J. McInnes Sheet 1. 4 Sheets.

Printing Fabrics.

No. 14772. Patented Apr. 29. 1856.

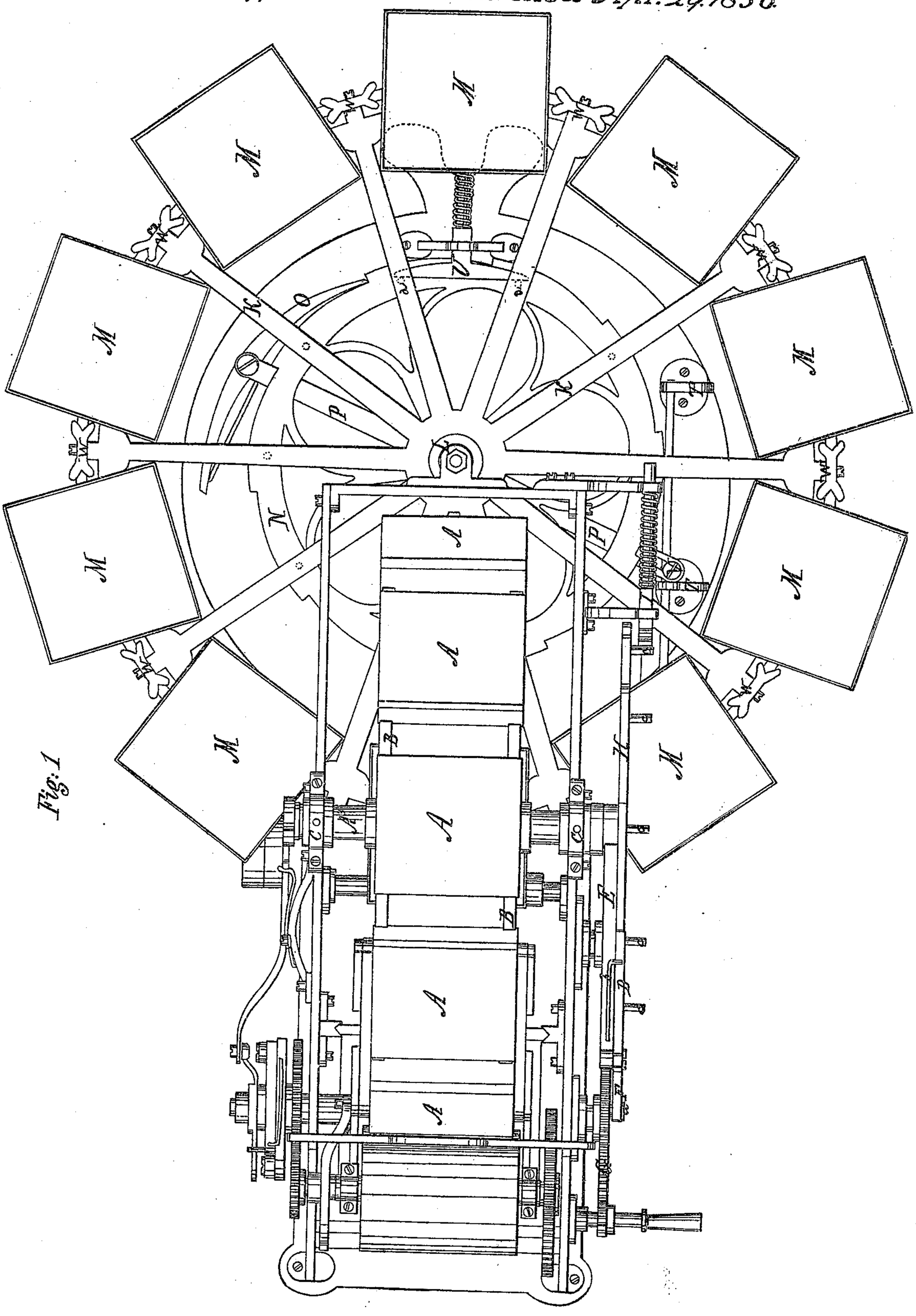


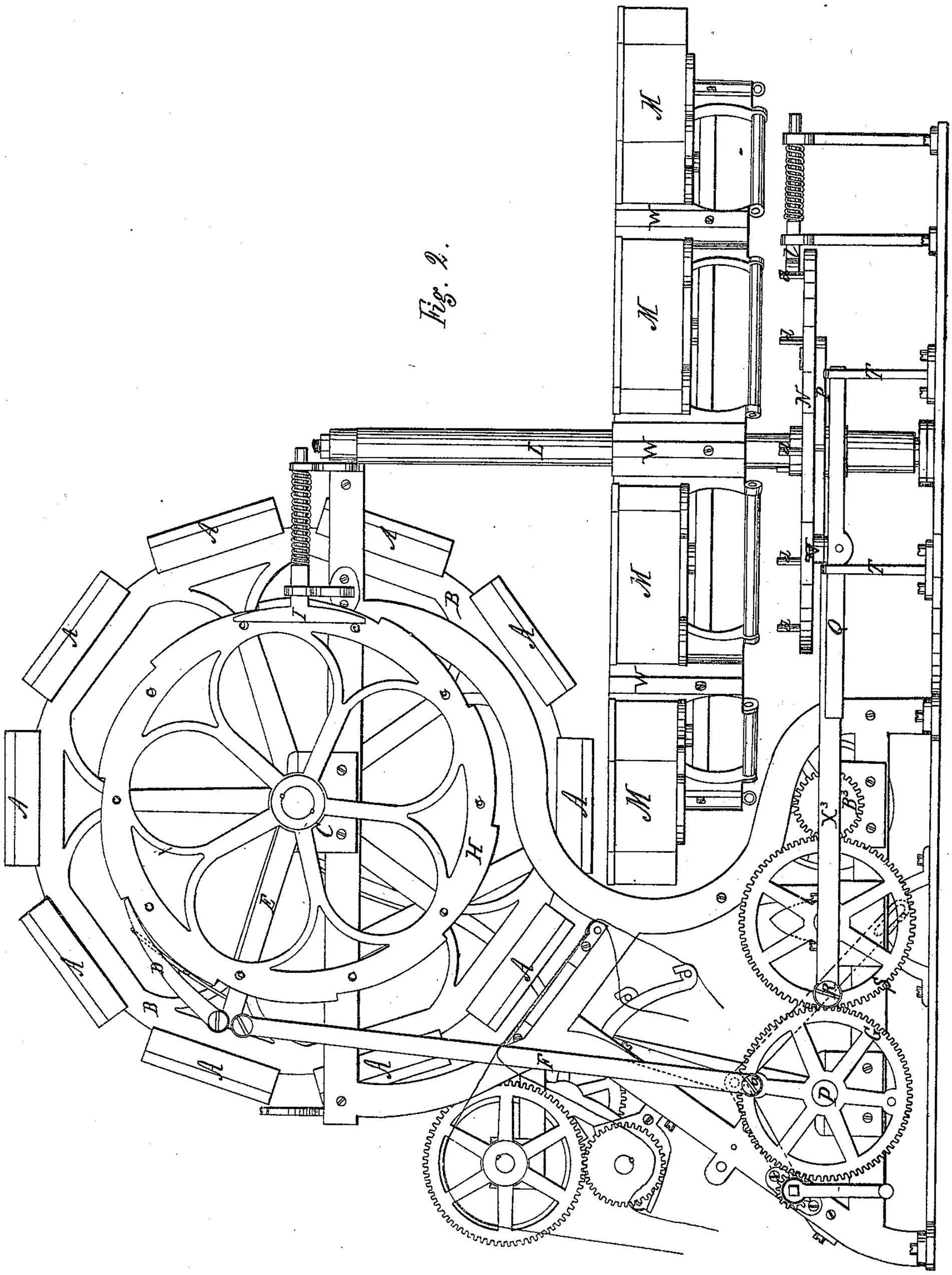
Fig. 1

J. McInnes. Sheet 2. 3 Sheets.

Printing Fabrics.

No. 14772. Patented Apr. 29. 1856

Fig. 2.



J. McInnes. Sheet 3. 4 Sheets.

Printing Fabrics

No. 14772. Patented Apr. 29. 1856

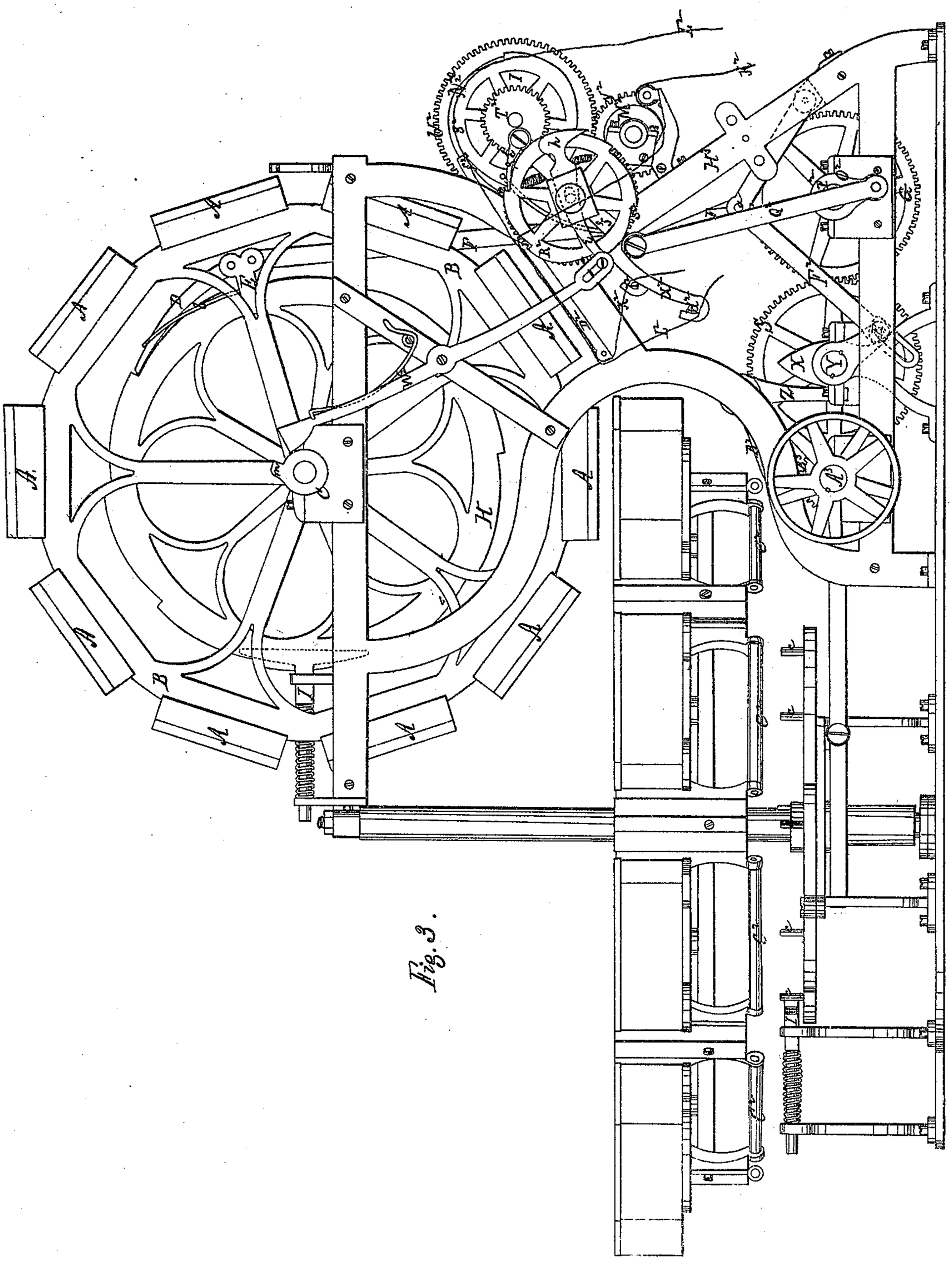


Fig. 3.

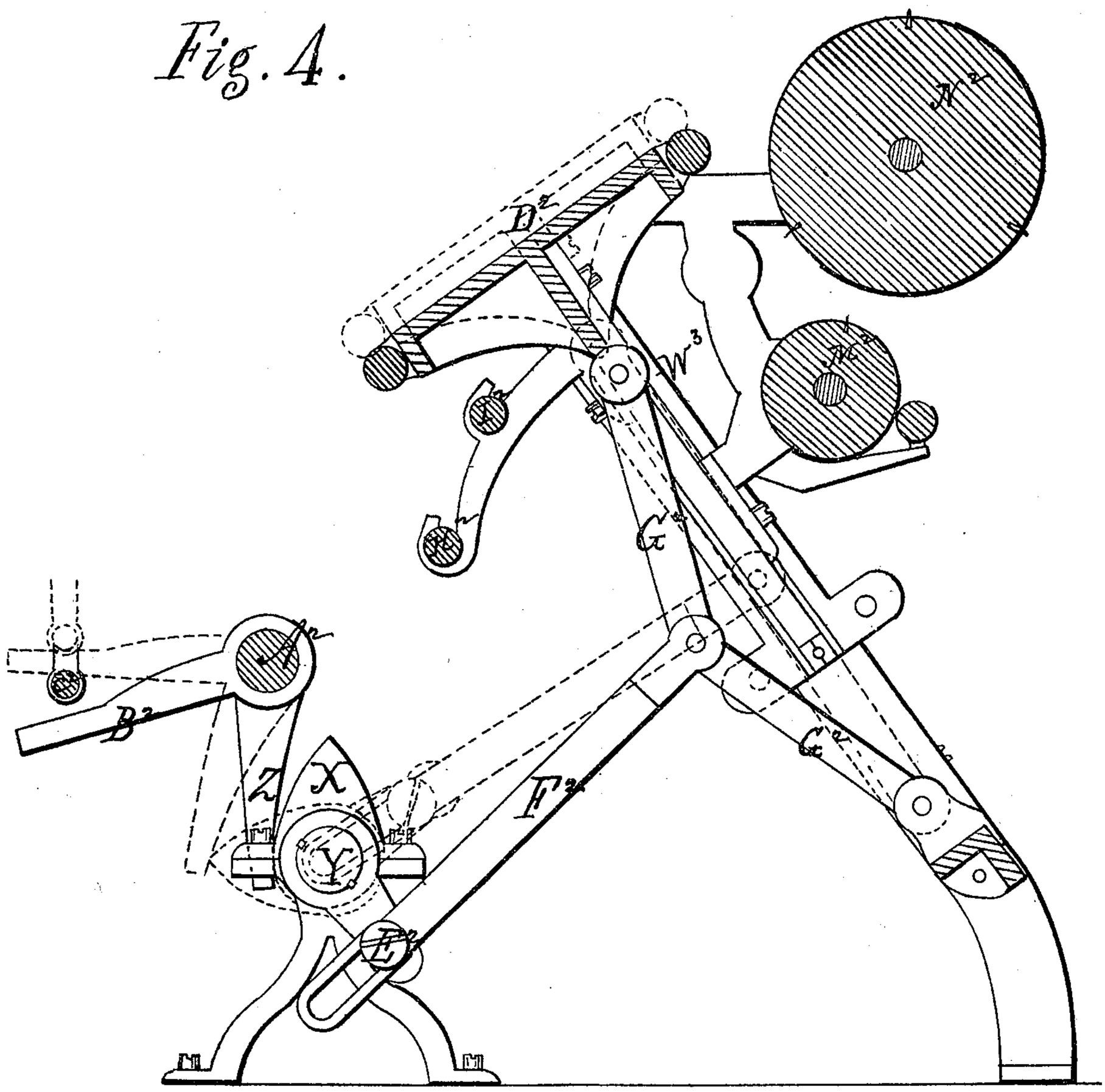
Sheet 4. 4 Sheets.

J. McInnes.

Printing Fabrics.

No. 14772. Patented Apr. 29. 1856.

Fig. 4.



UNITED STATES PATENT OFFICE.

JOHN McINNES, OF BRAINTREE, MASSACHUSETTS.

MACHINE FOR PRINTING WOOLEN AND OTHER FABRICS.

Specification forming part of Letters Patent No. **14,772**, dated April 29, 1856.

To all whom it may concern:

Be it known that I, JOHN MCINNES, of Braintree, in the county of Norfolk and State of Massachusetts, have invented a new and Improved Machine for Printing Woolen and other Fabrics, House-Paper, &c., of which the following is a full, clear, and exact description, reference being had to the annexed drawings, making part of this specification, in which—

Figure 1 is a plan; Fig. 2, an elevation of one side of the machine; Fig. 3, an elevation of the other side; Fig. 4, details, which will be referred to hereinafter.

In my machine the blocks are placed upon the surface of a revolving cylinder and receive their color from a corresponding series of sieves, which revolve in a horizontal plane, the whole being combined and arranged as will now be fully set forth and explained.

In the accompanying drawings, the blocks A are secured to the surface of a vertical cylinder, B, which is caused to revolve intermittently in its bearings C by a pawl, D, attached to the arm E. This arm is vibrated around the axis of the cylinder B by the connecting-rod F, one end of which embraces the crank-pin *a* upon the wheel G. This wheel makes one entire revolution each time an impression is made. The pawl D is kept in contact with the ratchet-wheel by a spring, *b*. The ratchet-wheel H, with the teeth of which the pawl D engages, is secured to the shaft of the cylinder B, and thus the latter is revolved an amount equal to the distance between two contiguous teeth of the ratchet-wheel each time the wheel G makes a revolution, and perfect register is attained. That the cylinder may be in the exact position required while the impression is made, the spring-holder I is caused to bear against two contiguous pins, *c c*, projecting from the face of the ratchet-wheel H. This holder may, if preferred, be made in the shape of a bolt, and be caused by its spring to enter suitable holes in the periphery of the ratchet-wheel or in the cylinder.

The block-cylinder is revolved between each impression sufficiently far to bring the blocks over the platen and over the sieves M, which latter are carried by the horizontal wheel K, attached to the shaft L and revolving with it. An intermittent rotary motion is communicated to the sieves to bring them in the proper order beneath the blocks in the following manner:

The ratchet-wheel N, secured to the shaft L, is actuated by the spring-pawl O upon the arm P, which is pivoted near its center, and is vibrated around the shaft as a center in the following manner: The arm P is connected by means of a pin and slot, V, with a bar, Q, which slides in bearings T, and is vibrated back and forth by the pin R upon the wheel S and connecting-rod X^3. The sieve-cylinder is arrested and held in the required position by the spring-holder V, which bears upon two contiguous pins, *d*, upon the ratchet-wheel N, as seen in Figs. 1 and 2.

The sieves slide up and down in ways W upon the end of the arms of the carrying-cylinder K, and are elevated at the required moment to transfer the color to the blocks in the following manner: The cam X upon the shaft Y, Figs. 3 and 4, of the revolving-wheel S strikes an arm, Z, projecting from the vibrating shaft A^2. This shaft carries two arms, B^2, one only of which is seen in the drawings, which are caused, as the shaft A^2 vibrates, to bear against the bars C^2, attached to the sieves, by which means the latter are raised and brought in contact with the blocks.

The platen D^2 is brought to bear upon the block for the purpose of giving the impression, Fig. 4, by the crank E^2, which plays in a slot in the end of the connecting-rod F^2, the other end of which is jointed to the toggle-levers G^2, by which means the platen is caused alternately to rise and fall, as required.

I will now describe the manner in which the fabric is fed through the machine as it is printed. The apron K^2, which runs through the machine beneath the fabric, is carried by the roll I^2. From this roll it passes over the platen D^2, beneath the roll M^2, out of the machine. The fabric L^2 passes from its carrying-roll H^2 over the platen, thence over the cylinder N^2 out of the machine. The surface of the cylinder N^2, as well as the roll M^2, is covered with short metallic points, or is otherwise suitably roughened to insure the feeding of the fabric through the machine.

The cylinder N^2 and roll M^2 are caused to revolve, as required, in the following manner: The crank O^2 upon the shaft P^2 gives motion,

through the connecting-arm Q^2, to the arm *f*, which carries the pawl *g*. This pawl engages with the teeth of the ratchet-wheel R^2 upon the shaft of the toothed wheel S^2, which meshes with the toothed wheel T^2 upon the shaft of the cylinder N^2. This same shaft carries a gear, U^2, which engages with a wheel, V^2, upon the shaft of the roll M^2, and thus both the cylinder and the roll are caused to revolve, and the fabric and its apron are fed through the machine. It is evident that this feed should take place only after each block of the series employed has made its impression upon the fabric. To this end the pawl *g* is permitted to engage with the teeth of its ratchet-wheel but once during an entire revolution of the block-cylinder, if but one series of blocks are used, or as many times during the revolution of this cylinder as there are series of blocks employed. This is effected by the curved piece *h*, upon which the pin *l* rests as the pawl is drawn back. The latter is thus held up and prevented from engaging with the teeth of its ratchet-wheel. When the block cylinder has completed its revolution, and the fabric is again to be moved, a cam, *m*, upon the shaft of the block-cylinder strikes the lever W^2 and withdraws the arm *i* and curved piece out of reach of the pin *l*, the arm being hung upon the shaft of the ratchet-wheel R^2, with a slot, as seen dotted in Fig. 3, to permit this motion. A retaining-pawl, f^2, engages with the teeth of the ratchet-wheel g^2 upon the shaft of the cylinder N^2 and prevents the recession of this cylinder.

The cylinder N^2, roll M^2, ratchet-wheel R^2, and the arm x^2, which carries the fabric and apron, together with the platen D^2, are attached to a sliding frame, W^3, Fig. 4, which rises and falls as the shaft Y revolves.

In lieu of the series represented in the accompanying drawings, it is evident that rolls may be employed to distribute the color upon the blocks, they being similarly applied to the revolving cylinder K.

The machine represented in the accompanying drawings is arranged for ten colors; but the same machine may be used for any number of colors less than ten. For instance, if the number of colors be any division of ten, then the colors may be repeated—thus, No. 1, red; No. 2, blue; No. 3, green; No. 4, yellow; No. 5, brown; No. 6, red; No. 7, blue; No. 8, green; No. 9, yellow; No. 10, brown. If, however, the number of colors be not a division of the whole number of blocks, then a portion of the blocks may be omitted, and any number of colors may be employed less than the whole number for which the machine is calculated.

Operation: Motion is communicated to the machine through the shaft A^3, a wheel, B^3, upon which engages with the wheel S, which drives a similar wheel, G, the cloth and apron being placed in the machine, as seen in Figs. 2 and 3. The platen D^2 is brought up against the block A, immediately above it at the same instant the succeeding block receives its color by the rising of its sieve, as already explained. The block-cylinder is now revolved, so as to bring the next block over the platen, the sieves being revolved, as before explained. Another impression is then taken, and the blocks and sieves continue to revolve until the impression is taken from the whole series of blocks. While this is going on the curved piece *h* has held up the pawl *g*, so as to keep it out of the notches of the ratchet-wheel R^2. The cam *m* now withdraws the piece *h* and permits the pawl *g* to enter the teeth of its ratchet-wheel and feed the goods. The fabric is again held stationary until an impression has been made by the whole series of blocks, when it is again moved a distance sufficient for another figure.

What I claim as my invention, and desire to secure by Letters Patent, is—

The general construction and arrangement of the machine—that is to say, the vertical cylinder B, with its series of blocks A, in combination with a corresponding series of sieves or their equivalents, arranged and operating in the manner substantially as herein set forth.

JOHN McINNES.

Witnesses:

SAM. COOPER,

THOS. R. ROACH.