No. 726,161. PATENTED APR. 21, 1903.

C. G. HARRIS.

DELIVERY MECHANISM FOR PRINTING PRESSES.

APPLICATION FILED DEC. 14, 1901.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1.

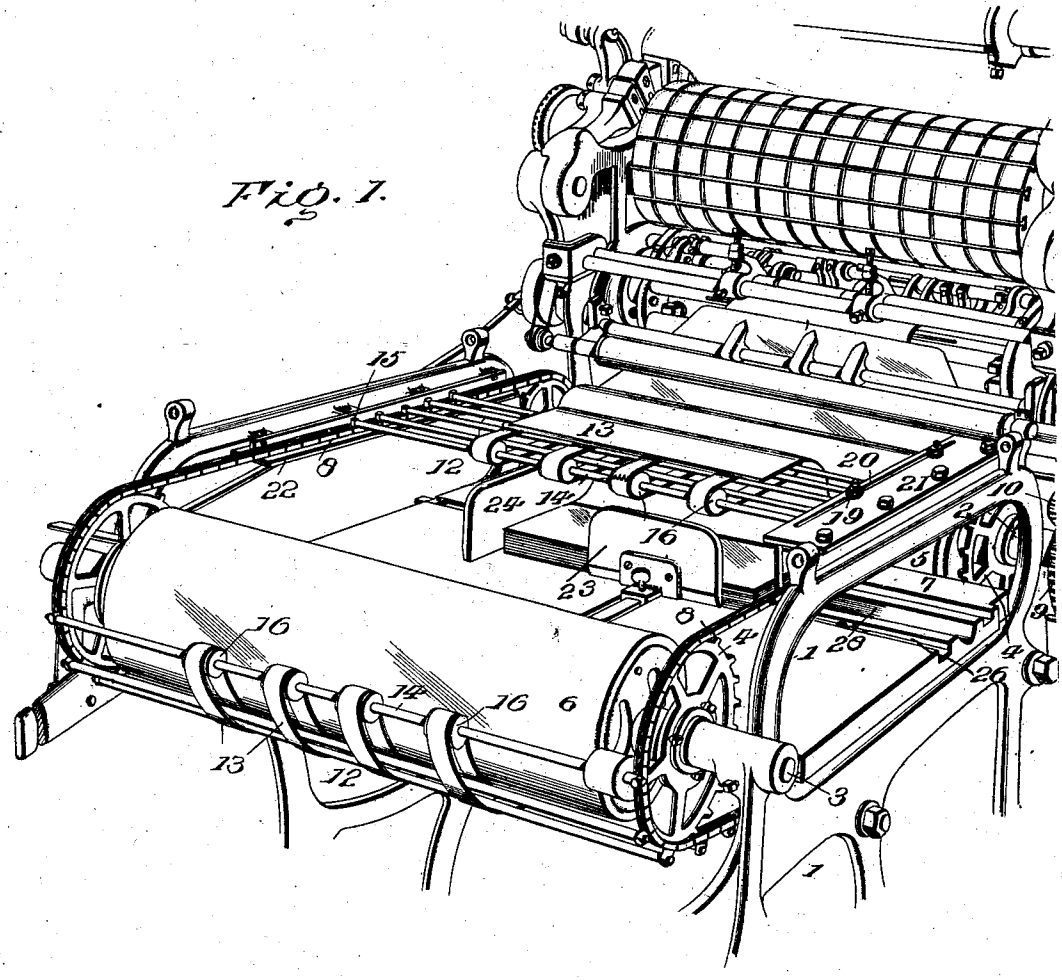
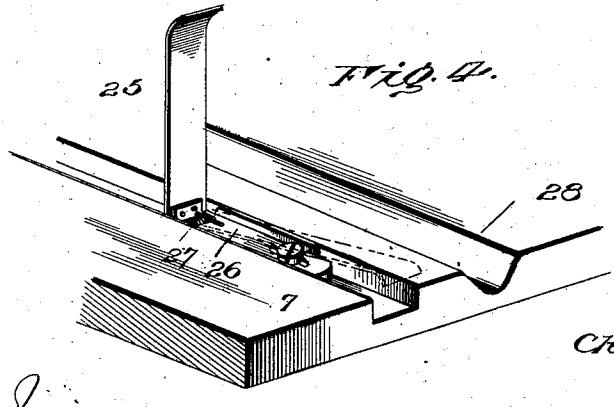


Fig. 4.



Witnesses

Inventor

Charles G. Harris.

By

Attorney

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

No. 726,161. PATENTED APR. 21, 1903.

C. G. HARRIS.

DELIVERY MECHANISM FOR PRINTING PRESSES.

APPLICATION FILED DEC. 14, 1901.

NO MODEL. 2 SHEETS—SHEET 2.

Fig. 2.

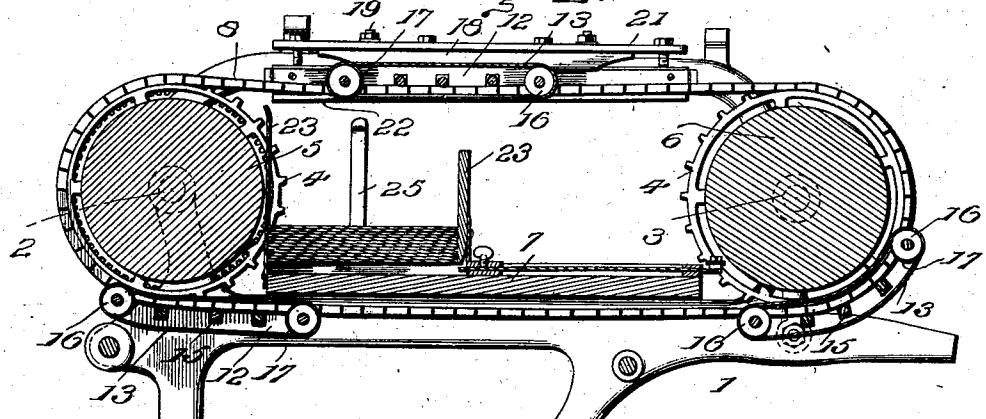
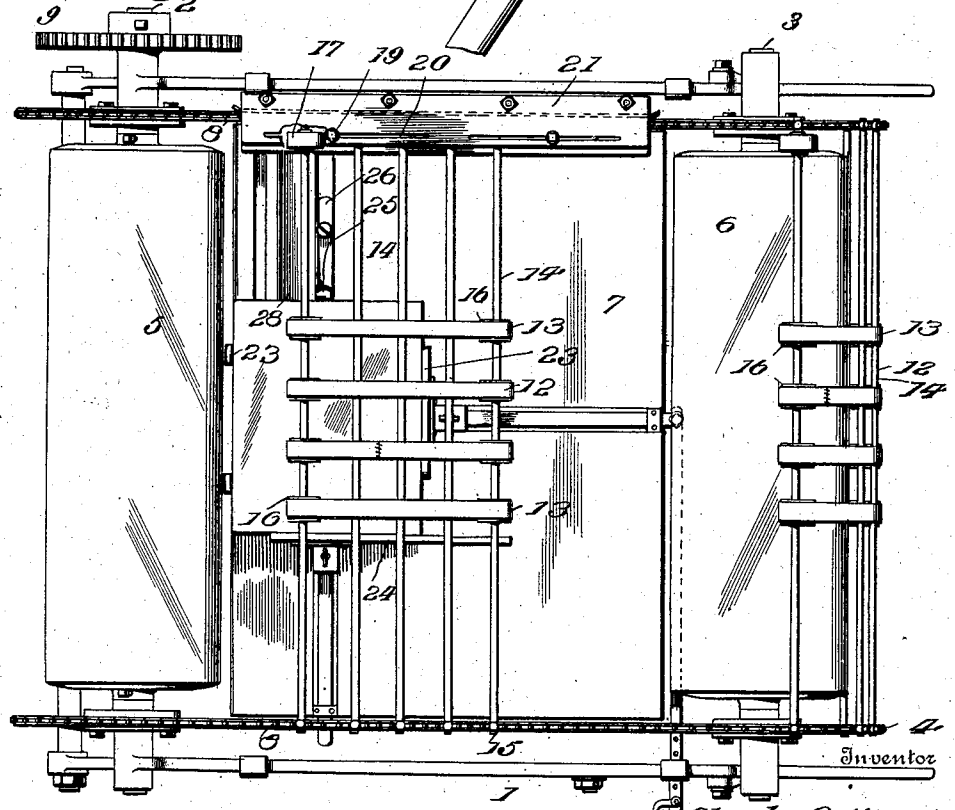


Fig. 3.



Witnesses

Inventor

Charles G. Harris.

By

Attorney

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

UNITED STATES PATENT OFFICE.

CHARLES GRANT HARRIS, OF NILES, OHIO, ASSIGNOR TO THE HARRIS AUTOMATIC PRESS COMPANY, OF NILES, OHIO, A CORPORATION OF OHIO.

DELIVERY MECHANISM FOR PRINTING-PRESSES.

SPECIFICATION forming part of Letters Patent No. 726,161, dated April 21, 1903.

Application filed December 14, 1901. Serial No. 85,875. (No model.)

To all whom it may concern:

Be it known that I, CHARLES GRANT HARRIS, of Niles, in the county of Trumbull and State of Ohio, have invented certain new and useful Improvements in Delivery Mechanism for Printing-Presses; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

Heretofore much difficulty has been experienced in the delivery or discharge of rapidly-operating job-printing presses, especially of the style known as the "Harris automatic," the operation of which is so rapid that the sheets of paper unless otherwise controlled slide each over the others in such rapid succession as to cause smearing of the ink and want of uniformity in the stack or pile on the delivery-table. To avoid these difficulties, to provide for the effective delivery of the sheets as they leave the press at whatever speed the latter may be operated and without one sheet overtaking another while in travel, and at the same time to neatly stack the sheets one upon the others are the primary objects of this invention.

A further object is to carry out the objects above stated with but a single engagement of each sheet with the delivery mechanism.

A further object is to insure the even stacking of the paper and to allow it to be readily removed from the table without interfering with the operation of the deliverer; and a further object is to provide mechanism of the character stated for handling stock or sheets of paper of various sizes.

Means comprehended by my invention for carrying out the objects stated will be hereinafter fully set forth, and the invention will be particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a view in perspective, a portion of a printing-press being indicated. Fig. 2 is a central longitudinal sectional view looking in the direction opposite to that of Fig. 1. Fig. 3 is a plan view. Fig. 4 is a detail.

Referring to the drawings, 1 designates a frame which may be secured to or formed as part of the frame of a printing-press or other machine or placed in suitable relation thereto.

2 and 3 are inner and outer shafts; 4, sprocket-wheels on such shafts; 5 and 6, drums or large rollers on such shafts, and 7 the delivery-table, supported by the frame intermediate the bearings of the two end shafts.

8 8 designate two endless chains engaging wheels 4 and extended over and beneath table 7—that is, the table is located between the upper and lower folds of the chains. Motion is imparted to both chains through a gear-wheel 9 on shaft 2, driven by an intermediate gear-wheel 10, operated by the press-gearing at the same speed as the rotation of the impression-cylinder of the press, by which means the two chains travel at a speed corresponding to that of the impression-cylinder. These chains carry a number of carriers 12, the distance between adjacent carriers being such as to allow for any size sheet which the carriers may be required to handle to pass downwardly between the two carriers without interfering with a successive sheet or being engaged by the next following carrier. I have shown three carriers; but it is obvious that a greater or lesser number may be used under certain conditions. The advantage in providing three carriers is that I am enabled thereby to secure sufficient space between the two end shafts to accommodate a table of ample dimensions for receiving comparatively large sheets of paper and at the same time insure the presence of a carrier at the proper point to receive the discharge from the press at whatever rate of speed the same may be operated. Each carrier is shown as consisting of a series of endless tapes or bands 13 and cross-rods 14, the latter being supported at their ends in bearings 15, formed with or secured to certain of the links of each chain. The forward and rearward cross-rods of each carrier have peripheral enlargements 16, with which the several tapes or bands engage. The intermediate rods of each carrier serve to keep the folds of the tapes apart as they travel around the end drums, thus avoiding the necessity of overcoming slack in the carriers after they pass free of the drums.

As a carrier comes up over the inner drum

and begins its forward horizontal travel it is in position to receive the advance end of the sheet or other stock being discharged from the press, and as the carrier travels at the same rate of speed as the sheet the latter will move in unison with and be supported by the former in the forward travel. As soon as the sheet is free of the impression-cylinder, and hence wholly supported by the carrier, the several endless tapes thereof are caused to rotate in a direction the reverse of the bodily movement of the carrier itself, with the result that the carrier will move out from beneath the sheet of paper and allow the latter to drop onto table 7. This rotation of the endless tapes is accomplished by a ring or peripheral enlargement 17 on the end of the rearmost cross-rod of the carrier engaging the under side of a contact-plate 18, overhanging one of the carrier-chains. This plate is adjustably secured to frame 1 by nutted bolts 19, passed through longitudinal slots 20 of a second overhanging plate 21, secured to such frame. 22 designates tracks for supporting the chains as they travel horizontally. By adjusting the contact-plate 18 longitudinally the point at which the endless tapes are caused to travel reversely may be regulated to suit stock of different sizes—that is to say, for large stock the engagement of the cross-rod with the contact-plate will be postponed, while for small stock the engagement will occur soon after such cross-rod begins its forward horizontal movement.

On the delivery-table 7 are adjustably mounted inner and outer gages 23 and a side gage 24. A second side gage 25 is in the form of a bar hinged to a horizontal bar 26, adjustable transversely of the table, the gage-bar being held normally vertically or in its upright position by a spring 27. Adjacent to this side gage 25 table 7 has a groove or cut-out 28 sufficiently wide to admit the hand of a person to grasp the pile of stock located on the table and to pull the same outwardly to one side, the side gage 25 thereupon being moved downwardly into the groove wherein its adjusting-bar 26 is located. As the stock is thus moved to one side and is free of the side gage the latter will immediately return to its normal position under the action of its spring. By this means it will be noted that the gages retain the stock in proper position as it is piled on the table, and yet permit of its ready removal at any time. The hand cut-out is extended inwardly from one side of the table to and terminates within the field occupied by the stock deposited thereon, which stock extends over such cut-out to allow of its being easily grasped.

From what has been said it will be noted that I have provided means whereby stock discharged from a rapidly-operating printing-press may be quickly and evenly piled on a delivery-table, that its delivery onto the table is effected in a single handling of a sheet or other stock and before the carrier completes the forward movement over the table, and that the point of discharge of the stock from the carrier is controlled by the adjustment of the contact-plate, which gives to the carrier-tapes a travel in a direction the reverse of the bodily movement of the carrier. It will also be observed that the stock may be readily withdrawn from the table at any time without interfering with the operation of the carriers.

I claim as my invention—

1. The combination with a printing or other machine, of a delivery-table, a carrier movable horizontally over such table and designed to loosely support a sheet during its movement away from the machine, and means for automatically arresting the travel of the sheet with the carrier before the latter reaches the limit of its travel over the table for effecting the immediate discharge of the sheet direct onto the table, as set forth.

2. The combination with a delivery-table, of an endless series of carriers movable horizontally above and beneath such table, each carrier being designed in its movement over the table to loosely support a sheet of paper, and means for automatically arresting the travel of such sheet before the carrier reaches the limit of its travel over the table, as set forth.

3. The combination with a printing or other machine, of a delivery-table, an endless series of carriers movable horizontally over and beneath such table, each carrier being designed in its movement over the table to loosely support a sheet of paper, means for automatically arresting the travel of such sheet before the carrier reaches the limit of its travel over the table, and means for actuating said carriers at a speed corresponding to the speed of the discharge of said machine, as set forth.

4. The combination with the delivery-table, of the series of carriers movable over and beneath such table, each carrier having a series of endless tapes or belts designed to loosely support a sheet of paper, and means for causing said tapes to travel in a direction the reverse of the bodily movement of the carrier as the latter travels over the table, substantially as set forth.

5. The combination with the delivery-table, of the series of carriers movable over and beneath such table, each carrier having a series of endless tapes or belts designed to loosely support a sheet of paper, and adjustable means for causing said tapes at a predetermined point to travel in a direction the reverse of the bodily movement of the carrier as the latter travels over the table, substantially as set forth.

6. A sheet-deliverer comprising, in combination, a carrier having endless tapes, two endless chains for moving such carrier, a delivery-table interposed between the folds of such chains, and means for causing the carrier-tapes to travel in a direction the reverse

of their bodily movement as the carrier moves over the table, substantially as set forth.

7. A sheet-deliverer comprising, in combination, a carrier composed of a series of cross-rods and endless tapes passed around such rods, endless chains to which said cross-rods are secured, a delivery-table interposed between the folds of such chains, and means for causing the carrier-tapes to travel in a direction the reverse of their bodily movement as the carrier moves over the table, substantially as set forth.

8. The combination with the table, and the two end drums, of the endless series of carriers movable over and beneath such table and designed to engage said drums, each carrier comprising a series of cross-rods and a series of endless tapes passed around such cross-rods, the intermediate rods being located between the folds of such tapes, and means for rotating the tapes in a direction the reverse of the bodily movement of the carrier, substantially as set forth.

9. The combination with the frame, the end shafts, and the wheels thereon, of the endless chains engaging such wheels, the series of carriers having cross-rods carried by said chains, each carrier having tapes surrounding said cross-rods, one of said cross-rods having at one end a peripheral enlargement, a longitudinally-adjustable contact-plate overhanging the upper fold of one of the chains and designed to be engaged by such enlargement for rotating the tapes in a direction the reverse of the bodily movement of the carrier, and the delivery-table intermediate the folds of the chains, substantially as set forth.

10. The combination of a delivery-table, a gage mounted thereon inwardly from the edge, such gage being normally upright and designed to be moved downwardly out of the way into an approximately horizontal position in withdrawing stock from the table, means for automatically returning the gage to and holding it in its normal position, and means adjustably secured to the table for holding the gage at different points thereon, as set forth.

11. A delivery-table having a groove, a bar adjustably secured within such groove, a gage hinged at its lower end to such bar and capable of being moved downwardly into an approximately horizontal position in withdrawing stock from the table, and a spring for normally holding said gage vertically, as set forth.

12. A delivery-table having a cut-out extending from one edge inwardly to the field occupied by the stock, a gage adjacent to such cut-out normally occupying an upright position and designed to be lowered by the withdrawal of stock from the table, and means for returning and holding the gage in its normal position, substantially as set forth.

13. The combination with a delivery-table, of end and side gages, said table having a cut-out extending inwardly from one side, for the purpose stated, one of said side gages being hinged at its lower end, and means for holding such gage in its normal upright position, substantially as set forth.

14. The combination with an endless series of carriers designed to loosely support a sheet of paper, of a table over and beneath which said carriers are designed to travel, said table having a cut-out extending inwardly from one side to the field occupied by the paper or stock discharged onto the table, and means for automatically arresting the travel of a sheet with a carrier as the latter moves over the table, substantially as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

CHARLES GRANT HARRIS.

Witnesses:

A. M. HENDERSON,

C. G. PRITCHARD.