G. H. Korff.

Lithographic Press.

No. 20476. Patented May 18. 1858.

Fig. 2.

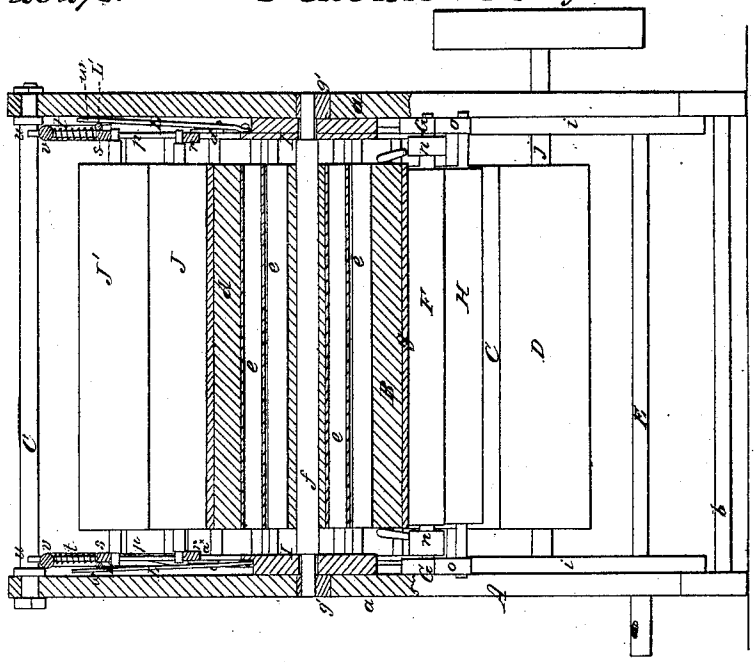


Fig. 3.

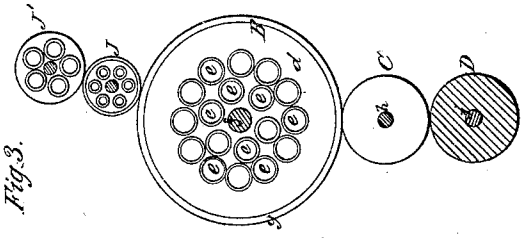
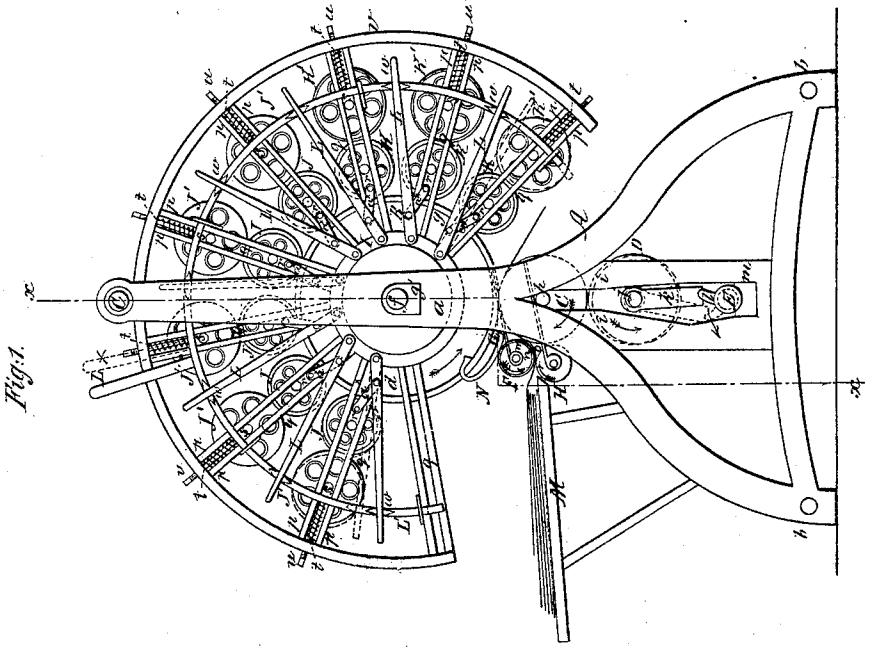


Fig. 1.



UNITED STATES PATENT OFFICE.

G. H. KORFF, OF HOBOKEN, NEW JERSEY.

PRESS FOR ZINCOGRAPHIC PRINTING.

Specification of Letters Patent No. 20,276, dated May 18, 1858.

To all whom it may concern:

Be it known that I, G. H. KORFF, of Hoboken, in the county of Hudson and State of New Jersey, have invented a new and Improved Press for Zincographic Printing; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a side view of my improvement. Fig. 2 is a section of the same, taken in the line *x x*, of Fig. 1. Fig. 3 is an end view of the printing cylinder, pressure rollers, and two of the ink-rollers.

Similar letters of reference denote like parts in the three figures.

This invention consists in the employment or use of a cylinder provided with a zinc face or periphery on which the design is drawn, and having a series of adjustable ink and wet rollers bearing against its periphery when the press is in operation, the ink and wet rollers as well as the cylinder being peculiarly constructed and used in connection with pressure and feed rollers the whole being arranged as hereinafter described whereby a rotary power press is obtained, one capable of working with comparatively great rapidity and in a perfect manner.

To enable those skilled in the art to fully understand and construct my invention, I will proceed to describe it.

A, represents the frame of the press, which is constructed of two uprights *a*, *a*, divaricated at their lower ends and connected by traverse bars *b*, *b*, to form a firm base. The upper ends of the uprights *a*, *a*, are connected by a cross rod *c*. The frame may be constructed of cast iron, at least that will probably be the material generally used for this purpose.

B is a cylinder the journals of the shaft of which have their bearings in the uprights *a*, *a*. This cylinder is constructed of plaster of Paris *d*, molded or formed around sheet metal tubes *e*, parallel with the shaft *f*, of the cylinder, and a face or periphery of zinc *g*, is placed over the plaster of Paris. The construction of this cylinder will be well understood by referring to Figs. 2 and 3. It will be seen that the tubes *e* give strength and lightness to the cylinder. It is necessary to have a firm cylinder or one that will not yield or "give" to the pressure to which it may be subjected, and at the same time not a very heavy one. Plaster of Paris, when moistened and allowed to "set," is a firm substance, and when used in connection with the tubes *e*, a very firm, unyielding and light cylinder is obtained. The shaft *f* of the cylinder is fitted in permanent bearings *g'*.

C, is a roller which is placed directly below the cylinder B. The body of this roller may be constructed entirely of pasteboard or paper, it being provided with a metal shaft *h*. The ends of the shaft *h*, of this roller are not fitted in bearings but between vertical guides *i*, *i*, which are attached to each side of the frame A, see more particularly Fig. 1.

Directly below the roller C, another roller D is placed. This roller D is constructed of cast iron and its shaft *j*, has its journals fitted in the bars *k*, the lower ends of which are notched and fitted on projections *l*, attached to a shaft E, the ends of which are placed in elastic bearings *m*, fitted between the lower ends of the guides *i*, *i*. One end of the shaft E projects beyond the side of the frame and a hole is made in it to receive a hand lever by which the shaft E may be turned, and the roller D, in consequence of its bars *k* resting on the projections *l*, may be forced upward and made to press the roller C, against the periphery of the cylinder B, as shown in Fig. 1, the rollers C, D, being retained in this upward position in consequence of the lower ends of the bars *k*, *k*, bearing against one of the guides *i*, at each side of the frame. The rollers C, D, may be depressed at any time, so that the roller C, will not be in contact with cylinder B, by merely turning the shaft E, so that the projections *l*, will move in the opposite direction toward the front of the machine, as indicated by the arrow in Fig. 1, so that the bars *k*, *k*, may pass down in recesses made in the guides *i*, *i;* see red lines in Fig. 1.

F, represents a roller which may be constructed of wood or other suitable material. This roller F has its bearings in the ends of springs G, G, which are attached one to each upright *a*, and on each end of the shaft *m*, of roller F, a roller *n*, is placed loosely.

H, is a roller precisely similar to F. This roller has its bearings in the ends of springs *o*, *o*. The roller F is directly in front of the roller C, but it is prevented from touching it by the springs G, G, which have a tend-

ency to keep it elevated a little above the said roller C. The springs *o*, *o*, of the roller H keep said roller quite near roller F, but not in direct contact with it.

To each upright *a*, and at their inner sides, concentric with the cylinder B, a circular disk I, is attached. To these disks radial rods *p*, are attached, as shown in Fig. 1 so as to form guides *q*, for the bearings *r*, *s*, of the rollers J, J′, K, K′. The rollers J are inking rollers. They are constructed of plaster of Paris molded or formed around sheet metal tubes precisely similar to the cylinder B, but covered with leather instead of zinc. Five rollers J are shown in Fig. 1, but more or less may be used as desired. The rollers J′ are rather larger in diameter than the rollers J, but are constructed precisely similar with the exception that they have no leather covering, the rollers J′ having merely a coating of oil. These rollers J′ are the ink-distributing rollers, the ink being placed on them and from them it is evenly placed on the rollers J. The rollers J′ are made to press on the rollers J, by means of springs *t*, which are fitted in the guides *q*, the strength of the springs being graduated as required by means of screws *u*, which pass through rims *v*, which connect the ends of the rods *p*. The rollers K, K′, are constructed precisely similar to the rollers J, J′, and provided with like springs, &c.; there is no difference in arrangement, but instead of being covered with leather they are covered with flannel or other suitable substance capable of absorbing or retaining moisture.

To each disk I, at the outer sides, rods L are pivoted. The outer ends of these rods are fitted in notches *w*, made in adjustable rings or curved rods L′, L′, concentric with the rims *v*. To the bearings of the rollers J, K, levers or arms $a^{\times}$, are attached, said arms or levers being also attached to rods L as shown clearly in Fig. 1.

M is a feed-board which is secured to the frame A in a slightly inclined position, its upper edge being just above the lower edge of the roller F.

To the cylinder B, at each end, a curved projecting rod N is attached.

The operation is as follows:—The rollers J′, have the ink placed upon them and may if desired be taken from their bearings, properly charged, and replaced therein. The design is drawn on the zinc *g*, of the cylinder B, and the paper (shown in red) is placed in a pile on the feed board M. Motion is given the roller D, by any proper means and the shaft E, is so turned as to cause the roller C, to bear against the cylinder B. The roller C, rotates the cylinder B, which in turn rotates the ink-rollers J, and wet rollers K, and these again rotate their respective rollers J′, K′. The rollers J soon have ink properly distributed over them, and the design on the zinc *g*, is charged with ink thereby. The rollers K are charged with moisture from the rollers K′, the latter receiving it by a drip or in any other way proper. The rollers K keep the blank surface of the cylinder B, or the zinc *g*, moist, so as to repel the ink as usual, so that the drawing only will be charged or inked. The paper is fed one sheet at a time underneath the roller F; and as the cylinder B rotates, the projecting curved rods N will strike the rollers *u*, *u*, on the shaft of the roller F. Said roller F will be thus depressed and brought in contact with the roller H, and also with roller C, and the edge of the sheet will be caught by said rollers and drawn through or between them and carried to the "bite" of the cylinder B, and the roller C, between which it is drawn and subjected to sufficient pressure to receive the impression of the design on the cylinder B. The rollers F, H, as soon as the rods N have passed over the rollers *n*, and the sheet is caught by the "bite" of cylinder B, and roller C, are made to assume their original position by the springs G, *o*. The rollers J′ do not require to be inked often, for when they are once charged they will not require replenishing oftener than once in every four hours or about that. Either of the ink rollers J, or wet rollers K, may be thrown out free from the cylinder B by actuating its respective rod L, so that the inking and moistening may be regulated as desired, and all the rollers may be thrown out simultaneously from the cylinder B, when desired, by operating the rings L′, at both sides of the machine, the two rings being connected by a cross rod $L^{\times}$.

By this invention the hitherto slow process of zincographic printing will be greatly expedited.

The machine may be driven by steam or other power and it may be manipulated with equally as great facility as any of the power typographical presses in use with which I am acquainted.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is:—

1. The cylinder B, in combination with the inking rollers J, J′, and moistening rollers K, K′, when arranged as shown, viz. the rollers J, K, having their bearings connected with rods L, and used in connection with the adjustable rings L′, so that either of the rollers J, K, may be moved out free from the cylinder B, or all moved simultaneously as may be desired.

2. In combination with the cylinder B and rollers J, J′, K, K′, I claim the pressure rollers C, D, in connection with the bars *k*, *k*, and shaft E, provided with projections *l*, *l*, for the purpose of producing the

"bite," or subjecting the paper to the proper pressure between the cylinder B and roller C.

3. The feed rollers F, H, fitted in elastic bearings G, *o*, and arranged relatively with each other, the pressure roller C, feed board M, and cylinder B, as described, whereby, with the aid of the curved rods N, on the cylinder B, the blank sheets are fed between the cylinder B and roller C.

4. I claim the peculiar construction of the cylinder B and rollers J, J′, K, K, as herein shown and described, viz. having plaster of Paris *d*, molded around tubes *e*, so as to obtain the necessary strength and inflexibility with a requisite degree of lightness.

G. H. KORFF.

Witnesses:
A. R. HAIGHT,
W. TUSCH.