

No. 669,061.

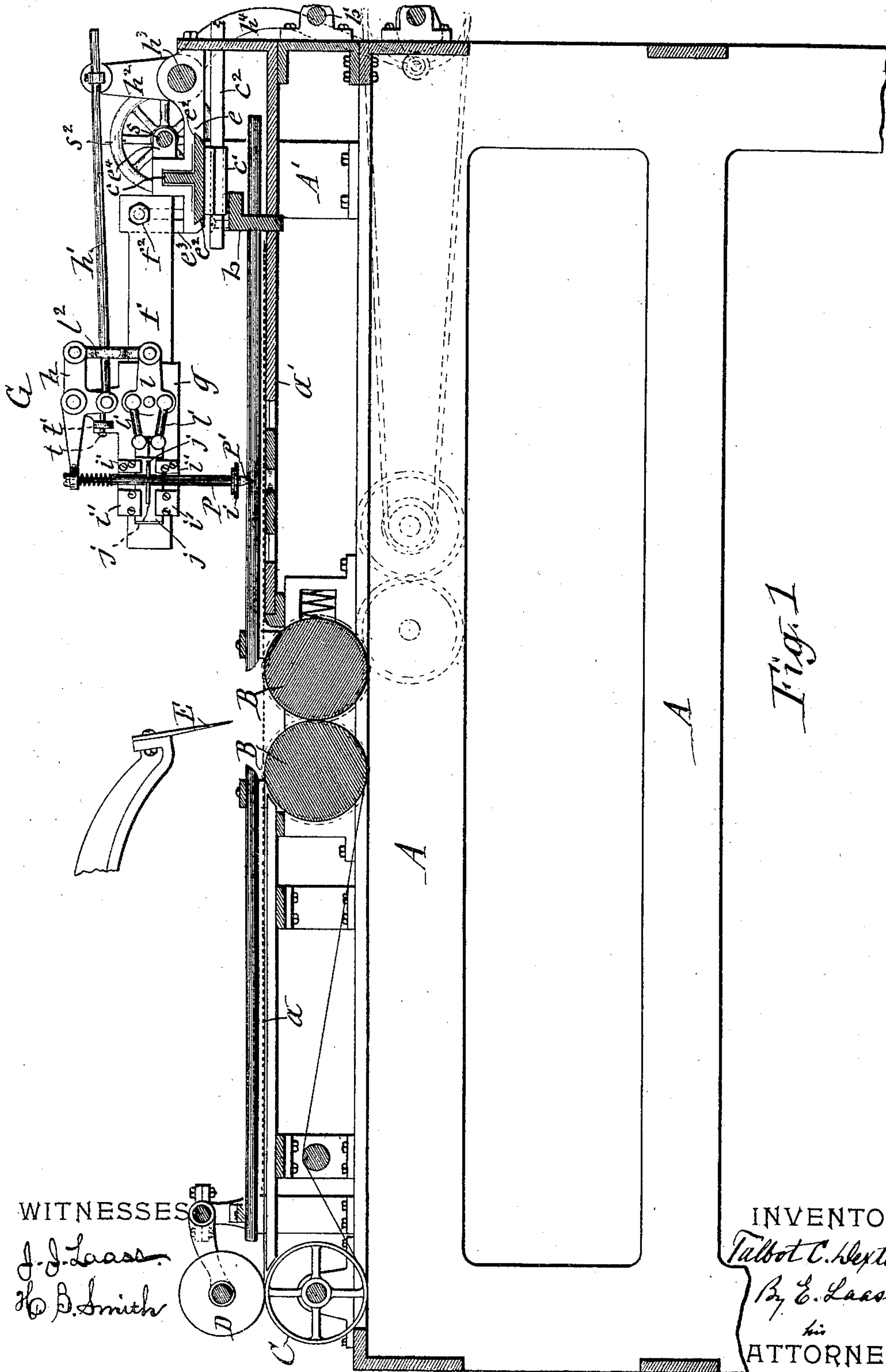
Patented Feb. 26, 1901.

T. C. DEXTER.
PAPER REGISTERING INSTRUMENT.

(No Model.)

(Application filed Dec. 6, 1898.)

8 Sheets—Sheet 1.



No. 669,061.

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8 Sheets—Sheet 2.

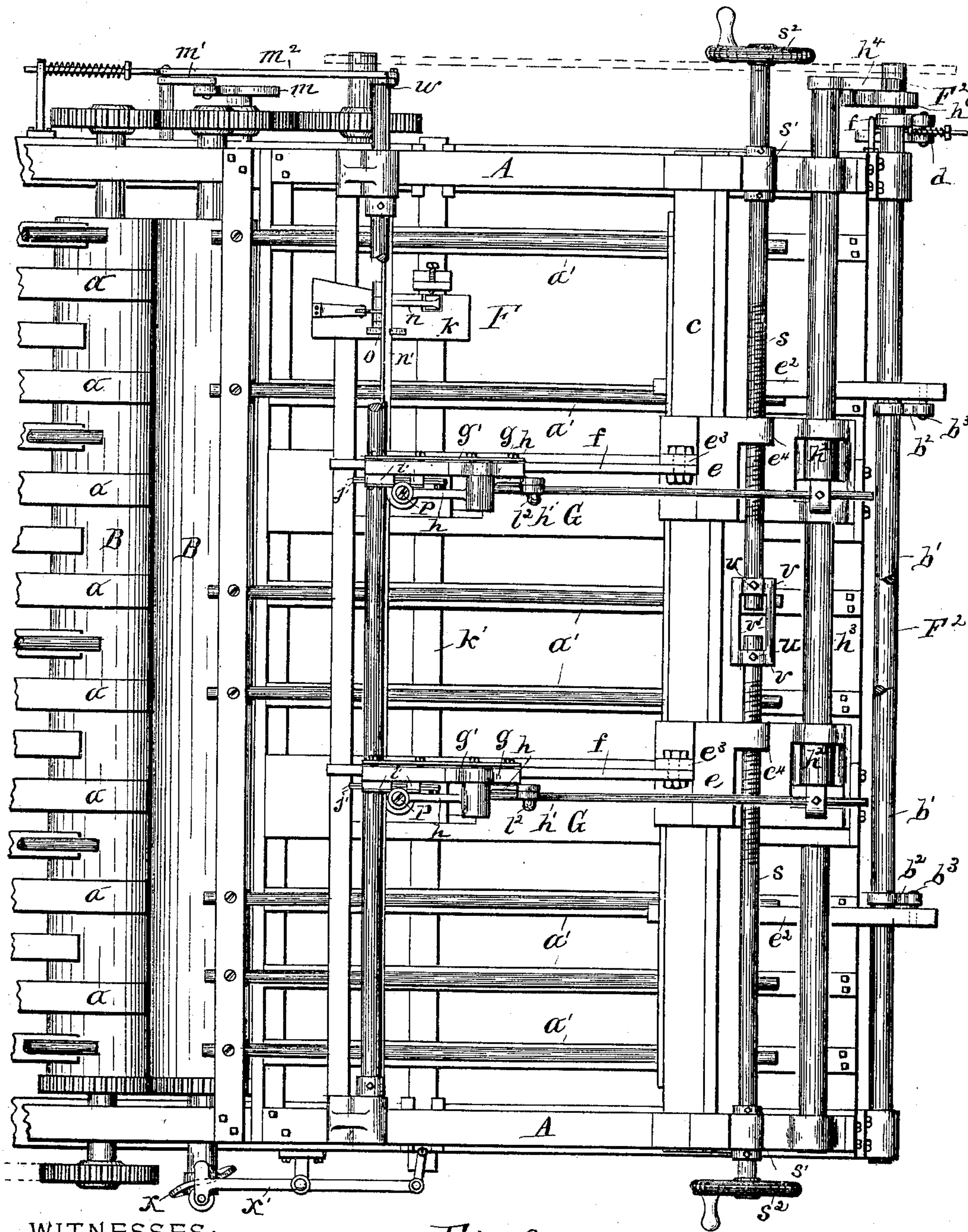


Fig. 2

WITNESSES:

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H. B. Smith.

INVENTOR

Talbot C. Dexter

By E. Laas

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No. 669,061.

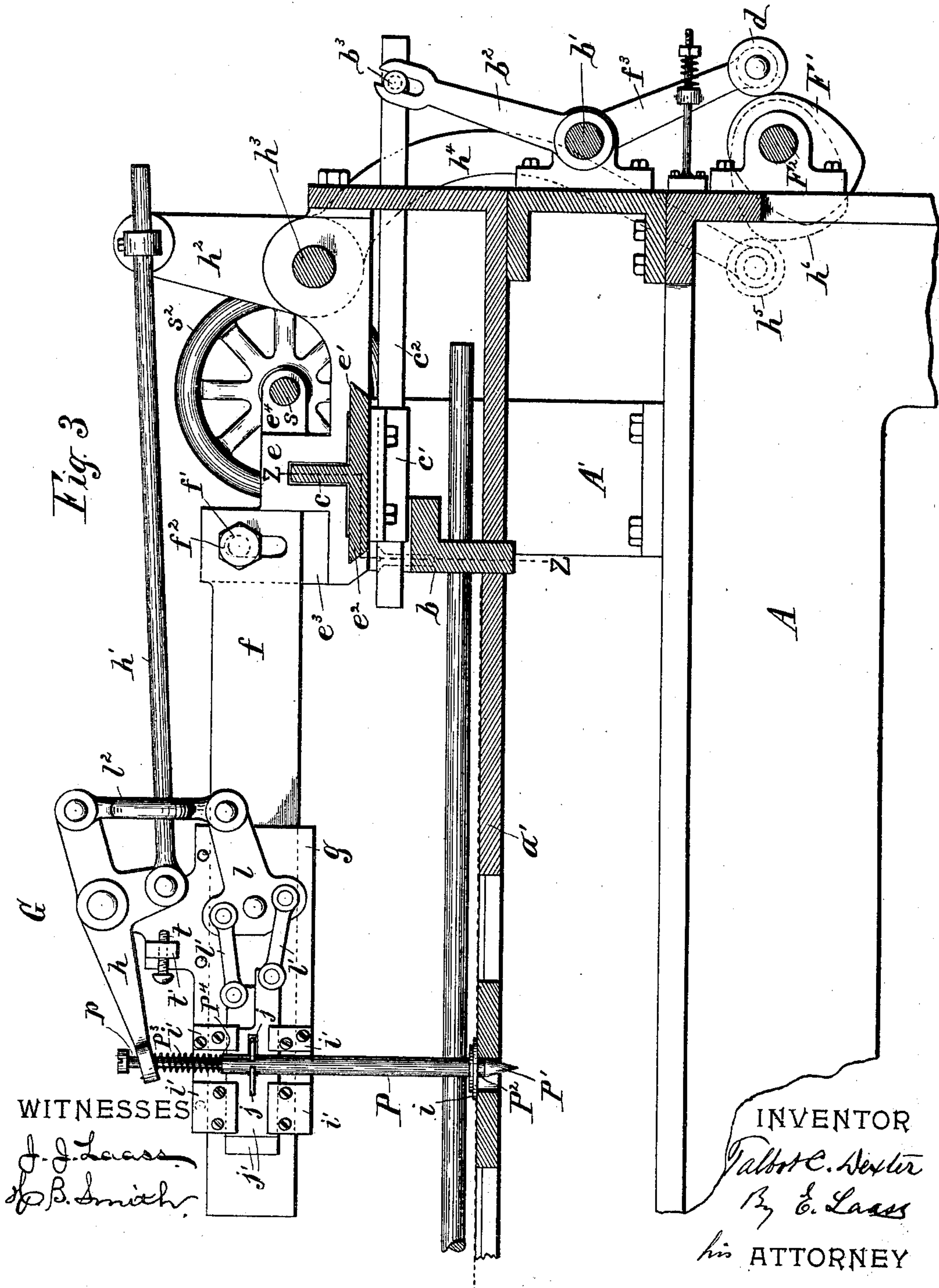
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8 Sheets—Sheet 3.



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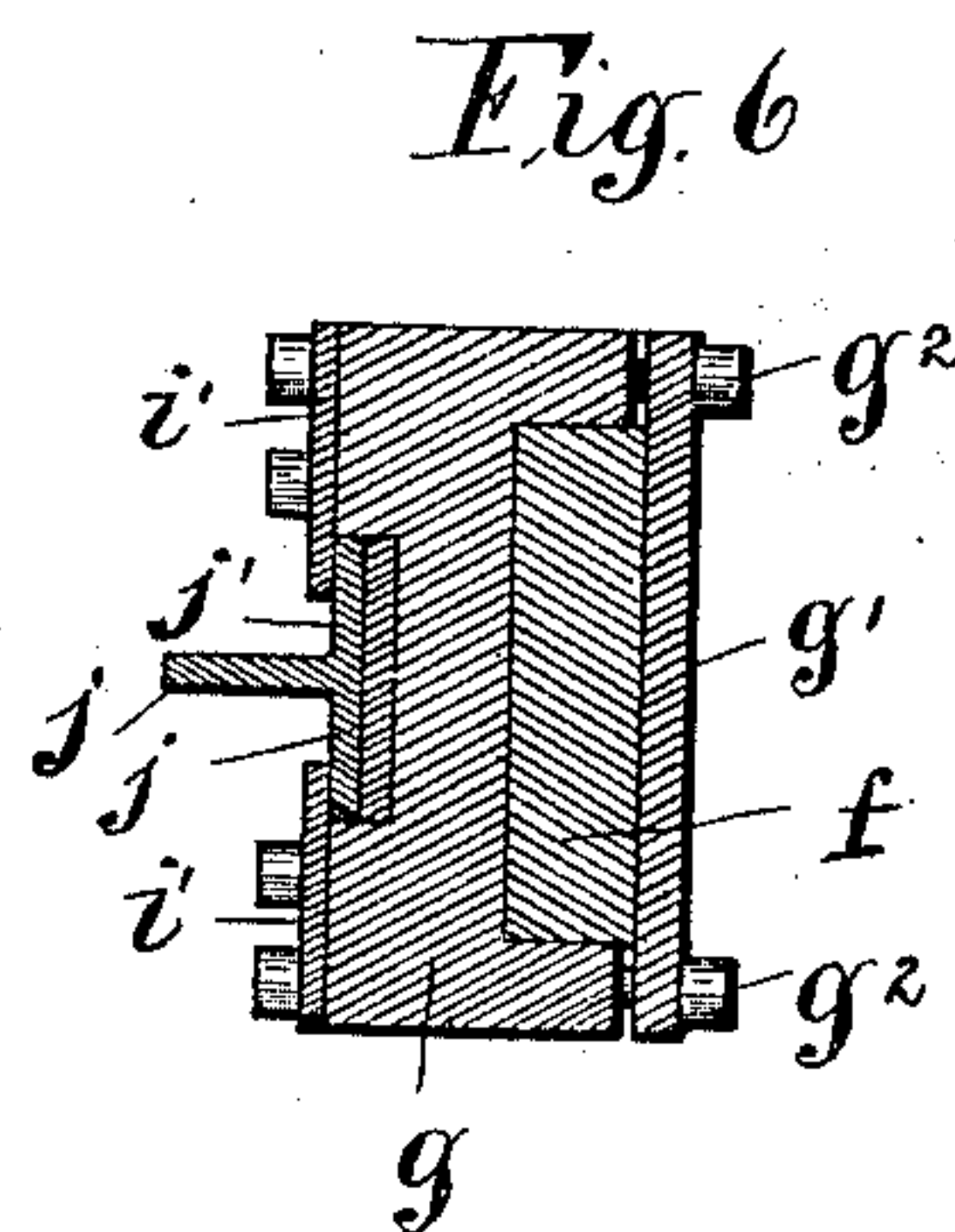
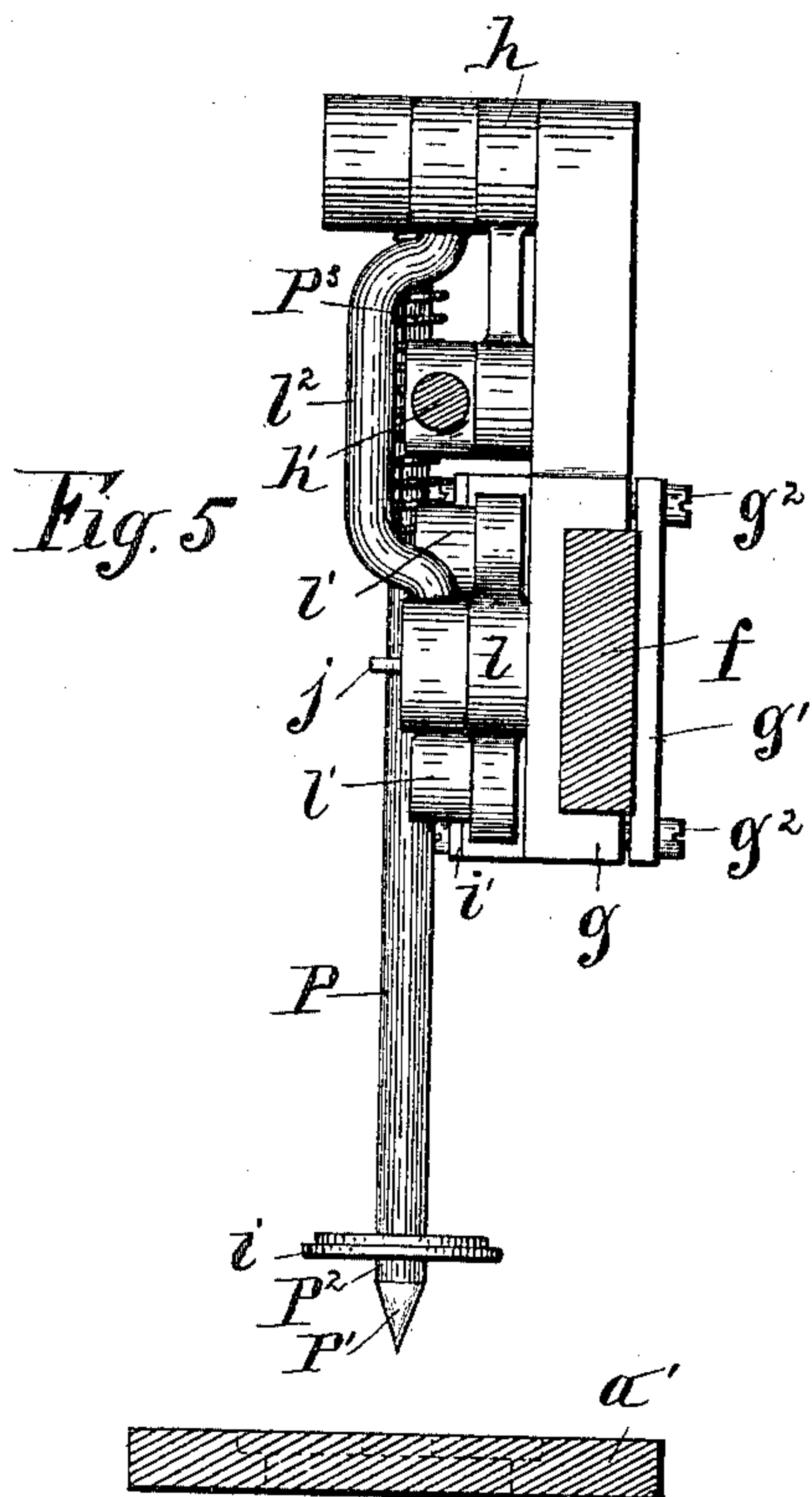
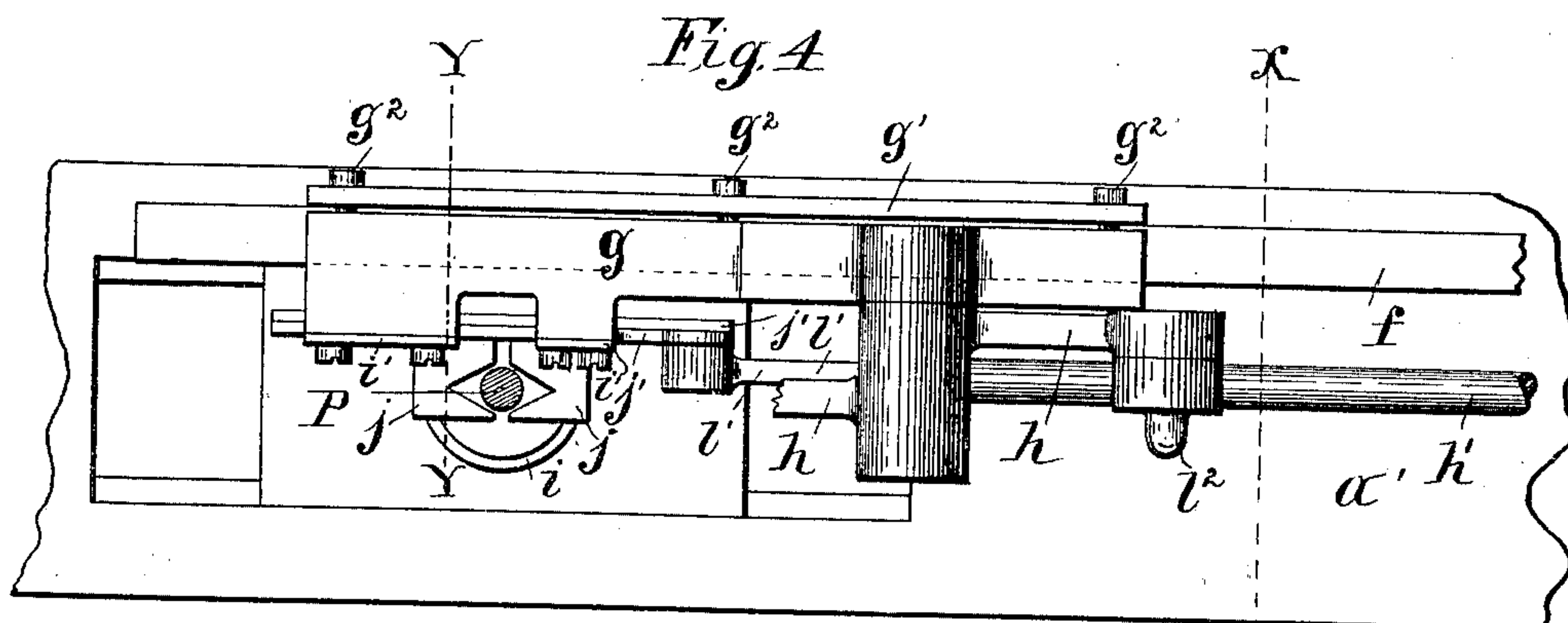
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(No Model.)

(Application filed Dec. 6, 1898.)

8 Sheets—Sheet 4.



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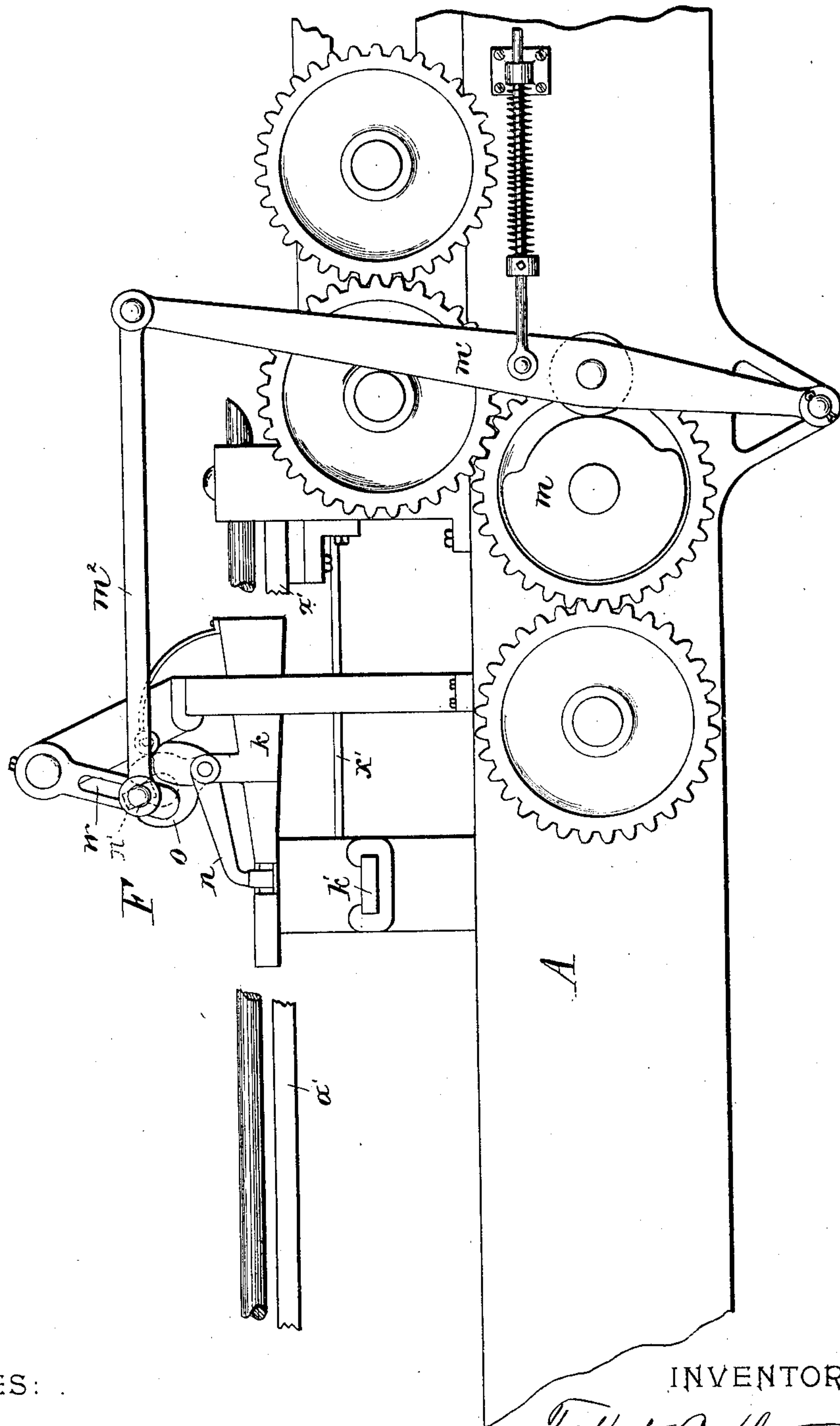
T. C. DEXTER.
PAPER REGISTERING INSTRUMENT.

(Application filed Dec. 6, 1898.)

(No Model.)

8 Sheets—Sheet 5.

Fig. 7



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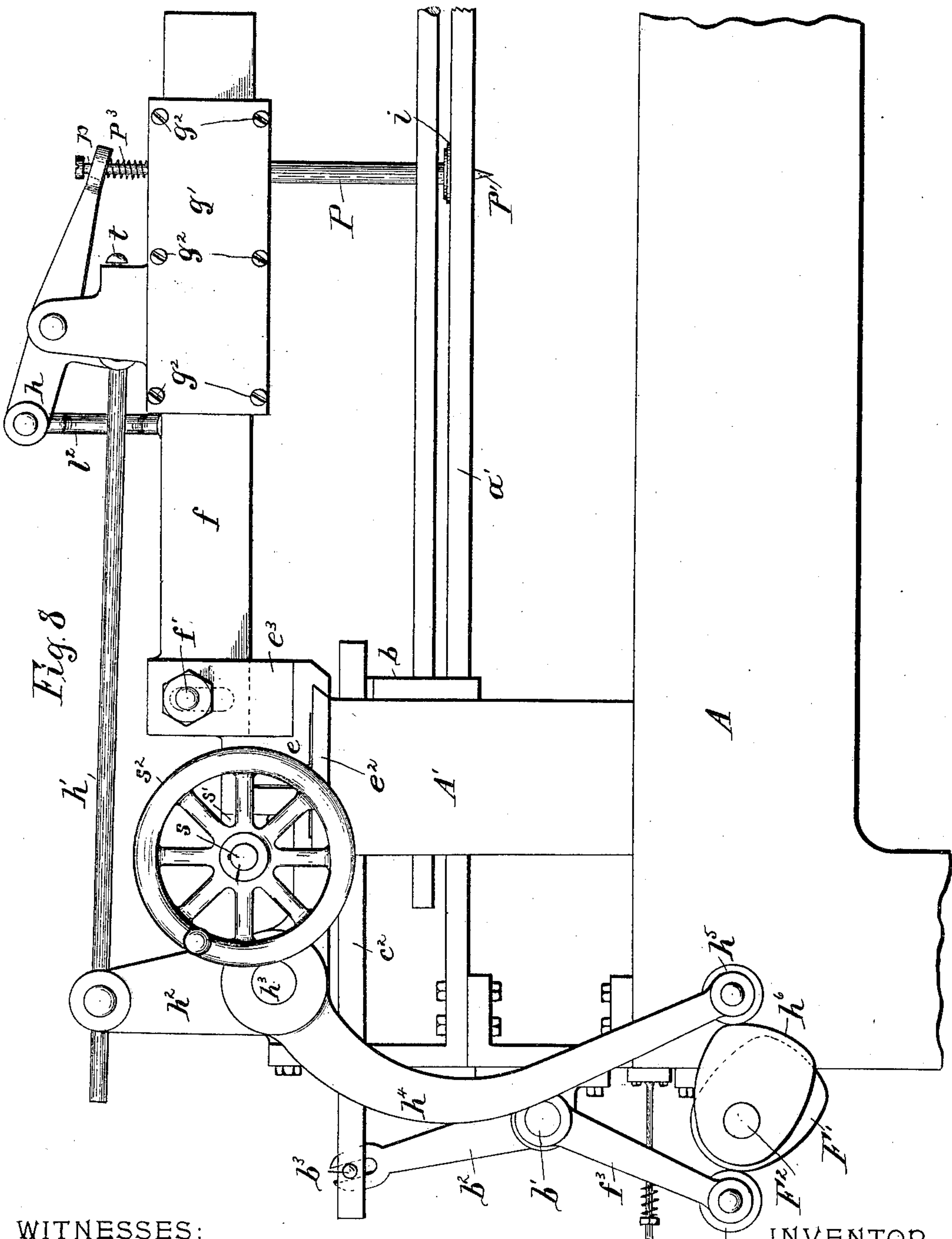
Patented Feb. 26, 1901.

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(Application filed Dec. 6, 1898.)

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8 Sheets—Sheet 6.



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PAPER REGISTERING INSTRUMENT.

(Application filed Dec. 6, 1898.)

(No Model.)

8 Sheets—Sheet 7.

Fig. 9

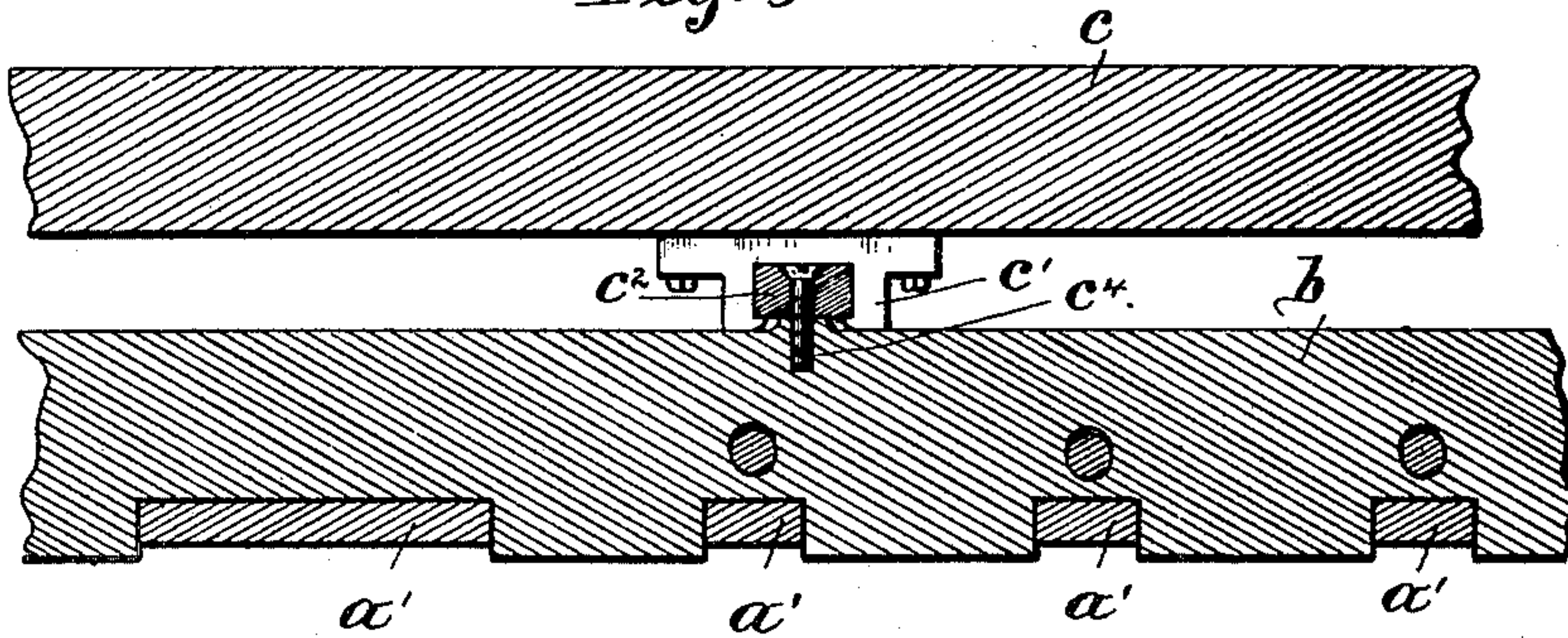


Fig. 10

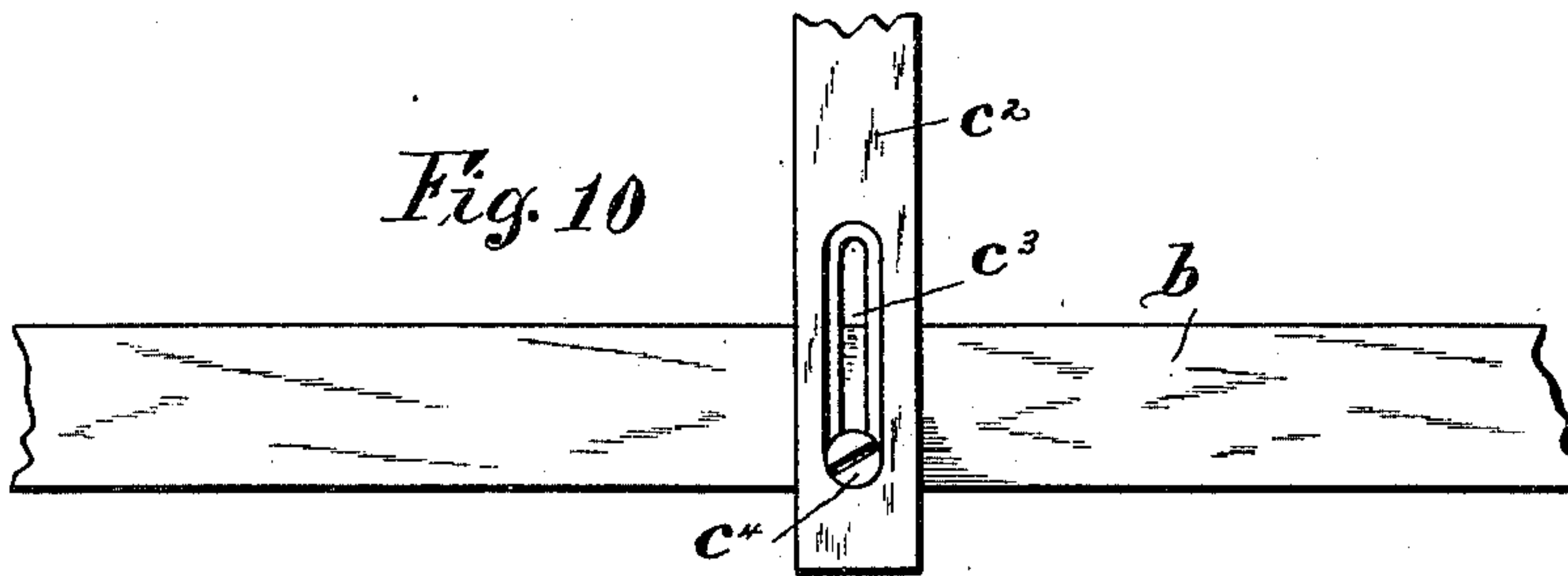
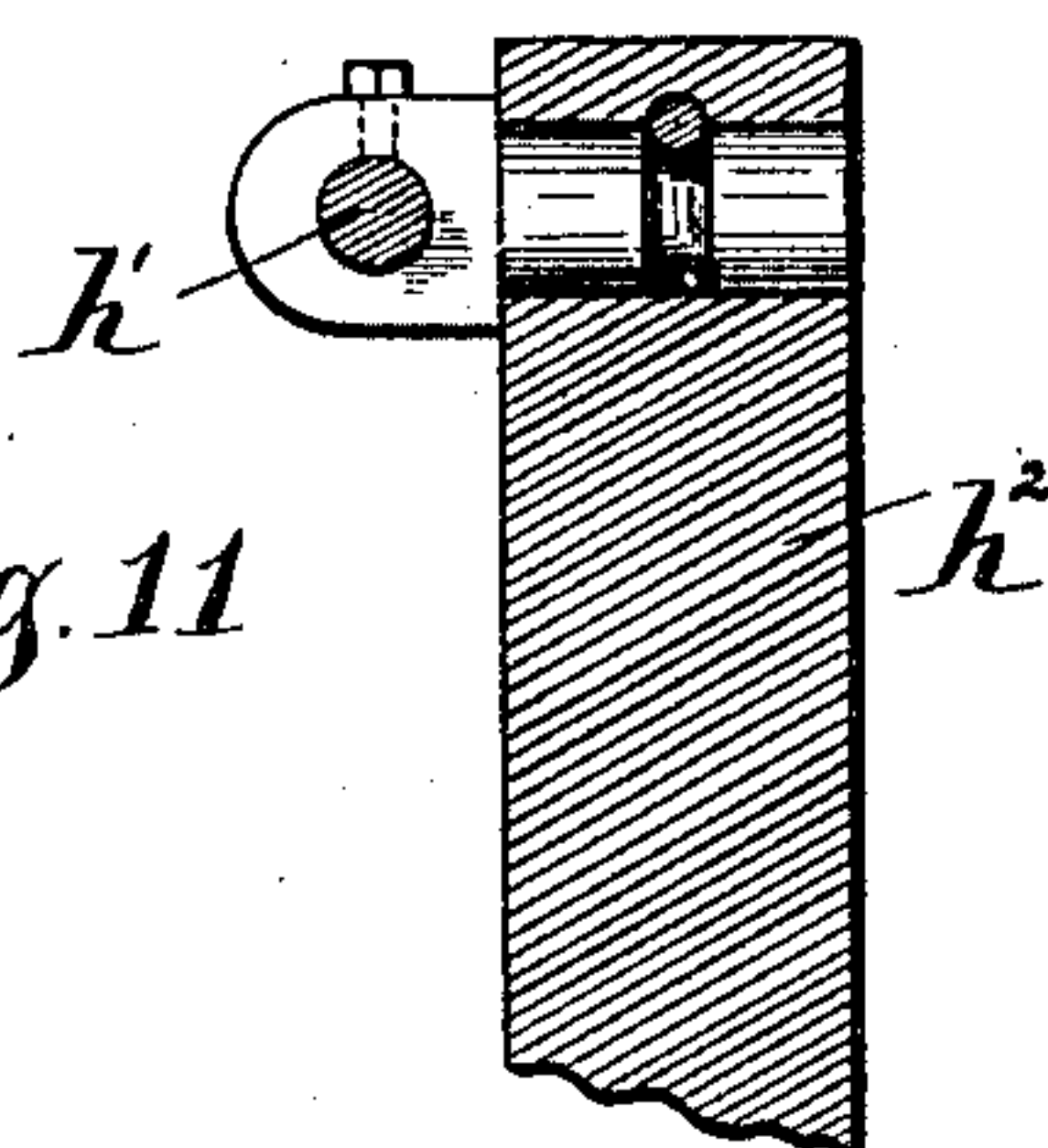


Fig. 11



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T. C. DEXTER.
PAPER REGISTERING INSTRUMENT.

(No Model.)

(Application filed Dec. 6, 1898.)

8 Sheets—Sheet 8.

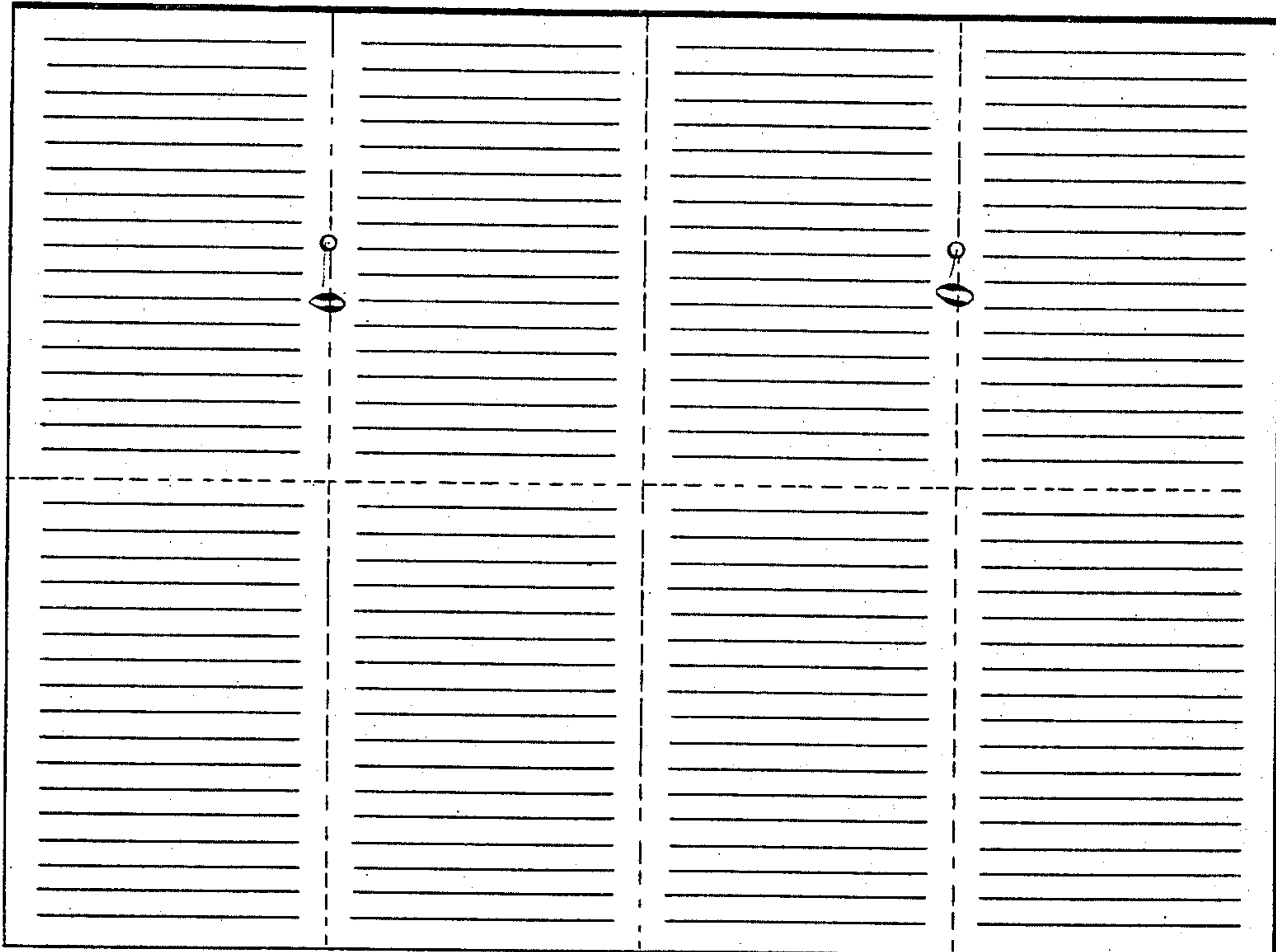


Fig. 12

WITNESSES:

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UNITED STATES PATENT OFFICE.

TALBOT C. DEXTER, OF PEARL RIVER, NEW YORK, ASSIGNOR TO THE
DEXTER FOLDER COMPANY, OF NEW YORK, N. Y.

PAPER-REGISTERING INSTRUMENT.

SPECIFICATION forming part of Letters Patent No. 669,061, dated February 26, 1901.

Application filed December 6, 1898. Serial No. 698,494. (No model.)

To all whom it may concern:

Be it known that I, TALBOT C. DEXTER, a citizen of the United States, and a resident of Pearl River, in the county of Rockland, in the State of New York, have invented new and useful Improvements in Paper-Registering Instruments, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention relates to the class of automatic paper-registering instruments shown in my Letters Patent No. 554,913, dated February 13, 1896, in which the registering of the paper is effected by means of vertically-movable pins dragging upon the paper and dropping into slits in the paper for that purpose, said pins having attached to them horizontal disks by which they ride upon the paper when the pins are dropped into the slits, as aforesaid. The succeeding lateral movement of the pins causes the paper to be shifted to its registering position.

In practice I have found that in operating the aforesaid registering instruments upon thin or light-grade paper the lateral movement of the registering-pins while entering into the slits causes said pin to press against the front edge of the slitted portion of the paper sufficiently to crimp the paper thereat before the disk on the pin was brought to bear on the paper to obtain its frictional hold thereon.

The object of my present invention is to obviate the aforesaid defect and to render the registering instrument more efficient in general; and to that end the invention consists in the improved construction and combination of parts hereinafter described, and summed up in the claims.

In the accompanying drawings, Figure 1 is a vertical longitudinal section showing my improved point-feed registering instrument applied to a paper-folding machine, the side registering device being omitted to better illustrate my invention. Fig. 2 is a top plan view of the folding-machine to which my invention is applied. Fig. 3 is an enlarged side view of the longitudinal registering mechanism. Fig. 4 is an enlarged plan view of the carrier of the longitudinal registering instru-

ment. Figs. 5 and 6 are vertical transverse sections on lines X X and Y Y, respectively, in Fig. 4. Fig. 7 is an enlarged side view of the machine, showing the mechanism for operating the gripper employed for registering the paper laterally. Fig. 8 is a side view showing the mechanism for operating the longitudinal registering instruments. Fig. 9 is a vertical transverse section on line Z Z in Fig. 3. Fig. 10 is a detached plan view of the adjustable attachment of the gage to its actuating-bar. Fig. 11 is an enlarged detail view of the attachment of the pitman to the rock-arm which transmits motion to the longitudinal registering instrument, and Fig. 12 is a plan view of a sheet of paper having circular perforations by which to register said sheet.

Similar letters of reference indicate corresponding parts.

A represents the supporting-frame of a paper-folding machine, which frame may be of any suitable shape to accommodate the number of folding-rollers and actuating mechanisms required to make the desired number of folds in the paper.

B B designate the first pair of folding-rollers. *a a* are the usual tapes which convey the paper into the folding-machine.

C denotes the feed-roller; D, the drop-rollers; E, the usual blade which tucks the paper into the bite of the folding-rollers, and *b* the front stop or gage which arrests the movement of the paper carried into the machine by the conveying-tapes *a a* preparatory to the introduction of the paper into the bite of the folding-rollers.

a a' denote the usual bars which support the portion of the paper lying between the folding-rollers B and gage *b*.

F represents the registering instrument by which the sheet is registered laterally after said sheet has been arrested in its forward movement by contact with the gage *b*, and G G represent the registering instruments by which the sheet is registered longitudinally after it has been registered laterally. There are two of said instruments G G, disposed equidistant from opposite sides of the longitudinal central line of the machine and on a line at right angles to said central line. My inven-

tion pertains more particularly to these longitudinal registering instruments G G, which I will now proceed to describe, with their actuating mechanisms and auxiliary devices employed in connection therewith.

Transversely over the paper-supporting bars a' is a rigid bar c , mounted on standards A' , fastened to the top of the frame A . To the under side of the bar c are attached two guides c' , disposed parallel with the paper-supporting bars a' . In these guides slide bars c^2 , to which is adjustably secured the gage b . The adjustable attachment of said gage is more clearly shown in Fig. 10 of the drawings and consists of a longitudinal slot c^3 on the bar c^2 and the attaching-screw c^4 , passing through said slot and into a screw-threaded socket in the gage. The adjustability of said gage is necessary to accommodate it to different-sized sheets of paper fed to the machine. Across the end of the frame A , adjacent to the gage b , extends a horizontal rock-shaft b' , journaled in suitable bearings attached to the frame. To this rock-shaft are fastened arms b^2 , the free ends of which are bifurcated or slotted longitudinally, by which they straddle wrist-pins b^3 on the bars c^2 , as clearly shown in Fig. 3 of the drawings. The shaft b' has an intermittent rocking motion, which causes the gage b to be carried back and forth at regular intervals of time. Said motion is derived from a rotary cam F' on a shaft F^2 , upon which cam bears a roller d , pivoted to the free end of an arm f^3 , attached to the shaft b' . Upon the cross-bar c ride two brackets e , which are fitted to it by dovetail grooves e' in the under sides of the brackets and embracing a correspondingly-shaped horizontal web e^2 on the bar c . Each of the brackets e is formed with a post e^3 , to which is adjustably secured a horizontal arm f by means of the attaching-bolt f' , passing through a vertical slot in the post and provided with a nut f^2 , by which the arm is clamped in position. Upon the arm f rides one of the registering instruments G, consisting of a shoe or carrier g , which is movable longitudinally and guided on said arm. Said movement is retarded by means of friction-plates g' , adjustably secured to the carrier g by means of screws g^2 , which plates pinch the arm f , for the purpose hereinafter explained. To the carrier g is pivoted a T-shaped lever h , the vertical limb of which is connected by a pitman h' to an arm h^2 , fastened to a rock-shaft h^3 , which is actuated by a lever h^4 , fastened to the end of said shaft and having pivoted to its free end a roller h^5 , by which it bears on a rotary cam h^6 , shaped to impart an intermittent oscillatory motion to said lever. The said pitman is longitudinally adjustable in its connection with the rock-arm h^2 , as shown in Fig. 11, to allow the registering instrument G to be adjusted to carry the paper to its requisite registering position. From one end of the horizontal limb of the lever h is suspended the paper-registering pin P, which

is specially designed to be used for registering paper which is provided with circular perforations O, as shown in Fig. 12 of the drawings, and for that purpose the lower end of the pin P is formed with a conical point P' to guide said pin into the perforation O during the descent of the pin, which at that time has its pendent portion yielding laterally. Immediately above the point P' the pin is formed cylindrical, as shown at P^2 , to occupy the perforation O when the pin is inserted and bearing upon the sheet by the disk i , of rubber or other suitable material, attached to the pin immediately above the cylindrical portion P^2 . The bevel of the point P' and its ability of yielding laterally in entering into the perforation O effectually guard against crimping or tearing the paper, and the straight cylindrical portion P^2 , subsequently occupying the perforation while the disk i bears upon the top of the paper, affords a safe and effective hold for the registering-pin for moving the paper to its registering position. A spiral spring P^3 , interposed between the horizontal limb of the lever h and a shoulder P^4 on the pin P, serves to exert a yielding downward pressure on the pin.

To effect the movement of the paper, I provide the carrier g with movable jaws $j j$, disposed at opposite sides of the registering-pin P and shaped to grip said pin after it has dropped into the perforation O, as aforesaid. Said jaws project from plates $j' j'$, sliding longitudinally on the carrier g and between guides $i' i'$, attached to said carrier. I preferably operate the jaws $j j$ by the same mechanism which moves the carrier and lifts the registering-pin, and for that purpose I pivot to the carrier g a three-armed lever l and connect two of its arms to the plates $j' j'$ by rods $l' l'$. The third arm of said lever I connect to the forwardly-extending limb of the lever h by a link or rod l^3 .

In order to limit the upward movement of the registering-pin, a set-screw t is inserted into a screw-threaded eye in an ear t' , which projects from the side of the carrier g back of the vertical limb of the lever h , which limb strikes the set-screw, and thereby arrests the movement of the lever h when it has lifted the registering-pin P sufficiently from the paper.

The operation of the described registering instruments is as follows: The paper having been carried into the machine by the tapes a and arrested in its movement by contact with the gage b , which at that time is in its rearmost position or closest position to the folding-rollers, then the lateral registering instrument F, hereinafter described, draws the paper to its side register, and thereby brings the perforations O O into position to allow the registering-pins P P to enter into said perforations, and then the gage b recedes from its aforesaid sheet-arresting position. In the meantime the registering instruments G G are sustained in their rearmost position and with

their registering-pins P P lifted from the paper, as represented in Fig. 1 of the drawings. In pushing the instrument G into the aforesaid position the pitman h' first tilts the lever h so as to lift the registering-pin P before moving the carrier g , which is retarded in its movement by the friction-plates g' pinching the arm f , so as to partially bind the carrier on the said arm, as hereinbefore described. In tilting the lever h , as aforesaid, the vertical limb thereof comes in contact with the set-screw T, which arrests the further tilting of the lever and causes the pitman h' to push the carrier to its aforesaid rearmost position. The pitman is then moved in the opposite direction by the rock-arm h^2 , and the lever h is thereby actuated to allow the registering-pin P to drop and to be guided into the perforation O in the paper by the conical point P' on the laterally-yielding lower end of the pin. In this manner the pin is made to ride on the paper by the disk i , while the cylindrical portion P² of the pin occupies the aforesaid perforation, and thus the paper is relieved from liability of being crimped or torn by the introduction of the registering-pin and said pin obtains a safe and perfect hold on the paper. During the aforesaid introduction of the registering-pin the carrier g is held stationary by its frictional hold upon the arm f , and this causes the lever h to actuate the lever l , so as to force the jaws $j j$ to grip the registering-pin P, and this engagement restrains the levers l and h from further tilting movement and causes the pitman h' to draw the carrier forward or toward the gage b . The pin P, being in the meantime engaged with the paper and firmly gripped by the jaws $j j$, causes the paper to be shifted to its registering position. The subsequent reverse or rearward movement of the pitman h' tilts the levers h and l , so as to first move the jaws $j j$ out of engagement with the registering-pin P and then lift said pin from the paper. Said successive action is permitted by lost motion or play between the head of the pin and top of the lever, as represented at p in Figs. 3 and 4 of the drawings. The movement of the pitman h' is so timed as to cause the registering-pin to be lifted in time to allow the blade E to tuck the paper into the bite of the folding-rollers B B. The perforations O are made in the paper by means of dies set in the form carried on the press-bed, and inasmuch as said dies have to be set various distances apart, according to the sizes of the sheets to be printed, it is necessary to provide means for very accurately adjusting the registering instruments G G laterally to conform their positions to the locations of the perforations. For the aforesaid adjustment I employ two separate adjusting-screws $s s$, one for each of said registering instruments. Said screws are in line with each other and extend horizontally to opposite sides of the frame A, where they are journaled in suitable boxes $s' s'$, mounted on the frame. The inner end of each screw passes

through a screw-threaded eye e^4 on the carrier e , and the outer end of the screw has fastened to it a hand-wheel s^2 or other suitable means by which to turn the screw, and thereby shift the carrier e longitudinally on the bar c . By means of these separate screws the two carriers are adjusted independently of each other in the manner aforesaid and can thus be set to carry the registering-pins P P the requisite distance apart for entering the perforations O O in the paper.

It is sometimes found necessary to shift both registering-pins laterally in the same direction, and in order to permit this to be effected expeditiously and conveniently I provide a suitable coupling, which may be of the form shown in Fig. 2 of the drawings, consisting of two collars $v v$, rigidly united by bars $v' v'$. Each of said collars loosely embraces the inner end of the adjacent screw s and is provided with a set-screw U, by which to fasten the collar to the screw when desired to adjust the two registering instruments simultaneously.

The lateral registering instrument F may be of any suitable and well-known form. The annexed drawings show it to consist of a gripper similar to that shown in my Letters Patent No. 599,319, dated February 22, 1898, and consists, essentially, of a shoe k , receiving through it the marginal portion of the paper and provided in its top with an aperture through which plays the paper-gripping finger n , which is actuated by a rocking plate n' , playing in a tumbler o , attached to the shaft of the gripper-finger. Said rocking plate is attached to a shaft which receives rocking motion from a rotary cam m , imparting oscillatory motion to a lever m' , connected by a rod m^2 to an arm w , attached to the aforesaid shaft. The shoe k is attached to an intermittent reciprocating bar k' , by which said shoe receives its requisite motion for drawing the paper laterally to register. The bar k' is actuated by a rotary cam x , oscillating a lever x' , which is connected to the said bar, as shown in Fig. 2 of the drawings.

What I claim as my invention is—

1. An instrument for registering paper provided with perforations for that purpose, which instrument comprises a horizontally-movable carrier, a laterally-yielding registering-pin suspended from said carrier, mechanism holding the carrier temporarily stationary and with the registering-pin directly over the perforation in the paper and subsequently dropping the pin into said perforation, jaws on said carrier gripping the entered pin, and means for subsequently moving the carrier and thereby registering the paper.

2. An instrument for registering paper provided with circular perforations for that purpose, which instrument comprises a horizontally-movable carrier, a laterally-yielding registering-pin suspended from said carrier and provided with a conical point by which to guide itself into the aforesaid perforation,

mechanism imparting intermittent reciprocating motion to said carrier and timed to temporarily confine the same with the registering-pin directly over the perforation in the paper, and subsequently dropping said pin into said perforation, jaws on the carrier gripping the entered registering-pin, and means for subsequently moving the carrier as set forth.

3. In combination with the paper-conveyers, and an alternately advancing and receding gage arresting the movement of the paper, intermittent reciprocating carriers traveling horizontally at right angles to said gage and timed to confine the carriers temporarily stationary over the arrested sheet, vertically-movable registering-pins supported on the carrier and provided with conical points for entering circular perforations in the underlying sheet and with horizontal disks above the points to bear on said sheet, and mechanism dropping said pins and subsequently moving the carriers with the pins toward the receding gage as set forth.

4. In combination with the paper-supporting bars, paper-conveyers delivering the sheet upon said bars and an alternately advancing and receding gage arresting the movement of the sheet, a horizontally-movable carrier, a laterally-yielding registering-pin suspended from said carrier and provided with a conical point for guiding itself into a circular perforation in the arrested underlying sheet, jaws supported on the carrier to grip the registering-pin entered into the aforesaid perforation, levers pivoted to the carrier and controlling respectively the registering-pin and the jaws, a coupling connecting the levers together to operate them in unison and mechanism imparting intermittent reciprocating motion to the carrier and simultaneously actuating the aforesaid levers as set forth.

5. In combination with the paper-supporting bars and sheet-arresting gage, an arm sustained horizontally above said bars, a carrier mounted longitudinally movable on said arm, friction-plates partially binding the carrier on the arm, a lever pivoted to the carrier, a registering-pin suspended from said lever, movable jaws on the carrier at opposite sides of the said pin, a lever pivoted to the carrier and coupled with the aforesaid lever to operate in unison therewith and connected to the jaws to operate the same and mechanism imparting intermittent motion to the carrier and to the said levers as set forth.

6. In combination with the paper-conveyers and paper-supporting bars, a stationary bar disposed transversely above said support-

ing-bars, brackets mounted on said stationary bar adjustably lengthwise thereof, arms extending horizontally from said brackets and vertically adjustable thereon, carriers sliding on said arms, levers pivoted to said carriers, registering-pins suspended from said levers and mechanisms imparting intermittent motion to the carriers and levers as set forth.

7. In combination with the paper-supporting bars, a stationary bar disposed transversely above said supporting-bars, brackets mounted on said stationary bar movably lengthwise thereof, arms extending from said brackets and paper-registering instruments carried on said arms, separate means for adjusting the brackets independently of each other on the stationary bar and means for adjusting said brackets synchronally on said bar, as set forth.

8. In combination with the paper-supporting bars, a stationary bar disposed transversely above said supporting-bars, brackets mounted on said stationary bar movably lengthwise thereof, arms extending from said brackets and paper-registering instruments carried on said arms, separate screws adjusting the brackets independently of each other on the stationary bar and a coupling provided with means adjustable to either rigidly unite said screws or release the screws from each other as set forth.

9. In combination with the paper-supporting bars, paper-conveyers delivering the paper upon said bars and a gage arresting the movement of the paper, a stationary bar disposed transversely above said supporting-bars, brackets mounted on said stationary bar movably lengthwise thereof, separate screws adjusting said brackets independently of each other on the stationary bar, a coupling provided with means adjustable to either rigidly unite said screws or release the screws from each other, horizontal arms connected vertically adjustable to said brackets, carriers mounted longitudinally movable on said arms, levers pivoted to said carriers, registering-pins suspended from said levers and provided with conical points for entering circular perforations in the paper, friction-plates partially binding the carriers on the arms, intermittently-operating rock-arms and pitmen transmitting motion from said rock-arms to the aforesaid levers and adjustable in their connections lengthwise of the pitmen as set forth.

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Witnesses:

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