

L. M. RANDALL & H. A. MOORE.  
MACHINES FOR PRINTING OIL CLOTH.

No. 179,059.

Patented June 20, 1876.

Fig. 1.

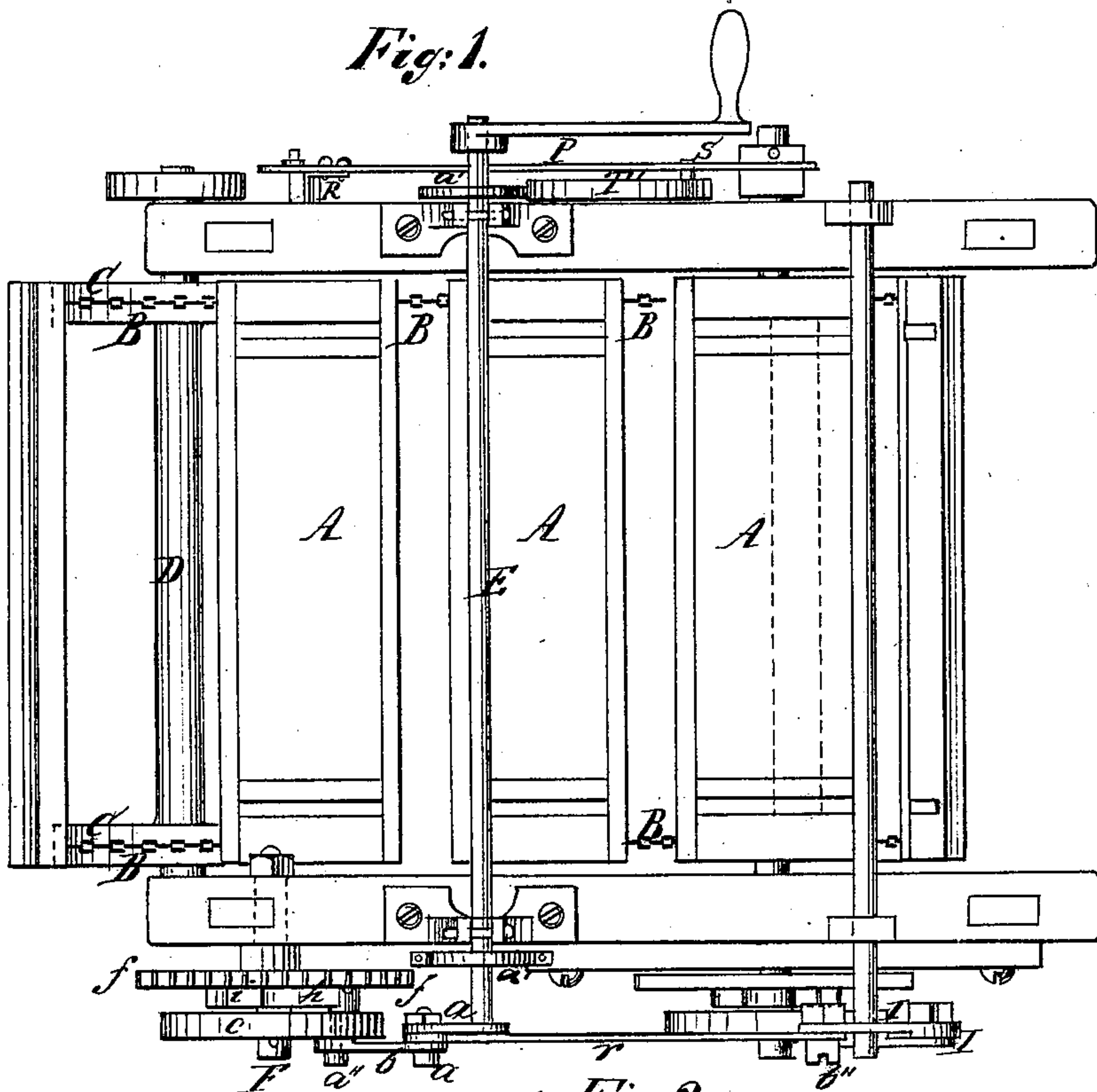
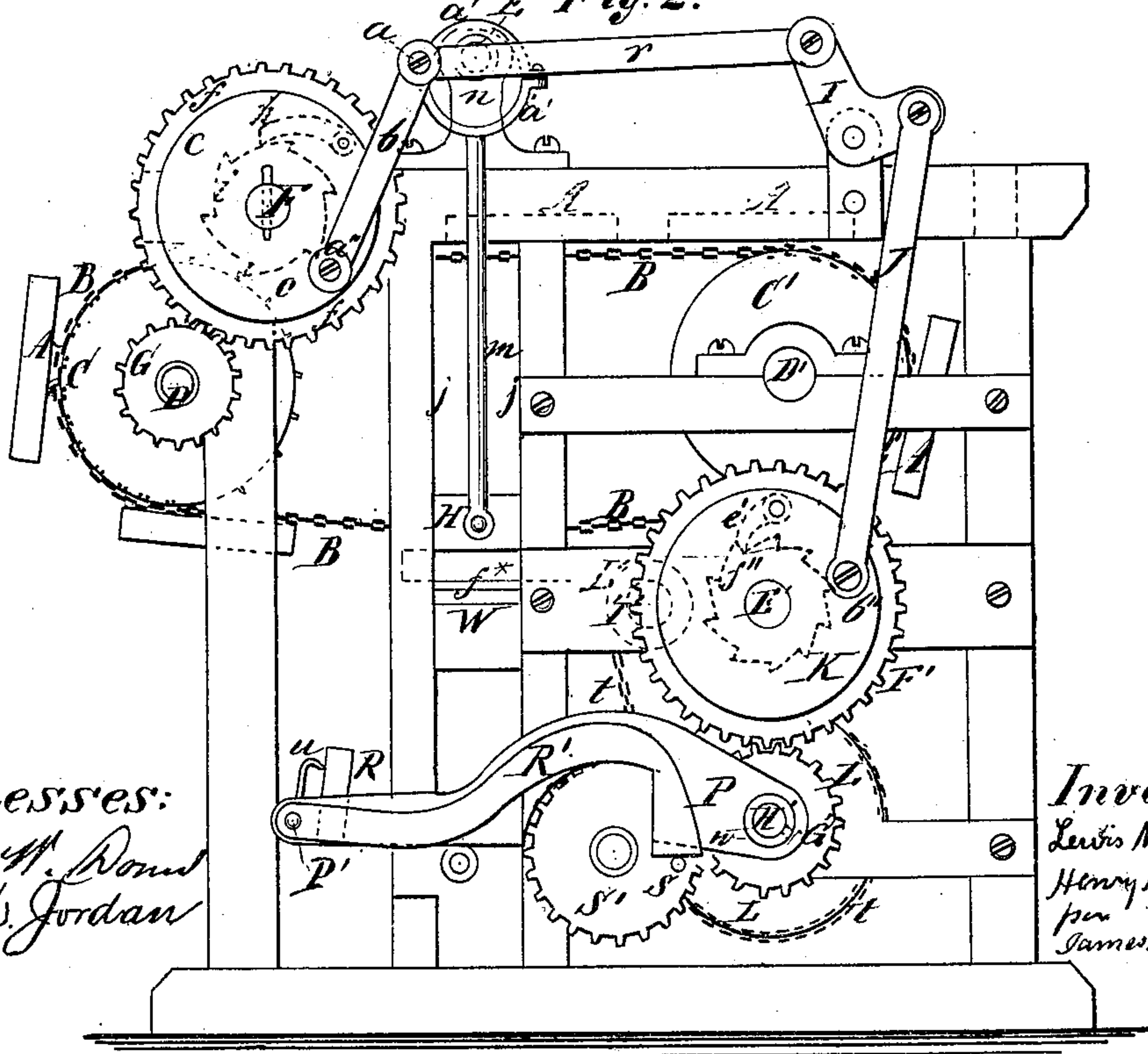


Fig. 2.



Witnesses:

Edw. H. Bond  
N. M. Jordan

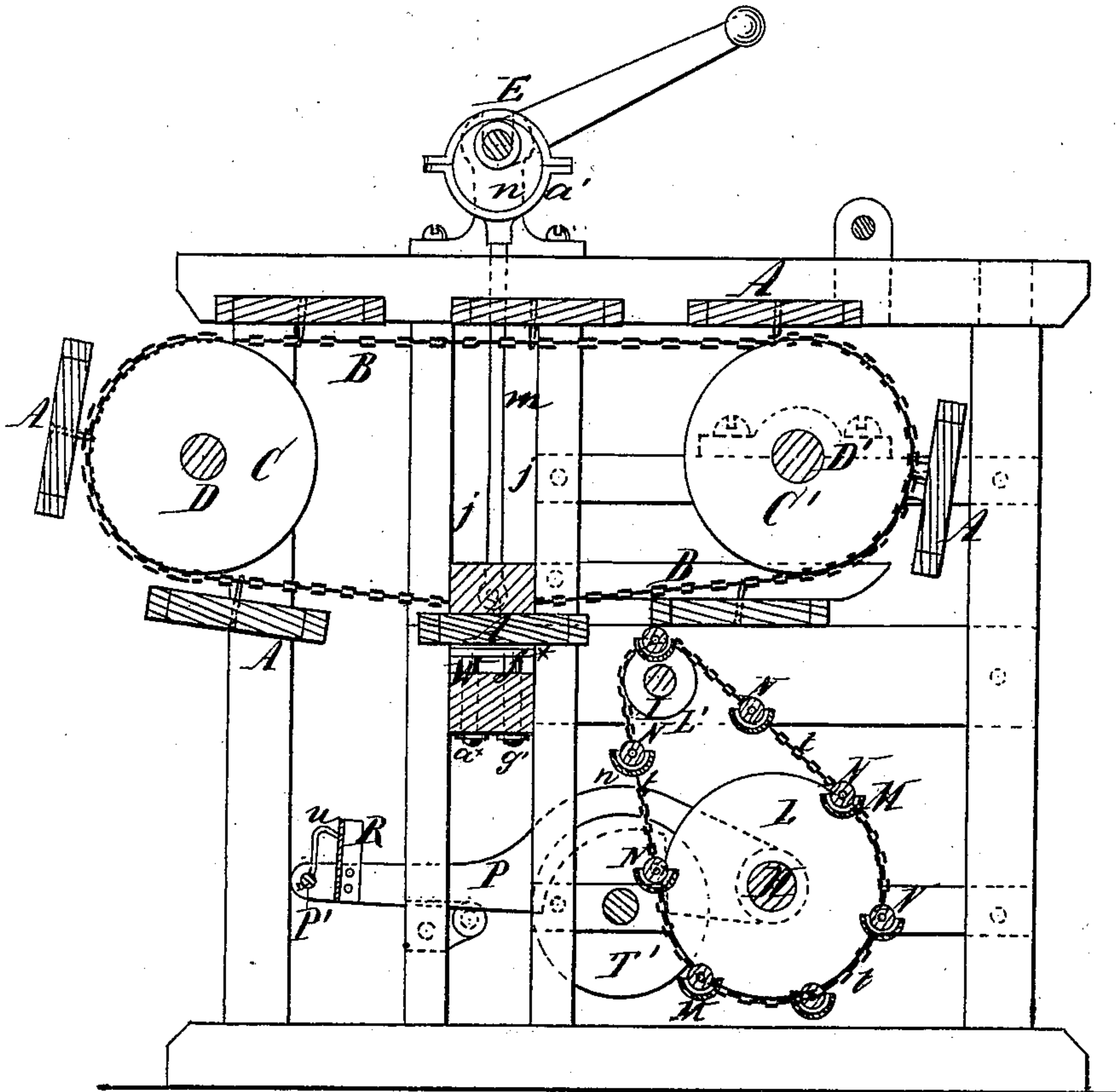
Inventors  
Lewis M. Randall  
Henry A. Moore  
per  
James A. Whitney  
Atty

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Fig. 3.



Witnesses:

Edw. W. Brown  
C. N. Jordan

inventors

Lewis M. Randall  
Henry A. Moore  
per James Whitney  
Atty



# UNITED STATES PATENT OFFICE.

LEWIS M. RANDALL, OF SALEM, NEW JERSEY, AND HENRY A. MOORE,  
OF BROOKLYN, NEW YORK.

## IMPROVEMENT IN MACHINES FOR PRINTING OIL-CLOTHS.

Specification forming part of Letters Patent No. 179,059, dated June 20, 1876; application filed  
September 3, 1875.

*To all whom it may concern :*

Be it known that we, LEWIS M. RANDALL, of Salem, in the county of Salem and State of New Jersey, and HENRY A. MOORE, of Brooklyn, in the county of Kings and State of New York, have invented an Improvement in Machines for Printing Oil-Cloths, &c., of which the following is a specification :

This invention consists in a novel combination—an endless system of printing-blocks, a reciprocating plunger, a system of rotary color-troughs carrying color-feed rollers, a plunger, and a vibratory gripping cloth-feed, the whole arranged to act in concert through suitable connecting mechanism, whereby a simple, strong, easily-operated, and durable machine is produced, capable of printing oil-cloths and the like with greater rapidity and finish than the machines hitherto in use for the same or similar purposes. The invention further comprises certain novel combinations of parts, whereby the greatest degree of effectiveness in the hereinbefore-specified main or essential features of the invention is secured.

Figure 1 is a plan view of an apparatus made according to our invention. Fig. 2 is a side elevation of the same, and Fig. 3 is a central vertical longitudinal view thereof.

A are printing-blocks, attached at their ends to two endless chains, B, which are arranged in parallel vertical planes, and run over pulleys C C' on shafts D D' at the ends of the machine. These printing-blocks A are made in the usual manner for color-printing, each block having its face formed in relief to print such portion of the intended design as is to be in one color, and no more. For example, if the design on the printed cloth contains eight colors, and the system of blocks A comprises eight of said blocks, the blocks must each be devoted to a single color, and to a single portion of the design. If, however, but four colors were to be used, then the said blocks for said number of colors would be duplicated in the eight embraced in the system.

E is the driving-shaft, having at one end a crank, *a*, connecting, by a rod, *b*, with a crank-pin, *a''*, on a disk, *c*, loose on the end of a fixed shaft, F, on which is also a loose spur-wheel, *f*, which gears into a spur-wheel, G, on the

end of the shaft D. The disk *c* has a pawl, *h*, that works into a ratchet, *i*, on the side of the spur-wheel G.

As the crank *a* revolves with the driving-shaft it gives an alternating semi-rotary movement in opposite directions to the disk *c*, whereby the pawl *h* is caused to act upon the ratchet *i* to give an intermittent rotary movement to the endless system of printing-blocks A, hereinbefore described, thereby bringing the several blocks in succession to and from underneath the plunger H. This plunger is arranged in vertical guides *j* at the sides of the machine, and receives a vertical movement through rods *m*, provided at their upper ends with straps *a'*, passing around actuating-eccentrics *n* on the shaft E.

From the crank *a* extends a rod, *r*, to one arm of an elbow-lever, I, from the opposite arm of which extends a rod, J, to a crank-pin, *b''*, or a disk, K, loose on a fixed shaft or bearing, E'. On this latter is also a loose spur-wheel, F', as shown in Fig. 2, which gears into a spur-wheel, G', on the end of a transverse shaft, H'. The disk K carries a pawl, *e'*, which acts upon a ratchet, *f''*, on the side of spur-wheel F', as shown in dotted outline in Fig. 2, L, and parallel with it is another shaft, I', upon which are two other pulleys, L'. From the pulleys L to the pulleys L' extend endless chains *t*, which carry a system of troughs, M, each designed for the reception of a particular color, and corresponding in number to the blocks A, less the "finishing-block," so termed, which receives no color. In each trough is roller N, which is capable of turning freely therein, and the upper side of which projects somewhat above the top of the trough. These troughs are freely suspended from the chains in such manner as to keep right side up during the rotation of the said chains.

The rotation of the driving-shaft E, acting through the rod *r*, elbow-lever I, rod J, crank-pin *b''*, pawl *e'*, ratchet *f''*, and spur-wheels F' G', gives an intermittent rotary movement to the system of troughs M, in such coincidence with the similar movement of the system of blocks A that as each block passes to and beneath the plunger H the trough carrying the color for the said block will bring its roller N



in contact therewith, to supply the same with a color requisite to the production of an impression thereby.

Upon each side of the machine, pivoted upon the end of the shaft  $H'$ , is an arm,  $P$ , the free ends of which carry a transverse gripping-bar,  $R$ . The ends of the arms  $P$  project somewhat beyond the plate  $R$ , in order to afford bearings for a rock-shaft,  $P'$ , provided at one end with a lever,  $R'$ , which rests upon a crank-pin,  $S$ , on a gear-wheel,  $S'$ , gearing with the spur-wheel  $L$  on the shaft  $H'$ .

The rock-shaft is provided with claws  $u$ , so arranged that when the lever  $R'$  is permitted to fall the claws will be brought to or against the bar  $R$ , to form in connection therewith a kind of clutch, the function and use of which will presently herein appear. Upon the arms  $P$  are shoulders  $w$ , which rest upon the crank-pins  $S$  during a portion of the revolutions of the latter, so as to be lifted and let fall at due intervals thereby. The shaft that carries the gear-wheel  $S'$  carries at its opposite end a disk,  $T$ , upon which is provided the second crank-pin  $S$ , to act upon the shoulder  $w$  of the arm  $P$  at that side of the machine, so that both ends of the bar  $R$  shall be raised and lowered simultaneously.

In the operation of the machine the cloth to be printed has one end passed up beneath the plunger  $H$  upon the table  $W$ , immediately below the same, the edges of the cloth passing under spring-plates  $f^*$ , arranged to throw the blocks clear from the cloth as soon as the impression is given. These plates are held in place by their downwardly-projecting guide-stems,  $a^*$ , which pass down through guides in the ends of the table  $W$ , and are pressed upward by springs  $g'$ . The end of the cloth, being thus drawn over the table  $W$ , is brought between the bar  $R$  and rock-shaft  $P'$ , the claws  $u$  of the latter holding it strained across the table  $W$ . This done, the nearest adjacent block  $A$ , having received its color from the roller  $N$  of the appropriate trough  $M$ , is brought immediately over the table  $W$  and under the plunger  $H$ , whereupon the descent of the plunger forces down the block  $A$  upon the fabric, and prints or impresses the same with the color and portion of the design with which said block is provided. As soon as this is accomplished, and the plunger begins its upward movement, the spring-plates  $f^*$  throw the block out of contact with the cloth, so that its movement therefrom shall not drag or smear the surface. This done, another intermittent impulse is given to the system of blocks  $A$  and system of troughs  $N$  by the succeeding revolution of the driving-shaft, and the succeeding block is brought in like

manner to print its color and its own special portion of the design upon the cloth. In this manner the several blocks are made to act upon the cloth until all have impressed the same, and the design is printed complete upon that portion of the cloth upon which the blocks have been made to act, as aforesaid; whereupon the crank-pins  $S$ , rising against the shoulders  $w$  of the arms  $P$ , elevate the bar  $R$  and its attached rock-shaft  $P'$ , one of the crank-pins having just previously lifted the lever  $R$  to bring the claws  $u$  away from the bar  $R$  to release the clutch of the device upon the cloth. When the bar and its adjuncts have been lifted to the height required for a new clutch or hold upon the cloth, the continued rotation of the crank-pins  $S$  permits, first, the falling of the lever  $R'$ , which causes the rock-shaft  $P'$  and bar  $R$  to gripe the cloth between them; and, second, the descent of the said bar and rock-shaft to draw downward upon the cloth to an extent sufficient to bring or feed the next adjacent portion of the cloth upon the table  $W$ , to be in like manner printed by the successive action of the several printing-blocks, successive portions of the cloth being in this manner fed to the action of the said blocks until the entire piece of the cloth has been printed.

What we claim as our invention is—

1. The endless system of printing-blocks  $A$ , the endless system of color-troughs  $M$ , carrying color-feed rollers  $N$ , the plunger  $H$ , and the vibrating gripping cloth-feed, comprising the rock-shaft  $P'$  and bar  $R$ , the whole combined and arranged for use by means of suitable connecting mechanism, substantially as and for the purpose set forth.

2. The arms  $P$  and lever  $R'$ , in combination with the bar  $R$  and rock-shaft  $P'$ , having claws  $u$ , the aforesaid arms and lever being actuated in unison with the printing-blocks  $A$  and color-troughs  $M$  by means of the crank  $S$ , substantially as and for the purpose set forth.

3. The driving-shaft  $E$ , rod  $b$ , pin  $a''$ , pawl and ratchet  $h$ , rod  $r$ , elbow-lever  $I$ , rod  $J$ , crank-pin  $b''$ , pawl  $e'$ , ratchet  $f''$ , and spur-wheels  $F'$   $G'$ , the whole arranged to give motion to the endless system of color-troughs in unison with the movements of the printing-blocks, substantially as and for the purpose set forth.

LEWIS M. RANDALL.  
HENRY A. MOORE.

Witnesses for RANDALL:

MORRIS HALL,  
JACOB BALLEG.

Witnesses for MOORE:

H. WELLS, Jr.,  
ELBERT DEARBORN.