L. SCHULTE.

PLATING MACHINE.

APPLICATION FILED SEPT. 8, 1914.

**1,165,346.**

Patented Dec. 21, 1915

2 SHEETS—SHEET 1.

Fig. 1.

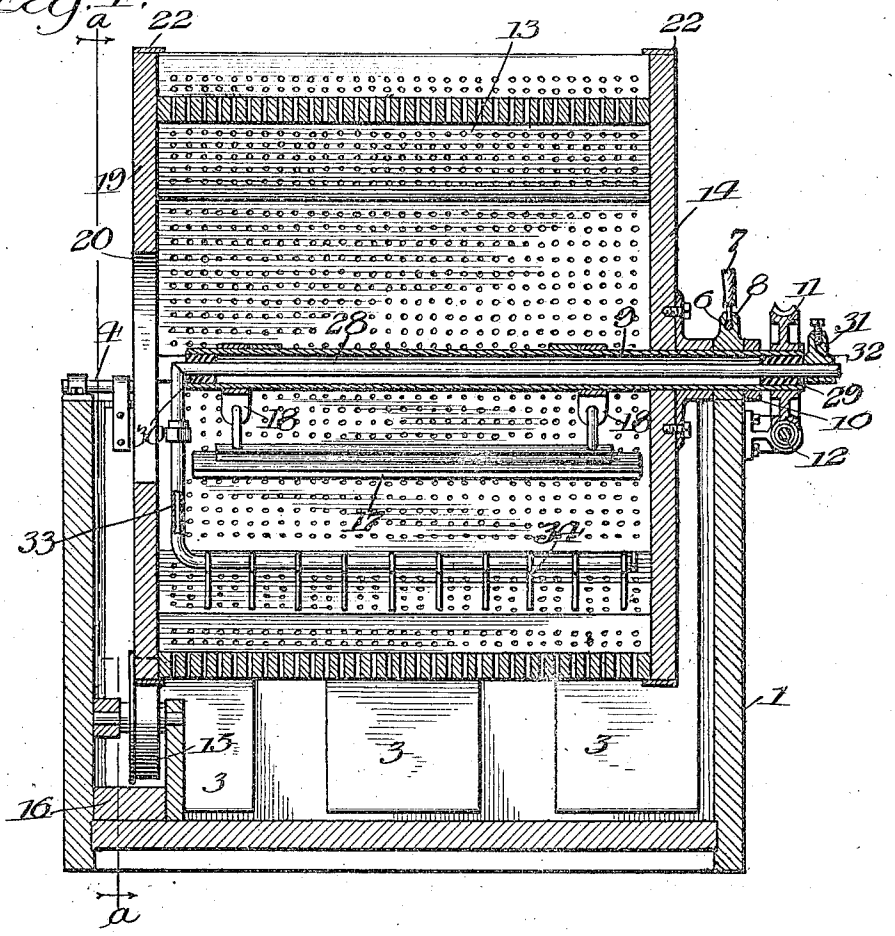
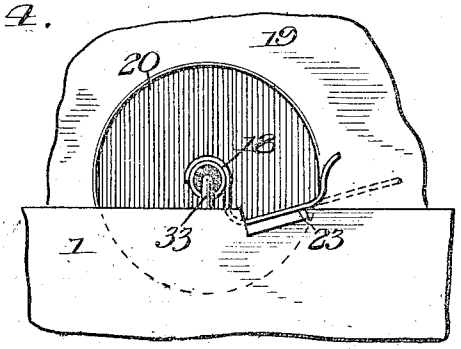



Fig. 4.




Witnesses

Hazel Anna Jones,

A. Lyda Jones

Inventor

Louis Schulte

by Max W. Zabel atty.

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2 SHEETS—SHEET 2.

Fig. 2.

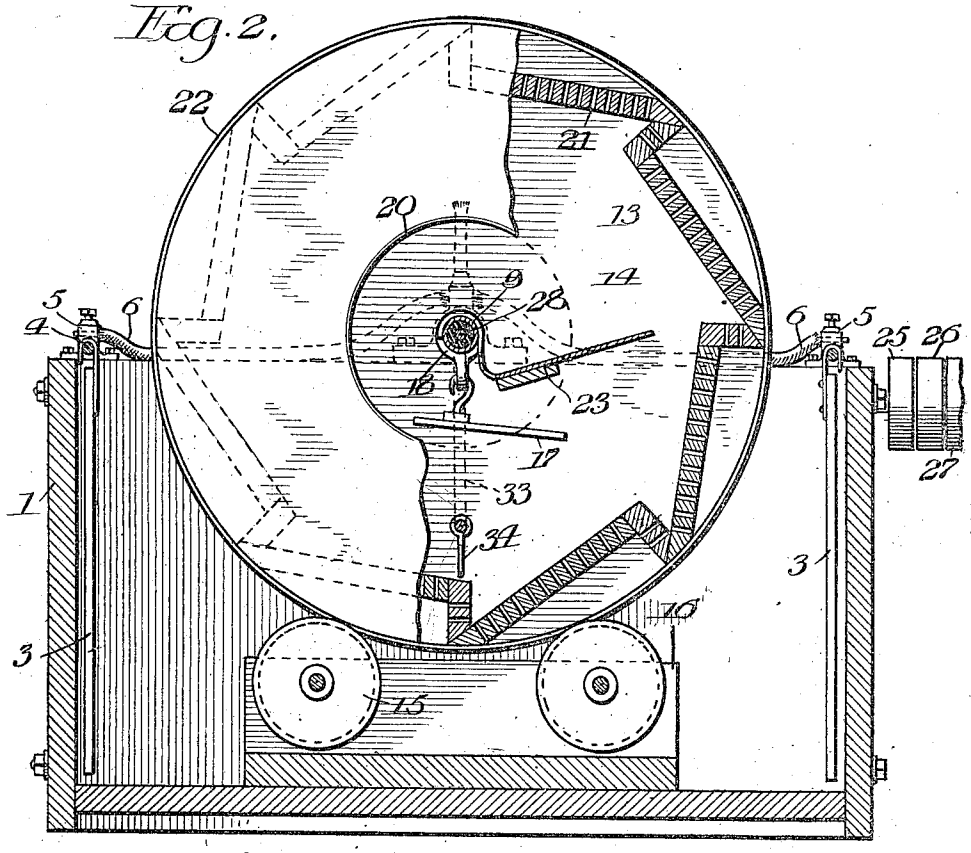
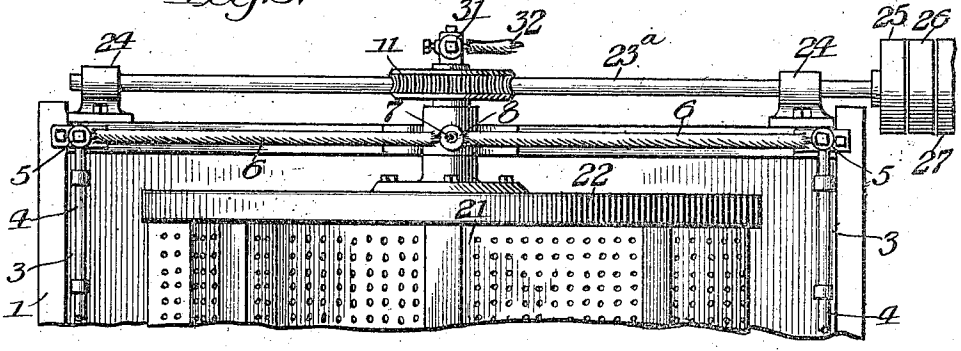



Fig. 3.




Witnesses

Hazel Ann Jones.

A. Lyda Jones

Inventor

Louis Schulte

by Max W. Zabel

Atty.

# UNITED STATES PATENT OFFICE.

LOUIS SCHULTE, OF CHICAGO, ILLINOIS.

## PLATING-MACHINE.

1,165,346. Specification of Letters Patent. Patented Dec. 21, 1915.

Application filed September 8, 1914. Serial No. 860,748.

*To all whom it may concern:*

Be it known that I, LOUIS SCHULTE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Plating-Machines, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to electroplating machines and more particularly to that class of plating machines which are adapted to receive a plurality of small objects each to be plated, which objects are suitably agitated and moved around so that plating may be effectively done throughout all of their exposed surfaces.

My invention accomplishes a number of desirable objects among which might be mentioned the ease and simplicity with which the machine may be charged and the articles withdrawn therefrom; the provision of means to suitably turn over or agitate the articles to be plated instead of causing them merely to slide upon an unbroken surface; improved features for conducting the current into the electrolyte and to the articles to be plated; and various other objects all as will appear more clearly from the detailed description of one form of my invention which I will now set forth in connection with the accompanying drawings in which—

Figure 1 represents a vertical longitudinal sectional view of my improved plating machine; Fig. 2 is a sectional view on line *a*—*a* of Fig. 1; Fig. 3 is a fragmentary top view of my machine, and Fig. 4 is a detail of construction.

My improved plating machine includes primarily a water-tight tank 1 adapted to have electrolyte therein. Suitable anodes 3, 3 are provided along the sides of the tank properly hung from bus bars 4 to which current is conducted through the binding posts 5, 5, by way of the conductors 6, 6, which conductors preferably receive their current from the incoming line conductor 7 mounted in the binding post 8 with which the conductors 6, 6 also have electrical connection. The binding post 8 is in electrical connection with a conducting sleeve 9, which conducting sleeve is mounted in a bearing 10 so that it may be rotated when the worm wheel 11 is suitably rotated by the worm 12. This rotatable sleeve 9 is secured to the plating barrel 13 by being fastened to the side wall 14 thereof. This plating barrel which is thus rotatably mounted at one side by the sleeve 9 is also rotatably mounted at the other side by resting upon rollers 15, 15 suitably rotatably supported within the framework 16. The entire barrel 13 may thus be suitably rotated when the worm 12 is rotated. A further anode 17 is provided, which anode has electrical connection with hangers 18, 18 electrically connected to the conducting sleeve 9, which conducting sleeve, as will be remembered, has electrical connection with the binding post 8 by being rotatably mounted in electrical connection therewith. The barrel 13 at its opposite side has the side wall 19 which has a large opening 20 through which the articles to be plated may be inserted and withdrawn as will presently appear. The side walls 14 and 19 are cut out to receive a plurality of substantially L-shaped agitating members 21 suitably held in place upon the periphery of said sides 14 and 19 by the metallic straps 22. The left hand (Fig. 1) metallic strap 22 rides upon the rollers 15 as is apparent. These agitating elements 21 are perforated so as to permit of the ready flow of electrolyte therethrough.

The articles to be plated are introduced through the opening 20 and as the barrel is rotated clockwise, (Fig. 2), they fall from one element 21 to the next, being thereby turned over instead of merely sliding along and thus presenting various faces more thoroughly into association with active electrolyte so that these articles to be plated are plated throughout their entire exposed surfaces.

Whenever it is desired to remove the articles, as when they have been sufficiently plated, then the rotation of the barrel is changed, and it will be noted that the step-like projections of the elements 21 will then carry the articles upwardly and deposit them upon the trough 23 from where they can be raked out of the machine through the opening 20. It is thus not necessary to remove the barrel in order to insert the articles to be plated or to withdraw them from the barrel. A more or less continuous plat-

ing process can thus be carried on and larger barrels may be used to thereby more economically carry on the work.

The worm 12 is mounted upon a shaft 23ª, which shaft is mounted in suitable bearings 24 and carries suitable pulleys 25, 26 and 27 for driving purposes, one pulley preferably being an idler, one serving to drive the shaft in one direction and the other serving to drive the shaft in the opposite direction. A further idler pulley can also be added although here not shown.

In order to conduct the current to the articles to be plated, I provide a bus bar 28 insulatingly carried within the rotating tube 9 by being rotatably mounted within the insulating bushings 29 and 30. This bus bar 28 is then suitably electrically connected with a binding post 31 to which leads the conductor 32 from the negative pole of the source of current. As the barrel turns the bus bar 28 remains with its depending portion 33 in a vertical position. The lower extremity of the bus bar is again turned to a horizontal position and carries a plurality of pivotally mounted fingers 34, 34 which are adapted to engage the articles to be plated which rest upon the insulating elements 21. These elements 21 and the sides 14 and 19 are of course preferably made of wood. The fingers 34 may swing in order to more readily permit the articles to pass by as the barrel is being rotated. A very efficient way of conducting the current to the articles or work is thus provided. The barrel may usually be about one third full of work and give satisfactory and efficient service.

From what has been described the nature of my invention will be readily clear to those skilled in the art, as will also its application to other structures and its arrangement for use in different ways.

Having however thus described one form which my invention may take, what I claim as new and desire to secure by Letters Patent is:

1. A plating machine of the character described comprising a rotatable barrel made up of a plurality of step-like internally extending projections each having two faces substantially at right angles to each other, the plane of one of each of said faces extending substantially radial, whereby when the barrel is rotating in one direction of rotation only, the articles to be discharged are carried above the horizontal plane through the axis of said barrel, and means for rotating said barrel.

2. A plating machine comprising a rotatably mounted plating barrel having step-like projections on its interior periphery, said step-like projections each having two faces substantially at right angles, one face of each projection extending substantially radially, and a chute, said step-like projections serving when said plating barrel is rotated in one direction of rotation only to deposit the articles to be plated on said chute.

3. A plating machine comprising a rotatably mounted plating barrel having step-like projections on its interior periphery, said step-like projections each having two faces substantially at right angles, one face of each projection extending substantially radially, a chute, and said step like projections serving when said plating barrel is rotated in one direction of rotation only to deposit the articles to be plated on said chute, said barrel having in its side an aperture through which the articles may be taken out from said chute during the rotation of said barrel.

4. A plating machine of the character described comprising a plating barrel, a shaft associated with one side of said barrel, said barrel having a hand hole in the opposite side thereof for charging and withdrawing the work, a stationarily mounted cathode within said barrel, a bearing for said shaft, said barrel having at its opposite side a circular periphery, rollers for said opposite side for rotatably carrying said opposite side of the barrel, a tank for said barrel, and means provided within said barrel for receiving deposited articles thereon preparatory to their withdrawal from said barrel.

5. A plating machine of the character described comprising a plating barrel, a shaft associated with one side of said barrel, a cathode stationarily mounted within the interior of said barrel, a bearing for said shaft, said barrel having at its opposite side a circular periphery, rollers for said opposite side for rotatably carrying said opposite side of said barrel, and said barrel having a centrally located opening in said opposite side of said barrel for charging the same and withdrawing plated articles therefrom during rotation of said barrel, and a tank for said barrel above whose upper surface said opening projects during the operation of said barrel.

6. A plating machine of the character described comprising a plating barrel, a shaft associated with one side of said barrel, a bearing for said shaft, said barrel having at its opposite side a circular periphery, rollers for said opposite side for rotatably carrying said opposite side of said barrel, and said barrel having a centrally located opening in said opposite side of said barrel for charging the same and withdrawing plated articles therefrom, and a chute fixedly supported within said barrel from which said plated articles may be taken through said aperture.

7. A plating machine comprising a tank, a plating barrel, anodes mounted in said tank exterior of said barrel, an anode mounted in-

ternally of said barrel, said barrel having in its side a hand hole for charging and withdrawing the work, and means whereby said charging and withdrawal may be carried on during the rotation of said barrel.

8. A plating machine comprising a tank, a plating barrel, anodes mounted in said tank exterior of said barrel, an anode mounted internally of said barrel, a cathode adapted to contact with materials to be plated mounted interiorly of said barrel, a hollow shaft carrying a conductor extending to said cathode, and a chute within said barrel adapted to receive articles deposited thereon during the rotation of said barrel.

9. A plating machine comprising a tank, a plating barrel, anodes mounted in said tank exterior of said barrel, an anode mounted internally of said barrel, a cathode adapted to contact with materials to be plated non-rotatably mounted interiorly of said barrel, and a chute within said barrel adapted to receive articles deposited thereon during the rotation of said barrel.

10. A plating machine of the character described comprising a tank, a plating barrel, anodes mounted in said tank externally of said barrel, a cathode adapted to contact with materials to be placed non-rotatably mounted interiorly of said barrel, a non-rotatable conductor extending to said cathode, and a rotatable hollow shaft surrounding said conductor and adaptetd to rotate said barrel.

11. A plating machine comprising a tank, a plating barrel, anodes mounted in said tank exterior of said barrel, a cathode adapted to contact with materials to be plated non-rotatably and eccentrically mounted interiorly of said barrel, said cathode including a plurality of swinging fingers, a hollow shaft for rotating said barrel, and an electrical conductor extending through said hollow shaft to said cathode.

12. In a mechanical plater the combination with a plating barrel, a tank within which said barrel is partly submerged, means for rotating said barrel, said barrel having at one side a hand hole substantially concentric with said barrel, and means within said barrel to receive deposited articles from which they may be withdrawn from said barrel during rotation of said barrel through said hand hole.

13. In a mechanical plater the combination with a plating barrel, a tank within which said barrel is partly submerged, means for rotating said barrel, said barrel having in its side a hand hole substantially concentric with said barrel, means whereby articles may be charged into or withdrawn from said barrel during rotation of said barrel through said hand hole, and a chute stationarily mounted within said barrel adapted to receive articles in the course of the rotation of said barrel, wherefrom said articles may be withdrawn from said barrel through said hand hole.

14. In a mechanical plater the combination with a plating barrel, a tank within which said barrel is partly submerged, means for rotating said barrel, said barrel having in its side a hand hole substantially concentric with said barrel, means whereby articles may be charged into or withdrawn from said barrel during rotation of said barrel through said hand hole, a chute stationarily mounted within said barrel adapted to receive articles in the course of the rotation of said barrel, wherefrom said articles may be withdrawn from said barrel through said hand hole, and means provided upon the periphery of said barrel whereby upon rotation in one direction only articles thereon are deposited upon said chute.

In witness whereof, I hereunto subscribe my name this 5th day of August, A. D., 1914.

LOUIS SCHULTE.

Witnesses:
MAX W. ZABEL,
HAZEL ANN JONES.