

No. 632,449:

Patented Sept. 5, 1899.

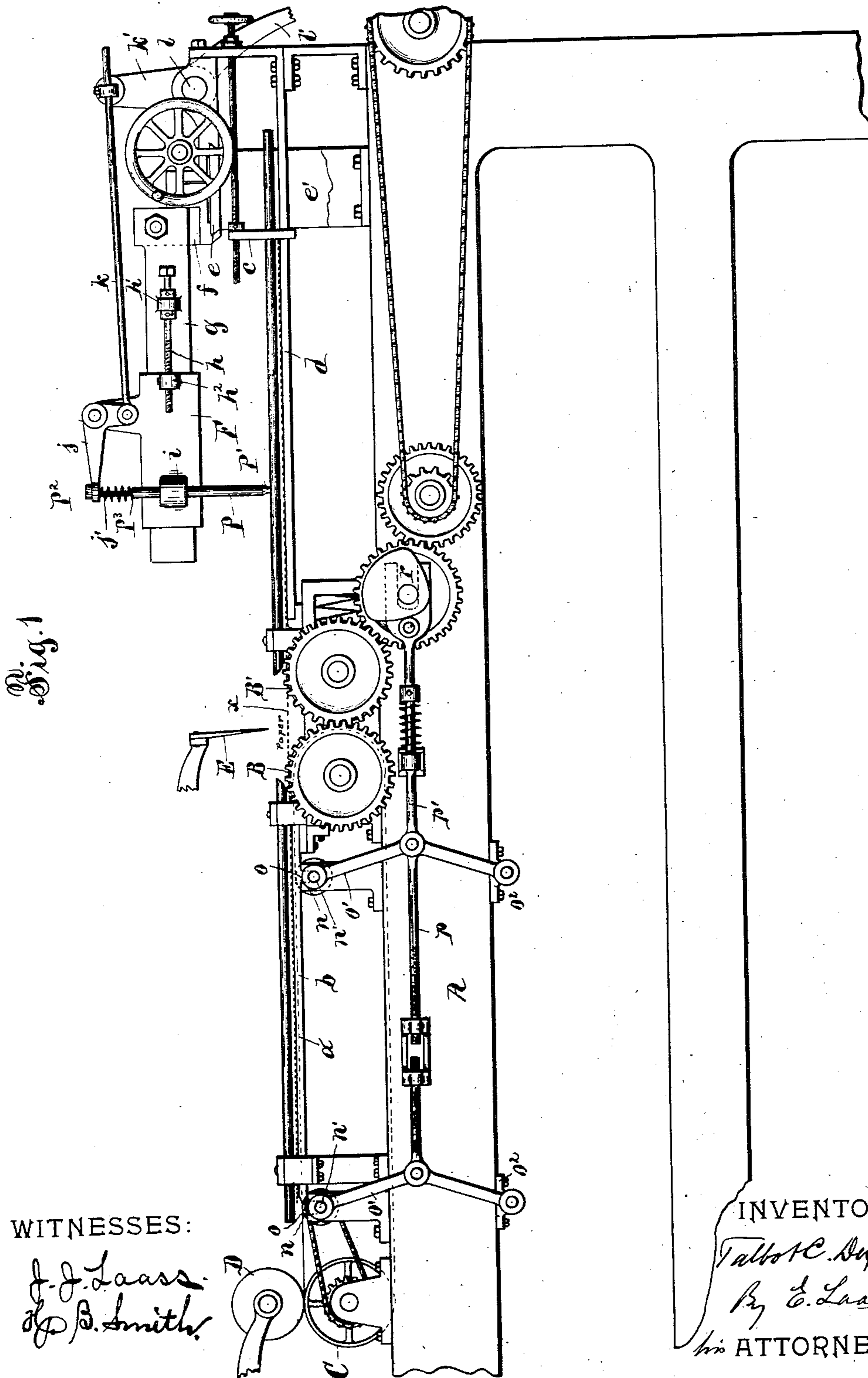
T. C. DEXTER.

PAPER REGISTERING INSTRUMENT.

(Application filed Dec. 15, 1898.)

6 Sheets—Sheet 1.

(No Model.)



WITNESSES:

J. J. Laass.
H. B. Smith.

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My ATTORNEY

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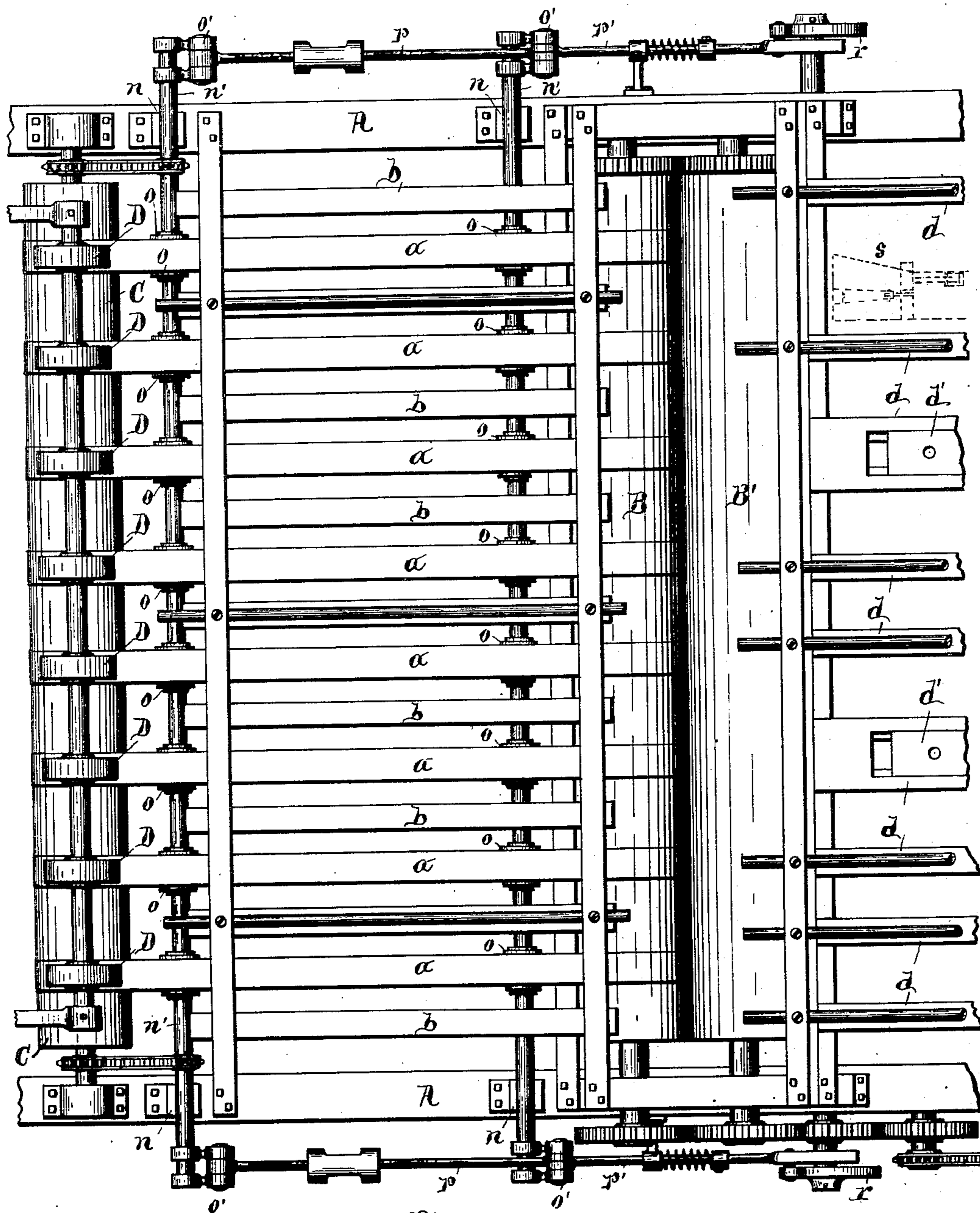


Fig. 2

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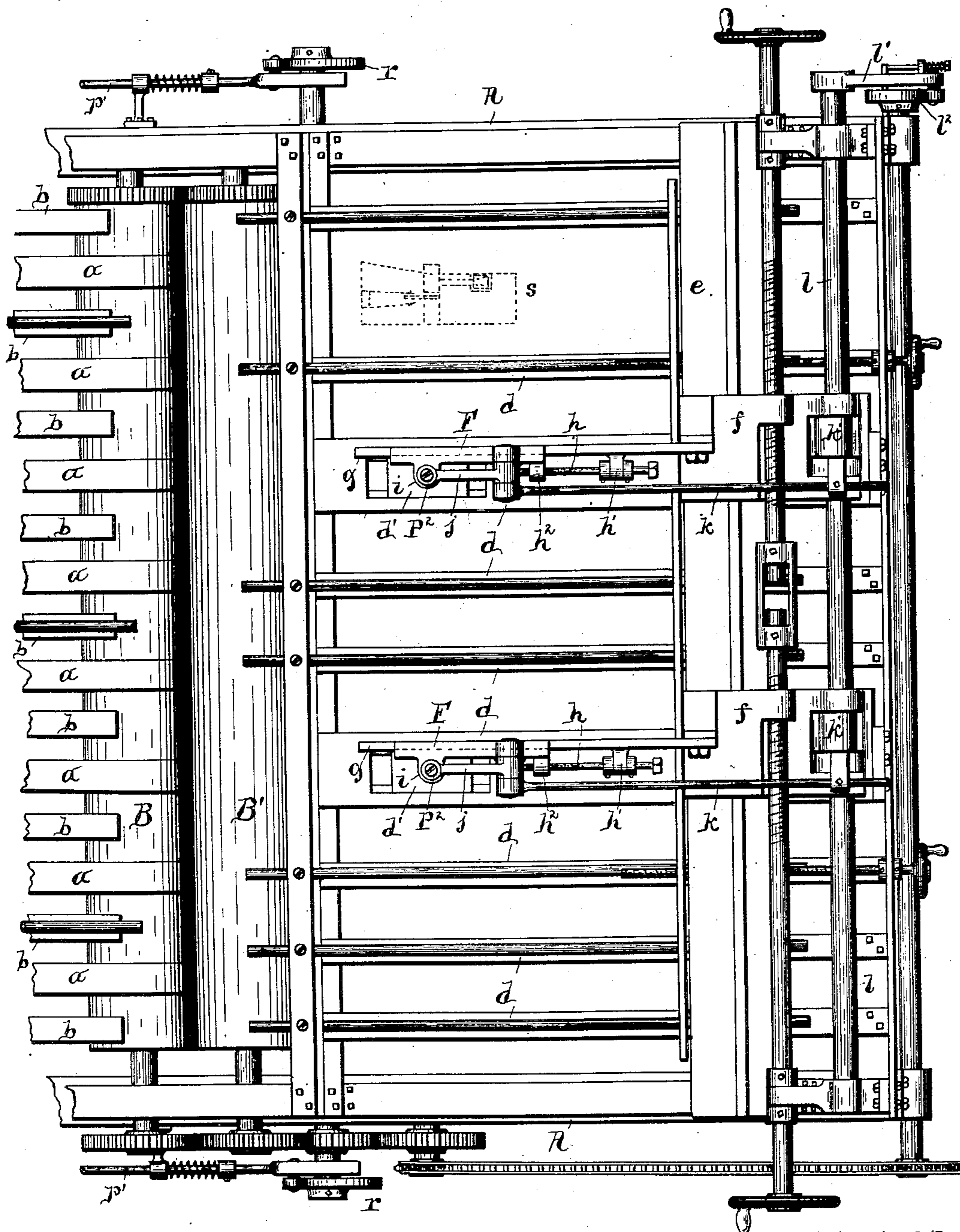
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6 Sheets—Sheet 3.



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Fig. 3

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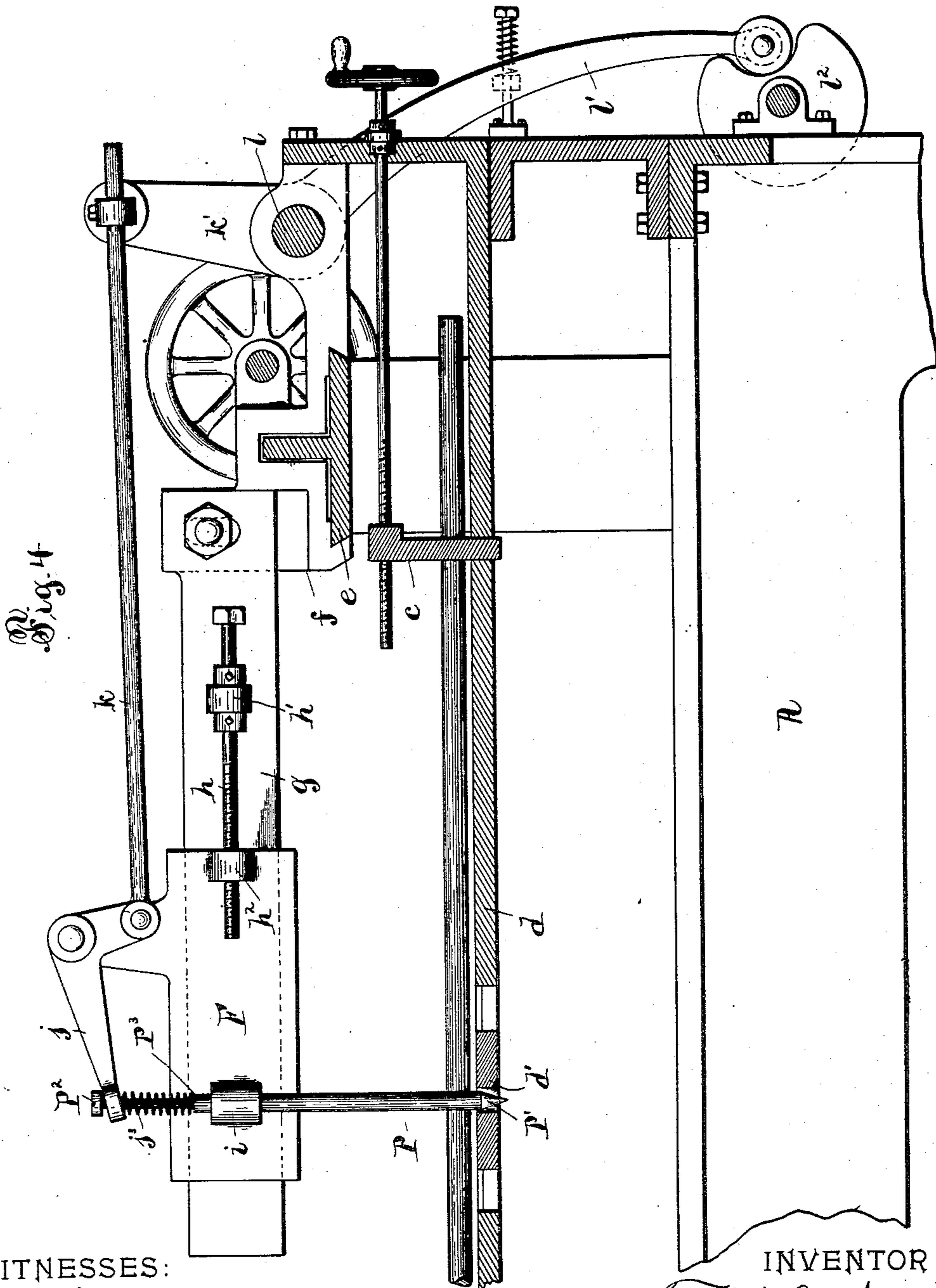
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(Application filed Dec. 15, 1898.)

(No Model.)

6 Sheets—Sheet 4.



WITNESSES:

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Patented Sept. 5, 1899.

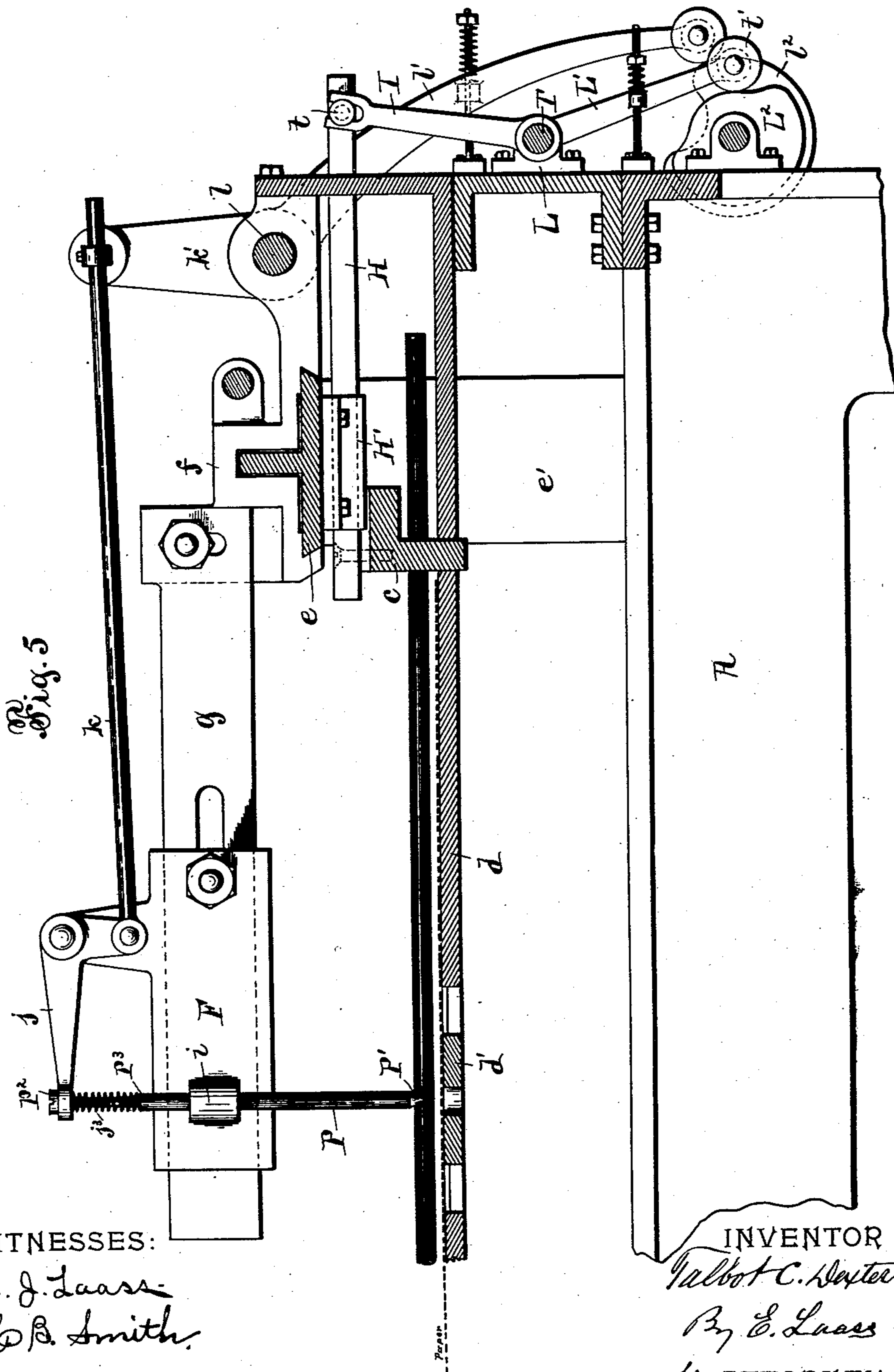
T. C. DEXTER.

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(Application filed Dec. 15, 1898.)

(No Model.)

6 Sheets—Sheet 5.



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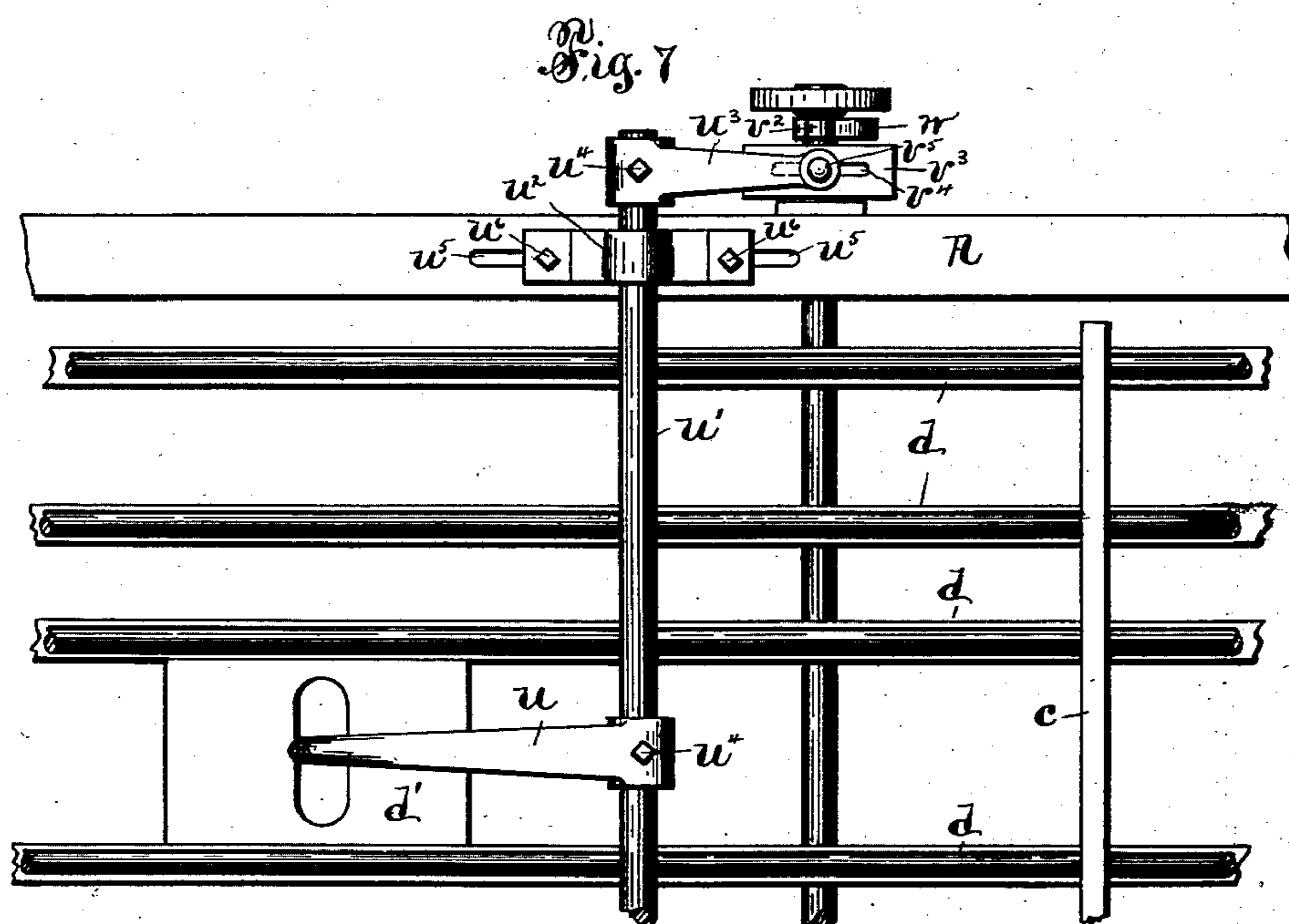
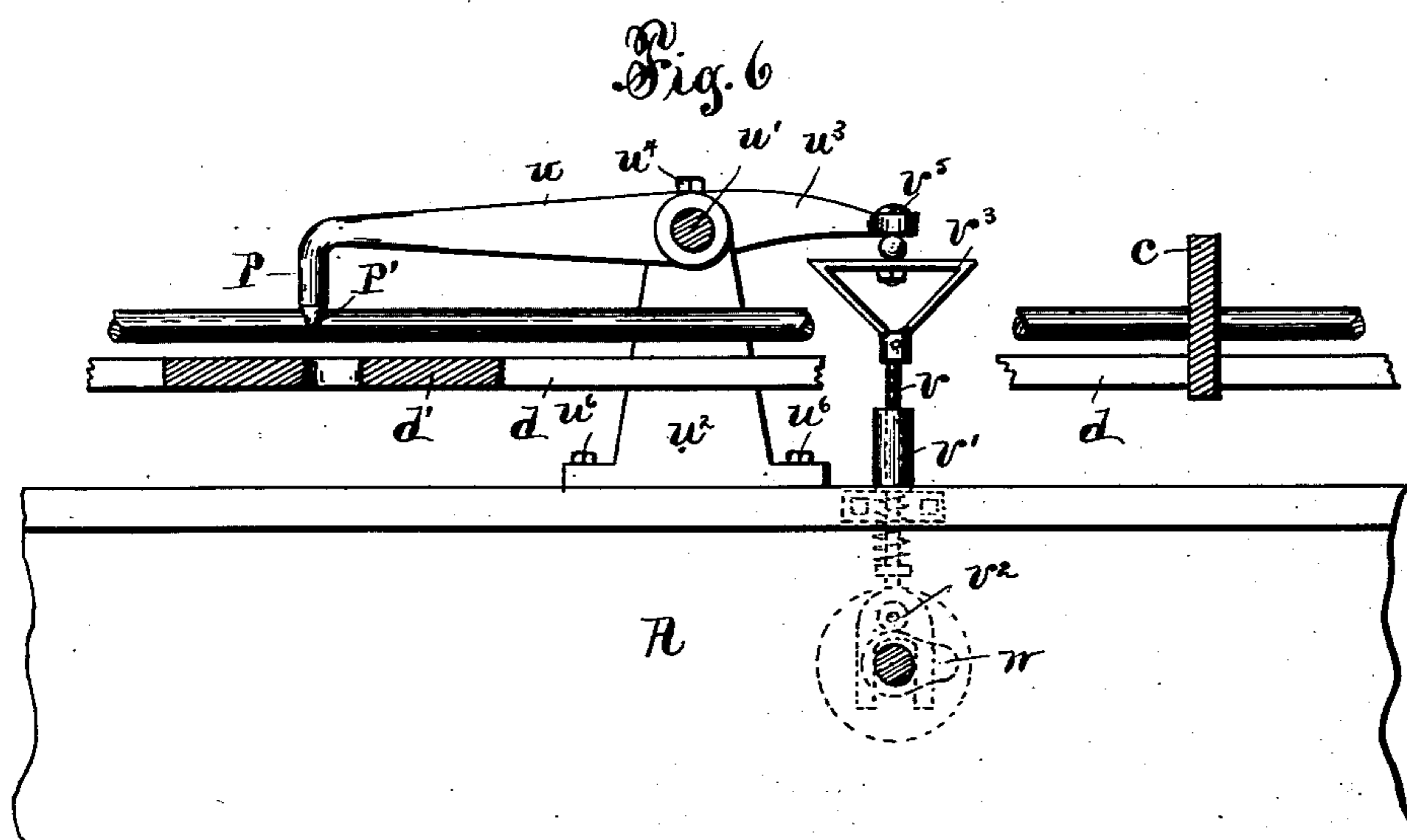
T. C. DEXTER.

PAPER REGISTERING INSTRUMENT.

(Application filed Dec. 15, 1898.)

(No Model.)

6 Sheets—Sheet 6.



WITNESSES:

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UNITED STATES PATENT OFFICE.

TALBOT C. DEXTER, OF PEARL RIVER, NEW YORK, ASSIGNOR TO THE
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PAPER-REGISTERING INSTRUMENT.

SPECIFICATION forming part of Letters Patent No. 632,449, dated September 5, 1899.

Application filed December 15, 1898. Serial No. 699,337. (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 paper-registering instruments which are provided with vertically-movable pins entering perforations in the underlying sheet.

The object of the invention is to provide a registering instrument which shall be of utmost simplicity in construction and efficient in operation; and to that end the invention consists, chiefly, in the combination, with the sheet-conveying tapes, front stop, and sheet-supporting bars, of a carrier disposed stationary above said bars, a lever pivoted to said carrier, mechanism imparting intermittent oscillatory motion to said lever, a vertical guide on the carrier, a conically-pointed registering-pin suspended from the aforesaid lever and sliding in said guide, and a spring transmitting downward pressure from the lever to the pin; and the invention also consists in novel features of its details, as hereinafter more fully described.

In the accompanying drawings, Figure 1 is a side elevation of a paper-folding machine equipped with my improved registering instrument. Figs. 2 and 3 are plan views of the rear and front portions, respectively, of said machine. Fig. 4 is an enlarged side view of the registering instrument in its sheet-registering position. Fig. 5 is an enlarged side view showing said registering instrument in connection with the movable front stop. Fig. 6 is a side view of a modification of the registering instrument, and Fig. 7 is a plan view of the same.

Similar letters of reference indicate corresponding parts.

A represents the main frame of a paper-folding machine. B B' denote the first pair of folding-rollers. The majority of such machines are provided with additional folding-rollers. (Not shown in this case.)

a a represent the tapes which convey the

paper into the machine. Said tapes run on the feed-roller C and in grooves in the rear folding-roller B.

D are the usual drop-rollers over the aforesaid feed-roller.

b b are the usual paper-supporting bars, which are arranged between the tapes a a.

c designates the front stop, which arrests the movement of the delivered sheet and is adjustable toward and from the folding-roller to suit the different sizes of sheets to be folded.

E designates the blade which introduces the delivered sheet into the bite of the folding-roller, and d d are the usual paper-supporting bars, which extend from the folding-rollers to the front end of the machine.

e represents a rigid horizontal bar which is sustained transversely above the paper-supporting bars d d by means of posts e', mounted on the sides of the main frame A. Upon said transverse bar are mounted longitudinally-adjustable brackets f f, from each of which extends at right angles toward the folding-rollers B B' a horizontal arm g, which is adjustable vertically on the bracket f. On said arm rides a carrier F, which is adapted to be shifted lengthwise the arm and adjustably secured in its required position, preferably by means of a screw h, journaled in an ear h' on the arm g and passing through a screw-threaded ear h² on the carrier, as clearly shown in Figs. 1 and 3 of the drawings. The aforesaid adjustabilities of the brackets f and carrier F are essential to adapt the registering instrument to operate on sheets of different sizes and on sheets having the perforations in different positions. Said carrier has rigidly attached to it or integral with it a vertical guide i, in which slides the vertical sheet-registering pin P, the lower end of which is formed with a conical or tapered point P' for entering a perforation, preferably of circular form, in the underlying sheet of paper. (Indicated by the dotted line x.)

The vertical guide i serves to maintain the registering-pin axially in the line of its vertical movement, so that in the descent of said pin the tapered or conical point P' thereof entering the perforation in the paper acts as a wedge, which by contact with the

front edge of the perforation in the paper pushes the sheet to its registering position.

For operating the registering-pin P, I preferably pivot to the carrier F a bell-crank or
5 suitable lever *j*, one arm of which carries in a suspended position the registering-pin, which is provided with a head P^2 on its upper end and with a shoulder P^3 beneath the lever-arm, and between said shoulder and arm is
10 interposed a spiral spring *j'*, surrounding the upper end portion of the pin, said spring serving to transmit downward pressure from the lever *j* to the registering-pin, so as to insure the entrance of the tapering point of
15 the pin into the perforation in the paper and push said paper to its registering position. To further insure said effect, the paper-supporting plate *d'* is disposed directly under the registering-pin and provided with a vertical
20 orifice for the reception of the registering-point P' . The lever *j* receives intermittent oscillatory motion from a pitman *k*, connecting one of the arms of said lever to an arm *k'*, fastened to a rock-shaft *l*, to the
25 end of which is attached a lever *l'*, which has its free end bearing on a rotary cam l^2 .

In order to facilitate the movement of the sheet to its registering position, I employ suitable means for relieving the sheet from frictional contact with the tapes *a a* during said
30 movement. This I preferably accomplish by carrying said tapes on vertically-movable supports which cause the tapes to be lowered to a plane beneath the usual paper-supporting
35 bars *b b* between the tapes. Said vertically-movable supports may consist of rollers *O* mounted on shafts *n'*, which extend across the machine beneath the tapes and pass with their ends through vertical guides *n*, secured
40 to the sides of the main frame A. Said ends of the shafts are pivoted to the upper ends of toggles *o' o'*, the lower ends of which are pivoted to suitable supports o^2 , fastened to the frame, as illustrated in Fig. 1 of the
45 drawings.

The toggles on each side of the machine are connected together by a rod *p* and are actuated by a pitman *p'*, which receives intermittent reciprocating motion from a cam *r*.

50 In the operation of the machine the paper is fed in upon the feed-roller C, from whence it is carried into the machine by the tapes *a a*, which at that time are in a plane to obtain the necessary frictional hold upon the paper to
55 carry it forward to the front stop *c*, which arrests said movement. The paper is then shifted laterally to side-register by a suitable registering instrument, (indicated by dotted lines at *s* in Fig. 3 of the drawings,) which instrument
60 may be of the form of the gripper and its actuating mechanism clearly shown in my Letters Patent No. 599,319, dated February 22, 1898, and inasmuch as I do not in the present case limit myself to any special form
65 of said lateral-registering instrument it is unnecessary to describe the same in detail here. This registering of the paper carries it into

position to allow the registering-pins P to enter the perforations in the paper. Either before or immediately after said lateral registering of the paper the toggles *o' o'* are actuated to lower the rollers *o o*, which during their elevated position have their tops in a plane slightly higher than the top of the feed-roller C and the tops of the tape-carrying portions of the folding-roller B. In lowering the
70 aforesaid rollers *o o* the tapes are allowed to drop sufficiently beneath the plane of the paper-supporting bars *b* to cause the paper to ride on said bars and to be carried thereby
75 out of contact with the tapes. The registering-pins P P then descend and enter their conical or tapering points $P' P'$ into the perforations in the paper. Said pins being maintained axially in the lines of their vertical
80 movement and incapable of yielding laterally in any direction causes the tapering front sides of said points to crowd against the adjacent edges of the perforations, and thereby push the paper forward to its longitudinal
85 registering position. As soon as this is effected the pins P P rise to release the paper, and then the blade E tucks the paper into the bite of the folding-rollers B B', which
90 draw the sheet down between them and impart the first fold to the sheet. As soon as the sheet has thus been withdrawn from the top of the machine the toggles *o' o'* are again actuated to lift the rollers *n n*, which are thereby caused to carry the tapes into position to
95 receive upon them the next incoming sheet.

For registering some grades of paper the front stop *c* may be stationary, as represented in Fig. 1 of the drawings, in which case the paper will become slightly buckled between
100 the registering-pins and front stop, and the folding-blade E is required to be so timed in its movement as to cause it to touch the sheet just as the points of pins P P are withdrawn from the perforations in the paper. In this
105 manner the sheet will be accurately folded; but in most cases the front stop *c* is required to be movable to and from its sheet-arresting position and timed to recede from said position before the registering-pins enter the perforations in the paper. The arrangement of
110 this alternately advancing and receding front stop is shown in Fig. 5 of the drawings, in which the front stop *c* is attached to longitudinal bars H, sliding in guides H', attached to the
115 stationary cross-bar *c'*. The outer end of each bar H has attached to it a wrist-pin *l*, which is straddled by the longitudinally-slotted end of an arm I, attached to a shaft I', which extends across the machine and is mounted in
120 suitable bearings L, attached to the frame A. To one end of this shaft is fastened a lever L', the free end of which has pivoted to it a roller *l'*, by which it rides on a cam L^2 and receives therefrom an intermittent rocking
125 motion. The cam L^2 is shaped to cause the front stop *c* to move to its sheet-arresting position in time to secure the impact of the front edge of the incoming sheet and to recede from

said position immediately before the registering-pins P P enter into the perforations in the underlying sheet, and thus permit said sheet to be pushed forward by the tapering or conical points of said pins pressing on the adjacent edges of the perforations.

I wish it to be understood that I do not limit myself to the hereinbefore-described vertical guide *i* on the carrier F for maintaining the registering-pin axially in the line of its vertical movement, as the same result may be attained by forming said pin integral with an arm *u*, attached to a shaft *u'*, which extends across the machine and is mounted in bearings on posts *u''*, secured to the sides of the frame A, as represented in Figs. 6 and 7 of the drawings. To one end of the shaft *u'* is secured an arm *u'''*, which is connected to a vertical pitman *v*, sliding in a vertical guide *v'*, attached to the frame A. The lower end of this pitman has pivoted to it a roller *v''*, by which it rides on a rotary cam *w*.

In order to permit said instrument to be adjusted for different-sized sheets of paper, I fasten the arm *u* to the shaft *u'* by means of set-screw *u''*, which can be loosened to allow the arm to be shifted lengthwise of the shaft and secured in its desired position, tightening said screw. This permits lateral adjustment of the registering-pin. To permit longitudinal adjustment of said pin, I provide the frame A with longitudinal slots *u'''* for the reception of the bolts *u''''*, by which the posts are fastened to the frame. To maintain the arm *u'''* in connection with the pitman *v* during said longitudinal adjustment, I rigidly secure to the upper end of said pitman a horizontal plate *v'''*, which is provided with a longitudinal slot *v''''* for the reception of the bolt *v'''''*, which connects the arm *u'''* to the pitman.

What I claim as my invention is—

1. In combination with the sheet-convey-

ing tapes, front stop and sheet-supporting bars, a carrier disposed stationary above said bars, a lever pivoted to said carrier, mechanism imparting intermittent oscillatory motion to said lever, a vertical guide on the carrier, a conically-pointed registering-pin suspended from the aforesaid lever and sliding in said guide, and a spring transmitting downward pressure from the lever to the pin.

2. In combination with the sheet-conveying tapes, sheet-supporting bars and front stops, a rigid bar extending across the machine above the aforesaid bars, arms extending from said cross-bar and supported thereon adjustably lengthwise thereof, carriers mounted longitudinally adjustable on said arms, vertical guides on said carriers, registering-pins sliding in said guides and provided with conical sheet-registering points, levers pivoted to the carrier and supporting the registering-pins in suspended positions, springs transmitting downward pressure from the levers to said pins, and mechanisms imparting rocking motion to said levers.

3. In combination with the sheet-conveying tapes, sheet-supporting bars and front stop, carriers disposed stationary above said bars, vertical guides on said carriers, registering-pins sliding in said guides and provided with conical points for entering into perforations in the underlying sheet, mechanisms imparting intermittent vertical reciprocating motion to said pins and means for dropping the aforesaid tapes below the plane of the sheet-supporting bars during the entrance of the registering-points into the aforesaid perforations as set forth.

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Witnesses:

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