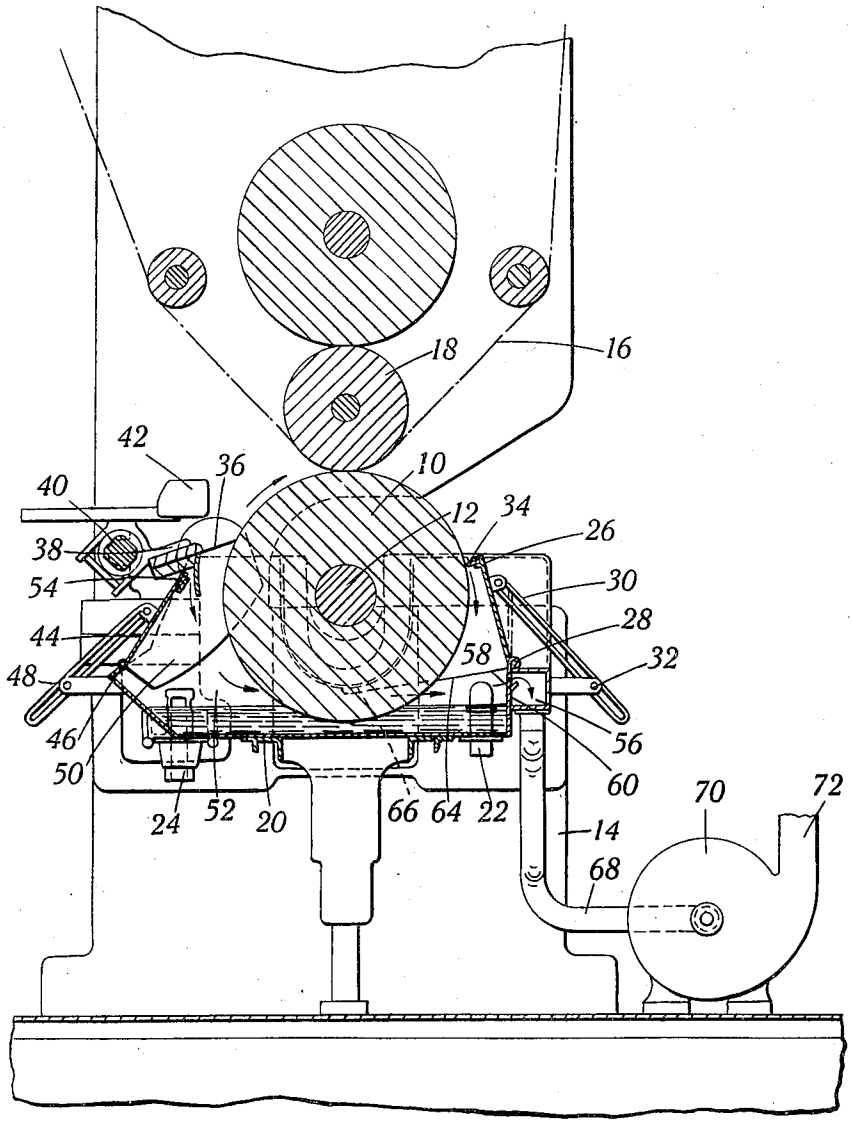
Dec. 27, 1938. D. GREENHILL 2,141,978

ROTARY PRINTING OR COATING MACHINE

Filed March 11, 1937 2 Sheets-Sheet 1

Fig. 1.



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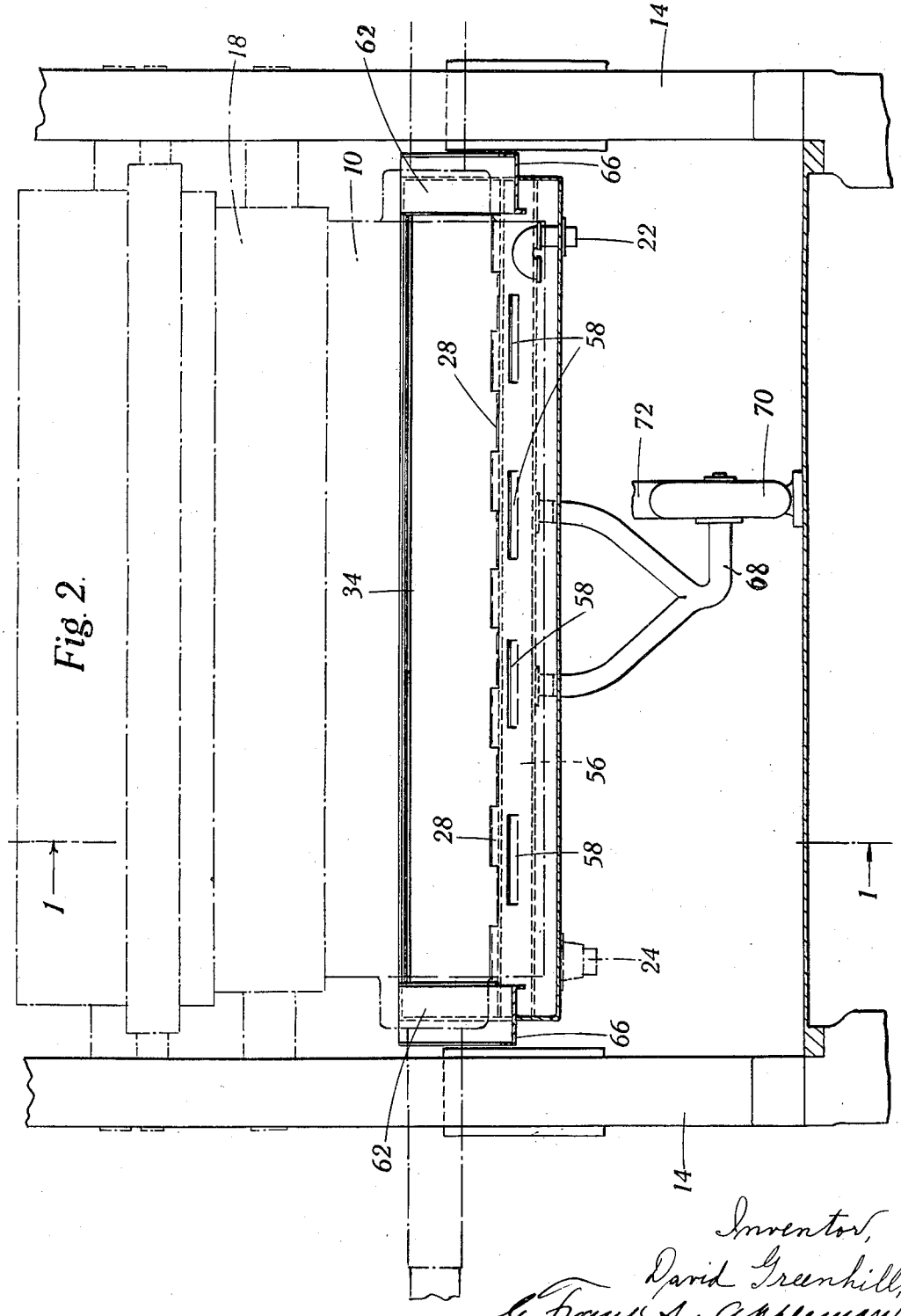


Fig. 2.

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UNITED STATES PATENT OFFICE

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ROTARY PRINTING OR COATING MACHINE

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Application March 11, 1937, Serial No. 130,410
In Great Britain March 12, 1936

4 Claims. (Cl. 101—157)

In certain kinds of printing, for example intaglio printing, ink containing volatile solvents is used. Such solvents are also used in gumming, varnishing and similar coating machines. It is desirable to prevent the escape of the vapour of these solvents into the atmosphere from the container for the ink or coating material in which the printing or coating cylinder is mounted, not only because the solvent is lost by such escape but also because the vapour forms an explosive or inflammable mixture with air.

It has been proposed to prevent the escape of the vapour by sealing in an airtight or substantially airtight manner the gaps between the rim of the container and the cylindrical and end surfaces of the printing or coating cylinder.

The use of such sealing means involves certain disadvantages which are avoided by the present invention according to which air is continuously drawn or sucked out of the interior of the container through a duct leading from an aperture in the wall of the container, and the rim of the container is brought into close proximity with the surfaces of the cylinder but not into sealing engagement therewith.

It will be appreciated that by this means air is continuously drawn into the container through the narrow gaps between its rim and the surface of the cylinder, thereby preventing escape of vapour through these gaps. The air charged with vapour which is extracted from the container through the duct may be passed to a solvent recovery apparatus.

Referring to the accompanying drawings,

Figure 1 is an end elevation in section of one embodiment of the invention as applied to an intaglio printing machine, and

Figure 2 is a side elevation in section on the line II—II in Figure 1.

Referring to Figures 1 and 2 the printing cylinder 10 bearing on its surface a design in intaglio is mounted on a spindle 12 carried in bearings in end frames 14. A web of paper 16 is fed between the printing cylinder and an impression roller 18 also mounted in bearings in the end frames 14.

Below and surrounding the cylinder is an ink container 20 to which ink is fed through an inlet pipe 22, the ink being kept at a constant level by means of an ink outlet pipe 24, this level being such that the lower side of the printing cylinder dips into the ink as shown.

At one side of the ink container is a movable side wall 26 hinged at 28 and provided with a slotted stay 30 which can be clamped in any position by a clamping bolt and nut indicated at 32. The upper edge of this side wall is provided with a strip of felt or other soft material 34 to prevent accidental damage to the surface of the printing cylinder. This end wall is adjusted so that the edge of the strip of felt is not quite in contact with the surface of the printing cylinder. At the other side of the cylinder a doctor blade 36 is mounted with its edge in contact with the printing cylinder in the usual manner, this doctor blade being secured in a frame 38 carried by a rotatable spindle 40 and provided with adjustable balance weights 42 whereby the pressure exerted on the cylinder by the doctor blade may be regulated. The frame 38 carrying the doctor blade can be turned upwardly and backwardly clear of the cylinder when it is desired to remove the cylinder.

At this side a second movable wall 44 is hinged at 46 and is provided with a slotted stay 48 similar to the stay 30 on the other side. This side wall is also provided at its ends with flanges 50 which lie close to the end walls 52 of the ink container itself. The upper edge of the side wall is provided with a strip of soft material 54 and is adjusted so that the edge of this strip lies close to the underside of the frame 38, although not in contact with it.

At the end of the ink container remote from the doctor blade is an air duct 56 extending from end to end of the ink container above the ink level and communicating with the interior of the container through a number of slots 58 in the fixed side wall 60 thereof. At its ends the air duct 56 communicates with end casings 62 which lie between the ends of the printing cylinder 10 and the end frames 14. These end casings are closed at the top but are opened along their lower edges 64 and at their inner edges 66 adjacent the spindle 12. The air duct communicates through a pipe 68 with the suction side of a centrifugal fan 70 which discharges through a delivery pipe 72 which may lead to a solvent recovery plant. The fan 70 continuously extracts air from the ink container and thereby maintains a flow of external air into the container through all the gaps through which the vapour of the solvent in the ink might escape, these gaps being between the ends of the cylinder and the end walls of the container and between the strips 34, 54 and the cylinder and doctor blade carrier 38 respectively. If the rate of inflow of air is greater than the rate of diffusion of the solvent vapour through air no vapour can escape through these gaps, and if a solvent recovery plant is provided all the solvent

which is evaporated in the container is recovered.

I claim:

1. In a rotary intaglio printing machine, in combination, an ink container comprising walls partially enclosing the printing cylinder, a duct communicating with the interior of said ink container, and means for continuously withdrawing air from said ink container through said duct.

2. In a rotary intaglio printing machine, in combination, an ink container, walls surmounting said ink container and constituting a casing partially enclosing the printing cylinder, at least one of said walls being movable towards and away from said cylinder, a duct communicating with the interior of said casing and means for continuously withdrawing air from said casing through said duct.

3. Apparatus for applying to paper liquid material containing a volatile solvent comprising in combination, an applying cylinder, a container for liquid material, means for maintaining a body of liquid material in the container, the cylinder being rotated while dipping into said body of liquid material, a doctor blade applied to the surface of the cylinder on the ascending side thereof, means for applying a web of paper to said cylinder and guiding it in rolling contact therewith, walls surmounting said container and constituting a casing partially surrounding said cylinder, a duct communicating with the interior of said casing and means for continuously withdrawing air from said casing through said duct.

4. Apparatus for applying to paper liquid material containing a volatile solvent comprising in combination, an applying cylinder, a container for liquid material, means for maintaining a body of liquid material in the container, the cylinder being rotated while dipping into said body of liquid material, means for applying a web of paper to said cylinder and guiding it in rolling contact therewith, walls surmounting said container and constituting a casing partially surrounding said cylinder, a duct communicating with the interior of said casing and means for continuously withdrawing air from said casing through said duct.

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