F. O. DEGENER.

Printing Press.

No. 27,973. Patented April 24, 1860.

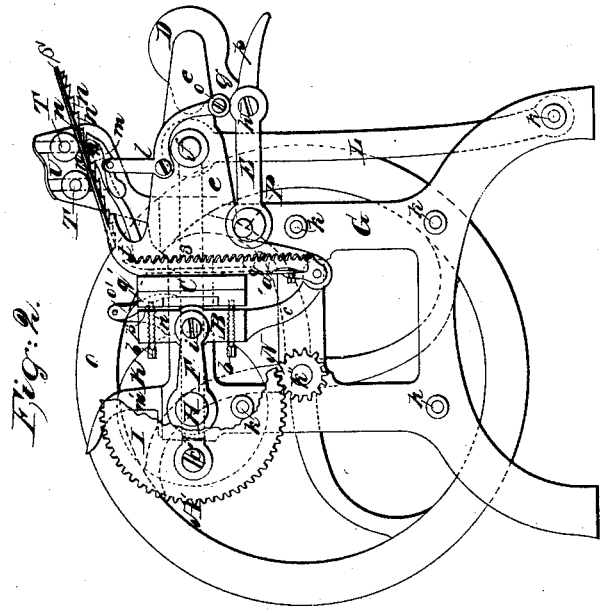

Fig: 2.

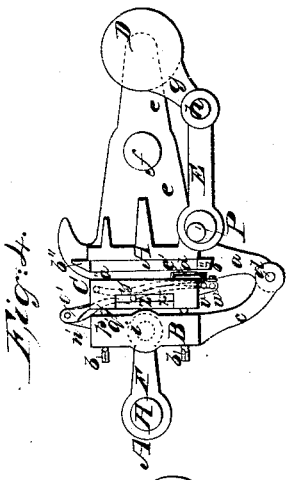

Fig: 4.

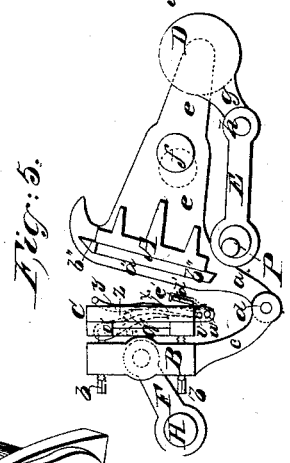

Fig: 5.

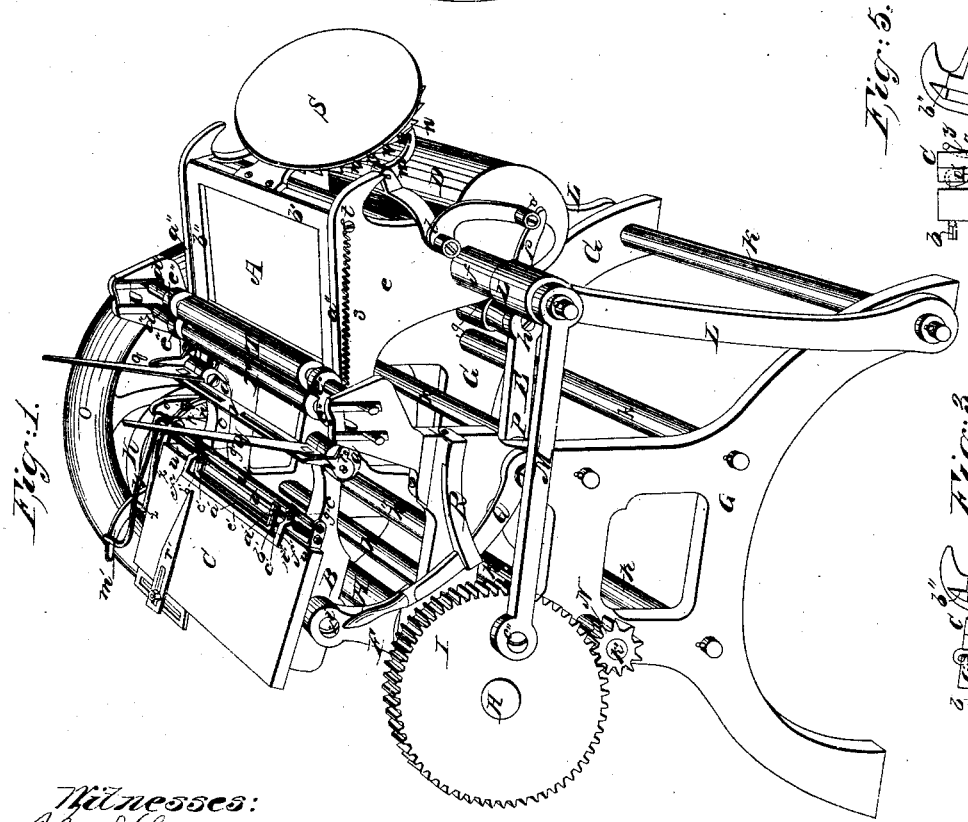

Fig: 1.

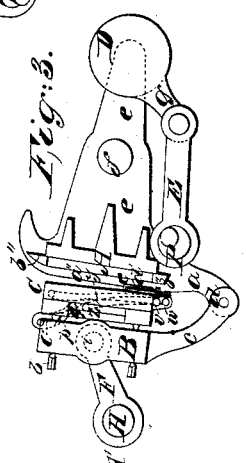

Fig: 3.

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UNITED STATES PATENT OFFICE.

F. O. DEGENER, OF NEW YORK, N. Y.

IMPROVEMENT IN PRINTING-PRESSES.

Specification forming part of Letters Patent No. **27,973,** dated April 24, 1860.

To all whom it may concern:

Be it known that I, F. O. DEGENER, of New York, in the county and State of New York, have invented a certain new and useful Improved Printing-Press; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, and the letters of reference thereon, all of which form a part of this specification, the same letter of reference always desinating the same object or part of the press in all the figures.

Of the drawings, Figure 1 is a perspective view of the press, the type-bed and platen having been moved upward, the platen being in a position to receive the paper or card to be printed. Fig. 2 is a side view, (representing the same ends of the type-bed and platen toward you as in Fig. 1,) with the side of the frame next to you removed, as also the support of the type-bed and connecting-piece next toward you, and part of the gear-wheel removed for the purpose of showing better the positions of the different parts of the type-bed and platen, as also the other parts attached thereto, the platen being here represented without the card arrangement, and the platen having had a sheet of paper previously placed upon it has moved with the paper, the side grippers, and the type-bed to the place of impression, the red line representing the sheet of paper. Figs. 3, 4, and 5 are sectional views of the type-bed and platen in different positions, which, with the details of all the figures, I shall fully explain in the construction and operation of the press.

This press is constructed to be used for printing either cards or paper.

The nature of my invention consists in the peculiar construction of a printing-press and the arrangement of different parts thereof, so as to make it both simple and useful.

To enable others skilled in the art to make and use my invention, I will now explain its construction and operation.

Construction.—The material used in the construction of this press is principally iron, of which I construct a type-form bed, A, with two projecting arms, *a*, on one side, one arm near each end of such type-form bed. I also provide said type-form bed with a flange, *a''*, on each end, said flanges being made type-high, so as to serve as guides for the inking-rollers. Between the said flanges *a''* the frame or chase *b''* (which is to hold the type) is placed upon the face of the type-form bed, and secured in its place by any known means.

The back of the bed A, I provide with projecting pieces *e*, at or near the center of which a shaft, *f*, is run through, and between the ends of the pieces *e* a counter-balance, D, is firmly secured, so as to constitute with the type-form bed one substantial whole, as it were. This counter-balance D has a projecting arm, *g*, on one end to which a connecting-piece, E, is pivoted. (This arm *g* may be made to project from one of the pieces *e* and be connected therewith instead of being connected with the counter-balance D.)

The platen C is attached and held by regulating-screws *b* to a frame-work, B. This frame B is provided with two projecting arms, *c*, corresponding with the two arms *a* of the bed, so that the bed and platen can be connected or hinged together at or near the ends of these arms, as shown at *d*. To this frame B, I attach at each end a connecting-piece, F, by means of bolts or a shaft, as shown at *i*. I now provide a proper frame or stand to support the type-form bed and platen, as also other parts of the press, said stand or frame consisting of two sides, G, held together by proper braces or traverse-pieces, *k*. I run a shaft, H, through this stand or frame G, near the front and top, and support the frame B, with the platen C, on this shaft H between the two sides G, by having the shaft H pass through one end of the connecting-pieces F. To one end of this shaft H, I firmly attach a gear-wheel, I, and to the other end of the shaft H, I fasten a plain plate-wheel, K.

At the back of the frame G, near the bottom, I pivot two supports, L, one support on each side of the press. At the top ends of these supports L, I have the shaft *f* of the bed run through and connect this shaft *f*, by means of two connecting-pieces, M, (one on each side of the press,) to the wheels I and K by pins or bolts placed eccentrically to the shaft H, as shown at *c''*, Figs. 1 and 2. A pinion, N, is geared into the wheel I. This pinion is fastened to one end of the shaft *k''*, and to the other

end of this shaft k'' a fly-wheel, O, is firmly attached. The connecting-piece E being attached by one end at h to a part of the type-bed, is attached at the other end to the frame G by means of an eccentric, P. To this eccentric an arm or lever, Q, is firmly attached, as shown in Fig. 1. By means of this lever Q the eccentric P can be made to assume different positions, as occasion may require, which will be further explained. A guard-piece, R, provided with proper notches, is placed over this lever Q, by which the motion of the eccentric P is determined.

To the bed A, at the top, I attach a round ink-distributing table, S, so that it can rotate. I place this ink-distributing table at an incline from the face of the type-bed, so that the type-bed and ink-table both can pass and repass properly under the inking-rollers T, which are held in slits of two stationary supports, U, one on each side of the press. On the inking-roller stocks d'', I place metal rollers e'', one on each side of the inking-roller T. These metal rollers e'' are to bear on the flanges a'' of the type-bed, so as to keep the inking-rollers T at a uniform height from the type as the type-bed passes and repasses under the inking-rollers.

To one of the pieces e, near the shaft f, I pivot a lever, l, which carries a pawl, m, at one end. This pawl m is to catch into teeth n at the under side of the ink-distributing-table, so as to turn it during the working of the press. At the lower end of this lever l a roller, o, is placed, which is to operate the lever l by rolling on an incline, p, projecting from and forming part of the connecting-piece E. This incline p is shown in Figs. 1 and 2. I further attach to the type-bed, where it is jointed to the platen, a frisket or gripper-frame, V. To this gripper-frame I attach two grippers, q, in such manner that they can be adjusted sidewise to suit the different sizes of paper or articles to be printed. This gripper-frame V and grippers q are shown in Fig. 1 and partly in Fig. 2. This gripper-frame V has on each end a short arm, r, projecting sidewise. To this arm r, I attach one end of a sufficiently strong spiral spring, s, and the other end of this spring I fasten to the end of the type-bed, as shown at t, Figs. 1 and 2. This gripper-frame, with the projecting arm or arms r and spring or springs s, is so arranged that the tension of the spring or springs alone will hold the gripper-frame in its normal position, as shown in Fig. 1, and will also allow the said gripper-frame to assume any other necessary positions, while holding the paper against the platen by means of its grippers, during the working of the press, without any other means—such as cams or stops, generally used for such purpose—being employed.

Fig. 2 shows the position which the gripper-frame, grippers, and springs assume while an impression is being given, the red line representing a sheet of paper being held against the platen by the grippers. For cards of a small size or of common size I provide the following card arrangement, which is so constructed that it can easily be attached to or removed from the platen. This card arrangement consists of a frame, u, to be attached to the lower side of the platen C. This frame u has two small shafts or rods, v w, running parallel with the platen and projecting on one end of the platen, each rod being provided with an arm, x y. The ends of these arms are bent at a right angle with the arm, so as to form projecting pins or studs, as shown at z and z', Fig. 1.

To the rod v, I attach a card-gage, a', which has two projecting arms, b', one at each end of the gage. These arms are provided with slits c', and are fastened to the rod v by screws or bolts d', passing through these slits, and the gage is thus made adjustable.

To the rod w, I attach a card-gripper, e', provided likewise with two projecting arms, f', with slits g', and fastened to the rod w by means of bolts or screws h'. This card-gripper can also be adjusted so as to suit the position of the card-gage. This card-gripper is made of thinner material than what the card-gage is, and is placed above the card-gage. The card-gripper has its front edge bent down in front of the card-gage, as shown at i', so as to grip the card when it is placed against the gage. The card-gage d' and card-gripper e' are held in their proper positions against the platen by means of springs k' l', being attached by one end to their respective rods, v w, and fastened by the other ends to the frame u.

To the frame G of the press I attach an incline, m', for the pin or stud z' of the arm y to slide on when the platen is brought forward, and thus raise the card-gripper from the platen. I further attach to the press-frame G a piece, n', which supports a swinging pawl, o', and a stop-pin, p', the said pawl having a projecting flange, q', the use of which I shall further explain when describing the operation of the press.

At the front of the platen C, I attach an adjustable gage, r', which may be used as an end gage for cards, and also occasionally for paper when the card arrangement is removed from the platen.

This press may be so arranged as to be operated either by steam, foot, hand, horse, or other power.

Operation.—Having the different parts of the press constructed and arranged as described, then by turning the fly-wheel O motion will be imparted to all the working parts of the press. The type-form bed A being supported and connected with the driving parts of the press, as explained, a vibratory or alternate motion is given to the shaft f of the bed as the main shaft H, with its two wheels I and K, revolves, while at the same time the face of the type-bed has a rotating reciprocating movement, caused by the type-bed being connected at a certain point with the stand or

frame G by means of the connecting-piece E. Thus this part of the bed is retained at *h* nearly in the same position always, while that part of the bed at the shaft *f* is moved backward and forward by and through the crank-motion of the wheels I and K and the connecting-pieces M, and thus the face of the type-bed rotates and reciprocates; and as the platen C, by and through the frame B, is hinged to the type-bed A, the bed while moving gives also motion to the platen C and causes it to assume the necessary positions required during the working of the press, so that a sheet of paper or a card may be placed upon the platen, then, as the bed and platen in their movements meet, receive an impression, and as the bed and platen return to their first position this printed matter will be removed and be succeeded by another sheet of paper or card to be printed. The type-bed with ink-table attached both pass and repass under the inking-rollers during the working of the press. Thus the inking-rollers alternately ink the type and are replenished with ink. During the inking of the type the ink-distributing table is moved part way round by a lever, pawl, and incline, as before mentioned, so as to always keep the ink spread evenly. The ink may be put on to the ink-distributing table by means of a small hand-roller, as occasion may require. By means of the eccentric P the type-bed and platen can be so adjusted that while the impression is being given all the points that have to bear the impression will fall in in a central line, as shown by the dotted line A′, passing through these points in Figs. 2 and 4 at H, *i*, and *f*. The eccentric P being thus properly adjusted and firmly attached to a lever, Q, as shown in Fig. 1, the said eccentric P can be turned part way round, the distance to be turned being determined by the guard-piece R, as shown in Fig. 1. By changing the eccentric P from its normal position it occupies in Figs. 1, 2, 4, and 5 to the position as shown in Fig. 3 the point *i* will be considerably raised above the dotted line A′ by the lower part of the type-bed being drawn farther forward and upward. Thus the face of the type and the face of the platen cannot touch while the press is in motion, and the taking of an impression may thus be suspended as occasion may require—for instance, when the ink is to be distributed, or when the type is to be passed several times under the inking-rollers for one impression, so as to give to the type a more thorough inking. When cards are to be printed, then the described card arrangement, as shown in Fig. 1, is attached to the platen, and the grippers *q* may either be removed or placed one at each end of the frame V, which holds them, so that they cannot interfere with the card arrangement, as shown in Fig. 1, where the press is represented in a position for the platen C to receive the card to be printed. After a card has been placed upon the platen against the previously-adjusted gages, then as the platen recedes from the position shown in Fig. 1 and the stud *z* of the gripper-arm *y* leaves the incline *m′*, this causes the card-gripper *e′* to come down and hold the card, by means of the spring *l′*, until an impression has been given, Fig. 4 showing the position which the bed and platen assume while an impression is being given. During the movement of the platen from the position of Fig. 1 to the position of Fig. 4 the stud *z* of the gage-rod arm *x* passes under the projecting flange *q′* of the swinging pawl *o′*, thus lifting the pawl from the stop-pin *p′*, and when the platen arrives at or near the place where the impression is to be given the stud *z* slides from under the pawl *o′* and allows the pawl to drop against the stop-pin *p′*. This position is shown in Fig. 4, the red line representing a card previously placed upon the platen. As the bed and platen move upward after the impression has been given the stud *z* slides on the upper side of the pawl-flange *q′*, and thus raises the card-gage, and with it the card-gripper, from the platen. The card-gage withdrawing under the projecting flange of the card-gripper causes the card to be pushed from the gage by the gripper, thus insuring its dropping from the gage and platen, the card while dropping passing the gage and gripper on one side, and the two rods which hold and operate the gage and gripper on the other side. This position is shown in Fig. 5, the red line representing the card in the act of dropping. Should a card have been placed upon the platen and the taking of an impression be suspended, then the stud *z* will not pass from under the pawl-flange *q′*, as the platen cannot move down low enough, and thus the dropping of the card from the platen will also be suspended simultaneously with the suspension of an impression by and through one and the same means. This position is shown in Fig. 3, the red line representing the card being retained in its place against the platen.

A box (which is not shown in the drawings) may be placed under the bed and platen to receive the cards as they drop. When sheets of paper or large cards are to be printed, then this card arrangement is removed from the platen, and the side grippers, *q*, are used to hold the paper or large cards against the platen, as shown in Fig. 2.

Having thus fully described my improved printing-press, what I claim therein as new and as my invention, and which I desire to have secured to me by Letters Patent of the United States, is—

1. The combination of a rotating ink-distributing table with a rotating reciprocating type-bed, for the purpose as described.

2. The combination of the described mechanism for giving the desired movement to a type-bed hinged to a platen, the said mechanism consisting of the revolving shaft H, passing through the pieces (or piece) F, which sup-

port and guide the platen, the pieces (or piece) F, the alternating rotating reciprocating shaft *f*, supporting the type-bed, the vibrating supports L, or their equivalent, the connecting-piece E, or its equivalent, the connecting-pieces M, being attached to the shaft *f* of the type-bed at one end, and connected at the other end by pins or bolts set eccentrically to the shaft H, to wheels, plates, or arms attached to the shaft H.

3. In combination with a type-bed constructed and operating as described, the eccentric P, for the purpose of adjusting and varying the linear position of the type-bed and platen.

4. The described construction of the card arrangement, operating and for the purpose as herein set forth.

5. In combination with the described card-gage and gripper, making the end gage entirely separate from the side gage, and attaching the end gage to the platen on the side opposite to the side gage and gripper, for the purpose as described.

6. Attaching the frisket or gripper-frame to a rotating reciprocating type-bed, or to arms projecting from such type-bed, in such manner that the said frisket or gripper-frame shall be carried by and move with said type-bed, and holding said gripper-frame in the desired position when the grippers are not in contact with the platen, and allowing the gripper-frame to assume the requisite positions when the grippers are in contact with the platen, and causing them to grip and hold the paper against the platen by and through the tension of a spring or springs only, thus dispensing with cams or stops generally used for such purpose.

7. In combination with a type-bed and platen constructed and operating as described, the eccentric pin, bolt, or shaft, for the purpose of suspending the taking of an impression.

8. Suspending the operation of the card-drop motion during the suspension of the impression.

9. The combination of the eccentric pin, bolt, or shaft with a card-drop motion, for the purpose of suspending the operation of such card-drop motion.

10. Suspending the taking of an impression, and suspending the operation of the card-drop motion by and through one and the same means.

11. The combination of a type-bed, operating as described, with the stationary ink-roller supports.

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Witnesses:
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