G. P. Gordon. Sheet 1, 3 Sheets.

Printing Press.

No. 7,215. Patented Mar. 26, 1850.

Fig. 1.

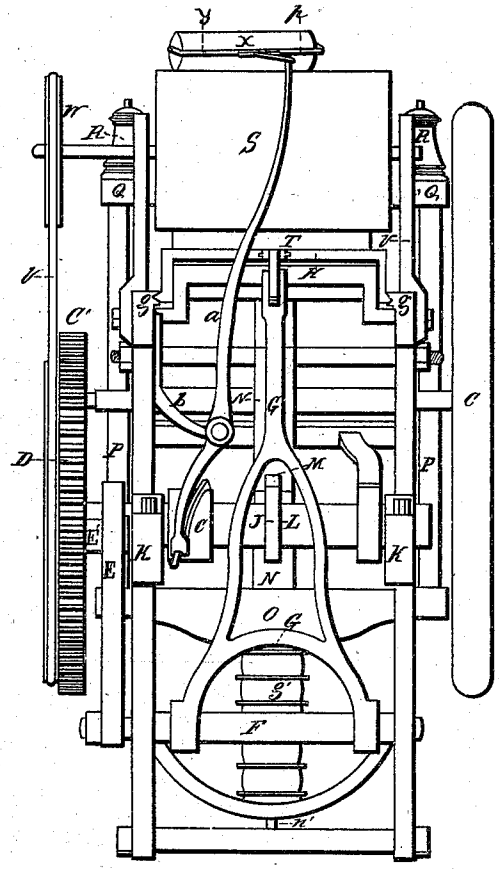


Fig. 4.

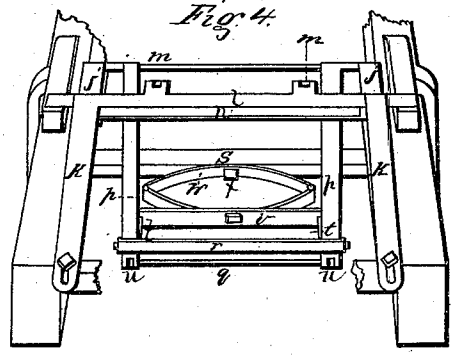


Fig. 5.

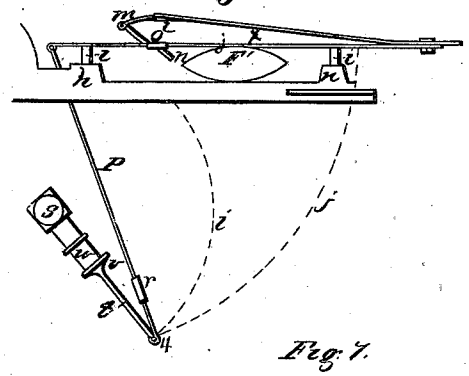


Fig. 6.

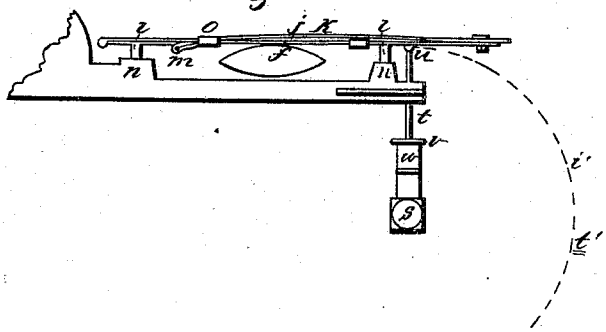
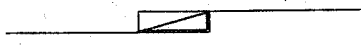


Fig. 7.



Fig. 8.



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Fig. 9.

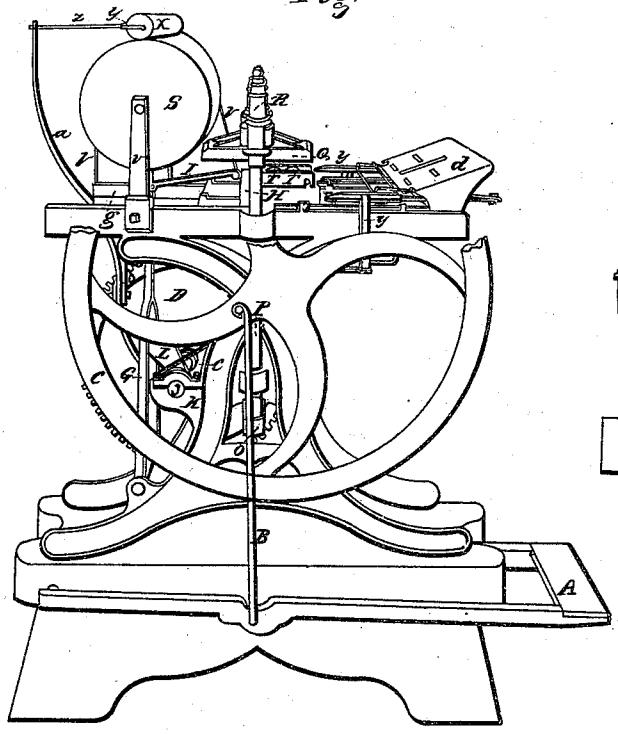
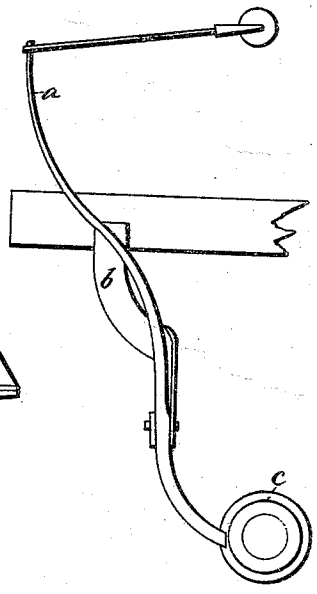


Fig. 10.



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G. P. Gordon. Sheet 3, 3 Sheets.

Printing Press.

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Fig. 3.

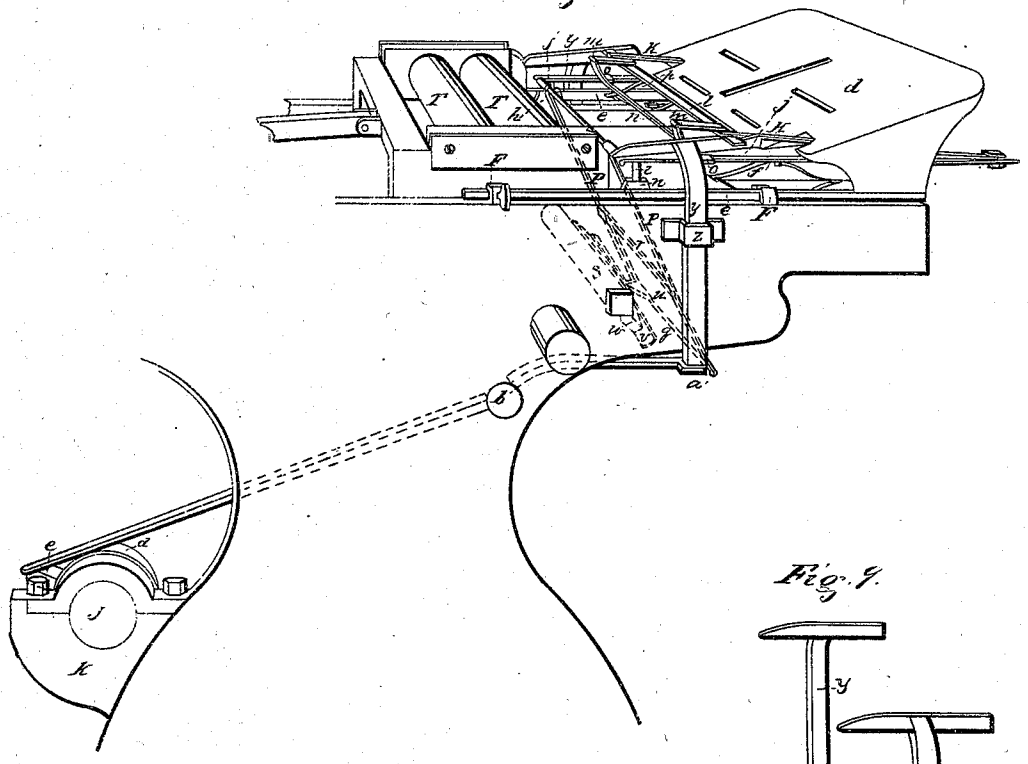


Fig. 4.

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UNITED STATES PATENT OFFICE.

GEORGE P. GORDON, OF NEW YORK, N. Y.

IMPROVEMENT IN PRINTING-PRESSES.

Specification forming part of Letters Patent No. **7,215**, dated March 26, 1850.

To all whom it may concern:

Be it known that I, GEORGE P. GORDON, of the city, county, and State of New York, have invented certain new and useful Improvements in the Construction of Printing-Presses; and I hereby declare that the following is a full and accurate description of the same, reference being had to the annexed drawings, in which—

Figure 1 is a back view of a press which I have constructed for the purpose of attaching my said improvements, and Fig. 2 is a side view of the same.

The said press being made up of principles (irrespective of the aforesaid improvements) which are neither new nor novel, I shall not enter into a detailed description of its parts any further than is necessary to show the connection of my said improvements thereto and the manner in which motive power is communicated to them.

A, Fig. 2, is an ordinary foot-treadle, which is connected by means of the rod B with the fly-wheel C on the driving-shaft. On the farther end of said shaft is a small cog-wheel *c'*, (see Fig. 1,) which plays into the larger wheel D. Said large wheel D has a groove cut eccentrically on its inner face, forming a cam movement, in which groove the lever E on the end of the shaft F is made to play freely by means of the roller E'. The last-mentioned shaft supports and has firmly attached to it an inverted-U-shaped upright or standard G, the upper end of which is attached to the carriage H by means of the short arm I. The large cog-wheel D is attached to and works upon the shaft J, which shaft works upon journals in the boxes K and has attached to it at about its center an elongated cam L, which impinges upon the toggles N N. The upper toggle works upon a joint upon the under side of the bed of the press, while the lower one works upon the cross-bar or miter O, to which are attached on either ends the rods P P, on the upper ends of which said rods is placed the platen Q. Said platen rests upon shoulders formed on the upper ends of the rods aforesaid, and can be removed and replaced at pleasure by means of the hand-screws R R.

Having thus briefly glanced at the construction of those parts of the press which I do not claim as either new or novel, I shall proceed to describe my improvements, which consist of an inking apparatus, the details of which are shown in Figs. 1, 2, and 10, and of an arrangement for laying, gripping, and retaining the sheet or card to be printed, carrying it over the form, and when printed discharging it into a box or drawer placed to receive it.

The inking apparatus aforesaid consists of a cylinder S, which is placed for convenience above the inking-rollers T T in the carriage H, the said cylinder being supported by the standards U U and operated by means of the band V, running over the large cog-wheel D and the pulley W. Resting upon the upper side of the said cylinder S is a small distributing hand-roller X, with its handle Z and frame Y. The outer end of the handle is fitted and works upon the end of the curved lever *a*, (see Fig. 10,) which lever plays upon the fulcrum *b* on the rear of the press-frame. The lower end of this lever is slotted to allow it to stride and retain it upon the eccentric *c* upon the shaft J. The revolution of the shaft J (see Fig. 1) would give the upper end of the lever *a* a back-and-forth motion in the arc of a circle. Thus when the parts were in the position as shown in Fig. 1, the roller X would traverse from left to right over the surface of the cylinder S until by the revolution of the eccentric *c* the motion was reversed, (at which time it would have nearly reached the periphery of the cylinder,) when it would traverse slowly back. It will be readily seen that the motion of this arrangement is quite simple, at the same time that the result obtained is of the greatest importance—viz., that of giving the roller X an eccentric motion over the surface of the cylinder S at each revolution of the same, thus distributing the ink evenly and smoothly over its surface, from which it is again distributed upon the rollers T T (see Fig. 2) in the carriage H at each vibration back and forth of the same; and from the fact that the shaft J revolves but once while the cylinder revolves once and a half it will be seen that the distributing-roller X aforesaid must change its relative position to the cylinder at every vibration.

The arrangement for laying, gripping, and retaining the sheet consists,—First, of an adjustable table *d*, Figs. 2 and 3, which is made of either wood or iron and has secured upon its under sides two rods of brass or iron *e e*, which said rods move easily through the sock-

ets *f f* on the sides of the press-frame, and thus by means of the thumb-screws enabling me to adjust the table at any point to conform to the form or type.

Secondly. The carriage H, which is cast in the form of a parallelogram and has on its outer sides ribs which slide freely forward and back in grooves *g g*, cut on the inner sides of the press-frame, (see Figs. 1, 2, 5, and 6,) has on its upper edge four studs or bosses *h h h h*, in which the short vertical rods *i i* play freely. On the upper ends of the said rods are secured the horizontal bars *j j*. (See Figs. 3, 5, and 6.) These bars have secured upon their forward ends two elongated springs *k k*, which are slightly curved, as shown in Fig. 6, and project back and over the bars *j j* aforesaid, having secured upon their back ends the upper nipper *l*, (see Fig. 4,) which is connected by means of hinge-joints at *m m* with the lower nipper *n*. (See Figs. 3, 4, 5, and 6.) The last-mentioned nipper has upon its respective ends two projections, which move in the sliding pieces *o o*, said pieces being dovetailed upon the lower bars *j j* and sliding freely upon the same.

Thirdly. Upon the back ends of the bars *j j* is a rod running from one to the other for the purpose of securing them and attaching the frisket, which consists of the two thin metallic bars *p p*, the rod *q*, and the nipper *r*. (See Fig. 4.) The lower end of the frisket is attached to the bar *s* by means of the short pieces *t*, working on hinge-joints at *u u* and attached to the metallic strip *v* (see Figs. 4, 5, and 6) and the spring *w*, which is secured to the bar *s* aforesaid by a nut *x*.

Fourthly. Upon each side of the press-frame is a T-shaped pawl or catch *y*, which slides through an eye *z*, their lower ends resting upon the leaves of the curved pieces *a' a'*, (see Figs. 3 and 9,) projecting from the shaft or rod *b'*. From the other side of said shaft projects a lever *c'*, which rests on a hub *d'* on the main shaft J. The said hub has rising from its surface a projection *e'*, whose office it is once in each revolution of the shaft J to raise the end of the lever *c'*, resting upon said hub, and thus by depressing the forward ends of the curved pieces *a' a'* to lower gradually the pawls *y*, thereby allowing the nippers to close easily and grip the sheet or card.

I would call particular attention to the shape of the nippers *l n r*. They are made in the form of inclined planes (see Figs. 7 and 8) in such a manner that when two of their inclined surfaces are brought together they assume the form of a regular parallelogram, as shown in Fig. 8, which also represents the edge of a sheet passing between them. The nipper *r* being used singly, only becomes a nipper when the impression is given by the elliptical spring *w*, pressing it upward against the platen, and thus securing the paper between the nipper and the platen to assist in relieving the paper from the type after the impression is given. It will be readily seen that this form of a nipper must be of the greatest advantage in seizing the paper or card and retaining it until the impression is taken and the nippers are opened by the pawls or otherwise. In the case of paper the said paper must necessarily draw over two sharp edges of the nippers, which gives a surety of its being held securely in its place. Another point I would call particular attention to in the shape or form of the nippers is that their inclined surfaces incline away from the edge of the paper. It will be seen that the surface of the paper and that of the upper nipper are upon the same plane, and thus there is nothing to intervene between the direct contact of the platen-surface and that of the paper.

The operation of the above-described machine and the improvements attached thereto are substantially as follows: The fly-wheel C, by means of the small cog-wheel C' on the end of its shaft, gives motion to the larger cog D, the eccentric groove on the inner face of which is formed in such a manner as to throw the carriage H back and forth alternately at each revolution of said cog by means of the lever E, the shaft F, the inverted-U-shaped upright G, and the connecting-bar I. At the same time the cam L on the shaft J impinges upon the toggle M, and (reaching its extreme point of impingement at the moment when from the shape of the eccentric in the wheel D the carriage is stationary under the platen) forces down the platen upon the form, which is secured upon the bed of the press and takes the impression. The impingement of the cam L passing off, the platen is raised by means of the spring *g'*, acting upon the under side of the miter *o* and the floor at *h'*. At the moment the platen is raised the action of the eccentric E, lever, &c., throws the carriage out, and as it goes out the ends of the upper nipper *l* impinge upon the pawls *y*, thus opening the nippers and relieving the printed card or paper, and in the first case the card drops at once into the box or drawer placed under the front part of the press, and in the latter the frisket drops and allows the paper to drop off into said drawer. When the nippers have reached a point near the forward part of the pawls *y*, (see Fig. 3,) the continued revolution of the shaft J has brought the projection *e'* on the hub *d'* to its impinging-point upon the end of the lever *c'*, which in rising depresses the curved pieces *a' a'* and allows the pawls *y* to fall gradually, by this means allowing the nippers *l n* to close easily upon and grip the sheet or card which has been laid ready upon the table. At this moment, from the action of the eccentric lever and upright before mentioned, the carriage is thrown in under the platen, when, from the impingement of the cam L upon the toggle-joint aforesaid, the platen is brought down, and the impression is taken, as before described.

The frisket before described is intended to

be used for printing paper, and when printing cards I remove it entirely. Its operation is substantially as follows: The bar *s* is stationary, except that it revolves upon its own axis, and when the carriage starts to go in the lower end of the frisket describes the arc of a circle, which as relates to its own axis is similar to the dotted lines *i i*, (see Figs. 5 and 6;) but as regards the carriage its motion is shown by the dotted line *j*, Fig. 5. Thus when the nippers have gripped the paper and the carriage starts to go in, by the time the forward end of the paper is about to pass off the table the frisket is ready to receive it. Fig. 6 represents the frisket in this position—*i. e.*, when the carriage is in and the frisket is lying parallel with the horizontal bars *j j* and almost on the same plane and ready to receive the pressure of the platen. Beneath the said bars and between them and the carriage are secured two elliptical springs *f' f'*, which, with the spring attached to the frisket, allow the whole frame composed of the bars *j*, the nippers, and the frisket to be pressed down to allow the under surface of the paper to strike the type. When the carriage starts to come out, the frisket commences to move over the circle *i'*, (see Fig. 6,) and when the ends of the nippers *l* impinge upon the pawls *y* it has reached a point about *l'*, and as the nippers open the paper which is upon it slides off into the box or drawer placed to receive it. When the carriage is thrown in, the rollers T pass over the surface of the type and beyond, directly beneath and in contact with the cylinder S, which, receiving the ink from the distributing-roller X, distributes it to the rollers T aforesaid, which again pass over the type, communicating ink thereto in their back-and-forth motion.

What I claim as new and useful in the above-described improvements, and desire to secure by Letters Patent, is—

1. The peculiar manner of constructing the nippers so that their upper surface shall be even with the surface of the paper and their inclined or curved surface shall incline away from the surface of said paper.

2. An adjustable table to be adjusted to the nippers, the nippers being first adjusted to the type or form, substantially as above set forth and described.

3. A frisket operated on by the motion of the carriage, so that when the carriage goes in with the sheet its forward end shall rise under and support the paper and (from the upward pressure of the nipper *r* against the platen in giving the impression) grip it firmly and relieve it from the type after the impression is given, and on the receding of the carriage with the printed sheet its forward end shall lower and allow the said sheet which rests upon it to slide or fall off into a box or drawer placed to receive it, operating substantially as above described.

4. The application of the vibratory power to the handle of a distributing-roller (see Figs. 1 and 2) (said handle projecting from the frame of said roller midway from its respective ends) and not to the end of the roller-frame, as in general use.

5. The combination and arrangement for opening the nippers when the carriage moves out with the printed sheet and closing them just previous to its going in, which combination consists of the horizontal bars or pawls *y*, (see Figs. 3 and 4,) the curved pieces *a'*, the lever *c'*, attached to the shaft *b'*, (see Fig. 9,) the hub *d'*, with its projection *e'* on the main shaft J, and the spiral spring *y'*, one end of which is attached to the press-frame, the whole being arranged and operating together, substantially in the manner hereinabove set forth and described.

Dated New York.

GEO. P. GORDON.

Witnesses:

JOHN W. PIRSSON,

TALBOT PIRSSON.