

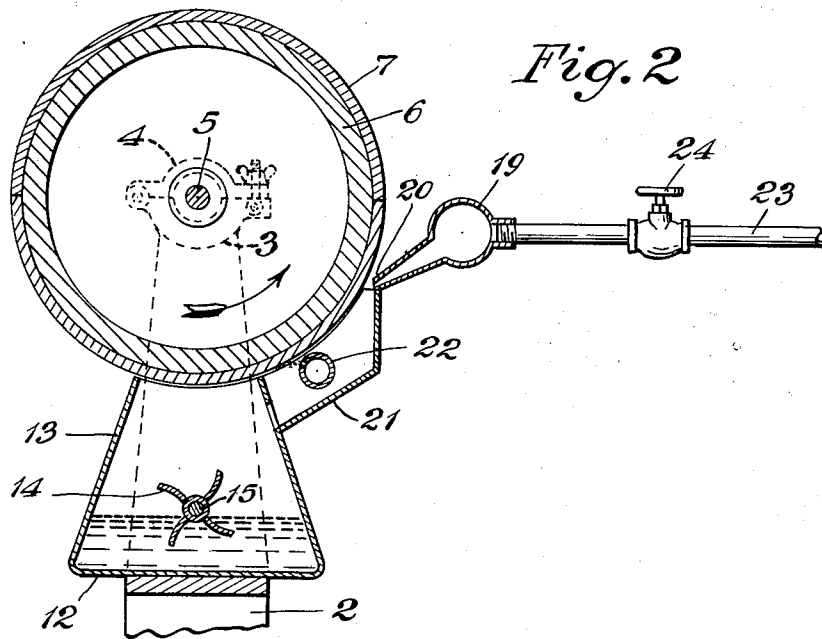
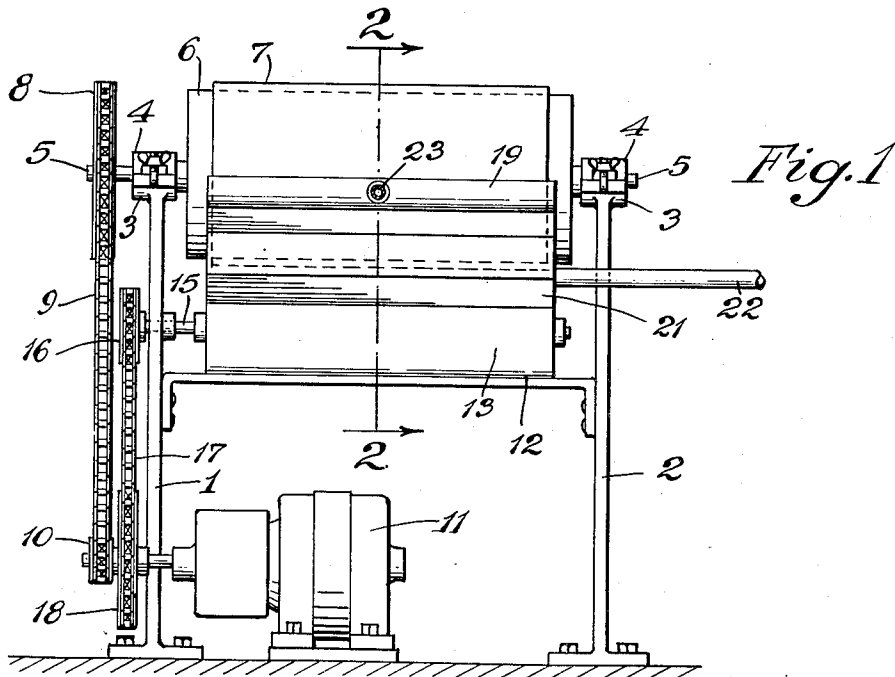
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APPARATUS FOR PREPARATION OF ROTOGRAVURE CYLINDERS

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APPARATUS FOR PREPARATION OF ROTO-
GRAVURE CYLINDERS

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1 Claim. (Cl. 41—9)

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My invention relates to improvements in method and apparatus for preparation of rotogravure cylinders. It has for one object to provide a new and improved apparatus and process which will produce rotogravure cylinders with a minimum waste of material, and will result in the production of accurate, clean-cut printing members.

As is well known, acid etching is used in the production of rotogravure cylinders, and it is of the utmost importance that when the acid has done its work it be removed without delay, as otherwise cylinders are inaccurate, unsatisfactory, and even spoiled. Much work has been done in connection with the removal of the acid. It is necessary that the acid be removed quickly, expeditiously and completely, and that in the removal the plate or cylinder itself be not mechanically abraded and that no acid be left on the plate or cylinder after the time that the etching has been accomplished.

I propose to bring about this acid removal by the use of what is referred to in the trade as an "air knife" or "doctor bar." Air knives and doctor bars have been used for spreading liquids on surfaces, even for cleaning surfaces under some circumstances, but I have found no case where such apparatus had been used or proposed to be used in connection with the removal of the etching acid from a plate or cylinder in connection with the rotogravure or similar printing processes.

My invention is illustrated more or less diagrammatically in the accompanying drawings, wherein:

Figure 1 is a side elevation of an apparatus embodying my invention;

Figure 2 is a section along the line 2—2 of Figure 1;

Like parts are indicated by like characters in the specification and drawings.

1, 2 are end-supporting frames. Each of them carries a journal box 3 having a removable cover 4. The boxes 3 support a roller shaft 5, each end of the shaft being supported in one of the boxes and held in place by the removable cover 4. 6 is a roller carried by the shaft, on which is removably mounted a rotogravure cylinder 7. 8 is a sprocket on one end of the roller shaft 5; 9 a drive chain engaging the sprocket 8 and driven by a drive sprocket 10 driven in turn by a motor 11, whereby the cylinder may be rotated. 12 is an acid trough supported between the end frames 1 and 2 immediately beneath the roller. The acid trough has walls 13 extending up to and terminating immediately adjacent, but out of actual

contact with, the cylinder. 14 is an agitator paddle contained within the trough 12, mounted on a shaft 15 extending outwardly through the end of the trough 12, the shaft 15 being equipped with a sprocket 16 driven by a chain 17 from a sprocket 18 driven by the motor 11, so that as the cylinder rotates, the agitator rotates in unison therewith but at a higher rate of speed, and agitates and throws the acid against that part of the cylinder open downwardly to the acid trough between the walls 13. 19 is an air knife mounted on the end frames 2, having a narrow discharge nozzle 20 discharging against the face of the roll and plate. The axis of discharge of air through the nozzle 20 as it extends across the entire length of the plate is inclined against the direction of rotation of the cylinder, so that the air tends to strip the acid from the cylinder, blowing it back downwardly toward, and causing it to fall into, the trough 21. In the trough 21 is a spray pipe 22 which sprays water upon the cylinder to dilute the acid. The water and acid, removed from the cylinder by the air knife, falls into the trough 21 and may be returned to the acid trough 12 if desired, or may be concentrated, by a simple means not here illustrated as it forms no part of the invention, before the acid is returned to the acid trough. 23 is a high-pressure air supply pipe adapted to supply air to the air knife, air, under high pressure, being supplied to this pipe from any suitable source of supply not here illustrated. The valve 24 is adapted to control the air pressure.

The photographic and chemical processes resulting in the production of a rotogravure cylinder form no part of my present invention. My invention is limited to the method and process of removing the excess acid from the cylinder. It will be understood, of course, that there are many other printing industry situations where the use of the air knife and the use of the apparatus which I disclose are important. I have illustrated my apparatus and process in connection with a cylinder or rotated curved plate. Obviously a flat plate might equally effectively be treated, in which case, of course, the plate would move along a straight line instead of along a curved path across the mouth of the acid trough.

I claim:

In combination in an etching machine for etching the peripheral surface of a printing cylinder, a longitudinally extending etching trough adapted to contain etching fluid, having at its top an open mouth, means for rotatably supporting the cylinder to be etched above the trough

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with its longitudinal axis generally parallel to said open mouth, said support means for the cylinder to be etched being at such height above the trough that the open mouth of the trough is closed by the peripheral surface of the cylinder to be etched, there being sufficient clearance between the upper wall of the trough and the peripheral surface of the cylinder to prevent contact therebetween, means for rotating the cylinder, a washing trough extended along the etching trough, bounded on one side thereby and extending upwardly about a portion of the peripheral surface of the cylinder being etched, means within the washing trough for projecting a washing spray against the periphery of the cylinder being etched along a generally tangential path toward the etching trough in a direction opposite to the direction of rotation of the cylinder, means adjacent the upper edge of the washing trough for projecting a generally tangential air jet

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against the periphery of the cylinder along a generally tangential path toward the etching trough in a direction opposite to the direction of rotation of the cylinder, and means within the etching trough for projecting the etching liquid against the peripheral surface of the cylinder to be etched.

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