Aug. 21, 1928.

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O. WILHELM

INTAGLIO PRINTING MACHINE

Filed July 8, 1926

Fig. 1.

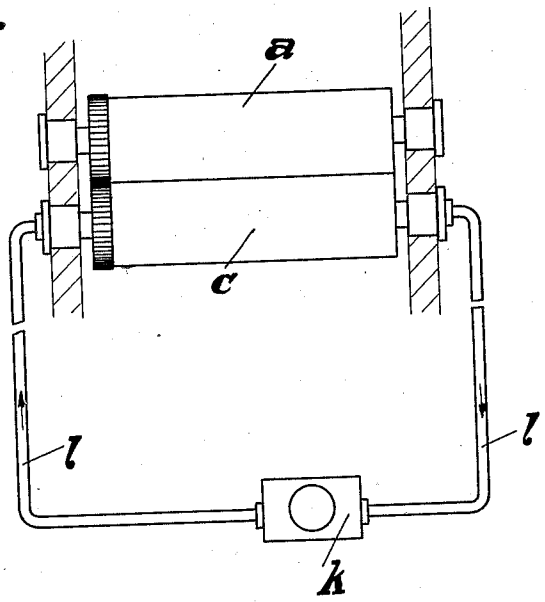
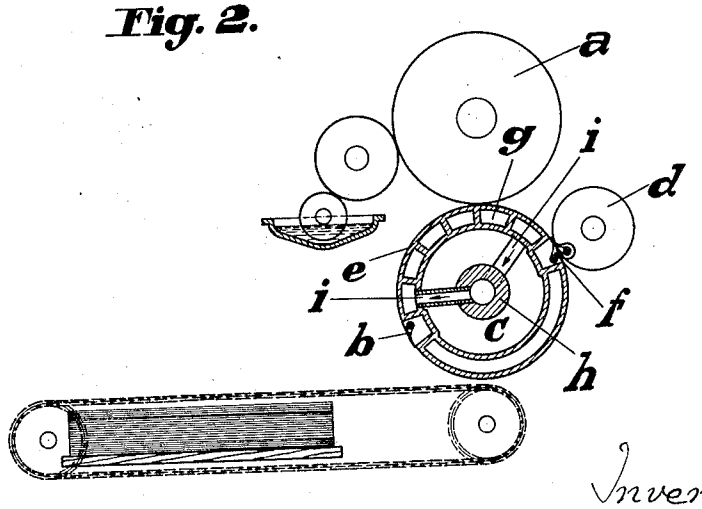


Fig. 2.



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UNITED STATES PATENT OFFICE.

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INTAGLIO PRINTING MACHINE.

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It is well known in intaglio printing machines to cool the ink or colour used for printing upon the paper in order to thereby improve the effect of the ink or colour. For this purpose, the printed sheet is first delivered to a heating device and then to a cooling cylinder or the like, which is supplied with cooling water. Experiments have shown that the colour effect is greatly improved, if instead of working with cooling water of the temperature ordinarily found in the printing-room or in the pipe-line, the impressed ink or colour is subjected to cooling to a temperature considerably below that of the ordinary cooling water say about 8–10° C. The invention accordingly consists in connecting the cooling cylinder of the machine, to which the sheet is delivered after the printing and heating, with a separate cooling plant in which the cooling means e. g.—water, brine, air or the like—is cooled in well known manner to a substantially lower temperature and is then supplied to the cooling cylinder.

The drawing shows by way of example one embodiment of the invention.

Fig. 1 is a diagrammatic plan view, the printing couple being shown turned through 90°, while

Fig. 2 is a section.

The printed sheet coming from the impression cylinder *a* is transferred by the grippers *b* of the delivery cylinder *c* and is passed on to the turning cylinder *d* which is provided with heating means and serves also as a drying drum. The grippers of this turning cylinder transfer the printed sheet back on to the second half *e* of the delivery cylinder *c*, which is also provided with grippers *f* and moreover, contains hollow spaces *g* to which cooling water is supplied from the hollow cylinder shaft *h* through pipes *i*. A separate cooling plant *k* is connected with the intaglio printing machine. In this plant the cooling means e. g.—water, brine, air or the like—is cooled to a low temperature and is then supplied by means of pipes *l* to the hollow shaft *h* of the cooling cylinder *c*. After having passed through the cooling spaces *g* the cooling means returns to the cooling plant *k*. The cooling apparatus *c* together with the cooling plant *k* and the pipes *l* of the cooling means, form a closed circuit in which the cooling means circulates.

The drawing illustrates the invention as applied to a sheet printing machine. It is obvious however, that the invention is not limited to this type of machines, but may be used also in connection with other intaglio printing machines, for instance, in connection with web printing machines.

I claim:

1. In intaglio printing machines, the combination with the delivery cylinder and means for transferring the printed sheet to said delivery cylinder; of a cooling means for continuously supplying to said delivery cylinder a cooling medium at a temperature substantially lower than the water of the main water line to quickly cool and thereby contract the ink on the printed sheet.

2. In an intaglio printing machine, the combination with the delivery cylinder containing circumferential closed hollow spaces, of a cooling means for supplying a cooling medium to the hollow spaces of said delivery cylinder, the said hollow spaces and the said cooling means being so connected as to form a closed circuit.

3. In an intaglio printing machine, the combination with the delivery cylinder containing circumferential closed hollow spaces, a hollow shaft carrying said delivery cylinder and in communication with said hollow spaces, and a cooling means connected with said hollow shaft for supplying a cooling medium to said hollow spaces.

4. In an intaglio printing machine, the combination of the delivery cylinder having closed hollow spaces along a portion of its circumference, a heating cylinder in cooperative relation to said delivery cylinder, and a cooling means in communication with the hollow spaces in said delivery cylinder for continuously supplying thereto a cooling medium.

5. In intaglio printing machines, the combination with the delivery cylinder and means for transferring thereto the printed sheet, of a separate cooling plant for continually supplying a cooling agent to said delivery cylinder to quickly cool and thereby contract the ink on the printed sheet.

In testimony whereof I have affixed my signature.

OTTMAR WILHELM.