Oct. 12, 1926. 1,602,810

F. M. CARROLL

POWDERING MACHINE

Filed Dec. 11, 1924 2 Sheets-Sheet 1

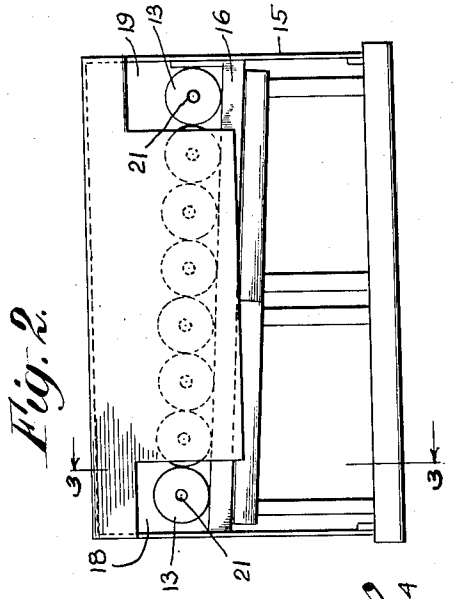


Fig. 2.

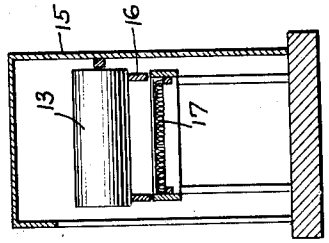


Fig. 3.

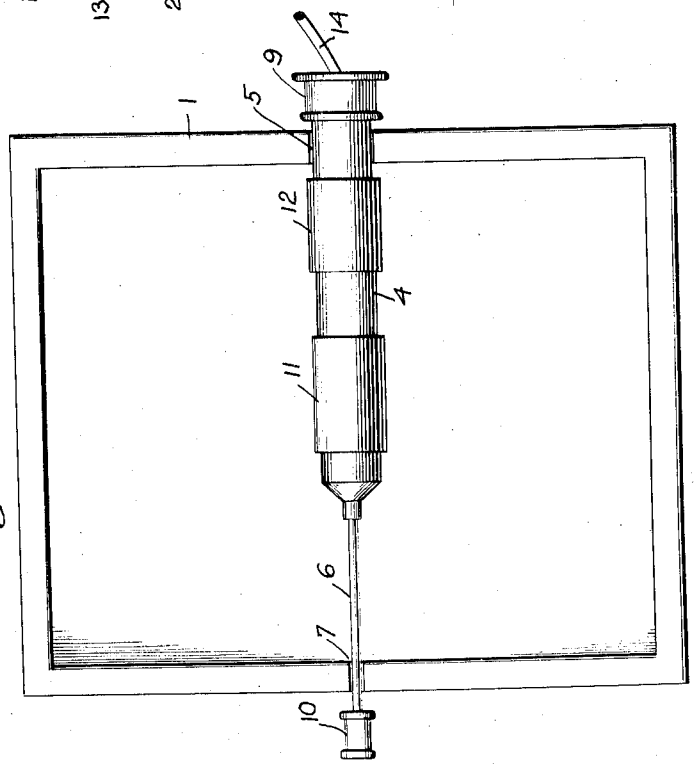


Fig. 1.

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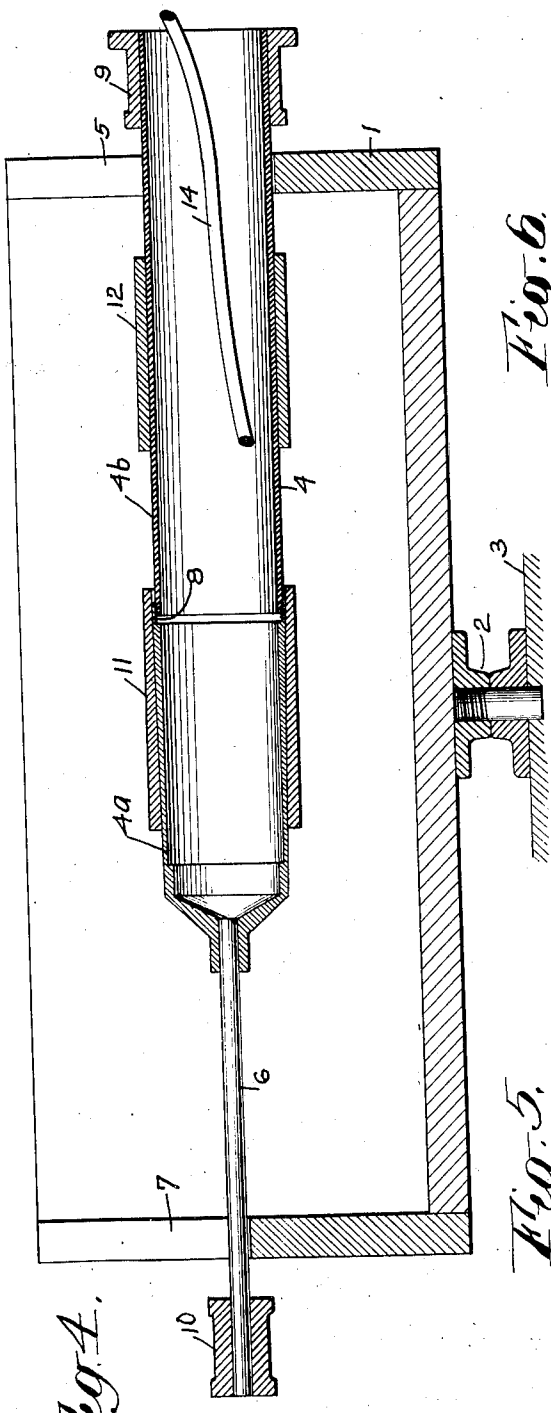


Fig. 4.

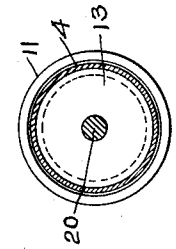


Fig. 6.

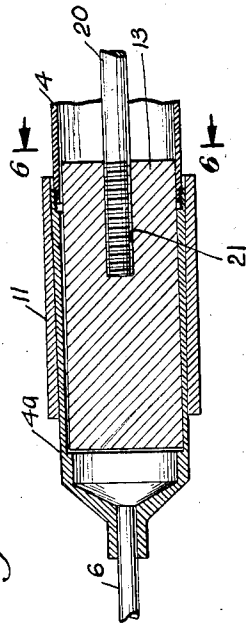


Fig. 5.

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Patented Oct. 12, 1926. 1,602,810

UNITED STATES PATENT OFFICE.

FRED M. CARROLL, OF ENDICOTT, NEW YORK, ASSIGNOR TO THE TABULATING MACHINE COMPANY, OF ENDICOTT, NEW YORK, A CORPORATION OF NEW JERSEY.

POWDERING MACHINE.

Application filed December 11, 1924. Serial No. 755,168.

This invention relates to dusting or powdering devices, for use in applying what is commercially known as dragon's blood to etchings in the process of being made.

In making etchings it is common practice after the acid has eaten into the metal a short distance, to suspend the working or application of the acid, and to apply the dragon's blood powder to the sides of the upstanding letters or other characters. After this has been completed the acid is again applied, and after it has eaten a little deeper, the powdering operation is repeated. This may be done several times during the etching. The reason for the application of the powder is to protect the sides of the letters from the action of the acid so that the acid will not eat into the sides of the letters and weaken their structure.

Ordinarily the application of the powder is accomplished by laying the plate in a horizontal position and stroking its surface with a brush which has been dipped into the powder. The stroking is done in one direction at a time, care being taken to remove all powder from the plate except that which is banked against the sides of the characters. The plate is then heated to bake the powder in position, so that it will hold firmly. After the plate has been cooled, the powder is applied by stroking in another direction to apply the powder to another side of the raised characters. The cycle is repeated until the powder has been applied in four directions so as to completely surround the characters. The acid is again applied, and after it has eaten a little deeper the whole process of powdering is repeated. The alternate etching and powdering is carried on a number of times depending upon the depth of etching desired.

The work of powdering, with its attendant baking and cooling is relatively easy when performed on flat plates as is the usual practice. But when working on the peripheral surface of cylinders, the work of powdering, heating and cooling is much more difficult.

The object of the present invention is to devise a method and means for performing this work on cylinders, with greater ease, greater speed and a higher degree of efficiency.

Referring to the drawings wherein I have shown what I now consider to be the preferred form of my invention:—

Fig. 1 is a plan view of my powdering device.

Fig. 2 is a side elevation of a device used for heating irons for use in connection with the powdering device.

Fig. 3 is a section of the heating device taken on line 3—3 of Fig. 2.

Fig. 4 is a longitudinal vertical sectional view of the powdering device and associated parts shown in the top plan view of Fig. 1.

Fig. 5 is a view of a portion of the device shown in Fig. 4, showing the heating iron in place.

Fig. 6 is a section taken on line 6—6 of Fig. 5.

In the drawings, 1 represents a box, pivotally mounted as at 2 upon a supporting base 3, only a fragment of which is shown. A tube 4 is shown as resting at one end in a notch 5 in one end of the box, and a stem 6 fixed to the other end of the tube rests in a notch 7 in the other side of the box. For convenience in construction, the tube may be made in two sections 4^a and 4^b screwed together at 8 as shown. The outer end of the tube is provided with a heat resisting sleeve 9, and the outer end of the stem 6 has a similar sleeve 10. These will enable the operator to handle the device while it is hot. They also serve as limit stops, preventing endwise movement of the tube so far as to permit the end of the tube to fall into the box. One end of the tube is closed and the other open. The portion 4^a of the tube tapers from its left hand end to a larger outer diameter toward the right to receive the cylinder 11 which is being engraved and which is tapered on its inner side to fit upon the press. The cylinder thus fits snugly over the supporting tube. A sleeve 12 loose on the tube 4 may be provided for the purpose of loosening the cylinder from the tube when it is to be removed; the cylinder being tapped on the end with said sleeve. The stem 6 is lifted out of its groove 7 when a cylinder is being placed upon, or removed from the tube.

After the cylinder has been partly etched, it is placed upon the powdering device. The operator then strokes the cylinder in one direction with the powdering brush, while turning the knob 10 to rotate the supporting

tube and the cylinder. The powder is thus applied evenly about the entire circumference of the cylinder. A heated iron is then thrust into the tube as in Fig. 5, and the tube is rotated so that the iron will be brought into contact with the tube about its whole inner circumference. Heat is applied in this manner to the cylinder 11 to bake the powder in position against the sides of the partially etched characters.

After the baking has been completed, the iron 13 is removed, and a hose 14 is inserted in the end of the tube, and the tube is flooded with water to cool the cylinder. The cylinder is then stroked in another direction and the process repeated until the powdering has been effected in the four directions.

By swinging the box 1 about its supporting pivot 2, the tube 4 may be maneuvered into convenient position for the insertion of the heating irons, and it may be turned to another position when cooling, so that the water may flow out of the end of the tube into a waster trough.

In order to maintain a constant supply of heating irons for use in operating one or more of the powdering devices, I have provided a heater 15 (Figs. 2 and 3), having an inclined trackway 16 upon which the irons 13 may be placed. An electric heating coil 17 or other suitable means may be provided for heating the irons. The coil 17 is disposed below the trackway 16. The irons may be placed in the heater at the upper end of the inclined track, through an opening 18, and removed therefrom through an opening 19 at the lower end of the track. Thus, the iron which has been in the heater longest is always the one that is removed and has therefore had sufficient time to become heated.

For handling the irons, a rod 20 (Fig. 5) may be provided. The rod may be screwed into the threaded hole 21 in the iron, and may be removed when the iron is replaced in the heater.

Having described my invention, what I claim and desire to secure by Letters Patent is:—

1. In a powdering device, a tube adapted to support a cylinder being prepared for etching, and means comprising a heated metallic member for uniformly imparting heat to the internal surface of said tube and thereby to the cylinder supported thereby.

2. In a powdering device, a rotatable tube adapted to support a cylinder being prepared for etching, and a mounting for said tube, the aforesaid tube having an open end which affords access to the interior thereof for the introduction and interchange of various devices when the cylinder is in working position upon its tube-like support.

3. In a powdering device, a rotatable tube adapted to support a cylinder being prepared for etching, a rotatable mounting for said tube, said rotatable mounting and support being provided with an accessible fixed opening in one end thereof constructed to afford access into the interior of said tube and the introduction thereinto of a heating inner tube having an outer diameter substantially co-extensive with the inner diameter of said tube.

4. In a powdering device, a tube adapted to support a cylinder being prepared for etching, means for applying heat to the interior of said tube for heating the cylinder, and means for cooling said tube for cooling the cylinder.

5. In a powdering device, a rotatable tube adapted to support a cylinder being prepared for etching, means for heating the cylinder, and means within the tube for cooling the cylinder.

6. In a powdering device, a rotatable tube adapted to support a cylinder being prepared for etching, means for heating the interior of the tube for heating the cylinder, and means for applying a cooling fluid to the interior of the tube for cooling the cylinder.

7. In a powdering device, a rotatable supporting member adapted to support a cylinder, being prepared for etching, means for heating the cylinder, and means within the said member for cooling said cylinder by internally lowering the temperature thereof.

8. In a powdering device, a rotatable supporting member adapted to support a cylinder being prepared for etching, means for heating said member to heat the cylinder, and means for cooling said member for cooling the cylinder.

In testimony whereof I hereto affix my signature.

FRED M. CARROLL.