

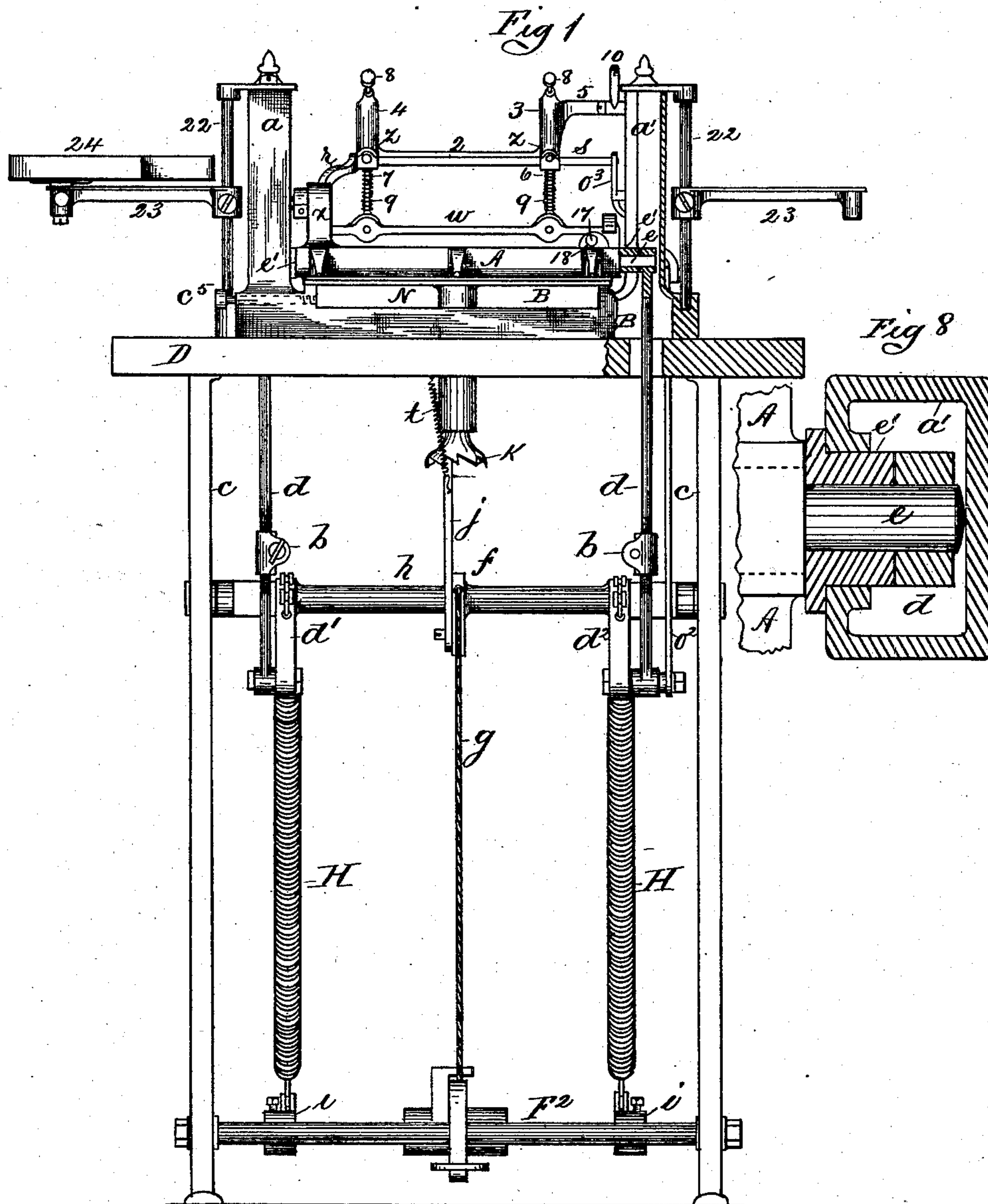
(No Model.)

5. Sheets—Sheet 1.

F. H. RICHARDS.  
Oscillating Printing Press.

**No. 241,421.**

Patented May 10, 1881.



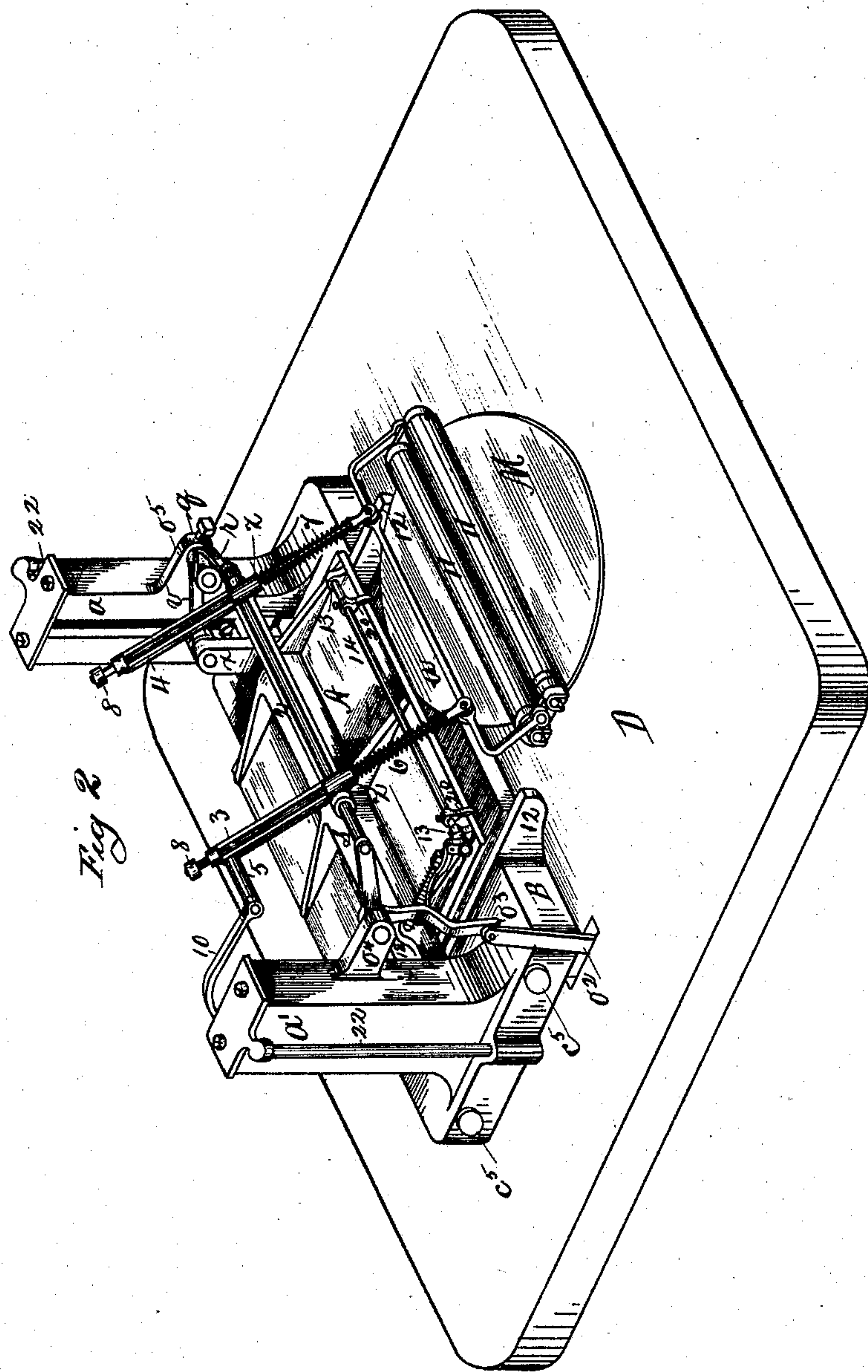
Witnesses  
J. D. Garfield  
Wm. A. Chapin

Inventor  
Francis H Richards  
By Henry A Chapin  
Atty

(No Model.)

5 Sheets—Sheet 2.

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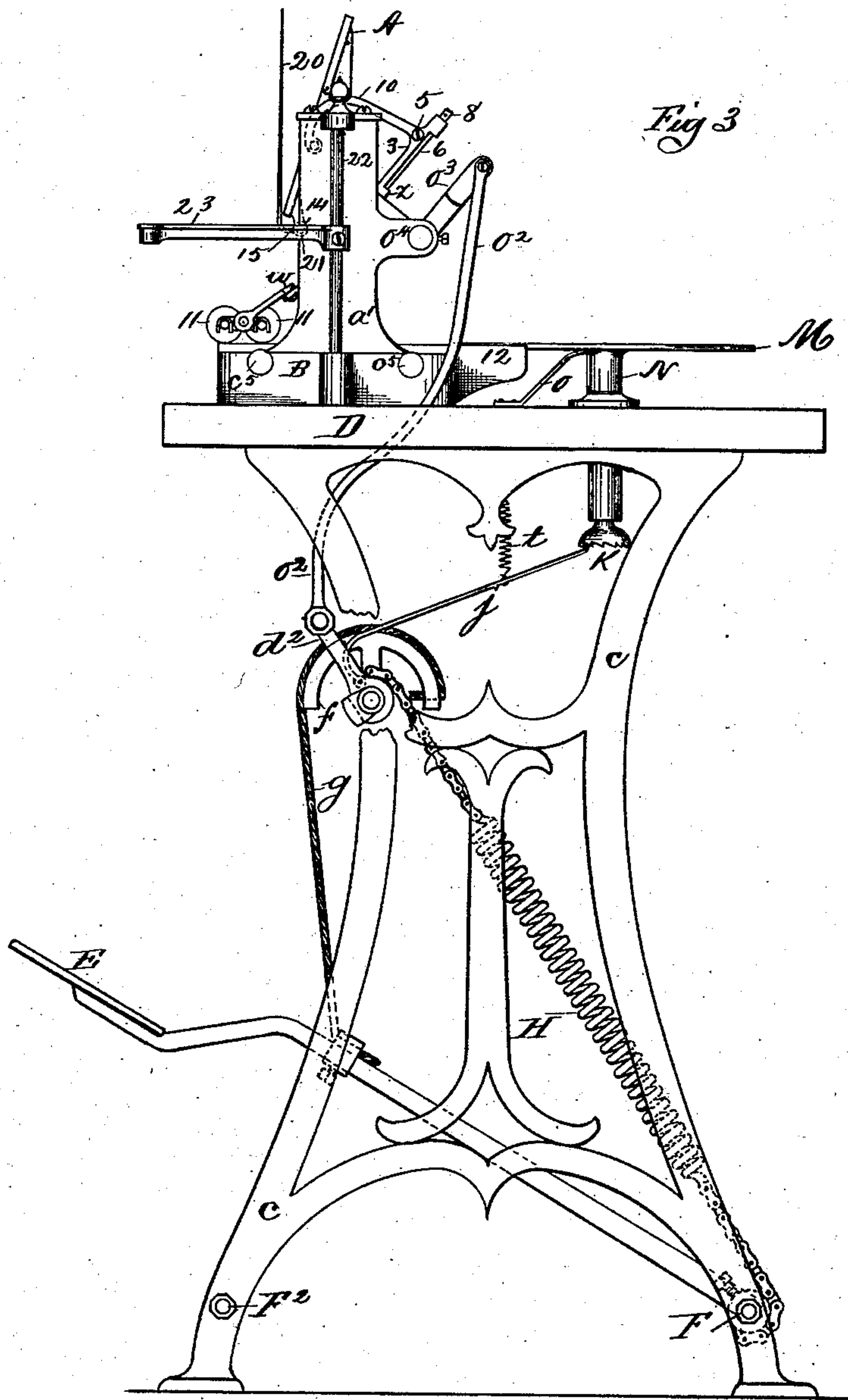
Inventor  
Francis H. Richards  
By Henry A. Chapin  
Atty



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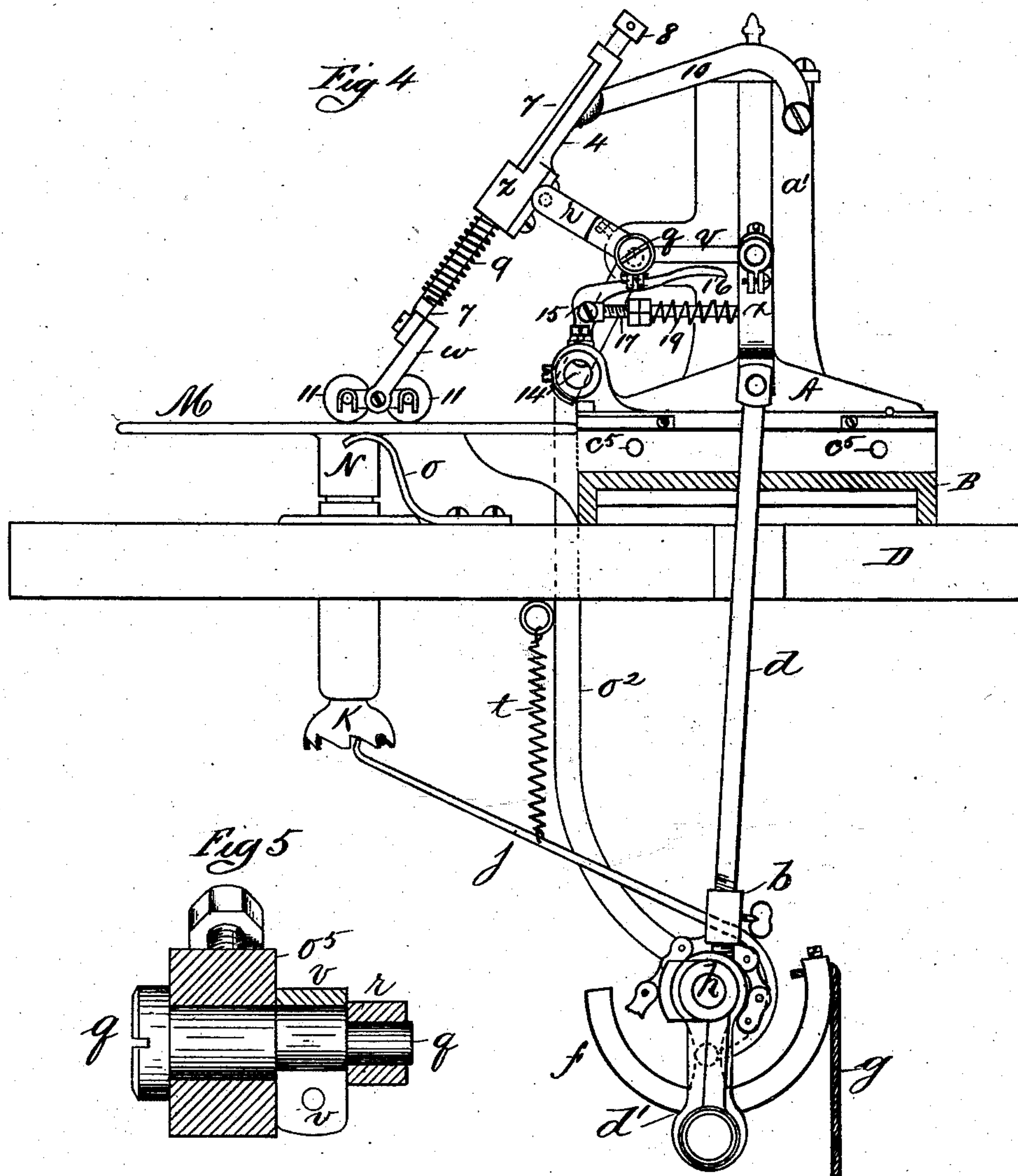
Witnesses  
J. D. Garfield  
Wm. A. Chapin

Inventor  
Francis H. Richards  
By Henry A. Chapin  
Atty

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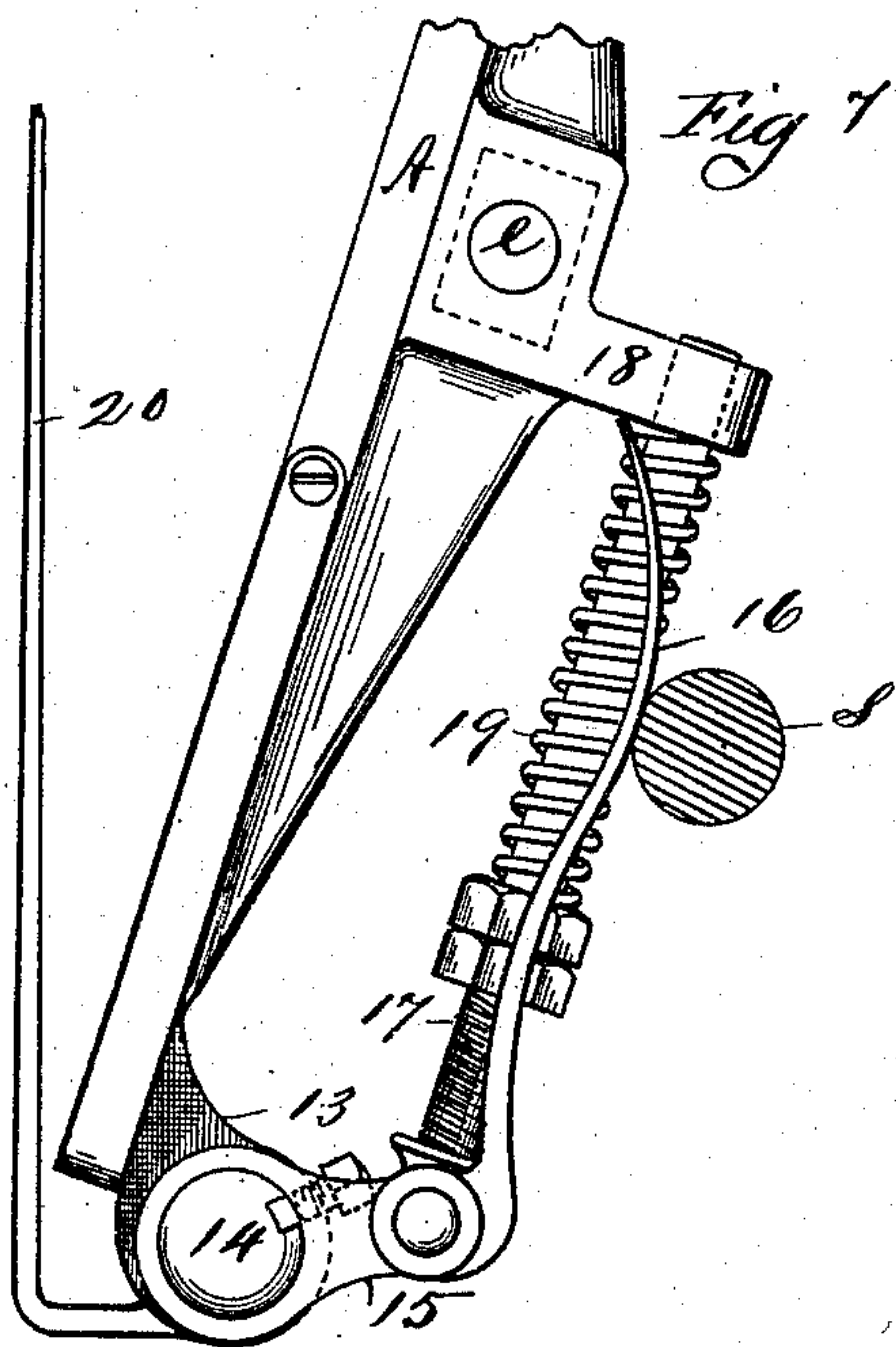
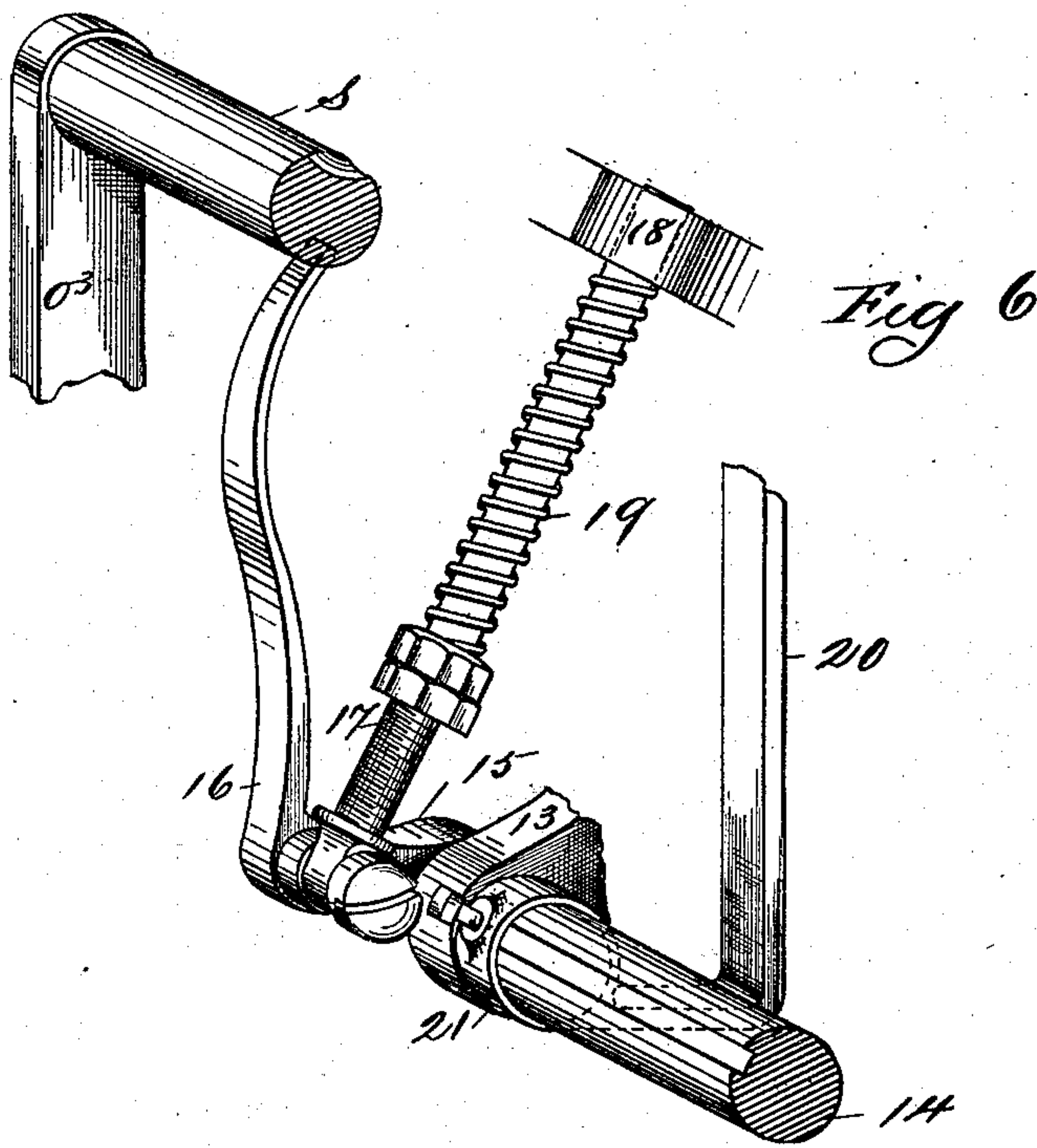
Witnesses  
J. D. Garfield  
Wm. A. Chapin

Inventor  
Francis H. Richards  
By Henry A. Chapin  
Atty

(No Model.)

5 Sheets—Sheet 5.

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J. D. Garfield.  
Wm. A. Chapin

Inventor  
Francis H. Richards,  
By Henry A. Chapin  
Atty



# UNITED STATES PATENT OFFICE.

FRANCIS H. RICHARDS, OF SPRINGFIELD, MASSACHUSETTS, ASSIGNOR TO  
GILMAN VERTICAL PRESS COMPANY, OF NEW HAMPSHIRE.

## OSCILLATING PRINTING-PRESS.

SPECIFICATION forming part of Letters Patent No. 241,421, dated May 10, 1881.

Application filed September 3, 1880. (No model.)

*To all whom it may concern:*

Be it known that I, FRANCIS H. RICHARDS, a citizen of the United States, residing at Springfield, in the county of Hampden and State of Massachusetts, have invented new and useful Improvements in Foot-Power Printing-Presses, of which the following is a specification.

My invention relates to self-inking printing-presses adapted to be operated by a foot-treadle, and is in the nature of an improvement upon the patent to Edward L. Gilman, May 7, 1878; and the objects thereof are to provide improved devices for guiding and turning the platen in its upward and downward movements, for operating the ink-roller carrier and ink-table, for governing the movements of the tympan-fingers, for carrying the platen against the type-bed with greatly-increased power, and for adjusting the face of the platen and of the type-bed to perfectly parallel planes.

I attain the above-named objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a front elevation of the printing-press embracing my improvements, showing the platen down against the bed. Fig. 2 is an isometrical view of the parts of the press above the table, also showing the platen down. Fig. 3 is a side elevation from the right, in which one of the stands is partly broken away and in which the platen is shown in its upward position. Fig. 4 is a left-hand side elevation, partly in section, with the stands and one of the platen-posts removed. Fig. 5 is a view, partly in section, of an eccentric-bolt connection between the bed-frame and platen. Fig. 6 is an isometrical view of portions of the tympan-finger shaft and its operating devices. Fig. 7 is an end elevation of the left-hand end of Fig. 6, the lower portion of the platen, and showing the relative positions of the latter and the tympan-finger-operating devices with said fingers swung off from the platen. Fig. 8 is a transverse section of one of the hollow posts *a a'* and of the platen-shaft box and the treadle connecting-rod, together with the end of the platen-shaft and a portion of the platen.

Like letters and numerals refer to like parts in the different figures.

The bed B, with its hollow posts *a a'*, table D, and stands *c*, constitute the frame of the machine. The bed B is provided with a suitable wide channel between the posts *a a'*, for the reception of the usual printer's chase, in which the type-form is locked, and said chase is secured in place under the platen by screws *c<sup>b</sup>* through the ends of the bed. The platen A is provided with a shaft, *e*, whose ends project beyond the ends thereof and through boxes *e'*, fitted to slide in the vertical slots formed in the walls of the hollow posts *a a'* adjoining the ends of the platen, and the flange on said boxes is adapted to fill the space between the said posts and the ends of the platen and prevent endwise motion of the latter.

Two vertical rods, *d d*, whose ends are perforated transversely, are hung, one on each end of the platen-shaft *e*, within the hollow posts *a a'*, as seen in Figs. 1, 4, and 8, and extend therefrom down through the table D. Said rods *d* are made in two parts, which are united by means of a split right-and-left screw-coupling, *b*, each provided with flanges, and a thumb-screw through them, as shown, by means of which said coupling can be securely fastened in any desired position on said rods, and by turning said coupling thereon the rods can be nicely adjusted to such a length as the proper action of the platen-moving devices may demand.

A shaft, *h*, is hung in proper bearings in the stands *c* parallel with the base of the bed B, and is adapted to have a reciprocating rotary motion. Said shaft is provided with two arms, *d'* and *d<sup>2</sup>*, and is bent for a short distance between each of said arms and the ends of it into a double-crank form, as seen in Figs. 1, 3, and 4, and centrally between its ends is fixed a segment of a circle, *f*, adapted to carry on its periphery a wire rope or chain, *g*, which is secured to one end thereof, as shown. The other or lower end of said chain or rope *g* is secured to a foot-treadle, E, whose rear end is pivoted to a rod, F, secured transversely between the rear lower ends of stands *c*. The lower ends of the aforesaid vertical rods *d d* are pivotally connected to the sides of the arms *d' d<sup>2</sup>* at their



ends by bolts passing through them, as seen in Fig. 1.

Two retracting-springs, H H, are secured adjustably by chains, as shown, to collars *i i* on said rod F, and their upper ends are secured (likewise by chains) around shaft *h* at the base of arms *d' d''*, as seen in Figs. 1 and 3.

A rod, F<sup>2</sup>, is fixed between the lower front ends of stands *c*, opposite rod F in the rear.

On one side of the segment *f*, near to shaft *h*, is pivoted a pawl-rod, *j*, its end next to said shaft bent in the form shown, and its opposite end is properly formed to engage with the ratchet-wheel K. A spiral spring, *t*, is attached to the under side of the table D and to said pawl-rod, as shown.

A circular ink-table, M, is attached to the upper end of a vertical shaft, N, to the lower end of which is attached the aforesaid ratchet-wheel K, and shaft N is fitted to revolve in a proper vertical bearing set in table D. A frictional spring, *o*, is attached to the table, and bears slightly against the under side of the ink-table M.

Attached pivotally to the bolt which passes through the arm *d''* on shaft *h* and the lower end of one of the rods *d* is a connecting-rod, *o''*, made of the form shown in Fig. 3, and, running up through the table by the end of the bed B, is pivotally connected to one arm of a bell-crank lever, *o''*, which is pivoted to an arm, *o''*, projecting from the hollow post *a'*, as seen in Figs. 2 and 3. An arm, *o''*, corresponding to said arm *o''*, projects from hollow post *a*, and attached pivotally thereto by a bolt, *q*, Fig 5, is a swinging arm, *r*.

A post, *x*, projects from the upper side of the platen, as seen in Fig. 1, and to said post, and to the side of the aforesaid arm *o''* on post *a*, is pivotally attached a connecting-rod, *v*, bolt *q* passing through its end at arm *o''*. Said bolt *q* has that portion of it which passes through said rod *v* turned eccentric to its axis, as seen in Fig. 5. A set-screw, as shown, is placed in the end of arm *o''*, and adapted to be screwed against bolt *q* to prevent it from turning. Connecting-rod *v* is provided with clamp pivot-holes, as shown, so that there may be no lost motion in this connection.

One arm of the bell-crank lever *o''* is perforated transversely to receive the end of a shaft, *s*, and the other end of said shaft passes in like manner through aforesaid swinging arm *r*.

*z* is an ink-roller-frame carrier, consisting of the semi-tubular longitudinal part 2 and the parts 3 4, of like tubular form, at right angles to the former, and having an arm, 5, projecting from said part 3, as shown. The shaft *s* passes through the tubular portion 2 of the frame-carrier *z*, and the latter has an oscillatory motion thereon. The tubular parts 3 and 4 of said carrier are set a little to one side of the axis of shaft *s*, as shown, and are adapted to receive two posts, 6 and 7, of the ink-roller frame *w*, on the upper ends of which are nuts 8, as shown. Spiral springs 9 are placed on

posts 6 and 7, between the carrier *z* and the frame *w*. A bent connecting-rod, 10, is pivotally attached to the side of post *a'*, next to the platen, and to the end of arm 5 on frame *z*.

The ink-rollers 11 are adapted to turn on shafts which are fitted to proper twin boxes attached to the frame *w*, as shown, and are provided with collars near their ends, which roll on tracks 12, running transversely across bed B, when the ink-rollers run off from the type-form.

On the upper side of the platen, near its rear edge, are provided two short posts, 13, which are perforated transversely for the reception of the tympan-finger shaft 14, which is splined longitudinally, as shown, and has a crank, 15, formed on one end thereof, and to the end of said crank is rigidly fixed a bent lever, 16, as shown in Figs. 6 and 7.

Pivotally attached to the side of crank 15, as shown in Fig. 6, is a rod, 17, provided with adjusting-nuts, as shown, and its upper end enters a hole formed through a projection, 18, on the back of the platen. A spring, 19, is interposed between said projection 18 and said nuts on rod 17.

The tympan-fingers 20, of which there are two, having collars 21 formed on their lower ends to fit on shaft 14, and bent in the form shown, are secured on said shaft by set-screws whose points enter said spline in said shaft, and said fingers reach from the shaft under the bottom edge and up in front of the platen, as seen in Figs. 3 and 7.

Fixed to the outer sides of the posts *aa'* are two vertical rods, 22, adapted to support two brackets, 23, each of which is adapted to support a paper-table, 24, pivotally hung on said brackets to one side of their centers.

The operation of my press is as follows, it being understood that the usual provision of type-form and ink has been made: The position of the operating parts of the press, when the platen is up, presenting its under side or face conveniently for placing the paper to be printed upon it, is that shown in Fig. 3. Upon pressing upon the foot-treadle E shaft *h* is caused to turn by the action of the rope or chain *g*, attached to the periphery of the segment *f*. As said shaft turns arms *d' d''* are caused to swing downward, drawing rods *d* connected to the ends of the platen-shaft *e* and the platen in the same direction. Immediately that said downward movement begins the platen commences to turn on its shaft in boxes *e'*, so actuated by the connection of the post *x* on the back of the platen with the fixed arm *o''* on post *a* of the frame through the connecting-rod *v*, and while moving down turns so as to bring its face squarely against the type thereunder, or to the position shown in Figs. 1, 2, and 4.

To enable the operator to so adjust the plane of the face of the platen that it shall perfectly agree with the plane of the type-face, means for slightly swinging the platen on its shaft



while nearly against the type are provided in the bolt *q*, connecting one end of rod *v* with arm *o*<sup>5</sup>. By turning this bolt slightly its eccentric portion causes rod *v* to move longitudinally in the direction required to adjust the platen to the necessary plane, and when so adjusted the bolt may be secured against turning by the set-screw shown on one side of arm *o*<sup>5</sup>. When shaft *h* is turned far enough over to bring the ends of arms *d'* *d*<sup>2</sup> down to the position relative to the axis of said shaft which the double-crank shape of it permits before rods *d* can strike it, a very great pressure of the platen upon the bed is produced as said arms and rods approach a corresponding line, and a powerful printing impression is the result. While shaft *h* is revolved, as above stated, springs *H* are elongated, and upon lifting the foot from the treadle their retracting power turns said shaft in the opposite direction and lifts the platen back to its upward position. Said springs, as heretofore set forth, are connected to collars *i* on rod *F*, and by turning and setting said collars suitably thereon the tension of said springs may be increased or diminished, as may be desired. When shaft *h* is revolved to bring the platen down, as above described, the pawl-rod *j* is drawn toward the front of the machine, and when said shaft turns back the end of said rod engages with the ratchet-wheel *K*, and so turns the ink-table *M* partly around, spring *t* serving to hold the end of the rod against the wheel.

It will be seen that the ink-rollers in Fig. 1 are shown in front of the posts *a a'*, having been brought into that position and across the type-form from the ink-table as the platen moved up. Figs. 1 and 2 show the position of the said rollers and their actuating parts when the platen is down. Simultaneously with the downward movement of the platen just described occurs the backward movement of the ink-rollers onto the ink-table, actuated by the swinging of the bell-crank lever *o*<sup>3</sup>, caused by the downward movement of rod *o*<sup>2</sup>, connecting it with arm *d*<sup>2</sup> on shaft *h*.

The connection of the upper end of the ink-roller-frame carrier *z* with post *a'* by the connecting-rod 10 allows said frame to swing freely below said rod. Frame *z* obeys the oscillating motions of shaft *s*, the latter being actuated by the movement of the bell-crank lever. Thus each time that the platen goes up the ink-rollers are carried from the ink-table across the types between posts *a a'*, and when it descends they return to said table and the springs 9 tend to force the rollers against the type-bed sufficiently to cause the form to be properly inked.

It will be observed that the tympan-fingers, when the platen is up, spring away from the face of the platen, as shown in Figs. 3 and 7, and they are caused to move to this position by the striking of lever 16, Fig. 7, against

shaft *s* when the platen swings to this position; but as soon as the platen has turned slightly on its axis said lever is moved away from said shaft, and, spring 19 operating to drive rod 17 downward, shaft 14 is revolved, causing the fingers 20 to quickly spring against the face of the platen and hold the paper placed thereon to be printed.

The paper-tables 24, supported on brackets 23 at the ends of the bed, are provided with pivots placed on their under sides, one side of their centers, and said brackets may be swung backward and the tables 24 be swung over the ink-table in such a way that they offer no obstruction to placing a box-cover over the whole upper part of the machine.

This press may be easily converted into a power-press by any suitable attachment whereby shaft *h* is caused to have a reciprocating rotary motion, such as is given to it by the treadle and its shaft-connections and by springs *H*, in which case those parts may be dispensed with.

By the construction herein described and shown a self-inking foot-power press is provided which is simple in construction, one in which an unusually large type-form can be practically printed from, owing to the great power which operates to force the platen down, and in which the self-inking devices are simple and effective.

What I claim as my invention is—

1. The combination, in a printing-press, of the bed *B*, provided with the slotted posts *a a'*, the platen *A*, provided with its shaft *e*, and the connecting-rod *v*, secured pivotally to the platen and to the frame of the machine, and appliances for moving the platen vertically between said posts, substantially as and for the purpose set forth.

2. The combination, with the bed *B*, of the platen adapted to be moved vertically against it, the connecting-rod *v*, attached to the platen, and the eccentric-bolt *q*, securing said rod to the frame of the machine, substantially as and for the purpose set forth.

3. The combination, with the connecting-rods *d d*, of adjustable length, connected to the platen-shaft, of the shaft *h*, provided with arms *d' d*<sup>2</sup>, and with the segment *f*, of the treadle connected with said segment, and of the springs *H*, adjustably connected with the frame of the machine, substantially as and for the purpose set forth.

4. The combination, with the ink-roller-frame carrier *z*, of the connecting-rod 10, pivotally attached to the latter and to the frame of the machine, shaft *s*, arm *r*, and bell-crank lever *o*<sup>3</sup>, connected with shaft *h*, substantially as and for the purpose set forth.

FRANCIS H. RICHARDS.

Witnesses:

H. A. CHAPIN,  
I. L. DOLE.