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PHOTO ENGRAVER'S CABINET

Filed Jan. 8, 1927

Fig. 1.

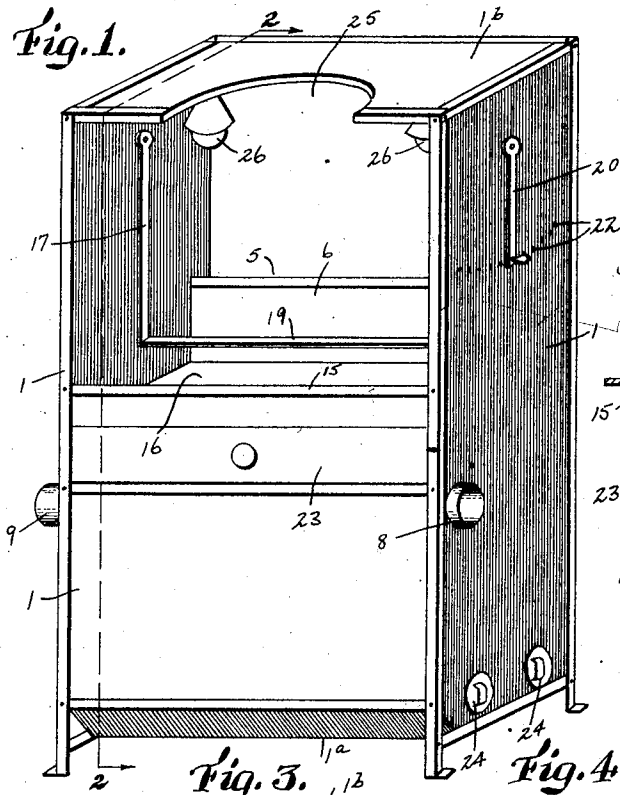


Fig. 2.

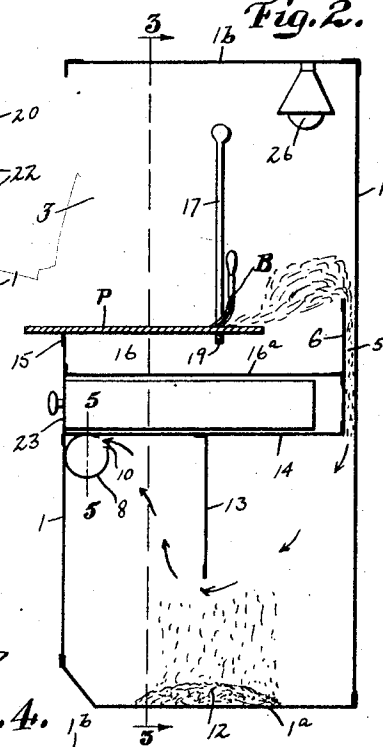


Fig. 3.

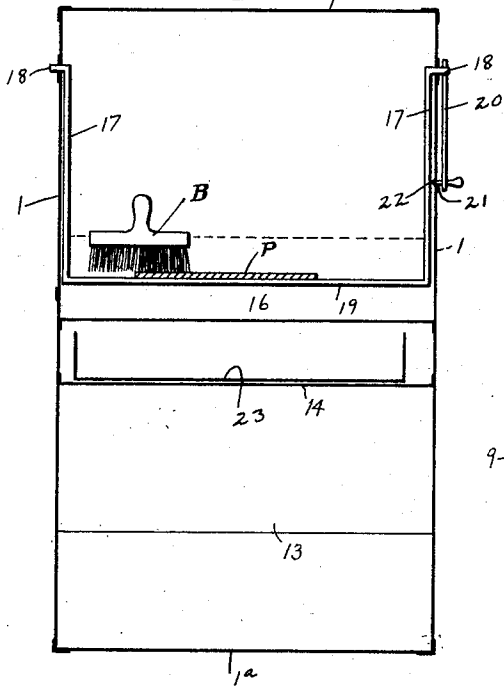


Fig. 4.

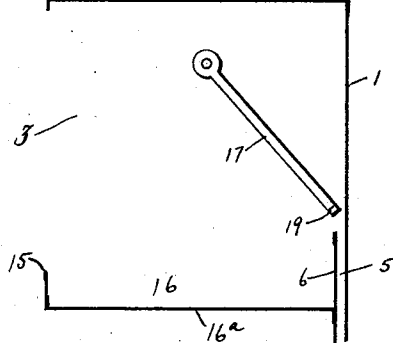


Fig. 5.



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PHOTO-ENGRAVER'S CABINET

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This invention relates to appliances known as blood boxes and bleeding cabinets used by photo-engravers in preparing partially etched zinc plates for further etching by applying to the partially etched surfaces a dark red East Indian resin, called dragon's blood, the resin being finely powdered.

Usually the powder is kept in a shallow box or tray, and the plate is held by the operator on one edge of the tray. A flat brush charged with the powder is then swept across the plate, to cause some of the powder to lodge against the sides of the etched lines, the lodged powder being subsequently melted by heating the plate so that it adheres to the lines and prevents the undercutting of the lines during subsequent etchings.

During the brushing operation, and particularly while the excess powder is being brushed from the plate into the tray, the finest particles of the powder which constitute the most valuable portion thereof, are caused by the agitation to rise as dust into the air, and then settle on surfaces in the vicinity, causing annoyance. If the surfaces include those of other partially etched plates in the vicinity, damage well known to photo-engravers is caused. The dust-laden air is liable to be inhaled by the operator, to his physical detriment, and the loss of material in the form of dust is considerable.

The chief object of my invention is to provide a cabinet in which the operation of applying dragon's blood to lines of partially etched photo-mechanical plates may be conveniently performed, and whereby the powder which rises from the plate may be unobjectionably disposed of, by depositing the major portion in the cabinet, so that it may be recovered, and so delivering any unrecoverable residue that it may be conducted away from the cabinet, and discharged at a distant point.

Other related objects will hereinafter appear.

Of the accompanying drawings forming a part of this specification,—

Figure 1 is a perspective view of a cabinet embodying the invention.

Figure 2 is a vertical section on the plane

indicated by line 2—2 of Figure 1, showing the plate in the position it occupies when surplus powder is being brushed off, a brush being shown.

Figure 3 is a section on line 3—3 of Figure 2.

Figure 4 is a view similar to a portion of Figure 2, omitting the plate, and showing the hereinafter described rear plate rest displaced.

Figure 5 is a fragmentary section on line 5—5 of Figure 2.

The same reference characters indicate the same parts in all of the figures.

My improved cabinet is preferably composed of sheet metal members and suitable reinforcing frame members, forming a vertically elongated cabinet which may be approximately five feet high, three feet wide, and two and one-half feet deep from front to back. These proportions are suitable, but of course, may be varied. The vertical front, back and side walls of the cabinet are designated by the reference numeral 1, the bottom by 1^a and the top by 1^b.

The upper portion of the cabinet constitutes a working chamber, which is open at the front side of the cabinet, the front wall being provided with an opening 3 (Figures 2 and 4), permitting free access to the working chamber.

The lower portion of the cabinet constitutes a settling chamber, in which the surplus powder is deposited, as hereinafter described. The working chamber is connected with the upper portion of the settling chamber at one side of the latter by a vertical flue 5, preferably located at the back of the cabinet, one side of the flue being formed, in this instance, by a vertical sheet metal member 6, spaced from the back wall of the cabinet. Said flue is adapted to conduct floating powder from the working chamber to the settling chamber.

Communicating with the settling chamber, at the front upper portion thereof, is an exhaust outlet, adapted to be connected with an exhaust conduit section 7, (Figure 5) which may extend to a point remote from the cabinet and be connected with a suction fan

or blower (not shown), whereby an air current may be induced through the working chamber, the passage 5, the settling chamber and the exhaust conduit.

5 The exhaust outlet is preferably provided by a tube 8, extending horizontally from side to side of the settling chamber, and through the side walls thereof, as shown by Figure 5. The conduit section 7 may be connected with
10 either of the projecting ends of the tube 8, the other end being closed by a cap 9. The tube is provided with an intake opening 10 which is preferably an elongated slot, formed and arranged to widen the portion of the induced
15 current entering the tube 8, so that the width of the current is substantially equal to the width of the chamber. The air current entering the upper portion of the settling chamber at the rear side thereof, flows en-
20 tirely across the chamber to its front side, so that time is allowed for powder carried by the current to fall to the bottom of the settling chamber.

The arrangement shown is such that blood-
25 ing powder set free in the working chamber during the operation of applying the powder to a partially etched plate P, supported in the working chamber, is drawn by the induced current from the working chamber
30 through the exhaust flue 5 to the settling chamber, the major portion of the powder is deposited at 12 on the bottom of the chamber, and the air, and any floating powder carried thereby, are exhausted through the exhaust
35 outlet 8 and conduit 7.

13 designates a baffle plate in the settling chamber, between the exhaust flue 5 and the exhaust outlet 8, whereby the induced current is deflected toward the bottom of the settling chamber, so that said current passes up-
40 ward to the exhaust outlet 8, after passing under the baffle-plate. This change in the direction of the current facilitates the deposition of powder on the bottom of the settling
45 chamber. The baffle-plate, preferably of sheet metal, extends entirely across the settling chamber, between the side walls thereof, and is connected in this instance, with a horizontal partition 14, extending from the front
50 wall of the cabinet to the flue 5. The cabinet is provided with a fixed front rest 15, at the front of the working chamber, supporting the outer portion of the plate P during the brushing operation performed by a brush B. Within the working chamber, and suitably
55 spaced from the front rest, is a displaceable rear rest, preferably constructed as herein-after described, supporting the inner portion of the plate.

60 The rests are located above an open dipping tray 16, constituting the bottom portion of the working chamber, and adapted to contain a supply of bleeding powder into which the plate P may be dipped by the operator, to
65 take up a supply of the powder. In this in-

stance, the bottom of the dipping tray is formed by a horizontal partition 16^a, extending from the front wall of the cabinet to the wall 6 of the exhaust flue 5, and the front rest 15 is formed by a portion of the front wall which projects above the partition 16^a and constitutes the front wall of the dipping tray 16.

The displaceable rear rest, as here shown, is a swinging U-shaped member composed of a pair of arms 17, having trunnions 18, journaled in bearings in the side walls of the cabinet, and a neck 19 constituting the acting portion of the rest, and displaceable rear-
75 wardly, as shown by Figure 4, by a swinging movement of the U-shaped member. The object of thus displacing the rear rest is to leave the dipping tray 16 unobstructed, so that the plate P may be conveniently dipped therein.

The displaceable rest may be locked in its operative and its displaced positions by means including a crank 20, fixed to one of the trunnions 18, and provided with a detent member 21 (Figure 3), adapted to engage
85 either of a series of detent members 22, on a side wall of the cabinet. The members 22 may be indentations adapted to engage the member 21. The crank 20 constitutes a means for moving the displaceable rest.

I am not limited to this specific displace-
95 able rest construction. The partitions 14 and 16^a may be spaced apart and form the upper and lower sides of a space in which a drawer 23, containing a reserve supply of powder, is slidable.

Operation.—A supply of powder is placed in the dipping tray 16, the rear rest is displaced, as shown by Figure 4, the suction blower is started, and the plate P, previously partly etched, is dipped in the powder in the tray 16, and then stood up on edge to allow the powder taken up by the plate to settle upon the upper sides of the lines of the plate. The displaceable rest is then located in its operative position, shown by Figure 2, and the plate is deposited on the two rests. The brush B is then moved over the upper side of the plate, to force the powder more closely against the lines of the plate and remove the surplus powder from the plate. The loose powder thus set in motion, is drawn by the induced air current through the exhaust flue 5, into the settling chamber in which the speed of the dust-laden air is reduced, as the air current expands in the settling chamber, and passes under the baffle-plate. The powder rains down and its major portion is deposited at 12, for subsequent removal through hand holes having removable closures 24 (Figure 1). The air and any residuum of dust carried thereby then rises and is drawn through the exhaust outlet 8, and conduit section 7, to be discharged at any suitably distant point.

To enable the operator to conveniently inspect the plate P, in the working chamber,

I provide the top 1^b of the cabinet with a recess 25. Electric lamps 26 may be located in the upper portion of the working chamber, to illuminate the plate.

The dipping tray 16 is located below the front opening 3, and forms the bottom of the working chamber. The outer plate rest 15 constitutes the outer end of the tray and is located above the bottom of the tray and at the lower end of the front opening. The intake end of the exhaust passage 5 communicates with the working chamber above the plate rests. The relative arrangement of the dipping tray, the front opening, the plate rests, and the intake end of the exhaust passage is therefore such that the dipping tray is located below an air current flowing through the front opening to the exhaust passage, while the plate rests are located within said current, so that powder in the tray is unaffected by the current, while the finer portion of the powder rising from a plate supported by the rests is carried away by the current, the heavier portion, which is the major portion of the powder, settling in the tray.

I claim:

1. A cabinet of the character stated comprising in combination a working chamber, having a front opening, a settling chamber below the working chamber closed at its lower portion, a vertical exhaust flue adapted to conduct floating powder downward from the working chamber to one side of the upper portion of the settling chamber, an exhaust outlet communicating with the opposite ends of the upper portion of the settling chamber, and adapted to be connected with suction means whereby an air current may be induced through the working chamber, the exhaust flue and across the settling chamber to the exhaust outlet, and a baffle plate extending from the top partly to the bottom of the settling chamber between the exhaust flue and the exhaust outlet, the arrangement being such that floating powder set free in the working chamber during the operation of floating a partially etched plate, is drawn by the induced current from the working chamber through the exhaust flue to the settling chamber, the major portion of the powder is deposited on the bottom of said chamber under the baffle plate, and the air and any residuum of floating powder carried thereby are exhausted through said outlet, the baffle plate facilitating the deposition of powder on the bottom of the settling chamber.

2. A cabinet as specified by claim 1, the exhaust outlet being a substantially horizontal tube extending across the settling chamber at one side of the upper portion thereof, adapted to be connected with a conduit section outside the chamber, and provided within the chamber with a substantially horizontal intake slot, extending

lengthwise of the tube and elongated to widen the portion of the induced current entering the tube.

3. A cabinet comprising a working chamber having a front opening, a dipping tray located below said opening, the bottom of said tray forming the bottom of the working chamber, an outer plate rest located above the outer end of the tray bottom, and at the lower end of the front opening, an inner plate rest located within the chamber above the tray bottom, and spaced from the outer rest, a settling chamber, a vertical exhaust flue adapted to conduct floating powder from the working chamber to the settling chamber, and having an intake end communicating with the working chamber above the plate rests, and an exhaust conduit communicating with the settling chamber, and adapted to be connected with suction means whereby an air current may be induced through the working chamber, the exhaust flue and the settling chamber, the arrangement being such that the dipping tray is located below and the plate rests within, an air current flowing through the front opening to the exhaust flue, so that powder in the tray is unaffected by said current, while powder set free from a plate supported by the rests is carried away by the air current.

4. A cabinet as specified by claim 3, the inner plate rest being movable and displaceable, to permit an unobstructed dipping of a plate in the tray.

In testimony whereof I have affixed my signature.

WILLIAM J. DOBINSON.