

No. 652,169.

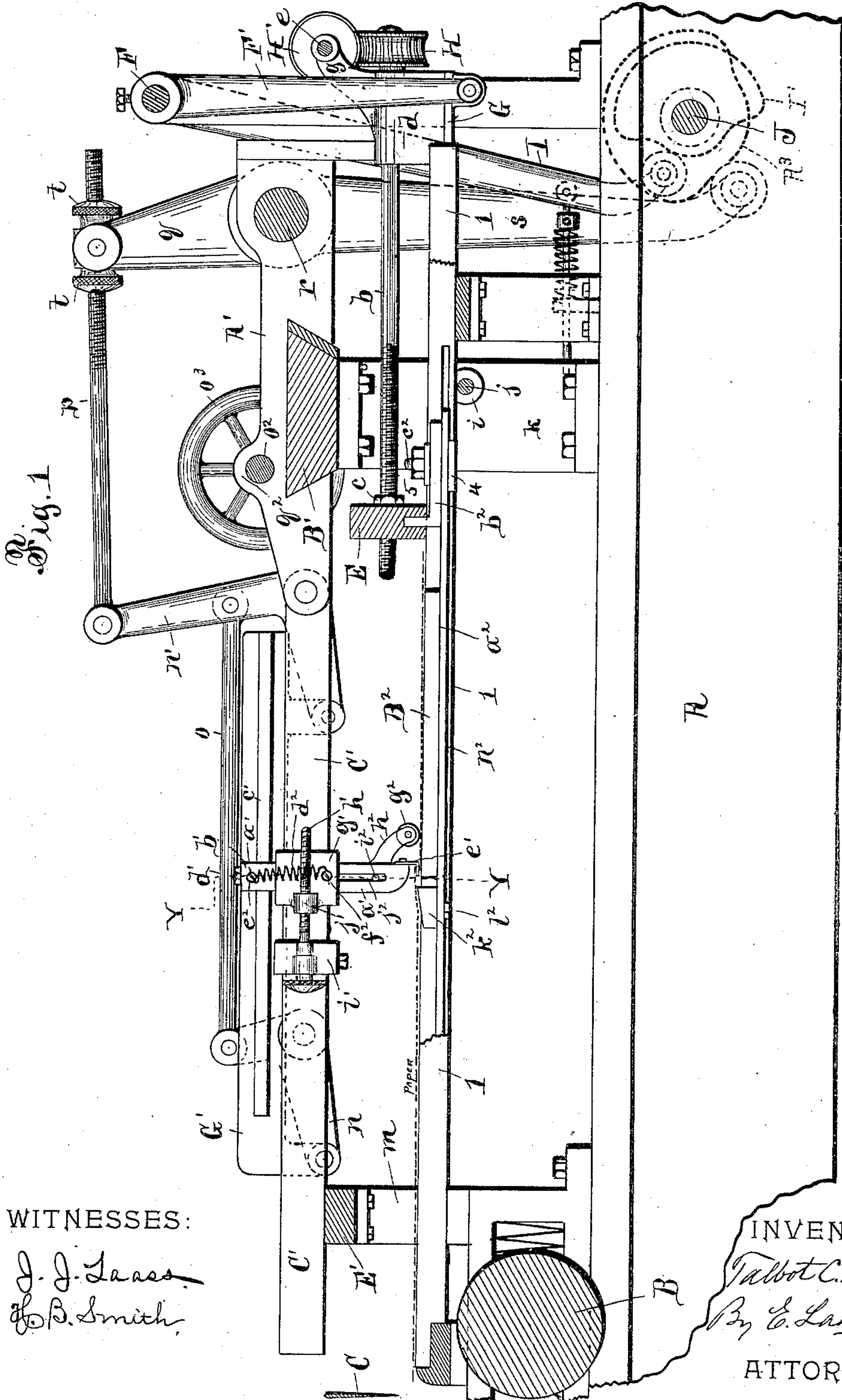
Patented June 19, 1900.

T. C. DEXTER.  
PAPER REGISTERING MECHANISM.

(Application filed Oct. 24, 1899.)

(No Model.)

5 Sheets—Sheet 1.



WITNESSES:

J. J. Laess  
H. B. Smith

No. 652,169.

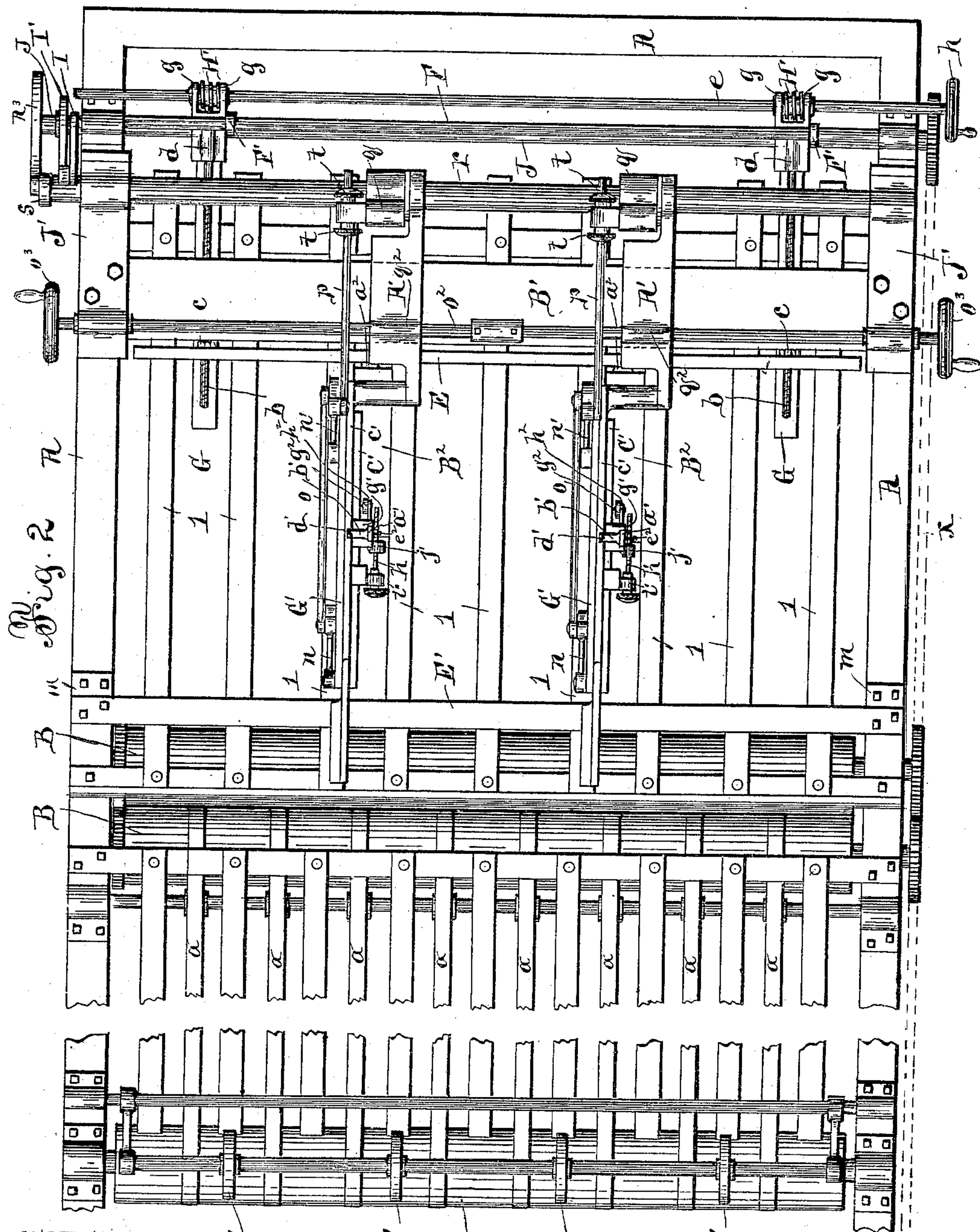
Patented June 19, 1900.

T. C. DEXTER.  
PAPER REGISTERING MECHANISM.

(Application filed Oct. 24, 1899.)

(No Model.)

5 Sheets—Sheet 2.



WITNESSES:

J. J. Laass.  
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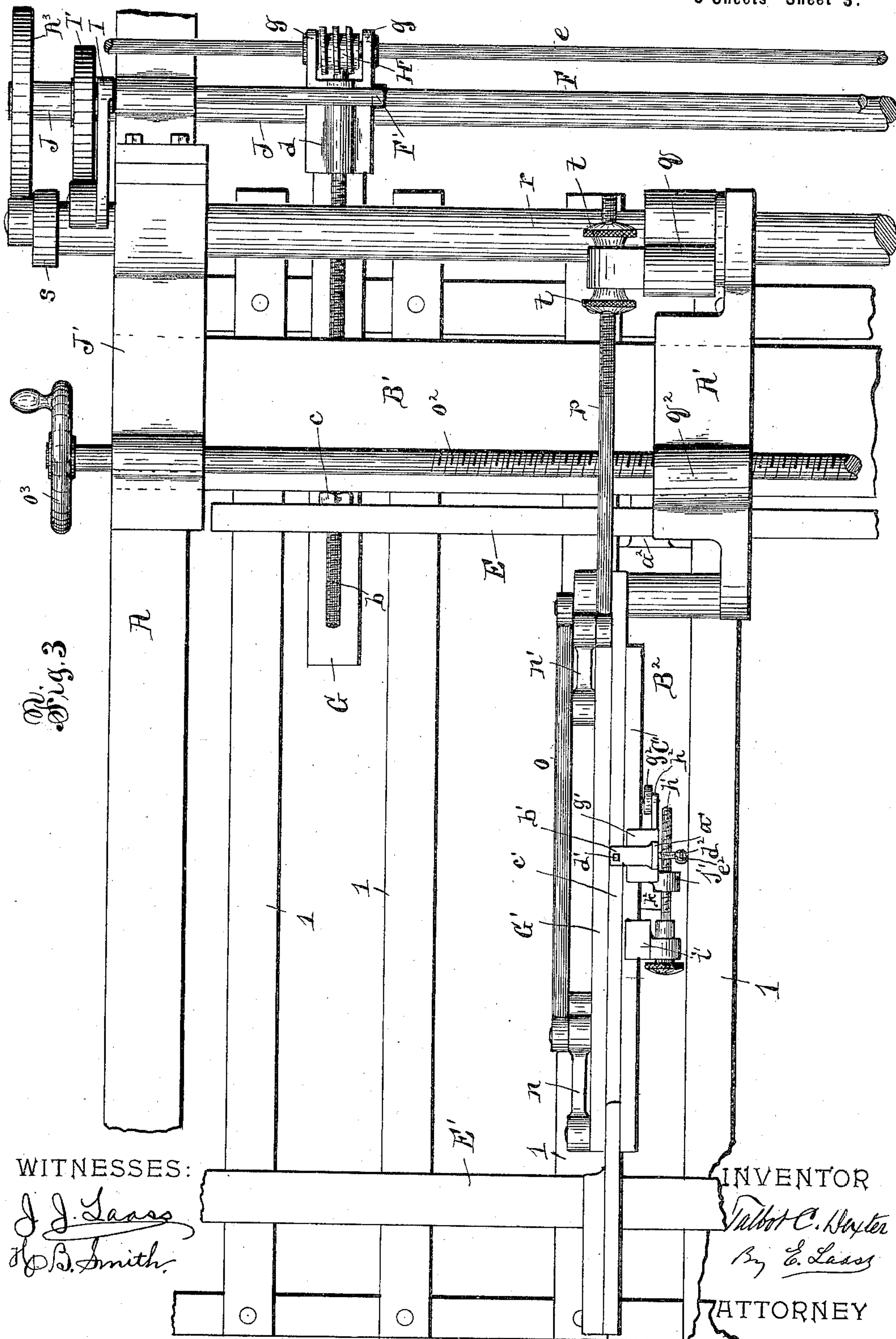


T. C. DEXTER.  
PAPER REGISTERING MECHANISM.

(Application filed Oct. 24, 1899.)

(No Model.)

5 Sheets—Sheet 3.



WITNESSES:

J. J. Laess  
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**No. 652,169.**

**Patented June 19, 1900.**

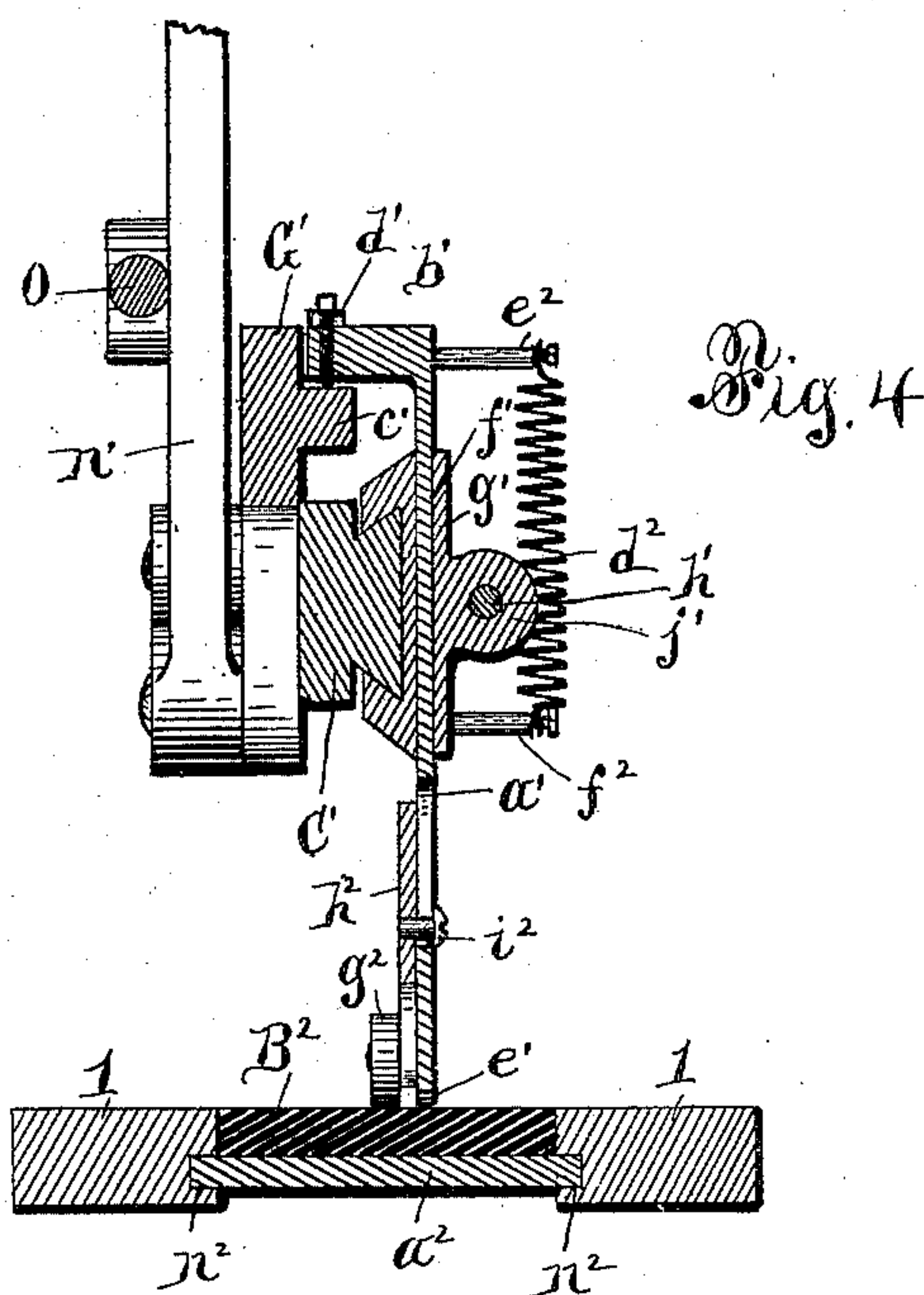
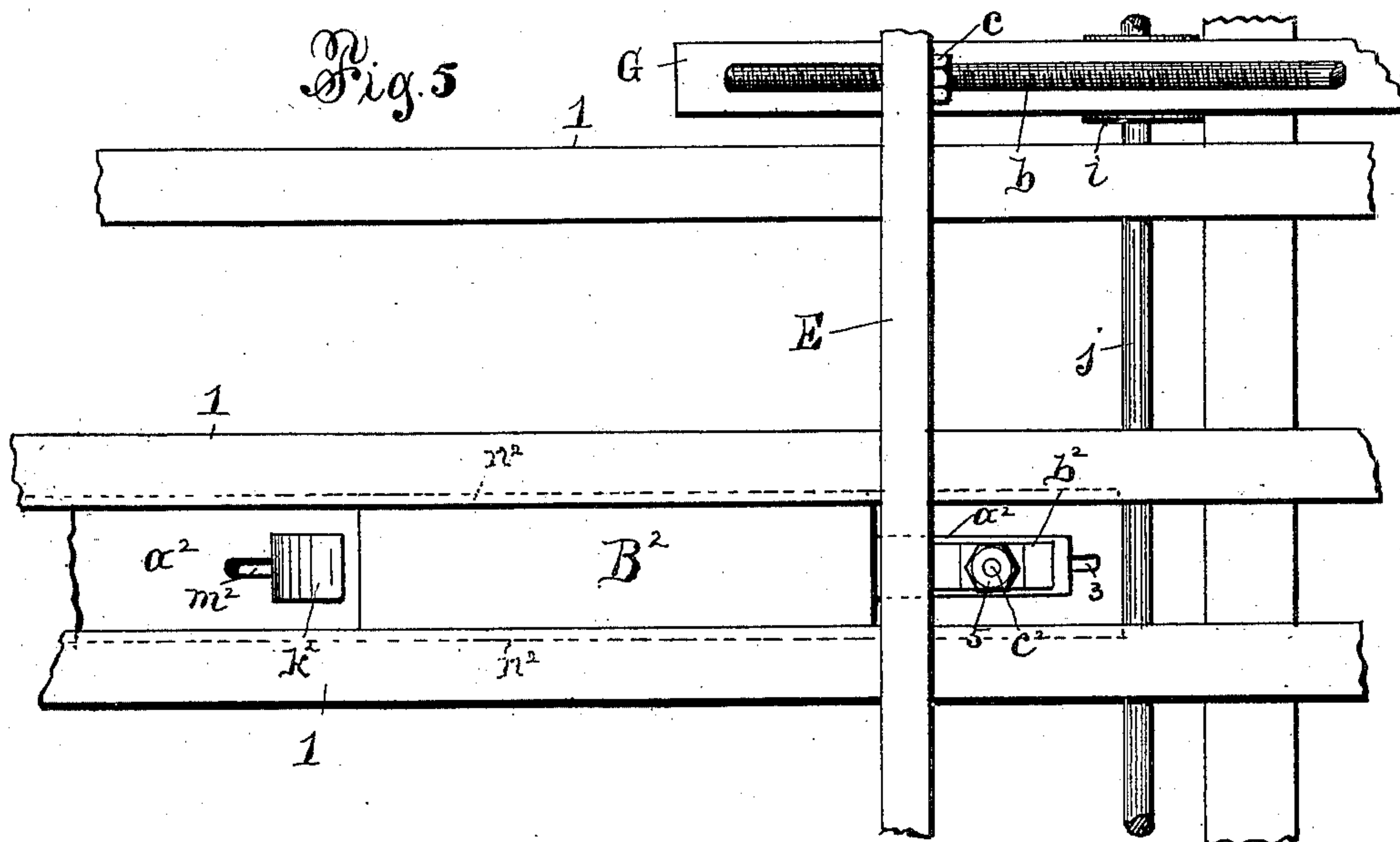
**T. C. DEXTER.**

### PAPER REGISTERING MECHANISM.

(Application filed Oct. 24, 1899.)

(No Model.)

**5 Sheets—Sheet 4.**



WITNESSES:

J. J. Laoss.  
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INVENTOR

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No. 652,169.

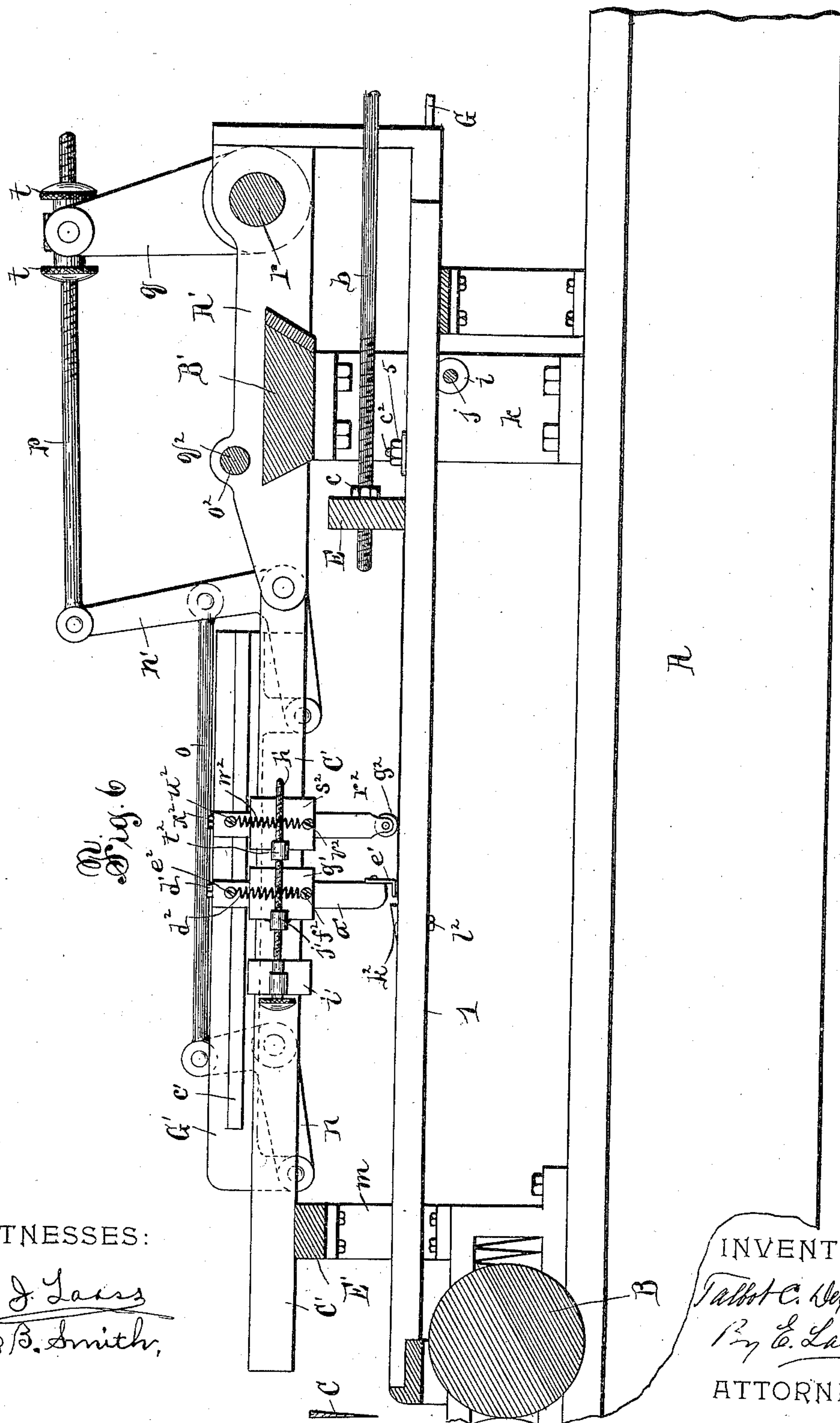
Patented June 19, 1900.

T. C. DEXTER.  
PAPER REGISTERING MECHANISM.

(Application filed Oct. 24, 1899.)

(No Model.)

5 Sheets—Sheet 5.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

TALBOT C. DEXTER, OF PEARL RIVER, NEW YORK, ASSIGNOR TO THE  
DEXTER FOLDER COMPANY, OF SAME PLACE.

## PAPER-REGISTERING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 652,169, dated June 19, 1900.

Application filed October 24, 1899. Serial No. 734,623. (No model.)

*To all whom it may concern:*

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

This invention relates to an improvement  
10 in mechanisms employed in connection with paper-folding machines and analogous machines for the purpose of automatically and accurately registering the sheets of paper preparatory to folding or otherwise operating on  
15 the same; and the invention has special reference to the class of paper-registering mechanisms in which the registering instrument proper is equipped with a tongue or point adapted to enter a slit provided in the sheet  
20 for that purpose.

The object of my present invention is to provide more efficient means for opening the slit in the paper to facilitate the entrance of the registering-point into said slit; and to that  
25 end the invention consists in the novel construction and combination of the component parts of the registering mechanism, as hereinafter fully described, and set forth in the claims.

30 In the annexed drawings, Figure 1 is a vertical longitudinal section of a portion of a paper-folding machine equipped with my improved paper-registering mechanism. Fig. 2 is a reduced plan view. Fig. 3 is an enlarged  
35 plan view of the registering mechanism. Fig. 4 is an enlarged vertical transverse section on line Y Y in Fig. 1. Fig. 5 is an enlarged detached plan view of the slit-opening bridge and the bed which imparts a further advance  
40 movement to the sheet to be registered; and Fig. 6 is a vertical longitudinal section of a portion of a folding-machine, illustrating a modification of the paper-registering mechanism.

45 Referring to the drawings, A represents the main frame of the paper-folding machine.

B B denote the usual folding-rollers.

*a a* are the traveling tapes, which convey the sheets of paper into the machine, and *l l* are  
50 the longitudinal bars, which support the portion of the sheet beyond the folding-rollers.

C designates the folding-blade, which tucks

the sheet between said folding-rollers, and D is the feed-roller, upon which the tapes *a a* run, over which roller are located the drop-  
55 rollers D' D', which press the sheet upon the traveling tapes. All of said parts are arranged to operate in the usual and well-known manner.

E represents the front stop or end gage, 60 against which the advance edge of the sheet is brought when fed into the machine. Said gage is made to alternately move part way toward and from the folding-rollers B B by means of a rock-shaft F, having depending  
65 from it arms F' F', the lower ends of which are connected to longitudinal bars G, upon which the aforesaid gage rides and is adjustably secured in its position by means of screw-  
70 rods *b*, passing through nuts *c* on the gage and journaled in brackets *d*, attached to the bars G. On the ends of the screw-rods *b* are secured worm-gears H, which mesh with corresponding gears H', secured to a transverse  
75 shaft *e*, which is journaled in ears *g g*, formed on the brackets *d*. The end of the shaft is provided with a hand-wheel *h* by which to turn it, and thereby turn the screw-rod *b*, which moves the gage E to the desired position in relation to the folding-rollers B B to  
80 accommodate sheets of different lengths. The rock-shaft F receives motion from a lever I, which is attached thereto, and is oscillated by means of a rotary cam I', secured to a shaft J, journaled on the main frame, which  
85 latter shaft receives its motion, preferably from one of the folding-rollers B, either by a chain, belt, or gears, as indicated by dotted lines at *x* in Fig. 2 of the drawings, although  
90 the same may be operated otherwise. The aforesaid bars G ride upon rollers *i i*, journaled on a transverse shaft *j*, supported in posts *k k*, mounted on the frame A.

The purpose of my improved paper-registering mechanism is to automatically and  
95 accurately adjust the sheet to bring a predetermined line of folding directly over the bite of the folding-rollers B B before the sheet is introduced between said rollers by the aforesaid blade C. There being two reg-  
100 istering instruments employed and located at opposite sides of the central line of travel of the sheet of paper, as is well known, each of these registering instruments is operated



by the following mechanism, to wit: A bracket A' is mounted on a stationary cross-bar B', preferably dovetail-shaped in cross-section and extended across the machine and supported on the aforesaid posts *k k* on the frame A. From said bracket extends rearwardly or toward the folding-rollers a horizontal bar C', which is shaped dovetail in cross-section or otherwise formed with a longitudinal guide and supported at one end on said bracket and at the opposite end on a cross-bar E', mounted on suitably-supported posts *m m*. To the side of the bar C' are pivoted the bell-crank levers *n n'*, and to corresponding arms of these levers is pivotally connected a horizontal bar G'. The other arms of the levers *n n'* are connected by means of a rod *o*, which causes said levers to operate in unison and to raise and lower the bar G' in parallel planes. One of the latter arms is extended in length and is connected, by means of a rod *p*, to the upper end of an arm *q*, rigidly secured to a transverse rock-shaft *r*, whereby said levers are oscillated. The shaft *r* is journaled at its ends to stationary brackets J' J', mounted on the frame A, and passes through the aforesaid brackets A' and receives its motion from a lever *s*, depending from said shaft and oscillated by means of a rotary cam A<sup>3</sup>, secured to the aforesaid shaft J. The rod *p* is screw-threaded at its connection with the arm *q* and is provided with nuts *t t* at opposite sides of the arm, whereby the distance between the points of connection of the rod *p* can be varied to cause the levers *n n'* to carry the bar G' at the desired elevation above the plane of the paper-supporting bars *b b*. A vertical plate *a'* is formed with a horizontal projection *b'*, and through this projection passes a set-screw *d'*, which bears upon the rib *c'*, formed on the side of the bar G', and thereby supports the plate *a'* in a suspended and vertically-adjustable position. To the lower end of said plate is attached the tongue *e'*, which by engagement with a slit in the paper registers said paper. By the aforesaid vertical adjustment of the plate *a'* the tongue *e'* is made to bear with the requisite pressure upon the paper to effect the aforesaid register. The tongue *e'* projects rearwardly from the plate *a'* and is located in the path of the slitted portion of the sheet, so as to enter the slit, as herein-  
 55 after more fully described. The plate *a'* slides in a vertical guide *f'*, formed in a block *g'*, mounted longitudinally adjustable on the bar C', which adjustment is effected by means of a screw-rod *h'*, journaled in a block *i'*, adjustably secured to the bar C' by a set-screw. Said rod *h'* passes through a screw-threaded ear *j'*, formed on the block *g'*. Said adjustment is provided for the purpose of setting the tongue *e'* in the required position according to the location of the slits provided in the sheets.

B<sup>2</sup> represents a bed consisting of a pad of

rubber or other suitable material upon which a portion of the delivered sheet rests. Said bed is carried on a longitudinally-reciprocating plate *a<sup>2</sup>*, which receives its movement from the aforesaid gage E, to which it is secured, preferably by means of an L-shaped plate *b<sup>2</sup>*, clamped adjustably onto the plate *a<sup>2</sup>* by means of a bolt *c<sup>2</sup>*, passing through the horizontal portion of the plate *b<sup>2</sup>* and through a longitudinal slot 3 in the plate *a<sup>2</sup>* and attached to a washer 4 and provided with a nut 5 on its end. The plate *a<sup>2</sup>* slides in longitudinal grooves or guides *n<sup>2</sup> n<sup>2</sup>*, provided in the edges of the bars 1 1. The bed B<sup>2</sup>, carried on the plate *a<sup>2</sup>*, serves, with the aid of the sheet-depressor hereinafter described, to obtain a frictional hold on the sheet to impart a secondary advance movement to the sheet after the sheet has been arrested by the gage E, as will be shortly more fully explained.

*d<sup>2</sup>* is a vertically-disposed coil-spring which is connected at its ends to two pins *e<sup>2</sup> f<sup>2</sup>*, projecting horizontally from the upper portion of the plate *a'* and lower portion of the block *g'*, respectively. Said spring serves to impart a downward pressure to the plate *a'*, whose downward movement in the guide *f'* is limited by the aforesaid set-screw *d'*. Said sheet-depressor consists of a roller *g<sup>2</sup>*, located back of the aforesaid registering-tongue *e'* and journaled on a bracket *h<sup>2</sup>*, secured vertically adjustable to the plate *a'* by means of the attaching-screw *i<sup>2</sup>*, passing through a vertical slot *j<sup>2</sup>* in the plate *a'*.

In front of the tongue *e'* is located a sheet-lifting bridge *k<sup>2</sup>*, which is secured longitudinally adjustable to the plate *a<sup>2</sup>* by means of a bolt *l<sup>2</sup>*, passing through a slot *m<sup>2</sup>* in said plate and engaging the bridge. Said bridge being in the path of the slitted portion of the sheet serves, in conjunction with the depressing-roller *g<sup>2</sup>*, to open the slit for the entrance of the tongue *e'*.

The aforesaid bracket A' is adjustable lengthwise of the cross-bar B' to accommodate to the width of the sheet the sheet-registering devices carried on said bracket, which adjustment is effected by means of a screw-rod *o<sup>2</sup>*, which is parallel to the bar B' and journaled in suitable bearings on the frame A and passes through a nut *q<sup>2</sup>*, formed on the bracket A'. The rod *o<sup>2</sup>* is provided with a hand-wheel *o<sup>3</sup>*.

The operation of my improved paper-registering mechanism is as follows: The sheet of paper is conveyed into the folding-machine by the tapes *a a* while the bar G', carrying the registering instrument and depressing-roller *g<sup>2</sup>*, is in its elevated position, whereby the sheet is brought with its advance edge against the gage E and is thereby arrested, said gage being in its position nearest the folding-rollers B B. The bar G' is then dropped, whereby the tongue *e'* of the instrument is made to bear slightly upon the sheet and the roller *g<sup>2</sup>* to bear firmly thereon to press the sheet into frictional contact with



the bed  $B^2$ . Immediately after the tongue  $e'$  and roller  $g^2$  have been brought into contact with the sheet the gage E is moved forward, thereby shifting the bed  $B^2$ , which by the  
 5 aforesaid frictional contact with the sheet imparts a secondary advance movement to the sheet. In this movement the slitted portion of the sheet is drawn onto the top of the bridge  $k^2$ , which opens the slit and facilitates  
 10 the entrance of the tongue  $e'$ . The rear edge of the slit then coming in contact with the heel of the aforesaid tongue arrests the further advance movement of the sheet and accurately registers the same. The bar  $G'$  is  
 15 then raised, whereby the tongue  $e'$  lifts the slitted portion of the sheet to prevent the slit from being caught on the bridge  $k^2$  and tearing the same when the sheet is withdrawn from the tapes  $a$  by the folding-blade C,  
 20 which descends and tucks the sheet between the folding-rollers B B in the usual and well-known manner. After the sheet has been withdrawn the gage E recedes, and the registering instrument and depressing-roller being in their elevated position the next incoming sheet is allowed to pass under said instrument and roller to be registered in the manner described.

In some cases I prefer to support the sheet-depressing roller  $g^2$  independent of the registering instrument, as illustrated in Fig. 6 of the drawings, in which said roller is pivoted to vertical plate  $r^2$ , which slides vertically in a block  $s^2$ , mounted longitudinally adjustable  
 35 in the bar  $C'$ , which adjustment is effected by means of the aforesaid screw-threaded rod  $h'$ , which engages a screw-threaded ear  $t^2$ , formed on the block  $s^2$ . The plate  $r^2$  and block  $s^2$  are provided with horizontally-projecting pins  $u^2$  and  $v^2$ , respectively, to which  
 40 is connected a coil-spring  $w^2$ . Said spring serves to impart a downward pressure to the plate  $r^2$ , the downward movement of which plate is limited by a set-screw  $x^2$ .

45 What I claim is—

1. The combination with a paper-folding machine, or analogous machine designed to operate on sheets of paper, a sheet-registering mechanism comprising a suitably-supported  
 50 vertically-movable bar, means imparting movement to said bar and maintaining the same in parallel planes, and the registering instrument proper carried on said bar and equipped with a tongue or point adapted to  
 55 enter a slit provided in the sheet substantially as set forth.

2. The combination with the sheet-conveyers, end gage arresting the advance movement of the sheet, folding-rollers, and folding-blade, of a paper-registering mechanism  
 60 comprising a bracket, a vertically-movable bar supported on said bracket, means imparting movement to said bar and maintaining the same in parallel planes, and the registering instrument proper carried adjustably on  
 65 said bar substantially as set forth.

3. The combination with the sheet-conveyers, end gage, folding-rollers, and folding-blade, of a paper-registering mechanism comprising a supporting-bracket, a stationary  
 70 bar extending horizontally from said bracket, bell-crank levers pivoted to the bar, a vertically-movable bar supported on and operated by said levers, and maintained thereby in parallel planes, means imparting movement to  
 75 said levers, and the registering instrument proper carried on the movable bar substantially as set forth.

4. The combination with the sheet-conveyers, end gage, folding-rollers, and folding-blade, of a paper-registering mechanism comprising a supporting-bracket, a stationary  
 80 horizontal bar extending from said bracket and having a vertical guide thereon, upright bell-crank levers pivoted to said bar, a horizontal bar supported on said levers and moved vertically thereby, and maintained in parallel  
 85 planes, means imparting movement to said levers, and the registering instrument proper carried on the movable bar and sliding in the aforesaid guide substantially as set forth.  
 90

5. The combination with the sheet-conveyers, end gage, folding-rollers, and folding-blade, of a paper-registering mechanism comprising a suitably-supported vertically-movable  
 95 horizontal bar, means imparting movement to the bar and maintaining the same in parallel planes, and the registering instrument proper and sheet-depressor carried on said bar substantially as set forth.  
 100

6. The combination with the sheet-conveyers, end gage, and means withdrawing the sheet from the conveyers, of a paper-registering mechanism comprising a supporting-  
 105 bracket, a stationary bar extending horizontally from said bracket, a vertical guide carried on said bar, bell-crank levers pivoted to said bar, a vertically-movable horizontal bar supported on and operated by the levers and maintained thereby in parallel planes, means  
 110 actuating said levers, the registering instrument proper carried on the movable bar and sliding in the aforesaid guide, a sheet-depressing roller supported on the registering instrument, and a spring imparting downward  
 115 pressure to said instrument for the purpose set forth.

7. In a paper-registering mechanism, the combination with a supporting-bracket, a stationary horizontal bar extending from said  
 120 bracket, a vertical guide on the bar, a vertically-movable horizontal bar supported on the stationary bar, means operating the movable bar and maintaining the same in parallel planes, the registering instrument proper  
 125 carried on the latter bar and equipped with a tongue to enter a slit provided in the sheet of paper, and sliding in the aforesaid guide, a sheet-depressor supported vertically adjustable on the registering instrument, and a  
 130 spring imparting downward pressure to the instrument for the purpose set forth.



8. In a paper-registering mechanism, the combination with a supporting-bracket, a stationary horizontal bar extending from said bracket and having a vertical guide thereon, bell-crank levers pivoted to said bar, a suitably-operated rock-shaft imparting movement to the levers, a vertically-movable horizontal bar supported on and operated by said levers, the registering instrument proper carried on said movable bar and sliding in the aforesaid guide, a bracket supported vertically adjustable on the instrument, a sheet-depressing roller pivoted on said latter bracket, and a spring imparting downward pressure to said instrument for the purpose set forth.

9. In a paper-registering mechanism, the combination of a suitably-supported vertically-movable horizontal bar, means imparting movement to said bar and maintaining the same in parallel planes, and the registering instrument proper and sheet-depressor carried vertically and longitudinally adjustable on said bar substantially as set forth.

10. In a paper-registering mechanism, the combination of a suitably-supported horizontal bar, means imparting vertical movement to said bar and maintaining the same in parallel planes, the registering instrument proper carried on said bar and equipped with a tongue to enter a slit provided in the sheet of paper, a sheet-lifting bridge supported in front of the instrument, and a sheet-depressor supported back of the instrument as and for the purpose set forth.

11. In a paper-registering instrument, the combination with a supporting-bracket, a stationary bar extending horizontally from said bracket, levers pivoted to the bar, a vertically-movable horizontal bar supported on and operated by said levers, and maintained thereby in parallel planes, a rock-shaft imparting movement to said levers, a cam actuating said shaft, and the registering instrument proper carried on the aforesaid movable bar substantially as set forth.

12. The combination with the sheet-conveyers, end gage arresting the advance movement of the sheet, and means withdrawing the sheet from said conveyers, a paper-registering mechanism comprising a longitudinally-reciprocating bed upon which a portion of the sheet rests, a suitably-supported vertically-movable horizontal bar above said bed, means operating said bar and maintaining the same in parallel planes, means moving said bed, the paper-registering instrument proper carried on the aforesaid bar and equipped with a tongue to enter a slit provided in the sheet, a sheet-lifting bridge supported in front of the instrument and in the path of the slitted portion of the sheet, and a roller supported back of the instrument, and pressing the sheet into frictional contact with the moving bed to impart a secondary advance movement to the sheet, and to cause the sheet-lifting bridge to open the slit for the

entrance of the aforesaid tongue substantially as described.

13. The combination with the sheet-conveying tapes, the alternately advancing and receding end gage, and means withdrawing the sheet from said tapes, a paper-registering mechanism comprising a reciprocating bed operated by the aforesaid gage, a vertically-movable horizontal bar suitably supported above the bed and maintained in parallel planes, and the registering instrument proper and sheet-depressor carried on said bar, and thereby moved to and from the bed substantially as described.

14. The combination with the sheet-conveying tapes, alternately advancing and receding gage, and means withdrawing the sheet from the tapes, a paper-registering mechanism comprising a bracket supported adjustably in a line transverse to said tapes, a horizontal stationary bar extending from said bracket, suitably-actuated levers pivoted to said bar, a vertically-movable horizontal bar supported on said levers and operated thereby, and maintained in parallel planes, the registering instrument proper carried longitudinally and vertically adjustable on the movable bar, a sheet-depressing roller supported vertically adjustable on the registering instrument, a longitudinally-reciprocating bed below said instrument and roller, and connected longitudinally adjustable to the aforesaid gage and operated thereby in the manner set forth.

15. In a paper-registering mechanism, the combination of a supporting-bracket, a stationary bar extending horizontally from said bracket, suitably-actuated bell-crank levers pivoted to said bar, a vertically-movable horizontal bar supported on and operated by the levers, and maintained thereby in parallel planes, means to adjust the movable bar vertically, a block mounted longitudinally adjustable on the stationary bar and formed with a vertical guide, and the registering instrument proper carried on the movable bar and sliding in said guide substantially as described.

16. In a paper-registering mechanism, the combination of a supporting-bracket, a stationary bar extending horizontally from said bracket, suitably-actuated bell-crank levers pivoted to said bar, a vertically-movable horizontal bar supported on and operated by the levers, and thereby maintained in parallel planes, a block mounted longitudinally adjustable on the stationary bar and provided with a vertical guide, the registering instrument proper carried on the movable bar and sliding in said guide, a sheet-depressing roller supported vertically adjustable on the instrument, and a coil-spring connected at its ends to the instrument and aforesaid block respectively for the purpose set forth.

TALBOT C. DEXTER. [L. S.]

Witnesses:

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M. E. MORRISON.