



# UNITED STATES PATENT OFFICE.

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## INKING APPARATUS FOR LITHOGRAPHIC PRESSES.

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*To all whom it may concern:*

Be it known that I, FRANKLIN MACDONALD, a citizen of the United States, residing at the city, county, and State of New York, have invented certain new and useful Improvements in Inking Apparatus for Lithographic Presses; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to that class of lithographic presses designed for printing in parallel spaces with two or more colors; and its object is to prevent the lateral spreading of the ink upon the ink-slab and ink-rollers, thereby securing a perfect operation of the press, so far as concerns the application of ink, in the printing of separate colors each within its own space or spaces.

Figure 1 is a vertical longitudinal sectional view, Fig. 2 an end view, and Fig. 3 a plan view, illustrating the combinations and arrangements of the essential parts included in my said invention, as hereinafter fully particularized. Fig. 4 is a detail view further illustrating my said invention.

My invention can be employed in any lithographic press of suitable kind or character, and inasmuch as the construction and operation of many and various such kinds of presses are well known in the art it is only necessary to set forth herein those parts which in combinations and arrangements are included within my said invention.

A is the ink-slab, placed in suitable relation with the reciprocating bed B, the pressure-cylinder C, ink-supplying trough or device D, and inking-rollers E. Along the upper surface of the ink-slab A are placed wires or ribs *a*, which may be secured in place by any suitable means—as, for example, by small screws *a'*. These wires are parallel with the direction of movement of the ink-slab A and divide the upper surface of the said slab into longitudinal spaces *b b*, as illustrated in Fig. 2. These wires or ribs *a* are laterally adjustable to positions at a greater or less distance from each other, according as it is required that the spaces *b b* shall be of greater or less width. Placed over each of the inking-rollers E, and parallel with the

shaft or axis *e* thereof, is a shaft, *f*, upon which at intervals are placed disks F, of a thickness at their edges proportioned to the width of the impression or indentation which they are designed to form circumferentially upon the surface of the inking-rollers E below. These disks F are placed in positions coincident with those of the wires or ribs *a a*, as more fully illustrated in Fig. 2. The ink-rollers E are covered with leather or other suitable material in the usual manner, and have a surface sufficiently yielding to be indented by the action of the disks F when the latter are pressed down upon said rollers, and the said inking-rollers E are rotated in the usual manner. The rollers E are placed in suitable journals in the frame of the machine, as is usual in various common forms of lithographic presses, and the ends of the shaft *f* are supported in suitable journal boxes, also provided to the said frame.

The ink trough or box D is internally divided into compartments arranged to receive the inks of the requisite colors. In other words, the certain compartments for using, we will say, blue ink are adjusted to supply such ink to the space, *b*, to which the ink for printing blue is transferred, while the other compartments—as, for example, for holding black inks—are placed in like relation with the spaces, *b*, from which ink for black printing is to be transferred, all as indicated in Fig. 3. The usual ink-distributing rollers, *e'*, may be placed in the usual relation with the ink-supplying trough or box D. The movement and mechanical operation, except in the particulars herein specifically pointed out, of the ink-slab A, inking-rollers E, reciprocating bed B, pressure-cylinder C, ink-supplying trough or device D, and the stone do not vary materially from that of the ordinary lithographic press; but the operation of the apparatus differs from the ordinary lithographic press in this, that the wires or ribs *a a* prevent the lateral spreading of the different colors of the colored inks from one space, *b*, to another, thereby preventing the mingling or confusion of said colors, while the disks F, by circumferentially indenting or deeply grooving the ink-rollers E, form the circumferential grooves *s*, (more fully shown in Fig. 4,) which prevent the various colored inks transferred to the rolls E from

mingling, the one with the other, and thereby insures a transfer of each particular color to the requisite portion of the stone without any admixture of the one color with the other, thereby providing first-class lithographic printing in different colors at a single operation at a very slight additional expense to the first cost of the machine and without any increased expense in the working or operation thereof.

In practice it is preferred that the thickness of the disks F at their peripheries should be such as to make the grooves *s* of a width and depth somewhat greater than the transverse dimensions of the wires or ribs *a a*, so that the latter need not necessarily impinge upon the sides or bottoms of the grooves *s*.

It will be observed that, in addition to providing against the commingling of the various colored inks on each roller E, the grooves *s* permit the surface of the rollers E to combine in due relation with the surface of the ink-slab A without interference of the wires or ribs *a a*, and without impairing the efficiency of the latter in preventing the spreading of the various colored inks upon the slab, which, if permitted, will cause the said inks to mingle with each other.

In order that the disks F may be adjustable upon the shaft *f*, their bosses *a''* are provided with suitable set-screws, *b''*, which, when loosened, permit the disk to be adjusted along the length of the shaft *f*, and which, when tightened, confine the disk at the requisite place upon the shaft.

What I claim as my invention is—

1. The combination, with the inking-slab A and ink-rollers E of a lithographic press, of the roller-indenting disks F, substantially as and for the purpose herein set forth.
2. The combination, with the inking-slab A and ink-rollers E of a lithographic press, of the wires or ribs *a a*, substantially as and for the purpose herein set forth.
3. The combination, with the inking-slab A and ink-rollers E of a lithographic press, of the roller-indenting disks F and the wires or ribs *a a*, substantially as and for the purpose herein set forth.
4. The combination, with the inking-slab A and ink-rollers E of a lithographic press, of the adjustable roller-indenting disks F, substantially as and for the purpose herein set forth.
5. The combination, with the inking-slab A and ink-rollers E of a lithographic press, of the adjustable wires or ribs *a a*, substantially as and for the purpose herein set forth.
6. The combination, with the inking-slab A and ink-rollers E of a lithographic press, of the adjustable roller-indenting disks F and the adjustable wires or ribs *a a*, substantially as and for the purpose herein set forth.

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Witnesses:

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