

M. A. DROITCOUR.
 ROTARY SHEET PRINTING PRESS.
 APPLICATION FILED NOV. 2, 1910.

997,051.

Patented July 4, 1911.

Fig. 1

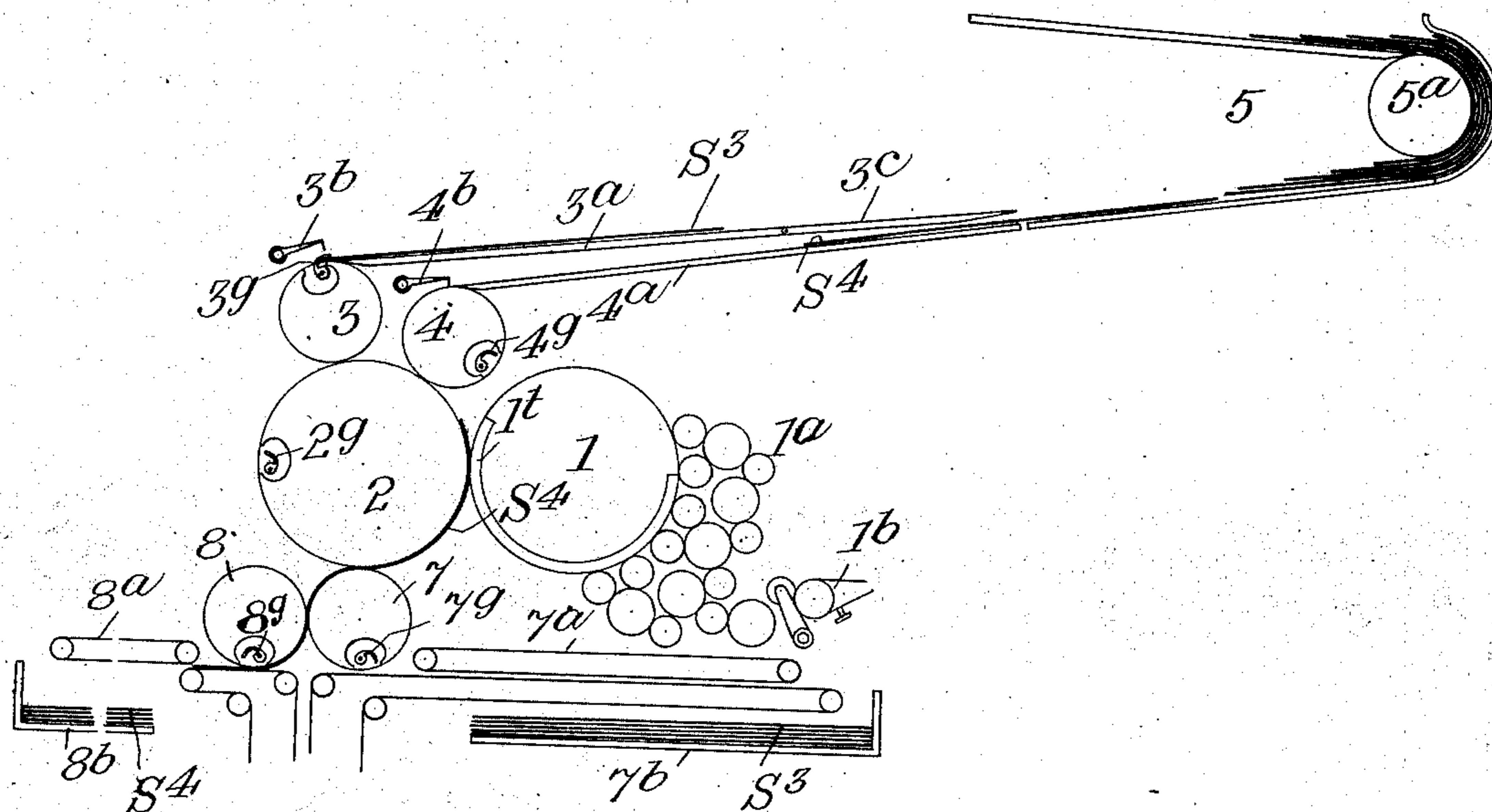
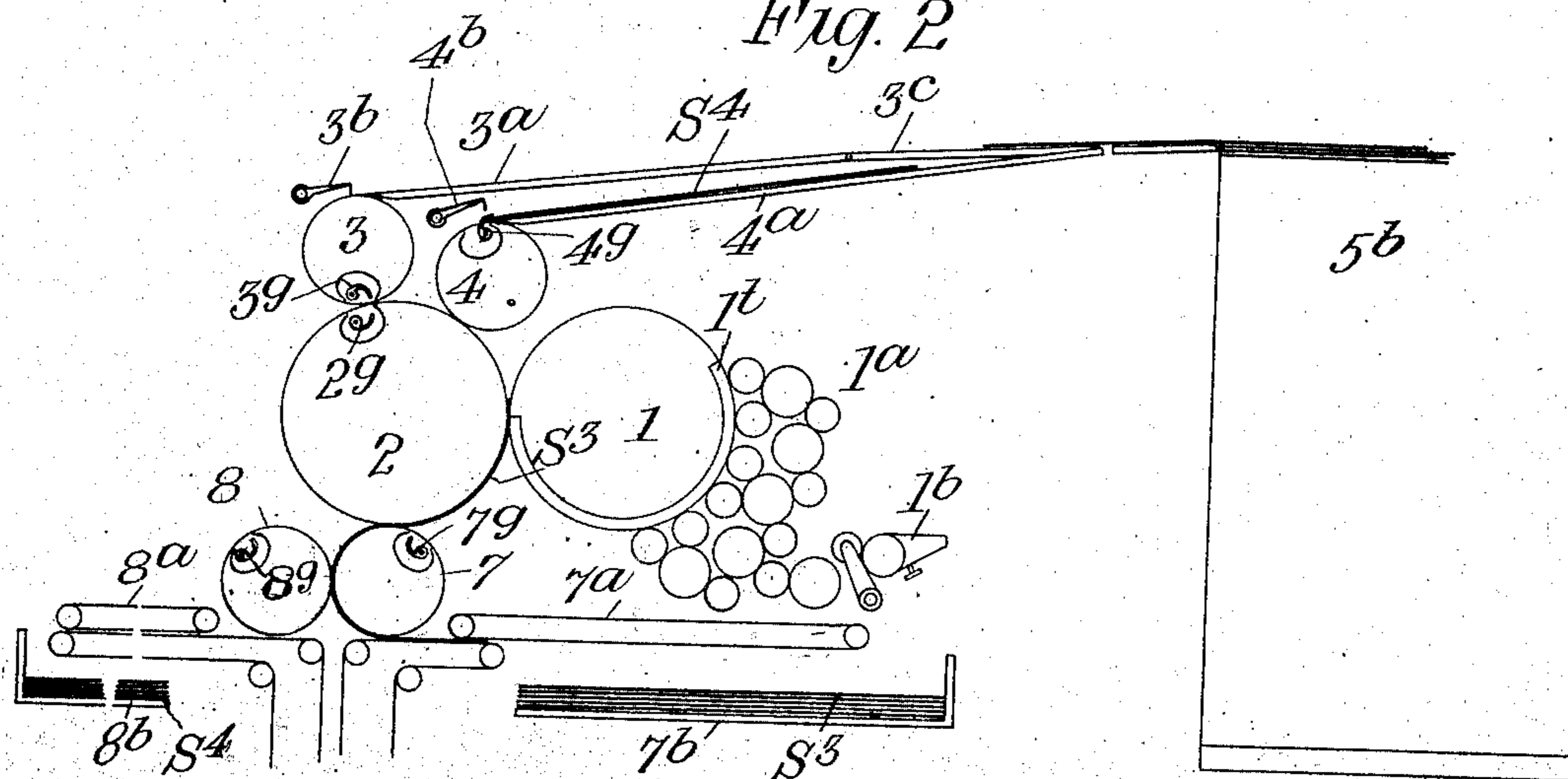


Fig. 2



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UNITED STATES PATENT OFFICE.

MICHAEL ANDREW DROITCOUR, OF OAK PARK, ILLINOIS, ASSIGNOR TO MIEHLE PRINTING PRESS AND MANUFACTURING COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

ROTARY SHEET-PRINTING PRESS.

997,051.

Specification of Letters Patent,

Patented July 4, 1911.

Application filed November 2, 1910. Serial No. 590,382.

To all whom it may concern:

Be it known that I, MICHAEL A. DROITCOUR, of Oak Park, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Rotary Sheet-Printing Presses; and I hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form part of this specification.

This invention is an improvement in sheet printing presses of the general type shown in my application for patent Serial No. 570,012, filed July 1st, 1910; and the object of the present invention is to simplify the construction of the press shown in my said application, and to enable alternate sheets taken successively from one pile or feed table,—which may be an automatic sheet feeder,—to be placed upon separate registering tables upon which the sheets are positioned by proper gages; and from said registering tables the sheets are taken alternately by means of related transfer reels, or cylinders, and carried to the grippers on the impression cylinder, by which the sheets are successively presented to the printing surface or plate cylinder, and the printed sheets are thereafter taken from the impression cylinder by a delivery cylinder or reel, which is preferably arranged to surrender alternate sheets to one delivery mechanism, by which such sheets are transported and deposited upon one table, while every other sheet is taken from said delivery reel by a second delivery reel and transferred by the latter reel to a second delivery mechanism by which the latter sheets are separably deposited upon another table. In this manner the sheets may be adjusted comparatively slowly on the respective registering tables, are rapidly printed, and are then comparatively slowly delivered; so that ample time is provided for accurately positioning each sheet upon its registering table so that it can be accurately positioned before being seized by the transfer reel grippers; and ample time is given for the delivery of each sheet. In this way the actual time allowed for the positioning of each sheet before presentation to the impression cylinder is approximately twice the time required for the printing of such sheet, and the time

required for the delivery of each printed sheet is also approximately twice the time required for the printing thereof. Therefore I am enabled to operate the printing cylinders at very high speed while operating the feed and delivery mechanisms at a comparatively very low speed. The delivery mechanisms may be of any suitable construction, such for example as shown in my Patent No. 960,007 of May 31, 1910.

I will now describe the invention with reference to the accompanying drawings; the mechanical details of construction of the elemental parts of such press being so well known that any one familiar with the art can readily construct and operate a machine in accordance with the invention from the information contained in the following description and the said drawings.

In said drawings—Figure 1 is a diagrammatical longitudinal vertical sectional elevation of a rotary cylinder sheet printing press embodying the invention with one form of automatic sheet feeder, and indicating the positions of parts when a sheet is about to be taken from the upper registering table; and Fig. 2 is a similar view, with another form of automatic feeder, indicating the positions of parts when a sheet is about to be taken from the lower registering table.

In the drawings 1 represents a form or plate cylinder adapted to carry a single form or type 1^a supplied with ink from a fountain 1^b by means of any suitable system of inking rolls, indicated at 1^a.

With the plate cylinder 1 coöperates an impression cylinder 2, which is provided with grippers 2^s that are adapted to take sheets alternately from two transfer reels or cylinders 3 and 4, and present the sheets successively to the form on cylinder 1 and thereafter surrender them to a transfer reel or cylinder 7.

The reel 3 has grippers 3^s adapted to take sheets from a registering table or board 3^a on which the sheet is fed up against registering gages 3^b of the usual construction. The reel 4 has grippers 4^s adapted to take sheets from a registering table 4^a provided with registering gages 4^b. The sheets S³, S⁴, may be fed to the tables 3^a, 4^a by hand or automatically. I prefer to use an automatic sheet feeder, and have indicated at 5 in

Fig. 1 of the drawings an automatic sheet feeding device of the type shown in the Cross Patents No. 799,457 of September 12, 1905, and No. 812,260 of February 13, 1906, in which a pile of sheets is bent around a roll 5^a and fed successively forward by automatic mechanism, not shown, on to the tables 3^a, 4^a. The table 3^a may be provided with movable fingers or guides 3^c adjacent the end of the feed table 5, and operated by suitable mechanism, not shown, so that alternate sheets fed forward by the feeder 5 will be directed onto the table 3^a, and every other sheet onto the table 4^a.

Instead of the rotary feeder indicated in Fig. 1 a pile feeder might be employed as indicated at 5^b in Fig. 2, such being well known, and adapted to automatically feed the sheets to the tables 3^a, 4^a, as described.

Automatic sheet feeders being well known need no particular description herein, and I have simply indicated such feeders diagrammatically in the drawings to show that any style of automatic sheet feeder could be employed, but the invention does not reside in the feeder, and the registering tables 3^a, 4^a might be supplied with sheets fed thereto by hand from an ordinary feed table.

The grippers 3^s, 4^s are timed to take sheets from their respective tables 3^a, 4^a, and to surrender the sheets to the grippers 2^s at the proper time; and grippers 2^s are operated to take sheets alternately from reels 3 and 4 at the points of juxtaposition of the reels and cylinders. As many means for so operating the grippers are well known it is not necessary to illustrate same herein.

The printed sheets are taken from the cylinder 2 by the grippers 7^s on the transfer reel or cylinder 7, which are arranged to take all the sheets from cylinder 2 but will deliver alternate sheets to a delivery mechanism 7^a and the other sheets to a delivery reel 8. The delivery mechanism 7^a may be like that shown in my Patent No. 960,007 aforesaid; or of any other suitable construction adapted to deposit the sheets upon a receiving table 7^b, or other suitable point of deposit.

The sheets taken from cylinder 7 by the delivery reel 8 are delivered to a second delivery mechanism 8^a, which may also be like that described in my said patent, and by which they are deposited upon a table 8^b. I have not considered it necessary to illustrate in the drawings the mechanism for feeding the sheets, or for operating the switch 3^c, nor the sheet gages 3^b, 4^b, nor the grippers of the several cylinders; as such mechanisms are common and well understood by those familiar with the art, and will be readily supplied by the ordinary press mechanic.

The operation of the press is as follows: The sheets are fed alternately to the registering tables 3^a 4^a and assuming that a sheet

is properly positioned on table 3^a (see Fig. 1) the grippers 3^s of reel 3 seize such sheet and carry it to the cylinder 2 whose grippers 2^s take the sheet and present it to the form on cylinder 1 and then surrender it to the grippers 7^s of transfer reel 7, which in turn take such sheet and surrender it to the delivery 7^a by which it is deposited upon table 7^b. While the sheet from table 3^a is being printed another sheet is being properly positioned upon table 4^a and the grippers 4^s of reel 4 take the sheet from table 4^a (see Fig. 2) in time to deliver it to the grippers 2^s on cylinder 2 upon the next revolution thereof succeeding the printing of a sheet taken from table 3^a, and the sheet taken from table 4^a will be presented by cylinder 2 to the plate cylinder 1 and then surrendered by cylinder 2 to the transfer reel 7, but the parts are preferably so arranged and timed that the grippers 8^s on reel 8 will take this sheet from reel 7 and transfer it to the delivery 8^a, by which it is deposited on table 8^b; and at the next revolution of the cylinder 2 a sheet taken from the table 3^a will be printed.

In the preferred mode of operating the press the parts are so arranged and timed that the sheets will be alternately taken by cylinder 2 from the reels 3 and 4; and the sheets taken from table 3^a will be printed and finally deposited upon table 7^b; while the sheets taken from table 4^a will be printed and finally deposited upon table 8^b. Thus the sheets fed from both registering tables 3^a, 4^a will be printed on the same form, by the same plate and impression cylinders, and yet may be delivered at different points. When the press is operated in this manner the time required for two impression operations of the plate and impression cylinders 1 and 2 is allowed for positioning a sheet on either registering table 3^a or 4^a; and a like amount of time is allowed for depositing a sheet upon either table 7^b or 8^b. In other words twice as much time is allowed for the feeding and delivery of a sheet as is allowed for the printing thereof, which is of the utmost advantage in producing fine work at high speed. The separate delivery of the sheets fed from the tables 3^a and 4^a also allows the sheets fed from the different tables to be registered at successive impressions if desired because all the sheets fed from table 3^a, and deposited on table 7^b can be again placed on table 3^a and run through the machine if desired; and similarly all the sheets fed from table 4^a can be again placed on table 4^a and passed through the machine if desired. The additional time allowed for depositing the sheets also lessens the liability of offset, by giving the ink more time to set before the finished sheet is deposited on the pile. The sheets delivered on table 7^b will be deposited

printed side up, while the sheets delivered on table 8^b will be deposited printed side down.

The delivery reel grippers might be adjusted so that the sheets printed on table 3^a could be deposited on table 8^b and the sheets from table 4^a might be deposited on table 7^b, or so that all the sheets will be deposited on either table 7^b or 8^b, if it is not desired to keep them separate. But it is my purpose to feed and deliver the sheets separately as above explained. As compared with the press shown in my application and patent aforesaid it will be seen that in the present invention the sheets are positioned by gages 3^b, 4^b at the points where they are to be gripped; that two feed or transfer gripper reels are used to transfer sheets from the table to one common impression cylinder; that said reels deliver sheets to said cylinder at different points of its rotation; that all the sheets are delivered from the impression cylinder at the same point to one transfer reel; that alternate sheets are taken from the first transfer reel by another transfer reel so that alternate sheets are delivered by the first transfer reel to one delivery mechanism, while the other sheets are delivered by the second transfer reel to another delivery mechanism, and that by the employment of such transfer reels each sheet is under absolute control from the moment it leaves its table 3^a, or 4^a, until it enters the delivery tapes.

In the practical construction of the press suitable tripping mechanism should be provided whereby the impression will be thrown off if a sheet is not properly fed to the impression cylinder from either registering table so that the blanket on the impression cylinder would not be printed upon in case a sheet was not fed, or was improperly fed thereto.

What I claim is:

1. In a printing mechanism, the combination of an impression cylinder, a plate cylinder co-acting therewith, a feed table, a pair of registering tables, and a pair of gripper reels, one for each table, adapted to transfer sheets from the registering tables to the impression cylinder.

2. In a printing mechanism, the combination of an impression cylinder rotating in one direction, a printing surface co-acting therewith, a pair of superposed sheet tables, a gripper reel for each table adapted to transfer sheets from such table to the impression cylinder; with two sheet delivery mechanisms one receiving sheets fed from one of the sheet tables and the other receiving the alternate sheets fed from the other sheet table.

3. In a printing mechanism, the combination of an impression cylinder rotating in one direction, a plate cylinder co-acting

therewith, a pair of superposed sheet tables, a pair of transfer gripper reels one for each table adapted to transfer sheets from such tables to the impression cylinder at different points; and a pair of sheet delivery mechanisms, one receiving sheets fed from one of the tables and the other receiving the alternate sheets fed from the other table.

4. In combination, an impression cylinder rotating in one direction, a printing surface co-acting therewith, two feed tables one above the other, two reels one for each table adapted to alternately transfer sheets from said tables to the impression cylinder at different points, and means for removing all the sheets from the cylinder at the same point, and means for delivering the sheets at the same or different points.

5. In a printing mechanism, the combination of an impression cylinder, a printing surface co-acting therewith, a pair of sheet tables, a reel for each table adapted to transfer sheets from such table to the impression cylinder, a delivery reel taking all the sheets from the impression cylinder at one point, a second delivery reel taking alternate sheets from the first delivery reel, and delivery mechanisms receiving sheets from the said delivery reels.

6. In combination an impression cylinder, a printing surface co-acting therewith, two feed tables, two gripper reels for transferring sheets from the respective tables to the impression cylinder at different points, with a transfer reel taking all the sheets from the impression cylinder at one point, a second transfer reel taking alternate sheets from the first transfer reel; a delivery mechanism receiving sheets from the first transfer reel, and a second delivery mechanism receiving sheets from the second transfer reel.

7. In a printing mechanism, the combination of an impression cylinder, a plate cylinder co-acting therewith, a pair of sheet tables, a gripper reel adjacent each table for transferring sheets from such table to the impression cylinder, a delivery reel taking all the printed sheets from the impression cylinder, a second delivery reel taking alternate sheets from the first delivery reel, a delivery mechanism receiving sheets from the first delivery reel, and a second delivery mechanism receiving sheets from the second delivery reel.

8. In combination an impression cylinder, a plate cylinder co-acting therewith, a feed table, two registering tables, and two reels for transferring sheets from the respective registering tables to the impression cylinder at different points; with a gripper reel taking all the printed sheets from the impression cylinder at one point, a second gripper reel taking alternate sheets from the first gripper reel; a delivery mechanism receiving alternate sheets from the first

gripper reel, and a second delivery mechanism receiving all the sheets from the second gripper reel.

5 9. In printing mechanism, the combination of an impression cylinder rotating in one direction and having one impression surface, a plate cylinder co-acting therewith, a pair of superposed sheet tables, a pair of gripper reels, one for each table, interposed between the tables and the impression cylinder and adapted to alternately transfer sheets from the related table to the impression surface of said impression cylinder.

10 10. In printing mechanism, the combination of an impression cylinder rotating in one direction, and having one impression surface and one set of grippers, a plate cylinder co-acting therewith, a pair of superposed sheet tables, a gripper reel for each table interposed between such table and the impression cylinder and adapted to alternately transfer sheets from said tables to the grippers of the impression cylinder at different points.

11. In printing mechanism, the combination of an impression cylinder rotating in one direction, and having one impression surface, a plate cylinder co-acting therewith, a pair of sheet registering tables arranged one above the other, and both above the impression cylinder; and a pair of gripper reels, one for each table, interposed between the tables and the impression cylinder and adapted to alternately transfer sheets from the related table to the said impression surface of the impression cylinder.

In testimony that I claim the foregoing as my own, I affix my signature in presence of two witnesses.

MICHAEL ANDREW DROITCOUR.

Witnesses:

SIMON BARLOW,
CARL HENDERSON.