F. T. CORKETT.

APPARATUS FOR INTAGLIO PRINTING.

APPLICATION FILED JUNE 23, 1915.

1,191,949. Patented July 25, 1916.

Fig. 2.

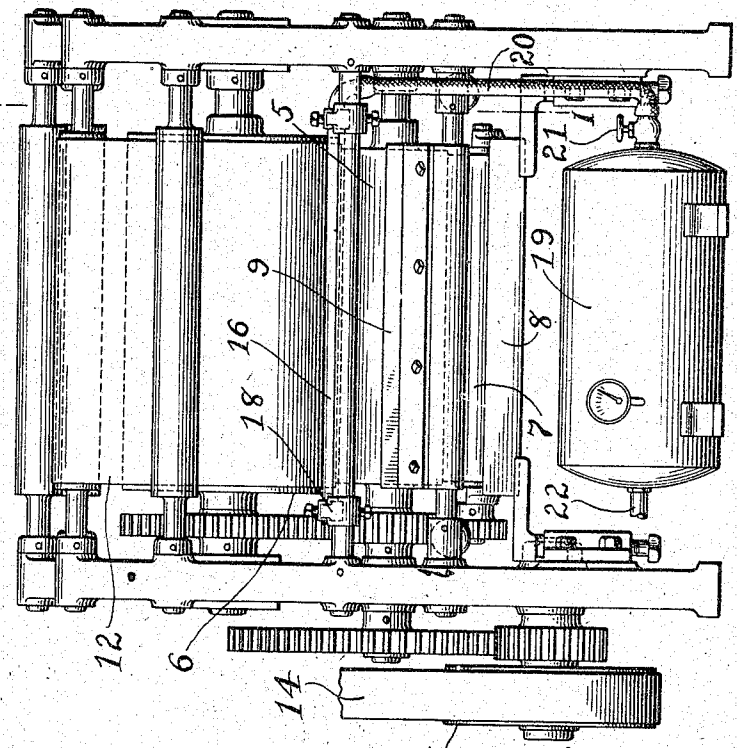


Fig. 3.

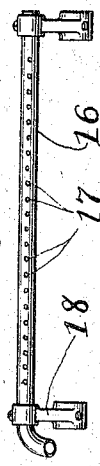
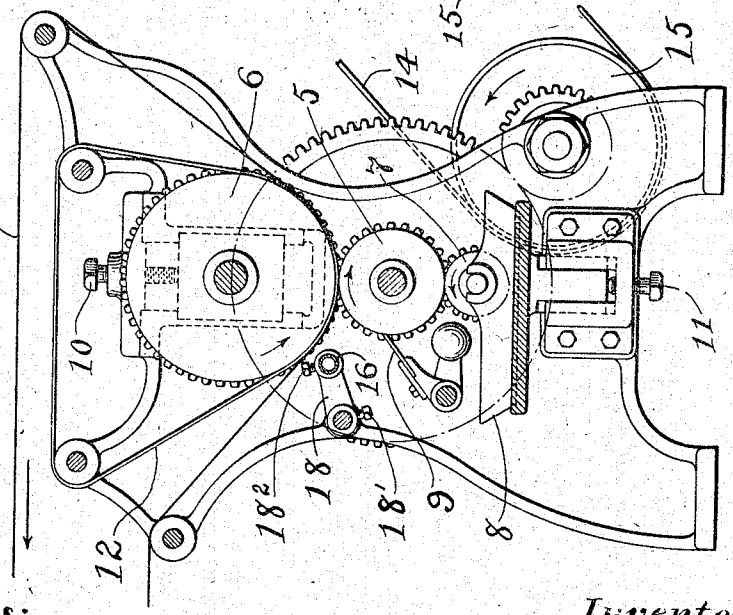


Fig. 1.



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UNITED STATES PATENT OFFICE.

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APPARATUS FOR INTAGLIO PRINTING.

1,191,949. Specification of Letters Patent. Patented July 25, 1916.

Application filed June 23, 1915. Serial No. 35,751.

To all whom it may concern:

Be it known that I, FREDERICK T. CORKETT, a subject of the King of England, and a resident of Rochelle, Oakfield Road, Ashtead, Surrey, England, have invented a certain new and useful Improvement in Apparatus for Intaglio Printing, of which the following is a specification.

This invention has particular reference to printing from design cylinders as for instance photo-mechanical intaglios.

The improvement is designed to improve the appearance of the product, to control the amount of ink deposited upon the paper, and to assure that the plain portions of the rollers shall carry no ink to the paper.

The invention is adapted for use in connection with evaporative inks in controlling the quantity of ink deposited by the designed surface upon the paper.

The drawings accompanying this application illustrate an example of my improved apparatus.

In such drawings, Figure 1 is an end elevation of portions of the mechanism, certain parts however, being on cross section at about the plane of the line 1—1 of Fig. 2. Fig. 2 is a front elevation of the mechanism, and Fig. 3 is a detail of a form of air blast nozzle.

One drawback in the use of intaglio or photo-etched rollers in printing is that the unetched portions, no matter how carefully polished, have certain surface imperfections, invisible frequently to the naked eye, but which, nevertheless, retain ink and convey this to the portions of the paper which are not intended to be inked. Another disadvantage has been that atmospheric conditions, varying conditions of the paper worked upon, and of the ink, and the over-etching of the rolls, has produced undesirable results in the product. The present improvement is designed for providing a controllable regulation for the ink or rather controllable regulation for the amount of ink delivered from the etching to the surface of the paper irrespective of the amount of ink left on such etching after it has passed the scraper or other ink removing device.

The mechanism herein shown is illustrative of my improved apparatus and the procedure described is to be understood as being an illustrative example of a method of using the same.

The invention as now practised in the United States of America employs an etched surface of cylindrical form as the design member and ink conveying medium, and for convenience and the avoidance of circumlocution this specification employs the term cylinder or photo-etched cylinder, in a generic or inclusive sense.

The principal feature of the invention is the application of a properly regulated and controlled air blast to the freshly scraped surface of the cylinder prior to the transference of the ink therefrom. Evaporative inks are preferably employed in practising my invention. The printing results, are governable by proper positioning and adjustment of the nozzle supplying the air, and by the adjustment of the volume and force of air.

The intaglio printing surface, the photogravure or etched cylinder 5, in the illustration is shown coacting with the pressure cylinder 6. The ink is supplied to the cylinder by a fountain roller 7, from an ink pan 8. The ink is preferably applied in a flood, and the surplus removed by a scraper 9, of some suitable construction. Means are shown in the form of set screws 10 and 11 for setting the cylinders or rollers together. A traveling cushion or blanket 12, is shown interposed between the pressure cylinder 6 and printing cylinder 5 and the web of paper 13. Guiding devices are illustrated for the web of paper and the endless blanket or cushion 12. The rollers or cylinders 5, 6 and 7 are shown geared together and driven by a belt 14 and pulley 15. Air, being the most readily accessible gas for use in this connection, is mentioned, but it is to be understood that any other suitable gas may also be employed, the ingredients of the ink and the material of the cylinder determining its character. The air blast in the illustration is furnished by a suitable nozzle adapted to direct the current of air against the wiped surface of the cylinder 5. In the illustration this is in the form of a tube 16 having on its side toward the cylinder a series of holes 17. The nozzle is shown adjustable toward and from the cylinder for regulating the strength, the effect, the tan-

gent of incidence and the region of application of the blast of air. This adjustability is afforded in the illustration by means of rock arms 18 adapted to be held in their position of adjustment by set screws 18^1. The tube 16 is shown rotatably adjustable in the sockets at the ends of such arms, and set screws 18^2 are provided for holding it in its position of adjustment therein.

A compressed air reservoir is shown at 19 for supplying the air. A flexible tube 20 is shown connecting the tank and tube 16. A stop cock 21 is shown for regulating the air supply. The source of air pressure is not shown, the tank inlet 22 being assumed to be connected with some suitable source.

The product of my improved apparatus is a clean, well printed sheet or web, wherein the solid colors are flat and unbroken, and the unprinted portions absolutely free from ink or any trace thereof. The lines between the solid color and unprinted portions being sharp and well defined, and associated with this are the tints and blendings going to make up the picture, (by whatever local or trade term known,—photogravure for instance).

Not only does the regulable and locally adjustable air blast eliminate the ink from the unetched portions of the cylinder, but it also renders the exposed surface of the ink at the etched portions more susceptible to the surface of the paper, thereby assuring a transfer of the maximum quantity of ink from the etched portions of the cylinder to the paper. The quantity of ink transferred, when this is of the proper evaporative nature containing the proper volatile ingredients, is readily controlled by means of this present invention.

As was above pointed out the foregoing is to be understood to be illustrative of my invention, and it is also to be understood that changes may be made within the scope of the claims without departing from the spirit of the invention.

I claim:

1. An apparatus for intaglio printing comprising a continuously rotating design cylinder, means for inking such cylinder, means for removing surplus ink, and means for directing a blast of air against the surface of the cylinder after the removal of the surplus ink therefrom.

2. An apparatus for photogravure printing comprising a design cylinder, means for continuously rotating said cylinder, means for inking said cylinder, a scraper for removing the surplus ink, and means for directing an air blast against the scraped portion of the cylinder.

3. An apparatus for intaglio printing comprising a design cylinder, means for continuously rotating said cylinder, means for inking said cylinder, a scraper for removing the surplus ink, and means for directing a regulable air blast against the scraped portion of the cylinder.

4. An apparatus for intaglio printing comprising a design cylinder, means for inking the same, a pressure cylinder, a scraper between the said cylinders for removing surplus ink, means for directing an air blast against the cylinder between the scraper and the pressure cylinder, and means for adjusting the position of the same between said scraper and pressure cylinder.

5. An apparatus for intaglio printing comprising a design cylinder, means for inking the same, a pressure cylinder, a scraper between the said cylinders for removing surplus ink, means for directing an air blast against the cylinder between the scraper and the pressure cylinder, means for adjusting the position of the same between said scraper and pressure cylinder, and means for regulating the blast of air.

6. Apparatus for intaglio printing which comprises, a design cylinder, means for inking the same, a scraper for removing surplus ink, and a pressure cylinder and a tube disposed longitudinally of the cylinder between the scraper and pressure cylinder, and provided with a series of holes, rock arms carrying said tube and adapted to adjust the position thereof relative to the cylinder, said tube being rotatively adaptable on said arms.

Signed at London, England, this 9th day of June, 1915.

FREDERICK T. CORKETT.

It is hereby certified that in Letters Patent No. 1,191,949, granted July 25, 1916, upon the application of Frederick T. Corkett, of Ashtead, England, for an improvement in "Apparatus for Intaglio Printing," an error appears in the printed specification requiring correction as follows: Page 2, line 55, claim 2, for the word "photogravure" read *intaglio;* and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 22d day of August, A. D., 1916.

[SEAL.]

F. W. H. CLAY,

Acting Commissioner of Patents.

Cl. 101—104.