2 Sheets. Sheet 1.

G. W. Hunt,

Printing Press.

No. 112249. Patented. Feb. 28 1871.

Fig. 1.

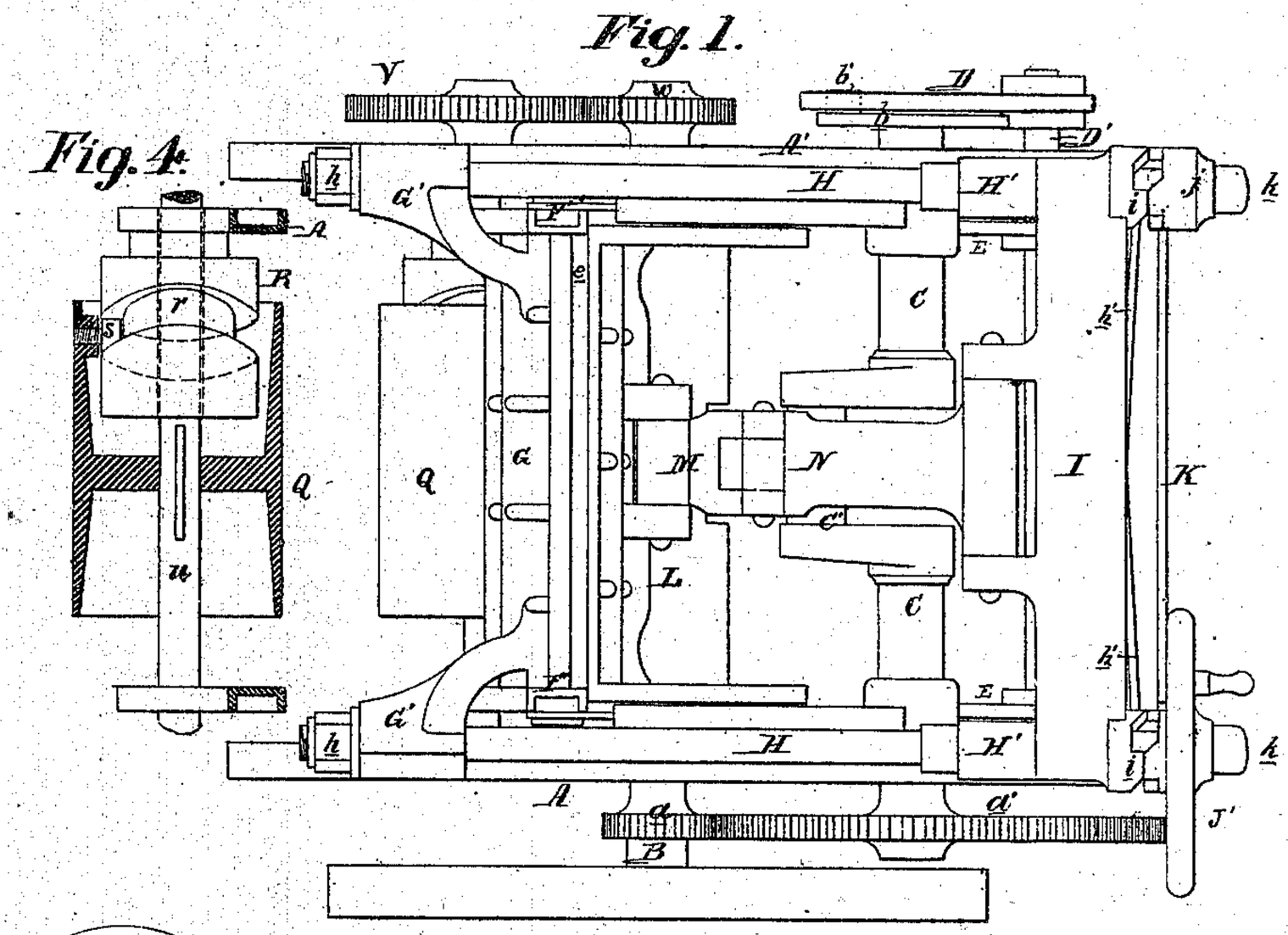

Fig. 4.

Fig. 3.

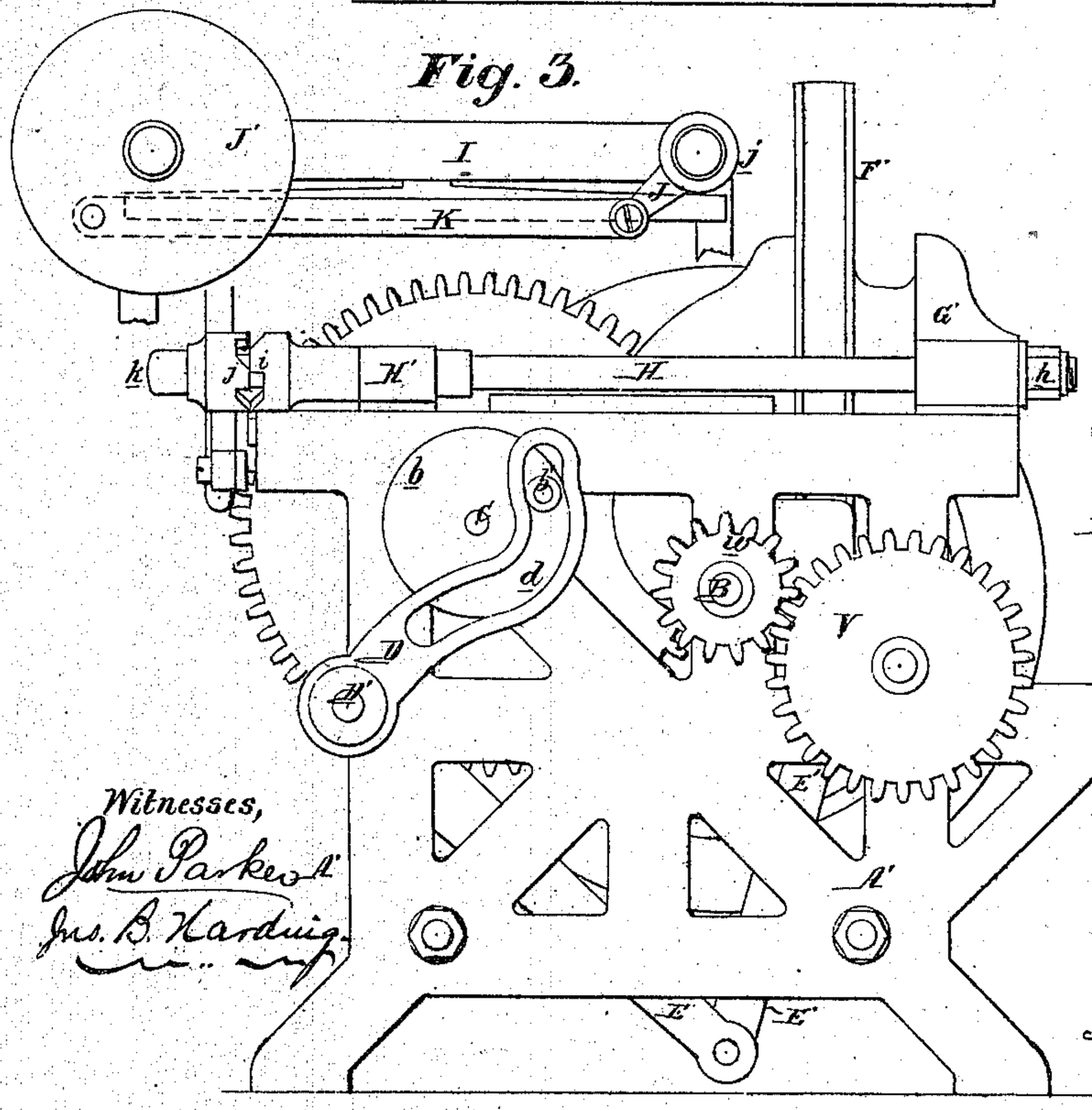

Fig. 2.

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2 Sheets Sheet 2.

G. W. Hunt.

Printing Press.

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Fig. 5.

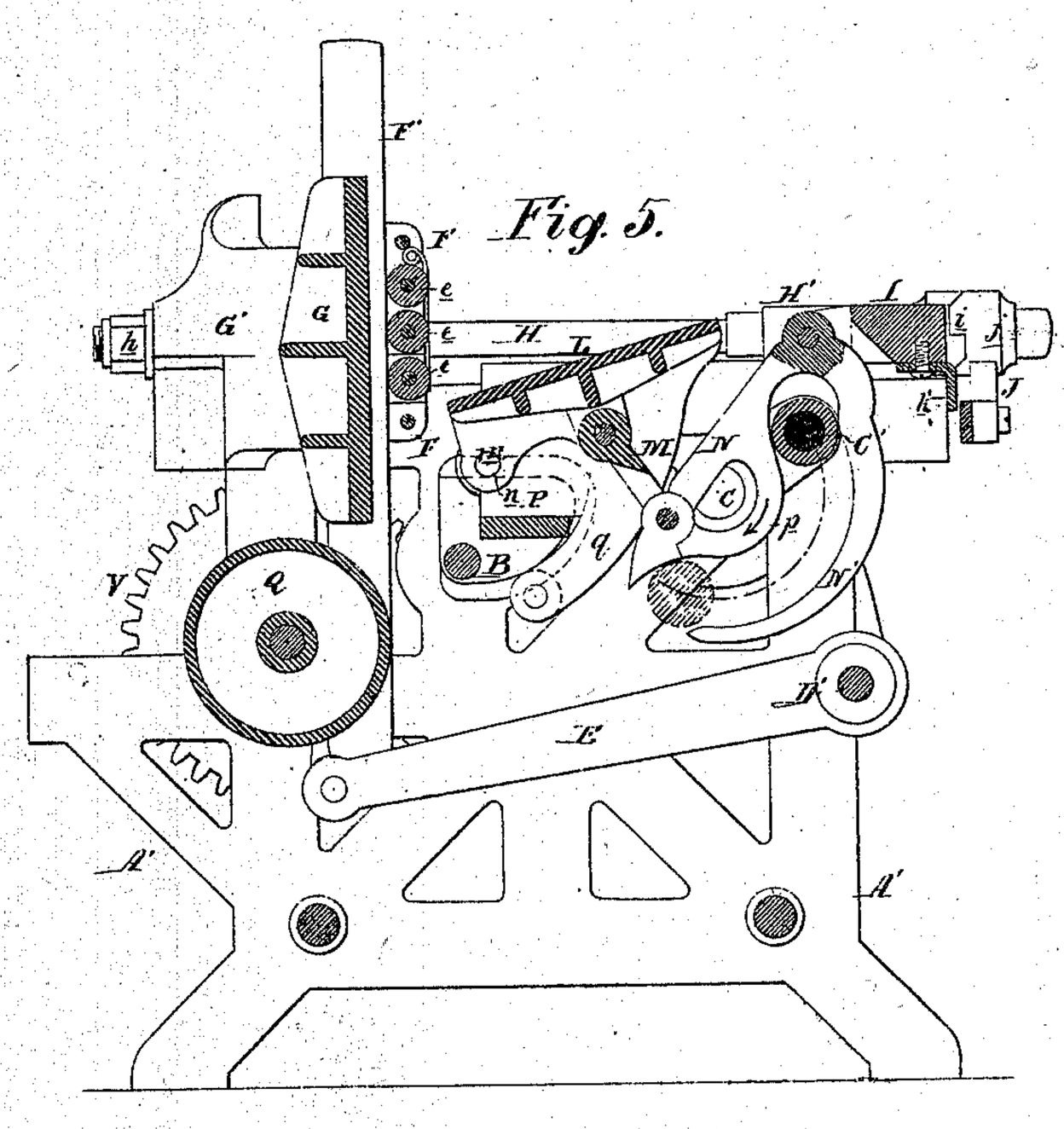
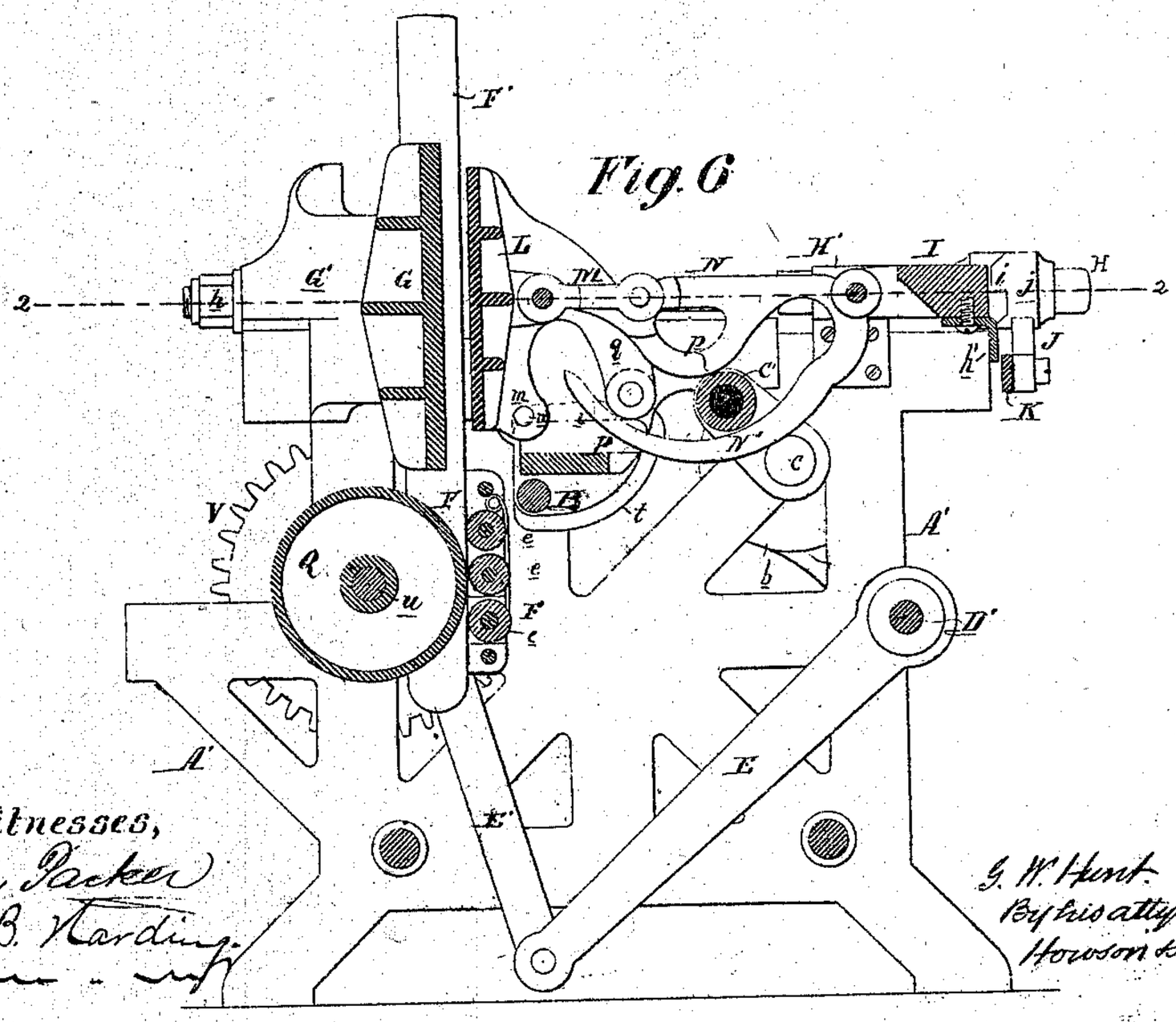


Fig. 6



Witnesses,
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Jno. B. Harding.

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By his attys.
Howson & Son

UNITED STATES PATENT OFFICE.

GEORGE WASHINGTON HUNT, OF NEW YORK, N. Y., ASSIGNOR TO HIMSELF, GEORGE PLACE, AND CHARLES F. HARDWICK, OF SAME PLACE.

IMPROVEMENT IN PRINTING-PRESSES.

Specification forming part of Letters Patent No. **112,249,** dated February 28, 1871.

I, GEORGE WASHINGTON HUNT, of New York, county of New York, State of New York, have invented an Improvement in Printing-Presses, of which the following is a specification:

Nature and Object of the Invention.

My invention consists of certain improvements in the construction of printing-presses, too fully described hereafter to need preliminary explanation.

Description of the Accompanying Drawing.

Figure 1 is a plan view of my improved printing-press; Fig. 2, an elevation of one side of the same; Fig. 3, a view of part of the front end of the press; Fig. 4, a sectional view of the ink-carrying roller and its adjuncts; Figs. 5 and 6, vertical sections, showing the moving parts in different positions.

General Description.

A and A′ are the opposite side frames of the press, and in these frames turns a driving-shaft, B, a pinion, *a*, on which gears into a cog-wheel, *a′*, on the crank-shaft C, which also turns in suitable bearings in the opposite side frames. A crank-wheel, *b*, is secured to the shaft C outside of the frame A′, and an anti-friction roller, *b′*, on a pin attached to this crank-wheel, passes through and accurately fits in a peculiarly-curved slot, *d*, in an arm, D, attached to a shaft, D′, adapted to bearings in the opposite side frames. (See Fig. 2.) On this shaft D′ are secured two arms, E, Figs. 6 and 2, which are connected, by rods E′, to an inking or carrier frame, F, the latter having a series of inking-rollers, *e e*, revolving in movable bearings, and having, at the under side, anti-friction rollers adapted to vertical guides F′, attached to the bed G, one on each side of the same, and so situated that the inking-rollers will reciprocate in a plane adjacent and parallel to the vertical face of the said bed G of the press. The bed has, at its rear, projections G′, secured to the opposite frames, and to each projection G′ is firmly secured a horizontal rod, H, passing through a bracket, H′, attached to the frame, and through a cross-bar, I, Figs. 1, 5, and 6, which fits snugly on the two rods H H, but is permitted to slide freely to a limited extent on the same. This cross-bar I has at each end, and round each opening, which admits each rod H, projections *i*, each projection being abrupt on one side and inclined on the other, as seen in Fig. 1, and these projections being adapted to corresponding recesses between like projections on the hub *j* of an arm, J, Fig. 3, which is so hung to one of the rods H that it can vibrate freely thereon, but is confined to the rod by the head *k* at the termination of the same. To the other rod H is so fitted a hand-wheel, J′, that it can turn freely, the hub of the wheel having projections adapted to recesses between the projections on one end of the cross-bar, and the wheel being so connected by a rod, K, to the arm J that the movement of one will insure the simultaneous movement of the other.

It may be stated here that the platen L is connected to the above-mentioned cross-bar I, and that when the press is in active operation the said bar is in the position shown in Fig. 1, the ends of its projections being in contact with the ends of those on the arm J and hand-wheel J′.

Should it be desirable for any cause to prevent the platen from exerting any pressure against the form on the bed of the press while the latter is in operation, the wheel J′ must be so turned that the spaces between its projections and the spaces between the projections of the arm J shall coincide with the projections on the cross-bar, which will, owing to the action of a spring, *h′*, recede so far as to prevent the platen from pressing the form. The cross-bar can, however, promptly, and without stopping the press, be restored to its former position by turning the wheel J′ in a contrary direction, the inclinations of the projections of the wheel and arms J acting on the inclined faces of the projections of the cross-bar, and thereby forcing the latter toward the platen, and afterward forming an abutment to receive the back-pressure of the platen when the latter is performing its printing duties.

To lugs at the rear of the platen L is jointed a link, M, hinged to a link, N, which is jointed to lugs on the cross-bar I, these two

links forming a knee or toggle joint, through the medium of which pressure is imparted to the platen.

The platen is hinged at its lower edge to a slide, P, the latter extending across the machine from frame to frame, and being adapted to horizontal guides on the said frames, and therefore permitting the platen to receive the desired horizontal movement.

The knee-joint, through which force is applied to the platen, is operated by the crank C′ of the shaft C.

As seen in Fig. 5, the crank-shaft C is supposed to be turning in the direction of the arrow, and its roller C′ upon the crank-pin, by acting on the arm N′, which is a part of the link N, has caused that link to pull down the platen to the inclined position shown, and in this position it will remain a sufficient time to receive the sheet to be printed; for as the shaft C continues to revolve, its roller C′ will pursue a course concentric with the segmental space between the link N and its arm N′. Neither the link, therefore, nor the platen will be disturbed, but will remain at rest until the roller of the crank-pin reaches the point shown by dotted lines in Fig. 5, when it begins to act on the convex portion of the under edge of the link N. The latter, and with it the platen, will consequently be raised, the crank-pin gradually moving along the edge of the rounded projection *p* of the link, and, in doing this, continuing to raise, and at the same time move forward, the platen until the latter has assumed a vertical position and has made the desired impression.

It will be observed that the platen has at its rear two downwardly-curved arms, *q*, on the end of each of which is a pin carrying a roller, the roller of one arm bearing against a guiding-segment, *t*, on one frame of the machine, and the roller of the other arm against the edge of a like guiding-segment on the opposite side frame. These stationary segments are so formed and arranged that they will, through the medium of the arms *q*, retain the pins *n*, on which the platen vibrates, in one position until the link N is approaching its highest point, and after the platen has been raised to a vertical position, when the rollers of the arms *q* will have left the segmental portions of the guides; but they will bear upon and are controlled by the horizontal upper edge of the same, thus steadying the platen, which is at liberty to be moved horizontally without varying from its vertical position, inasmuch as it (the platen) carries with it the slide P. This short horizontal movement of the platen is effected by the crank, through the medium of the knee-joint, as the latter finishes its upward movement.

It will now be seen that all the desired differential movements of the platen, and the retention of the same in a quiescent state, are effected by a single crank through the medium of very simple mechanism.

The slot *d* of the arm D, Fig. 2, is so formed, and the pin with its roller *b′*, which operates the arm, so arranged in respect to the crank for operating the platen, that while the latter is in its quiescent state an up-and-down movement will be imparted to the inking-frame, the rollers of the same thus transferring to the type on the bed ink derived from the cylinder Q, with the surface of which the rollers *e* of the frame are brought into contact during the reciprocating movement of the said frame. This cylinder Q is so attached to a shaft, *u*, Fig. 4, as to slide freely thereon without being capable of turning independently of the shaft, which revolves in projections on the bed of the press, and is furnished with a cog-wheel, *v*, gearing into a pinion, *w*, on the driving-shaft B.

Surrounding the shaft *u*, and secured to one of these projections on the bed, is the stationary hub R, in which is cut a scroll-groove, *r*, for receiving a roller, *s*, on a pin secured to the inside of the cylinder Q, as seen in Fig. 4.

As the cylinder revolves, it will receive a reciprocating motion from the groove *r* of the hub R, and this motion will tend to the even distribution of the ink on the inking-rollers of the frame.

The up-and-down movement of the inking-frame, caused by the slotted arm D, is not uniform. On the contrary, the slot of the arm is so formed that when the inking-frame has been depressed to the limit of its downward movement, it will remain stationary then for a short time while its rollers receive the ink from the cylinder Q, thus insuring a complete and even distribution of ink on the rollers.

An important feature is the arrangement of the rods H, the center of each of which, as will appear by the dotted lines 2 2, Fig. 6, is in line with, or, rather, passes through the centers of, all of the connecting-pins of the knee-joint when the latter has been elevated to a point where it is the means of exerting the greatest force, the central line of each rod, moreover, being midway, or very nearly so, between the upper and lower edges of both bed and platen. Hence these two rods H H, as tension-rods, serve as mediums for resisting the force applied by the knee-joint to the platen, and are in the best position for resisting this force, and for relieving the frame from this duty. The frame, in fact, may be comparatively light, as it has to contribute little or nothing toward resisting the force exerted by the knee-joint.

The device for releasing the cross-bar I has been too fully described above to need further explanation here. It will suffice to remark that when it becomes necessary to discontinue the printing without stopping the machine, all that is required is to release the cross-bar I, when the platen must cease to perform its usual functions.

Claims.

1. A crank-shaft revolving at a uniform speed, in combination with the hinged or vi-

brating platen of a printing-press, and with a knee-joint, one link of which is constructed and acted on by the said crank, substantially as set forth.

2. The combination of the platen, the slide P, to which the platen is jointed, and the stationary segments *t t*, all substantially as and for the purpose described.

3. The projections *i i*, arranged on the cross-bar I around the tension-rods, in combination with hubs having like projections, and so attached to the said rods as to admit of being turned thereon, all substantially as set forth.

4. The revolving cylinder Q and its pin S, in combination with the shaft *w*, on which the cylinder slides, and which imparts a rotating motion to the same, and with the stationary hub R and its scroll-groove, arranged substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

GEORGE W. HUNT.

Witnesses:

WM. A. STEEL,

LOUIS BOSWELL.