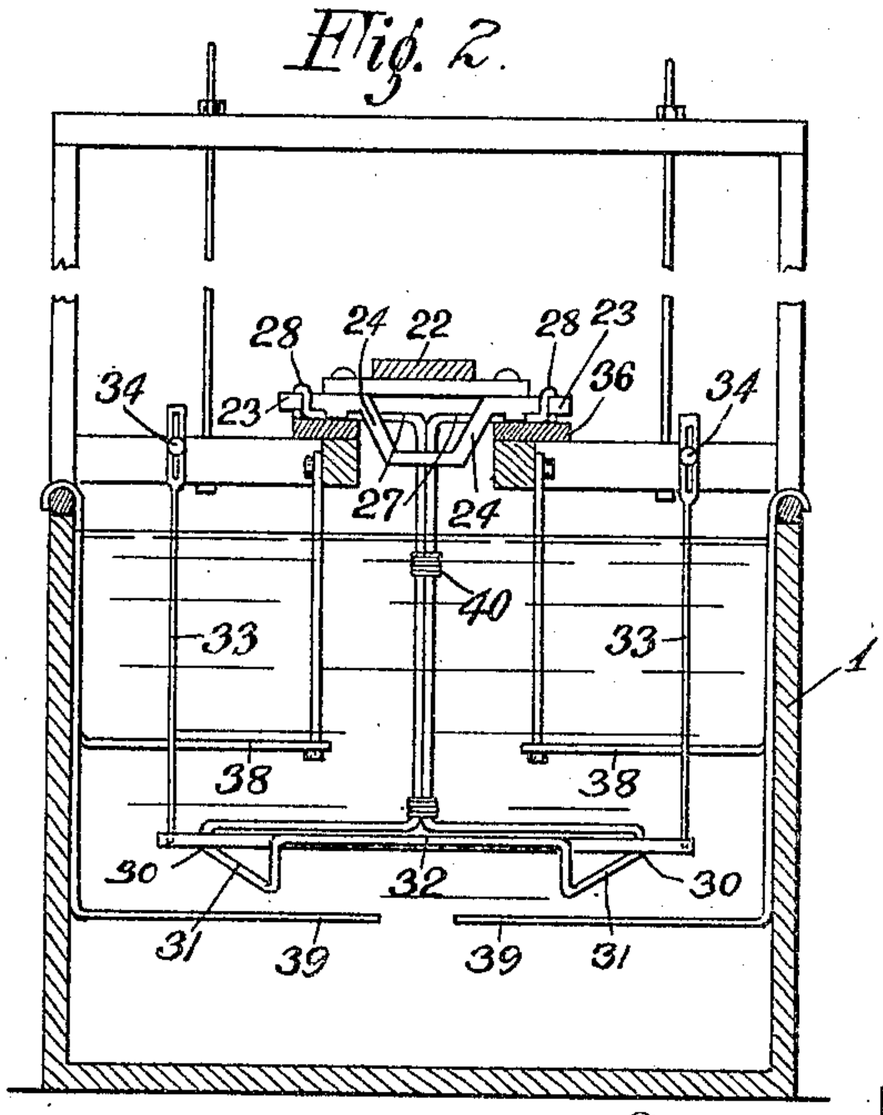


Fig. 2.



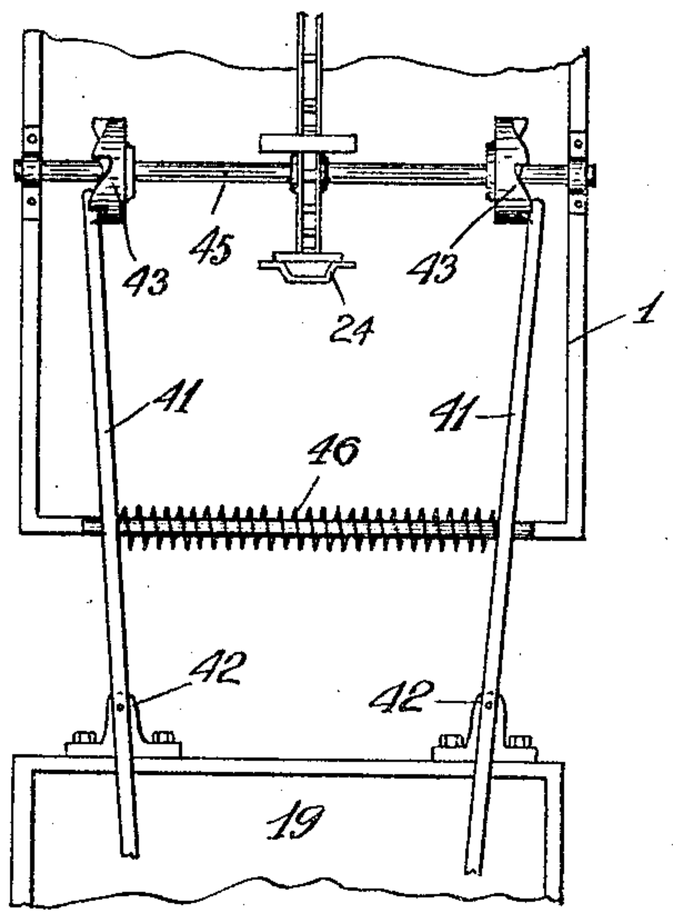


Fig. 3

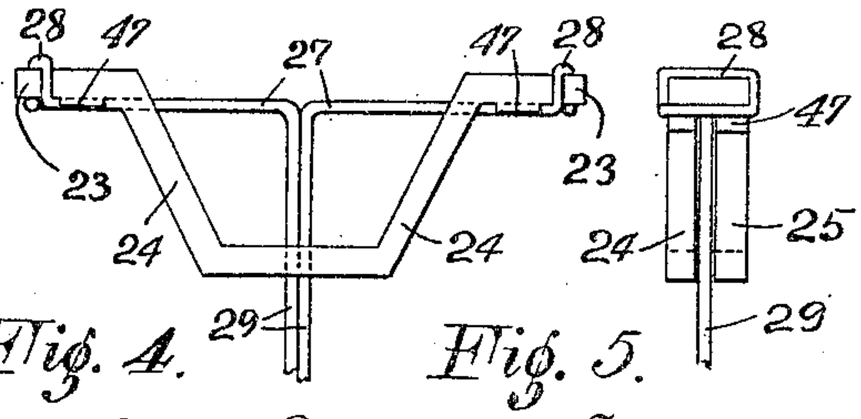


Fig. 4.

Fig. 5.

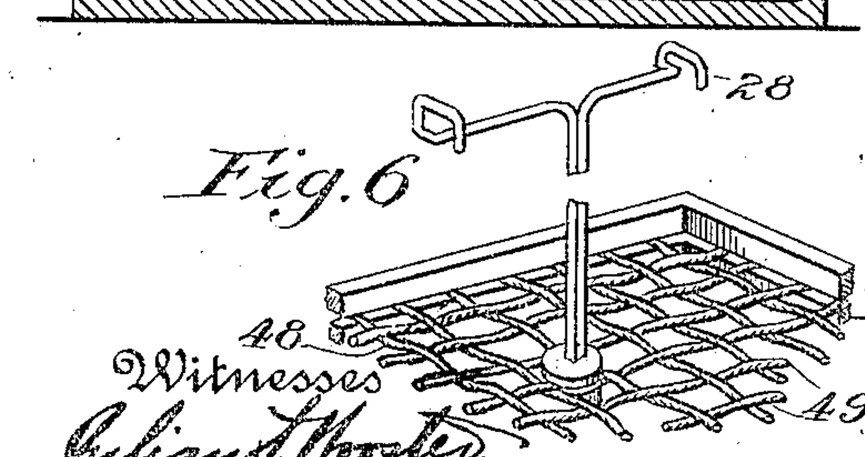


Fig. 6

Witnesses
Juliand Hooker.
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By his Attorney C. V. Edwards.

UNITED STATES PATENT OFFICE.

LOUIS POTTHOFF, OF BROOKLYN, NEW YORK.

ELECTROPLATING APPARATUS.

No. 799,402. Specification of Letters Patent. Patented Sept. 12, 1905.

Application filed April 30, 1904. Serial No. 205,845.

To all whom it may concern:

Be it known that I, LOUIS POTTHOFF, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Electroplating Apparatus, of which the following is a full, clear, and exact specification.

This invention relates to electroplating apparatus, and has for its objects to improve the construction of such tanks and to increase their capacity.

Heretofore it has been proposed to provide a galvanizing-tank with an endless conveyer carrying baskets in which a number of small articles to be galvanized were carried, the baskets being suitably connected, so that the current would pass from a submerged anode through the solution to the articles in the baskets and thence out through sliding contacts. Such a construction has been only suitable for nails, bolts, and other small articles which could be easily shaken up by hand, so as to change their points of contact.

According to this invention I have devised a mechanism which can be used to galvanize bars, tubes, and other pieces too large to be shaken up as is done with small nails, &c. It therefore becomes necessary to change the points of contact between the bars or other articles being galvanized, the supporting means, and the cathode-terminal. In order to automatically accomplish this and to automatically discharge the articles at the end of the tank, I have devised the apparatus of this invention. I propose to provide a traveling band or conveyer with a series of cathode-terminals adapted to move the articles being galvanized and to provide means which will automatically change the point of contact between the articles, the supporting means, and the cathode-terminals.

The invention will be more fully described with reference to the form thereof shown in the accompanying drawings, in which—

Figure 1 is a longitudinal section of an apparatus embodying my invention. Fig. 2 is a transverse section. Fig. 3 is a detail showing the automatic discharging devices, and Figs. 4 and 5 show the manner in which the cathode-terminals are mounted. Fig. 6 is a detail view showing a basket instead of hooks.

A chain or belt 22 carries a number of cross-bars 23, having a depending loop or eye portion 24, which is slotted, as at 25, (see Fig. 5,) and a lug 27, which rests on the conductor 36.

26 represents cathode-terminal hooks for carrying the bars or rods to be galvanized. Each hook is made of heavy wire and covered with protecting insulation, except where the bars rest, in a manner similar to that shown in my Patent No. 650,051, May 22, 1900. The two ends 28 of each hook are looped in order to engage the ends of the bars 23. The depending legs separate and spread outward and are then bent at right angles to form the supports 30. From 30 there are downwardly-inclined legs 31, which are connected by the cross-bar 32. The bars or rods to be galvanized are first placed on the supports 30 at the left end of the tank in Fig. 1 and by means of downwardly-projecting brushes or wires 33 are pushed down the inclined legs 31 to the cross-bar 32. In doing this the rods being treated fall far enough to enable them to clear the lower ends of the brushes 33. By this means it will be seen that the contacts between the hooks and the bars or rods will be automatically shifted by the movement of the chain. Round rods will roll down the incline and change their contact. The brushes are made adjustable by means of set-screws 34, so as to fit different thicknesses of work. The track 36 conducts the current out of the tank. The anodes 38 39 are disposed one above and one below the hooks. The hooks can be detached from the cross-bars 23 by springing the arms 29 apart, the sliding ring 40 being provided to hold the arms together.

Fig. 6 shows a basket instead of hooks, and its manner of use can be readily understood. It will be noticed that the basket is rigidly held instead of being free to swing, as in my patent aforesaid.

In order to automatically discharge the work as it comes out of the solution, I provide a pair of vibrating arms 41, which are automatically spread apart to allow a hook carrying a bar to pass and then spring together to catch the bar as it drops from the hook, the bar thereupon sliding down the arms 41 to the table or tank 19. The arms are pivotally mounted at 42, Fig. 3, and are vibrated by cams 43 on the pulley-shaft 45, the cams 43 being timed so that the arms will be expanded when a hook is about to pass through. A spring 46 holds the arms in engagement with the cams. As soon as a bar or rod drops on the arms 41 it will slide down to the table or tank 19.

It will thus be seen that the apparatus herein described is capable of operation with

either long or short bars and that the points of contact are automatically changed, so that all parts will be galvanized. It will also be seen that the work will be automatically discharged after being passed through the galvanizing solution. By the apparatus herein described I am enabled to do a much larger quantity of work in a given time and by changing the contacts to have it completely covered.

Modifications and changes may be made without departing from the scope of the invention, and I do not desire to be limited to the exact construction which I have shown and described.

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

1. The combination with a movable cathode-terminal, of means for automatically shifting the position of the work relatively thereto, substantially as described.

2. The combination with a traveling belt, of a cathode-terminal carried thereby and adapted to support the work, a conductor connected with said cathode-terminal, and means for automatically shifting the point of contact between the work and the cathode-terminal, substantially as described.

3. In an electroplating apparatus, the combination of a tank, a traveling belt, a series of hooks attached to said belt, means for moving the bars from one portion of the hook to another to change the point of contact, said hooks being connected with one terminal, an anode connected with the other terminal, and an electric circuit, substantially as described.

4. In an electroplating apparatus, the combination of a tank, a traveling belt, means attached to said belt, adapted to support bars or rods, means for changing the point of support from one portion of said supporting means to another, said supporting means being connected with one terminal, an anode connected with the other terminal, and an electric circuit, substantially as described.

5. In an electroplating apparatus, the combination of a tank, a traveling belt, means attached to said belt adapted to support bars or rods, means for automatically changing the point of support from one portion of said supporting means to another, said supporting means being connected with one terminal, and an anode connected with the other terminal of an electric circuit, substantially as described.

6. In an electroplating apparatus, the combination of a tank, a belt, means carried by said belt for supporting bars or rods, means for shifting the point of support from one portion of the belt to another portion, a cathode-terminal, and an anode, substantially as described.

7. In an electroplating apparatus, the combination of a tank, a traveling belt, means attached to said belt for supporting bars or rods in a horizontal position, and means for automatically discharging the bars or rods from the belt outside of the tank, substantially as described.

8. In an electroplating apparatus, the combination of a tank, a belt, and a hook attached to said belt, each hook having means adapted to support a rod in two positions, and means for moving the rod from one position to the other, substantially as described.

9. In an electroplating apparatus, the combination of a tank, a traveling belt, carrying means on said belt, and means for discharging an article in a horizontal position from the carrying means on to a runway leading outside the tank, substantially as described.

10. In an electroplating apparatus, the combination of a tank, a traveling belt, carrying means on said belt, and means permitting the articles to pass upward on the belt but receiving them when discharged, substantially as described.

11. In an electroplating apparatus, the combination of a tank, a traveling belt, carrying means on said belt, and vibrating arms adapted to permit the articles to pass upward on the belt but receiving them when discharged from the belt, substantially as described.

12. In an electroplating apparatus, a carrying-hook comprising spring-arms adapted to be attached to a belt, and two carrying portions, one being below the other, substantially as described.

13. The combination with a traveling conveyer, of a bar attached thereto, said bar having a bent divided portion, a work-support adapted to be attached to the end of said bar and supported against movement by said divided portion, and a track on which said bar moves, said track being electrically connected with said work-support, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

LOUIS POTTHOFF

Witnesses:
JULIAN S. WOOSTER,
GEORGE N. KERR.