J. L. Kingsley. Sheet 1. 2 Sheets.

Printing Press.

No. 1394 Patented Oct. 31. 1839.

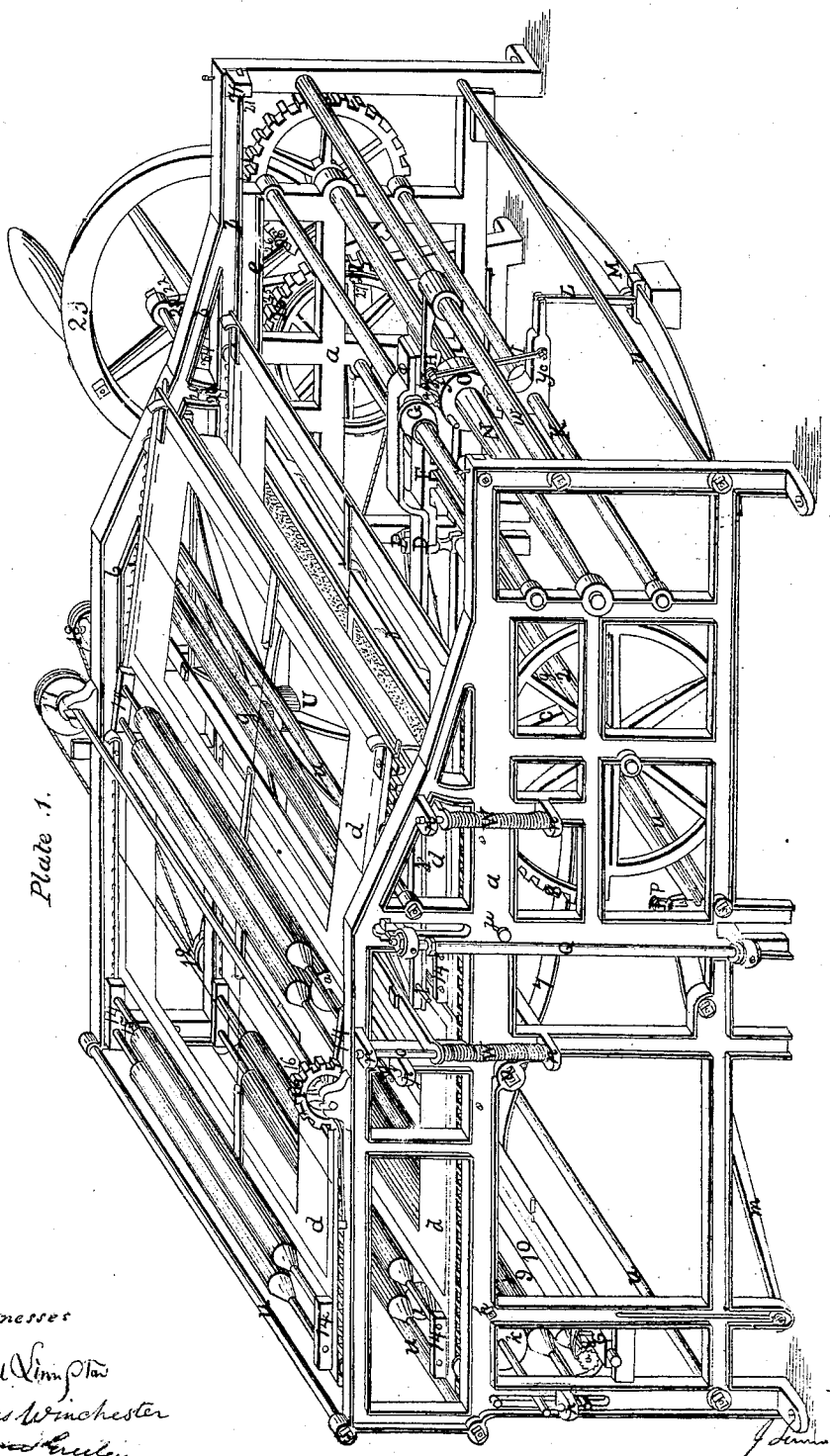

Plate 1.

Witnesses

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Jonas Winchester

Horace Kinsley

Inventor

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J. L. Kingsley. Sheet 2. 2 Sheets.

Printing Press.

No. 1394 Patented Oct. 31. 1839.

Plate. 2.

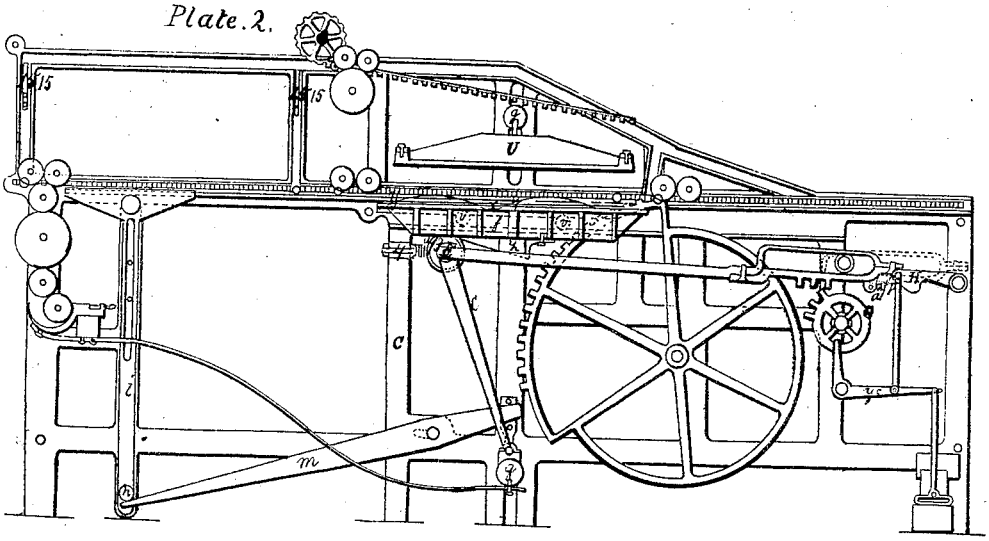
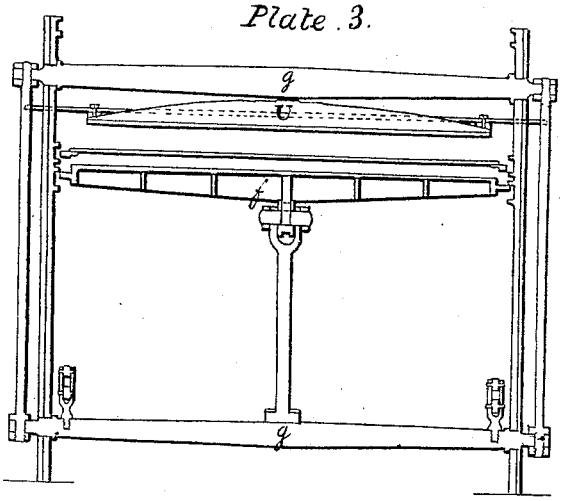


Plate. 3.



Witnesses

Alfred Livingston

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Inventor.

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UNITED STATES PATENT OFFICE.

JOHN LEMUEL KINGSLEY, OF NEW YORK, N. Y.

IMPROVEMENT IN PRINTING-PRESSES.

Specification forming part of Letters Patent No. **1,394**, dated October 31, 1839.

To all whom it may concern:

Be it known that I, JOHN LEMUEL KINGSLEY, of the city, county, and State of New York, have invented a new and useful Improvement on the Bed and Platen Power-Printing Press, (or Machine;) and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Plate I is a perspective view, Plate II a longitudinal elevation, and Plate III a transverse section.

The nature of my invention consists in providing a set of changing motion or self-adjusting and self-gearing friskets and a mode or modes of using them as well by the arrangement and construction of the friskets themselves with the toothed rack and friction-wheel as the moving them in grooves and on projecting or side railways, the changing motions being produced by the frisket-rack gearing with, at proper times, the toothed sector-wheel and the toothed wheel on the top of the press; also, the raising of the friskets from the lower to the upper horizontal railway by the elevators, by the various operations of which the friskets are so moved as to replace one in the last position of the other alternately.

In order to enable others skilled in the arts to make and use my invention, I will proceed to describe its construction and operation, which are as follows:

PART I.—CONSTRUCTION AND OPERATION OF PARTS.

Section.—1. *Of frame.*—I provide a frame consisting of two sides and several rods or bolts which extend from one side to the other and bind the two sides together by means of nuts on the outside of sides. These sides, being marked *a* in the annexed drawings, may be formed in such shape and proportion as there laid down, provision being made for the bearings of the several journals, slots for the cross-beams, inking apparatus, &c., and projections, as *n*, to hold the spring-rods in their places and, as *p*, to hold the nibs of the changing rollers. On the inside of these sides of frame are formed the grooves and projecting railways on which the friskets are moved, (see *b*,) as well as the one on which the bed moves *e*, the several bolts or connections being marked *u* in the drawings. (See Plate I.)

Section 2. *Of bed.*—The bed (marked *f* in drawings) is a leveled flat surface of such thickness and so braced on its back as to give it sufficient strength to withstand the pressure which is applied to the inclined plane or wedge *z* on the center of its back or under side. At the ends of the bed are projections, as *x*, for the arched springs, as *y*, to rest on, and in these projections are put the pins or journals of the friction-rollers, which rollers are *v* and move on the rail *e* of frame, while the bolts *w* pass through the sides of frame into the bed to keep the latter in its place when the machine is in operation, and which may be drawn out so as to let the bed move from under the platen in order conveniently to take off or put on a form of type.

Section 3. *Of the platen.*—The platen U is a flat surface on its under side. It is placed immediately over the bed and its back or top is braced up to give it strength when the pressure bears on the center. Attached to the platen are bars, as V, which run across and extend through the sides of frame and round the rods of the springs *o* and resting on the springs W, by which the platen is raised after it has been lowered by the compressure. In each end of the platen are the bent pins, (one in drawings,) which press on the frisket and cause it to descend with the platen, as well as bearing on the arched springs *y*, which serve to raise the frisket to the level of the railway or where it was before the compression.

Section 4. *Of compress-frame.*—The two cross-beams *g*, with the side rods Q, form a frame or connection round the platen and compress machinery placed transversely with the sides and extending outside of the same through slots, which keep the transverse frame in its place and prevent its moving any other way but straight up and down, the upper cross-beam having in its center a pin, which conveys the pressure to the platen and by which it is carried down, while the ends have each a hole through to receive the side rods, which are kept in their places by screwing a nut and counter-nut on the side rods, so as to confine them. The lower ends of the side rods are like the top and have

like connections with the ends of lower cross-beam. This lower cross-beam also has the small standards P, with slots in the top to hold the ends of the levers *m* of the elevators, as well as the standard-lever C, which is secured by caps over side journals to the center of the beam.

Section 5. *Of compress machinery.*—The compress machinery consists of thirteen parts, which may be named and are known by their references to the drawings, as follows: The standard lever or C, the friction-roller B, the connecting-rod D, the toothed rack of connecting-rod F, the friction-roller G, the toothed sector-wheel O, the bent lever *yc*, connector I, pawl H, connector L, spring M, the bolt E, pins F and H of the drawings, and are placed as follows: The standard lever being fastened, as before described, to the cross-beam, extends up with a slot or a pair of ears at top, in which the friction-roller is held when it rolls on the inclined plane of bed. This roller is constructed with small flanges rising a little above the surface of the plane, which keep it from slipping off sidewise. One end of the connecting-rods has ears similar to those on the standard and passing outside of the same, when the bolt may be run through the two, including the friction-roller, which runs freely on the same, while the whole forms a compound joint to work, as the standard is brought to or thrown out of a perpendicular line by the movement of the connecting-rod. The other end of the connecting-rod is formed with a slot for the friction-roller G to work in. This roller, being made with journals to work in the sides of frame, has shoulders fitted to the connecting-rod on the edges of the top of slot, which act as a guide to the connecting-rod while it is moving, the connecting-rod being moved by the toothed sector-wheel gearing into a rack placed directly under the slot in the connecting-rod for the friction-roller. Directly beyond the slot is a projection or pin F on one side, which is caught by the pawl H about the time the sector is relieving the rack and holds it until the last tooth of the sector has passed, when a similar pin, as H, on the side of the sector strikes the bent lever on the curved end, which raises (by the connectors) the spring, and the pawl at the same time relieves the connecting-rod, which flies quickly back, where it is again geared with the sector. 4 represents a bar or spring running from one side to the other, which prevents the standard lever from going too far back when relieved.

Note: I have not so fully described the compress machinery as it might have been, for, although it is original, it is not as good as the toggle or knee joint in general use, which I have applied in the usual manner in my large machine, and can recommend.

Section 6. *Of inking apparatus.*—The inking apparatus is represented by the following references to the drawings, all of which are constructed and operate in the usual manner known and used in other machines: 7 is a simple lever running from the under side of the ink-trough to the under side of the lower cross-beam *g*, by which it is raised and lowered, so as to vibrate or rock the trough on its journals and make the roller 9 in the trough strike the roller *j* once each time the compress is made. 6 is a part of the ink-trough, and forms its journals, which work in sides of frames 8 in the ink-trough, in which 9 is a roller lying in the ink, it being scraped to an even quantity by the knife 10. This knife, being adjusted to fit the surface of the roller *j*, receives the ink from 9 and carries it to *k*, which is a large roller moving circularly and vibratorily by an endless screw on the end, fitted to a nib, which produces the vibratory motion. *k* moves circularly both *j* and *l*. This last passes the ink to the rollers of the friskets, which give it to the type, being previously more thoroughly distributed by these last coming to *q* for that purpose. *q* is a roller constructed and operating like *k*, its position being over the platen, while that of the other parts is at the end of the machine.

The driving or moving apparatus is partly gearing or toothed wheels, and partly bolts and pulley-wheels marked and known as follows in the drawings:

Section 7. *Of driving motions, &c.*—A sort of frame or brace, as 22, is used to support the driving-shaft, on which is placed the fly-wheel 23, as well as the pinion or driving-wheel 24, which gears with and drives 25, and 25 in like manner gears with 26. The wheel 25 is on the shaft 2, which moves the sector-toothed wheel of frisket motion, while 26 is on the shaft 2 and carries the sector-toothed wheel of compress machinery. 27 is a grooved pulley, and carries a line to the triple pulley 12, which carries two other lines—one to the pulley 18 on the roller *q* and one to pulley 17.

Section 8. The friskets and their movers may be known as follows: There are four friskets, which are constructed and operate alike, (see *d*,) being a light frame, on the side of which is a rack consisting of pins or teeth, in which a wheel may mesh or work either from the top or under side to move the frisket along. Outside of the rack are formed four journals, one near each corner of frisket, on which the friction-rollers work freely. These rollers serve as guides, running in the grooves and on the ways, as well as for the purpose of moving the frisket more freely. These friction-rollers of friskets are constructed so as to fit the diameter in the groove formed by the rails, and with flanges rising on the sides or front edges of the rails, which fit said edges in operating. Each frisket also carries its own inking-rollers with it, which revolve freely on their journals placed in boxes or bearings on the friskets, as 14. Each has also two registering-points to put the sheets on so as to make register. These points are made in the usual known manner. Each of these friskets in the operation assume the

following positions alternately, viz: First, where the paper is laid on; second, where the impression is taken; third, where the ink is taken; fourth, the elevation; fifth, its return movement; sixth, its rest over the platen; seventh, its fall down the inclined way to the horizontal or to its first position. The friskets are carried from the first position to the second by the toothed sector-wheel (see 3) gearing with the rack. This sector is one-third, more or less, of a circle, having just as many teeth as will carry the rack of friskets its own length, the one which was in position second having been pushed to position third by the end of the one driven by the sector. At position third the inking-rollers get the ink from the train of rollers of inking apparatus. Here it rests about one-eighth of the time of a sheet, when the elevators raise it to the upper groove or horizontal way. These elevators (see *i*) are made by using an upright with an arm or projection on each edge on which the frisket may balance or keep in a horizontal position while being elevated. The upright part has a long slot fitting a pin inside of frame near the top and a pin fitted to a slot in the frame near the bottom. These pins and slots keep the elevators from moving any other way than perpendicularly to the proper distance. At the bottom is a pin projecting inside and resting on or fastened to the levers (see *m*) by which they are raised. These are simple levers centered in the frame and moved with the compress machinery by the blocks P, forming a part of lower cross-beam *g*, as hereinbefore described. On being elevated the frisket-rack gears with the toothed wheel (see 16) on top of press, which moves it the length of the rack and leaves it at position 6, or over the distributing-roller *g*. In coming to this position it has pushed the one last there down the inclined way to the first position, or where it may again receive a sheet and be geared by the sector. 16 is a small toothed wheel, made to fit the teeth of the rack. In passing down the inclined way the side of frisket passes over a check-spring (see † in drawings) to keep it from going down too rapidly. The grooves or ways on the two sides of frame are both alike and may be shaped in the following courses which will guide the frisket properly: first, a horizontal rail from end to end of press, except two openings, just the size of the friction-rollers; at position second, through which said rollers can pass, the opening serving to guide the frisket in a parallel line when it is brought down to the form by the platen. Directly over this is a similar rail running over positions 1 and 2, placed so as to form a groove between the two just fitting the diameter of the friction-roller. The upper rail keeps the frisket from raising off the sector, but is not wanted at position third. Directly over this position are two parallel rails far enough apart to guide the outside of the friction-rollers as they ascend to the upper horizontal way. The upper horizontal ways are like the lower, except they are placed at positions 5 and 6. The lower rail has openings for the friction-rollers to pass through. These openings are filled by springs, which form out the rail when the frisket is up, while they give back to let the friction-rollers pass up into the groove. Position 7 is formed by rails and a groove, as last described, except it is on an incline from the upper to the lower horizontal groove by which the frisket regains position 1, by the one end running down until the incline terminates in the lower horizontal way, and runs to the end of it, where the journals of friction-rollers on one end form centers, while the other end describes part of a circle and falls to the lower horizontal way, being checked by springs from falling too hard.

Section 9. Difference of my machine from those of Adams and Tuft, being those it nearest resembles.—My machine differs from others in use in the following particulars, viz: in the construction of the frame, so as to make use of the railways, as described, which guide the friskets; in the use of the standard lever and friction-roller moving on the inclined plane, instead of the toggle or knee joint, (as a compress apparatus,) and in the means used to straighten the compress machinery, being the toothed sector-wheel and toothed rack. It also differs by the fixtures, so as to allow the platen to rise and fall to take the impression, instead of pushing the bed, with the form on it, up to the platen for that purpose. The frisket is differently constructed by the introduction of the rack by which it is moved, as well as its connectors or movers, and the whole operation of being carried by the sector under the platen and down to the form with the platen, and raised up again by the arched springs drawing the sheet of paper off the ink on the type when printed. The construction of the elevators and the manner of operating them, with the return-movement and down the inclined plane.

PART II.—OPERATION OF THE WHOLE MACHINE.

I will proceed to describe the operation of the whole machine more minutely, in order to enable a printer to use it, (that being a different business from building such machinery.) Start with a sheet on frisket at position 1, which will immediately move to position 2, pushing the one at position 2 to position 3. While the last change is taking place the one at position 5 has moved to 6, and the one at 6 to 7, and that (7) to position 1. In short, when one frisket moves they all move the same distance, more or less. As soon as the friskets have changed, as above described, one in place of the other, the sector of compress machinery will bring the platen to its bearing and print the sheet laid on, during which time a sheet must be laid on the other frisket at position 1, repeating it as each frisket comes to that position. The sheets

may be taken off while the frisket is at position 6 and put on a board or table provided. As each frisket passes over the form the inking-rollers ink the type, they having been supplied with and distributed the ink at the inking apparatus, as usual in other machines.

PART III.—CLAIM.

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

The method of circulating the friskets over the platen and back under the same by making two level railways, one above and the other below the platen, with an inclined railway at one end connecting them, the whole having grooves for the friskets to move in, and in conducting the friskets over the same by means of the pinion and toothed sector acting on the rack attached to said friskets, and also, in combination therewith, and as necessary to the circulation of the friskets, the mode of raising the same from one level to the other by means of the elevators *i*, the whole being constructed and operating as described.

J. LEMUEL KINGSLEY.

Witnesses:
ALFD. LIVINGSTON,
JONAS WINCHESTER,
H. STEELE.