2 Sheets—Sheet 1.

J. L. BURDICK.

CYLINDER PRINTING PRESS.

No. 6,236. Patented Mar. 27, 1849.

Fig. 1.

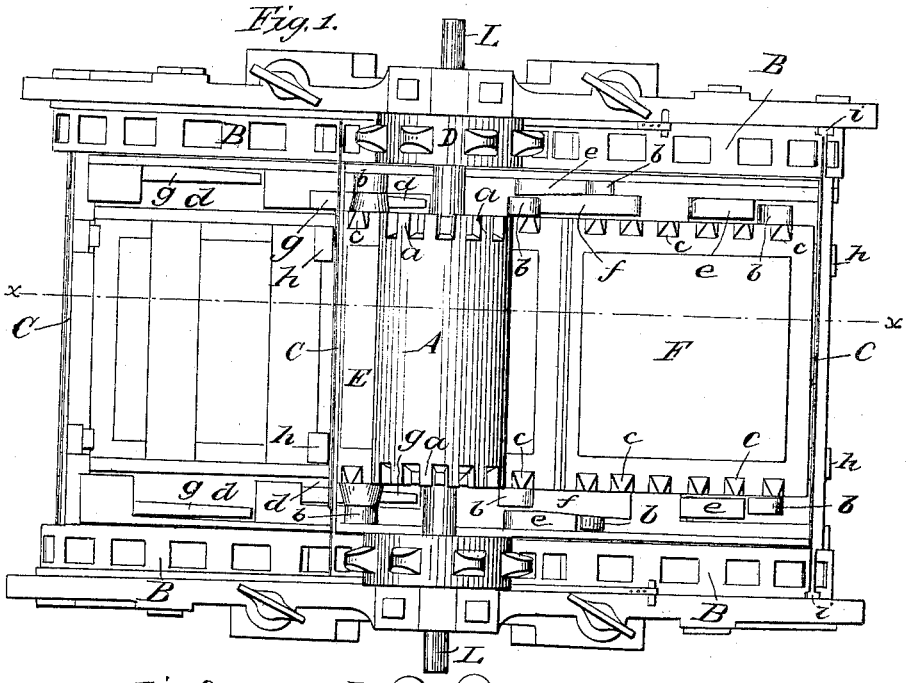
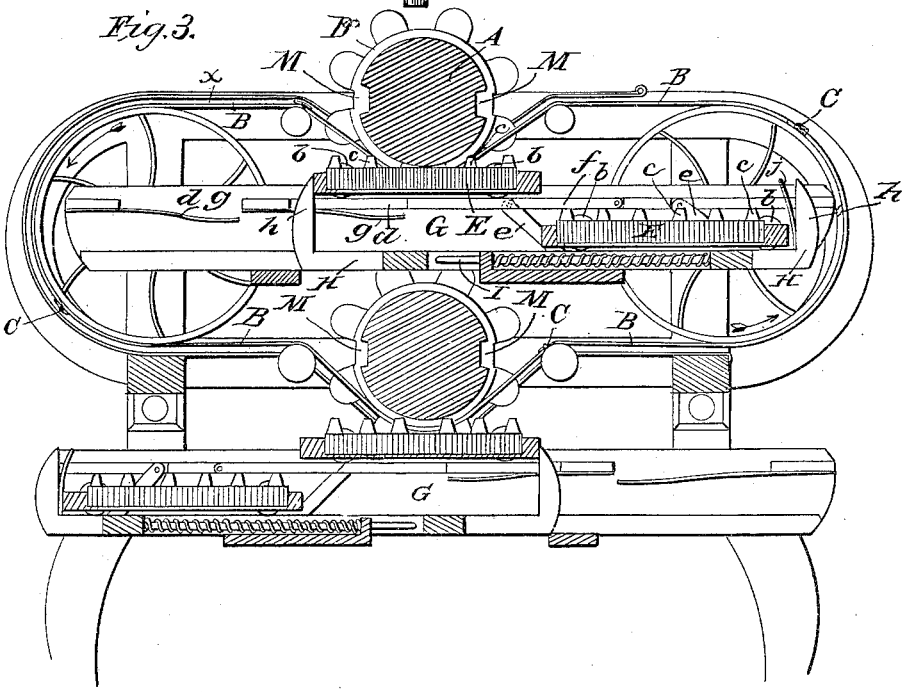


Fig. 3.



2 Sheets—Sheet 2.

J. L. BURDICK.

CYLINDER PRINTING PRESS.

No. 6,236. Patented Mar. 27, 1849.

Fig. 2.

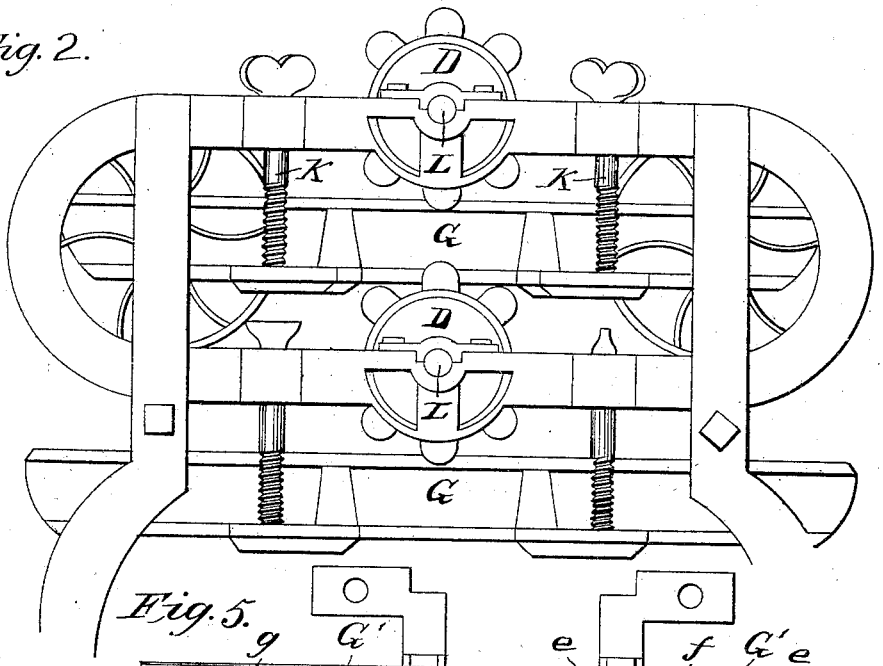


Fig. 5.

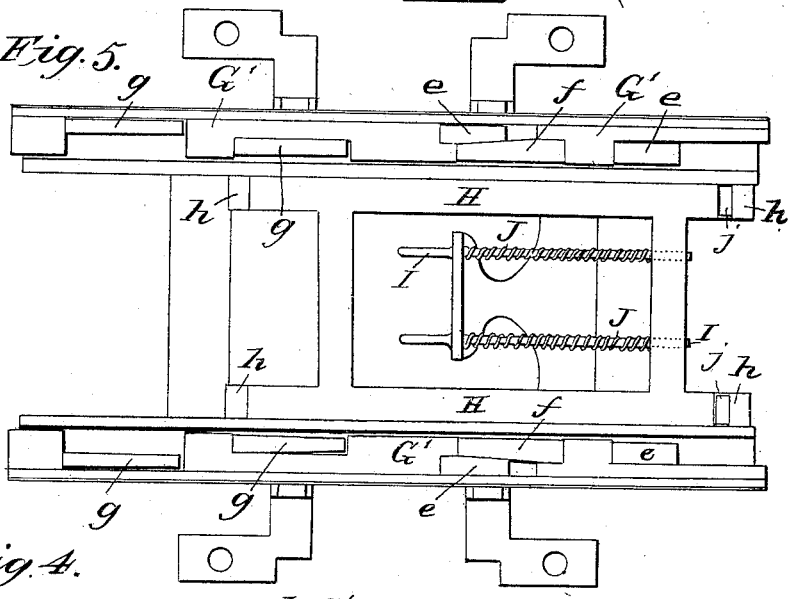
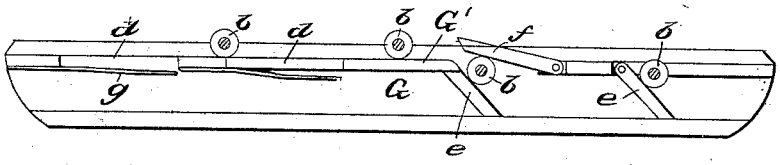


Fig. 4.



UNITED STATES PATENT OFFICE.

JASON L. BURDICK, OF NORWICH, NEW YORK.

PRINTING-PRESS.

Specification of Letters Patent No. 6,236, dated March 27, 1849.

To all whom it may concern:

Be it known that I, JASON L. BURDICK, of Norwich, in the county of Chenango in the State of New York, have made certain new and useful Improvements in the Manner of Constructing a Cylinder Printing-Press; and I do hereby declare that the following is a full and exact description thereof.

In my press there are two cylinders, and four forms; each form being intended, when used for book work, or for newspapers, &c., to print on one half of the sheet; two of these forms are sustained on a platform at the upper part of the press, there being a cylinder above them, to make the impression; the two other forms are situated on a second platform placed below that first named, and at a sufficient distance therefrom to admit a cylinder to operate between them, similar to that above the upper platform. The cylinders that make pressure on the forms have each two channels, or grooves along them, to admit the clips by which the sheet is held; the cylinders must be of such size as that the spaces betwen these channels shall be sufficient to make the impression from one form, on one half of the sheet. The two platforms are each suspended from the frame of the press by four regulating screws by the turning of which the pressure of the cylinders may be readily and perfectly adjusted.

The two forms rest during a part of the operation on the platform to which they belong, and during another part of the operation upon a sliding carriage which moves back and forth on said platform. The sheet is to be fed in by means of a feeding board, in the ordinary way, so as to be seized and held by the clips that are to carry it forward for the purpose of receiving the impression. These clips, or sheet holders, extend across from side to side of the press, their ends being made fast to endless belts, which may be formed of leather, of india rubber cloth, of metal, or any other suitable material, there being openings in said belts to cause them to be carried forward by the cogs of carrying wheels that take into them, said wheels being on the cylinder shafts.

The power to move the machine is applied directly to the axis of one of the cylinders, which is geared by spur wheels to that of the second cylinder. These cylinders have at each of their ends cogs which project out from them in the manner of a crown wheel, and the frame of each form has cogs which rise from the sides, and into these, those on the cylinder ends gear, and carry the form under said cylinder.

When a sheet is fed in between the clips, the form from which it is to receive its first impression rests upon a ledge extending along the upper part of the platform to which it appertains; the frames, or chases of the forms have each friction rollers on their under sides to enable them to move forward readily. When an impression has been taken from the first form, it immediately descends on to the sliding carriage below it, and at this time the second form will have been elevated from said carriage will rest upon the ledge of the platform, and be ready to give the second impression to the same side of the sheet. During the rising of the second form the inking rollers pass over it, these being formed and situated in the ordinary way. The form that has given its impression, and has descended on to the sliding carriage is carried back under the elevated form by the retreat of the carriage, which is effected by means of spiral springs, or otherwise; and this form is then ready for elevating, inking, and giving a second impression. The sheet which has been thus perfected on one of its sides is carried over the forms on the second, or lower platform by means of the clips and endless bands, where its second side is printed under arrangements in all respects similar to those described as operating on the upper platform.

In the accompanying drawings Figure 1, is a top view, or plan of my press; Fig. 2, is a side elevation thereof, and Fig. 3, is a vertical longitudinal section of the machine in the line *x*—*x* of Fig. 1.

In each of these figures where the same parts are represented they are designated by the same letters of reference.

A, is the upper cylinder, having teeth *a*, *a*, at its ends.

B, B, are endless bands, that carry the clips C, C, which seize the sheet as it is fed in.

D, D, are toothed wheels on the axis of the cylinder that carry the endless bands.

E, and F, are the two forms on the upper

platform, the form E, being that which, in the position represented, is giving the impression, and F, that which is ready to rise, receive the ink, and take the place of E; *b*, *b*, are the friction rollers on which the forms run; *c*, *c*, are cogs on the edge of the frame or chase of the forms, into which the teeth *a*, *a*, of the cylinder gears.

G, G, is the platform on which the forms rest at the time of taking the impression.

H, seen in the section (Fig. 3) is the sliding carriage which moves back and forth on the platform. In this figure, and in Fig. 1, the form F, is shown as resting on this carriage, from which it is to rise as the form E, advances; this latter form being sustained on the face G′, G′, of the ledges on the sides of the platform. When the cylinder A, has completed the impression from the form E, said form will have arrived at openings *d*, *d*, under its friction rollers *b*, *b*, and the form will descend on to the sliding carriage H, by its own gravity, there being springs beneath the friction wheels to ease it down. The ends *h*, of the sliding carriage turn up vertically, or at right angles from its bottom at each of its ends, and bear against the edges of the frames or chase of the forms; and the carriage is made to advance by the bearing of the fore edge of the form against this part, thereby overcoming the force of springs or weights which tend to move the carriage back. When the form at E, has descended the carriage is suddenly forced back by the springs, or weights, that are to act upon it, and the momentum given to the form by the motion of the carriage, causes it to slide to the opposite end of said carriage, and to occupy the situation of the form F, in the drawings. During the latter part of the advancing of the form E, the form F, will have been raised to the level of the form E, and the teeth of the cylinder will have engaged with those on its edges. By the moving back of the carriage the ends *h*, on its fore part will be brought into contact with the fore edge of the form F, and as this advances the carriage will necessarily advance with it. At the rear end of the sliding carriage there are two springs *j*, *j*, that serve to press the rear form into contact with the forward one, when the former is raised up; this is essential to the correct action of the gearing.

I will now describe the manner in which the form F, is elevated, so as to rest on the ledges G′, G′, of the platform. At *e*, *e*, there are portions of these ledges, which are attached thereto by joint pins, and which when forced up from a part of the face thereof, but which when not held up, fall and form inclined planes, up which the form F, may be made to pass by the aid of its friction rollers, so as to elevate it to the proper level. As the form was run back by the spring or weights, so as to bring it into contact with the vertical parts *h*, of the rear end of the carriage the pieces *e*, *e*, were raised by the friction wheels *b*, *b*, and then fell, forming the above named inclined planes. The advance of the carriage by the bearing of the fore end of the acting form against it will consequently cause the form F, to rise up the inclined planes and its friction rollers to bear on the solid part of the ledges of the platform. To admit the forward rollers *b*, of the rising form to pass on to the ledge of the platform, the portions *f*, *f*, of said platform are capable of being elevated by turning on joint pins, after which they fall by their own gravity, and form a part of the general surface.

Fig. 4, is an inside view of one of the sides of the platform, showing the respective jointed pieces, and the friction wheels of the forms, as also the openings *d*, *d*, which allow the forward form to descend, together with the springs *g*, *g*, for easing it down.

Fig. 5, is a top view of the platform, and of the sliding carriage as seen when the cylinder and forms are removed. I, I, are rods attached at one end to the platform their other ends passing freely through holes in the sliding carriage. J, J, are spiral springs which force the carriage back when it is at liberty to pass in that direction. A weight passing over a pulley may be substituted for these, or other springs.

In the side elevation Fig. 2, K, K, are screws tapped into ears attached to the platforms; their heads bearing on the frame of the machine, and thereby serving to adjust said platforms with perfect accuracy. L, L, are the axles of the cylinders. These at each end carry spur wheels of equal size that gear into each other, and thereby communicate the required motions. These are not shown in the drawings. The operation on the lower platform is precisely the same with that of the upper, all the parts being repeated.

The clips C, may be operated as in other machines in which they are carried by endless bands, as in this machine; the manner in which I have caused them to keep hold on the paper during the time that they are carrying the sheet is as follows. At each end of the upper part of the clip, which is hinged to the lower, there is a cross piece *i*, and this being received within a groove *x* formed on the inner edges of the frame, along its whole circuit, keeps it closed, and when liberated from these it springs open, and lets go the sheet. In the section Fig. 3, M, M, are the channels in the cylinders which receive the clips as they pass over the form.

Having thus fully described the manner in which I combine and arrange the respec-

tive parts of my cylinder printing press, and shown the operation thereof, what I claim therein as new, and desire to secure by Lettesr Patent, is,—

1. The manner in which I combine the two cylinders in my printing press, with their respective platforms one immediately above the other, under an arrangement such as is herein described, by which each of the cylinders is made to take impressions from the forms on the platform to which it appertains, the lower cylinder perfecting the sheet which has been printed on one side by the upper cylinder and forms.

2. I claim the manner of advancing the forms, and of carrying them under the cylinder by the gearing of the toothed wheels on the ends of said cylinders into teeth rising up from the edges of the chase, or frame in which the form is locked up.

3. I claim the manner set forth of constructing the sliding carriages, and of combining them with the platforms, and with the forms sustained thereon; by which construction and combination the form from which an impression has been taken is made to descend, and pass back under the form last elevated, and is itself again elevated and forced forward; the respective parts of this apparatus being substantially the same in construction and operation with that herein described and represented.

JASON L. BURDICK.

Witnesses:

THOS. P. JONES,

LEM WILLIAMS.