

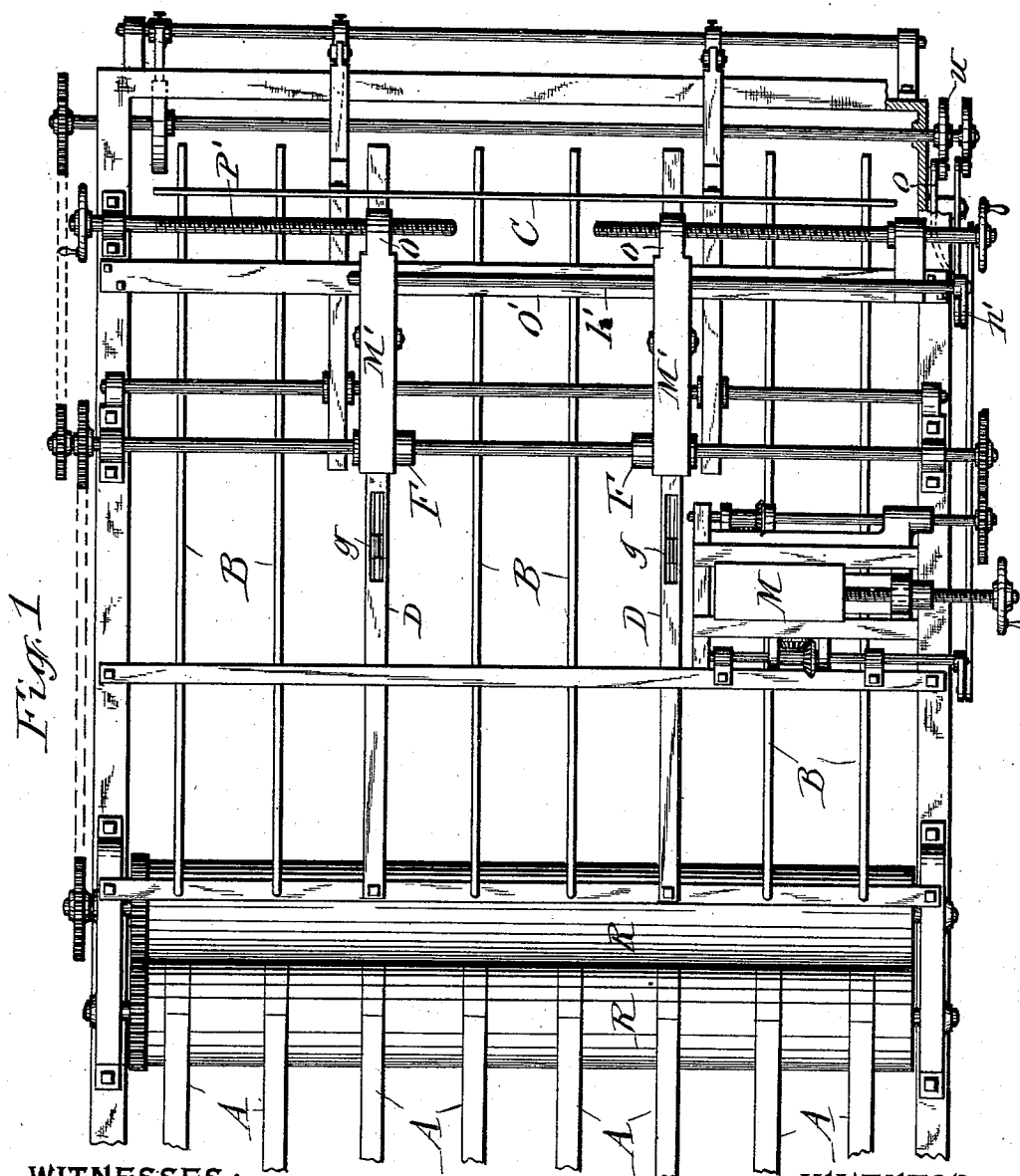
(No Model.)

4 Sheets—Sheet 1.

T. C. DEXTER.
PAPER REGISTERING MACHINE.

No. 578,549.

Patented Mar. 9, 1897.



WITNESSES:

C. L. Bendison

J. J. Laass

INVENTOR:

Talbot C. Dexter

By E. Laass

his ATTORNEY

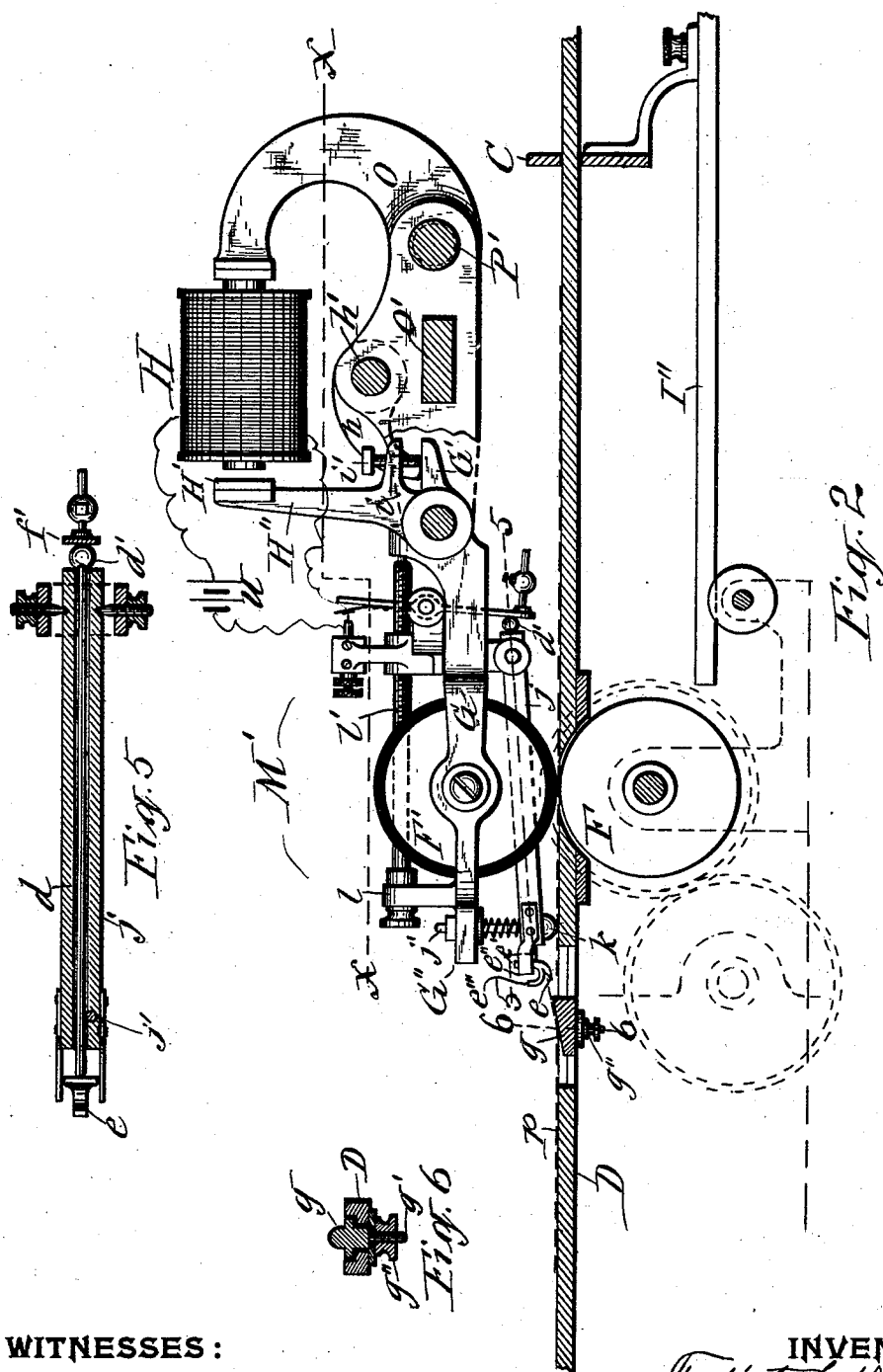
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4 Sheets—Sheet 2.

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WITNESSES:

C. L. Bendison

J. J. Laess

INVENTOR:

Talbot C. Dexter
By E. Laess

his ATTORNEY

(No Model.)

4 Sheets—Sheet 3.

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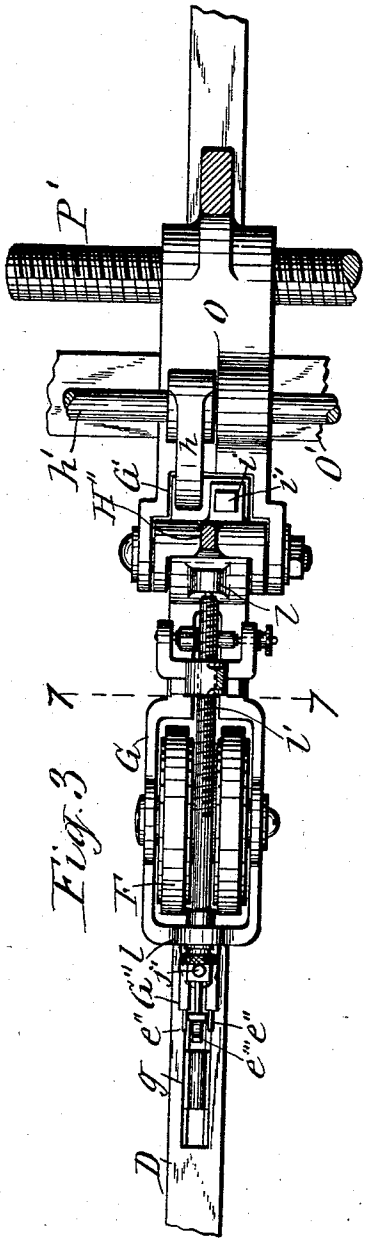


Fig. 3

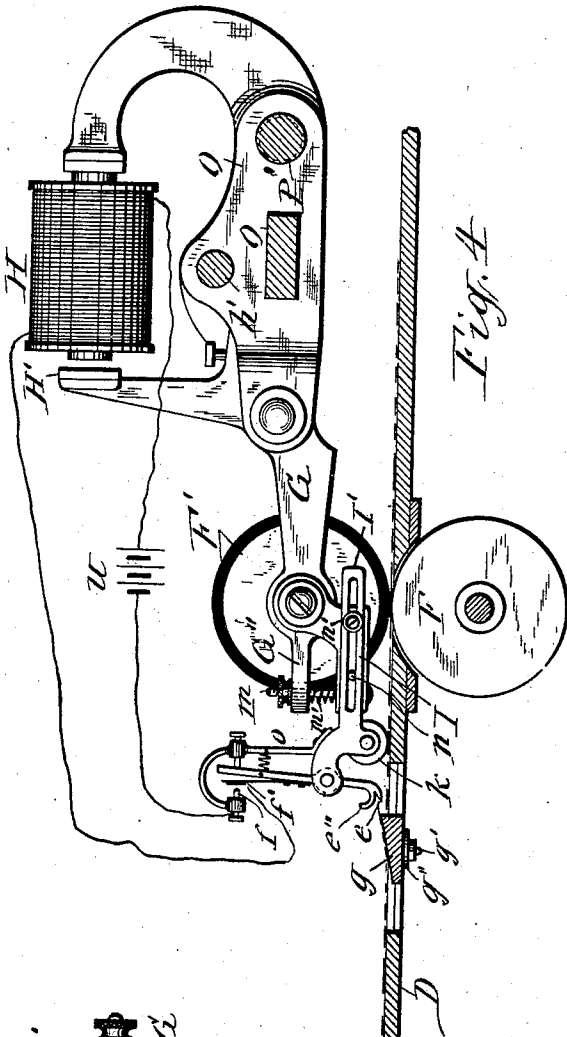


Fig. 4

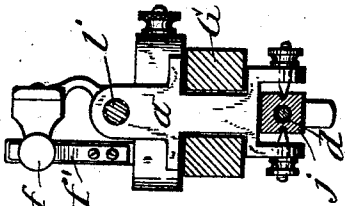


Fig. 4

WITNESSES:

C. L. Bendixon

J. J. Sanss

INVENTOR:

Talbot C. Dexter

By E. Laass

his ATTORNEY

(No Model.)

4 Sheets—Sheet 4.

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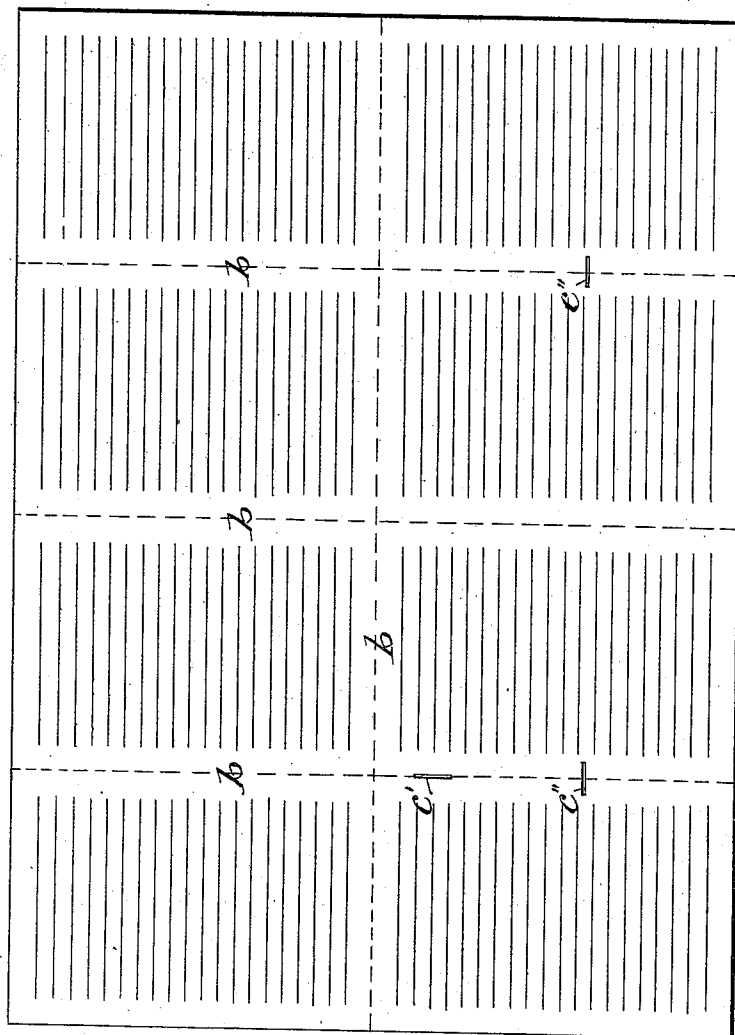


Fig. 8

WITNESSES:

C. L. Bendixen

J. J. Laass

INVENTOR:

Talbot C. Dexter

By C. 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. 578,549, dated March 9, 1897.

Application filed August 9, 1895. Serial No. 558,742. (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 automatic paper-registering devices which effect the registering by means of pins or points dropping automatically into slits made in the paper for that purpose simultaneously with the passage of said paper through the printing-press from which the paper is passed to the registering devices.

The invention has more particularly reference to the automatic paper-registering machine shown and described in United States Letters Patent No. 561,771, dated June 9, 1896. In said machine the registering point or pin is arranged to drop by gravity into the slit in the paper moving under it, said dropping of the point or pin closing the electric circuit which controls the hold of the paper-shifting mechanism on the paper. In the operation of this machine I found that in some instances the slit in the paper was so short as to prevent the edges of the slit from yielding sufficiently to allow the point or pin to enter the same to the requisite depth to effect the closing of the electric circuit, and consequently the electromagnet, which is designed to lift by its armature the upper paper-gripping roller, was deprived of its power of performing said function and caused the paper-gripping rollers to draw along the paper while the point or pin was stationary and in engagement with the paper and thus caused said paper to be slightly torn.

The object of my present invention is to obviate the aforesaid defect; and to that end the invention consists, primarily, of novel devices for opening the slit in the paper to facilitate the entrance therein of the point or tongue or analogous instrument employed in the so-called "point-feed" registering-machines; and the invention also consists in certain novel features of the construction and combination of parts and auxiliary devices connected therewith, all as hereinafter more

fully described, and specifically set forth in the claims.

In the annexed drawings, Figure 1 is a diagrammatic plan view of that part of a paper-folding machine to which the paper-registering devices are applied, said view illustrating the relative position of the longitudinal and lateral registering devices. Fig. 2 is an enlarged side view of my improved registering device, parts being shown in section. Fig. 3 is a longitudinal section on line X X in Fig. 2. Fig. 4 is a side view of a modification of my invention. Fig. 5 is a horizontal longitudinal section on line 5 5 in Fig. 2. Fig. 6 is a transverse section on line 6 6 in Fig. 2. Fig. 7 is a transverse section on line 7 7 in Fig. 3, and Fig. 8 is a plan view of a sheet of paper provided with the slits required for the operation of the registering devices.

Similar letters of reference indicate corresponding parts.

R R represent the first pair of fold-rollers of a paper-folding machine.

A A designate the usual tapes, which convey the paper to a position over said folding-rolls to receive therefrom the first folding. The usual blade which tucks the sheet between said rolls is not shown, but its arrangement and operation are well understood by those conversant with this class of machines.

B B designate the usual guide-bars, which support the sheet in its travel to the end gage C, which arrests the longitudinal movement imparted to the paper by the tapes A A and is mounted on a reciprocating bar I², by means of which it is caused to recede from the sheet after arresting the same, as described in the aforesaid Letters Patent No. 561,771.

M and M' M' in Fig. 1 show, respectively, the locations of the lateral and longitudinal paper-registering mechanisms. The sheet is fed to the folding-machine with the edge X (see Fig. 8) in advance.

c' designates the slit which is used in the lateral registering of the sheet, and c' c' are the slits required for the longitudinal registering of the sheet. It is chiefly this longitudinal registering which requires my present invention in the registering mechanism. The slits c' c' are crosswise of the blank spaces b b of the sheet and are therefore lim-

ited in their lengths and in some cases so short as to render it difficult to allow the prior gravitating registering points or pins to enter into the slits a sufficient depth to close the electric circuit which controls the gripping action of the paper-shifting mechanisms, which are similar to those shown in the aforesaid Letters Patent No. 561,771, and are constructed to operate substantially as follows:

The two longitudinally-registering mechanisms $M' M'$ are connected to two separate brackets O , mounted longitudinally adjustable on a bar O' , which extends across the top of the folding-machine and is secured to the sides of the frame thereof. Said adjustment of the brackets is required to bring the registering mechanisms into their requisite positions for operating on papers having the blank spaces bb in different positions. Said adjustment is effected by means of the screws P' , passing through screw-threaded orifices in the brackets and journaled in suitable bearings on the sides of the main frame, as shown in Fig. 1 of the drawings. To each of said brackets is pivoted a vertically-movable arm G , to the free end of which is pivoted the roller F' , disposed directly over the continuously-rotating roller F . Both of said rollers are rubber-faced to obtain sufficient frictional hold on the paper to impart motion to the same. Said rollers $F F'$ constitute the paper-shifting mechanism.

The roller F rotates with the upper part of its periphery toward the gage C and thus moves the paper in that direction when said paper is pressed onto said roller by the upper roller F' .

To allow the paper to enter between the rollers $F F'$, the arm G is lifted intermittently by means of a toe h on a rock-shaft h' , pressing down on a heel G' , projecting rearward from the pivoted end of the arm G , as shown in Fig. 2 of the drawings. Said rock-shaft passes through bearings in the brackets O and extends to one side of the folding-machine and has affixed to it a crank n' , which receives a rocking motion by the rod o , connecting said crank to a lever o' , pivoted to the main frame and oscillated by a rotary cam u , as more clearly shown in the Letters Patent No. 561,771 before mentioned.

The action of the roller F' in registering the paper is controlled by the electromagnets H in an electric circuit, the generator or battery of which is indicated at U . Said magnets are mounted on the brackets O , and the armature H' of said magnets is attached to an arm H'' , pivoted, preferably, to the pivot-pin of the arm G . The armature-arm H'' has projecting from its lower portion a lug i , which is directly over the heel G' of the arm G , and is provided with a contact-screw i' , by which it bears on the heel G' . Said screw is adjusted so as to cause it to depress said heel and thereby lift the opposite end of the arm G when the armature is attracted by the magnets. Hence when the circuit is closed

the energy of the magnets causes the roller F' to be lifted from the paper entered between said roller and subjacent revolving roller F .

My present invention pertains to the means for automatically controlling the magnets H and is designed to perform said function in a more reliable and perfect manner and without liability of tearing or injuring the paper to be registered. For this purpose I employ a registering-point of the form of a tongue e of a suitable shape and dimensions to enter the slit c'' in the paper to be registered, which tongue is connected to a yielding support to allow it to move with the paper while in motion received from the paper-shifting mechanism, which in this case is represented by the rollers $F F'$. Said yielding support may be constructed in various ways to actuate the circuit maker and breaker which controls the magnet H .

The construction shown in Figs. 2 and 3 of the drawings consists of the tubular bar j , which is underneath the arm G and extending lengthwise thereof and pivoted at its rear end to the foot of a bracket a on the aforesaid arm. The front or opposite end of the said bar is suspended from an extension G'' of the arm G by a bolt j' , attached to the bar j and passing freely through the extension G'' and provided with a nut on its protruding end. A spring j'' , interposed between the bar and arm, serves to depress the bar. The upper end of the bolt j' is screw-threaded and provided with a nut which can be turned so as to cause said bolt to support the bar j with the pointing attachment in proper position in relation to the plane of the paper to be registered. Longitudinally through the bar j extends a rod d , which is free to slide endwise. To the front end of said rod is attached the tongue e , which is formed with a shank e' , passing between plates e'' , attached to the bar j . Said plates serve to sustain the tongue in proper operative position.

The rear end of the rod d terminates with a ball or rounded enlargement d' , which serves as a stop to limit the forward movement of the rod and at the same time forms a bearing against which the lower end extension of the terminal f' of the circuit maker and breaker rests. Said terminal is pivoted to the bracket a , to which is also secured the stationary terminal f . The lower end of the terminal f' is weighted, so as to cause it to be normally carried toward the rear end of the rod d and force the said rod forward.

The tongue e is supported out of contact with the paper in transit, and in order to insure its entrance into the slit in the paper I employ in front of said tongue a slit-opener consisting mainly of a bridge g , which is mounted on a bar D , arranged beneath the plane of the paper and supporting the overlying portion of the paper. Said bridge rises gradually from the bar D toward the tongue e , as shown in Fig. 2 of the drawings. Immediately back of the tongue e I attach to the

bar *j* a suitable sheet-depressor *k*, which may consist of either a boss or knob, as shown in said figure, or a roller, as represented in Fig. 4 of the drawings. Said depressor assists the bridge *g* in opening the slit in the paper, but may be dispensed with in registering flimsy paper.

To limit the degree of the entrance of the tongue *e* into the slit in the paper indicated by dotted line *p*, I provide the top of the said tongue with an upwardly-curved lip *e'''*.

The operation of my invention thus far described is as follows: During the shifting of the paper *p*, imparted to it by the rollers *F F'*, the slitted portion of the paper is carried over the bridge *g*, and in traversing the same the depressor *k* bears down upon the paper and causes the upwardly-projecting bridge to open the slit in the paper and pry up the edge of the slit presented toward the tongue *e*, which is thus caused to positively engage the said edge of the slit. Then in the further movement of the paper it pushes back with it the tongue *e*, and thereby causes the rod *d* to tilt the terminal *f'*, so as to close the electric circuit. The magnets *H* being thus energized cause the armature-arm *H''* to lift the arm *G*, with the roller *F'*, by the bearing of the screw *i'* on top of the heel *G'* of said arm. The said lifting of the roller *F'* deprives the revolving roller *F* of its hold on the paper and leaves the same in its required position.

In order to allow the registering devices to be adjusted to operate on paper having the slits *c''* different distances from the advance edge *X* of the paper, I support the bar *j* adjustable longitudinally in its position by mounting the bracket *a* movable lengthwise on the arm *G* and provide it with a screw-threaded orifice, through which passes a screw *l'*, journaled in suitable bearings *l l'* on the arm *G*. The free end of said arm is provided with a longitudinal slot through which the bolt *j'* passes, and thus allows said bolt to be shifted with the bar *j*. Inasmuch as the terminals *f f'* are connected to the bracket *a*, the circuit maker and breaker is adjusted simultaneously with the bar *j* and tongue *e*, supported thereon. To allow the bridge *g* to be adjusted to conform to the adjustment of the tongue, I form said tongue so as to allow it to be slipped lengthwise on its supporting-bar *D* and provide it with a screw-threaded downwardly-projecting stud *g'*, which passes through a washer on the under side of the bar and is clamped by a nut *g''* on the protruding end of the stud, as more clearly shown in Fig. 6 of the drawings.

One of the modifications which my invention is susceptible of is illustrated in Fig. 4 of the drawings and consists of the supplemental arm *I*, pivoted to the main arm *G*, preferably to the axle of the roller *F'*, and extending downward and forward from its pivot. The free end of said supplemental arm is adjustably suspended from the extension *G''* of the main arm by means of the bolt

m, which passes freely through the arm extension *G''* and is screw-threaded at its upper end and provided with a nut which can be turned to raise or lower the supplemental arm. To the supplemental arm *I* is connected a horizontally-elongated plate *I'*, which is provided with a longitudinal slot through which project a lug *n* and a screw-threaded stud *n'*, which latter is provided with a nut by which to clamp the plate on the arm. The longitudinal slot in the plate allows the same to be adjusted longitudinally to carry the tongue *e* a greater or less distance from the paper-shifting rollers *F F'*. To the free end of the plate *I'* is pivoted the shank of the tongue *e*, which shank is prolonged and serves the function of the movable terminal *f'* of the electric circuit. The stationary terminal *f* is connected to a suitable bracket *O*, attached to the plate *I*. In the engagement of the tongue *e* with the slitted portion of the paper shifted by the rollers *F F'* the shank of said tongue is tilted so as to close the electric circuit and thus cause the electromagnets *H*, by means of the armature *H'*, to lift the arm *G* and thereby deprive the rollers *F F'* of their hold on the paper.

The adjustability of the tongue *e* in relation to its distance from the paper-shifting mechanism is quite an important feature of my present invention, because different printing-presses cut the slits *c''* different distances from the front edge *X* of the paper. The lateral adjustment of the said registering mechanism is effected by means of the screw *P'* in the same manner as described in my prior patent hereinbefore referred to.

The lateral registering mechanism *M* may be of the same construction as shown in said prior application, because the slit *c'* is lengthwise of the blank space *b* of the paper and can therefore be made of ample length to insure its coming in the path of the registering point or tongue which is to enter said slit.

What I claim as my invention is—

1. In an electrically-controlled point-feed registering-machine, the combination with the paper-shifting mechanism, electromagnets controlling said mechanism, and a circuit maker and breaker controlling said magnets, of a tongue engaging the edge of the slit in the paper during the shifting thereof and sustained yieldingly to move with the paper and thereby actuate the circuit maker and breaker.

2. In an electrically-controlled point-feed registering-machine, the combination with the paper-shifting mechanism, electromagnets controlling said mechanism and a circuit maker and breaker controlling said magnets, of a bridge sustained under the plane of the shifting paper and rising therefrom to open the slitted part of the paper, and a tongue engaging the edge of the slit during the shifting of the paper and sustained yieldingly to move with the paper and thereby actuate the circuit maker and breaker.

3. In an electrically-controlled point-feed registering-machine, the combination with the paper-shifting mechanism, electromagnets controlling said mechanism, and a circuit maker and breaker controlling the magnets, of a bridge located under the plane of the shifting paper and in the path of the slit thereof, a paper-depressor in front of said bridge and in conjunction with the same serving to open the slitted part of the paper, and a tongue engaging the edge of the slit and sustained yieldingly to move with the paper and thereby actuate the circuit maker and breaker.
4. In an electrically-controlled point-feed registering-machine, the combination with the paper-shifting mechanism, electromagnets controlling said mechanism, and a circuit maker and breaker controlling said magnets, of a bar extending horizontally under the plane of the paper in transit and parallel with the line of travel thereof, a bridge connected to said bar adjustably toward and from the paper-shifting mechanism and rising from the bar to open the slit in the overlying paper, and a tongue engaging the edge of the slit and sustained yieldingly to the contact with the shifting paper and thereby actuate the circuit maker and breaker.
5. In an electrically-controlled point-feed registering-machine, the combination with the paper-shifting mechanism, electromagnets controlling said mechanism, and a circuit maker and breaker controlling said magnets, an upwardly-projecting bridge located under the plane of the shifting paper, a tongue entering the slit in the paper and sustained yieldingly to the contact with the shifting paper and thereby actuates the circuit maker and breaker, and an upwardly-curved lip projecting forward over the tongue to insure and limit the degree of the entrance of the tongue into the slit of the paper as set forth.
6. In combination with the paper-shifting mechanism, electromagnets controlling said mechanism and a circuit maker and breaker controlling the magnets, an upwardly-projecting bridge under the plane of the shifting paper, a paper-depressor in front of said bridge, a tongue over the aforesaid plane entering the slit in the paper and sustained yieldingly to move with the paper, and thereby actuate the circuit maker and breaker, and a forwardly-projecting lip over the tongue to limit the degree of entrance of said tongue into the slit as set forth.
7. In combination with a paper-shifting mechanism comprising a vertically-movable frame over the plane of the paper in transit, a paper-gripping member on said frame, an electromagnet lifting said frame by means of the armature and a circuit maker and breaker controlling said magnet, an arm connected to the aforesaid frame yieldingly to the contact with the shifting paper and actuating the

aforesaid circuit maker and breaker as set forth.

8. In combination with a paper-shifting mechanism comprising a vertically-movable frame over the plane of the paper in transit, a paper-gripping member on said frame, an electromagnet lifting said frame by means of the armature and a circuit maker and breaker controlling said magnet, an arm pivoted at one end to the aforesaid frame and suspended at the opposite end from the same, a spring depressing the suspended end of the arm, a paper-depressor on said depressed end of the arm, an upwardly-projecting bridge under the plane of the shifting paper in front of the aforesaid paper-depressor, and in conjunction therewith opening the slit in the paper, and a tongue sustained between said depressor and bridge to enter the slit, and connected to the arm yieldingly to the contact with the shifting paper and thereby actuates the circuit maker and breaker as set forth.

9. In combination with the rotary paper-shifting roller F vertically-movable frame G roller F' pivoted to said frame and the electromagnet H having its armature lifting said frame under the influence of the magnet, the bracket *a* mounted longitudinally adjustable on the aforesaid frame, the electric terminal secured to said bracket, the cooperating terminal *f'* pivoted to the bracket, the longitudinally-movable rod *d*, engaging at one end the pivoted terminal, the tongue *e* attached to the opposite end of said rod, and the upwardly-projecting bridge *g* under the plane of the shifting paper in front of the aforesaid tongue substantially as and for the purpose set forth.

10. In combination with the roller F' and its supporting-arm G, a pointing attachment supported on said arm adjustable in a vertical direction to sustain said attachment in proper position in relation to the plane of the sheet to be registered as set forth.

11. In an automatic point-feed paper-registering machine, the combination with the paper-shifting mechanism, of a slit-opener consisting mainly of a projection under the plane of the travel of the sheet and in the path of the slit therein whereby the slitted portion of the paper is strained from the plane of the main portion of the sheet.

12. In an automatic point-feed paper-registering machine, the combination with the paper-shifting mechanism, of an upwardly-projecting bridge directly under the plane of the travel of the sheet and in the path of the slit therein, and a sheet-depressor in front of said bridge and in conjunction therewith opening the aforesaid slit.

In testimony whereof I have hereunto signed my name this 18th day of July, 1895.

TALBOT C. DEXTER. [L. s.]

Witnesses:

JAS. F. WHITLOCK,
V. E. MARSH.