

(No Model.)

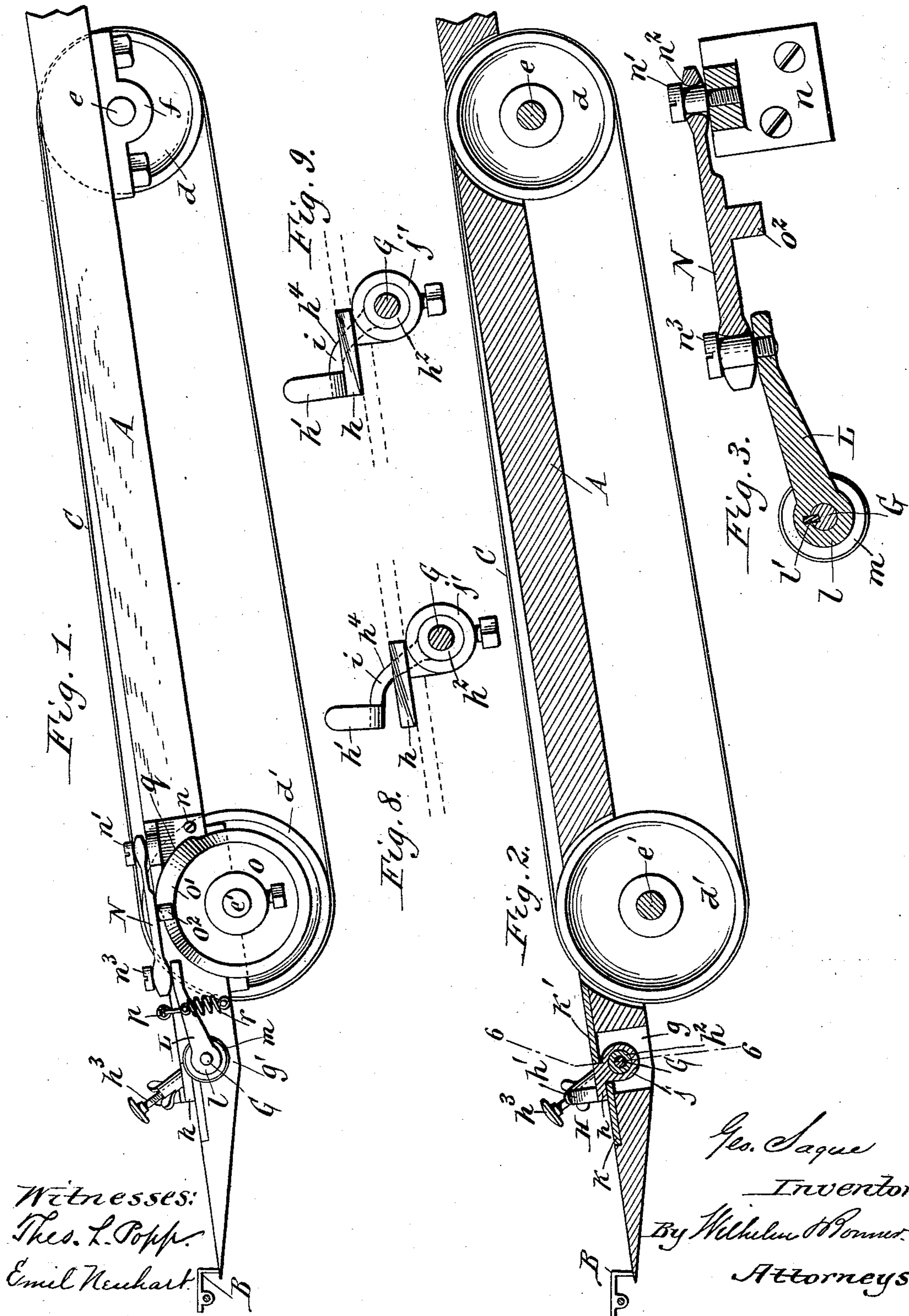
2 Sheets—Sheet 1.

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SIDE REGISTERING MECHANISM FOR PAPER FEEDERS.

No. 529,084.

Patented Nov. 13, 1894.



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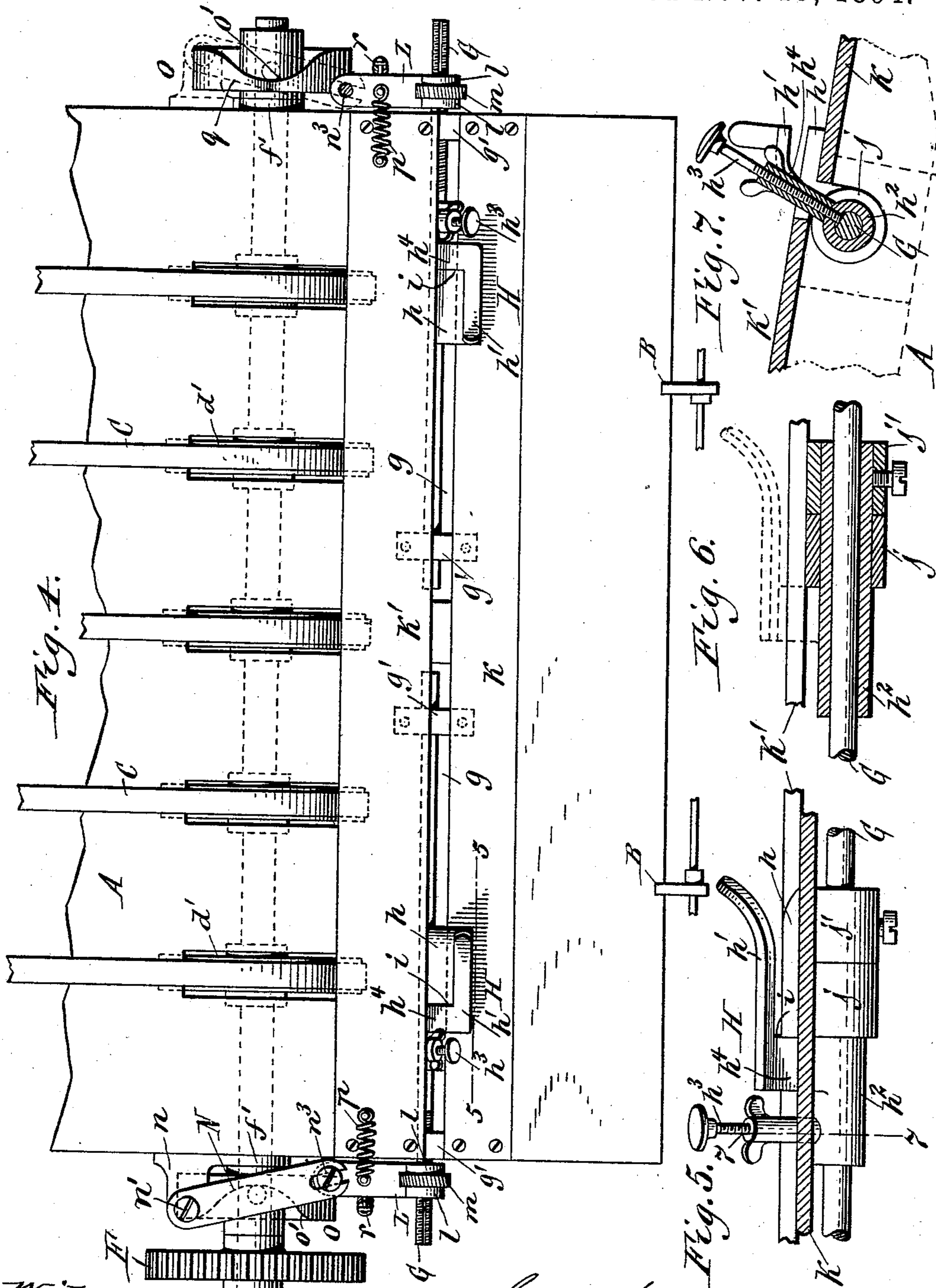
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Witnesses:  
Theo. L. Popp.  
Emil Neuhart.

George Sague Inventor.  
By Wilhelm Dorned.  
Attorneys.

# UNITED STATES PATENT OFFICE.

GEORGE SAGUE, OF POUGHKEEPSIE, NEW YORK.

## SIDE-REGISTERING MECHANISM FOR PAPER-FEEDERS.

SPECIFICATION forming part of Letters Patent No. 529,084, dated November 13, 1894.

Application filed April 9, 1894. Serial No. 506,849. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE SAGUE, a citizen of the United States, residing at Poughkeepsie, in the county of Dutchess and State of New York, have invented a new and useful Improvement in Side-Registering Mechanisms for Paper-Feeders, of which the following is a specification.

This invention relates to a side registering mechanism, whereby sheets of paper are automatically registered on the side edge before entering the printing press, ruling or other machine to which the sheets are fed.

The object of my invention is to produce a side registering mechanism which is simple in construction and which will correctly register the sheets.

In the accompanying drawings consisting of two sheets: Figure 1 is a side elevation of my side registering mechanism applied to the feed table of a printing press or other machine. Fig. 2 is a vertical longitudinal section thereof. Fig. 3 is a vertical longitudinal section of the actuating lever and connecting parts for operating the side registering gripper, on an enlarged scale. Fig. 4 is a fragmentary top plan view of the feed table provided with my improved side registering mechanism. Fig. 5 is a vertical transverse section, on an enlarged scale, taken through the feed table in front of one of the side registering grippers, in line 5—5 Fig. 4. Fig. 6 is a similar section, taken through the journal of the gripper, in line 6—6, Fig. 2. Fig. 7 is a fragmentary vertical section, in line 7—7, Fig. 5. Fig. 8 is an inside elevation of the gripper, open for the reception of the sheet. Fig. 9 is a similar view showing the gripper closed.

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

A represents the inclined feed table of a printing press or other machine to which sheets of paper are fed, and B the front registering guides arranged transversely on the front end of the table in the usual manner.

C represents the sheet delivery tapes, whereby the sheet is carried with its front edge against the front registering guides preparatory to being side registered. These tapes are arranged lengthwise with their operative portions above the feed table and with

their inoperative portions below the feed table. The tapes pass with their receiving and delivery portions around receiving and delivery rollers  $d$   $d'$ , respectively, which latter are mounted on transverse shafts  $e$   $e'$ , journaled in bearings  $f$   $f'$  secured to the under side of the front and rear portions of the feed table. The delivery tapes are preferably driven by means of a gear wheel F, secured to one end of the delivery roller shaft and meshing with any suitable gear wheel on the machine to which the sheets are fed. The sheets are placed upon the receiving portions of the tapes, either by hand or by an automatic paper feeder. In order to permit the unobstructed advance of the sheet as it is passed from the table to the tapes, the receiving portions of the latter are arranged flush, or nearly so, with the top of the table, while their delivery portions are elevated a short distance above the table to prevent the tapes from bearing against the top of the feed table and becoming worn.

G G represent two shafts or rods whereby the side registering grippers H H on opposite sides of the feed table are actuated and which are capable of reciprocating transversely of the feed table and oscillating about their axes. The actuating rods are arranged transversely and in line with each other in transverse slots  $g$   $g$ , formed in the feed table and are journaled in bearings  $g'$   $g'$ , secured to the under side of the feed table. Each of the side registering grippers is provided with a lower jaw  $h$ , which reciprocates transversely with the gripper rod, and an upper jaw  $h'$  capable of oscillating toward and from the lower jaw and of reciprocating therewith. The oscillatory gripper jaw  $h'$  is mounted on the rod by a carrying sleeve or hub  $h^2$  which is adjustably secured to the rod by a set screw  $h^3$  and connected with the rear end of the jaw by an arm  $h^4$ . The latter is provided on its under side with a registering face or shoulder  $i$  against which the side edge of the sheet is registered. The lower jaw is provided with an eye  $j$  in which the carrying sleeve of the oscillatory jaw turns and is compelled to move lengthwise with the rod by the arm  $h^4$  bearing against the outer end of the eye, and a collar  $j'$  secured to the sleeve and bearing against the inner end thereof.

The lower jaw of the gripper is guided between two guide plates  $k$   $k'$  which are secured transversely upon the feed table along the front and rear sides of the transverse slots.

5 The upper side of the lower gripper jaw is preferably arranged flush with the rear guide plate and fits snugly between the front and rear guide plates so that the lower jaw cannot turn on the carrying sleeve. The front edge  
10 of the sheet has a tendency to bend downwardly as it passes over the slot between the guide plates and is therefore liable to strike the front edge of said slot. In order to prevent this, the front portion of the feed table  
15 and the guide plate in front of the slot are depressed sufficiently below the rear guide plate to prevent the downwardly bent front edge of the sheet from striking the front guide plate and the front edge of the slot in passing  
20 over the latter, as represented in Fig. 2.

L represents an actuating arm secured with its front end to the outer end of each actuating rod for operating the latter. Each of  
25 these arms is provided with a bifurcated eye  $l$  at its front end which is mounted on the outer screw-threaded end of the actuating rod and the latter is made capable of lengthwise adjustment in said eye but held against turning therein by a feather or key  $l'$ .

30  $m$  is an adjusting screw nut arranged upon the screw threaded portion of the actuating rod in the bifurcated eye of the actuating arm. Upon turning the screw-nut the actuating rod is moved lengthwise through the  
35 eye of the actuating arm.

N represents an actuating lever whereby each actuating arm is operated and which is capable of a vertical and a lateral oscillating movement. Each of these levers is pivoted  
40 to a bracket  $n$  on the side of the feed table by a screw  $n'$  passing through an upwardly and downwardly flaring opening  $n^2$  in the rear end of the lever. The front end of the actuating lever is pivotally connected to the  
45 rear end of the actuating arm by a screw  $n^3$  passing through the bifurcated front end of said lever.

O O represent cam wheels whereby the grippers are opened and closed and moved transversely on the feed table. These cam wheels  
50 are secured to the shaft of the delivery rollers adjacent to the sides of the feed table and each cam wheel is provided on its outer side with a face cam  $o'$  which is adapted to engage  
55 against the inner side of a depending pin  $o^2$  formed on the actuating lever. Upon rotating the cam wheel its face cam engages against the inner side of the depending pin and moves the gripper outwardly through  
60 the medium of the lever, arm and rod. When the face cam releases the pin the gripper is moved inwardly by a spring  $p$  secured with its ends to the actuating arm and the feed table.

65 The cam wheel is provided on its periphery with a peripheral cam  $q$  which is adapted to engage against the under side of the actuat-

ing lever for swinging said lever in a vertical direction and thereby rock the rod and close the gripper. When the gripper has reached  
70 the limit of its inward movement the peripheral cam raises the actuating lever and arm connected therewith, thereby turning the actuating rod in the proper direction for pressing the upper jaw against the lower jaw.  
75 When the peripheral cam moves from underneath the actuating lever the latter is depressed by a spring  $r$ , secured with its ends to the actuating arm and the feed table, thereby raising the oscillatory jaw and opening the gripper. By forming the two cams  
80 on the same wheel their relative position is always the same and cannot be disturbed. A spring, when used in connection with each of these cams, is a substitute for one side of  
85 a grooved cam, and it is obvious that each of these cams may be a grooved cam which produces a movement in both directions, in which case the spring is omitted.

When it is desired to adjust the gripper for  
90 different sizes of sheets, the coarse adjustment is effected by releasing the set screw  $h^3$  and shifting the gripper on the actuating rod and the fine adjustment of the gripper is effected by turning the screw nut in the eye of the act-  
95 uating arm.

Upon placing a sheet of paper upon the delivery tapes the latter carry the same forward until its front edge strikes the front registering guides. The gripper now moves inwardly  
100 with its upper jaw raised, so that the sheet enters between the jaws, and the registering face of the gripper strikes the side edge of the sheet, after which the gripper closes and grasps the side of the sheet. The closed grip-  
105 per now moves outwardly with the sheet and when it reaches the limit of its outward movement the sheet is in its correct side-registered position, after which the gripper opens, the front guides rise and the sheet is carried to  
110 the printing press or other machine in correct front and side register.

The face cam of the cam wheel is so constructed that the gripper is momentarily at rest when it arrives at the end of its inward  
115 movement, so as to enable the gripper to close while the registering face bears squarely against the edge of the sheet, thereby insuring proper side register of the sheet.

The ends of the gripper jaws are preferably  
120 curved to facilitate the entrance of the sheet between the same.

In operating upon large sheets only one of the side registering grippers is used, but when sheets of small size are operated upon, both  
125 grippers can be used for simultaneously side-registering two sheets.

I claim as my invention—

1. The combination with the feed table, of an actuating rod capable of a reciprocating  
130 movement in the direction of its axis and also capable of an oscillating movement about its axis, a gripper jaw which is connected with said rod and moved on the feed table by the

reciprocating movement of said rod, and a gripper jaw also connected with said rod and moved on the feed table with the first mentioned jaw by the reciprocating movement of said rod and moved toward and from said first mentioned jaw by the oscillating movement of said rod, substantially as set forth.

2. The combination with the feed table, of a transverse actuating rod capable of a reciprocating and an oscillating movement, and a gripper provided with a sliding jaw which partakes of the reciprocating movement of the actuating rod, and with an oscillating jaw which also partakes of the reciprocating movement of said rod, substantially as set forth.

3. The combination with the feed table, of a transverse actuating rod capable of a reciprocating and of an oscillating movement, a gripper adjustably secured to the actuating rod for effecting the coarse adjustment, an actuating rock-arm attached to the outer end of said actuating rod, and means whereby said rod can be adjusted in the direction of its length in said rock arm to effect the fine adjustment of the gripper, substantially as set forth.

4. The combination with the feed table, of an actuating rod capable of a reciprocating and of an oscillating movement, an oscillating gripper jaw provided with a sleeve which is secured to said rod and rocks therewith, and a sliding gripper jaw provided with an eye loosely mounted on the sleeve of the oscillating jaw, substantially as set forth.

5. The combination with the feed table, of an actuating rod provided with a screw-threaded portion, a gripper mounted on said rod, an actuating arm provided with a bifurcated eye embracing the screw-threaded portion of the actuating rod, and connected therewith so that said rod is capable of sliding therein, but is held against turning therein, and an adjusting screw nut arranged upon

the screw threaded portion of the actuating rod within the eye of the actuating arm, substantially as set forth.

6. The combination with the feed table, of a transverse actuating rod capable of a reciprocating movement in the direction of its axis and also capable of an oscillating movement about its axis, a gripper jaw which is connected with said rod and moved on the feed table by the reciprocating movement of said rod, and a gripper jaw also connected with said rod and moved on the feed table with the first mentioned jaw by the reciprocating movement of said rod and moved toward and from said first mentioned jaw by the oscillating movement of said rod, one of said jaws being provided with a side registering shoulder, substantially as set forth.

7. The combination with the feed table, of an actuating rod, a gripper mounted on said rod, an actuating arm also mounted on said rod, an actuating lever pivotally connected with said arm, and a cam wheel provided with a face cam which is adapted to engage with said lever for moving the gripper transversely on the feed board, and with a peripheral cam which is adapted to engage against the said lever for opening and closing the gripper, substantially as set forth.

8. The combination with a feed table having the upper surface of its delivery portion depressed below the surface plane of its upper or receiving portion and separated therefrom by a transverse slot, of a movable gripper arranged to move in said slot, substantially as set forth.

Witness my hand this 4th day of April, 1894.

GEORGE SAGUE.

Witnesses:

S. F. BACHELDOR,  
JOHN K. SAGUE.