V. M. Chafee. Sheet 1. 2 Sheets.

Card Printing Press.

No. 26834. Patented Jan. 17. 1860.

Fig. 1.

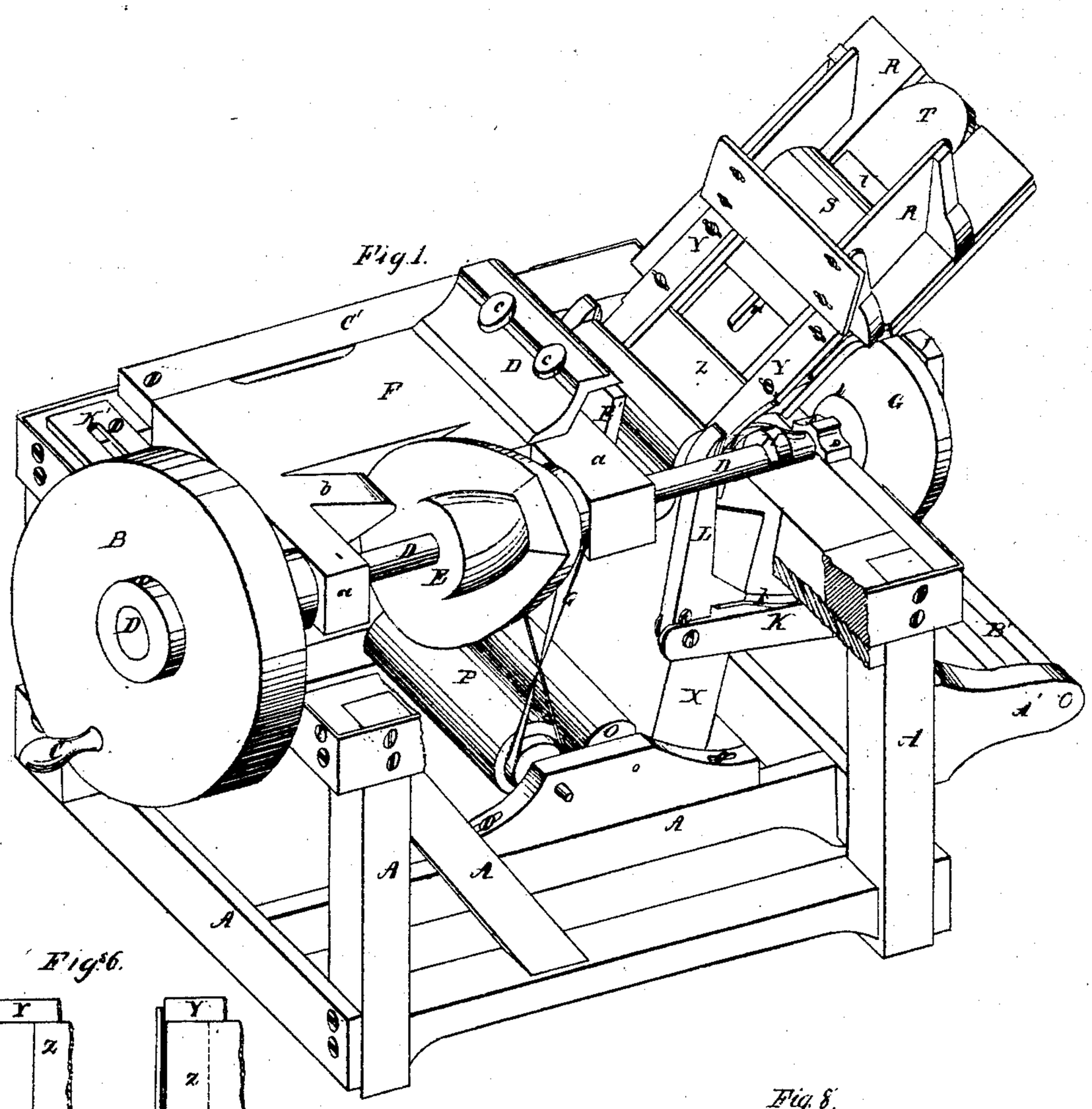


Fig. 6.

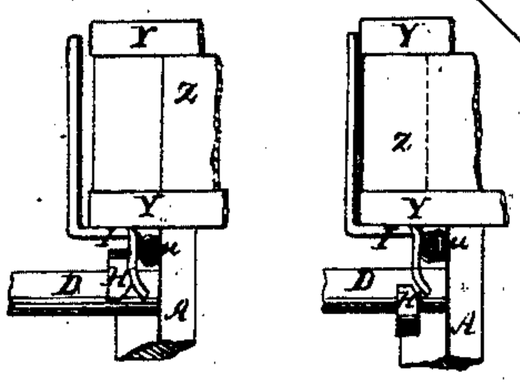


Fig. 5.

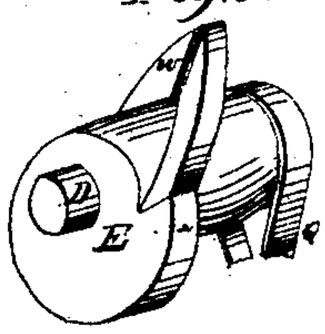


Fig. 7.

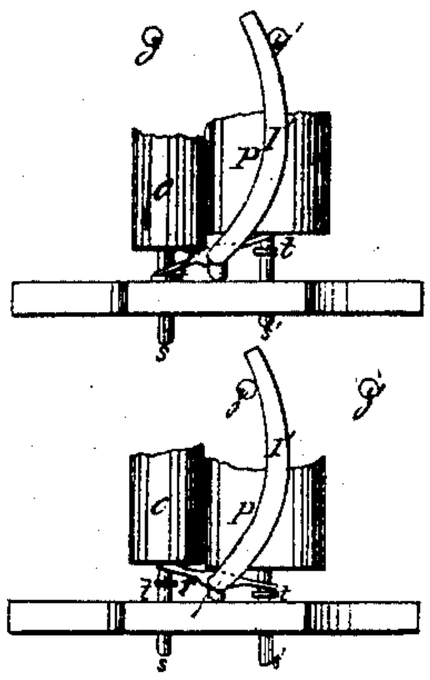


Fig. 8.

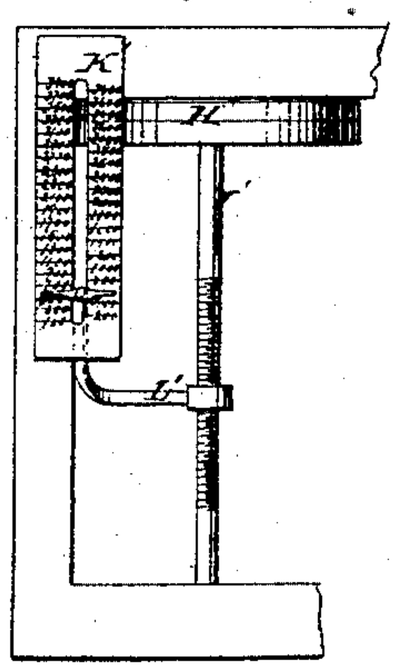
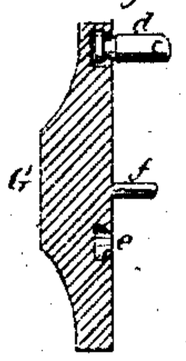


Fig. 9.



Witnesses.

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Chas. F. Jansbury

Inventor

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Sheet 2. 2 Sheets

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Card Printing Press.

No. 26834. Patented Jan. 17, 1860

Fig. 2

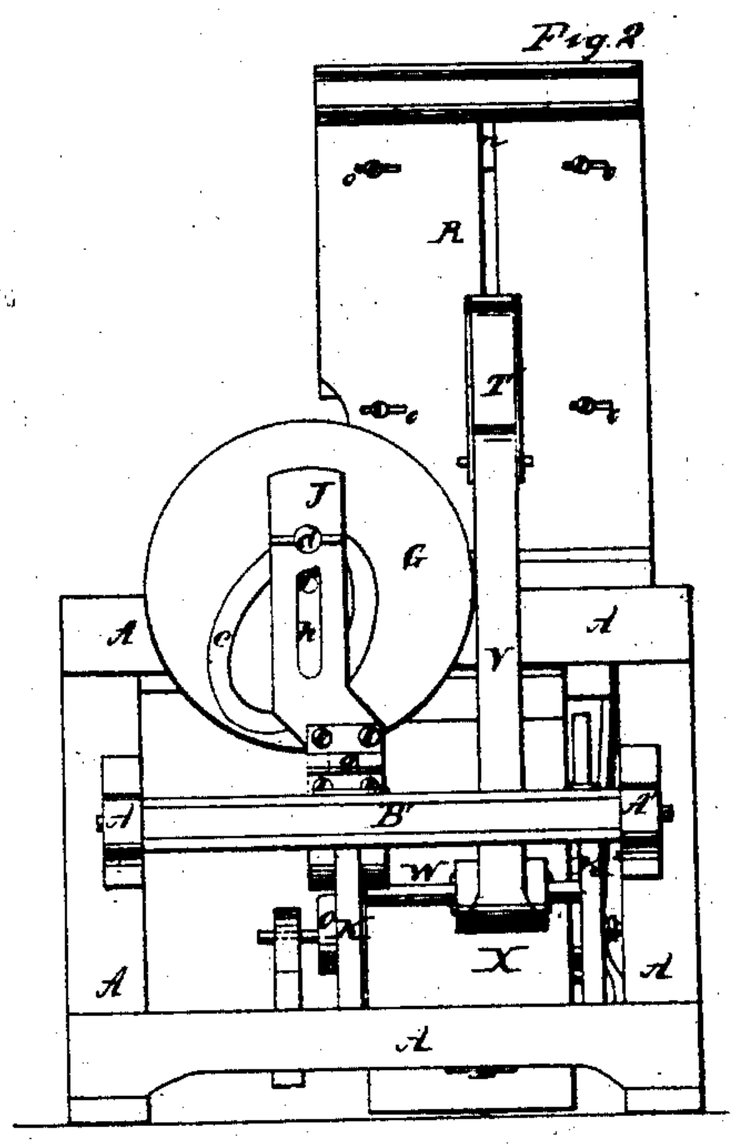


Fig. 4.

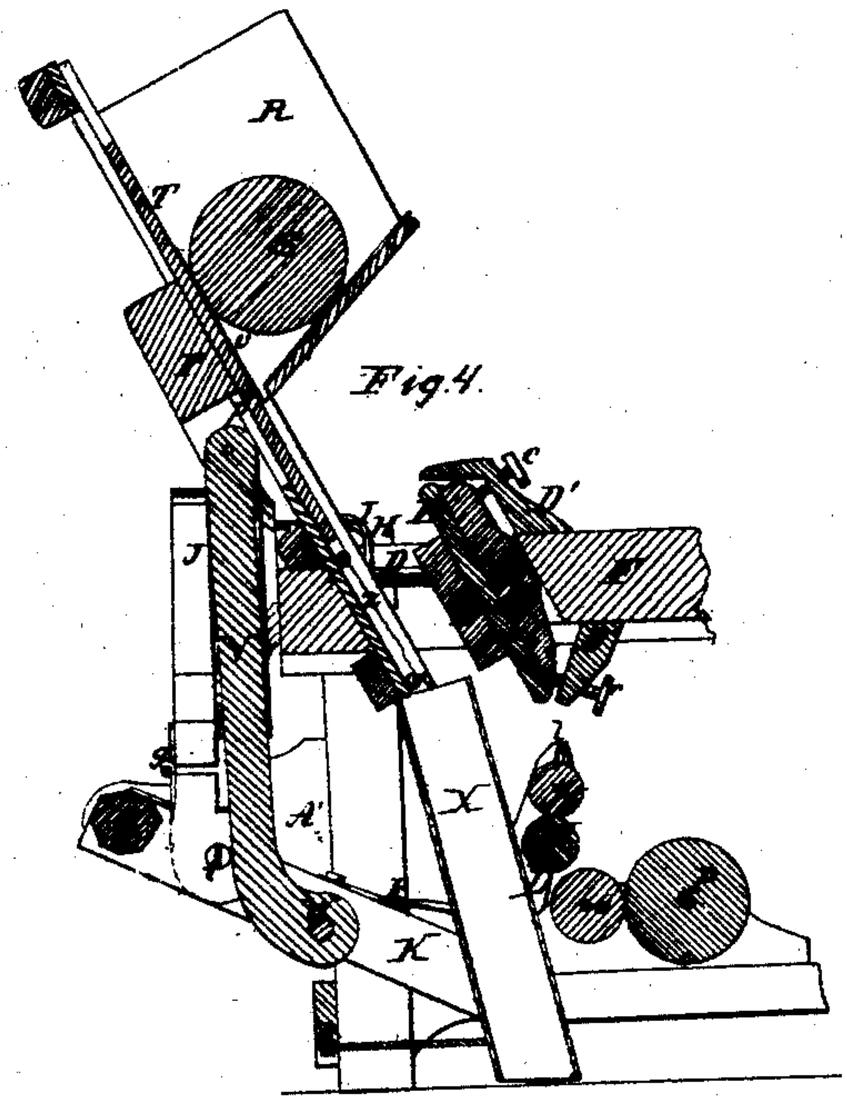
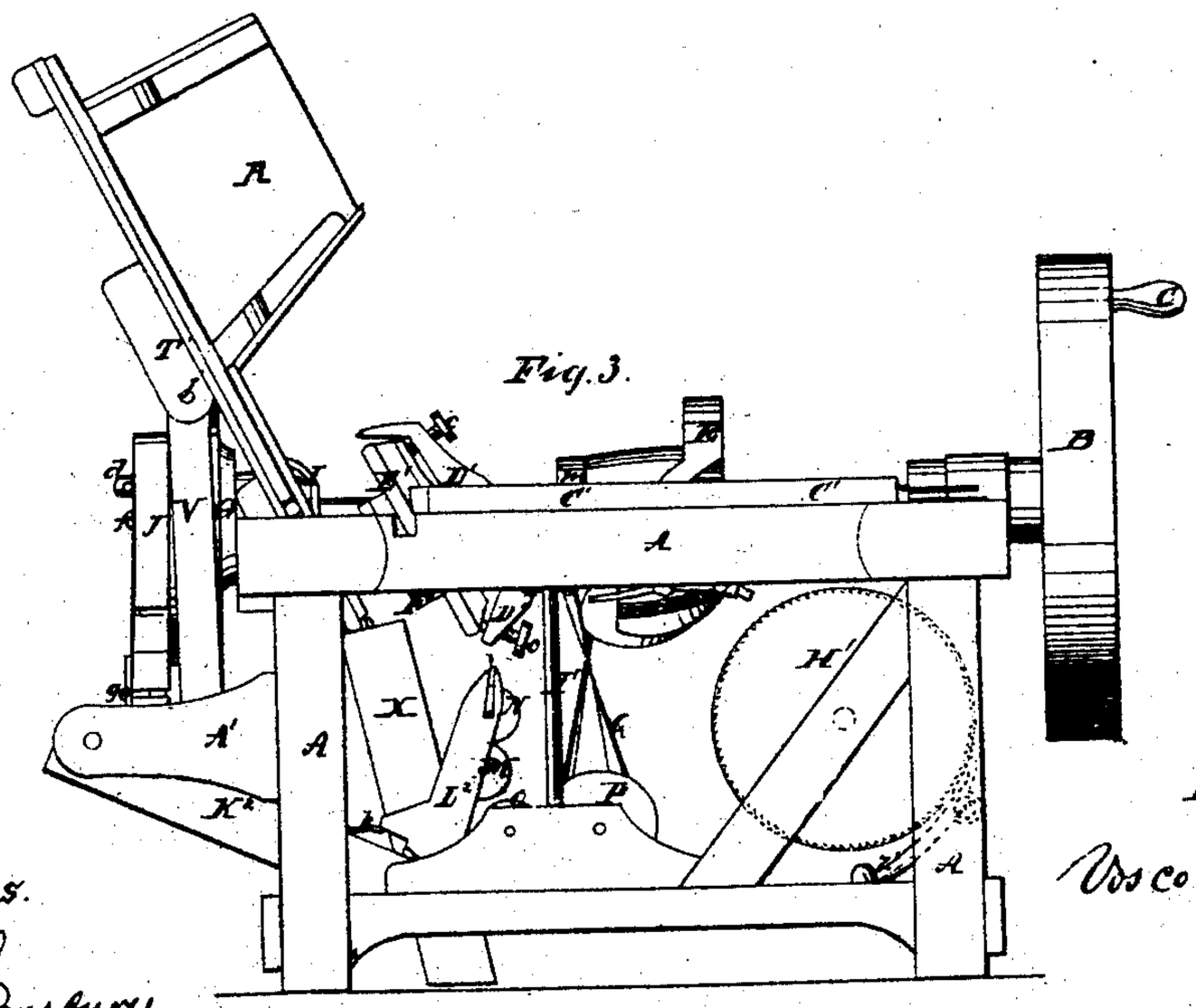


Fig. 3.



Witnesses.
Lewis Parr
Chas. F. Sansbury

Inventor
Vosco M. Chafee

UNITED STATES PATENT OFFICE.

VOSCO M. CHAFEE, OF XENIA, ILLINOIS.

PRINTING-PRESS.

Specification of Letters Patent No. 26,834, dated January 17, 1860.

To all whom it may concern:

Be it known that I, VOSCO M. CHAFEE, of Xenia, in the county of Clay and State of Illinois, have invented certain new and useful Improvements in Printing-Presses; and I do hereby declare the following to be a correct description of the same, reference being had to the accompanying drawings, in which—

Figure 1, is an isometrical perspective view of my improved press, part of the frame work being removed to show the working parts more clearly; Fig. 2, is an end elevation of the feeding end of the press; Fig. 3, is a side elevation of the press; Fig. 4, is a vertical, central, longitudinal section, through the feeding and printing portion; Fig. 5, is a separate view of the main cam. Fig. 6, is a top view of the stop, and its connections, for holding and releasing the cards, showing the stop in both positions; Fig. 7, is a top view of the principal ink rollers, with the mechanism for imparting to them longitudinal reciprocating motion against each other; Fig. 8, is a top view of the apparatus for counting the impressions; and Fig. 9, is a vertical central section of the grooved wheel G.

The same part is marked, wherever it occurs, by the same letter of reference.

My invention relates to the press for printing cards; and consists in the new modes hereinafter particularly described, of feeding the cards, distributing the ink on the rollers, imparting power to the printing apparatus, working the inking rollers, and counting the impressions, the whole together forming a more simple, economical and efficient press for the purpose intended, than any heretofore devised, with which I am acquainted.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation, referring to the drawings, in which—

A marks a stout frame of wood; iron or other suitable material; B marks the main driving pulley on the end of the main shaft; C is a winch or handle for turning pulley B, which may, if preferred, receive motion from any prime mover, by means of a band, or any other well known mode of gearing. The main shaft D, rests in suitable bearings on the top of the main frame A. Near the middle of its length it carries the principal cam E, which drives the sliding frame F, to which the printing apparatus is attached. The cam E is of the peculiar form represented in Figs. 1, 3 and 5, the last being a separate view of it. Its flange *w* is partly transverse, *i. e.* in a plane at right angles to the line of the main shaft, and partly inclined to that plane. It works between jaws *b*, *b*, in the sliding frame F. When the transverse portion is passing between said jaws, the frame F is at rest; but when the inclined portions pass between them, a reciprocating motion is imparted to the frame F, and to the form of types F′ which it carries. Two arms *a*, *a*, projecting from, and forming part of the sliding frame F, move longitudinally on the main shaft D, which passes through them, and serves as a guide and support for one side of the frame F. The other side of the frame F moves in grooved ways C′. On the end of shaft D, is a grooved wheel G, the structure and function of which will be presently described. Between cam E and wheel G, on shaft D, is the segmental cam H, which operates the stop I, (see Fig. 6,) which alternately supports and releases the cards as they are being printed and delivered from the press. The upper end of this stop is kept bearing against cam H by a spiral or other spring *u*. When uncompressed, this spring forces the stop into the position to support a card placed upon the platen Z of the press; but when compressed by the cam, the stop is raised up, so as to allow the card to slip from the platen into the conducting trough X.

Wheel G, on the end of shaft D, (see Figs 1, 2, and 9,) has on its outer face an elliptical groove *e*, which receives the head of bolt *d*. In contact with the face of this wheel, is the hinged and slotted pitman J, which works lever K. This pitman has a vertical slot *h* in it (Fig. 2,), which allows it to play vertically on the pin *f*, which projects from the end of the shaft D. The bolt *d* passes through a hole in lever J, which is confined to it by a removable pin in the end of the bolt. The sectional view in Fig. 9, and the face view in Fig. 2, clearly show the relations of wheel G, bolt *d* and pitman J. It will be perceived that, during a portion of the revolution of wheel G, the pitman J will remain at rest; but when the distance from *f*, to the point on the groove vertically above it, becomes, by reason of the revolution of wheel G, greater

than that from *d* to the top of slot *h*, the bolt *d* begins to rise, and carries with it the pitman J, and the parts with which it is connected, until the distance from *f* to *d* becomes equal to that from *d* to the bottom of slot *h*. In other words, pitman J rises and falls a distance equal to the length of slot *h;* and, when at its lowest point, has an interval of rest equal to half a revolution of wheel G. This pitman is hinged at *g*, so that it can be thrown back out of gear with wheel G. It is pivoted at *i* to lever K, to which it imparts motion. Lever K is attached, at its fixed end, to cross shaft B′. On its free end, it carries spring arm L, which, in conjunction with a similar arm L^2, projecting from lever K^2, supports the journals of the inking rollers M and N. The journals of the upper roller N work in a slot *l*, in arm L. The arms L, L^2, are pivoted to their respective levers K, K^2, but so as to have a very limited motion. They are operated upon by springs *k* which produce a gentle pressure of the inking rollers M and N against the face of the types in the form F′, when they pass across it. The lower roller M, turns in contact with roller O, and this in contact with large roller P. These last two are supported in bearings attached to the side and cross framing, and their journals have longitudinal play in their boxes. (See Fig. 7.) The journals *s*, *s′*, have upon them, just inside of the bearings in which they turn, collars *t*, *t*, against which plays the cross arm *r*, at the lower end of rock shaft I′, for the purpose of imparting alternate longitudinal motion to the rollers O, P, against each other. The roller P runs in an ink trough in the usual way. The rock shaft T′ has an arm upon its upper end, which is operated upon by pins *y*, *y′*, in the lower side of the sliding frame F, and thus the rocking motion is imparted to the shaft. This arrangement and operation is clearly shown in Fig. 7, where the rollers O, P, are shown in both positions.

Between levers K and K^2, runs rod W (see Figs. 2, and 4, which serves as an axis for the lower end of pitman V, the upper end of said pitman being pivoted to the slide head T′, to which, as levers K and K^2 rise and fall, it imparts a reciprocating motion in slot *n*. The slide head T′, has a tenon or tongue upon it, which passes into slot *n*, and serves at once as a guide, and as a means of attaching to slide head T′, the card slide T, (see Figs. 1, 2, and 4.) The card slide T is placed, and moves, in a recess in the back of card box R, and has upon its upper surface a feeding plate U, flush at its upper end, with the surface of the slide, but projecting, at its lower end, above that surface a distance regulated by the screw *p* (see Fig. 4). In the card box R, is placed cylinder S, for the purpose of keeping the cards in close contact with the slide T and plate U. The sides of box R are adjustable laterally by means of the slots and screws *o*, *o*, *o*, *o*, Fig. 2; and a similar adjustment is given to the guides Y, Y, between which the cards pass on their way to the platen Z. The platen is made in the usual way. Just below it is placed the conducting trough X, which carries the cards from the press after they have been printed and released by the stop I.

Attached to the end of the sliding frame F, are the heads D′, D′, above and below it (see Figs. 3 and 4). Through these pass the set or adjusting screws *c c*, which regulate the position of the bed E′, to which the form F′ is attached, in the usual way. The bed is attached to the frame F by a rod running transversely through the brackets G′, and a tenon projecting from frame F. This mode of attachment allows of a slight play in a vertical plane, the degree of mobility being governed by the set screw *c c*. The object of the arrangement is to allow of a nice adjustment of the form to the surface of the platen, so that the pressure shall be equal on all parts of it.

The main ink roller P is connected by a band to flat pulley *m* forming part of the main cam E. The other ink rollers are driven by the friction of their touching surfaces.

On the under side of sliding frame F is attached a dog or pawl *z*, which engages the teeth of ratchet wheel H′. One of said teeth is thus engaged at each back and forth movement of the slide frame. The teeth are numbered so as to count the vibrations of the frame, and the resulting number of impressions made by the press. The wheel H′, in making one revolution, turns the shaft J′ (see Fig. 8) on which there is a screw thread as shown. The arm L′ has on its lower end a collar or nut playing on the screw thread of shaft J′, and on its upper end which projects through the slot in the graduated plate K′, an index *v*. Each revolution of the shaft moves the index one degree on the scale, and thus records the revolutions made by ratchet wheel H′. The weighted pawl *z′*, attached to the main frame, holds the wheel H′ in place, while the pawl *z* is disengaged from it.

The operation of the machine is as follows: The cards to be printed are placed in the box R upon the plate U, and the cylinder S is placed on top of them for the purpose of keeping them in close contact with the plate and slide T. The sides of the box R, are adjusted so as to fit the cards closely enough to prevent lateral play. The same adjustment is given to the slides Y, Y. A supply of ink is placed in a suitable trough below the main inking roller P. Motion

being imparted to the main driving wheel B, by means of the winch C, or other proper means, the grooved wheel G revolves and imparts motion to the pitman V, and slide head T′, with the attached slide T, and plate U. The lower end of plate U is adjusted so as to project above the surface of slide T a distance not greater than the thickness of a single card. The slide T rises until the lower edge of plate U comes above the upper edge of the lowermost card in the pack. The slide then descends, and the projecting edge of plate U coming in contact with the upper edge of the lowermost card, pushes this down through the slot in the lower part of the card box, onto the platen Z, where it is arrested by the stop I, and held till it receives the impression. Simultaneously with the rise of the slide T, the inking rollers M, N, rise and pass over the face of the form F′, the spring *k* applying them with an equal and gentle pressure to every portion of the form. When the blank card descends to the platen, the inclined flange of cam E acts against one of the jaws *b* of the slide frame F so as to bring the form F′ against the card on the platen and give it the required impression. As soon as the impression is made, the further revolution of the shaft D brings the other inclined flange of cam E into operation to retract the sliding frame preparatory to a repetition of the operation. The cam H, as soon as the form is drawn back, presses upon the upper end of stop I, and raises it so as to let the card that has been printed fall into the conducting trough X, which carries it into any proper receptacle. As the sliding frame F slides back toward the wheel B, the pawl *z* (Fig. 2,) engages a tooth of ratchet wheel H′ and moves it the distance of one tooth. Each entire revolution of wheel H′ registers itself on the graduated plate K′ in the manner hereinbefore described; and, the number of teeth in the wheel being known, a perfect account of the number of impressions made can at any moment be read upon the scale. The index *v* can be carried back to the zero point as often as desired, by disengaging the pawls *z z′*, and reversing the direction of the wheel H′. When the inking rollers M, N, reach their lowest point and the roller M comes into contact with roller O, the grooved wheel G is at the beginning of that part of its revolution which leaves the pitman J at rest for half a revolution as hereinbefore described. During this period the rollers M N are revolving in contact with the roller O and receiving an evenly distributed supply of ink. The perfection of the distribution of the ink is enhanced by the double motion imparted to rollers O and P, whereby they have not only a rolling contact but a longitudinal friction upon one another, as before mentioned. The feeding and inking portion of the press may be thrown out of gear at any time by disengaging the pitman J from wheel G by drawing off of the bolt *d* and throwing it back on its hinge *g* as herein previously stated. When the frame F is at the end of its course toward wheel B, it has a period of rest while the transverse portion *x* of the flange of cam E is passing between the jaws *b*, *b*. During this period the inking rollers M, N, pass over the face of the form.

Having thus fully described my invention, what I claim and desire to secure by Letters Patent is—

1. The adjustable card box R constructed and arranged substantially as described.

2. The slide T in combination with the catch or feed plate U constructed and operated substantially as, and for the purpose specified.

3. The grooved wheel G in combination with the bolt *d* and pitman J, all constructed and operating substantially as described.

4. The sliding frame F constructed as described and working in a line parallel to the main shaft.

5. The mechanism described, or its equivalent for the purpose of imparting to the inking rollers a double longitudinal friction against each other.

6. The combination of the ratchet wheel H′, shaft J′, arm L′ and graduated plate K′ in the manner and for the purpose specified.

7. I claim communicating power to a printing press by means of a combination of a cam and sliding frame when the main shaft to which the cam is attached is in a line parallel to the line of motion of the sliding frame substantially as described.

The above specification signed and witnessed this second day of December, A. D. 1859.

VOSCO M. CHAFEE.

Witnesses:
EDW. F. BROWN,
CHAS. F. STANSBURY.