No. 739,233. PATENTED SEPT. 15, 1903.

A. STOCKER.

FRONT SHEET DELIVERY APPARATUS FOR PRINTING PRESSES.

APPLICATION FILED OCT. 9, 1902.

NO MODEL. 3 SHEETS—SHEET 1.

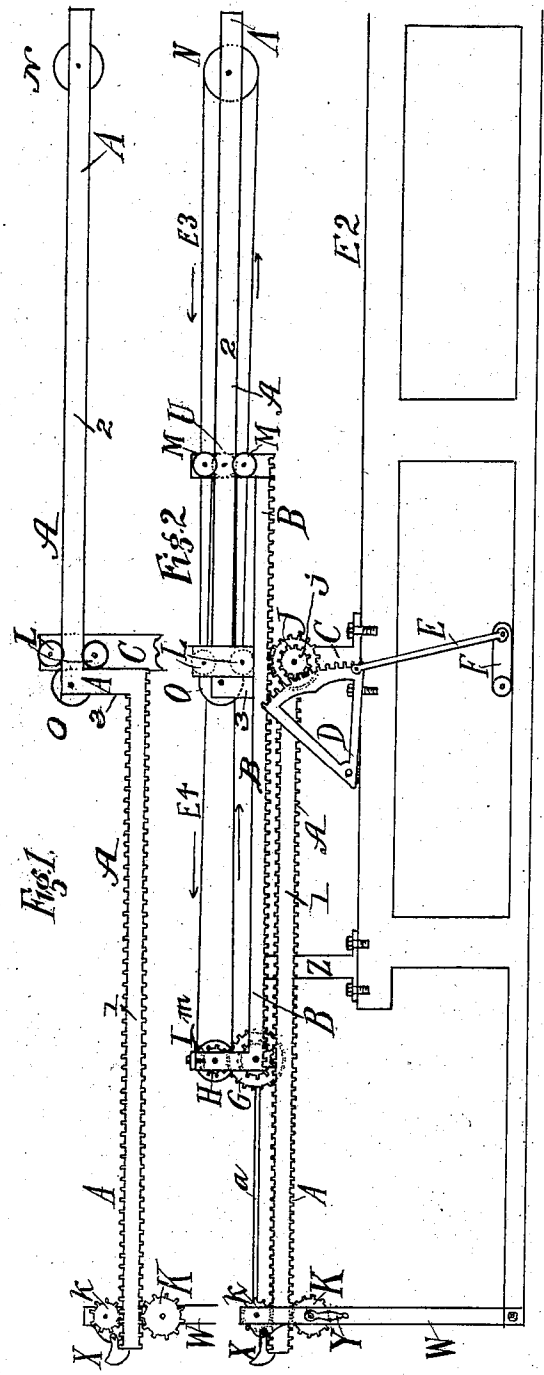


Fig. 1.

Fig. 2.

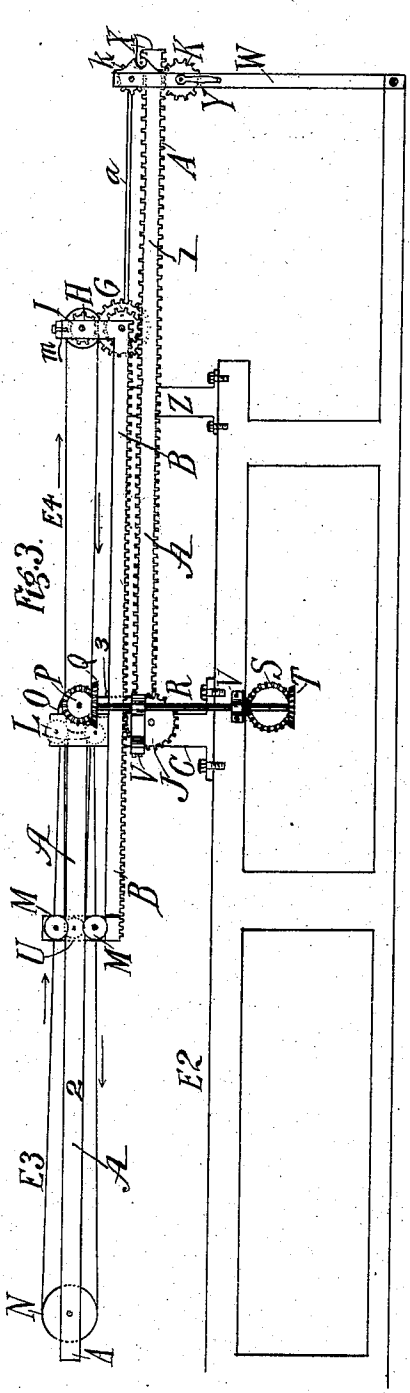


Fig. 3.

Witnesses:

Julia A. Sedgerwood

W. H. Walkinghorst

Inventor:

Anthony Stocker

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

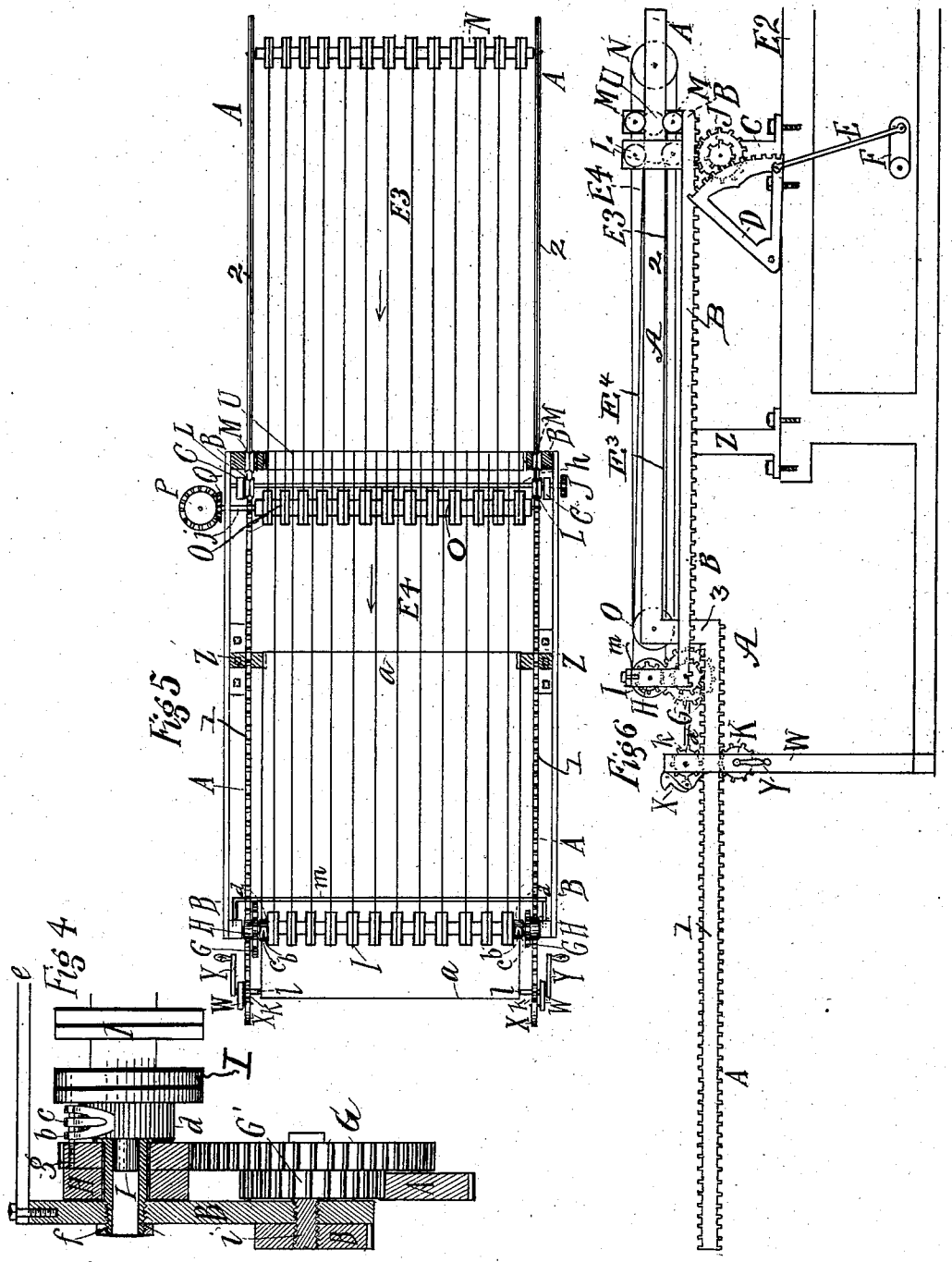
No. 739,233. PATENTED SEPT. 15, 1903.

A. STOCKER.

FRONT SHEET DELIVERY APPARATUS FOR PRINTING PRESSES.

APPLICATION FILED OCT. 9, 1902.

NO MODEL. 3 SHEETS—SHEET 2.



Witnesses

Julia A. Ledgerwood

W. H. Wallingford.

Inventor

Anthony Stocker

THE NORRIS PETERS CO., PHOTO-LITH., WASHINGTON, D. C.

No. 739,233. PATENTED SEPT. 15, 1903.

A. STOCKER.

FRONT SHEET DELIVERY APPARATUS FOR PRINTING PRESSES.

APPLICATION FILED OCT. 9, 1902.

NO MODEL. 3 SHEETS—SHEET 3.

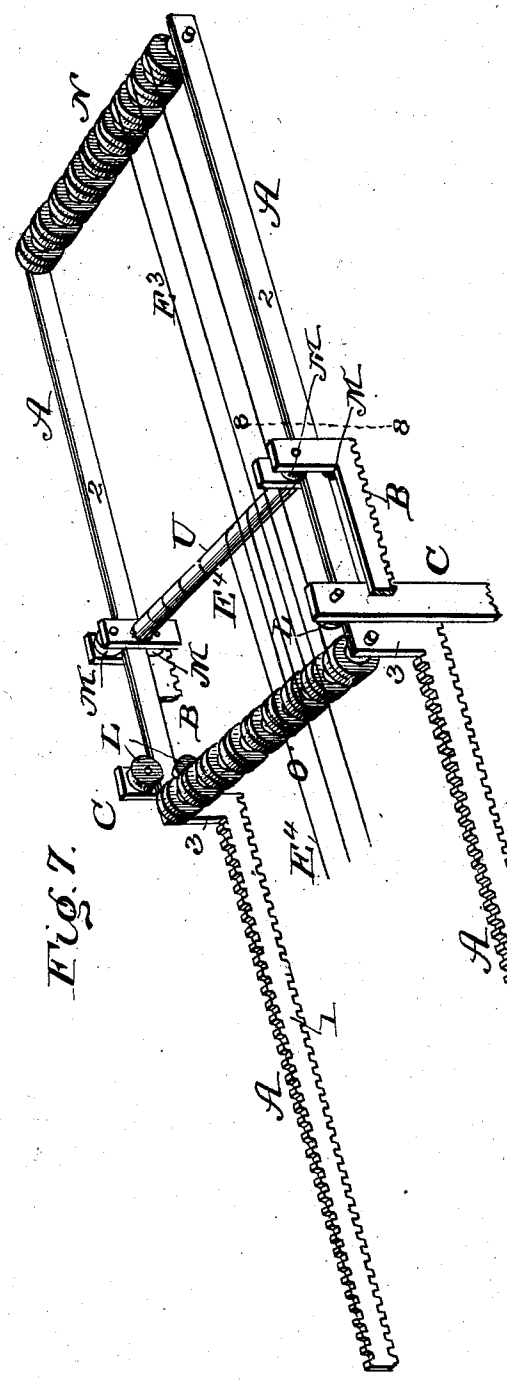


Fig. 7.

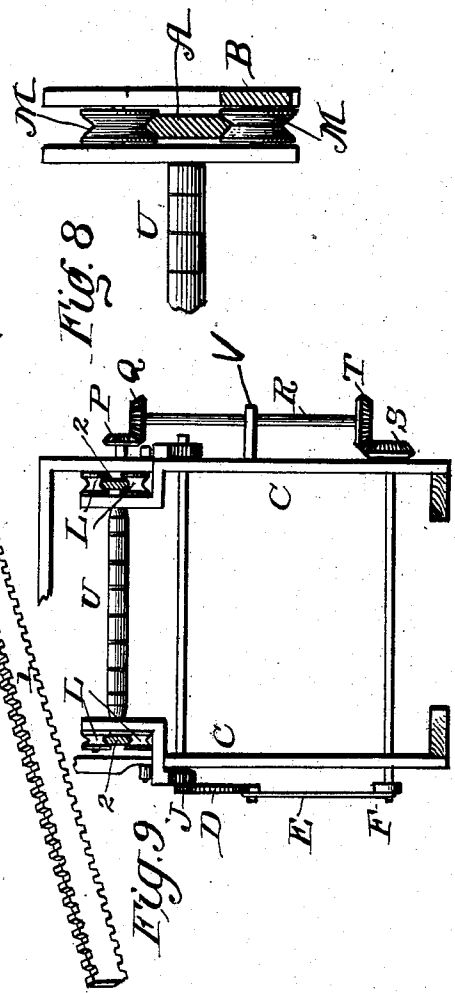


Fig. 8

Fig. 9.

WITNESSES:

Jos. A. Ryan

Amos W. Hart

INVENTOR

Anthony Stocker.

BY Munn & Co.

ATTORNEYS.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 739,233. Patented September 15, 1903.

UNITED STATES PATENT OFFICE.

ANTHONY STOCKER, OF DES MOINES, IOWA.

FRONT-SHEET-DELIVERY APPARATUS FOR PRINTING-PRESSES.

SPECIFICATION forming part of Letters Patent No. 739,233, dated September 15, 1903.

Application filed October 9, 1902. Serial No. 126,530. (No model.)

To all whom it may concern:

Be it known that I, ANTHONY STOCKER, a citizen of the United States, residing at Des Moines, in the county of Polk and State of Iowa, have invented certain new and useful Improvements in Front-Sheet-Delivery Apparatus for Printing-Presses, of which the following is a specification.

My invention is an improvement in that class of apparatus which forms an attachment of printing-presses, and is adapted to receive the printed sheet from the impression-cylinder and deliver it upon a receiving-board.

In carrying out my invention I employ two movable carriages and various adjunctive parts, the construction, arrangement, and combination of parts being as hereinafter set forth, reference being had to the accompanying drawings, in which—

Figure 1 is mainly a side view of the first carriage by which the printed sheet is received from the impression-cylinder. Fig. 2 is a side view of the entire apparatus. Fig. 3 is a view of the opposite side of the apparatus. Fig. 4 is an enlarged sectional view of ratchet-and-pawl mechanism and gearing, which will be hereinafter specifically described. Fig. 5 is a plan view of the apparatus. Fig. 6 is a side view of the apparatus similar to that shown in Fig. 2, save that both carriages are shown rolled out or extended so as to show the press-bed. Fig. 7 is a perspective view of the first carriage and a portion of the second carriage. Fig. 8 is a transverse vertical section on the line 8 8 of Fig. 7, the parts being shown enlarged. Fig. 9 is a vertical cross-section on the line 9 9 of Fig. 3.

The bed-frame E^2 of the apparatus (see Figs. 2, 3, and 6) is provided with vertical standards C W Z Y. The first carriage A, which is sometimes called the "stationary" carriage, since it has periods of rest, consists of two parallel rack-bars 1 and toothless bars 2, which are arranged in different horizontal planes and connected by vertical cross-pieces 3. The said frame is best shown in side view in Fig. 1. The rack-bar 1 is toothed on both sides and is supported and runs between two gears K *k*. The under gears K are mounted upon the same shaft, which is provided with a crank Y. (See Fig. 2.) The gears *k* are mounted upon stub-axles and work in contact with the upper side of the rack-bars 1. The gearing forms an attachment of the supporting posts or bars W, arranged at one end of the bed-frame E^2. The toothless bars 2 of the carriage A run between grooved rollers L, which are journaled on the vertical posts C. A roller N is journaled in the outer ends of the toothless bars 2, and another roller O is journaled at their inner ends. Tapes E^3 run on these rollers. (See Figs. 2 and 5.) A second or so-called "vibrating" carriage B consists, mainly, of bars 4, arranged parallel and toothed on the under side. The ends of said bars are provided with upright portions, one of which carries rollers M, which run in contact with the upper and under sides of the toothless bars 2 of carriage A. The other or front ends of the bars 4 are connected by a cross-bar *e* (see Figs. 2 and 4) and carry a transverse roller I, which is journaled in a peculiar way, as will be hereinafter described. Another roller U is journaled in the rear or inner ends of the carriage B. Tapes E^4 are applied to these rollers I U. Thus the first carriage A may be said to consist of side bars and rollers M O, carrying tapes E^3, while the second carriage B consists of rack-bars B, carrying rollers I U, having tapes E^4. It will be understood that in the operation of the apparatus the printed sheet is delivered first upon the tapes E^3 of the first carriage A and by them transferred on the tapes E^4 of the second carriage B and that the latter delivers said sheet upon the receiving-table *a*, arranged below. By reference to Figs. 2, 3, and 9 the gearing or chief means for operating the carriages A B will be seen. On one side of the apparatus a vertical shaft R is journaled in brackets V, attached to the frame of the apparatus and provided at its upper and lower ends with bevel-gears Q T. The upper gear Q meshes with a similar gear P, which is fast on the tape-roller O, while the lower gear T meshes with a similar gear S, fixed on the transverse shaft F′. The shaft F′ extends beyond the opposite side of the frame of the apparatus and is provided with a crank-arm F, which is connected by a rod E with a segment-gear D. (See Figs. 2 and 6.) The said gear D is pivoted at its apex upon the bed-frame E^2, and its toothed seg-

ment meshes with a pinion *j*, which is fast on a cross-shaft or axle having spur-gears J, that engage the toothed bars 4 of the second or vibrating carriage B. The shaft F', upon which the gear S and the crank F are mounted, as before stated, is driven by suitable gearing connected with the press proper, and it is unnecessary to illustrate it. It is apparent that as the crank F makes its rotation the segment-gear D will be vibrated in the arc of a circle and that the shaft connecting the gears J will thereby have a reciprocating rotary motion, by which means reciprocation will be imparted to the second or vibrating carriage B. On the other hand, the rotation imparted from the gear S (see Fig. 3) to the vertical shaft R will in turn effect the rotation of the roller O of frame A, and thus the tapes E^3 will be caused to travel in the direction of the arrows. (See Figs. 2, 3, and 5.) Dogs X (see Figs. 1, 2, and 3) are pivoted to the standards or posts W and are adapted to engage or lock with the outer ends of the rack-bars of carriage A when the latter is in the normal or retracted position indicated in said figures. When the said dogs are raised and thrown back in the position indicated in Fig. 6, the carriage A may be run out by rotating the hand-crank Y, forming an attachment of the shaft carrying the gears K. Referring to Fig. 4, it will be seen that the tape-roller I is journaled in a tube *f*, which is fixed in the vertical front portion of the bars constituting the frame of the second or vibrating carriage B. The said roller I is provided at each end with a ratchet-wheel *d*, with which a pawl *b* is adapted to engage. The pawl is mounted rotatably upon a journal *g*, fixed in a spur-gear H, and a spring *c* serves to hold the pawl normally engaged with the ratchet. The said gear H is journaled upon the tubular support *f* of the roller I and meshes with a larger gear G, whose pinion G' runs in contact with the upper side of the toothed bar 1 of carriage A. As shown in Fig. 4, the gear G and pinion G' are mounted upon a stub-shaft which is carried by the carriage-frame B. It will be understood that all the parts shown in Fig. 4 are duplicated on the other side of the apparatus—that is to say, the roller I is similarly provided at its other end with ratchet-and-pawl mechanism and is similarly geared with the toothed bar of frame B on that side.

In Fig. 2 the delivery apparatus is represented in the position in which the traveling tapes E^3 of the first carriage have delivered a printed sheet to the vibrating or second carriage B and the latter has completed a little more than half of its travel outward toward the upright or post W. It will be understood that its carriage B, which reciprocates, as before stated, moves between the upright C and W. When the vibrating carriage B moves outward toward the upright W, the pawl *b* slips over the back faces of the ratchet-wheel *d*, so that the roller I is not rotated and the tapes E^4 are not caused to travel, and hence the printed sheet which has been delivered upon the tapes E^4 is carried bodily toward the receiving-board *a*, (see Fig. 2;) but on the backward trip toward the impression-cylinder the pawl *b* grips or engages the ratchet *d*, so that the roller I is caused to rotate and the tapes E^4 are caused to travel in the direction indicated by the arrow, while at the same time the carriage B as a whole is moving away from the upright W. In this operation the printed sheet is forced or carried off from the tapes E^4 and delivered upon the receiving-board *a* with its printed side up. The printed side of the sheet does not come in contact with anything on its way from the impression-cylinder to the receiving-board *a*. Thus the intermittent action of the vibrating or second carriage B is due to and controlled by the operation of the gears G G' H and the ratchet and pawl *b d*, and that this result will be unattainable but for the adaptation of the roller I to rotate free in the bearings *f*. The reciprocation of the carriage B is caused by the segment-gear D and connected parts, the shaft F' being, as before stated, suitably connected with the press or the motor thereof.

It will be understood that when the carriages A B are moved out, as shown in Fig. 6, the gears Q and P are disengaged and that the engagement is restored when the carriages move back to the original position. The rear roller U of the carriage B, on which the tapes E^4 run, is made smaller than the roller O of the carriage A, so that the said roller U may be arranged between the upper and lower runs of the tapes E^3 without coming in contact therewith. Thus the said roller U is adapted to reciprocate, together with the remaining portions of the carriage B, without touching the sheet or the tapes E^3. The press-bed E^2 is exposed and freed from obstruction for work when the vibrating carriage B is run out to the extreme position. (Shown in Fig. 6.) To do this, the locking devices or dogs X are lifted. Then by the use of the crank Y the entire delivery apparatus is run out. The said apparatus is run back into position over the press-bed E^2 by use of the same crank Y, it being of course rotated in the opposite direction. I desire it to be understood, however, that this operation may be effected by power applied from the press, if desired. When the delivery apparatus is at its extreme point of movement away from the impression-cylinder and the press-bed is exposed, as in Fig. 6, power is applied by means of a crank Y to run the apparatus back into position over the press-bed E^2, and when its original position is reached it is again ready for work and the dogs X will fall into place.

As shown in Fig. 5, the roller O is formed with a series of circumferential grooves or depressions between its pulleys or enlarged portions upon which the tapes E^3 run. The enlarged portions are provided with circumfer-

ential grooves for receiving the tapes, and thus constitute practically so many pulleys fixed upon one and the same shaft, so as to rotate together. The rollers N O are similarly constructed, with enlarged portions serving as pulleys and with intervening reduced or narrow portions. It will be seen that the tapes E^4, which run on shafts I U, extend through the circumferential grooves of spaces that intervene the pulleys of shaft O, while the tapes E^3, which run on shafts N and O, pass over and under the shaft U, neither roller O or U being touched by the respective tapes. Thus the roller U is adapted to work or rotate between the tapes E^3 of the carriage A without touching the printed sheet, while the vibrating carriage B is making its backward trip toward the impression-cylinder or to the point where the said carriage B receives a sheet from the carriage A.

In Figs. 2 and 3, *m* indicates a wire guard under which the printed sheet is retained in place, while the vibrating carriage B carries the said sheet toward the receiving-board *a*. This sheet is taken under said guard *m* just at the point where the carriage B receives it from the stationary or first carriage A, and thus the front end of the sheet is prevented from flying up, as it might otherwise do, in the movement toward the receiving-board. It will be understood that the sheet passes between this guard and the tapes E^4 lined below.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination with the first or normally stationary carriage, composed of rack-bars and toothless bars arranged in different horizontal planes rigidly connected, with a second or vibrating carriage composed of parallel rack-bars, means for operating the two carriages whereby they are reciprocated toward and from the impression-cylinder, and two series of tapes mounted on the respective carriages, and means for causing the tapes to travel substantially as shown and described.

2. The combination with the first or normally stationary carriage, comprising parallel bars arranged in different horizontal planes and two of them toothed as described, rollers for supporting the toothless portion of the said bars, gears meshing with the toothed portion of said bar, and serving to support the same, grooved rollers journaled in the upper portion of the carriage, and tapes applied thereto, means for rotating one of the rollers, whereby the tapes are caused to travel, and means for reciprocating the said carriage bodily, substantially as shown and described.

3. The combination with the first or normally stationary carriage having endless traveling tapes and rollers to which the same are applied, means for imparting reciprocation to such carriage, a second carriage geared with the first carriage, and means for imparting independent movement thereto, rollers journaled in the frame of the second carriage, and one of them provided with a ratchet and pawl and connected gearing arranged as described, whereby the ratchet-and-pawl mechanism is brought into action when the carriage moves in one direction and thus causes the endless tapes to travel for delivering the printed sheet in the manner specified.

4. The combination with the first or normally stationary carriage having toothed or rack bars and means for reciprocating it as described, delivery mechanism arranged in the said carriage, and comprising endless tapes and rotatable rollers, of a second carriage comprising toothed or rack bars, and two rollers to which endless tapes are applied, one of said rollers being arranged between the tapes of the first carriage and adapted to reciprocate in such space toward and from the impression-cylinder, and the other roller having a ratchet-and-pawl mechanism whereby it is rotated during the backward movement of the carriage so that the printed sheet received from the first carriage is delivered from the second one in the manner described.

5. The combination with the two carriages, each provided with rack-bars and working in guides as described, and with rotatable rollers and tapes applied thereto, the driving-roller of the first or normally stationary carriage having a bevel-gear applied to one of its ends, of the driving-gearing comprising a vertical shaft having a bevel-gear adapted to engage the gear on said roller, and means for reciprocating the two carriages, substantially as shown and described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

ANTHONY STOCKER.

Witnesses:
JULIA A. LEDGERWOOD,
W. H. WALLINGFORD.