Sept. 19, 1933. W. W. ALLEN ET AL 1,927,381

PROCESS OF OPPOSING OFFSET IN PRINTING

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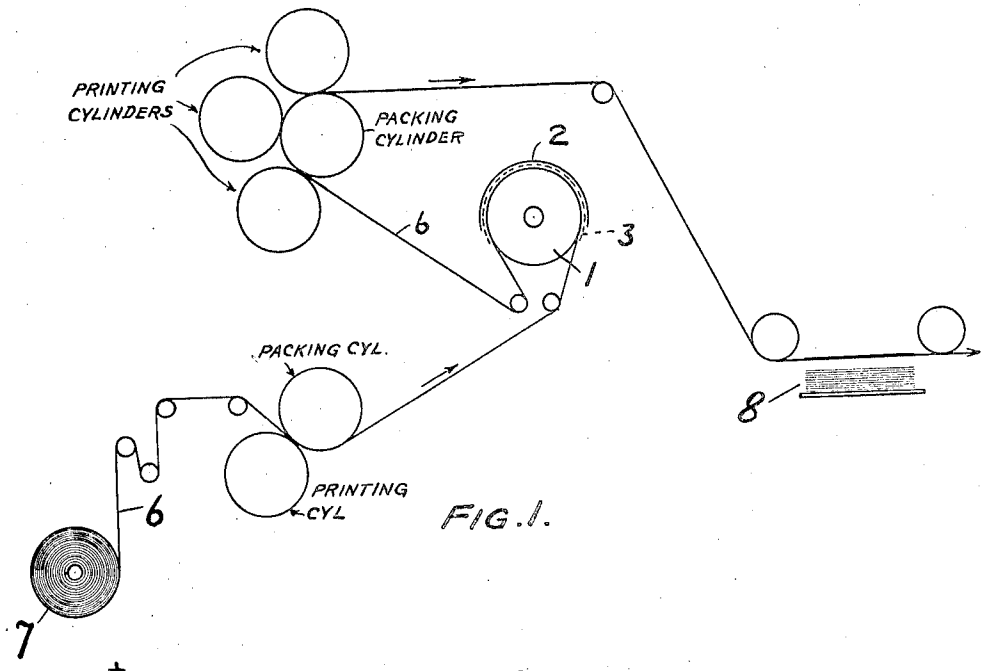


FIG. 1.

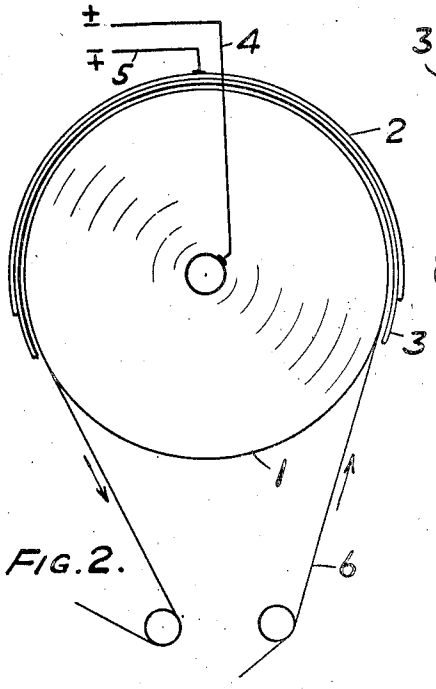


FIG. 2.

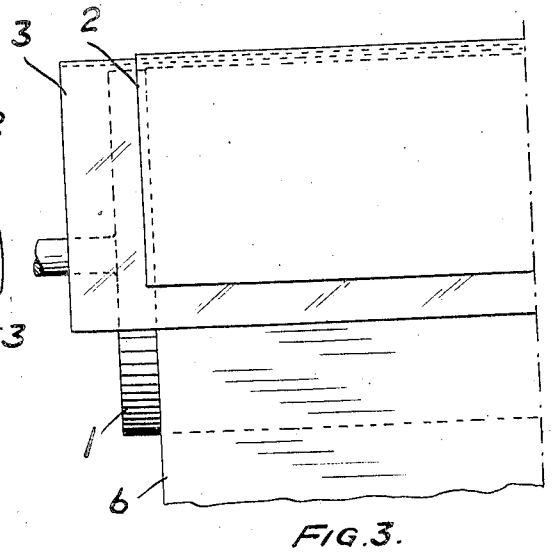


FIG. 3.

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WITNESS:

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PROCESS OF OPPOSING OFFSET IN PRINTING

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Application March 31, 1932. Serial No. 602,176

2 Claims. (Cl. 34—24)

Frequently one side of a sheet or web, when printed on a web rotary perfecting press, is printed and then the other side of the sheet is printed, and the side first printed, or, more accurately, the ink upon it must be dried or otherwise protected before the second side is printed; otherwise the undried ink on the side first printed will be transferred to the support upon which the second printing is done with the result that so-called offset occurs upon the first printed side. Our invention is directed to the correction or elimination of offset in printing under conditions of which the foregoing recital is an example.

The common practice to avoid this is the use of the offset or tympan web.

The principal object of the present invention is to provide for sufficiently drying or solidifying the ink that is printed upon one side of a sheet or web so that the other side of the sheet or web can be printed without producing offset on the first printed side and within such a short space of time as is afforded in the ordinary operation of printing machinery.

Generally stated, the invention comprises printing a web or sheet and passing it through a stream of electrons going between electrodes and through a dielectric and through the ink on the web or sheet, and which causes the liquid ink to be sufficiently solidified to make possible the second side printing without offset.

The invention also comprises the improvements to be presently described and finally claimed.

In describing the invention reference will be made to the accompanying drawing illustrating one, but not the only, type of apparatus appropriate for its practice.

In the drawing

Figure 1 is a diagrammatic and schematic view illustrative of the invention.

Fig. 2 is an enlarged end view schematically illustrating one of the elements shown in Fig. 1, and

Fig. 3 is a partial side view of Fig. 2.

There is a means for producing a stream of electrons or region of ionized air shown as of considerable area. As shown it comprises a rotating cylinder 1, of metal as aluminum, and a fixed metal plate 2, conforming to, but spaced from, a portion of the circumference of the cylinder 1. Between the cylinder 1 and the plate or electrode 2 there is interposed in spaced relation to one of them a fixed dielectric 3, as of glass, conforming to the curvature of the plate and cylinder, but extending beyond the sides and ends of the plate and beyond the ends of the cylinder. The conductors 4 and 5 serve to connect the plate 2 and cylinder 1 across a source of appropriate current, for example, across the terminals of a high potential alternating current generator, not shown. In the space provided between the appropriate parts of the ionizer there is a stream or discharge of electrons, or ionized or electrified air of considerable area, commensurate with the area of the plate 2, and through this zone or region the printed web is passed and by the phenomena which occurs the ink is rapidly dried or sufficiently solidified or hardened to avoid offset.

Referring to Fig. 1, the web or sheet 6 from the roll 7 is passed over suitable guide rolls and between the printing and packing rolls where one side of the web is printed. Then the moving web is led through the ionizer where the ink of the printed side is sufficiently hardened to avoid offset as has been described. Then the web is led through the second printing and packing cylinders where the other side is printed. Then the web is led over guide rolls and is finally cut and deposited in sheet form at 8.

When an ink made with drying oil is passed through the ionizer and subjected directly to the stream of electrons or ionized air therein, the drying oil is made sufficiently solid for the purpose of preventing offset. This change may be accelerated or retarded by adding various catalysts to the oil and by varying the voltage and/or amperage and frequency of the current, as well as by varying the physical construction of the ionizer, for example, in respect to the distance between the plates and the thickness of the dielectric.

In the case of China wood ink passed through a stream of electrons or region or zone of ionized air, not only is the ink solidified rapidly and in a very short period of time, but also, is the color of the ink greatly improved by imparting to it a bluish black tinge, which, especially in the case of illustrations, imparts an improved appearance, more especially in respect to bringing out details. In the practice of the invention the ionizer is substantially the width of the sheet or web which is passed through it, and the effective length of the ionizer is appropriate for effecting the described operation within the time allowed by the speed of travel of the web.

The conductors 4 and 5 may be connected in a secondary winding associated with a primary winding carrying a suitably interrupted or pulsating current.

It will be obvious to those skilled in the art to which the invention relates that modifications

may be made in details of procedure without departing from the spirit of the invention which is not limited to such matters or otherwise than the prior art and the appended claims may require.

We claim:

1. The process of opposing offset in printing which comprises passing an electric flux between spaced plate electrodes having a dielectric between them, and subjecting the ink on a newly printed paper sheet or web to the direct action of the flux by passing the sheet or web through the space between one plate electrode and the dielectric.

2. The process of opposing offset in printing which comprises passing an electric flux between spaced electrodes having a dielectric between them, and subjecting the ink on a newly printed paper sheet or web to the direct action of the flux by passing the sheet or web through the space between one electrode and the dielectric.

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