

(No Model.)

3 Sheets—Sheet 1.

T. C. DEXTER.  
PAPER REGISTERING MACHINE.

No. 582,812.

Patented May 18, 1897.

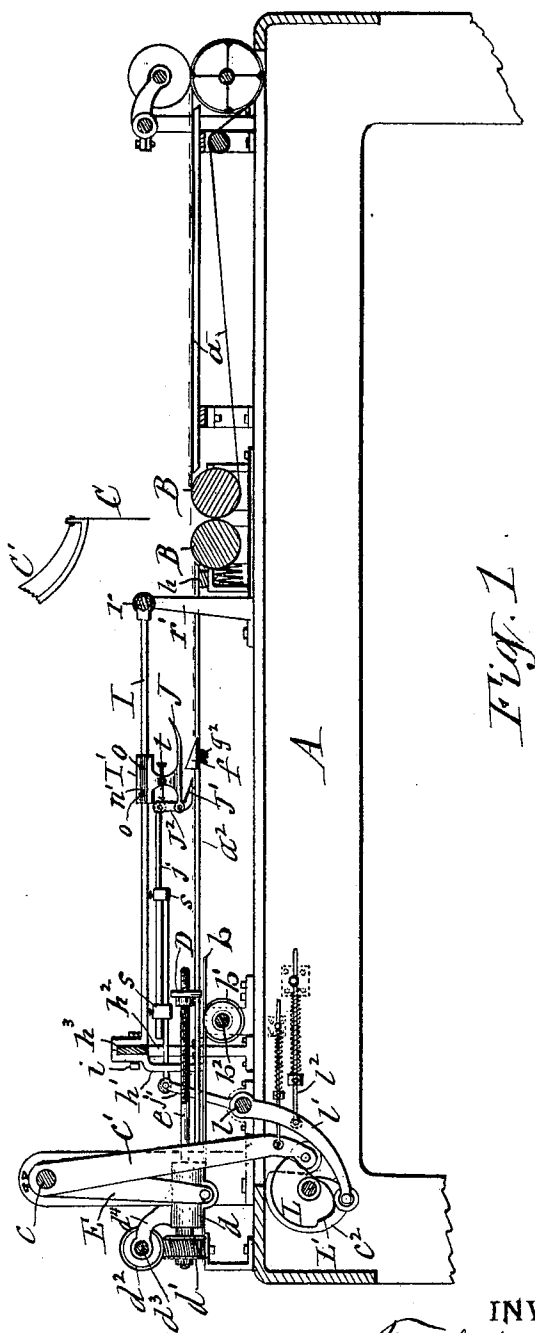


Fig. 1.

WITNESSES:

*H. B. Smith.*

*M. A. Leyden.*

INVENTOR

*Talbot C. Dexter*

*By E. L. Laves*

*his* ATTORNEY

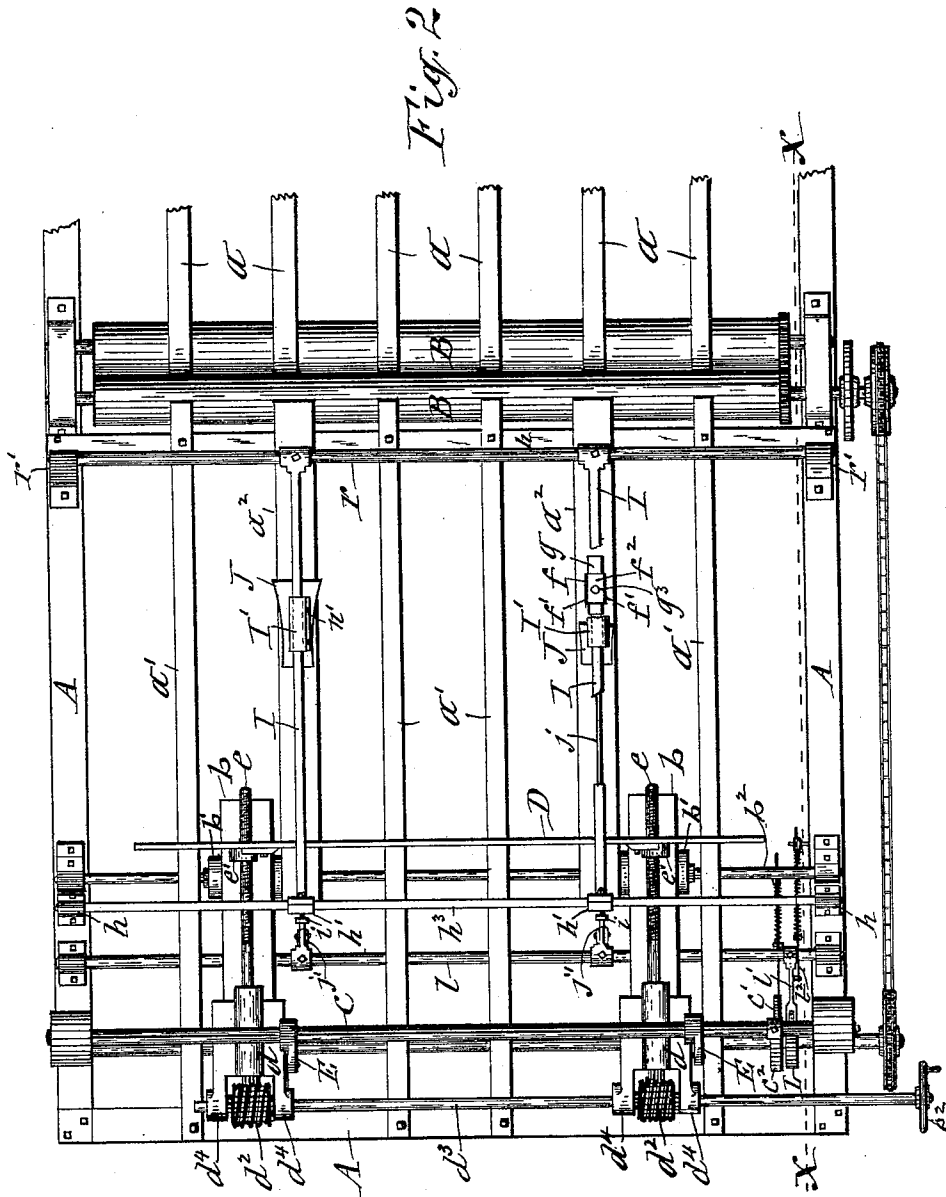
(No Model.)

3 Sheets—Sheet 2.

T. C. DEXTER.  
PAPER REGISTERING MACHINE.

No. 582,812.

Patented May 18, 1897.



WITNESSES:

*H. B. Smith*  
*M. A. Leyden*

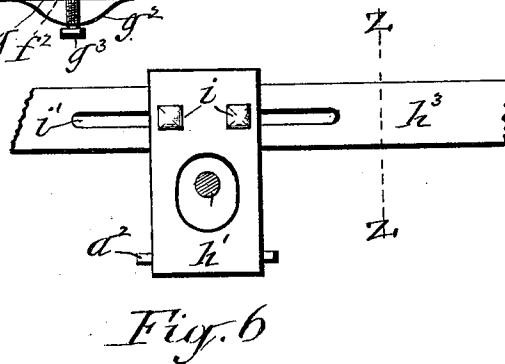
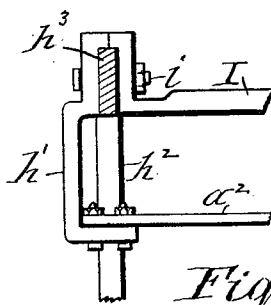
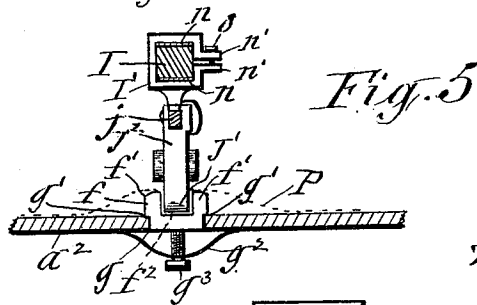
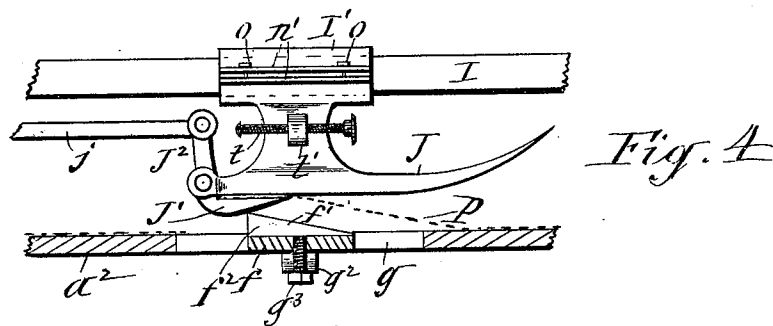
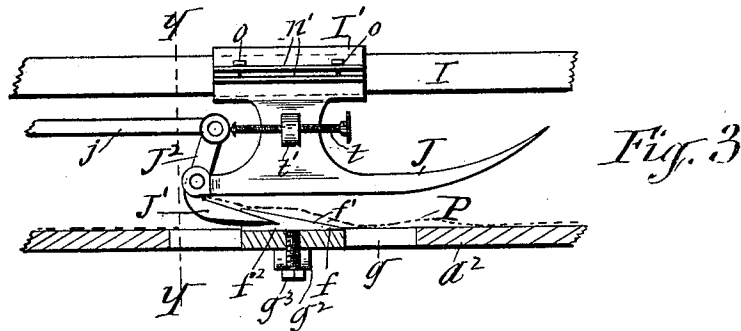
INVENTOR:

*Talbot C. Dexter*  
*By E. Laess*  
his ATTORNEY

T. C. DEXTER.  
PAPER REGISTERING MACHINE.

No. 582,812.

Patented May 18, 1897.



WITNESSES:

*W. B. Smith*  
*W. A. Lyden*

INVENTOR:

*Talbot C. Dexter*  
*By E. Laass*  
his ATTORNEY

# 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 MACHINE.

SPECIFICATION forming part of Letters Patent No. 582,812, dated May 18, 1897.

Application filed July 18, 1896. Serial No. 599,591. (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 useful Improvements in Paper-Registering Machines, 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 devices which is employed for registering or properly alining sheets of paper fed by means of traveling endless tapes or other suitable mechanical conveyers to machines designed to either fold or rule or otherwise treat the paper.

The invention is specially designed for automatically registering paper which is provided at predetermined positions with slits for the reception of the ends of pins or points arranged on the machine designed to receive said paper, the entrance of said pins or points into the slits determining the position in which the paper is required to be placed preparatory to being either folded or ruled or otherwise operated upon; and the invention consists in a materially-simplified and at the same time more efficient and reliable registering mechanism, as hereinafter described, and summed up in the claims.

Referring to the annexed drawings, Figure 1 is a vertical longitudinal section of a paper-folding machine embodying my present invention, said view being taken immediately inside of the main supporting-frame, as indicated by the dotted line X X in Fig. 2, and showing only part of the machine containing the first set of folding-rollers, which impart the first fold to the paper. The additional folding-rollers and folding-blades, which impart the succeeding folds to the paper, and the numerous conveying-tapes for carrying the paper from the first to the succeeding folding-rollers, as well as the various well-known adjuncts and mechanisms employed on folding-machines and not absolutely necessary for illustrating my present invention, are omitted in the drawings. Fig. 2 is a plan view of that part of the folding-machine to which my invention is applied. Fig. 3 is an enlarged longitudinal sectional view showing the gripper in position for gripping the slitted

portion of the paper. Fig. 4 shows said gripper in the act of drawing the paper to its registering position. Fig. 5 is a vertical transverse section on line Y Y in Fig. 3. Fig. 6 is an enlarged face view of a portion of the cross-bar which is located nearest to the end of the machine and has the longitudinal guide-bar and paper-supporting bar adjustably connected to it, and Fig. 7 is a transverse section on line Z Z in Fig. 6.

Similar letters of reference indicate corresponding parts.

A denotes the main supporting-frame of the machine, which frame may be of any suitable shape to accommodate the various mechanisms of the machine.

B B represent the folding-rollers, and C the blade, which is attached to an oscillatory arm C', by which said blade is made to tuck the central portion of the sheet of paper into the bite of said rollers. Said rollers are geared together in the usual manner to cause them to rotate in unison with their upper portions toward each other and thus draw the sheet down between them and impart the first fold thereto.

a a represent the usual endless tapes which travel with their upper runs from the feeding end of the machine to the first of said folding-rollers and convey to the machine the paper to be folded.

D denotes the end gage or first-fold gage, also sometimes termed "side guide." This gage serves to arrest the longitudinal movement of the paper delivered to the machine by the conveyers a a, which movement is arrested in time to retain the central portion of the sheet over the bite of the folding-rollers B B.

The folding-machine is usually employed for folding printed paper, and inasmuch as it frequently happens that the margins around the printed portions of the successive sheets fed to the machine vary in width and sometimes the printing is not squarely upon the sheet, and thus has the margins at the edges of the sheet narrower at one end of the edge than at the opposite end, it follows that when the sheet is arrested by contact of its advance edge with the gage D the paper is not in proper alinement with the bite of the folding-rollers to fold the paper accurately along

the center of its central blank space. To obviate this defect automatically, the following registering mechanisms are employed: The gage D is carried on longitudinally-movable bars  $b$   $b$ , which ride at their inner ends on rollers  $b'$ , mounted on a transverse shaft  $b^2$ , journaled in bearings on the sides of the main frame A. The outer ends of the bars  $b$   $b$  are supported by rock-arms E E, fixed in suspended positions to a rock-shaft  $c$  and pivoted at their lower ends to brackets  $d$ , fastened to the bars  $b$   $b$ , as more clearly shown in Fig. 2 of the drawings. The gage is secured to each of the plates  $b$  by means of a screw  $e$ , extending lengthwise of the plate and at right angles to the gage and passing through a nut  $e'$ , attached to the gage. The opposite or outer end of the screw is journaled in the bracket  $d$  and has attached to it a gear  $d'$ , which meshes with a worm-gear  $d^2$ , secured to a shaft  $d^3$ , which is mounted in arms  $d^4$   $d^4$ , projecting from the bracket  $d$ . The end of the shaft  $d^3$  is provided with a suitable crank or hand wheel  $e^2$ , by which to turn said shaft. By turning this shaft the screws  $e$   $e$  are caused to move the gage D a greater or less distance from the folding-rollers B B, and thus adjust said gage for arresting paper of different lengths. By means of the rock-arms E E the gage D is made to alternately advance and recede to and from its position for arresting the longitudinal movement of the paper. The rock-shaft  $c$  receives motion by means of a lever  $c'$ , fixed to the end of said shaft and held at its free end in contact with a rotary cam  $c^2$ , which imparts oscillatory motion to said lever.

$a'$   $a'$  represent the usual bars which extend from the folding-rollers to the rear end of the machine to carry the paper in transit to the gage D. In addition to these bars I employ the two paper-conveying bars  $a^2$   $a^2$ , which are parallel with the bars  $a'$   $a'$ , as shown in Fig. 2 of the drawings. Upon each of the two bars  $a^2$   $a^2$  I secure a bridge  $f$ , consisting of a block which is countersunk in the bar and formed with longitudinal ribs  $f'$   $f'$ , rising gradually from the end of the block facing toward the sheet-conveying tapes  $a$  and terminating abruptly at the opposite end of the block, which ribs form between them a longitudinal channel  $f^2$  for the reception of the attenuated end of the lower jaw of the gripper hereinafter described. The two bridges are placed in such positions as to cause the slitted portions of the paper to mount said bridges during the travel of said paper to the end gage D. The purpose of said bridge is to force upward said slitted portion of the paper and thereby open or spread apart the slit so as to facilitate the entrance of the registering point, which in this case consists of an attenuated lower jaw J' of a gripper J, which reciprocates to and from the bridge in a line parallel with the paper-carrying bar  $a^2$ , as hereinafter described. In order to adapt the bridge to operate on sheets of pa-

per having the slits in different positions, I support said bridge adjustably in a longitudinal as well as a lateral direction. The longitudinal adjustment is afforded by the seating of the bridge in a longitudinal slot  $g$  in the bar  $a^2$ , which slot is of sufficient length to allow the bridge to be shifted therein. The bridge is provided with shoulders  $g'$ , by which it rides upon the top of the bar. A bow-spring  $g^2$ , placed on the under side of the bar astride the slot  $g$  and having a bolt  $g^3$  passing through it and screwed into the bottom portion of the bridge, serves to confine the bridge from longitudinal movement when said bolt is screwed up tightly.

To obtain the lateral adjustment of the bridge, I support the end of the bar  $a^2$  adjacent to the folding-rollers B movably upon the cross-bar  $h$  and attach the opposite end of the bar  $a^2$  to the foot of a bracket  $h'$ , depending from a cross-bar  $h^2$ , supported upon posts  $h^3$ , secured to the sides of the frame A'. The bracket is secured to said cross-bar adjus- tably lengthwise thereof by the attaching-bolts  $i$ , passing through a longitudinal slot  $i'$  in the bar  $h'$ , as shown in Fig. 6 of the drawings.

In connection with each bridge  $f$  I employ a longitudinally-reciprocating gripper J, which slides on a longitudinal guide-bar I by means of a sleeve I', which slides on the bar I and is either formed integral with or rigidly attached to the upper jaw of the gripper.

The lower jaw J' is hinged to the heel of the upper jaw and provided with an upward projection J<sup>2</sup> at its pivoted end. To this projection is connected the end of a pitman  $j$ , the opposite end of which is connected to an arm  $j'$ , mounted laterally adjustable on a rock-shaft  $l$ , which extends across the machine and has secured to one of its ends a lever  $l'$ , which is held in contact with a rotary cam L by means of a spring-actuated rod  $l^2$ , as shown in Fig. 1 of the drawings. Said cam imparts oscillatory motion to the lever  $l'$  and a corresponding motion to the arm  $j'$ , which causes the gripper to be reciprocated to and from the bridge  $f$ .

In order to open the gripper in its movement to the bridge and close said gripper in its reverse movement, I provide the slide or sleeve with a frictional bearing  $n$  on the guide-bar I, as shown in Fig. 5 of the drawings, and preferably slit said sleeve longitudinally and provide it with longitudinal flanges  $n'$  at the edges of the slit, through which flanges pass bolts  $o$   $o$  for clamping the sleeve on the guide-bar sufficiently to retard the longitudinal movement of the sleeve and compel the pitman  $j$  to operate the lower jaw before moving the gripper on the guide-bar. A set-screw  $t$  is adjustably connected to a lug  $l'$  on the shank of the upper jaw of the gripper, which set-screw is in a position to arrest the forward thrust of the pitman  $j$ , so as to prevent excessive depression of the lower jaw J'. The cam L is formed with a depressed step

L' at the end of the portion of the largest radius, which step causes the pitman *j* to receive a slight forward thrust to open the gripper sufficiently to release the paper and allow it to be drawn in between the folding-rollers B B, after the paper has been drawn to its registering position by the two grippers.

In the operation of the machine the paper is carried to the gage D by the endless tapes *a a*. Said gage is at that time in its advanced position to arrest the longitudinal movement of the paper, after which the gage recedes. The paper then lies with its slitted portions on the bridges *f f*, and the grippers J J are in their remotest positions from the bridges *f f*, and the lower jaws of said grippers are closed and thus raised to allow the paper to pass freely under the grippers to the gage, as aforesaid. Then the grippers are pushed forward toward the bridges by the pitman *j*, and in this movement the lower jaws of the grippers are tilted so as to cause the bottoms of said jaws to bear upon the paper. As the grippers arrive at the ends of their latter movements the attenuated free ends of the lower jaws pass into the channels *f<sup>2</sup>* of the bridges and enter into the slits of the paper, (indicated by dotted lines,) said slits being opened or distended by the lower jaws of the gripper depressing the paper adjacent to the portions of the paper which ride on and are raised by the bridges. In case the paper lies slightly oblique, so as to cause one of the slits to be advanced farther than the other, then the said advanced portion of the paper becomes buckled by its contact with the hinged end of the gripper-jaw until the portion containing the outer slit enters into the gripper and is therein arrested. Then the two grippers close on the paper and draw it along and thereby straighten the paper and carry it to its requisite registering position. The gage D remains in its receded position during the last-described shifting of the paper. To allow the grippers to be adjusted to conform to the positions of the bridges *f f*, I mount the guide-bars I adjustable laterally on the cross-bar *h<sup>3</sup>*, hereinbefore mentioned, and on a cross-bar *r*, secured to standards *r'* on the sides of the main frame adjacent to the folding-rollers B B. The pitmen *j* are adjustable in their lengths, which may be effected in any suitable or well-known manner. In this instance they are represented as being composed of two end portions overlapping each other, and collars *s*, embracing said overlapping portions, are provided with set-screws for clamping the parts together.

What I claim as my invention is—

1. An automatic point-feed registering instrument consisting of a gripper reciprocating with both of its jaws in proximity to the same surface of the paper to be registered and having one of its jaws entering the slit of the paper and gripping the paper thereat and shifting the same to its registering position.

2. An automatic point-feed registering

mechanism comprising two grippers reciprocating in lines at opposite sides of the longitudinal central line of the paper-passage and parallel with the plane of the paper to be registered and with both jaws in proximity to the same surface of the paper, the jaws adjacent to the paper being attenuated to enter into the slits of the paper and bring the edges thereof in contact with the hinged ends of the jaws preparatory to gripping the paper and shifting it to its registering position, as set forth.

3. An automatic point-feed registering-machine comprising conveyers delivering the sheet to be registered, a gripper supported movably lengthwise of the passage of the sheet and having two jaws movable to grip the paper between them and one of its jaws attenuated to enter the slit in the sheet, and mechanism imparting reciprocating motion to the gripper, and during the movement in one direction, opening the gripper and cause the attenuated jaw to enter the slit, and in the reverse movement closing the gripper and gripping between its jaws the slitted portion of the paper, as set forth.

4. In a machine designed to operate upon sheets of paper slitted in predetermined portions thereof the combination with the sheet-conveyers and sheet-carrying bars, of bridges rising from said bars to open the slits in the sheet, and grippers reciprocating over said bars and having their lower jaws attenuated to enter into the slits of the sheet and movable to grip the paper between the jaws and draw said paper to its registering position, as set forth.

5. In a machine designed to operate upon sheets of paper slitted in predetermined portions thereof the combination with the sheet-conveyers and sheet-carrying bars, of a bridge rising from the plane of said bars to open the slit in the paper and provided with a longitudinal channel in its top, and a gripper reciprocating to and from said bridge parallel with the aforesaid bars and having its lower jaw attenuated to enter the channel of the bridge, as set forth.

6. In a machine designed to operate upon sheets of paper slitted in predetermined portions thereof the combination with the sheet-conveyers and sheet-carrying bars, of guides over said bars and parallel therewith, grippers sliding on said guides and having their lower jaws attenuated to enter into the slits in the sheet, and mechanisms imparting reciprocating motion to said grippers and opening the same in their movements to the slits and closing the grippers in their reverse movement and thereby shifting the sheet to registering position, as set forth.

7. In a machine designed to operate upon sheets of paper slitted in predetermined portions thereof the combination with the sheet-conveyers and sheet-carrying bars, of slit-opening bridges rising from said bars, guides parallel with said bars, grippers sliding on

said guides, and mechanisms moving said grippers to and from the bridges, as set forth.

8. In a machine designed to operate upon sheets of paper slitted in predetermined portions thereof the combination with the sheet-conveyers and sheet-carrying bars, of longitudinal guides over said bars and parallel therewith, slides mounted on said guides, upper gripper-jaws fixed to said slides, lower gripping-jaws pivoted to said upper jaws and having their free ends attenuated to enter into the slits made in the sheet to be registered, and reciprocating pitmen connected to the lower jaws of the grippers to open and close the same and impart reciprocating motion to the grippers, as set forth.

9. In a machine designed to operate upon sheets of paper slitted in predetermined portions thereof the combination with the sheet-conveyers and sheet-carrying bars, of an end gage alternately advancing to and receding from a position to arrest the movement of the sheet, and grippers reciprocating over the aforesaid bars and having their lower jaws attenuated to enter during the forward movement of the grippers into the slits in the paper and in the reverse movement of the grippers closing the jaws upon the intervening paper and drawing the sheet to its registering position, as set forth.

10. In a machine designed to operate upon sheets of paper slitted in predetermined portions thereof the combination with the sheet-conveyers and sheet-carrying bars, of an end gage alternately advancing to and receding from a position to arrest the movement of the sheet, slit-opening bridges rising from the aforesaid bars, and grippers reciprocating over said bars and having their lower jaws attenuated to enter into the slits of the sheet, as set forth.

11. In a machine designed to operate upon sheets of paper slitted in predetermined portions thereof the combination with the sheet-conveyers and sheet-carrying bars, of an end gage alternately advancing to and from a position to arrest the movement of the sheet, slit-opening bridges rising from the bars, longitudinal guides over said bars, slides mounted on said guides, upper gripper-jaws fixed to said slides, lower gripper-jaws pivoted to the upper jaws and attenuated to enter into the slits in the paper, and reciprocating pitmen connected to the lower gripper-jaws to open and close the same and impart reciprocating motion to the grippers, as set forth.

12. In a machine designed to operate upon sheets of paper slitted in predetermined portions thereof the combination with the sheet-conveyers and sheet-carrying bars, of longitudinal guides over said bars and supported laterally adjustable for different-sized paper to be registered, grippers sliding on said guides and having their lower jaws attenuated to enter slits made in the paper preparatory to registering the same, and mechanisms imparting reciprocating motion to said grippers

and opening and closing the same, as set forth.

13. In a machine designed to operate upon sheets of paper slitted in predetermined portions thereof the combination with the sheet-conveyers, of longitudinal sheet-carrying bars supported laterally adjustable, slit-opening bridges rising from said bars, longitudinal guides over said bars and supported laterally adjustable to conform to the positions of said bars, grippers sliding on said guides and having their lower jaws attenuated to enter into the slits in the sheet, and mechanisms imparting reciprocating motion to the grippers and opening and closing the same, as set forth.

14. In a machine designed to operate upon sheets of paper slitted in predetermined portions thereof the combination with the sheet-conveyers, of bars extending across the machine and supported on the sides of the main frame, brackets depending from and adjustable lengthwise of the machine, sheet-supporting bars secured to said brackets, slit-opening bridges rising from the latter bars, longitudinal guides connected to the aforesaid cross-bars adjustable to conform to the positions of the sheet-supporting bars, slides mounted on said guides, upper gripper-jaws fixed to said slides, lower jaws pivoted to said upper jaws and attenuated to enter into the slits in the sheet to be registered, and reciprocating pitmen imparting reciprocating motion to said grippers and opening and closing the same, as set forth.

15. In a machine designed to operate upon sheets of paper slitted in predetermined portions thereof the combination with the sheet-conveyers, of an alternately advancing and receding end gage, horizontal cross-bars secured to the side of the main frame, brackets depending from and adjustable lengthwise of the cross-bar located nearest the end of the machine, sheet-carrying bars secured to the feet of said brackets, slit-opening bridges rising from the latter bars, longitudinal guides connected to the aforesaid cross-bars laterally adjustable to conform to the positions of the sheet-carrying bars, slides mounted over said guides and provided with frictional bearings to retard the longitudinal movements thereof, upper gripper-jaws fixed to said slides, lower jaws pivoted to said upper jaws and attenuated to enter into the slits in the sheet, and reciprocating pitmen connected to the lower gripper-jaws to open and close the same and impart reciprocating motion to the retarded slides, as set forth.

16. In a machine designed to operate upon sheets of paper slitted in predetermined portions thereof the combination with the sheet-conveyers of a reciprocating gripper having its lower jaw attenuated to enter into a slit made in the sheet preparatory to registering the same, a sheet-carrying bar under said gripper and a slit-opening bridge consisting of a block countersunk in said bar and formed

with longitudinal ribs rising gradually from the end of the block facing toward the conveyers and terminating abruptly at the opposite end of the block, said ribs forming between them a channel for the reception of the attenuated end of the lower gripper-jaws, substantially as set forth and shown.

In testimony whereof I have hereunto signed my name this 12th day of June, 1896.

TALBOT C. DEXTER. [L. s.]

Witnesses:

V. E. MARSH,  
JOHN LOHMANN.