

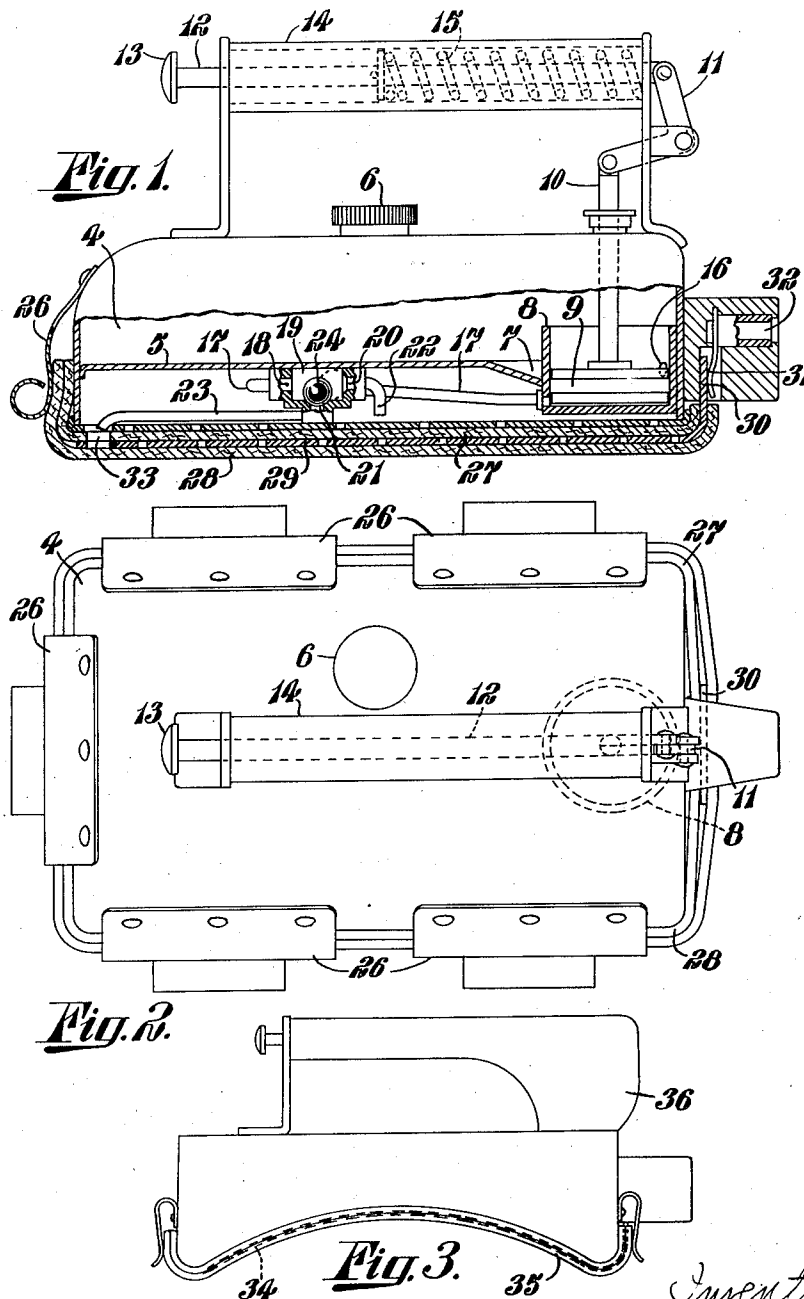
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APPARATUS FOR THE ELECTRODEPOSITION OF METALS

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APPARATUS FOR THE ELECTRODEPOSITION OF METALS

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4 Claims. (Cl. 204—5)

This invention relates to devices for use in effecting the electro-deposition of metals in accordance with the known method of operation wherein an electrode formed from the metal to be deposited is traversed upon the surface adapted to receive the deposit with the intervention of an absorbent pad for holding an appropriate electrolyte, the said electrode and the said surface being electrically connected to the appropriate poles of an electric current supply.

Now, in accordance with the present invention a device for use in effecting the electro-deposition of metal comprises an electrode formed from the metal to be deposited, an absorbent pad adapted to come between said electrode and the surface receiving the deposit, a reservoir for an appropriate electrolyte, means for transferring such electrolyte from said reservoir to the said absorbent pad and means for changing the position of delivery of the electrolyte to the pad according to whether the device is employed upon a horizontally or vertically disposed surface.

The said means for changing the position of delivery of the electrolyte to the absorbent pad preferably operates automatically to effect the necessary change according to whether the device is employed upon a horizontally or vertically disposed surface. One preferred embodiment of the invention provides such an automatically operating means for changing the position of delivery of the electrolyte to the absorbent pad by incorporating a gravity operated valve.

In order that the invention can be fully appreciated, two examples of devices constructed in accordance therewith will now be more particularly described with reference to the accompanying drawing, wherein:—

Figs. 1 and 2 show respectively an elevation partly in section and a plan view of a preferred embodiment of the invention for use in effecting the electro-deposition of metal upon flat surfaces, and

Fig. 3 is an elevational view of a further embodiment of the invention for use in effecting the electro-deposition of metal upon curved surfaces.

Referring to Figs. 1 and 2, the reference numeral 4 indicates a container adapted to constitute a reservoir for electrolyte, this container having a bottom wall 5 and a filling aperture closable by a cap 6. One end portion of the bottom wall 5 is recessed to provide a well 7 in which is disposed the cylinder 8 of a pump mechanism.

A piston 9 provided in the cylinder 8 is adapted to be reciprocated by means of the rod 10, bell-crank lever 11 and push rod 12, the latter being provided with a knob 13 for convenience of operation by the thumb of the hand of the user of the device which is adapted to grip the handle 14. Said handle 14 is hollow and encloses a spring 15 which co-operates with the push rod 12 and functions to cause the descent of the piston 9 after said piston has been raised by the manual operation of the push rod 12. Such operation of the pump mechanism is adapted to draw electrolyte from the container 4 through the inlet opening 16 to the cylinder 8 and force it through the conduit 17 to the port 18 of a valve box 19 disposed beneath the bottom wall 5.

This valve box also includes ports 20 and 21 which communicate with conduits 22 and 23 respectively, whilst within the said box is disposed a loose ball 24 which constitutes a valve member adapted to co-operate with seatings provided in the ports 20 and 21 as will be clearly evident from the drawing.

Below the valve box 19 and cylinder 8 there is provided a perforated base member 25 against which is held, in a removable manner, by means of spring clips 26, a pair of absorbent pads 27 and 28 between which is accommodated an electrode 29 formed from the metal it is desired to deposit. This electrode 29 is perforated and at one end is formed with an extension 30 for engaging with a spring blade 31 in electrical connection with a socket 32 by which the said electrode can be coupled to one pole of an electric current supply. The absorbent pad 28 is adapted to be brought into contact with the surface receiving the deposit and to be maintained saturated with electrolyte whether the device is employed upon a horizontally disposed surface (position shown in drawing), or a vertically disposed surface, in which latter case the left hand portion of the device shown on the drawing would be uppermost.

To assure a satisfactory distribution of the electrolyte over the entire area of the pad 28 when the device is employed on a horizontally disposed surface, the conduit 22 delivers electrolyte to the center portion of the perforated base 25 after which it passes through the apertures therein to the pad 27, and subsequently through the apertures in the electrode 29 to the pad 28. It should be observed that when the device is in position upon a horizontally disposed surface the ball 24 closes the port 21, whilst

the port 20 remains open and permits the flow of electrolyte from the conduit 17 to the conduit 22 when the pump is manipulated.

To assure a satisfactory distribution of the electrolyte to the pad 28 when the device is employed upon a vertically disposed surface the conduit 23 is extended as shown in the drawing to deliver the electrolyte through an aperture 33 provided in the pad 27 and electrode 29 directly to the end portion of the pad 28, from whence it will percolate over the entire area of the pad. When the device is in position upon a vertically disposed surface the ball 24 will close the port 20, the port 21 being then open to permit a flow of electrolyte from the conduit 17 to the conduit 23.

It will be readily understood that upon changing the device from the "horizontal position" to the "vertical position" or vice versa, the ball 24 moves, as a result of gravitational force, from one to the other of the two ports 20 and 21, the position of delivery of the electrolyte to the pad being thus automatically changed according to whether the device is employed upon a horizontally or vertically disposed surface.

The device shown in Fig. 3 of the accompanying drawing is in general similar to that hereinbefore more particularly described with reference to Figs. 1 and 2, but in this case the electrode 34 formed from the metal it is desired to deposit and the associated absorbent pad 35 are of curved formation, the curvature being chosen in accordance with the curvature of the surface upon which it is desired to deposit the metal, for example the curved surface of mill rollers or the like.

Further, in this particular example various parts of the pump operating mechanism are enclosed within a casing 36 which is formed as an extension of the handle 37 of the device.

It will be appreciated that the invention is not limited to the particular examples hereinbefore more particularly described and that various embodiments of the invention are possible to meet particular requirements without departing from the spirit thereof.

What I claim and desire to secure by Letters Patent of the United States of America is:—

1. A device for use in effecting the electro-

deposition of metal comprising as a unitary structure, an electrode formed from the metal to be deposited, an absorbent pad adapted to come between said electrode and the surface receiving the deposit, a reservoir for an appropriate electrolyte on which reservoir said pad and said electrode are mounted, a pair of conduits having delivery openings situated at different positions with respect to the absorbent pad, manually operable pump means integral with said reservoir for transferring the electrolyte from the reservoir through said conduits to the absorbent pad and a gravity operable valve capable of occupying either one of two different positions for rendering inoperative either one or the other of said pair of conduits, accordingly as the device is held in one position or another.

2. A device for use in effecting the electro-deposition of metal comprising as a unitary structure an electrode formed from the metal to be deposited, an absorbent pad adapted to come between said electrode and the surface receiving the deposit, a reservoir for an appropriate electrolyte on which reservoir said pad and said electrode are mounted, an integrally arranged manually operable pump for withdrawing electrolyte from said reservoir, a valve box, a conduit for conducting electrolyte from the said pump to said valve box, a pair of conduits leading from said valve box to different positions with respect to the absorbent pad and a loose ball member in said valve box for automatically rendering inoperative either one or the other of said pair of conduits, accordingly as the device is held in one position or another.

3. A device for use in effecting the electro-deposition of metal as claimed in claim 1 including a handle for traversing the electrode and its associated absorbent pad upon the surface adapted to receive the deposit and manually operable means incorporated in said handle and mechanically coupled to the pump means to actuate the same.

4. A device for use in effecting the electro-deposition of metal as claimed in claim 1 wherein the electrode formed from the metal it is desired to deposit and its associated absorbent pad are of curved formation.

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