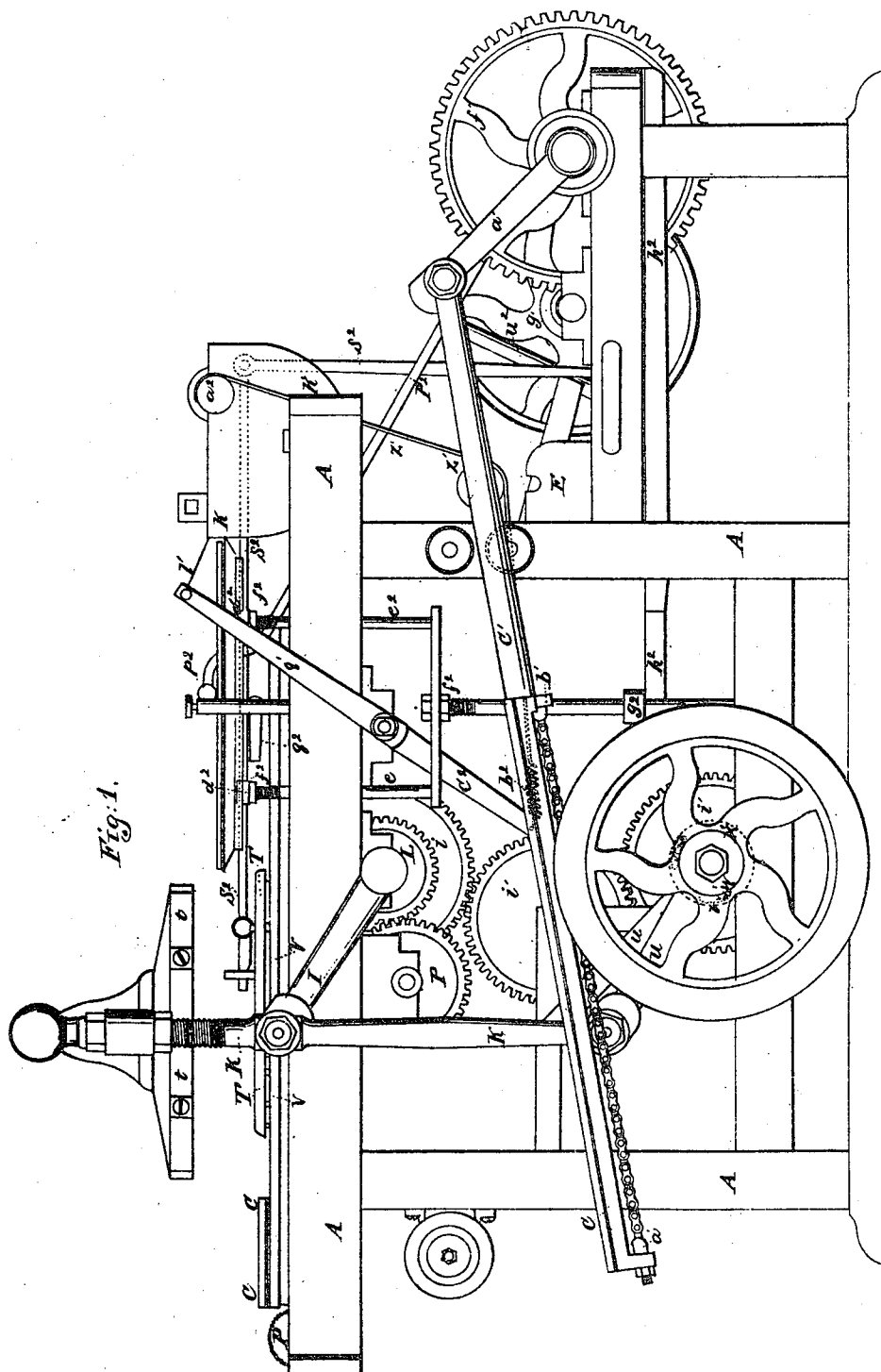


M. D. Whipple. Sheet 1. of 4 Sheets
Printing Wall Paper.
N^o 8372. Patented Sept. 16. 1851.



Sheet 2.4 Sheets.

Printing Wall Paper.

N^o 8372.

Patented, Sept. 16. 1851.



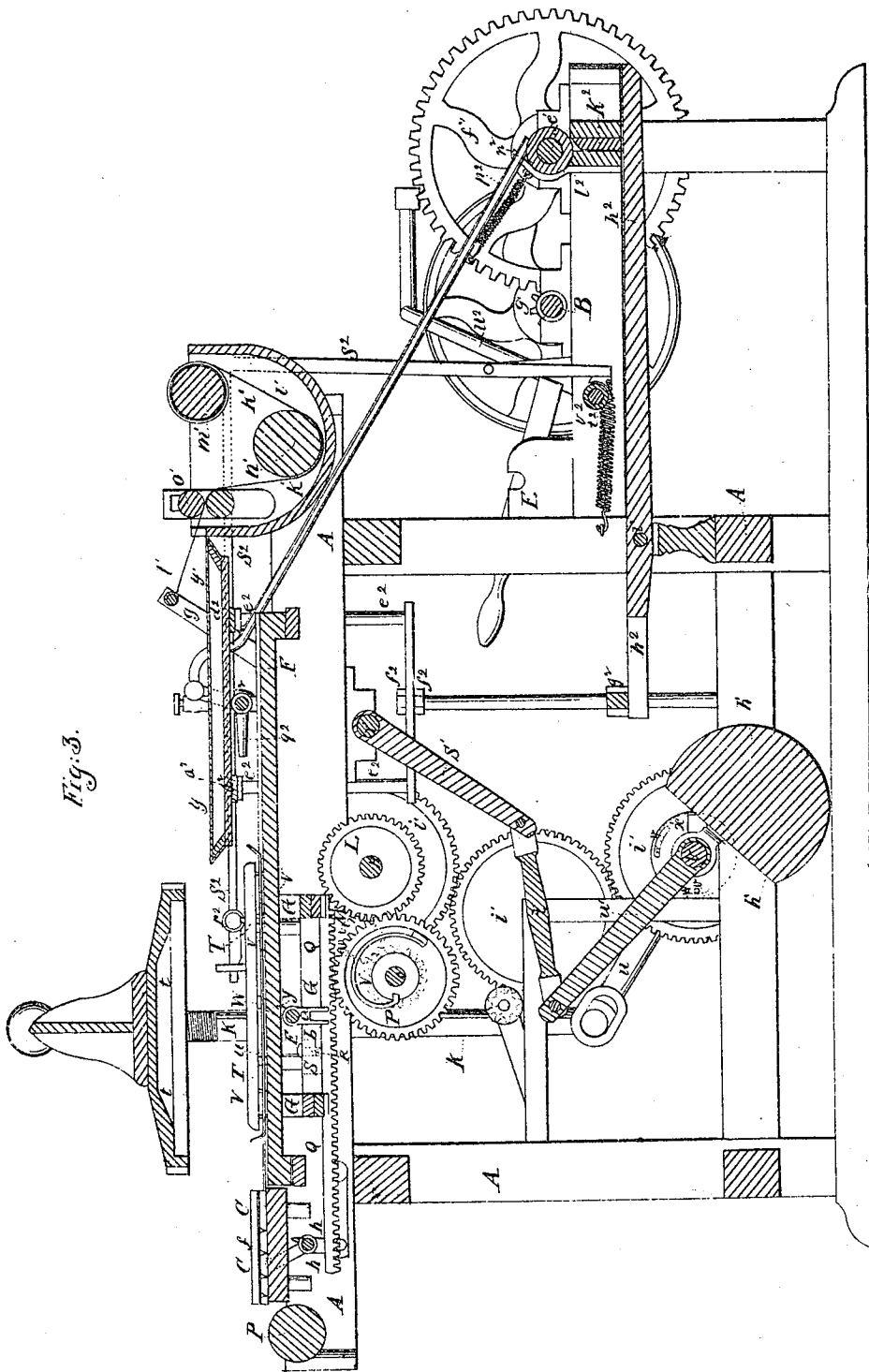
Sheet 3.4. Sheets.

Printing Wall Paper:

N^o 8372.

Patented, Sept. 16. 1851.

Fig: 3.



M. D. Whipple *Sheet 4. of 5. Sheets.*
Printing Wall Paper.
N^o 8372. Patented Sept. 16. 1851.

Fig. 4.

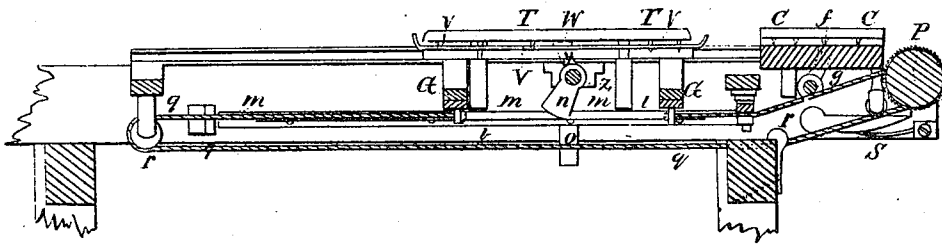
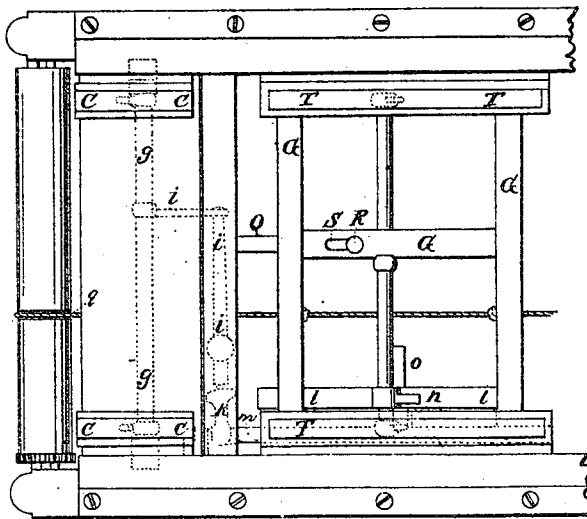


Fig. 5.



UNITED STATES PATENT OFFICE.

MILTON D. WHIPPLE, OF LOWELL, MASSACHUSETTS, ASSIGNOR TO ESSEX COMPANY.

MACHINE FOR PRINTING HOUSE-PAPER.

Specification of Letters Patent No. 8,372, dated September 16, 1851.

To all whom it may concern:

Be it known that I, MILTON D. WHIPPLE, of Lowell, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Machinery for Printing House-Paper, &c., and that the following description, taken in connection with the accompanying drawings, hereinafter referred to, forms a full and exact specification of the same, wherein I have set forth the nature and principles of my said improvements, by which my invention may be distinguished from others of a similar class, together with such parts as I claim and desire to have secured to me by Letters Patent.

The figures of the accompanying plates of drawings represent my improved machine.

In Plate 1, Figure 1 is a side elevation of my printing machine, and Fig. 2 is a plan of the same. In Plate 2, Fig. 3 is a central longitudinal vertical section, taken in the plane of the line A, B. Fig. 2 Pl. 1 and Fig. 4 is a detail sectional view taken in the same plane as Fig. 3, but looking in the opposite direction, and representing the spur clamps hereinafter described, and a part of the feeding motion for drawing the paper along to be printed. Fig. 5 is a detail plan, or top view, of the wooden platform, over which the paper is passed, being removed.

The great object which is attained by my machinery, is preserving "the register" (so to speak) in printing house paper, so that in printing several colors with different blocks, the patterns shall appositely fit each other, or be printed in accurate relative positions. This is done by an accurate feeding apparatus, in connection with two sets of jaws, with teeth or spurs, which alternately take hold of the paper and make circular holes in the margin thereof, on each side: one set of jaws being arranged so that its spurs shall make the holes as aforesaid, and convey the paper along, and the other set alternately closing, (its spurs or teeth fitting into the holes already made, or others), so as to hold the paper while the impression is being produced, and while the first named pair travel back to bring a fresh portion of paper along again, and then opening to permit the passage of the said fresh portion.

A A A A in the several drawings is the framework of the machine.

B B is the driving shaft, having a fast

pulley C and loose pulley D, arranged in the usual way as shown in Fig. 2, Pl. 1.

The paper to be printed, or stamped, is wound upon a roller, the journals of which rest in the bearings shown at E E, Fig. 1 Pl. 1, and Fig. 3, Pl. 2. From this roller, the paper passes up over a wooden platform F F, which is supported (and moves with a horizontal sliding iron frame, G G G G). This frame has a reciprocating rectilinear motion imparted to it, by the following arrangement of machinery. The cross shaft H, is connected, by means of the two connecting cranks I—I, to the vertical standards K K, K K of the platen, to which a reciprocating curvilinear motion is imparted, as hereinafter explained. The shaft H, by its connection with the platen standards K K &c., will have a reciprocating rotary motion, and it has a gear wheel L, on one end Fig. 3, Pl. 2, which, through the medium of the pinion (M)—and gear wheel N on the shaft O O, imparts a reciprocating rotary motion to said shaft also. At the center of this shaft O O is fixed the gear wheel P, the teeth of which engage with those of the rack Q Q, which is connected to the sliding frame G G G, by means of the screw R and slot S, in the center bar of said frame, arranged as shown in Fig. 5 Pl. 2.

T T—T T in the several figures are the sliding clamps, which are connected to and move with the sliding frame G G &c. The lower half of each of these clamps may be fixed to the said sliding frame, but the upper half is arranged so as to be moved vertically, by means of the guiding rods U V &c attached to the under side of the upper half of the clamp, and moving up and down in suitable holes in the lower half of the said clamps. Attached also to the under side of the upper half of said clamps, are a series of spurs or pins V V &c, set at proper intervals apart, over suitable holes in the lower half of said clamps. These clamps are closed when they are moving forward with the paper, and the spurs are passed through the paper at proper points along the margin on each side thereof, but they are opened when said clamps are moving backward, and the said spurs are also then disengaged from the paper. This opening and closing is effected by means of the cams W W, on the upper ends of the arms Y Y, which arms are attached to opposite ends of the rocking shaft, Z Z, and play through

proper slots in the lower half of the sliding clamps, the cams bearing against the underside of the upper half of said clamps, as shown in Figs. 3 and 4 Pl. 2. A metallic fork *a*, is secured firmly to the center of said shaft, *Z Z* and embraces a small pin *b* secured to the side of the sliding rack *Q Q*. This rack, as before suggested, is connected to the sliding frame *G G G*, by the pin *R* and slot *S*, in the center bar of said frame, but the rack always moves the length of said slot before said frame begins to move, and, by this means, and the operation of the pin *b* on the fork *a*, attached to the shaft *Z Z* and cams *W W*, it will readily be seen the desired opening and closing of said clamps at the proper times to effect the results above specified are secured. The set of short stationary clamps, *cc—cc*, in the several figures, are arranged so as to open when the sliding clamps are closed, and are feeding the paper along, and close when the sliding clamps are moving backward. These short clamps are provided with guiding rods, and holes and spurs precisely similar to those before described in the longer set. The upper halves of said clamps, rest upon the cams *f—f*, similarly arranged to those before described at *W W*, and connected to the ends of the rocking shaft *g g*, shown in Figs. 3 and 4 Pl. 2, and by dotted lines in Fig. 5 Pl. 2. This shaft is turned by means of the depending bar *h*, Figs. 3 and 4 Pl. 2, firmly connected to said clasp which is connected at one end to the right angular lever *i i i*. The other end of said lever, plays in, and is operated by the diagonal groove formed in the end of the arm *k*, which arm is secured to the front of the vibrating frame *l l l*, as shown by dotted lines in Fig. 5 Pl. 2.

This vibrating frame turns on the longitudinal shaft *m m* and is depressed by means of the cam *n* on the rocking shaft *Z Z*, which shaft opens and closes the sliding clamps, and said cam is so arranged on said shaft, as to open the short clamps when the sliding ones are closed. The raising of said vibrating frame and closing of the short clamps, is effected by the bent spring *o*, on which said frame rests as shown in Fig. 5 Pl. 2. After the paper is stamped, it is guided and drawn away, by the roller *p*, at the front of the machine, which is operated by the band or cord *q q q* Fig. 4. Pl. 2, one end of which cord is attached to the front of the sliding frame, *G G G*, and passes around the groove in said roller, and around the several guiding pulleys *r, r, r* &c., to the rear of said sliding frame to which it is attached, so that by this connection, the feeding of the paper forward and the turning of said roller *p*, will correspond precisely, but when the sliding frame moves backward, for a fresh portion of paper, the pawl and

ratchet at *s*, on one end of the roller *p*, holds the roller stationary, and the cord *q q q* slips on said roller without turning it.

The various patterns are confined in the platen *t, t*, in any desired way, said platen being, as before suggested, secured to the vertical arms *K K—K K* which arms are connected to the cranks *u, u* on the opposite ends of the lower transverse shaft *v v*. On one end of this shaft is the double grooved wheel *y y*, in the grooves of which, two chains are fitted, one end of each chain being fastened to the periphery of the wheel, and the other ends being secured to the points *a'—b'* of the long connecting arms *c' c'*. This connecting arm is attached at its rear end, to the crank *d'* of the shaft *e' e'*, which shaft is revolved by means of the gear wheel *f'*, on its end engaging with the gear wheel *g'* on the driving shaft.

From the above described arrangement of parts, it will readily be seen, that the shaft *v v* will have a reciprocating rotary motion imparted to it, and that by so moving, it gives a reciprocating curvilinear motion to the platen and its patterns, said platen alternately moving backward to get fresh color, and then forward to imprint the same upon the paper on the (sliding) platform *F F*. The changing or reversing of the motion of the shaft *v v*, is assisted by the heavy weight *h' h'* fastened to said shaft, as shown in Fig. 3 Pl. 2, and the motion of the feeding apparatus is connected to that of the imprinting machinery, by means of the chain or series of gear wheels *i', i', i'*, between said shaft *v v* and the shaft *H* which actuates said feeding apparatus.

The color for the patterns is contained in the semi cylindrical vat (*k' k'*) and it is served out for the patterns by means of the cloth band *l' l'*, which is attached to and wound partially around the roller *m'*, passing under the roller *n'* at the bottom of the vat and also under the adjustable roller *o'* at the front of the same, for expressing the redundant color, and connected to the cross bar *p' p'* of the vibrating frame *p' p' q' &c*. The upright arms *q' q'* of the frame, are secured to the opposite ends of the shaft *r'*. Depending from the center of this shaft, is an arm *s'*, connected by the connecting rod *t'* to the arm *u'*, which is fitted loosely on the shaft *v v*. This arm *u'* is moved forward and back by the adjustable studs *v' v'*, fitted in the slots *w' w'*, cut at proper intervals apart in the circular plate *x'*, fastened to and turning with said shaft *v v*. The shaft *v v*, as before specified, has a reciprocating rotary motion, and by means of the arms *s'* and *u'* and rod *t'* and studs *v' v'* in the plate *x'*, connecting the operation of the said shaft with that of the shaft *r'*, the latter shaft also has a reciprocating rotary motion, and, by this means, the frame

$p' p' q'$ is made to draw the band $l' l'$, after each impression, over the horizontal bed or frame $y' y'$. While the platen is moving over to give the impression, the cloth band $l' l'$ is drawn back by means of the band $z' z'$, attached at one end to and wound around the pulley a^2 , on one journal of the roller m' , and connected, through the medium of the spiral spring b^2 , to the lower end of the arm c^2 , which depends from the shaft r' in a direction parallel to the arm s' , so that, as the frame $p' p' q'$ vibrates toward the rear of the machine, the movement of the arm c^2 forward, will wind and draw the band $l' l'$ back through the color in the vat. In some cases it may be advisable to have the cloth band stationary, and supply it with color by a brush, which has a reciprocating motion to and from the vat. The bed $y' y'$ is elastic, and is formed of oil cloth, secured to the edges of a square frame and resting on the horizontal supports $d^2 d^2 d^2 d^2$ attached to the sliding side frames $e^2 e^2 e^2 e^2$ which move up and down in proper guides, formed in the frame work of the machine, as shown in the drawings. The bed $y' y'$ is made susceptible of a vertical adjustment by means of the screws and nuts, shown at $f^2 f^2$ Figs. 1 and 2 Pl. 1, and Fig. 3 Pl. 2.

The cross bar g^2 which connects the two side sliding frames $e^2 e^2 e^2 e^2 e^2 e^2$, rests on one end of a lever $h^2 h^2$ Fig. 1 Pl. 1 and Fig. 3, Pl. 2, said lever having a fulcrum at v^2 , and bearing, at its rear end, against a vertical pin k^2 , which moves up and down in a proper guiding hole in the framework. This pin is formed of a wedge shape, at its upper end, and bears against the periphery of the wheel l^2 , fixed on the center of the shaft $e' e'$. The wheel l^2 has a notch n^2 into which, at every revolution of the shaft $e' e'$, the end of the pin k^2 slips, and, by so doing, allows the color bed $y' y'$ and cloth band $l' l'$ to drop, but as the pin immediately falls or is pressed out of said notch the said bed rises again. This operation takes place while the patterns are taking the color from the cloth band and the falling and rising of the bed and band, immediately after the first touch of the patterns upon the latter, gives the second or double application of color to the patterns, which is so universally practised in the hand printing of house paper.

A small cam o^2 on the shaft $e' e'$ lifts the rod $p^2 p^2$ so as to turn the shaft $j^2 j^2$ and

press the fingers $q^2 q^2$ down upon the upper half of the sliding clamps, and push the spurs through the paper. When, for any reason, these spurs fail to pass through the margin of the paper, the upper half of said sliding clamps will press against the stud r^2 of the right angular lever $s^2 s^2 s^2$, and throw the catch, at the lower end of said lever, out of the notch in the lateral sliding shaft $t^2 t^2$ (to which the belt holder u^2 is attached), and allow the spring v^2 to move it laterally, and slide the belt on to the loose pulley of the machine and throw it out of gear.

After the first pattern has been printed on the machine, it will readily be seen that, in putting on a second pattern, if the spurs are once set in the holes first made, they will successively and accurately pass into all the holes in the margin of the paper, and preserve the register as desired.

Having thus described my improvements in house paper printing machinery, I shall state my claims as follows:

What I claim as my invention and desire to have secured to me by Letters Patent is—

1. The use of two sets of spur clamps, one set being sliding and feeding clamps, and the other set being stationary and holding clamps, and the two sets having a connected operation, so that one set shall be open when the other set is closed, all as herein above set forth.

2. I also claim the mode herein above described for supplying the coloring fluid to the patterns, that is, by means of a cloth band, alternately drawn forward from the vat over an elastic bed, on which the platen descends, and then back again, through the color in the said vat, all as herein above set forth.

3. I also claim giving the second or double application of the color to the patterns for each impression, by suddenly lowering the elastic bed after the first touch of the patterns on the cloth band, and then raising it again, for the second touch, substantially in the manner herein above set forth.

In testimony that the foregoing is a true description of my said invention and improvements I have hereunto set my signature this twenty sixth day of August in the year 1850.

MILTON D. WHIPPLE.

Witnesses:

EZRA LINCOLN,
ROBERT L. HARRIS.