

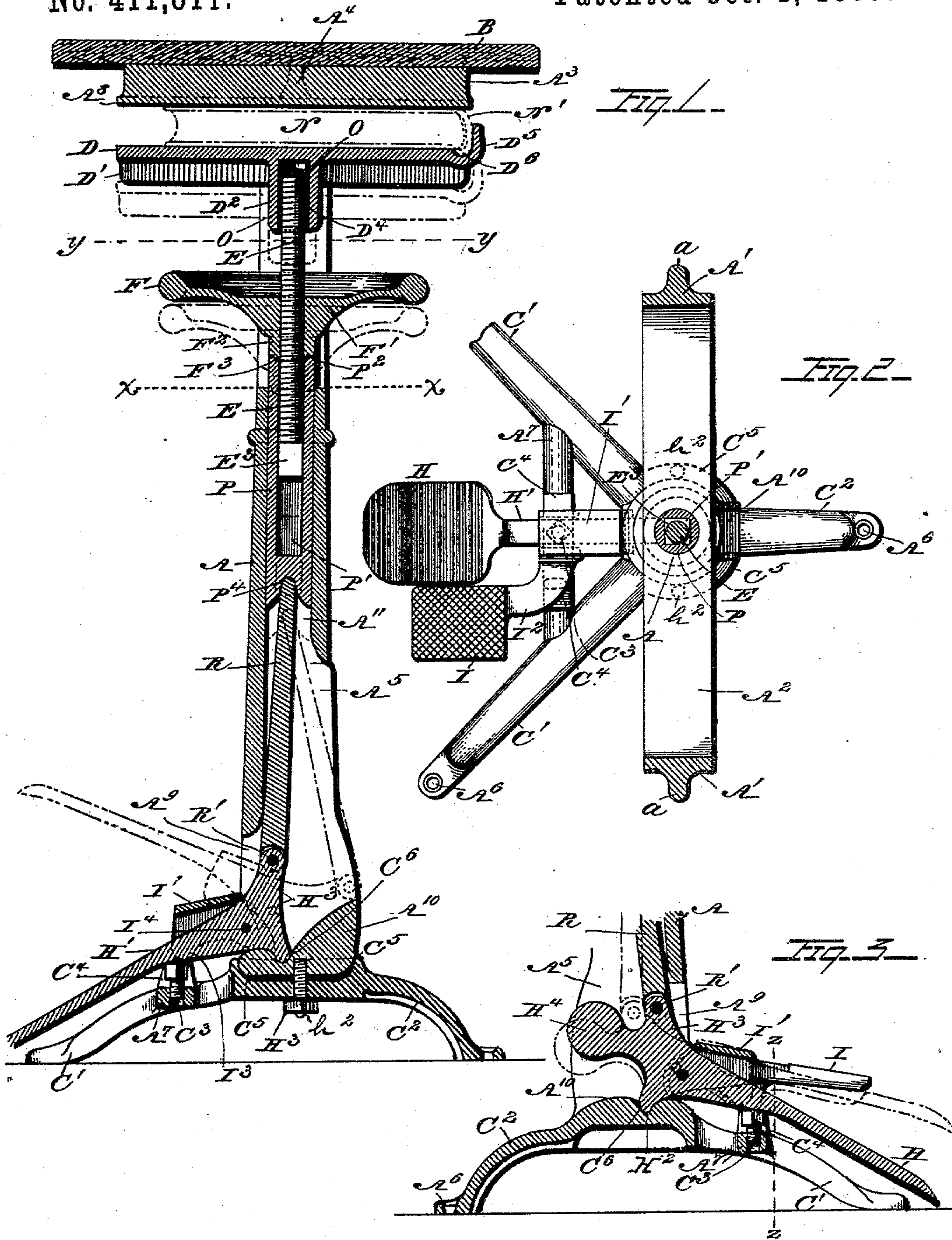
(No Model.)

3 Sheets—Sheet 1.

I. W. HEYSINGER.
COPYING PRESS.

No. 411,811.

Patented Oct. 1, 1889.



WITNESSES:

Joshua Pussey
John Tolson

INVENTOR

Isaac W. Heysinger

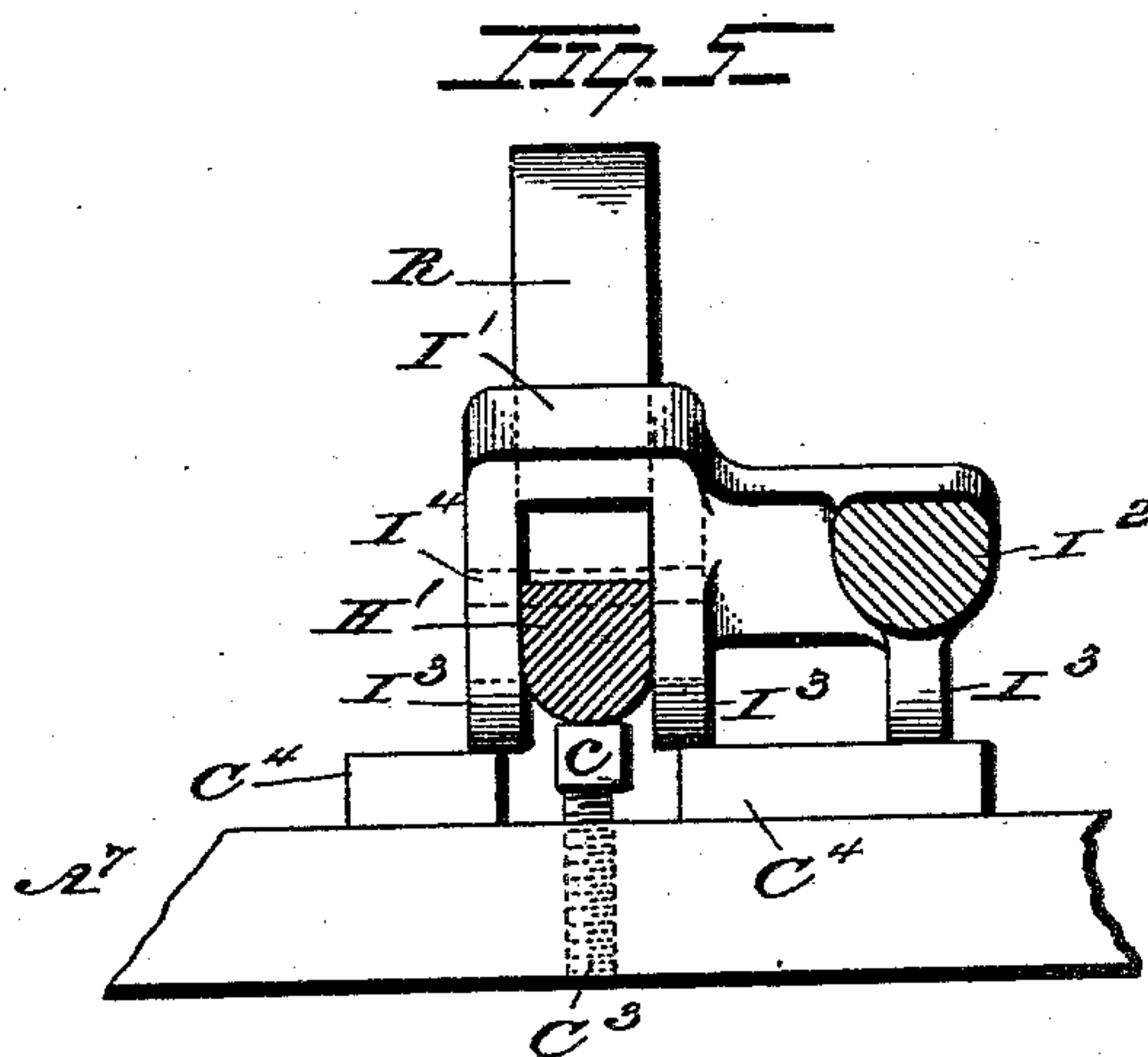
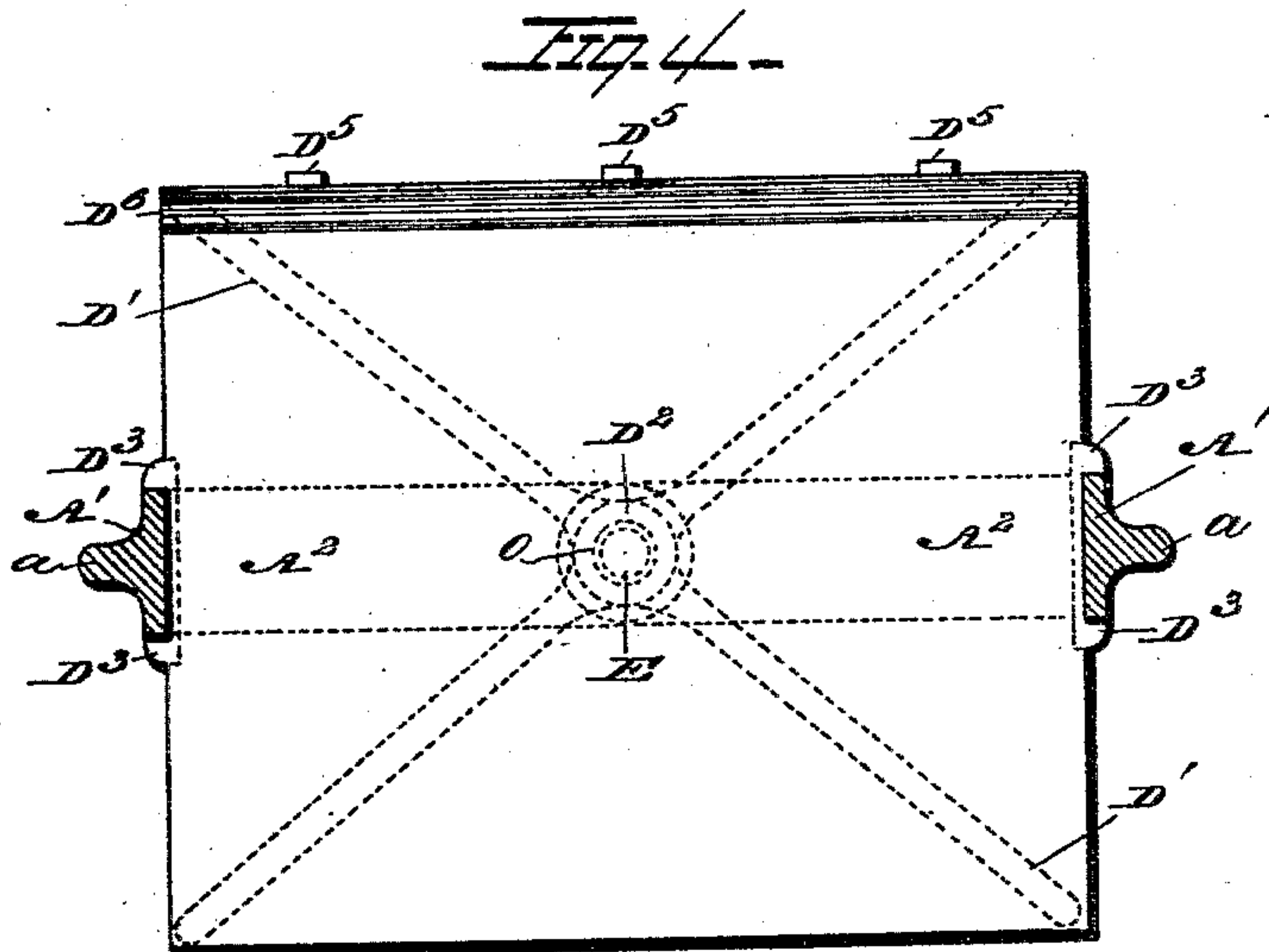
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3 Sheets—Sheet 2.

I. W. HEYSINGER.
COPYING PRESS.

No. 411,811.

Patented Oct. 1, 1889.



WITNESSES:

Joshua Pusey
John Talbot

INVENTOR

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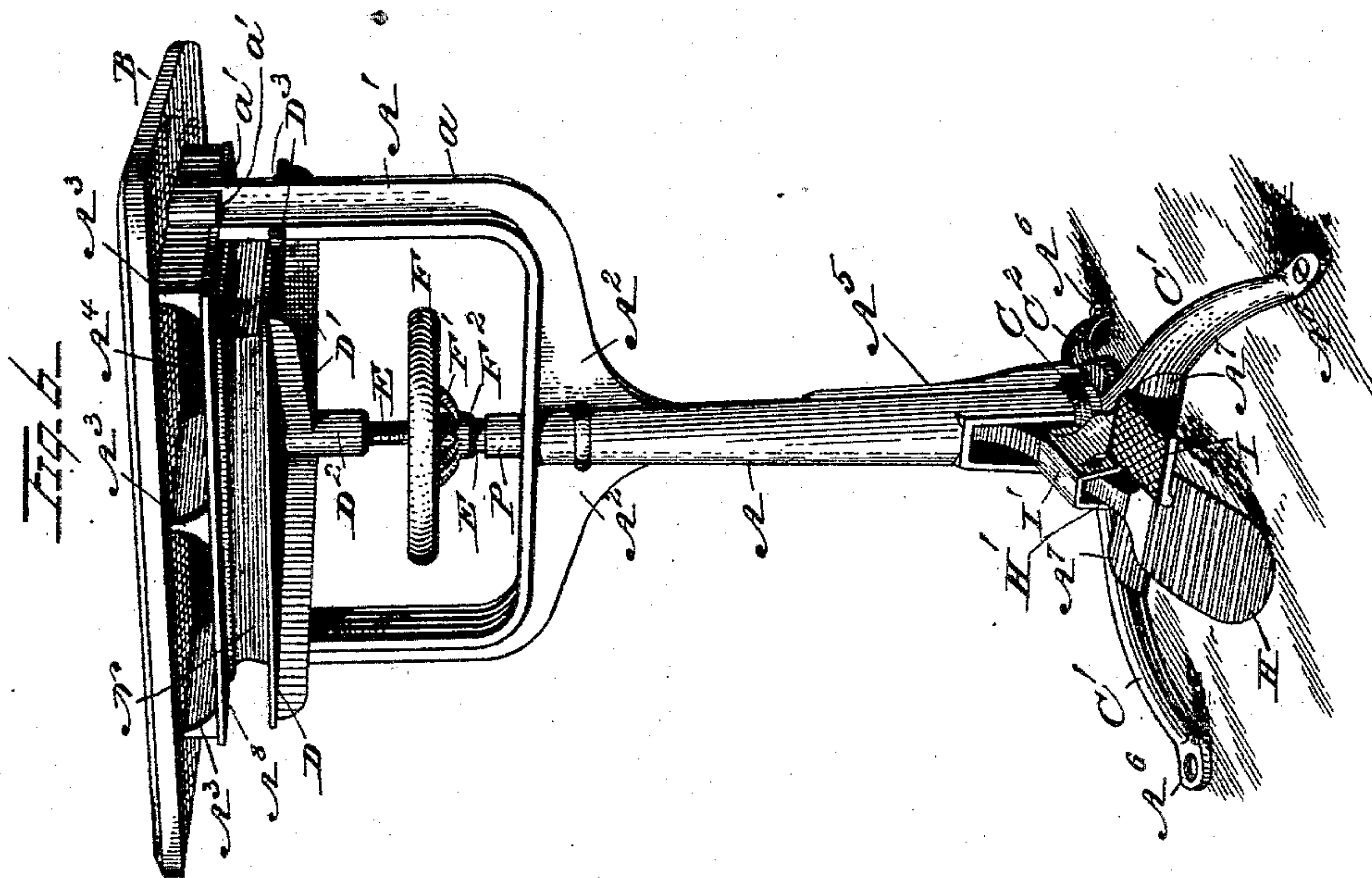
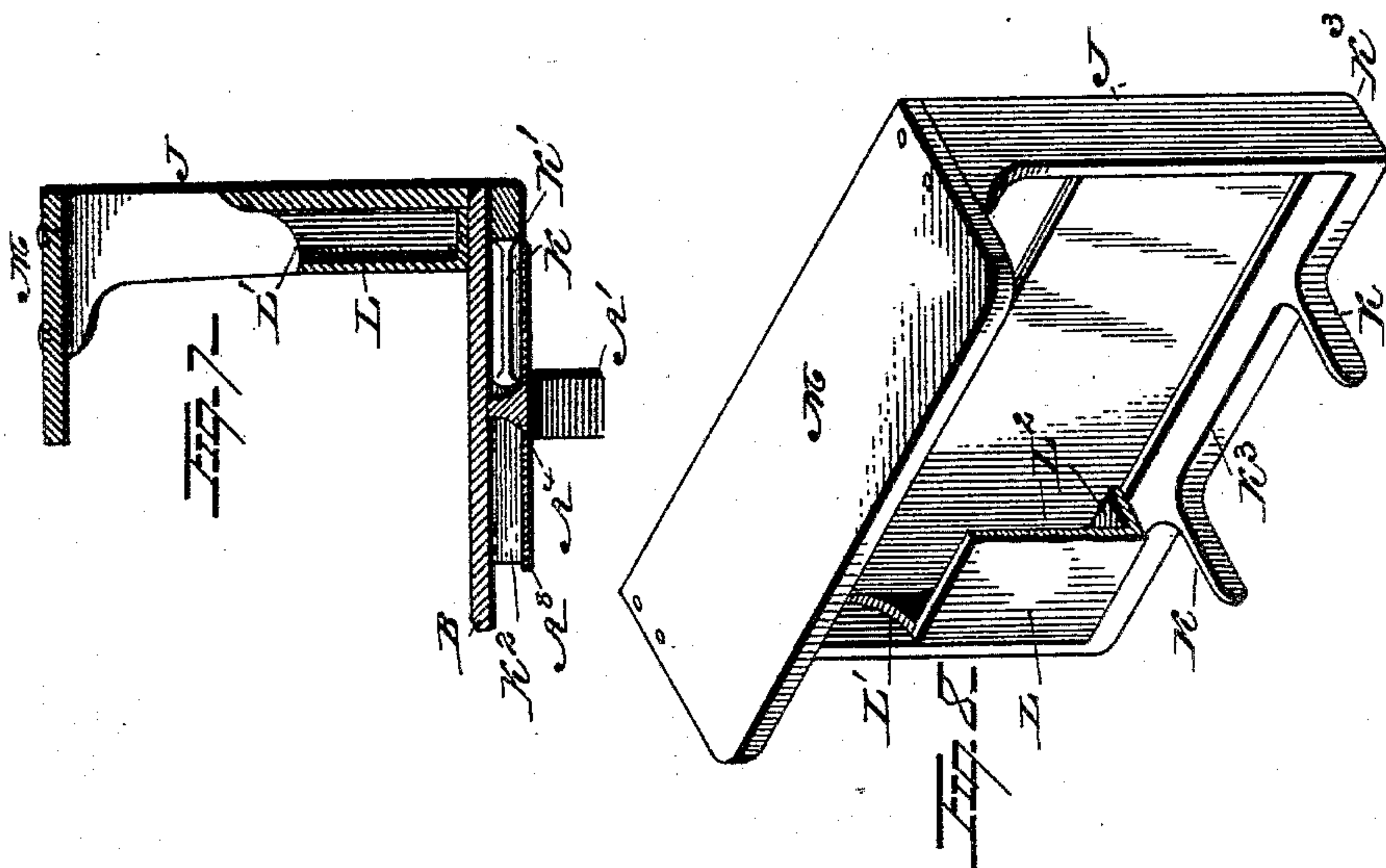
(No Model.)

3 Sheets—Sheet 3.

I. W. HEYSINGER.
COPYING PRESS.

No. 411,811.

Patented Oct. 1, 1889.



WITNESSES:

WITNESSES:
Joshua Pierce
John Tolson

INVENTOR

INVENTOR
Isaac W. Keyserlinger.

UNITED STATES PATENT OFFICE.

ISAAC W. HEYSINGER, OF PHILADELPHIA, PENNSYLVANIA.

COPYING-PRESS.

SPECIFICATION forming part of Letters Patent No. 411,811, dated October 1, 1889.

Application filed May 11, 1889. Serial No. 310,411. (No model.)

To all whom it may concern:

Be it known that I, ISAAC W. HEYSINGER, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have made a certain new and useful Improvement in Copying-Presses, of which the following is a full, clear, and exact description, reference being had to the drawings which accompany and form a part of this specification, in which—

Figure 1 is a vertical section from front to rear through the middle of a letter-copying press embodying my invention. Fig. 2 is a horizontal section along the line X X of Fig. 1, showing the lower parts in surface view beneath. Fig. 3 is a slight modification of the lower part of Fig. 1, showing also some parts from the opposite side. Fig. 4 is a horizontal section along the line Y Y of Fig. 1, looking upward. Fig. 5 is a vertical section of the operating mechanism along the dotted line Z Z of Fig. 3, looking to the rear. Fig. 6 is a perspective view of the whole press in use, with press copy-book in place. Fig. 7 is a vertical section from front to rear of the detachable rack which I use with my press when required for holding loose papers, &c., and showing the method of attachment thereof to the press; and Fig. 8 is a perspective view of said rack removed from said press.

The lettering in all the figures is uniform.

My invention relates to the construction of a press especially adapted for use as a letter-copying press, in which copies of letters, manuscript, &c., are taken upon moist sheets of tissue-paper under strong pressure, such as are in common use. My press is also adapted to be used for various other purposes where a quickly-acting and powerful press readily thrown out of action is required.

The object of my invention is to produce an adjustable press in which the pressure is applied from beneath by means of a toggle or the like, operated by foot-power, acting upon a movable platen, in which the adjustment is more readily made or altered and the pressure is more direct than in presses in general use, in which also the pressure of the platen is adapted to be released by pressure of the foot upon a releasing-treadle, and in which the movement of the toggle is made adjustable, so that the distance to which the toggle-joint passes beyond the vertical is

readily regulated, and also to the general construction of parts and their combination, as will be hereinafter described in detail, and to the attachment to said press of a detachable rack constructed and applied as will be further described in this specification.

Referring to the drawings, Fig. 1 is a vertical section, taken from front to rear, of one of my presses in use, a press copy-book N being shown compressed and in place.

A is a hollow vertical column expanded above into two branching vertical arms A' A', (see Fig. 6,) said arms connected together above by the broad flat plate A⁸, against which from beneath the platen D operates. I usually form this construction, including column A, arms A' A', and top plate A⁸, in a single piece of cast metal, except when great strength of resistance is required, in which case I form it in sections bolted together, as is usual in such classes of workmanship.

To increase the resistance and rigidity of the frame-work A A' A⁸, I provide stiffening-ribs A² A² a a, and upon the upper surface of A⁸ the gridiron-work ribs A³ A³ A⁴ A⁴, Figs. 1 and 6. The supplemental wooden top B, which forms a table, is secured upon the upper surface of these ribs by screws a' a' passing up from beneath through the top A⁸, Fig. 6, leaving an open space between the wooden cover B and the metal top A⁸ and interspaces between the ribs A³ and A⁴. This structure is supported beneath upon the foot C, having legs C' C' C², the rear leg C² being a little shorter than the others, so that when standing in position for use the column A is inclined slightly to the rear from beneath upward. In this way a book is more readily inserted and the rear side of the wooden top rests securely against the wall of the room, holding the whole press firm and rigid. The adjustment-wheel F is also more readily reached for manipulation. The column A is hollow from above downward except at its lower part, where it is closed by the transverse strut-support A¹⁰, Figs. 1 and 3, which I prefer to cast integral with the post to prevent danger of parting under the strain of thrust. The supporting-legs (see Fig. 2) are cast in a single construction with the center piece, which is recessed above at C⁵, Figs. 1 and 2. Into this recessed center the lower

end of column A is seated and secured by the bolts h^2 h^2 passing up from beneath.

The column A in its lower portion is open in front at A^9 and in rear at A^5 , the margins of said openings suitably strengthened by ribs, and I prefer to carry the sides of A^5 in rear backward, as shown in Fig. 1, to give additional support against displacement in the recess C^5 of the base. The vertical central opening A^{11} through the column A, I usually make cylindrical in form, though any other sectional shape may be used. In its upper part reciprocates a loose rigid plunger P, corresponding in shape and size to the vertical opening A^{11} . This plunger P is transversely notched in its lower face, as shown at P^4 , Fig. 1, and is provided with a vertical opening P' , extending downward from above through the greater part of its length, which opening is made square or otherwise angular in cross-section, as shown in Fig. 2. The plunger P is supported by its notched lower end upon the top of the thrust-bar R, which is transversely flattened and rounded to fit into the notch P^4 and form a movable joint therein. The lower end of the thrust-bar R is pivoted by the cross-pin R' to the elevated upper part of the toggle-block H^3 , and the lower part H^2 is seated in the cross-groove C^6 of the upper face of the thrust-block A^{10} , forming a joint therewith similar to that of R in the notch P^4 . The foot-lever H is attached to and projects by its neck H' forward from the middle of the toggle-block H^3 H^2 , through the slot A^9 of the column A, and terminates in a flat horizontal expansion H, as shown in Figs. 2 and 6. It is obvious that as the foot-lever H is raised or depressed it will cause the pivot R' to describe the arc of a circle upon the support H^2 beneath, and as the points of support H^2 , R' , and P^4 are in a straight line (see Fig. 1) when the foot-lever H is depressed, when the same is elevated the joint R' will pass to the rear and downward and carry down with it the thrust-bar R and the plunger P, which rests by gravity upon its upper end, thus forming a powerful toggle-joint acting upward.

When the foot-lever H is elevated, as shown in the dotted lines of Fig. 1, part of the toggle-block H^3 rests against the rear of the thrust-block A^{10} and is supported thereby. In order to regulate the extent of movement of the foot-lever H, so as to render the toggle more or less sensitive—that is, to regulate the point to which the pivot R' shall pass beyond a line drawn between H^2 and P^4 —I provide a cross-bar A^7 , Figs. 1, 2, 3, 5, and 6, which extends across between the legs C' C' , as shown in Fig. 2, and in this bar, beneath the neck H' of the foot-lever H, I somewhat loosely insert a thumb-screw C^3 vertically, which may be readily screwed upward or downward, and upon the upper end of which the lower surface of the neck H rests when the foot-lever is depressed. As this screw C^3 is set higher or lower the toggle will be more or less easy to

let off under pressure, and may thus be adjusted at will.

In connection with the foot-lever H, I use a supplemental releasing-lever I, which I construct as follows: As shown in Figs. 5 and 6, I attach to the neck of the foot-lever, in front of the opening A^9 of the column A, two side pieces I^3 I^3 , having closed top I' , by means of the transverse pivot I^4 , passing through the said side pieces and the neck H' , and from the side of one of the side pieces I carry laterally and to the front the neck I^2 , which terminates in a flat horizontal plate I alongside the foot-plate H and somewhat in rear thereof. (See Fig. 2.) Upon the upper side of the cross-bar A^7 is an elevation C^4 C^4 , the lower end of the side pieces I^3 I^3 being adapted to engage therewith when the foot-lever H is brought down in contact with the top of the screw C^3 , and thereby elevate the foot-plate I, as shown in Fig. 1, while when the foot-lever H is elevated the top part I' , connecting the side pieces I^3 I^3 , will rest upon the neck H' , as shown in the dotted lines of Fig. 1, the two foot-plates when thus elevated occupying substantially a common plane. Bringing down the foot-lever, thus throws up the foot-plate I, in which position it rests while the press is operating upon the book or the like. When it is desired to release the press, pressure of the foot is applied to the top surface of the foot-plate I, the lugs of the side pieces I^3 I^3 impinge forcibly against the raised portions C^4 C^4 of the cross-bar A^7 , and the pivot I^4 in rear of the releasing-lever is tilted forcibly upward, carrying with it the neck and foot-plate of the foot-lever H. The weight of the thrust-bar R, rod P, and the other parts above carries the toggle-joint R' downward and backward, tending to release the parts by a sudden shock; but the foot upon this plate I arrests this reverse movement as soon as the parts are released, and as the foot is raised the parts settle back noiselessly and without shock or jar.

The releasing-lever may be inverted from the form shown in the figures, so as to attach the lever I to the cross-bar A^7 ; but it is not nearly so good a construction, as the foot has no control of the toggle and other parts when once released.

In Fig. 3 I show in the rear of the toggle-block H^3 a rearward counter-weight H^4 , to assist in bringing down the parts when released; but if properly constructed this will not be required, except in special cases.

Into the vertical opening P' of the plunger P is inserted a screw-shaft E, the lower end of which is provided with a square or otherwise angular head E^3 , Figs. 1 and 2, fitted to reciprocate vertically in said opening P' , but not capable of rotation therein. Upon this screw-shank E is a hand-wheel F, having preferably a circular periphery of sufficient weight to enable it to be easily operated, and radiating spokes F' , attached to a center F^2 ,

threaded to operate upon the screw-shank E and cause the same to advance or retreat in the vertical opening P' of the plunger P. The spokes F' of this wheel I depress toward the center, so that the threaded bearing is beneath the level of the periphery of the wheel, in order that the hand of the operator may be safe from injury if caught beneath by the release of the toggle. The upper part of the plunger P is dished, as shown at P², Fig. 1, around the square opening, and the under surface of the wheel center is made conical downward, as shown at F³, Fig. 1, so that the wheel F, which constantly rests upon the upper end of the plunger P during its movements, is centered thereupon and the screw E centered therein, the head E³ centered beneath in the opening P', and the upper end of the screw centered in the socket of the platen above. This insures perfect steadiness of the screw in its ascent and descent without contact with the sides of the opening P' and with a direct vertical thrust at all times.

To the upper end of the screw E is attached the platen D, which compresses the book or other object to be operated upon. It is essential that this platen have a horizontal position, and yet one capable of some deviation to conform to irregular thicknesses of the same book in different parts thereof—that is, that it be supported by a somewhat flexible joint, but one which will hold the platen normally horizontal, so as to enable a book to be inserted with ease and certainty. Upon the under side of the platen I provide a vertical collar D², considerably elongated, which descends when the press is opened to its widest capacity into the depression formed by the downward concavity of the spokes of the hand-wheel F. To the sides of this collar D² are attached the stiffening-ribs D' D', Figs. 1, 4, and 6, the whole being formed in a single casting. The collar D² has a central vertical opening D⁴ from beneath, closed above, and the upper end of the screw-shaft E is inserted into this opening D⁴. Between the screw-shaft E and the inner sides of the opening D⁴ is inserted a collar or sleeve of leather or the like, which surrounds the screw and is forced in with great firmness. Belt-leather is what I prefer to use, though other somewhat flexible material may be employed. This elongated collar with its contained sleeve securely holds the platen perfectly horizontal, but under pressure is able to yield sufficiently to enable the platen to accommodate itself to any inequality at the sides of the object under compression. The platen also works without noise, and rises and falls with the screw-shaft not only by gravity but by adhesion as well. The sides of the platen, as shown in Fig. 4, are adjacent to the arms A' A' of the frame of the column A. Ears D³ D³ D³ D³ are provided upon the sides of the platen, which project and engage with and slide along the opposite margins of the

arms A' A', so that the full size of the platen is adapted to be used, no internal ribs or grooves being used. At the rear side of the platen I raise three or more fingers D⁵ D⁵ D⁵, Figs. 1 and 4, which are constructed to pass behind the rear side of the top A⁸ without contact therewith, and these fingers prevent the insertion of the book behind the rear side of the platen. In front of these fingers, along the rear side of the platen, I form a shallow groove D⁶, extending entirely along the rear face of the platen, (see Figs. 1 and 4,) in which groove the back of the book is adapted to rest, as shown in Fig. 1, so as to prevent crushing of the binding thereof, and also to enable a more even pressure to be applied, the binding being usually the thickest and least compressible part of the letter-book and most likely to be injured by crushing, more especially if leaves be removed from time to time, as is often required to be done.

The press in its different parts, as above described, is put together as follows: The column A being bolted to the base C and the wooden top B attached, the plunger P is inserted from above into the hollow column A, dropping down therein. The hand-wheel F being run down part way upon the screw-shaft E, the latter is inserted square head downward into the upper end of the hollow column A, and thence into the square vertical opening in the upper end of the plunger P, into which it is fitted to go. The plunger P is now raised from beneath, carrying the screw and hand-wheel up with it, and while held raised the thrust-bar R, pivoted to the foot-lever, is inserted from the front through the opening A⁹ in the lower part of the column A and is turned up vertically into the said hollow column, as the pivot R' and the block H³ follow. These parts being raised, the support H² is passed over the front of the supporting-block A¹⁰ until it finally seats itself in the transversely-grooved bearing C⁶. The plunger P and screw and hand-wheel being allowed to drop, the notch P⁴ engages with the rounded upper end of the thrust-bar, which henceforth supports the same. The screw E is now run down into the plunger by the hand-wheel, and the platen D is inserted diagonally into the frame A' A' and brought into a horizontal position, with the ears D³ D³ engaged with the sides of A' A'. The screw E being now run up by the hand-wheel F and a collar of leather O inserted into the socket D⁴, (the opening of the leather expanded to receive the rounded end of the screw,) the hand-wheel will force the screw into the socket to its full depth and seat it securely therein. Subsequent expansion of the leather will fill the threads, and, with the roughness of the inside of the iron socket, will retain the whole securely in place. The press is now ready for use, being released by foot-pressure upon the lever I or brought into pressure by force applied to the foot-lever H.

I prefer to finish the metal parts in japan,

suitably ornamented, as is common in goods of this general character, and to make the press of different sizes and weights proportioned to the work to be done. It will be observed that between the top plate A^8 and the wooden top B are open spaces formed by the ribs $A^3 A^3 A^3$. These may be utilized for various purposes—small drawers, slides, or the like—or may be left open, being practically out of sight from the overhanging of the wooden top. Into these spaces, in the rear, I fit a rack, which is especially adapted to this press, and which may be detached or applied as desired. I show this rack in Figs. 7 and 8, and in Fig. 7 it is seen attached to the upper part of the press. As the wooden top B overlaps the metal top A^8 in rear as well as in front and at the sides, I form an elongated bar K^3 , preferably of iron, provided with two or more forwardly-projecting arms K K. This bar K^3 extends along beneath the wooden top B and in rear of the metal top A^8 , projecting at the ends beyond the wooden top B, where the bar is turned vertically upward to form side pieces, which support the rack or hopper L, and above it the shelf M. The arms K K pass from the rear into the spaces between the metal top A^8 and the wooden top B in the interspaces formed by the ribs $A^3 A^3$ and support the rack.

It will be observed that the rear side of the wooden top of the press rests against the wall and not against the rack, the supports of the latter passing around the ends from beneath and not in rear. I vary the construction of this rack as desired so long as I combine it with the press by means of the supports K K, adapted to the interspaces shown and described between the tops A^8 and B and the ribs $A^3 A^3$.

I do not, in constructing my press, rigidly confine myself to the specific construction and arrangement of parts herein set forth, nor to the exact construction shown, but vary the same, as would be done by any mechanic skilled in the art, to suit special conditions and requirements, without departing from the principles of my invention as herein shown, described, and claimed.

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

1. In a letter-copying press, in combination with the hollow column A, having foot C, vertical branching arms $A' A'$, and top plate A^8 , the plunger P, adapted to reciprocate in said hollow column, screw-shank E, supported upon said plunger, hand-wheel F, operating said screw-shank, platen D, supported upon the same, and toggle $R R' H^2$, supported upon rigid bearing C^6 , together with foot-lever H, adapted to operate said toggle, substantially as described.

2. In combination with the hollow column A, supported upon foot C, having branching arms $A' A'$ above and connecting top A^8 , the plunger P, adapted to reciprocate in said hol-

low column, said plunger having internal vertical opening P' , angular in cross-section, open above, and screw-shank E, having angular head E^3 , adapted to reciprocate in the vertical opening P' of said plunger without rotation, together with hand-wheel F, working upon said screw-shaft and supported upon the top of the said plunger, said hand-wheel adapted by its rotation to raise or lower the said screw E, and the platen D, supported upon the end of the said screw and adjustable toward said top A^8 by said hand-wheel F, and the toggle-lever $R' H$, adapted to engage with and operate said plunger, screw, and platen, substantially as described.

3. In a toggle-lever press, in combination with the platen D and the foot-lever H, adapted by downward pressure to operate the toggle $R R' H^2 C^6$ and platen D, the said toggle held under tension by the pivot R' passing over the line of thrust and support $P^4 H^2$, the supplemental foot-lever I, attached to the said foot-lever H by pivot I^4 and having support I^3 against bearing C^4 in front of said pivot I^4 , said supplemental lever adapted to stand elevated by impingement of support I^3 against bearing C^4 when said foot-lever H is depressed and said toggle locked, and by pressure upon said supplemental lever to reverse the said foot-lever H and release the said toggle, substantially as described.

4. In a toggle-lever press, in combination with the locking-lever H, the supplemental releasing-lever I, pivoted to said locking-lever and operating by a separate fulcrum against a fixed support to release the same, substantially as described.

5. In a toggle-lever press, the hollow column A, having opening A^9 in front, near the lower part thereof, and thrust-support $A^{10} H^2 C^6$, extending across the bottom of the said hollow column, the toggle supported in open bearing H^2 , having pivot R' , thrust-bar R, foot-lever H, reciprocating plunger P, notched at P^4 and supported upon said bar R, platen D, supported by said plunger P, and flat top A^8 , against which said platen faces and is reciprocated by the operation of said toggle, substantially as described.

6. In a foot-press adapted to stand upon the floor, the toggle $H^2 H^3 R' R$, placed near the bottom thereof and supported upon fixed bearing C^6 , foot-lever H, hollow plunger P, supported upon thrust-bar R of said toggle, screw-shank E, vertically adjustable in said hollow plunger by screw-threaded hand-wheel F, platen D, supported upon the upper end of said screw E, together with foot C, hollow column A, branching arms $A' A'$, and transverse top A^8 , the whole constructed to operate substantially as and for the purposes shown and described.

7. In a foot-press, in combination with the hollow column A, branching arms $A' A'$, connecting top A^8 and foot C, the thrust-support $A^{10} C^6$, extended across the lower end of said hollow column and toggle-support H^2 , adapted

to operate in bearing C⁶ thereof, pivot R', thrust-bar R, and operating-lever H, the hollow plunger P, supported by bearing P⁴ upon the upper end of said bar R, said plunger having angular internal opening P' from above downward, screw-shaft E, having angular head E³, adapted to reciprocate in said opening P', screw-threaded hand-wheel F F², operating upon said screw-shaft and adapted to rest upon the upper end of said plunger during its reciprocation by said toggle and raise or lower the said screw, together with platen D, supported upon the upper end of said screw E, operated by said toggle, and adjustable to different thicknesses of material by said hand-wheel, substantially as described.

8. In a letter-press, the platen D, supported upon the screw E, said platen having elongated collar D², provided with vertical central opening D⁴ beneath, in combination with the flexible sleeve O, forcibly interposed between the sides of screw E and inside D⁴ of collar D², the whole adapted to maintain said platen D in a horizontal position and admit of flexibility under irregular compression, substantially as described.

9. In a letter-press, the platen D, having raised fingers D⁵ at its rear side and transverse groove D⁶ along the rear margin within the line of said fingers, substantially as and for the purpose described.

10. In a letter-press having foot C, top A⁸, platen D, lever H, and mechanism for operating said platen, the hollow column A, resting upon foot C in a position inclined backward from the vertical and from below upward, substantially as and for the purpose described.

11. In combination with a letter-copying press having top A⁸, stiffening-ribs A³ A⁴ upon its upper surface, and attached cover B, supported upon said ribs, a rack consisting of a shelf or the like M and supporting frame-work J J K³, said frame-work having projecting

arms K K, adapted to be inserted into the spaces between said top A⁸ and said cover B in the interspace between the ribs A³ A³, and thereby support said rack upon said press, substantially as described.

12. In a letter-copying press, the platen D, screw E, and adjusting hand-wheel F, all adapted to reciprocate together, said hand-wheel supported upon the top of reciprocating plunger P, in combination with toggle-lever mechanism beneath adapted to cause the said plunger to be reciprocated, so as to bring said platen under compression against top plate A⁸ or release the same, substantially as described.

13. As an article of manufacture, a combined toggle and screw press having hollow column A, branching arms A' A', top plate A⁸, support-block A¹⁰ C⁶, and opening A⁹, all formed in a single construction, foot-piece consisting of feet C' C' C² and central recessed support C⁵, adapted to receive the lower end of column A, rigidly bolted thereto, supplemental wooden cover B, attached to top A⁸, platen D, moving vertically between arms A' A' and guided thereby, screw-shaft E, seated at its upper end in packed collar D² of said platen, screw-centered hand-wheel F, operating said screw-shaft E, fitted to and supported upon upper end of hollow plunger P, the lower end of said screw-shaft E adapted to reciprocate in vertical opening P' of said hollow plunger, bearing P⁴ beneath said hollow plunger, toggle H³, adapted to operate through suitable connection against said plunger and reciprocate the same, and foot-lever H' H, projecting forward through said opening A⁹ and adapted to be operated by pressure upon foot-plate H, substantially as described.

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Witnesses:

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JOHN NOLAN.