

(No Model.)

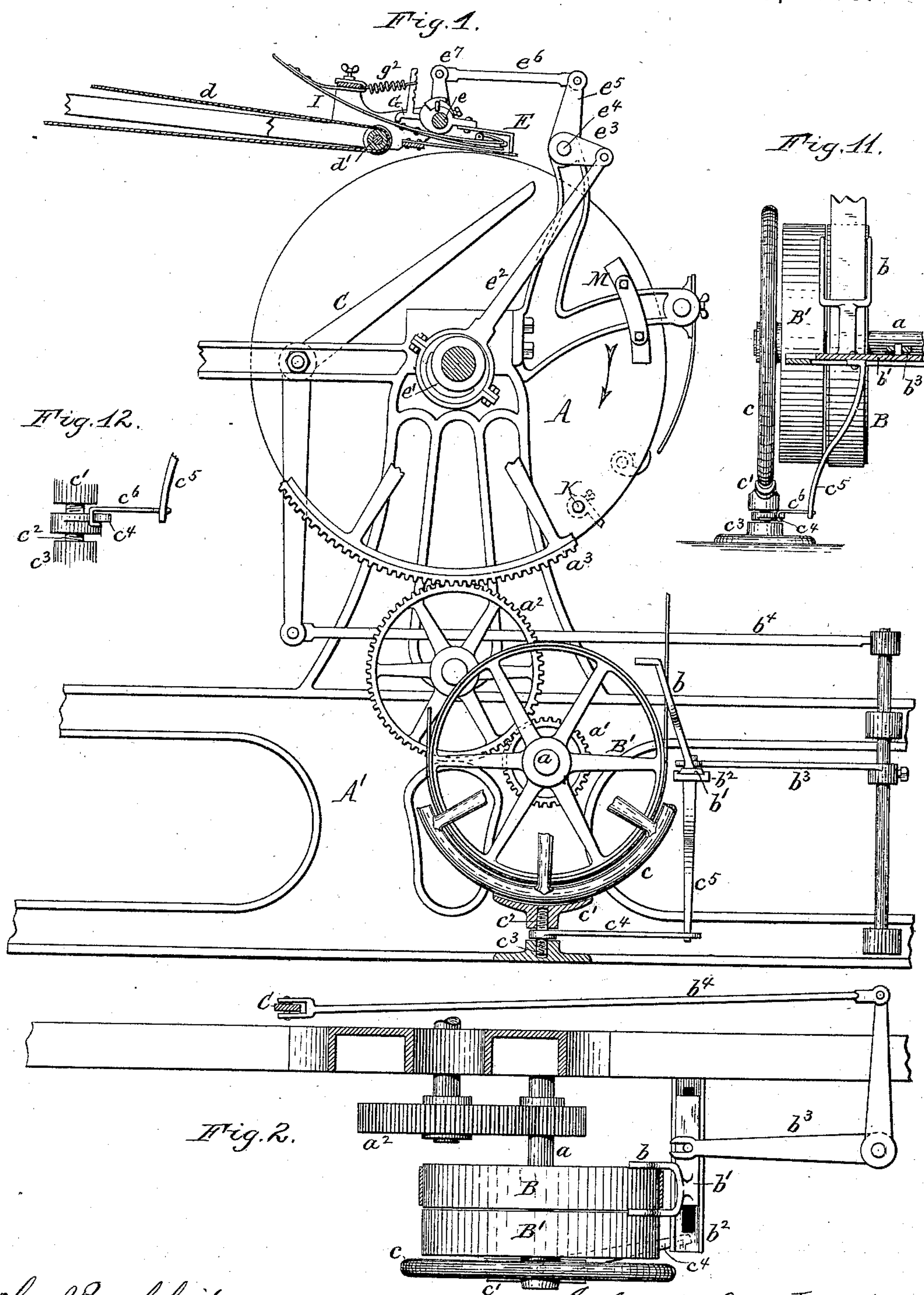
3 Sheets—Sheet 1.

J. NAYLOR, Jr.

STOP MOTION FOR PRINTING MACHINES.

No. 335,768.

Patented Feb. 9, 1886.



Chas. Buschheit  
Theo. L. Popp. } Witnesses.

J. Naylor, Jr. Inventor.  
By Wilhelm Hornum  
Attorneys.

(No Model.)

3 Sheets—Sheet 2.

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Fig. 5.

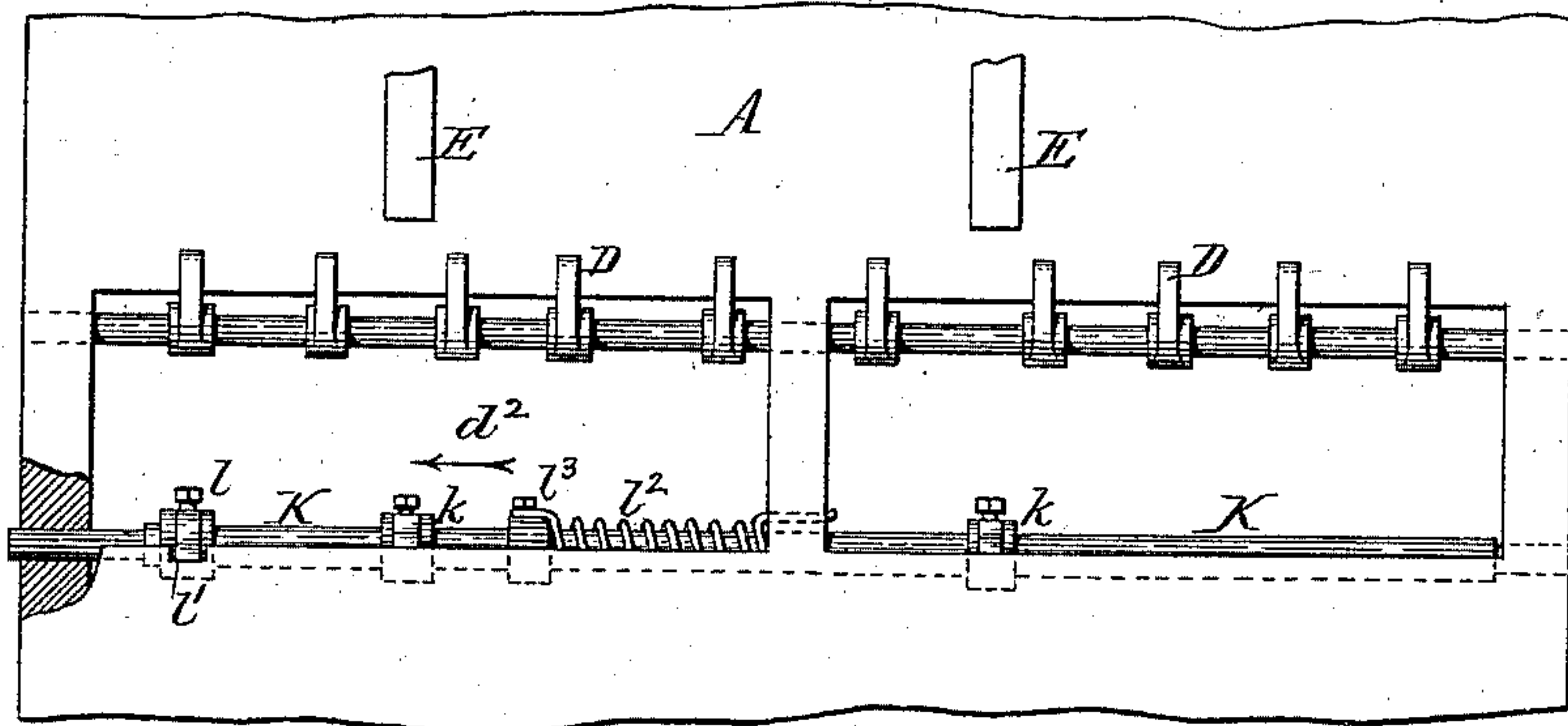


Fig. 6.

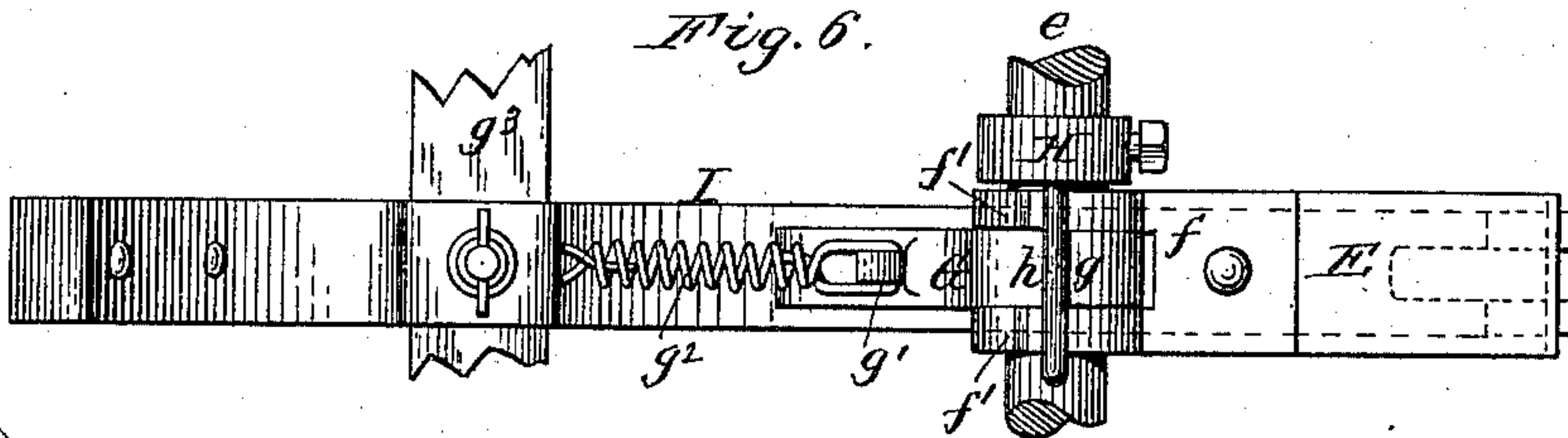


Fig. 7.

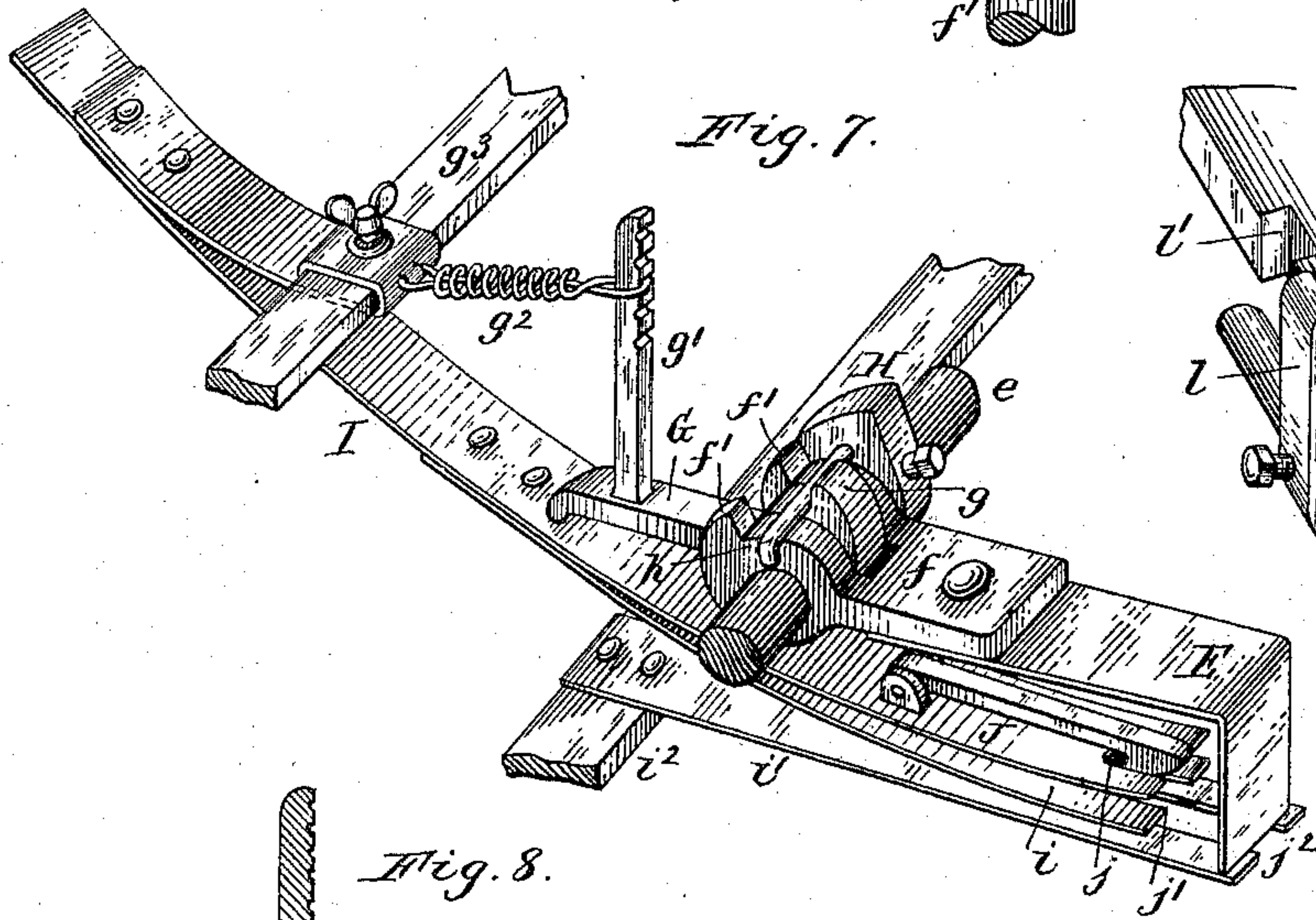


Fig. 13.

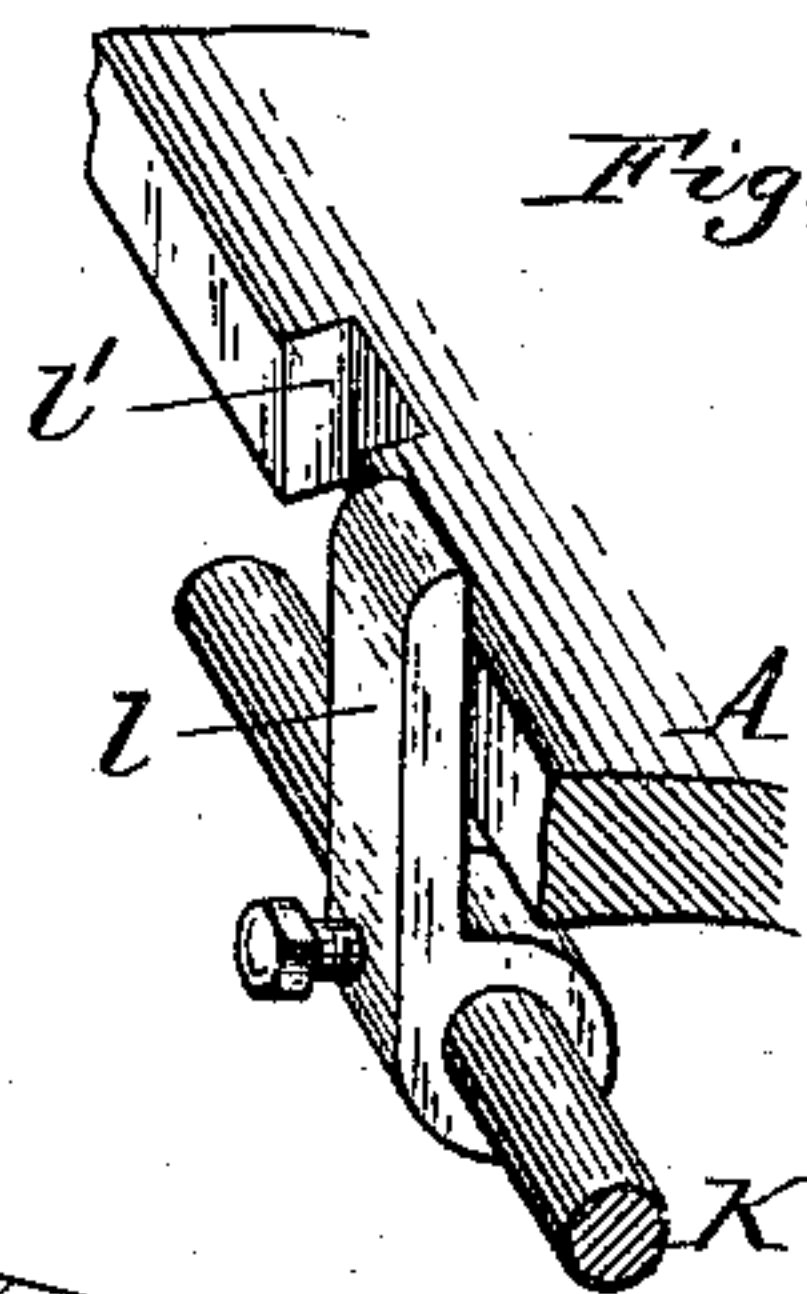


Fig. 8.

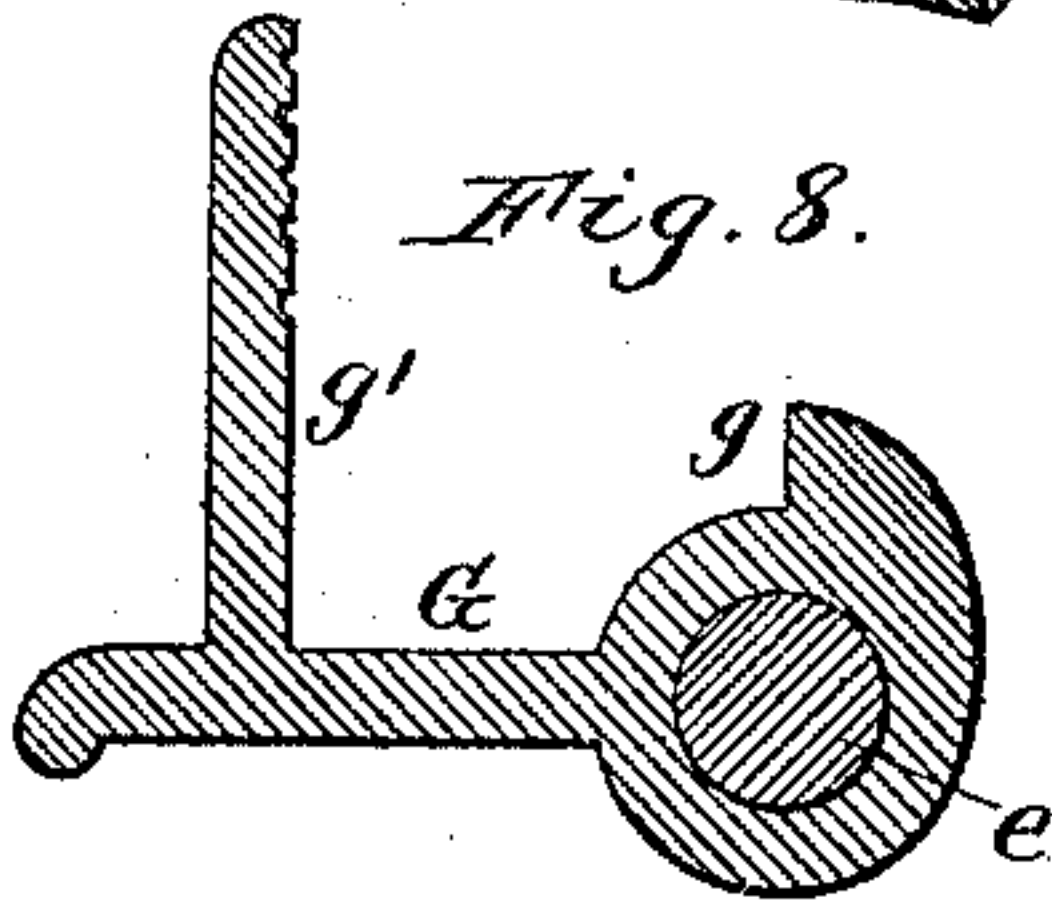


Fig. 9.

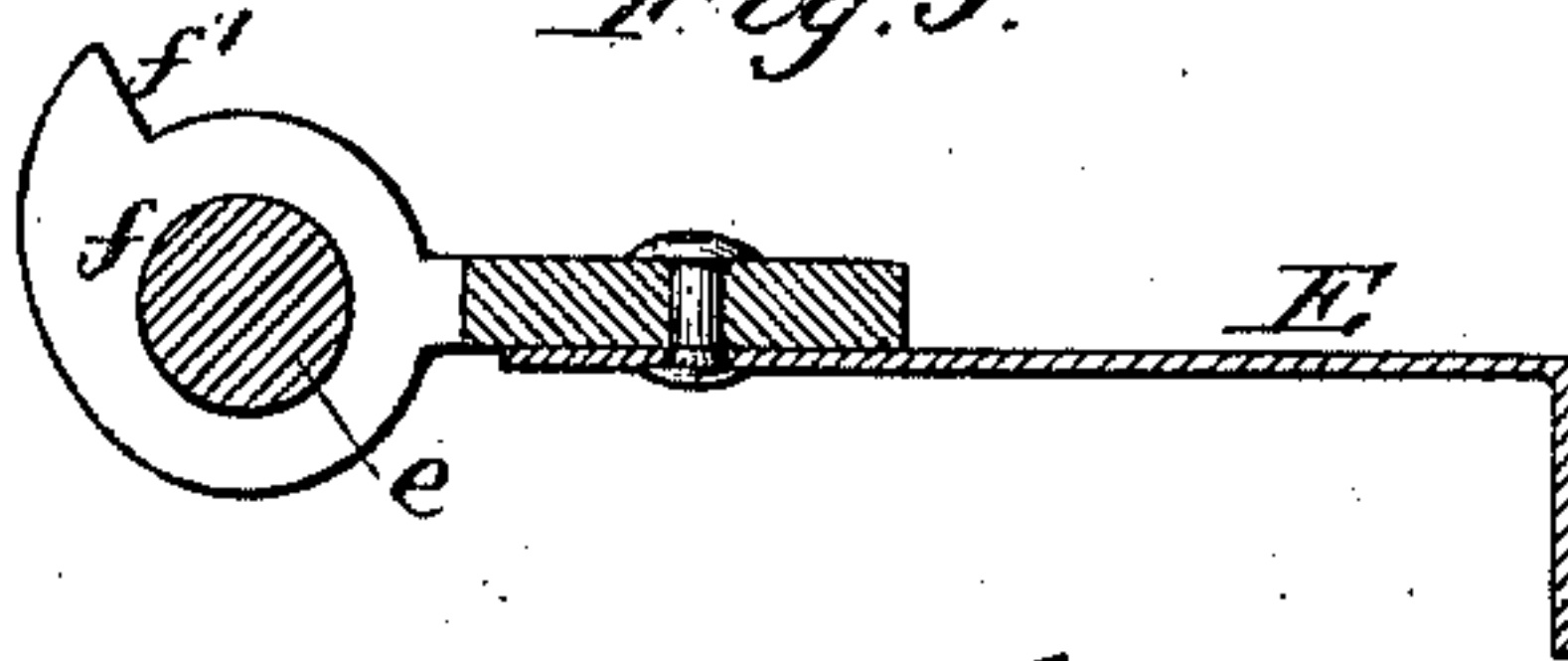
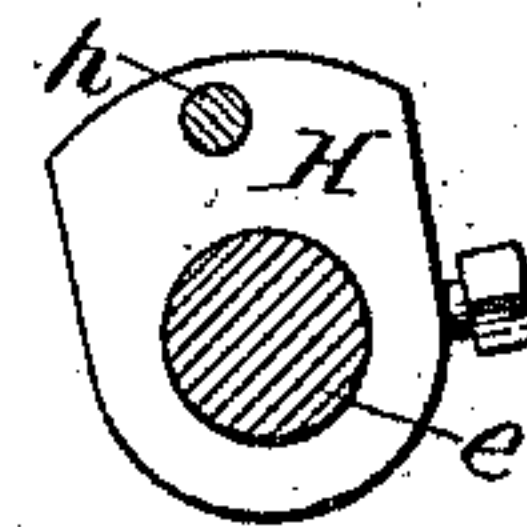


Fig. 10.



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(No Model.)

3 Sheets—Sheet 3.

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Fig. 3.

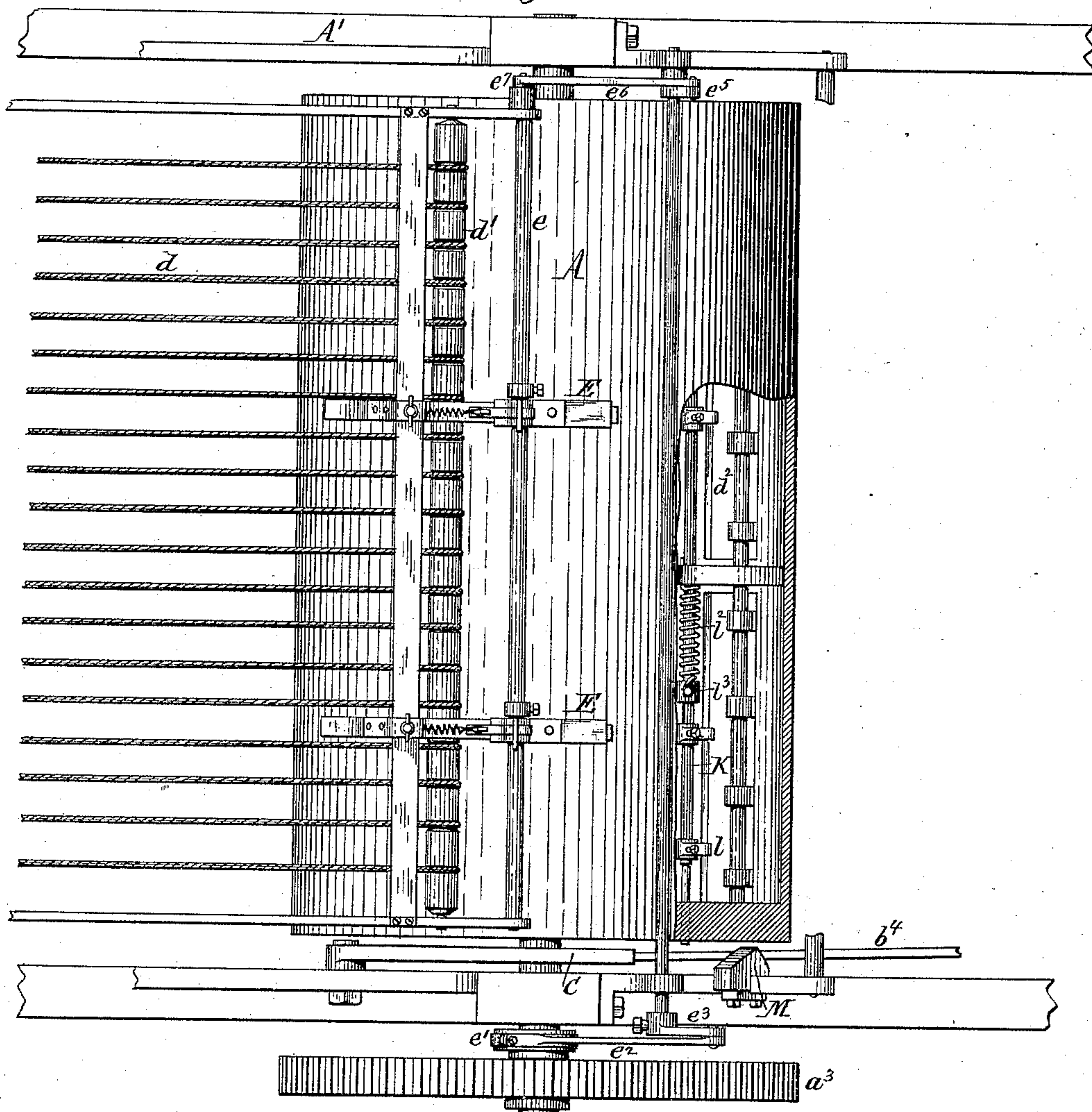
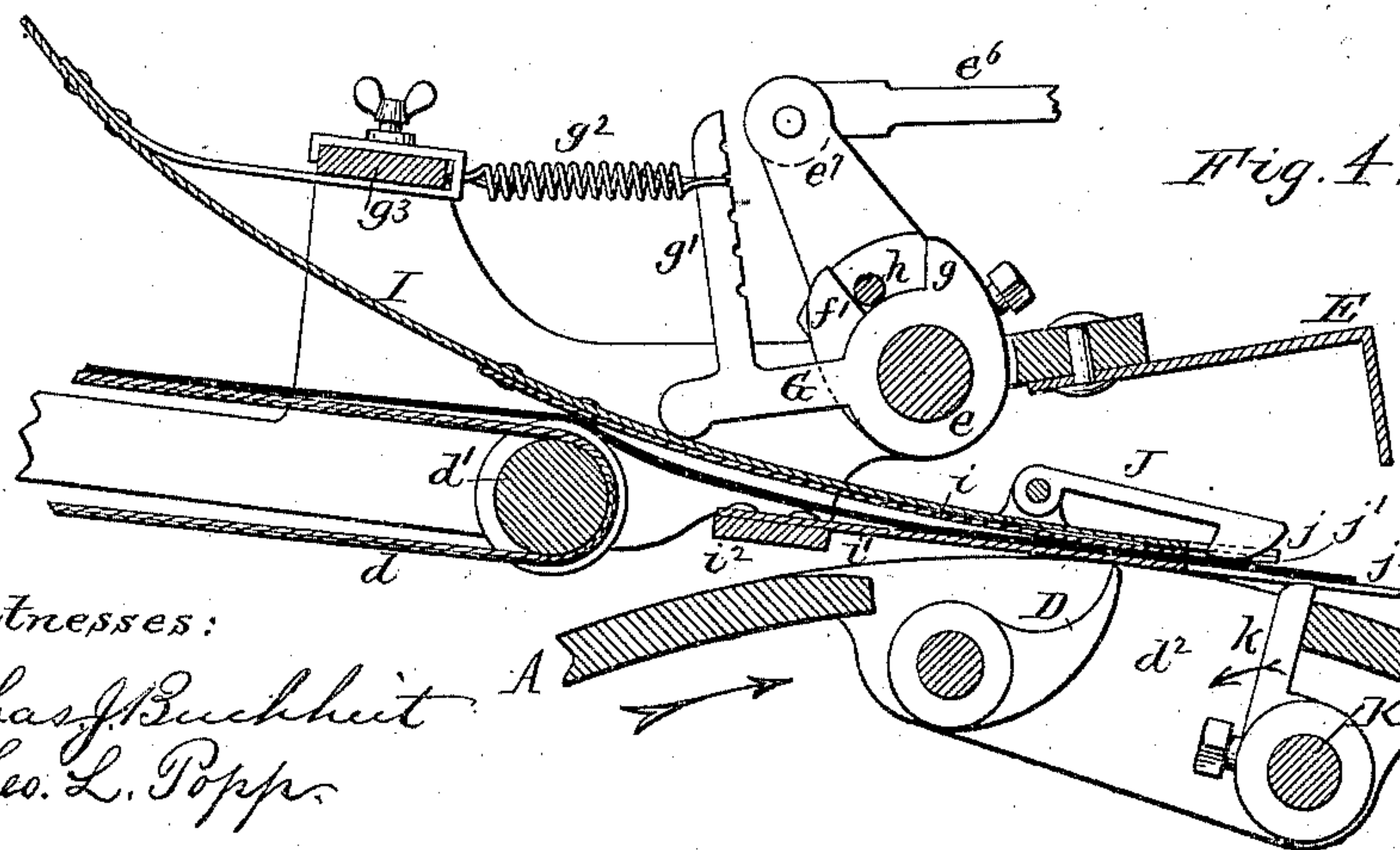


Fig. 4.



Witnesses:

Chas. J. Buchheit  
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J. Naylor, Jr.  
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# UNITED STATES PATENT OFFICE.

JAMES NAYLOR, JR., OF POUGHKEEPSIE, ASSIGNOR, BY MESNE ASSIGNMENTS, TO DAVID H. BURRELL, OF LITTLE FALLS, NEW YORK.

## STOP-MOTION FOR PRINTING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 335,768, dated February 9, 1886.

Application filed February 20, 1885. Serial No. 156,573. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES NAYLOR, Jr., of Poughkeepsie, in the county of Dutchess and State of New York, have invented new and useful Improvements in Stop-Motions for Printing-Machines, of which the following is a specification.

This invention relates to an improvement in cylinder printing-presses, and has for its object to provide the press with an automatic stop-motion which will promptly arrest the motion of the press when a sheet is improperly fed against the gages or when the front edge of the sheet is imperfect.

My invention consists of the improvements which will be hereinafter fully set forth, and pointed out in the claims.

In the accompanying drawings, consisting of three sheets, Figure 1 is a fragmentary side elevation of a printing-press provided with my improvement. Fig. 2 is a top plan view of the belt-shifting device. Fig. 3 is a top plan view of the stop-motion. Fig. 4 is a sectional longitudinal elevation of the gages and connecting parts on an enlarged scale. Fig. 5 is a top plan view of a portion of the press-cylinder with the shifting-rod. Fig. 6 is a top plan view of one of the gages on an enlarged scale. Fig. 7 is a perspective view of one of the gages. Figs. 8, 9, and 10 are longitudinal sectional elevations of parts of a gage. Figs. 11 and 12 are end views of the brake mechanism. Fig. 13 is a fragmentary perspective view of the shifting bar and stop.

Like letters of reference refer to like parts in the several figures.

A represents the press-cylinder, supported in a frame, A', of suitable construction.

a is the horizontal driving-shaft, arranged on one side of the frame A, and provided with a tight pulley, B, and loose pulley B'.

a' is a gear-wheel secured to the shaft a and meshing with an idler-wheel, a<sup>2</sup>, which in turn meshes with a gear-wheel, a<sup>3</sup>, secured to the shaft of the press-cylinder.

b represents the belt-shifter, secured to a sliding bar, b', which moves in horizontal ways b<sup>2</sup>.

b<sup>3</sup> is a horizontal elbow-lever having one arm engaging with the shifter-bar b', and its

other arm connected by a rod, b<sup>4</sup>, with an upright lever, C. The latter is pivoted to the frame A on one side of the press-cylinder, and its upper arm terminates near the point where the paper is fed to the press-cylinder.

c is a fly-wheel secured to the driving-shaft a, and c' is a brake-shoe arranged below the fly-wheel and attached to a right and left hand screw, c<sup>2</sup>, whereby it is applied to and released from the fly-wheel.

c<sup>3</sup> is a screw-nut in which the lower portion of the screw c<sup>2</sup> works, and which is secured to the floor.

c<sup>4</sup> is an arm secured to the screw c<sup>2</sup>, and c<sup>5</sup> is a depending arm secured to the sliding bar b' and engaging with the arm c<sup>4</sup>, to turn the screw c<sup>2</sup>. In moving the bar b' to shift the belt from the tight pulley upon the loose pulley, the arm c<sup>4</sup> is moved by the arm c<sup>5</sup>, so as to tighten the brake c' on the fly-wheel c, and upon shifting the belt from the loose pulley upon the tight pulley the arm c<sup>4</sup> is swung back by a hook, c<sup>6</sup>, attached to the arm c<sup>5</sup>, so as to release the brake. When the brake-shoe is released, it clears the fly-wheel, and is prevented from turning with the screw by the sides of the shoe overlapping the sides of the fly-wheel.

d represents the tapes whereby the paper is fed to the press-cylinder A, and d' is the tail-roller around which the tapes run.

D represents nippers attached to the press-cylinder in the usual manner in the opening d<sup>2</sup>, formed in the press-cylinder.

E E represent the gages against which the paper is fed by the tapes d, and which are mounted loosely on a rock-shaft, e, arranged above the press-cylinder. A rocking motion is imparted to the shaft e by an eccentric, e', mounted on the shaft of the press cylinder, a rod, e<sup>2</sup>, which connects the eccentric with an arm, e<sup>3</sup>, on an intermediate rock-shaft, e<sup>4</sup>, and an arm, e<sup>5</sup>, mounted on the opposite end of the shaft e<sup>4</sup>, and connected by a rod, e<sup>6</sup>, with an arm, e<sup>7</sup>, secured to the rock-shaft e. Each gage E is provided with a bifurcated hub, f, which turns loosely on the shaft e, and is provided on its upper side with shoulders or noses f', facing forwardly. The gages E extend forwardly from the shaft e in the direction



in which the paper moves toward the press-cylinder, and are bent downward at their ends to rest on the press-cylinder and arrest the forward movement of the paper.

5 G represents a pressure-arm, mounted loosely on the shaft *e*, between the forks of the hub *f*, and extending rearwardly from the said shaft. The arm G is provided on its upper side with a nose or shoulder, *g*, which faces rearwardly.

10 *g'* is a standard secured to the rear portion of the arm G, and *g<sup>2</sup>* is a spring extending from the standard *g'* to a cross-bar, *g<sup>3</sup>*, secured to the main frame A. The spring *g<sup>2</sup>* tends to turn the arm G backwardly on the shaft *e*, and  
15 its pressure is regulated by raising and lowering it on the standard *g'*.

H is a carrier or actuating-arm secured to the shaft *e* on one side of each gage, and provided with a horizontal pin or bar, *h*, which  
20 extends through the space between the shoulders *f'* and *g* of the gage and pressure-arm G, and engages alternately against said shoulders as the carrier H rocks with the shaft *e*.

I represents flat spring-bars, which are secured to the cross-bar *g<sup>3</sup>* and extend forwardly  
25 therefrom.

*i* is a light auxiliary spring secured to the under side of the lower or front portion of the spring I.

30 *i'* is a supporting-spring secured to a stationary cross-bar, *i<sup>2</sup>*, and projecting beyond the gage E, to support the latter and prevent the same from coming in contact with the press-cylinder. The three springs I, *i*, and  
35 *i'*, terminate near the bent front end of the gage, as clearly shown in Fig. 7. The pressure-arm G is held by the spring *g<sup>2</sup>*, with its rear end upon the spring I, whereby the latter is pressed down. The sheet passes from  
40 the tapes *d* between the auxiliary spring *i* and the supporting-spring *i'* until its front edge touches the gage, whereby the motion of the sheet is stopped. During this forward movement of the sheet the pressure-arm G is lifted  
45 from the spring I by the forward movement of the carrier H, which bears with its pin *h* against the nose *g* of the pressure-arm G, and turns the latter forwardly on the shaft *e*. When so released, the tendency of the

50 springs I is to stand in an elevated position above the paper. Only the light auxiliary spring *i* bears upon the sheet during this movement, and the pressure of this spring is just sufficient to properly guide the sheet.

55 When the latter has been fed against the gages, the movement of the carrier H is reversed, thereby releasing the arm G, which is now pressed upon the spring I by the spring *g<sup>2</sup>*, holding the spring I and its auxiliary spring  
60 *i* firmly upon the sheet. While the pin *h* swings through the space between the nose *g* and the nose *f'* the parts remain in this position with the gage and the springs down. The pin *h* next strikes the nose *f'*, thereby  
65 lifting the gage and releasing the front edge of the sheet. The spring I is still pressed down

and prevents the paper from being moved forwardly by the motion of the feed-tapes. The nippers D next close down on the sheet and draw it out from under the springs I *i*.  
70 When the sheet has been drawn out the gages are again dropped. In this manner the paper is fed forward against the light pressure of the guide-springs *i*, then clamped by the holding-springs I, preparatory to raising the gages,  
75 then released by raising the gages, and then drawn out from under the holding-springs by the nippers.

J represents hooks or stops, pivoted to the springs I, and resting with their heads upon  
80 the sheet of paper when the springs I are depressed, and lifted with the springs I from the paper when these springs are raised to permit a new sheet to be fed against the gages, so that  
85 the springs I constitute movable supports for the stops J. The springs I *i i'* are preferably provided in their ends with notches *j j' j<sup>2</sup>*, through which the heads of the hooks J play  
90 in order to extend the springs as closely as possible to the gages E; but the hooks J may extend with their heads beyond the springs I  
95 *i*, if desired. If a sheet is not properly fed up to the gage, it does not support the head of the hook, and the latter drops through the notches *j j' j<sup>2</sup>* below the line of the paper. The  
same occurs if the sheet is torn or of improper or imperfect form and does not rest with its edge closely against the gage.

K is a shifting-rod arranged longitudinally in the press-cylinder in the lower part of the  
100 opening *d<sup>2</sup>*, and guided in suitable bearings formed in the press-cylinder, so as to slide and turn in said bearings.

*k k* represent arms, secured to the rod K in line with the hooks J and projecting slightly  
105 beyond the face of the adjacent portion of the cylinder, so as to come in contact with the heads of the hooks when the latter are not supported by the paper.

*l* represents a stop-arm, secured to the rod  
110 K and engaging in a notch, *l'*, formed in the press-cylinder, in the forward edge of the opening *d<sup>2</sup>*, thereby holding the rod K against lengthwise movement.

*l<sup>2</sup>* is a spring coiled around the rod K and  
115 secured with one end to the press-cylinder and with the other to a collar, *l<sup>3</sup>*, which is secured to the rod K. The spring is twisted so as to hold the arm *l* in the notch *l'*, and compressed to move the rod K lengthwise in  
120 its bearings in the direction of the arrow in Fig. 5, when the arm *l* is disengaged from the notch *l'*. The rod K extends through the head of the press-cylinder, toward which it is moved by the spring *l<sup>2</sup>*, so as to come in con-  
125 tact with the upper arm of the lever C when the rod is shot out by the spring, while the rod clears the lever when it is withdrawn. When the hooks J are supported by the paper, the arms *k* pass under the paper and do not  
130 come in contact with the hooks. When one or more of the hooks J drop below the line of



the paper from any cause, the head of the hook which has dropped comes in contact with the corresponding arm  $k$  and arrests the latter, thereby turning the rod K in the direction of the arrow in Fig. 4, and swinging the arm  $l$  out of the notch  $l'$ . When the arm  $l$  has cleared this notch, the rod K is shot out by the spring  $l^2$  and comes in contact with the lever C, turning the latter in the direction of the arrow in Fig. 1, and shifting the belt from the tight pulley B to the loose pulley B', thereby stopping the motion of the press. The brake  $c'$  is applied to the fly-wheel  $c$  at the same time, whereby the momentum of the press is arrested before the cylinder has revolved far enough to bring the blanket on the form. When the rod K has cleared the lever C, the rod comes in contact with an incline, M, which is secured to the main frame A and presses the rod backward until the arm  $l$  arrives opposite the notch  $l'$ , when the arm  $l$  is swung into the notch by the twist of the spring  $l^2$ , whereby the rod K is again locked in position. The incline M is preferably inclined both ways, as shown, so that the rod K will encounter an incline in either direction in moving the cylinder back and forth in making ready.

Any desired number of gages may be employed side by side, and a corresponding number of arms,  $k$ , are secured to the rod K. The gages and arms are laterally adjustable by set-screws.

I claim as my invention—

1. The combination, with the press-cylinder and its driving-shaft, provided with a tight and loose pulley, and a belt-shifter, of a stop which moves out of its normal position when not supported by the paper, and a shifter which is attached to the press-cylinder and rotates therewith, and which is moved by the stop when the latter is out of its normal position, and which in turn moves the belt-shifter and brings the driving-belt on the loose pulley, substantially as set forth.

2. The combination, with the press-cylinder, its driving-shaft  $a$ , provided with tight and loose pulleys B B', and the belt-shifter  $b$ , of the movable stop J, shifting-rod K, attached to the press-cylinder, lever C, and rods and levers connecting the lever C with the belt-shifter  $b$ , substantially as set forth.

3. The combination, with the press-cylinder and its driving-shaft, provided with a tight and loose pulley, and a belt-shifter, of a stop which moves out of its normal position when not supported by the paper, a shifter which is attached to the press-cylinder and rotates therewith, and which is moved by the stop when the latter is out of its normal position to shift the belt to the loose pulley, and a brake which is connected with the belt-shifter and applied by the shifter attached to the cylinder simultaneously with shifting the belt to the loose pulley, substantially as set forth.

4. The combination, with the press-cylinder, its driving-shaft  $a$ , provided with tight and loose pulleys B B', and fly-wheel  $c$ , and the belt-shifter  $b$ , provided with arm  $c^5$ , of the movable stop J, shifting-rod K, lever C, rods and levers connecting the lever C with the belt-shifter  $b$ , and the brake  $c'$ , provided with the arm  $c^4$ , substantially as set forth.

5. The combination, with the press-cylinder and its feed mechanism, substantially as described, of the pressure-springs I, provided with auxiliary springs  $i$ , substantially as set forth.

6. The combination, with the press-cylinder, of the pressure-springs I, provided with auxiliary springs  $i$ , a gage, E, and an arm, H, whereby the gage is actuated, substantially as set forth.

7. The combination, with the rock-shaft  $e$ , of the gage E and pressure-arm G, mounted loosely on the rock-shaft, and the actuating-arm H, whereby the gage and pressure-arm are alternately actuated, substantially as set forth.

8. The combination, with the rock-shaft  $e$ , of the gage E, provided with a shoulder,  $f'$ , the pressure-arm G, provided with a shoulder,  $g$ , and the actuating-arm H, secured to the shaft  $e$  and provided with a pin,  $h$ , projecting between the shoulders  $f'$   $g$ , substantially as set forth.

9. The combination, with the pressure-spring I, of the rock-shaft  $e$ , the pressure-arm G, adapted to bear upon the spring I, and the actuating-arm H, whereby the arm G is alternately applied and released, substantially as set forth.

10. The combination, with the press-cylinder and the feed-tapes, of a gage which arrests the movement of the paper, a light spring which bears continually upon the paper and guides the paper in its movement toward the gage, and a pressure-spring which holds the paper when the gage is raised until the nippers seize the paper, substantially as set forth.

11. The combination, with the pressure-spring I, of a stop, J, pivoted to said spring and adapted to be supported by the paper, substantially as set forth.

12. The combination, with the movable stop J, supported by the paper, of the press-cylinder, a shifting-rod, K, provided with an arm,  $k$ , locking device  $l'$ , and spring  $l^2$ , and the lever C, connected with the belt-shifter, substantially as set forth.

13. The combination, with the press-cylinder having a notch,  $l'$ , and the shifting-rod K, provided with a locking-arm,  $l$ , and spring  $l^2$ , of the incline M, whereby the shifting-rod is returned to its retracted position, substantially as set forth.

14. The combination, with the press-cylinder provided with a notch,  $l'$ , of the shifting-rod K, an arm,  $l$ , attached thereto and adapted to engage in the notch  $l'$ , and a twisted and

compressed spring,  $\ell^2$ , whereby the shifting-rod is both turned and moved lengthwise, substantially as set forth.

15. The combination, with the gage E, of the spring I and a movable stop, J, attached thereto, whereby the stop is raised before the paper is fed against the gage and lowered upon the paper after it has been fed against the gage, substantially as set forth.

Witness my hand this 20th day of January, 1885.

JAMES NAYLOR, JR.

Witnesses:

A. SEDGWICK,  
SAML. J. SMITH.