W.M. Shaw & E. Gould.

Printing Oil Cloth, Wall Paper, &c.

No. 6404 Patented May 1. 1849.

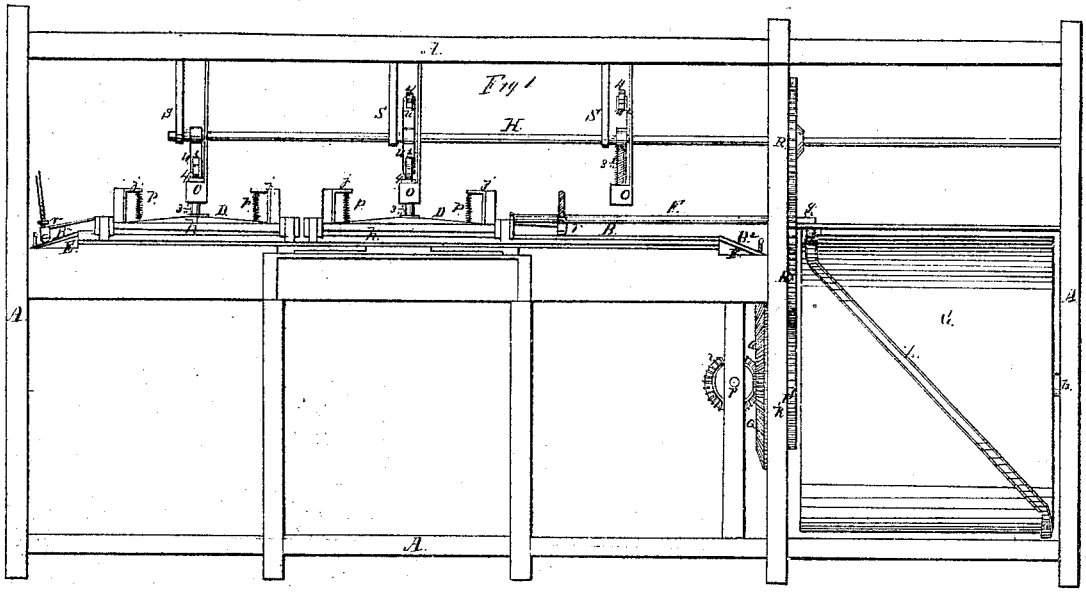

Fig. 1

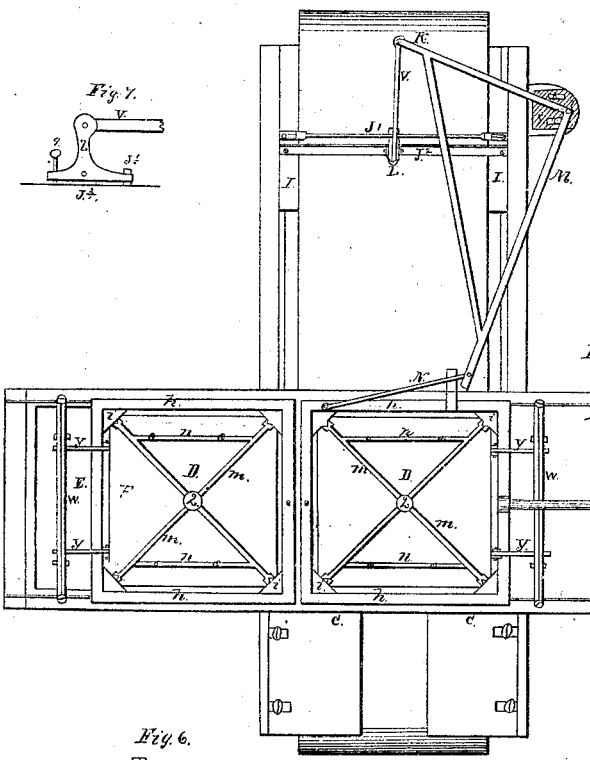

Fig. 2.

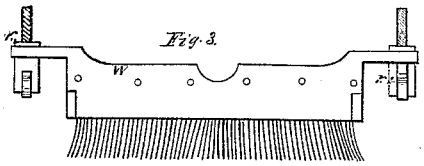

Fig. 3.

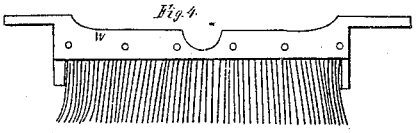

Fig. 4.

Fig. 7.

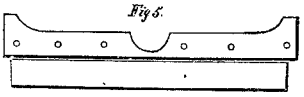

Fig. 5.

Fig. 6.

UNITED STATES PATENT OFFICE.

WM. M. SHAW AND EZRA GOULD, OF NEWARK, NEW JERSEY; SAID GOULD ASSIGNOR TO SAID SHAW.

PRINTING PAPER-HANGINGS.

Specification of Letters Patent No. 6,404, dated May 1, 1849.

To all whom it may concern:

Be it known that we, WILLIAM M. SHAW and EZRA GOULD, of the city of Newark, in the county of Essex and State of New Jersey, have invented a new and useful improvement on a machine for printing paper ornamenting the walls of houses, oilcloth, and for such like purposes; and we hereby do declare that the following is a full clear and exact description.

1st. The nature of our invention consists in providing a drum with an eccentric rail or flange on the same, on which is placed or connected with it, the slide of a horizontal shaft, for the purpose of giving an intermittent horizontal motion to the frames in which the blocks are secured that make the impressions on the paper; also in providing a vibrating reciprocating catch bar to take the paper when printed from under the block, drawing it forward on a transverse table, thus making the machine self feeding.

2d. The nature of our invention further consists in attaching the platens of the block plates to standards connected to the frames in which the said platens are placed by coiled springs which spring up both the blocks and platens from the paper after the impression is made.

3d. It further consists in providing spring pistons, passing vertical through guide eyes attached to suspended jointed arms, to be operated by cams on an upper revolving shaft, which cams press down regularly the spring pistons on the top of the platens to make one block impress the paper with color, and the other receive color from a color-sieve, (which is the technical term for the color or paint cushion,) the pressure of the cams of the pistons being regular to coincide with the period of intermission in the motion of the sliding shaft below, to make the impression on the paper at the exact period.

To enable others skilled in the art to make and use our invention, we will proceed to describe its construction and operation reference being had to the accompanying drawing making a part of this specification, in which—

Figure 1 is a longitudinal elevation. Fig. 2 is a horizontal section, showing how the main reciprocating shaft F, is attached to, and communicates motion to the platens and the machinery that feeds and shifts the paper. Figs. 3, 4 5 and 6, are views of the brushes and brush plates. Fig. 7, is a side section of the vibrating lever that operates the catch which moves the printed paper from the blocks.

The same letters indicate like parts on all the figures.

A is the frame, built of solid materials in any known way.

G, is a large drum made of wood or metal.

Z is a metal ridge or rail secured to the drum and made to extend in a curved direction from end to end of the said drum, but with a part of the said rail *a*, *a* extending at the ends of the drum at right angles to one another like a rim about one sixth of the circumference of the ends.

We do not confine ourselves to this proportion of the said rail on the ends of the drum, as it can be varied with the gearing that moves the revolving shaft H. This eccentric rail drum is suspended in the frame by a shaft (*b*) which revolves in proper bearings therein. This drum is driven by a pinion X on the cross shaft P, Fig. 1, which gears into a bevel wheel Q on the inside end of the drum shaft (*b*). F, is the shaft which moves the block frames.

This shaft is formed with a common box slide head (*g'*) which embraces Z, which moves it, and it is guided in a horizontal direction between two side guide rails *f*, *f*, when the drum therefore is revolved, the shaft F, will be moving backward or forward, except when *a*, *a* is pressing under (*g*) for the jaws of (*g*) are so formed as to allow *a*, *a* to slide through them, at which time the shaft F, is stationary, and thus by the rail on the drum a horizontal intermittent motion is given to the shaft F. This shaft is connected to the block frame (*h*, *h*) by a screw or bolt.

The block frame (one for each block), is composed of four square pieces of metal or it may be cast all in one piece with angular corner pieces and upright standards, *j*. The block frames are made so as they shall embrace and slide on a rail B, B, on each side of the frame to keep the blocks direct, steady and true in their motion. The two block frames are connected together by an arm in the middle and they have corner blocks that embrace the rail B, but as this plan of guiding blocks or shafts is well known, it need not be further described. The rail B B

dips or inclines at each end B^2 B^2 above two color boxes E, E, which hold the color to supply the brushes W, W, D, D, are two blocks secured to the platens (*n*) (*n*) by screws. Each platen consists of four arms (*m*) (*m*) with a solid center block and two braces through which pass the screws that secure the block D, to the platen. The ends of the arms of the platens are formed with a wedge grooved in each to allow the platen to slide up and down on wedge projections formed on the inside of (*i*) as seen in Fig. 2.

The platens and blocks are separate parts from the frame (*h*) but made to fit snugly therein, and they are (the platens) kept up some distance from one to two inches above the surface of the transverse table and the sieve T by coiled springs (*p*) (*p*) attached to the standards, *j*, *j*. To graduate the pressure on the coiled springs, we insert metal or other blocks between the springs and the standards, but these blocks are not represented in these drawings. W, W are two brushes which are made about the breadth of the seive T. These brushes are attached to the block frames by joints made in the usual manner and bars Y, Y.

The brushes are formed by securing the bristles between two metal plates as represented by Figs. 3, 4, 5 and 6, the bristles being secured by the plates being screwed tightly together by screws. Each brush is provided with two friction rollers or wheels (*r*, *r*,) which move on the top of the inclined rail B^2 B^2 to allow the brushes to dip into the color boxes E, E, and when the brush is drawn out of the trough it is carried along the surface of the sieve T supplying it regularly with color for the return of the block D.

During every revolution of G, the block frames and blocks are moved once backward and forward, with two intermissions in the motion when *a*, *a*, is passing under (*g'*). The intermissions occur when the block is making the impression on the paper, which is performed at that period or periods by the spring pistons being pressed down upon the center blocks of the platens by cams on the revolving shaft H. This shaft H is suspended in proper bearings on the frame, and it has four cams secured on it (*u' u'*) (u^2 u^2). These cams are the same in principle as cranks and each has a friction pulley (4) on its end to lessen the friction when the cams are in contact with the tops of the spring pistons. When the shaft H revolves the ends of the cams are brought in contact with the spring pistons 3^1, 3^2 during the intermission of the motion of F, and when the block, is above the paper to receive the impression and the said cams force down the spring pistons upon the center blocks 2, 2 of the platens and make the impression on the paper.

Two cams *u' u'* placed opposite to one another, are fixed on the shaft H above the block that prints, and only one cam is placed on the shaft above the sieves to get the color on the blocks, therefore two impressions are made during the intermission for every revolution of H. When the spring pistons are relieved from the pressure of the cams 3^1 3^2, the platens rise with the blocks from the paper and color sieve by the springs (*h*). On the top of each piston there rests the end of a jointed arm secured to the side of the frame.

The end of each arm is of a concave form to allow the friction rollers to roll therein. The heads of the spring pistons however may be so formed as to obviate the use of the jointed arms. O, O, O, are the guide eyes through which and in which the spring pistons work. They are placed exactly above the point to make the end of the piston press on the center block 2 of the platen during the intermission of the motion of F.

When the block rises from making the impression on the paper, the paper so impressed is drawn forward on the transverse table, and other unprinted paper is then drawn below the block to the exact pitch to receive the impression from the next block. This is accomplished as follows: The motion of the paper must be intermittent to coincide with the motion of the printing block; the slide catch therefore which moves the paper has an intermittent vibratory motion.

The paper to be printed is placed below the guide plates C, C, which have slots and set screws for guiding in various widths of paper. The piece of paper is extended under the block to be below the catch slide J^1 J^2. These catch slides are cross bars with slides I I, which move on and are guided backward and forward on slide rails.

The catches are operated as follows: N, is a short arm secured by a pivot to one of the block frames and attached by a pivot to the oscillating angular lever M, which is secured by a pivot to a metallic block or plate 8, fixed on the table as represented by set screws. V, is a connecting rod attached by a pivot K, to M, the oscillating angular lever, and to a rocking head or bar L, (as represented in Fig. 7). This rocking head is connected to J^2 by a center pin on which it vibrates and one of the rockers passes through a slot in J^1. Therefore when the block frames are moved, the slides I, I, and the catches J^1 J^2 will be moved likewise; but when the slides are moving toward the block frame, the rocker head is thrown back and the paper is released from the catch bar J^1, but whenever the slides move forward again, the rocker head vibrates forward catching the paper and carrying it forward on the table from the block; and so on continuously. The screw *g*, on L, is for regulating the dip

or rock of L, as may be desired to make the paper be caught by J^1 to suit truly to the pitch of the block.

The shaft H is moved by cog wheel gearing. R^1 is fixed on the shaft, *b*, it gears into R^2 another cog wheel on a side shaft and it gears into R^3 on the shaft H. This gearing is just made to connect H above F, but with a side intermediate wheel R^2 to clear F, a common manner of arranging gearing. During every revolution of G, two impressions are made on the piece of paper, the blocks are supplied with color, the sieves fed with the same by the brushes, the pressure is regularly applied by the cams on the revolving shaft and the paper is regularly taken away and fed in to be printed, a combination and arrangement of various parts, all working harmoniously from the pinion X to accomplish in one machine the self feeding and coloring and printing operation in this difficult art.

What we claim as our invention, is—

1. The combination of the platens with the block frames by means of the coiled springs to keep up the blocks from the face of the table, and to allow the said blocks to be pressed down on the paper, and color sieves, substantially as described.

2. We also claim the arrangement of the cams on the revolving shafts, in combination with the springs, pistons in the guide eyes *o*, *o*, *o*, to press down the platens during the intermission of the motion of the block frames, substantially as described.

3. We also claim the combination of the catch bars J^1 J^2 with the rocker L, and the connecting rod V, and oscillating angular lever M, and the arm N, connected with the block frame, to take the printed paper from under the block, and bring forward the unprinted paper to receive the next impression, substantially as described.

W. M. SHAW.
EZRA GOULD.

Witnesses:
STEPHEN R. HAINES,
FREDK. H. WHITE.