Jan. 11, 1927. 1,613,878

W. O. EMARD

PLATING EQUIPMENT

Filed March 23, 1925 2 Sheets-Sheet 1

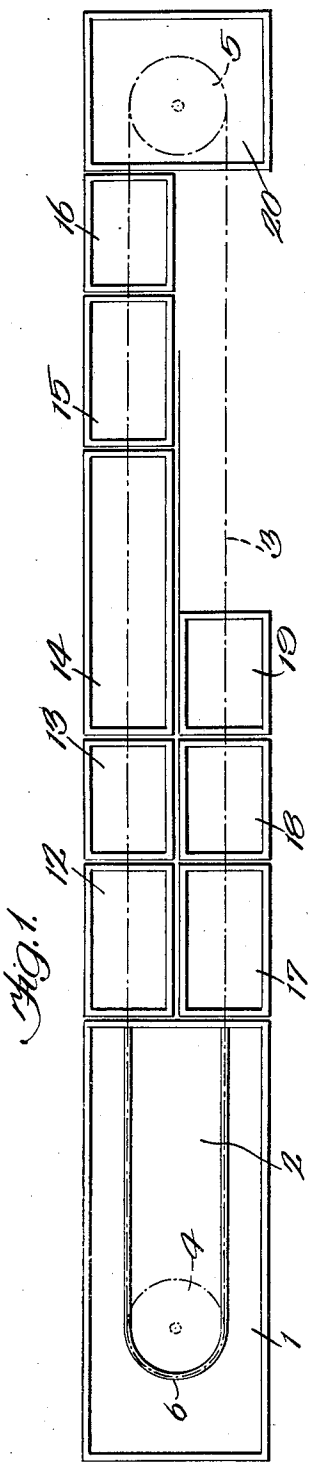


Fig. 1.

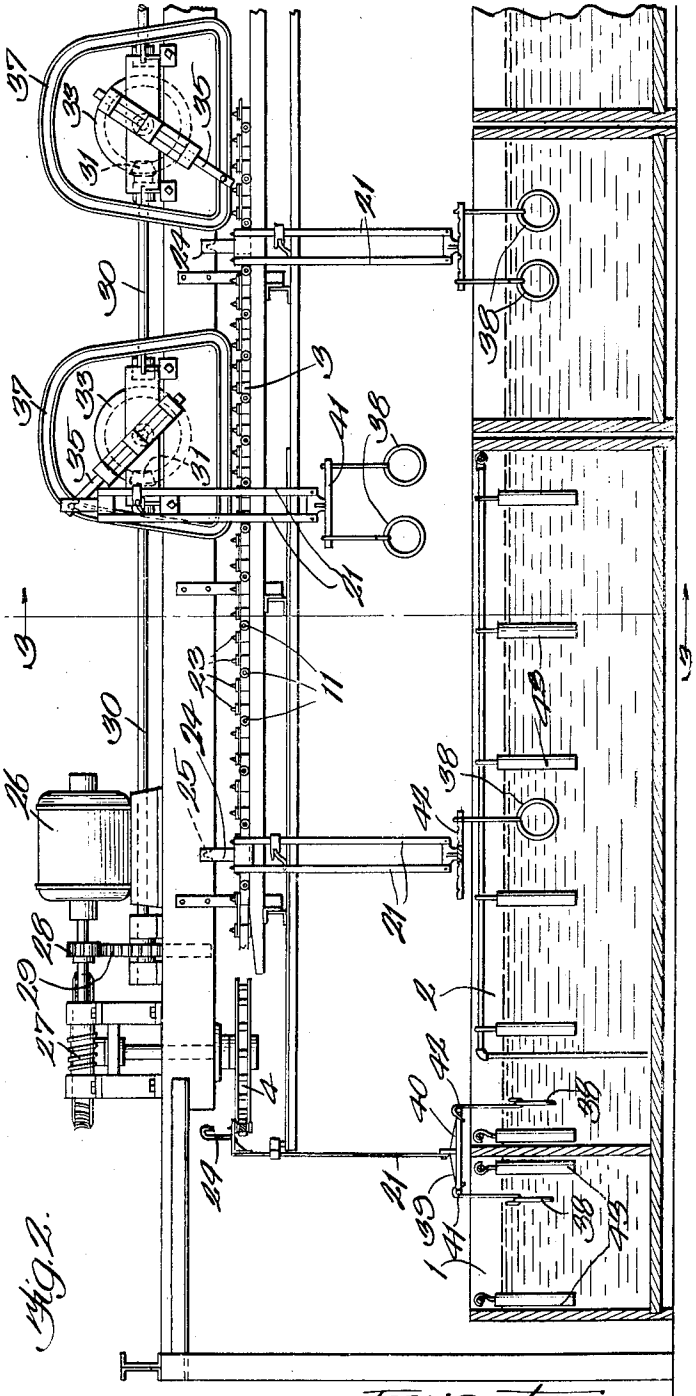


Fig. 2.

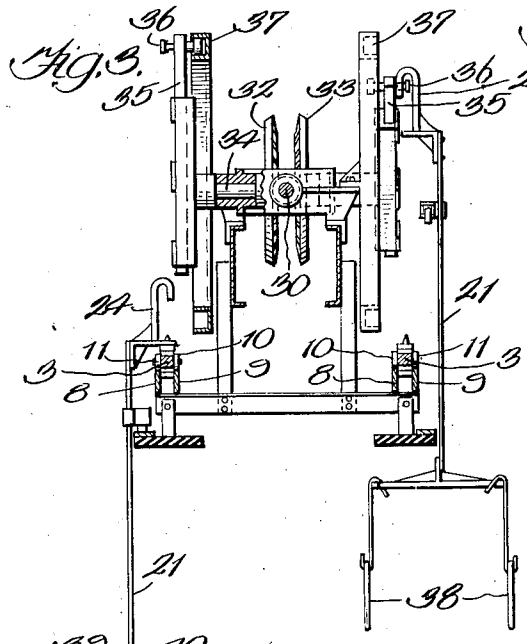
Inventor:
Wilfred O. Emard
By G. L. Gragg Atty.

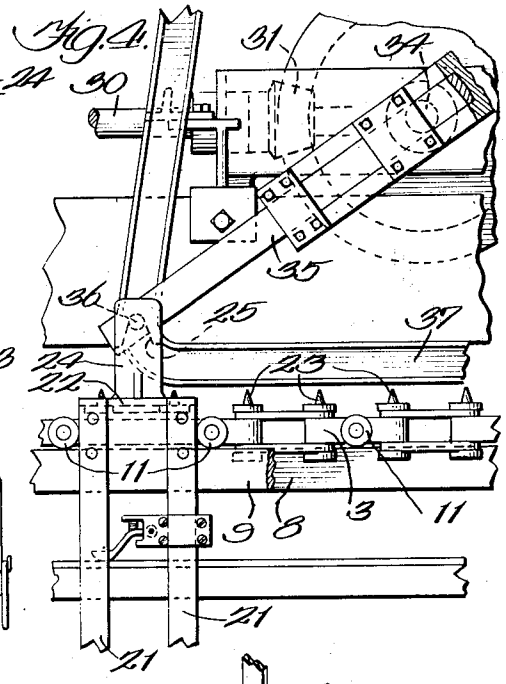
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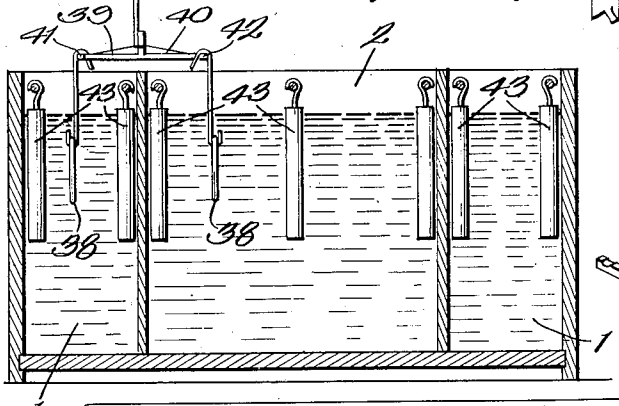
W. O. EMARD

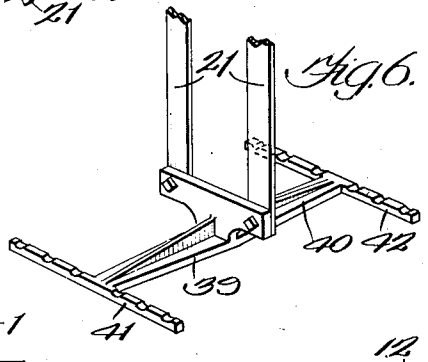
PLATING EQUIPMENT

Filed March 23, 1925 2 Sheets-Sheet 2









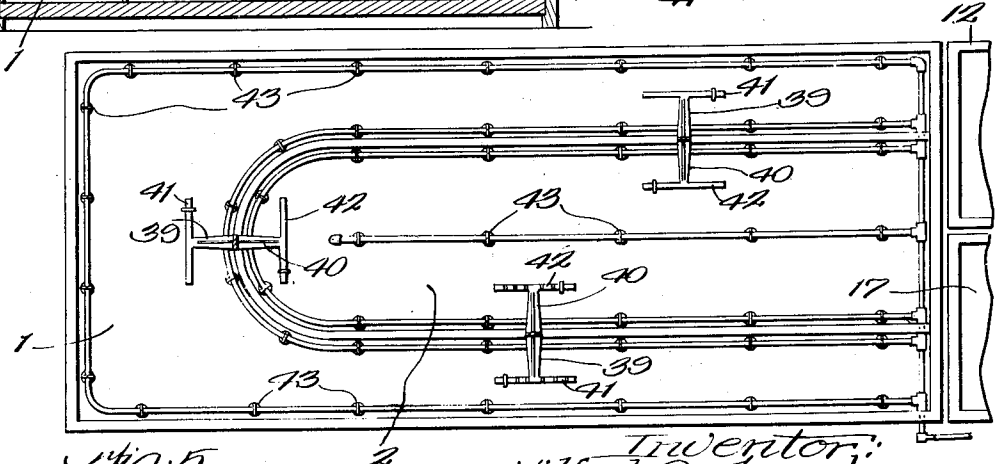


Fig. 5.

Inventor:
Wilfred O. Emard
By L. L. Cragg Atty.

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UNITED STATES PATENT OFFICE.

WILFRED O. EMARD, OF BROOKFIELD, ILLINOIS, ASSIGNOR TO ELMER J. MERCIL, OF OAK PARK, ILLINOIS.

PLATING EQUIPMENT.

Application filed March 23, 1925. Serial No. 17,665.

My invention relates to plating equipment. The invention has for its object the provision of means whereby a given equipment may be employed to apply different kinds or characters of platings to objects that are conveyed to the plating baths by a single conveyor. The equipment of my invention includes at least two plating tanks, a traveling conveyor having two object supporting portions which travel in lines that are abreast, each of said supporting portions having a tank individual thereto, each tank being preferably located vertically beneath the line of travel of the supporting portion to which it is individual to receive objects carried by the supporting portion in the solution contained in said tank and so located with respect to the line of travel of the other supporting portion as not to receive objects carried by the latter supporting portions.

The invention will be more fully explained in connection with the accompanying drawings in which Fig. 1 is a view somewhat diagrammatic, illustrating the preferred equipment of the invention; Fig. 2 is a side elevation with portions in section showing the preferred embodiment of the invention; Fig. 3 is a sectional view on line 3—3 of Fig. 2; Fig. 4 is a side view of a part of the equipment; Fig. 5 is a plan view illustrating the preferred arrangement of the tanks, and Fig. 6 is a perspective view illustrating the preferred form of supports which are carried by the conveyor.

The plating tanks 1 and 2 are preferably constructed as illustrated, the tank 1 being of U shape and the tank 2 being located between the branches or sides of the U-shaped tank 1. A conveying sprocket chain 3, of usual construction, is caused to travel horizontally in an elongated orbit, this chain passing about the sprocket wheels 4 and 5 which define the ends of its orbit, the inner wall of the tank 1 having a curved portion 6 joining the sides of this wheel and which portion 6 is curved and coaxial with the wheel 4. The chain 3 travels upon a track 7 having two rails 8 and 9 which extend along the straight sides of the path of the chain and terminate short of the wheels 4 and 5. The chain has rollers 10 and 11 which turn upon the rails 8 and 9, parts of the chain entering the spaces between the rails 8 and 9 of the track, whereby the path of the chain is defined between the wheels 4 and 5, these wheels being so formed as to maintain the chain in its proper path when turning around with the wheels. A suitable number of tanks 12, 13, 14, 15, 16, 17, 18, and 19 are disposed beneath the tracks and contain different solutions, some for pickling the objects to be cleaned, some containing cleaning solution, and some containing rinsing liquid, these tanks being positioned to receive objects which are carried over the same and which, by mechanism to be described, are lowered and elevated from the same as the chain travels. The loading station 20 is disposed below the wheel 5. The plating tanks 1 and 2 are located below the wheel 4 in position to receive objects carried by the chain and into which these objects are dipped for the plating operation and from which the objects are removed after the plating operation. The chain has supporting portions for directly carrying the objects that are to be cleaned and plated, these supporting portions being preferably of the construction illustrated. Each supporting portion shown includes a pair of upright bars which are joined at their upper ends by a cross head 22 which has openings therein that receive adjacent chains 23 carried by and projecting upwardly from the chain. The cross heads 22 have upwardly projecting stems 24 that are formed with downwardly facing recesses 25.

The mechanism for driving the chain is shown as being inclusive of an electric motor which drives a worm 27 that is in the usual driving relation with the driving sprocket wheel 4, the sprocket wheel 5 being an idler wheel. The motor also drives a spur pinion 28 which drives a spur gear 29. The spur gear 29 is fixed upon a shaft 30 and upon this shaft are fixed bevel pinions 31 at each tank. Each bevel pinion is in mesh with and oppositely rotates two bevel gears 32. Each bevel gear has a shaft 34 individual thereto, the shaft 34 pertaining to each pair of pinions rotating in opposite directions. Each shaft 34 has an arm 35 which it turns, each arm carrying a pin 36. Each arm, while being turned by its shaft, is movable in its plane of rotation transversely of such shaft by means of a groove member 37 which receives a cam roller upon the corresponding arm 35. Each member 37 straddles adjacent tanks and serves, in conjunction with the

arm 35, the pin 36 and the recessed portion 25 of the cross head stem 24 to elevate the work to be plated (illustrated as rings 38) from each tank as the work is leaving the same and to lower the work into the succeeding tank, all as is understood by those skilled in the art.

In accordance with the preferred embodiment of my invention, the supporting arms 21 carry cross arms 39 and 40 that are vertically beneath and in the plane of the chain, these cross arms respectively carrying other cross arms 41 and 42 on opposite sides of the chain, one of these latter two arms being vertically above the plating tank 1 and the other of these two arms being vertically above the tank 2. The plating tanks 1 and 2 contain different kinds of solutions whereby the objects upon the arms 41 may be plated with metal different from the metal which is plated upon the object carried by the arms 42, or the plating upon the objects entering both plating tanks may be of similar metal but of different character or extent. If it is desired, in a given run, to effect only one kind of plating, but one of the tanks 1 or 2 is employed, and the objects to be plated are placed only upon the arms 41 or the arms 42, which travel over the tank that is to be used. The plating equipment illustrated is an electroplating equipment employing anodes 43 and complemental cathodes arranged in any usual or suitable way, and as such arrangements are well known to those skilled in the art the arrangement shown will not be more specifically described

The advantages in the apparatus of my invention will be readily appreciated by those familiar with the art.

Changes may be made without departing from my invention.

Having thus described my invention I claim:

1. In a plating equipment, two plating tanks one of which is disposed within the limits of the other, a traveling conveyor above the tanks whose line of travel is directionally similar to the line of division between said tanks, and a work support moved by the conveyor and straddling the line of division between the tanks whereby a plurality of articles suspended from said support may be moved simultaneously with some of the articles passing through one tank and the remainder through the other tank.

2. In a plating equipment, a tank having the form of a U, a second tank embraced by the arms and bight portion of the first tank, a traveling conveyor above the tanks whose line of travel is directionally similar to the line of division between said tanks, and a work support moved by the conveyor and straddling the line of division between the tanks whereby a plurality of articles suspended from said support may be moved simultaneously with some passing through one tank and the remainder through the other tank.

3. In a plating equipment, two plating tanks, and a traveling conveyor having article carrying portions located to traverse only one tank, and other object carrying portions located to traverse only the other tank, whereby articles carried by said portions may be moved with some of the articles passing through one tank and the remainder through the other tank.

4. In a plating equipment, two plating tanks, and a traveling conveyor having a line of travel located between remote limits of the tanks, said conveyor having article carrying portions some of which are located to traverse only one tank and the remainder located to traverse only the other tank, whereby articles carried by said portions may be moved with some of the articles passing through one tank and the remainder through the other tank.

In witness whereof, I hereunto subscribe my name.

WILFRED O. EMARD.