

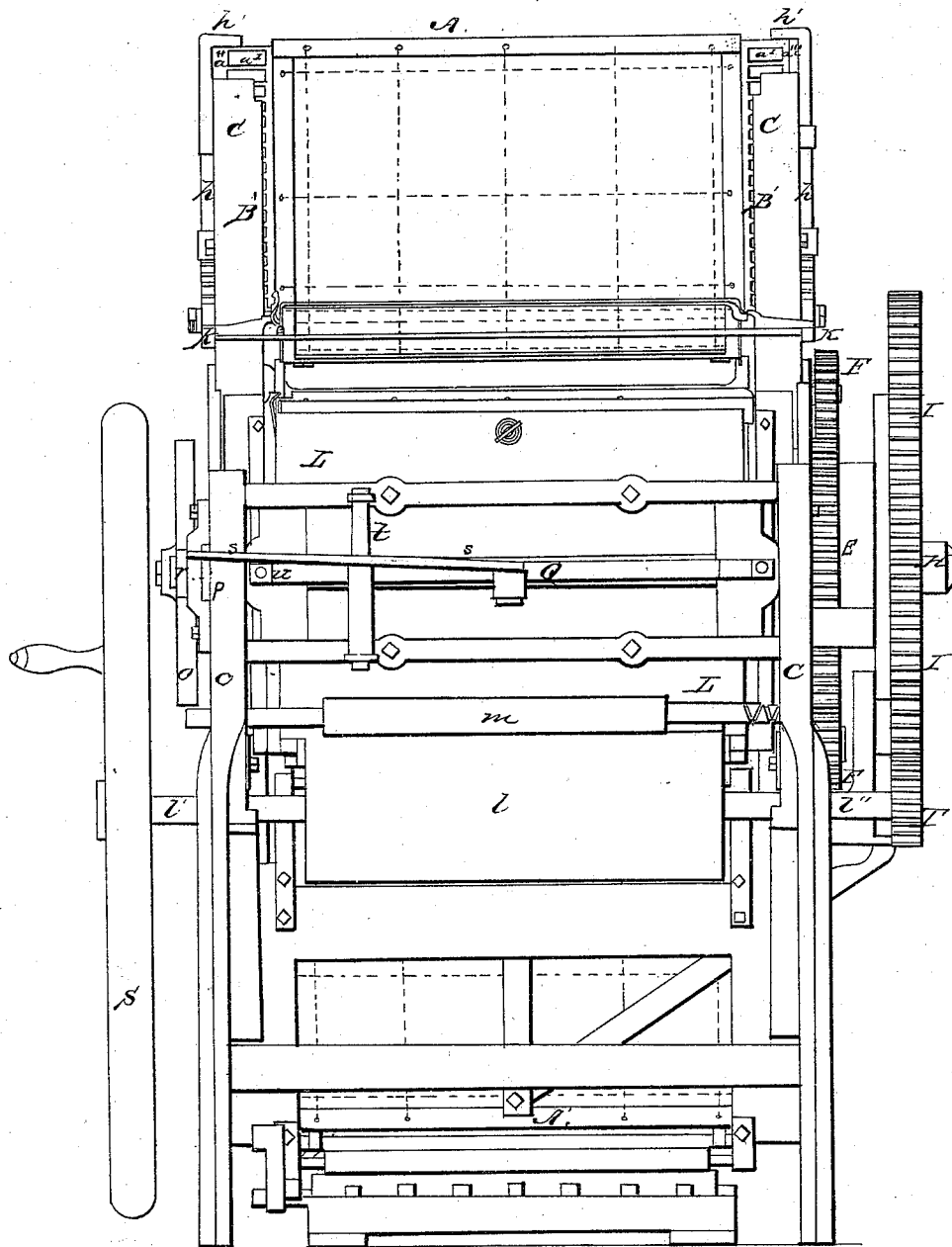
*J.C. Northrup. Sheet 1. 4 Sheets.*

*Friskets.*

*N<sup>o</sup> 3,985.*

*Patented Apr. 1, 1845.*

*Fig. 1.*



*N<sup>o</sup> 3,985. Patented Apr. 1, 1845.*

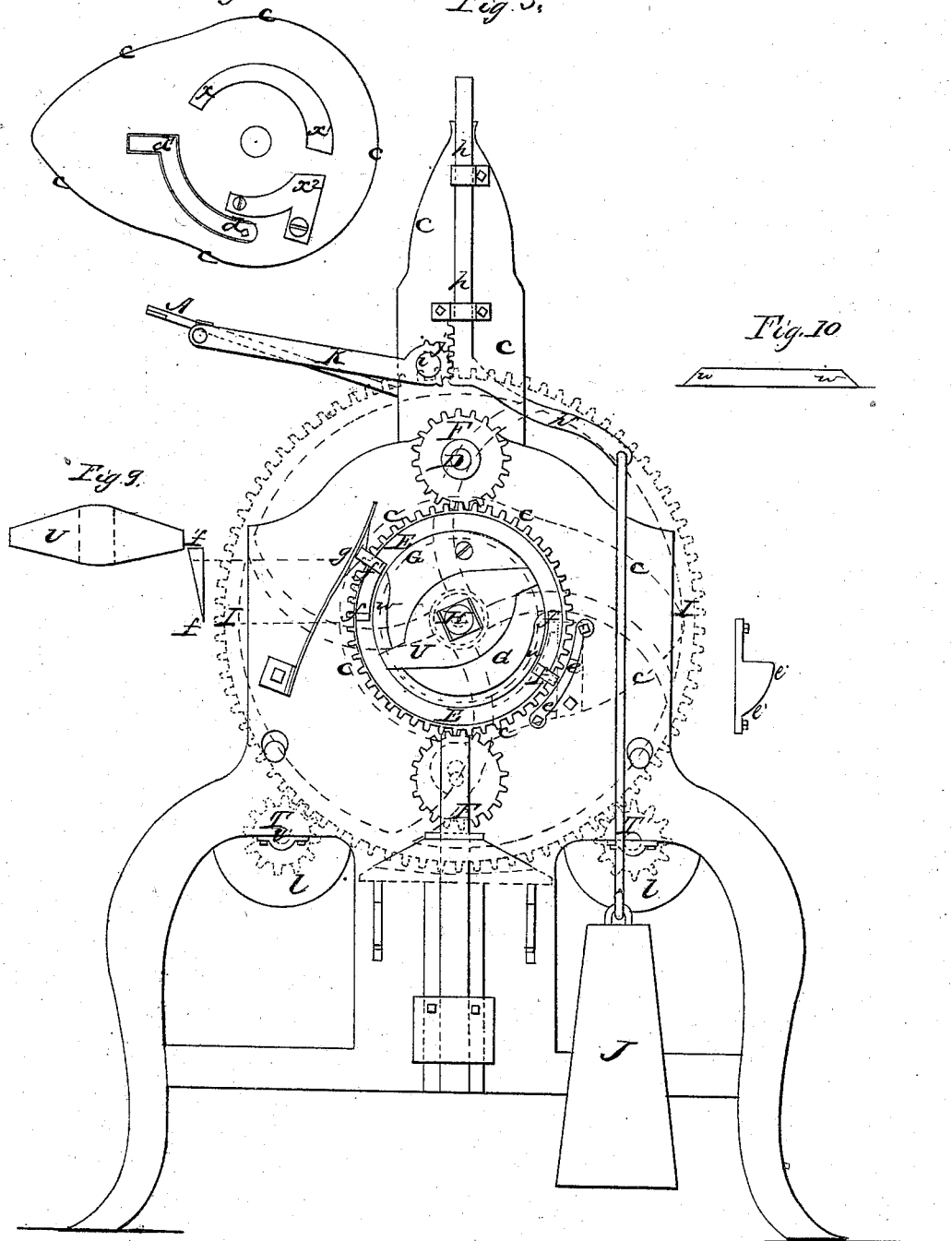
*J. C. Northrup. Sheet 3 of 5 Sheets*  
*Friskets*

*N<sup>o</sup> 3,985.*

*Fig. 7.*

*Patented Apr. 1, 1845.*

*Fig. 3.*

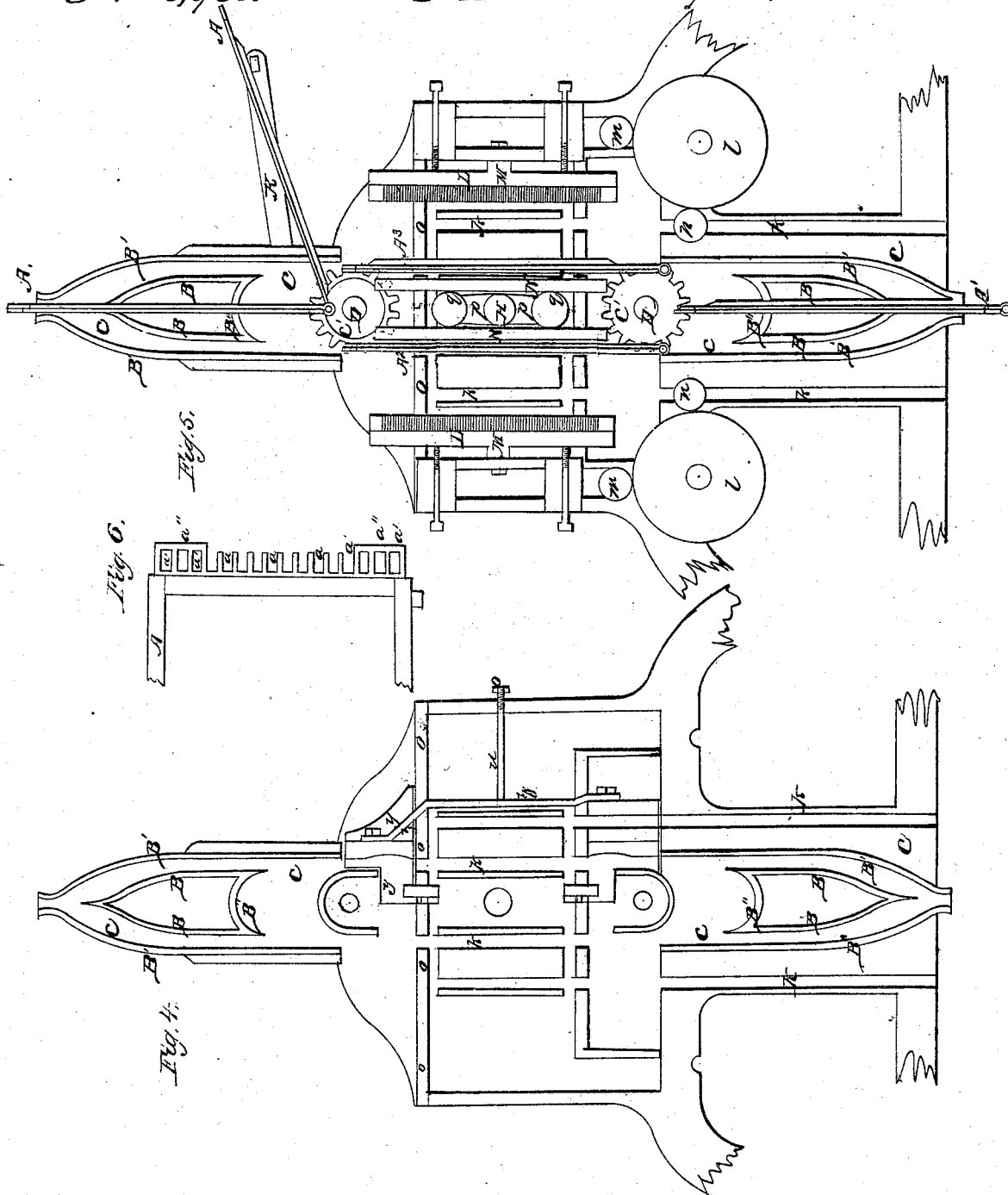


J.G. Northrup. Sheet 4, 4 Sheets.

Friskets.

N<sup>o</sup> 3,985.

Patented Apr. 1, 1845.



# UNITED STATES PATENT OFFICE.

JOEL G. NORTHRUP, OF CORTLANDVILLE, NEW YORK.

## PRINTING-PRESS.

Specification of Letters Patent No. 3,985, dated April 1, 1845.

*To all whom it may concern:*

Be it known that I, JOEL G. NORTHRUP, of Cortlandville, in the county of Cortland and State of New York, have invented certain new and useful Improvements in the Manner of Constructing Printing-Presses; and I do hereby declare that the following is a full and exact description thereof.

In my press I employ four friskets, which are made to traverse up and down, being governed in their movements by suitable guides, and carried by pinions and ratchets, to be presently described. In their passage two of them are, simultaneously, brought opposite to two forms of type situated vertically, between which and two platens they are arrested during the period necessary for taking the impression; the platens being brought up against them by a revolving shaft furnished with arms carrying friction rollers, and the impressions are thereby taken; at this time one of the friskets is situated above the platens, and the other below them; that above, opening for the delivery of a perfected, and the feeding in of a blank sheet.

In the accompanying drawings, Figure 1, is a side elevation of the machine. Fig. 2, is a top view of it. Fig. 3, is an end elevation, in which the black lines show the end of the machine when the parts represented in red lines are removed. Fig. 4, is a view of the inner side of one of the plates, or cheek pieces, which constitutes the end frame of the press; and Fig. 5, is a vertical section of the press from side to side in the line *x x* of Fig. 2.

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

A, is the frisket, which is situated at the upper part of the press, where it has opened to deliver the perfected sheet and receive a new one. A', is that which is below the forms, the sheet within which has received an impression on one side, and is to receive an impression on the opposite side at the same time that the sheet on the one marked A, is receiving an impression.

A<sup>2</sup>, A<sup>3</sup>, Figs. 2, and 5, are the friskets that are situated between the forms and the platens.

B, B, are projecting ledges on the inner sides of the end, or cheek pieces, C, C, of the frame, and B', B', are similar ledges on the

edges of said cheek pieces. The ledges, B, B, may rise about half an inch, and those marked B', B', about an inch from the face of the plate; this difference, however, is not essential; B'', is a semicircular continuation of the ledges, B, B, the use of which will presently appear. These ledges serve as guides in the passage of the frisket. One end of one of the friskets is shown as detached from the machine in Fig. 6.

*a, a, a*, are teeth into which small cog wheels take that carry the friskets around. The teeth, *a', a'*, are connected by a plate, *a'', a''*, which forms a support to the friskets in a part of their circuit. The teeth, *a, a*, do not project so far as to touch the ledges, B, as they have, in traversing, to pass back and forth over them. Each frisket consists of two parts, hinged together, one of which falls to deliver and receive a sheet; and it is that half which does not fall that has the teeth, *a, a'* upon it; this half being widened out for that purpose.

C', C', are the toothed wheels that carry the frisket, taking into the teeth, *a, a'*, at either end. The shafts, D, D, of these wheels are made to revolve by the toothed wheel, E, Fig. 3, which gears into the wheels, F, F, on the said shafts, each of which shafts, therefore has three wheels on it; namely the two, C', C', that move the friskets, and that, F, by which they are made to revolve. The wheel E, has no center, but is a hoop received under a circular plate, G, the inner edge of which is shown by the dotted lines. This wheel is to work intermittingly, as it must remain at rest while the impressions are being taken.

The red line, *c, c, c*, is the outline of a cam, the periphery of which is so formed as to raise and depress the inking rollers so as to pass them over the forms at the proper time. The arrangement of the inking apparatus does not differ from that in general use, and is adapted to presses in a variety of forms. The cam, *c, c, c*, on the main shaft, H, of the machine, immediately under and attached to, the large cog wheel, I, I, which carries the shaft, H, intermittingly. Fig. 7, shows the under side of the cam, *c, c, c*; on this there is attached a latch *d, d'*, which is connected to the cam plate *c, c*, by a screw at the end *d*, allowing it some play, and is forced up by a spring at its back; this latch rises, say half an inch, from the inner face of the

plate, and when pressure is made upon its end,  $d'$ , it may be forced down, and be received within a recess on the face of the cam. The latch,  $d, d'$ , is intended so to act as to carry the wheel E, E, intermittingly, causing it to make half a revolution for every revolution of the main shaft;  $e, e$ , is an inclined plane fixed firmly on to the end of the machine, nearly in contact with the wheel E; a lateral view of this piece is given at  $e', e'$ . As the cam,  $c, c$ , revolves, the end  $d'$  of the spring latch is brought into contact with the inclined plane,  $e'$ , and it is thereby forced into the recess on the face of the cam,  $c, c$ ;  $f, f'$ , are two inclined pieces, or stops, in one piece with, or firmly attached to, the wheel E. From the end  $f$ , these pieces rise, as inclined planes, to the end,  $f'$ , which end forms the stop against which the end of the spring latch,  $d'$ , is to engage. In the revolving of the cam,  $c, c$ , when the spring latch is brought into contact with the end  $f'$ , on the left hand side of Fig. 3, it pushes off a spring catch,  $g$ , (which when in contact with  $f'$ , detains it in place,) and carries the wheel, E, around until the latch,  $d$ , arrives on the opposite side when it is forced in by the inclined plane  $e, e$ , which detaches it from the piece,  $f$ , in consequence of which it leaves the wheel E, at rest during the next half revolution, and so on alternately; during the time this wheel is at rest the impressions are taken.

I have said that the friskets are caused to perform their circuit by the teeth of the wheels  $C', C'$ , taking into those,  $a', a'$ , on the edges of the friskets. When the friskets are in the situation of those above or below the forms, the part marked  $a''$ , Fig. 6, is contained between the toothed wheel  $C'$ , and the semicircular ledge,  $B''$ , and it is thereby carried around until the teeth of the wheel  $C'$ , gear into the spaces  $a, a'$ , on the ends of said friskets, which, of course, carries them up and down; the form of the ledges, B, B,  $B', B'$ , being such as to guide them in their course. Each of the friskets consists of two leaves, hinged together, one of which opens, and falls into the position shown at A, Fig. 3, so as to allow of the removal and supply of a sheet. The opening and closing of the friskets are effected in the following manner. At each end of the press there is a sliding bar,  $h$ , Fig. 3, the upper end of which projects over the upper frisket, as shown at  $h'$ , Fig. 1. To an arm,  $h''$ , Fig. 3, at the lower end of each of the sliding bars,  $h$ , is suspended a weight, J, which causes said bar to descend when it is left at liberty so to do.

K, is a frame working on joint pins,  $i$ , on each side of the machine, and upon this frame the frisket A, that is uppermost, when open, is sustained. The frame, K, is furnished with segment teeth that take into

ratchet teeth on the sliding bar,  $h$ , as seen at  $j$ . When the frisket, A, Fig. 1, is being raised to its greatest elevation by the wheels  $C', C'$ , its upper edge is brought into contact with the projections,  $h'$ , of the sliding bolts,  $h$ ; and as the frisket rises, the frame K, and the opening half of the frisket will, by the action of the gearing at  $j$ , be made to fall so as to assume the position shown at A, K, Figs. 3, and 5, allowing of the removal, and feeding in, of a sheet. When the frisket, A, begins to descend within the cheeks C, C, by the revolution of the wheels  $C', C'$ , the weights J, being left at liberty, will draw the bolts,  $h$ , down; and the frame K, with the opening half of the frisket that rests upon it, will be brought into a vertical position, with the sheet between its two sides. The semi-revolution of the wheels  $C', C'$ , brings the descending frisket, A, and the ascending frisket,  $A'$ , into the position for taking an impression, as at  $A^2, A^3$ , Fig. 5, when their motion is arrested, in the manner already described.

Having thus described the general course and operation of the friskets, and shown two of them as in the position for receiving an impression, I will now proceed to explain the arrangement and operation of those parts concerned in giving such impression. What may be called the beds of the press are seen at L, L, Figs. 1, 2, and 5; these consist of two flat plates placed vertically, and fixed stationarily in place, by suitable set screws. Against these beds are placed the forms of type, M, M. N, N, are the two platens, which are to be covered with blanketing; these, in Fig. 2, are shown in the position in which they stand when impressions are about being taken, embracing the friskets  $A^2$ , and  $A^3$ , between them. In the section, Fig. 5, they are shown at their greatest distance from the friskets and forms. When so situated the inking takes place by the inking carriage carrying inking rollers up and down on the face of the type;  $k, k$ , are grooves in the cheek pieces that guide the inking carriage and rollers;  $l, l$ , are the two large distributing rollers;  $m, m$ , the small, vibrating rollers, and  $n, n$ , those that are attached to the inking carriage, and ink the type, all of which, as before remarked, are constructed, and operate in a manner well known. The platens are sustained, and slide back and forth, on projecting bars, or ledges,  $o, o$ , in one piece with, or firmly affixed to, the cheek pieces, and as the platens move toward the type they carry the friskets,  $A^2$ , and  $A^3$ , with them, the upper projecting plate  $a''$ , Fig. 6, of the friskets resting, also, on the ledges,  $o, o$ , the wheels  $C', C'$ , being then at rest, and in a position which allows the friskets to leave and to be returned to said wheels, as seen in Fig. 5. The platens are forced

against the type by arms, *p, p*, on the main shaft carrying friction rollers, *q, q*, at their ends where they bear on the backs of the platens; these arms extend out from the main shaft, *H*, of the machine, and the respective pairs being in a right line with each other, operate simultaneously on the two platens, the arms, *p, p*, acting and reacting together so as to produce the required motions.

After the platens have been forced out by the arms, *p, p*, and the impressions have been taken, they are carried back in the following manner. *O*, Fig. 8, is a cam attached to the end of the shaft, *D*, that carries the upper frisket wheels, *C'*; this cam is on the opposite end of the machine from that shown in Fig. 3, where it acts upon two friction rollers, *r, r*, affixed to two slides, *P, P*; which slides act on two levers, *s, s*, that force the platens in, after an impression has been taken; *t, t*, are the fulcrum of these levers.

*Q, Q*, are bars that are attached to the ends of the platens by sliding rods, *u, u*, on the ends of said bars, and the pressure of the friction rollers on the ends of the levers will, consequently, force the platens back, by the cam, *O*, passing into a position the reverse of that shown in Fig. 8; the depressions, *v, v*, at the ends of the cam *O*, are to steady it during the time it is to remain at rest.

In Fig. 4, *y, y*, is a sliding piece that rests upon the ledge, *o, o*, there being a similar sliding piece on the opposite side, and at each end of the machine, but not shown in the drawings.

*z, z*, is a bar to which the ends of the bar *Q, Q*, are attached by the rods, *u, u*, there being four such bars as that shown at *z, z*; from the lower ends of these and from the sliding pieces, *y, y*, metal attachments are made to the backs of the platens; this particular form of attachment is not, however, important, but it is that which I have used.

The main shaft, *H*, which carries the arms that force the platens forward, must have an intermitting movement, while the large cog wheel, *I, I*, has one of continued rotation. The driving shaft, *L'*, upon which is affixed the fly wheel, *S*, carries one of the ink distributing rollers, *L*, and this has on its end, *L''*, a toothed pinion, *T*, that drives the wheel *I*. The wheel *I*, carries the pinion *T'*, Fig. 3, on the shaft of the other distributing rollers, giving to the inking apparatus the required motion. The wheel *I*, is not permanently attached to the shaft *H*, but is on a cylindrical part thereof, and when unclutched revolves upon it, and may, therefore, leave its shaft at rest, while its own motion is continued. The clutching and unclutching of this wheel *I* effect in the following manner.

*U*, Fig. 3, is a clutch piece which is as thick again in the middle as it is at its ends, being in the form shown at Fig. 9, when seen edgewise; it fits on a square on the shaft *H*, but in such manner as to admit it to rock endwise, so that one end may be depressed while the other is rising on an inclined plane, or passing over an elevated piece.

*w, w*, Fig. 3, is a piece which projects up, say to the height of half an inch, from the stationary plate, or end of the machine, *G*, from which the inclined pieces, *f, f*, also, rise; but the piece, *w, w*, is within the circle of the pieces, *f, f*, and has an action entirely independent of them. The piece, *w, w*, is inclined at its two ends, as shown in Fig. 10, which may represent this piece opened out; on the inside of the cam, *c, c*, Fig. 7, there is a curved, projecting piece, *x, x'*, rising from its inner face, like the piece, *w, w*, on the end of the machine; at the end *x*, this piece is inclined, like the two ends of the piece *w*, but at its end *x'*, it terminates in a line perpendicular to the cam; *x<sup>2</sup>*, is a thin plate constituting a spring piece, which may be depressed; its intention is merely to hold the end of the clutch piece, *U*, steady when in contact with the end of *x'*. While it is in this situation, the wheel *I*, which is attached to the cam *c, c*, will carry the shaft *H*, around, and the impression will be taken by the action of the arms, *p, p*, on the platens; but when the opposite end of the clutch, *U*, is brought into contact with the piece *w*, the clutch will be raised from the stop, at *x'*, the shaft *H*, will consequently, remain at rest while the wheel *I*, revolves upon it.

I have in the accompanying drawings represented my machine as having the forms placed vertically, and as making two impressions simultaneously; but where this is not desired, the form may be placed horizontally, the four friskets be carried in the same manner with that herein described, and the impressions taken on one side of a sheet only, the other arrangements being substantially the same as those set forth, with such modifications as the change of position will require.

Having thus fully described the manner in which I construct my improved printing press, and shown the operation of the respective parts thereof, what I claim therein as new, and desire to secure by Letters Patent, is—

1. The manner in which I have constructed, combined and arranged the friskets and the parts by which they are made to traverse through the machine, as set forth. I do not claim the using of four friskets as in itself new, but I claim the manner and combination in which I use them, which are essentially different from any heretofore adopted; and these I claim whether the form, or

forms, of type be placed vertically, or horizontally, and whether two impressions, or one only, be taken at the same time.

2. I also claim the manner of combining  
5 and arranging the parts by which the power is applied to the platens, through the intermediate of the revolving shaft, H, which is

made to operate intermittingly, and to carry arms that bear upon the backs of the platens, as herein set forth.

JOEL G. NORTHRUP.

Witnesses:

THOS. P. JONES,  
WM. BISHOP.