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ELECTROLYTIC FILM REMOVING APPARATUS

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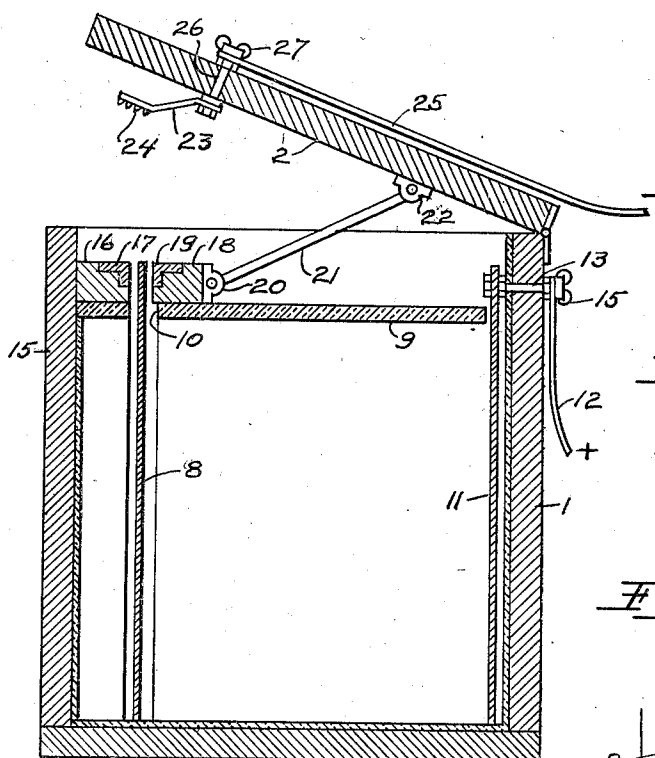


Fig. 1.

Fig. 3.

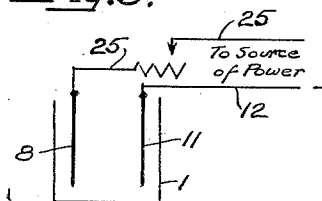
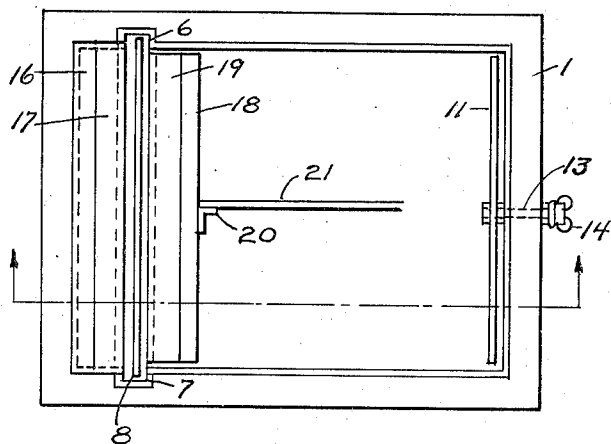


Fig. 2.

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ELECTROLYTIC FILM REMOVING
APPARATUS

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7 Claims. (Cl. 204—5)

(Granted under the act of March 3, 1883, as
amended April 30, 1928; 370 O. G. 757)

This invention described herein may be manufactured and used by or for the Government for governmental purposes, without the payment to me of any royalty thereon.

This invention relates generally to a method and apparatus for removing images from photographic plates, but more especially to the type of plates used by lithographers and off-set printers.

The principal object of the invention is to increase the usefulness and life of a metallic photographic plate.

Another object of the invention is to keep in service a metallic photographic plate, the grain of which is in good condition, without having to resort to regaining the plate.

The invention set forth herein is applicable to all metal plates from which it is desirable to remove a photographic image quickly and without injury to the surface thereof.

Other objects of the invention will be set forth in the following description which refers to the accompanying drawing. The essential characteristics are summarized in the claims.

In describing the invention in detail reference is had to the accompanying drawing, forming a part of this specification, wherein like numerals of reference indicate corresponding parts throughout the several views, in which—

Fig. 1 is a cross-sectional view of a tank, taken on line 2—2 of Fig. 2, showing plate clamping means and electrical connections;

Fig. 2 is a top plan view of the tank shown in Fig. 1, with cover removed;

Fig. 3 is a diagrammatic view showing electrodes and a portion of the circuit required in the operation of the device.

Referring to the drawing the numeral 1 indicates the tank and 2 the cover, which is attached thereto by means of the hinges 3. The tank is formed with an outer casing 4 of wood or any other suitable material provided with an inner lining 5 preferably of glass. The side walls of the tank are constructed with opposite grooves 6 and 7 adapted for the reception of the photographic plate 8 which is to receive electrolytic treatment.

The inner glass lining of the tank is continued upward on the front and side walls of the tank to a comparatively short distance from the upper edge of the wooden casing, and the upper edges of these walls of the lining are thus adapted to support a glass cover plate 9 which is provided with a slotted opening 10, coinciding with the upper edges of the lateral grooves 6 and 7, and adapted for the admission of the photographic

plate 8, which functions as an electrode. The other electrode is indicated by the numeral 11. This electrode 11 is conductively connected to a conduit 12 through the bolt 13 which is provided with a wing nut 14.

Mounted on the glass cover plate 9, adjacent the front wall 15 of the outer casing 4, is fitted an elongated rectangular block 16 of wood or other suitable material, the outer upper edge of which is cut away to receive an angularly formed strip of conducting material 17 composed of any suitable metal. A companion block to the one just described, is designated by the numeral 18. This second block 18 is provided with an angularly formed strip of conducting material 19 similar to block 16 but so fitted that the angles are positioned opposite each other. The second block 18 is provided with a bearing member 20 to which a link 21 is hingeably attached, the opposite end of the link being hingeably attached to a second bearing member 22 which is attached to the hingeably mounted tank cover 2.

From the above description of the blocks 16 and 18 and connecting link 21 it will be readily seen that on closure of the cover 2 the block 18 will be moved toward the block 16 and that the block 18 recedes from the block 16 on the opening of the cover 2.

The cover 2 is also provided with a spring metal contact piece 23, provided with sharp contact points or tines 24, said contact piece being conductively connected to the electrical conduit 25 through the bolt 26 provided with the wing nut 27. On closure of the cover 2 the metallic photographic plate 8 is clamped between the blocks 16 and 18 which bring it into electrical contact with the angles 17 and 19 and the contact piece 23 which is held tightly against both the angles 17 and 19 and also the plate 8, the upper edge of which extends to the level of the upper surfaces of said angles.

In the operation of the device, the tank is first filled with water, which is slightly acidulated to increase conductivity. The metallic photographic plate, from which it is desirable to remove a photo-transferred image, is then cleaned of all greasy inks which cover the image by applying any suitable solvent now employed by the trade. To remove the remaining albuminous photo-film the metallic photographic plate is now placed in the electrolytic bath by sliding it into the grooves 6 and 7 where it functions as an electrode and is held parallel to the opposite electrode 11 which is preferably made of zinc. The plate 8 and the opposite electrode 11 are re-

tained in the electrolyte at a specified distance, ranging from one to two inches, depending upon the strength of the electrolyte.

After the photographic plate 8 has been placed into the tank the cover 2 is closed and by so doing both plates are connected in the circuit of the source of electric power, which is preferably 110 volts, continuous direct current. An alternating current may be used with a rectifier or suitable interrupter. The strength of the current is held to about .003 ampere per square inch, and is permitted to flow between the plates 8 and 11 for about thirty seconds, the object being to subject the plate 8 to ion shock action for a fractional part of a minute. After about thirty seconds the lid 2 of the tank 1 is raised and the plate 8 removed from the electrolyte. Plate 8 is then washed under a tap and while still wet is subjected to rubbing action which after a few minutes completely removes the photographic image therefrom. Acid and caustic solvents are then applied to restore the brilliancy to the plate.

Without subjecting the plate to the electric shock, as described above, the known caustic solvents are only partially effective in removing the photographically transferred images from metallic plates. The electric current disintegrates the molecular structure and destroys the cohesion of the albuminous sensitizing compound used in making the photographic transfer onto the metallic photographic plates. In addition, the electric ions destroy the adhesive property of the albuminous film comprising the image to such a degree that any caustic solvent or mechanical rubbing readily removes the transferred photographic image.

Having described my invention, what I claim as new and wish to secure by Letters Patent is:

1. A device for the electrolytic treatment of photographic plates comprising a glass lined tank provided with a hingeable cover, a fixed electrode, an inner cover plate, a removable electrode comprising a photographic plate, clamping members and intermediate clamping means operatively connecting one of said clamping members with said cover, adapted to clamp the lateral surfaces of said photographic plate on closure thereof; means attached to said cover adapted to contact said photographic plate on closure of said cover, and means for connecting said fixed electrode and removable electrode in an exterior circuit.

2. A device for the electrolytic treatment of photographic plates comprising a tank having a hingeably mounted cover, a fixed electrode and a removable electrode mounted within said tank, said fixed electrode comprising a zinc plate, and said removable electrode a metallic photographic plate, means contained within said tank for clamping the lateral surfaces of said removable plate and additional means cooperating with said clamping means and said cover adapted to operate said clamping means on closure of said cover and means in connection with said cover to furnish a conductive contact with said plate with closure of said cover.

3. A device for the electrolytic treatment of metallic photographic plates, comprising a tank having vertical oppositely aligned grooves formed in the side walls thereof, a cover hingedly attached to said tank, an inner cover plate fitted within said tank and provided with a slotted opening registering with the upper extremity of said vertical groove and adapted for the reception of a metallic photographic plate which func-

tions as an electrode, a fixed electrode mounted within said tank, means adapted to clamp the lateral surfaces of said photographic plate on closure of the hingeable cover, and contact means adapted to engage the photographic plate on closure of the hinged cover.

4. A device for the electrolytic treatment of a metallic photographic plate, comprising a glass lined tank having a vertical groove formed in each side wall thereof, a cover hingeably attached to said tank, an inner cover plate fitted within said tank and provided with a slotted opening registering with the upper extremity of said vertical grooves and adapted for the reception of a metallic photographic plate which functions as an electrode, a fixed electrode mounted within said tank conductively connected to an exterior lead wire, a fixed and a horizontally movable clamping member mounted within the tank adjacent the upper extremity of the photographic plate, said members provided with adjacent edge plates of conductive material, intermediate means operatively connecting the horizontally movable clamping member with the hingeably mounted cover adapted to convert the rotative movement of the cover to horizontal transverse movement of said movable clamping member to bring both of said clamping members into conductive contact with said photographic plate, and a contact member provided with downwardly projecting tines attached to the inner surface of said cover conductively connected to an exterior lead wire and adapted to make conductive contact with the photographic plate and the aforesaid adjacent edge plates when the cover of said tank is closed.

5. A device for the electrolytic treatment of photographic plates comprising a glass lined tank provided with a hingeable cover, a fixed electrode, an inner cover plate of insulating material, a removable electrode comprising a photographic plate, clamping members adapted to engage the lateral surfaces of said photographic plate, and intermediate clamping means operatively connecting one of said clamping members with said cover, adapted to move said clamping member into engagement with said photographic plate on closure thereof; means attached to said cover adapted to make an electrical contact with said photographic plate on closure of said cover, and means for connecting said fixed electrode and removable electrode in an exterior circuit.

6. A device for the electrolytic treatment of photographic plates comprising a glass lined tank provided with a hingeable cover, a fixed electrode, an inner cover plate of insulating material, a removable electrode comprising a photographic plate, clamping members provided with conducting surfaces adapted to engage the lateral surfaces of said photographic plate, and intermediate clamping means operatively connecting one of said clamping members with said cover, adapted to move said clamping member into engagement with said photographic plate on closure thereof; means attached to said cover adapted to make electrical contact with the conducting surfaces of said clamping members and with said photographic plate on closure of said cover, and means for connecting said fixed electrode and removable electrode in an exterior circuit.

7. A device for the electrolytic treatment of photographic plates comprising a glass lined tank provided with a hingeable cover, a fixed electrode, an inner cover plate of insulating material, a removable electrode comprising a photographic

plate, a fixed and a movable clamping member adapted to engage the lateral surfaces of said photographic plate, and intermediate clamping means operatively connecting said movable
5 clamping members with said cover, adapted to move said movable clamping member into engagement with said photographic plate on clo-

sure thereof; means attached to said cover adapted to make an electrical contact with said photographic plate on closure of said cover, and means for connecting said fixed electrode and removable electrode in an exterior circuit.

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