

(No Model.)

5 Sheets—Sheet 1.

T. C. DEXTER.
PAPER FOLDING AND PASTING MACHINE.

No. 488,271.

Patented Dec. 20, 1892.

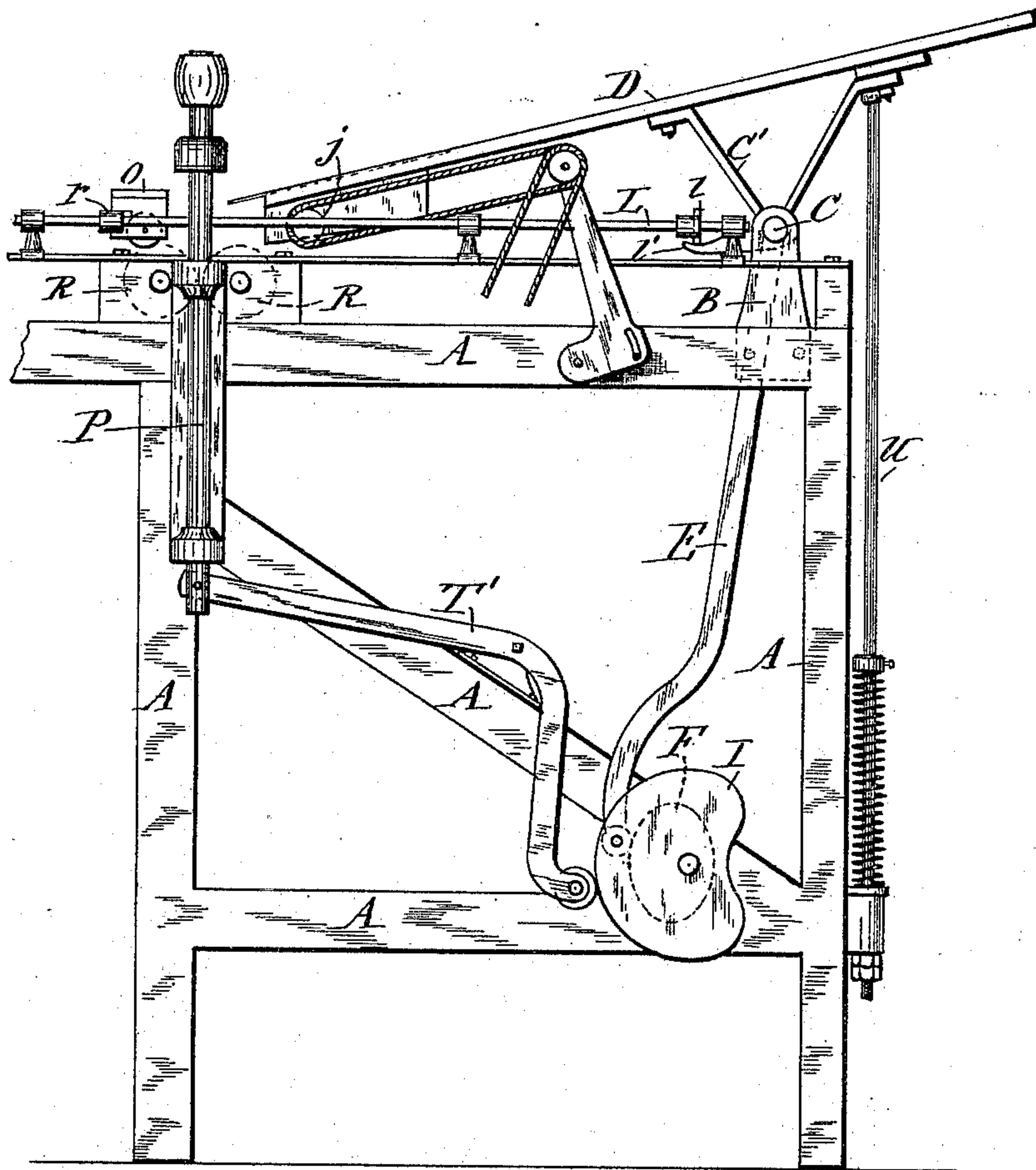


Fig. 1

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his ATTORNEYS.

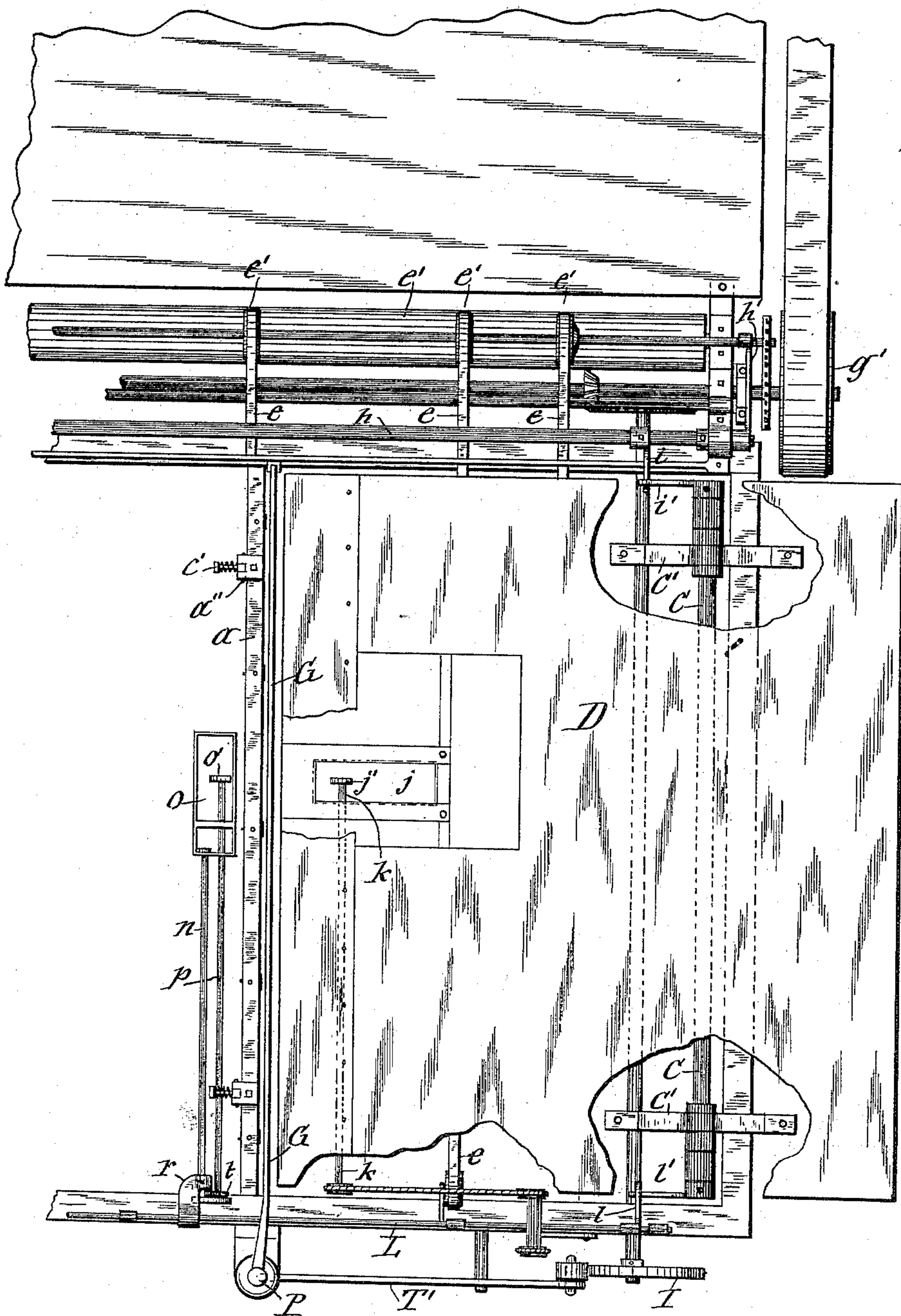
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5 Sheets—Sheet 2.

T. C. DEXTER.
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Fig. 2

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(No Model.)

5 Sheets—Sheet 3.

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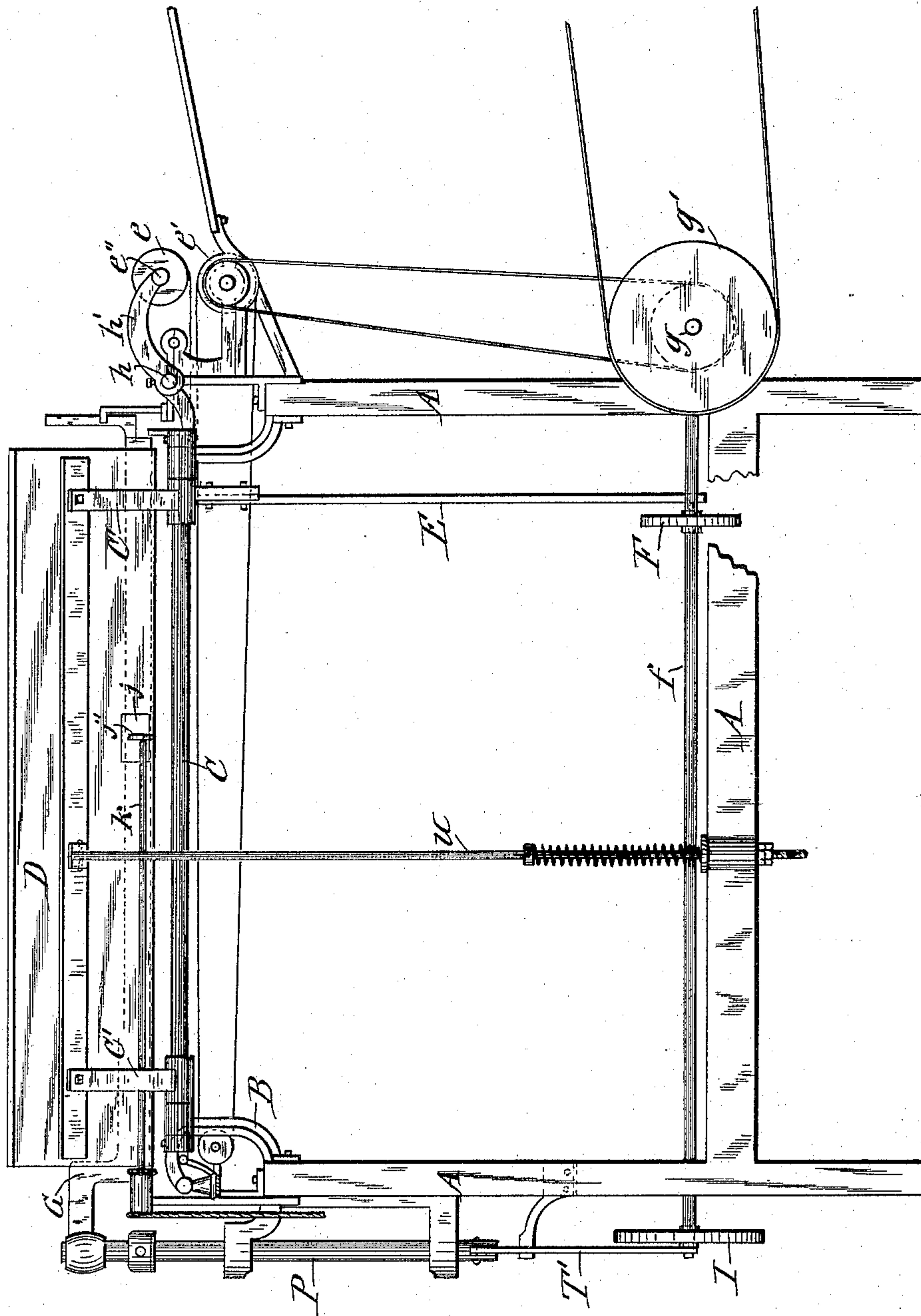


Fig. 3

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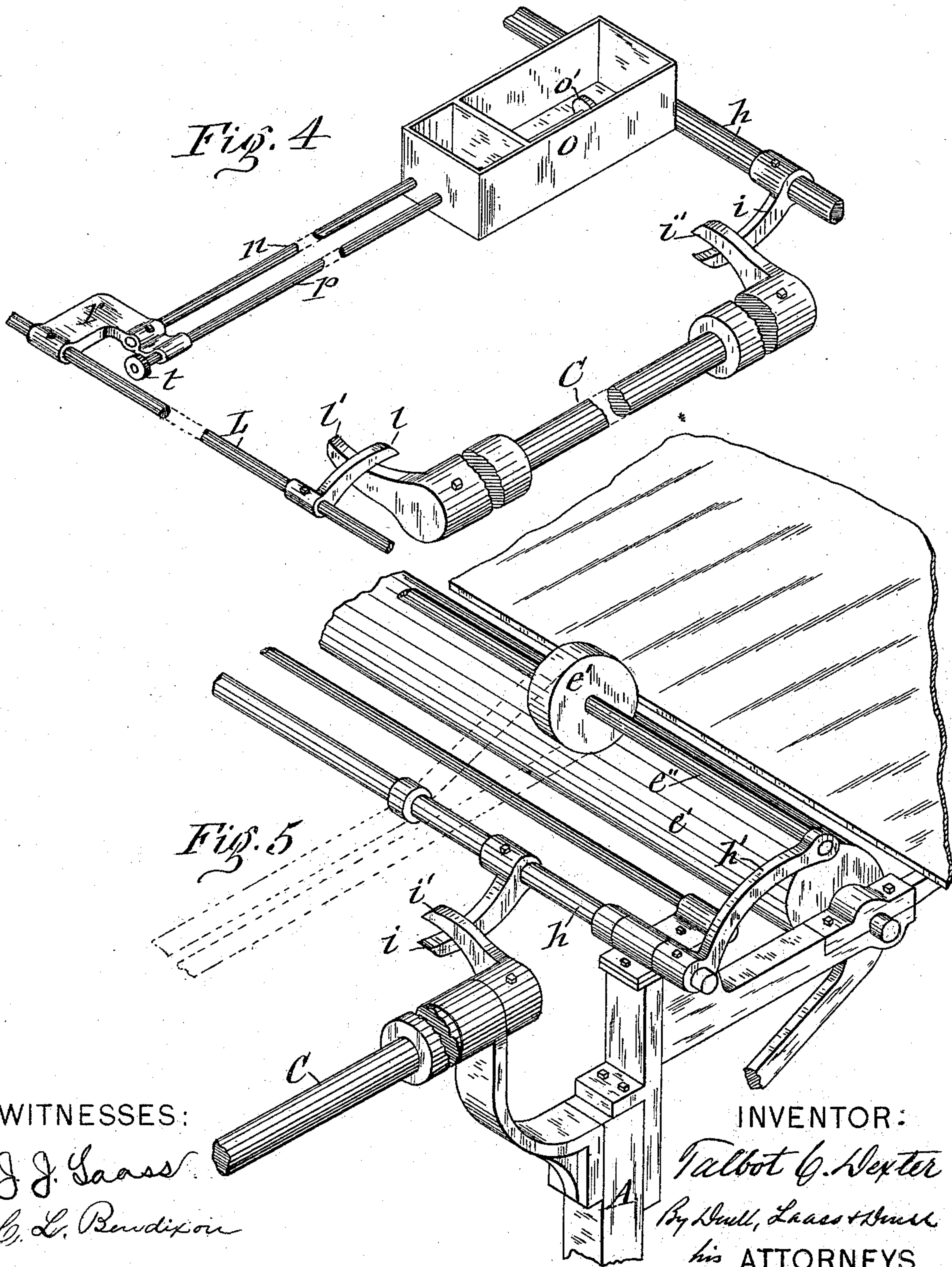
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5 Sheets—Sheet 4.

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Patented Dec. 20, 1892.



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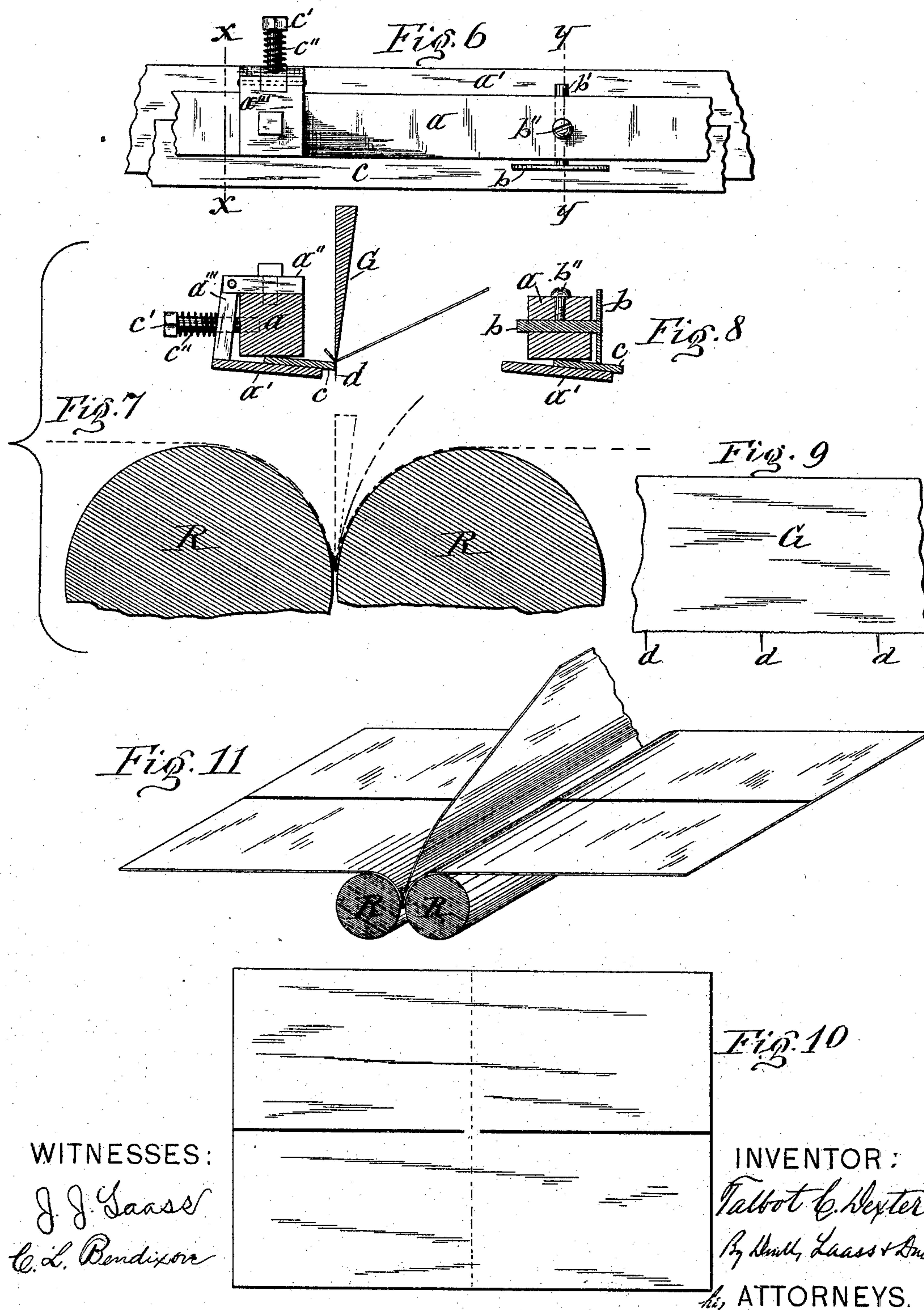
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T. C. DEXTER.
PAPER FOLDING AND PASTING MACHINE.

No. 488,271.

Patented Dec. 20, 1892.



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UNITED STATES PATENT OFFICE.

TALBOT C. DEXTER, OF FULTON, NEW YORK.

PAPER FOLDING AND PASTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 488,271, dated December 20, 1892.

Application filed June 25, 1892. Serial No. 437,979. (No model.)

To all whom it may concern:

Be it known that I, TALBOT C. DEXTER, of Fulton; in the county of Oswego, in the State of New York, have invented new and useful
5 Improvements in Paper Folding and Pasting Machines, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention consists in a novel organiza-
10 tion of a machine designed for inserting and pasting a supplemental sheet into the fold of the main sheet of paper. Said supplemental sheet may form two or four pages and thus, when connected to a main sheet forming eight
15 pages, a ten or twelve page paper is produced. And the invention also consists in certain peculiarities of the details of the machine as hereinafter fully described and specifically set forth in the claims.

20 In the annexed drawings Figure 1 is a side elevation of a paper folding and pasting machine embodying my invention, Fig. 2 is a plan view of the same, Fig. 3 is a rear end view, Figs. 4 and 5 are enlarged detail views
25 of the mechanism for lifting one of the pasters and the shaft of the feed rollers, Fig. 6 is an enlarged plan view of a section of the gage-bar, Figs. 7 and 8 are transverse sections respectively on lines x, x , and y, y , in Fig. 6,
30 Fig. 9 is a face view of a section of the folding blade, Fig. 10 is a plan view of the main sheet of paper showing by dotted lines the line of folding and by full lines the lines of pasting, and Fig. 11 illustrates the method of
35 inserting the supplemental sheet into the fold of the pasted main sheet.

Similar letters of reference indicate corresponding parts.

A—represents the main supporting frame
40 of the machine across the center of which extend the two folding rollers R—R—which are disposed contiguously side by side and journaled in suitable bearings secured to the frame A. The main sheet of paper to be folded and
45 pasted is carried over the folding rollers in a direction parallel with said rollers by means of the usual longitudinally traveling tapes e —running on rollers $e'—e'$. Said tapes are arranged at opposite sides of the folding rollers
50 to carry the said main sheet of paper so as to lie with the center of its width over the bite of said rollers.

To the rear end of the frame A are firmly secured the brackets B—B—on which is journaled the rock-shaft C—extending across the
55 frame parallel with the folding rollers R—R. On this rock-shaft are rigidly mounted the brackets C'—C'—which extend upward therefrom and have firmly secured to their tops the feed table D—which is thus supported
60 above the passage of the main sheet and is inclined toward the folding rollers and has its delivery edge over the bite of said rollers. This rock-shaft receives its rolling or rocking
65 motion by means of an arm E—fixed thereto in a pendent position and having pivoted to its lower end a roller E'—by which it bears on a cam F—fastened to a counter shaft f —which is parallel with the rock shaft and receives
70 rotary motion from the shaft g —of the driving pulley g' —by beveled gears f' —and f'' —as shown in Fig. 2 of the drawings. A spring
rod u —pushes the table in opposition to the pressure of the cam. The rocking of the shaft
75 C—tilts the feed-table D—so as to carry the delivery edge thereof toward and from the bite of the rollers R—R—and thereby facilitates the delivery of the paper toward the said rollers.

In front of the delivery edge of the table D
80 is a gage-bar a —secured at opposite ends to the frame A. From the rear bottom edge projects a cushion or yielding plate c —, the free edge of which is in the path of the edge of the folding-blade G. For said cushion I prefer
85 to employ a stout rubber strip which I connect to the bar a by means of a supplemental bar a' —which I hinge to the front edges of plates a'' —fastened to the top of the bar a . Said supplemental bar projects from the bot-
90 tom edge of the gage-bar a a short distance toward the path of the folding-blade, and to the top of said supplemental bar I fasten the aforesaid rubber strip. The supplemental
95 bar a' is sustained in its normal position by means of headed bolts $c'—c'$ —attached to the gage-bar a and coil-springs $c''—c''$ —interposed between the heads of said bolts and the vertical straps a''' —by which the supple-
100 mental bar is hinged to the plates a'' —, as shown in Fig. 7 of the drawings. The paper sliding from the feed-table D drops with its advanced edge onto the cushion c —, and, in order to prevent said edge of the paper from

entering between the bottom of the gage-bar *a* and subjacent supplemental bar *a'*—, I apply to the gage bar *a*—, at the side facing the feed-table D—, two or more stops *b* of the
 5 form of plates resting with their bottom edges on the top of the cushion *c* when in its normal position. Said stops are adjustably secured to the gage-bar by means of stems *b'*—
 10 projecting horizontally from the stops and passing freely through perforations in the bar *a*—, and set-screws *b''*—inserted in screw-threaded sockets in the top of the bar *a* bear with their inner ends on the stems *b'*—, and thus confine the stops in their adjusted posi-
 15 tions. The folding blade G is attached to and actuated by a vertically reciprocating pitman P—which receives motion from a lever T'—pivoted to the frame and connected at one end to said pitman, and having pivoted to its op-
 20 posite end a roller, by which it bears on a cam I—fastened to the countershaft, *f*. Said folding-blade is above and in line with the bite of the folding rollers R—R—and the reciprocating movement of the pitman P causes
 25 the blade to intermittently descend and enter between the folding rollers immediately above the bite thereof.

The mechanism thus far described performs the function of folding the paper, which is ef-
 30 fected in the following manner. The main sheet of paper is carried by the tapes *e e* over the top of the folding rollers and by means of suitable stops in the path of the paper it is arrested so as to hold it with the center of its
 35 width directly over the bite of the rollers R R—. While the main sheet is in this position the attendant of the machine places the supplemental sheet upon the table D which is then automatically tilted by the mechanism
 40 hereinbefore described. The tilting of said table causes the supplemental sheet to slide down until said sheet is arrested by the contact of its advanced edge with the stops *b*. Said edge then resting upon the cushion *c*.
 45 By the time this is effected the folding blade G descends and first comes with its bottom edge into contact with the top of the marginal portion of the supplemental sheet, and, in the farther descent of the blade, the marginal por-
 50 tion of the sheet which has rested on top of the cushion *c*, is bent up and pressed tightly against the side of the blade G by the free edge of the cushion *c*. Said blade thus receives a secure hold on the edge of the sup-
 55 plemental sheet and carries the same down onto the subjacent main sheet and forces the combined sheets into the bite of the folding rollers R which rotate and draw the said sheets
 60 down and fold the main sheet onto opposite sides of the supplemental sheet, while the folding blade ascends to its elevated position above the feed passages of the sheets and the tilting feed-table D returns to its normal position.

65 To allow the folding blade to obtain a more positive hold on the edge of the supplemental sheet I provide the bottom edge of said blade

with downward projecting pins *d d* which pierce the paper in the descent of the blade.

In order to allow the main sheet of paper to
 70 be readily introduced to the feeding devices I employ at the feeding side of the machine a shaft *h* disposed at right angles to the fold-
 75 ing rollers R R and journaled in suitable bearings. To this shaft I fasten arms *h' h'* in the free ends of which I journal the shaft *e''*
 80 of the upper or biting tape-rollers *e'*, and to the shaft *h* I also firmly attach a cam *i* with which engages an arm *i'* attached to the rock-shaft C as shown in Fig. 5 of the drawings. During the oscillation of said rock-shaft the
 85 arm *i'* depresses the cam *i* and thereby turns the shaft *h* so as to cause the arms *h'* to lift the shaft *e''* and rollers *e'* mounted on the latter. The succeeding main sheet can thus be
 90 readily introduced between top and bottom rollers *e' e'*.

Automatically with the folding of the paper as before described I paste the supplemental
 95 sheet to the main sheet by means of the following devices. To the underside of the tilt-
 100 ing table D near the delivery edge thereof I attach a paste-trough *j* provided in its bottom with a slot through which protrudes the lower
 105 portion of the periphery of the pasting-roller *j'* secured to the end of the shaft *k* which extends to one side of the frame A and is jour-
 110 naled in suitable bearings, and by means of a sprocket-wheel attached to said shaft and a sprocket-chain connecting said wheel with an-
 115 other similar wheel connected to a suitable rotary shaft, the aforesaid pasting roller receives rotary motion. The attachment of said
 120 pasting device is one of the salient features of my invention in that the table D, when in its
 125 normal position, supports the paster at a proper elevation above the main sheet to allow the latter to freely enter between the folding roll-
 130 ers, and in tilting the table the paster is carried nearer to the said rollers and brought in contact with the main sheet and thus pastes
 135 the sheets a greater distance across the same. On the opposite side of the folding rollers R R is another paster disposed in a line at
 140 right angles to the folding rollers and over the plane of the feed passage of the main sheet of paper. This paster is supported movable ver-
 145 tically and constructed as follows: Along one side of the frame A and mounted thereon is a rock-shaft L to one end of which is fastened
 150 a horn *l* which extends across the top of a cam *l'* attached to the rock-shaft C on which the tilting table D is mounted. To the opposite
 155 end of the rock-shaft L is firmly secured an arm *n* which is thus oscillated in a vertical plane. To the free end of this arm is secured
 160 the paste-trough *o* which is provided with a slot in its bottom, and through which slot protrudes the bottom portion of the pasting roller
 165 *o'* fastened to the end of a shaft *p* which is parallel with the arm *n* and is journaled in the bracket *r* by which the arm *n* is attached
 170 to the rock-shaft L. A pinion *t* fixed to the shaft *p* and meshing with the pinion of the

subadjacent roller R imparts rotary motion to the shaft *p* and pasting roller attached thereto. By the arrangement of the two pasters at opposite sides of the folding rollers R R the inserted supplemental sheet becomes pasted to both sides of the folded main sheet in the passage of said sheets between the said rollers and thus said sheets are securely united.

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

1. In combination with the folding rollers and paper-passage over said rollers, a feed-table over said passage and movable with its delivery edge toward and from the bite of the rollers as set forth.

2. In combination with the folding rollers and paper-passage over said rollers, a feed-table over said passage at one side of the folding rollers, and a paster carried on the under side of said table near the delivery edge thereof and in a line at right angles to the rollers, substantially as set forth.

3. In combination with the folding rollers and paper-passage over said rollers, a feed-table over said passage and tilting with its delivery edge toward the bite of the rollers, and a paster carried on the under side of said table near the delivery edge thereof and in a line at right angles to the rollers, substantially as described and shown.

4. In combination with the folding rollers, a folding blade over said rollers, a paper passage between said parts, a feed-table over said passage at one side of the rollers, and a paster disposed in a line at right angles to the rollers and carried on the under side of the said feed table as set forth.

5. In combination with the folding rollers, a folding blade over said rollers, a paper-passage between said parts, a feed-table over said passage at one side of the rollers and movable with its delivery edge toward and from the bite of the rollers, and a paster carried on the under side of said table and in a line at right angles to the rollers, as set forth.

6. In combination with the folding rollers, folding blade and paper-passage between said parts, a paster at one side of the rollers in a line at right angles thereto and over the paper-passage, a feed-table over the paper-passage at the opposite side of the rollers and tilting toward said rollers, and a paster carried on the under side of the said table and in line with the other paster, substantially as described and shown.

7. In combination with the folding rollers, folding blade over said rollers, and a paper-passage between said parts, a feed-table over said passage at one side of the rollers and tilting with its delivery edge toward the bite of the rollers, a gage in front of said edge of the table, and a paster carried on the under side of the feed-table near the delivery edge thereof, substantially as described and shown.

8. In combination with the folding rollers, folding blade over said rollers, and a paper-

passage between said parts, a rock-shaft parallel with the folding rollers, a feed-table mounted on said rock-shaft and having its delivery edge over the bite of the folding rollers, and a gage in front of said edge of the table as and for the purpose set forth.

9. In combination with the folding rollers, folding blade and paper passage between said parts, a rock-shaft parallel with the folding rollers, a feed-table mounted on said rock-shaft and having its delivery edge over the bite of said rollers, a rotary cam, an arm fastened to the rock shaft and bearing with its free end on the cam, and a spring pressing on the table in opposition to the pressure received from the aforesaid cam and arm, substantially as described and shown.

10. In combination with the folding rollers, folding blade and paper-passage between said parts, a feed-table over said passage at one side of the rollers and having its delivery edge over the bite of the rollers, a gage in front of said edge of the table, and a cushion on the base of said gage and having its free edge in the path of the edge of the folding blade, substantially as and for the purpose set forth.

11. In combination with the folding rollers, folding blade and paper-passage between said parts, a feed-table at one side of said rollers and tilting with its delivery edge toward the bite of said rollers, a gage in front of said edge of the table, and a cushion on the base of said gage and having its free edge in the path of the edge of the folding blade.

12. In combination with the folding-rollers, folding blade and paper passage between said parts, a feed-table over said passage at one side of the folding rollers, a gage-bar in front of the delivery edge of the table and parallel with the folding rollers, stops connected to said bar adjustably in relation to their distance from the edge of the table, and a cushion on the base of said bar and having its free edge in the path of the folding blade, substantially as described and shown.

13. In combination with the folding-rollers, folding-blade and feed-table arranged as described, the gage bar *a*—perforated transversely, the stops *b*—having stems *b'*—passing through the perforations of said bar, set screws *b''*—engaging said stems, and a cushion on the base of the aforesaid bar and having its free edge in the path of the folding blade, substantially as described and shown.

14. In combination with the folding rollers, folding-blade and feed-table arranged as described, the gage-bar *a*—, supplemental bar *a'*—hinged to said gage-bar and projecting from the bottom of the gage-bar, the cushion *c*—attached to the projection of the supplemental bar, the bolts *c'*—attached to the gage-bar, and springs connected to said bolts and holding the supplemental bar in its normal position as set forth and shown.

15. In combination with the folding rollers R R—feed-table D—and cushion *c*—, the fold-

ing blade G—and pins *d d*—extending downward from said blade, substantially as and for the purpose set forth.

16. In combination with the folding rollers,
5 a rock-shaft at one side of said rollers and parallel therewith, a feed-table mounted on said rock-shaft, a paster attached to said table, a paster supported movable vertically at the opposite side of the folding rollers, and a
10 supplemental rock-shaft actuated by the

aforsaid rock-shaft and lifting the latter paster, all combined to raise and lower the two pasters, substantially as set forth.

In testimony whereof I have hereunto signed my name this 21st day of June, 1892.

TALBOT C. DEXTER. [L. S.]

Witnesses:

GEORGE W. TUCKER,
FRED. E. CHUBB.