

No. 671,494.

Patented Apr. 9, 1901.

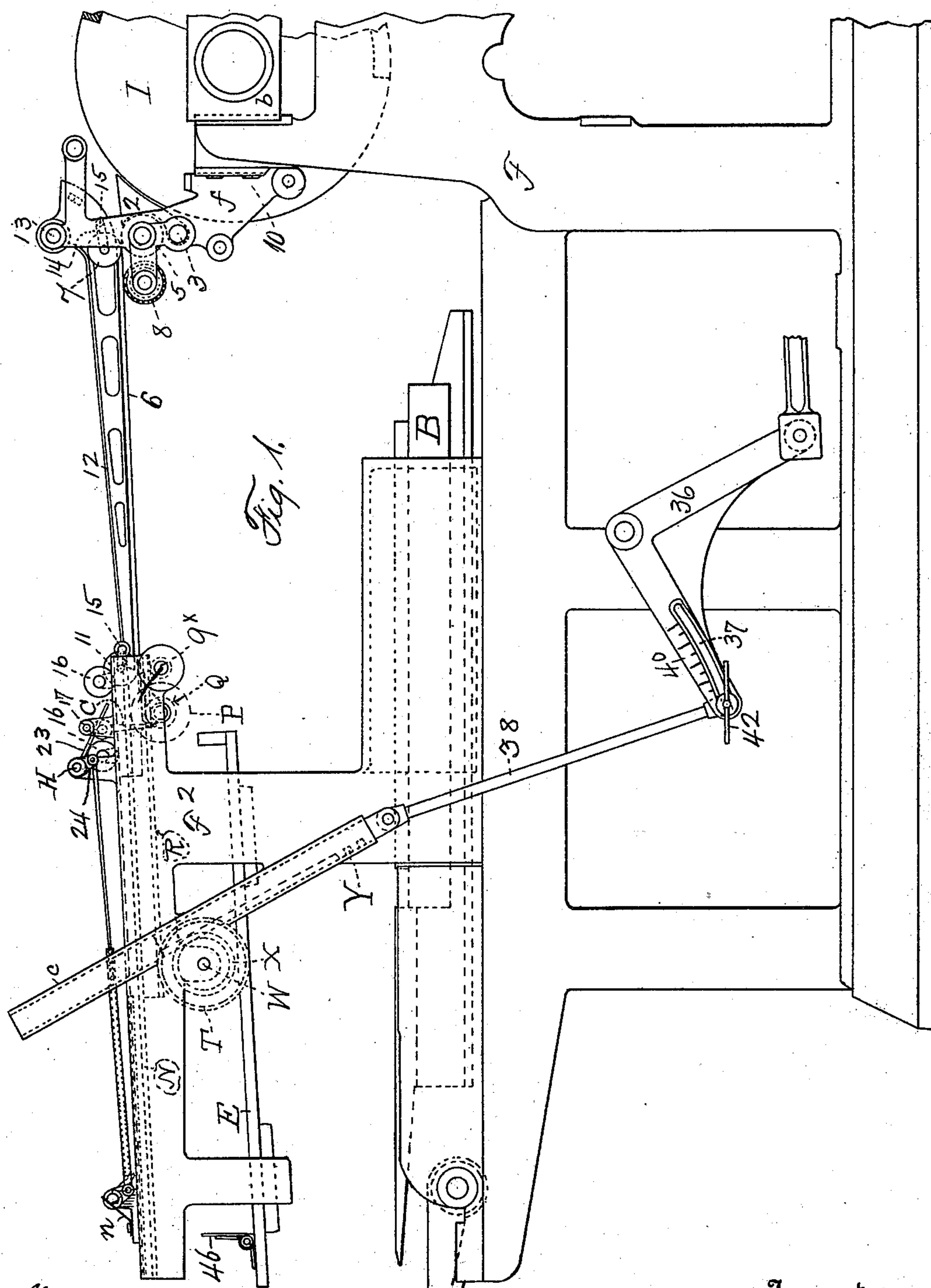
W. SCOTT.

SHEET DELIVERY MECHANISM.

(Application filed July 17, 1897.)

(No Model.)

3 Sheets—Sheet 1.



Witnesses:
Frank Ryall
Chas. Broder

By his Attorney
Walter Scott, Inventor
Richard W. Barker.

No. 671,494.

Patented Apr. 9, 1901.

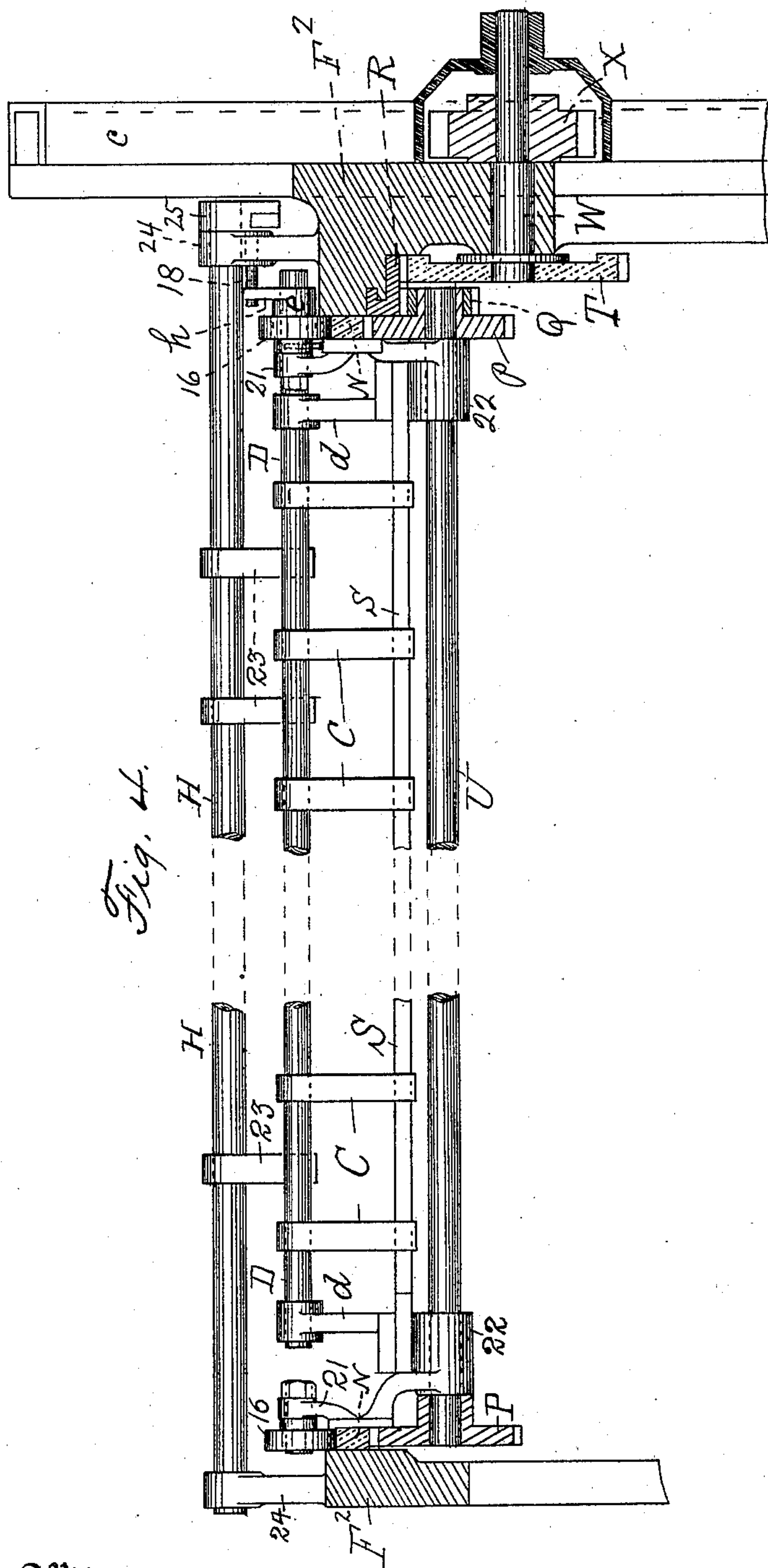
W. SCOTT.

SHEET DELIVERY MECHANISM

(Application filed July 17, 1897.)

(No Model.)

3 Sheets—Sheet 3.



Witnesses
Frank Ryall
Chas. Crocker

By his Attorney *Walter Scott,* Inventor
Richard W. Parkey.

UNITED STATES PATENT OFFICE.

WALTER SCOTT, OF PLAINFIELD, NEW JERSEY.

SHEET-DELIVERY MECHANISM.

SPECIFICATION forming part of Letters Patent No. 671,494, dated April 9, 1901.

Application filed July 17, 1897. Serial No. 644,997. (No model.)

To all whom it may concern:

Be it known that I, WALTER SCOTT, a citizen of the United States, and a resident of Plainfield, in the county of Union and State of New Jersey, have invented certain new and useful Improvements in Sheet-Delivery Mechanism, of which the following is a specification.

The present invention relates to sheet-delivery mechanism primarily intended for that class of printing-machines commonly spoken of as "bed-and-cylinder presses," and has for its principal object the delivery of the sheets flat with their freshly-printed side uppermost. There is a class of machines in which the sheets are carried out flat over the delivery-board and are then dropped thereon, beginning at the head of the sheet, by the withdrawal of the support from under the sheet in a progressive manner. With respect to this class of machines an object of the invention is to vary the travel of the sheet-support or to set it for any particular length of sheet within the limits of the machine without stopping the operation thereof.

Other objects of the invention will appear hereinafter.

To these ends the invention includes combinations of devices hereinafter described, and more particularly pointed out in the claims concluding this specification.

The preferred form of the invention is shown in the accompanying drawings, forming part hereof, in which—

Figure 1 is a side elevation of part of a bed-and-cylinder printing-press, showing the invention applied thereto. Fig. 2 is a plan, and Fig. 3 is a side elevation, both on an enlarged scale, of certain parts shown in Fig. 1; and Fig. 4 is a view looking toward the impression-cylinder and showing the sheet-support-operating gearing and the frame in section and showing other parts in elevation. Fig. 5 is a detail view showing an adjustment of the slide shown in other figures of the drawings.

Referring to the drawings, the references F F² mark a suitable fixed framework in which the working parts of the machine are appropriately mounted. The impression-cylinder I and form-bed B are to be operated in any suitable or desirable way, according to the class of the machine, whether stop cylinder,

oscillating cylinder, or rotary cylinder. The impression-cylinder is to be provided with suitable or usual devices for receiving, retaining, and discharging the sheets. In the instance shown the sheets are discharged from the cylinder I upon the guides 2, which are suitably supported by the cross-shaft 3, which may be adjusted transversely of the machine. The sheets pass from the guides 2 over the roller or pulleys 5 onto the webs or rib-bands 6 of fabric or other suitable material. A set of pulleys 7 coacts with the roller 5 to feed the sheets forward, the roller or pulleys 5 being suitably driven from the driving mechanism of the press. The webs 6 are discontinuous and have one end fastened to the hollow roller 8 and the other end to the bar S. The hollow roller 8 is provided with a spring coiled therein and fast at one end to the roller and at the other to the roller-bearings or other fixed part of the supplemental frame f, which is adjustably connected with the frame F at 10. The tension of the said spring is exerted to turn the top of the roller 8 toward the impression-cylinder I, and thus wind the webs 6 on the roller 8 after the manner of a well-known form of window-curtain. One or more of the webs 6, between the roller 8 and bar S, pass close above or in contact with one or more pulleys 9, which are fast on a shaft 9^x, which is suitably journaled in the frame F² near the point where the bar S approaches nearest the impression-cylinder. Rollers or pulleys 11 bear by their weight on those of the webs 6 which pass over or are in contact with the pulleys 9, and thus hold the sheets down. In order to prevent the sheets from rising as they are being run out on the webs 6, I provide one or more guide-bars 12, which are carried by the shaft 13, which extends transversely of the machine. This shaft 13 may be fast to the frame f and the guides 12 be adjustable about and along the same, or the shaft 13 may be adjustable about its axis, and thus furnish an indirect adjustment of the positions of the guides 12 relative to the webs 6. The rollers 7 and 11, hereinbefore mentioned, are preferably supported by or from the guide-bars 12, as by means of the arms 14, pivoted in the guides 12, as at 15.

The bar S, hereinbefore mentioned, is carried by or forms part of a carriage movable

to and fro on the frame F^2 . The said carriage is provided with wheels 16, which run on and are guided by the frame F^2 or a part attached thereto, as on the backs of the two rack-bars N, and with a shaft U, which is journaled therein. At its ends the shaft U is provided with two equal pinions P and at one end with a pinion Q, which is smaller than the pinions P. The pinions P mesh with the fixed rack-bars N, above named, while pinion Q meshes with the rack R, which is movable to and fro on frame F^2 in a direction parallel to racks N. The rack R is in mesh with the pinion T, fast on the shaft W, journaled in the frame F^2 . The shaft W is provided with a second pinion X, which is smaller than pinion T. The pinion X is oscillated by the to and fro movable rack-bar Y, which moves in a guide c, fastened to frame F^2 . From the described connections it results that the carriage aforesaid is run back and forth on the frame F^2 by the reciprocations of rack Y.

It is desirable that the extreme motion of the sheet-support be obtained without too great a motion of the lever 36. I have therefore shown the pinions X, T, Q, and P as of unequal sizes. Further, the unequal pinions Q P cause the support to travel faster than the rack R, thus keeping the length of said rack within such limits that it is at all times within the limits of the frame F^2 .

In the construction shown the sheets run out on the webs 6 are stopped by the movable fingers C until these are moved out of the way. The fingers C are fast to a shaft D, which is suitably journaled in arms d, carried on the carriage aforesaid. Near one end the shaft D is provided with a collar e, fast thereto, which collar is provided with the upright arm h. The shaft D is also provided with two flat surfaces i k, which form an angle with each other, as shown in Fig. 3. The carriage aforesaid has a leaf or flat spring m fast thereto, which spring bears upon one or the other of said surfaces i k, according to the position of the shaft D, and retains it in such position until the shaft is positively moved rotatively. The end of shaft D projects beyond the collar e for a purpose hereinafter specified. The frame F^2 is provided with a lug or standard 17, in which is secured a pin 18 in the path of the said arm h and serves to move the shaft D into the position shown. Near the end of the frame F^2 farthest removed from the impression-cylinder I place a suitable stop in the path of the said arm h in order to give a partial rotation to the shaft D to move the fingers C through a large angle, in the case shown nearly a right angle. This stop is conveniently formed by the end of the shaft 19, which is journaled in the lug or standard 20, secured to the frame F^2 in an adjustable manner. The fingers C form stops for the sheets, which are shot forward from the impression-cylinder onto the supporting-webs 6 and are moved aside at the proper

time to allow the sheets to fall on the delivery-board E.

The wheels 16 aforesaid are provided with axles, which are suitably journaled in the lugs 21 on or forming part of the carriage aforesaid. The shaft U aforesaid is journaled in lugs or sleeves 22 on or forming part of said carriage.

In the operation of the machine the said carriage is moved to and fro on the frame F^2 by suitable mechanism, as by the rack Y, pinions X T, rack R, pinions Q P, and racks N. As the carriage moves outward from the position shown the fingers C form stops beyond which the sheets cannot go as they are shot out on the webs 6 from the cylinder I. As the carriage is run out the webs 6 are unwound from roller 8 and carry the sheets along. As the carriage approaches the limit of its outward movement the arm h strikes the shaft 19 and shaft D is turned until spring m snaps into the recess or flat k, thus removing fingers C from in front of the bar S and the sheet on the webs 6. At the same time the detents 23 are thrown downwardly from the positions shown in the drawings behind the tail of the sheet, said detents 23 coming in between adjacent webs 6, as shown, and prevent the sheet from being carried back by the returning of the carriage to the position shown—that is to say, the sheets are pushed from the support on which they are carried out and fall onto the delivery-board E. The detents 23 are fast to the shaft H, which is journaled in standards or lugs 24 on the frame F^2 . The shaft H is provided with a collar 25, fast thereto, which collar is provided with an arm 26, projecting downwardly. The shaft 19 aforesaid has a collar 27 fast thereto, and this collar 27 is provided with an arm 28, also projecting downwardly. (I remark that these arms 26 28 may project upwardly, if desired.) The arm 28 has pivoted thereto a hollow rod 29 a little longer than half the limit of extreme separation of the lug 24 and the adjustable lug 20. The arm 26 has a rod 30 pivoted thereto, which rod is practically equal in length to rod 29 and is of a size and shape to telescope easily into the rod 29. A set-screw 31, passing through one side of hollow rod 29, serves to jam the rod 30 thereagainst, and thus practically make one rod of the two. The shaft 19 is provided also with a collar 32, fast thereto, which collar is provided with an arm 33 in the path of the end of the shaft D aforesaid. From the described connections it results that the detents 23 are thrown downward by the shaft D on the moving carriage. Any other part on or of the carriage would answer equally well for this purpose. In order to hold the detents 23 in either of their two positions, I flatten the shaft 29 on two sides, as shown in Figs. 1, 2, and 3, and provide the slide 34 with a flat or leaf spring n, which bears against the flattened parts of the shaft, as

will be understood. The parts 23 26, &c., are returned to the positions shown by the shaft D, which acts on the detents 23.

The operation, in brief, is that the sheets 5 are shot out on the webs 6, are prevented from overrunning by the fingers C, are carried out over the delivery-board E, are released by the fingers C, are caught and held by the detents 23 during the withdrawal of 10 the support, as the webs 6, and fall head first onto the delivery-board E.

The board E may be provided with the head-stop 46, which may be adjustable on the board toward and from the cylinder, as in my prior 15 application, filed on the 19th day of May, 1896, Serial No. 637,173. The distance traveled on frame F² by the to and fro moving carriage aforesaid may be regulated, as in my said application, by varying the throw of the 20 rack Y. Thus the rack Y may be operated by the bell-crank 36, which is pivoted to the frame F and is provided with a curved slot 37. A pitman 38 is pivoted to the rack Y and to a pin or stud 39, which is adjustable 25 in said slot 37 by means of the jam-nut 41. A collar *m* on the stud 39 and the nut 41 bind the stud to the lever 36.

In order to adjust the stud 39 along the slot 37 while the machine is in operation, I provide 30 the nut 41 with arms or levers 42, by which it may be turned on the screw-threaded portion of the stud 39 while the machine is operating.

In order to aid in accurately adjusting the 35 throw of the carriage for the parts S U, &c., during the operation of the machine to deliver the sheets at different points on the board E or to deliver sheets of different lengths, I provide a scale 40 at one side of the slot 37 to indicate the point to which the 40 stud 39 must moved in order to accommodate the throw of the carriage aforesaid to the length of the sheets being delivered. Also the slide 34 is adjusted along the slot 43 in 45 the frame F² (which slot is shaped like an inverted T, in which a T-head carried by the slide 34 fits, and against which the T-head is jammed by the nut 44, as will be understood, and the screw 31 being loosened for 50 the purpose) to the proper position. A scale alongside the slot 43 may be used as an aid in this adjustment if desired.

I remark that the fingers C, detents 23, and other parts on shafts are secured thereto by 55 set-screws or other means, and so may be adjusted on said shafts lengthwise and circumferentially thereof. I also remark that many changes in details, parts of combinations, and the like may be made without departing from 60 the spirit of this invention. I do not, therefore, limit myself to the form thereof shown in the drawings, and hereinafter described in detail, as for some of the purposes of my invention the roller 8 may be oscillated otherwise 65 than by a spring and by the pull of the webs thereon.

What I claim is—

1. In a sheet-delivery, the combination of a delivery-board, an extensible collapsible sheet-support for carrying the sheets out over 70 said board, the fingers C connected to or carried by said support at the front thereof and movable into and out of position for preventing overrunning of the sheets, the detents 23 75 on the fixed framework for dropping in behind the sheets, and mechanism for operating said parts, substantially as described.

2. The combination of the spring-roller 8 journaled in the fixed frame of the machine, the carriage movable to and fro on said frame, 80 the webs connected to said carriage and to said roller, the movable fingers C on said carriage, the movable detents 23 on said frame for dropping behind the sheets, a delivery-board, and operating devices for said parts, 85 substantially as described.

3. The combination of a delivery-board, a sheet-carrier moving to and fro over said board, mechanism provided with an adjustable member for varying the throw or extent 90 of motion of and operating the said carrier, the detents 23 for holding the sheets, the adjustable slide 34 on the frame, the shaft 19 journaled on said slide, and the adjustable connection between said shaft and the detents 95 23, substantially as described.

4. The combination of the spring-roller 8 journaled in the frame of the machine, the carriage movable to and fro on the said frame, the webs connected to said carriage and said 100 roller, the movable fingers C on said carriage, the movable detents 23 on said frame, an arm 33 in the path of said carriage and connections whereby said arm and carriage rock said detents 23, two projections on said frame 105 (as shafts 19, 18) for moving said fingers C, and means for holding said detents 23 and fingers C in and out of their operative positions, substantially as described.

5. The combination of the shaft H journaled on the framework, the detents 23 borne 110 by said shaft, the shaft 19, the adjustable slide 34 on which shaft 19 is journaled, the arms on said shafts 19 H, the rod adjustable as to length for connecting said arms, an arm 115 33 on said shaft 19, a to and fro moving carriage, an extensible collapsible sheet-support connected at one end to said carriage, the shaft D journaled on said carriage, the stops C on shaft D, the arm *h* on shaft D, the pin 120 18 on the frame, and means for holding the shafts D 19 in each of two positions, substantially as described.

6. The combination of a sliding sheet-carrier, a delivery-board over which the carrier 125 is reciprocated, a rack-and-pinion movement for operating said carrier, a vibratory slotted lever, a link adjustably connected with said slotted lever and connected with said rack-and-pinion movement, and a scale alongside 130 said slot indicating adjustments for sheets, substantially as described.

7. The combination of the lever 36 provided with the slot 37, a scale alongside the slot,

the link 38 adjustably connected with said slotted portion of said lever, a to and fro movable sheet-carrier, a delivery-board, and jack-and-pinion mechanism for moving said carrier operated by said link, substantially as described.

8. In a sheet-delivery mechanism, the combination of a to and fro moving carriage, a spring-roller journaled in the fixed framework, a sheet-support fast at one end to said roller and at the other to said carriage, means for conveying sheets to said support, stops on said carriage and movable into and out of position for coaction with the heads of the sheets, and means for moving said stops out of the path of the sheet at the end of the outward stroke of the carriage, substantially as described.

9. In a sheet-delivery mechanism, the combination of a to and fro moving carriage, a spring-roller journaled in the fixed framework, a discontinuous sheet-support fast at its ends to said roller and said carriage, stops on said carriage and movable into and out of the path of the sheet, fixed guides overlying said support to prevent the sheet from rising,

and means for moving said stops out of the path of the sheet at the end of the outward stroke of said carriage, substantially as described.

10. In a sheet-delivery mechanism, the combination of a to and fro moving carriage, a spring-roller journaled in the fixed framework, a discontinuous sheet-support fast at its ends to said roller and said carriage, means for conveying sheets to said support, stops on said carriage and movable into and out of position for coaction with the head of the sheet, detents for dropping in behind the tail of the sheet, and means for moving said stops out of the path of the sheet at the end of the outward stroke of the carriage and simultaneously dropping said detents in behind the tail of the sheet, substantially as described.

Signed at New York, in the county of New York and State of New York, this 1st day of July, A. D. 1897.

WALTER SCOTT.

Witnesses:

CHAS. A. BRODEK,
RICHARD W. BARKLEY.