H. LEWIS & C. J. WRIGHT.

DELIVERY MECHANISM FOR PRINTING PRESSES.

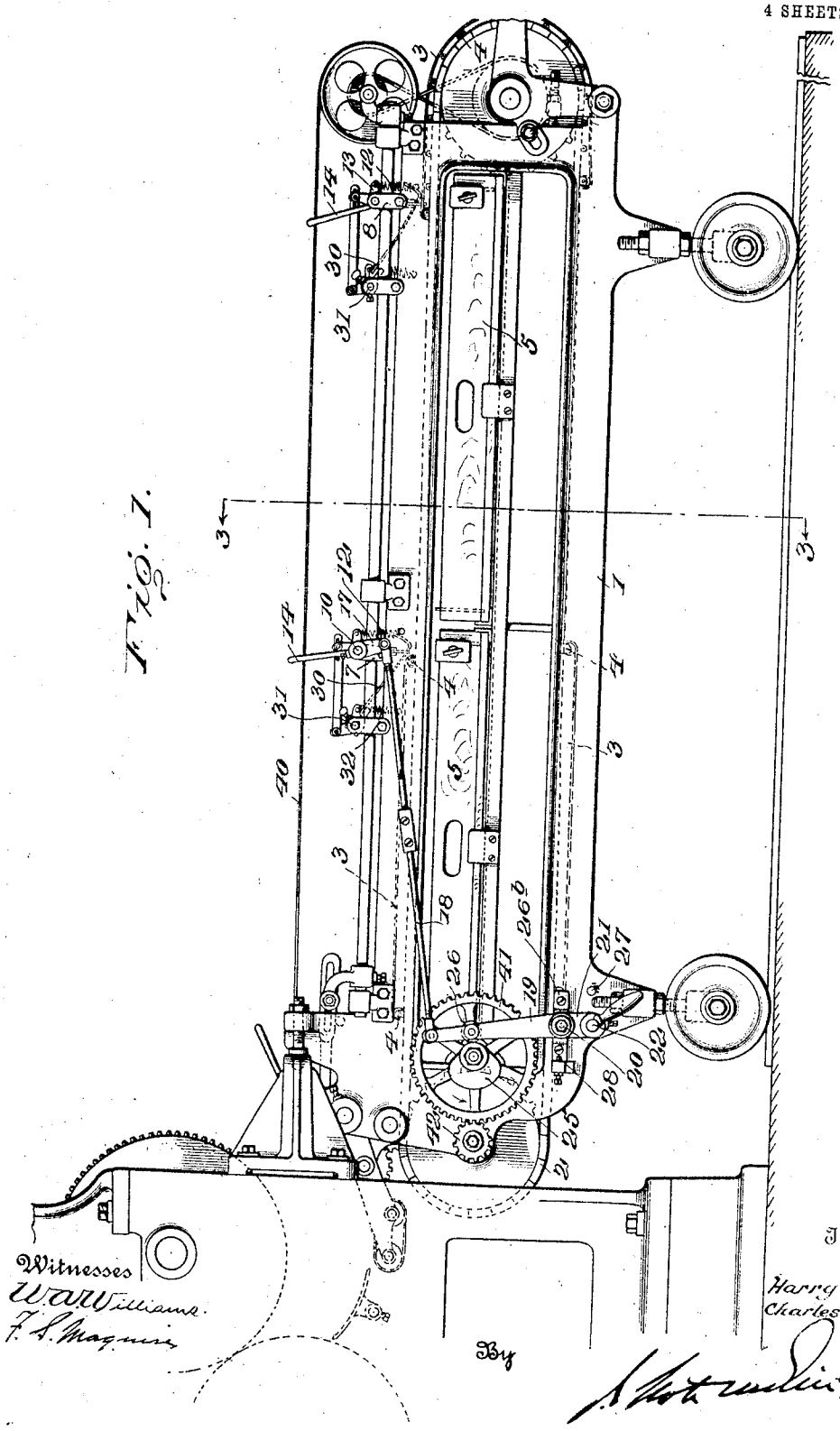
APPLICATION FILED MAR. 17, 1911.

1,084,019.

Patented Jan. 13, 1914.

4 SHEETS—SHEET 1.

Fig. 1.



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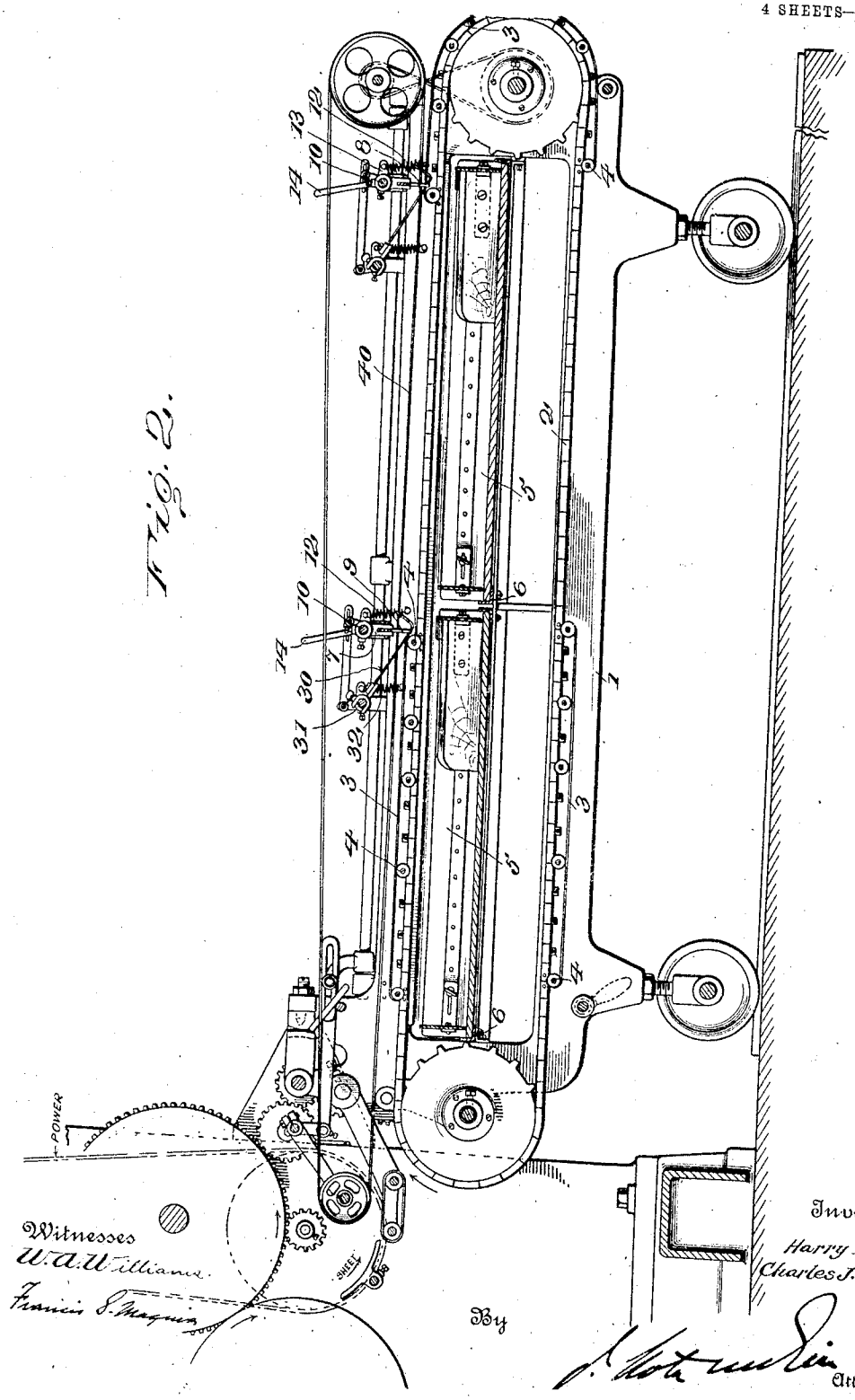
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4 SHEETS—SHEET 2.

Fig. 2.



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4 SHEETS—SHEET 3.

Fig. 3.

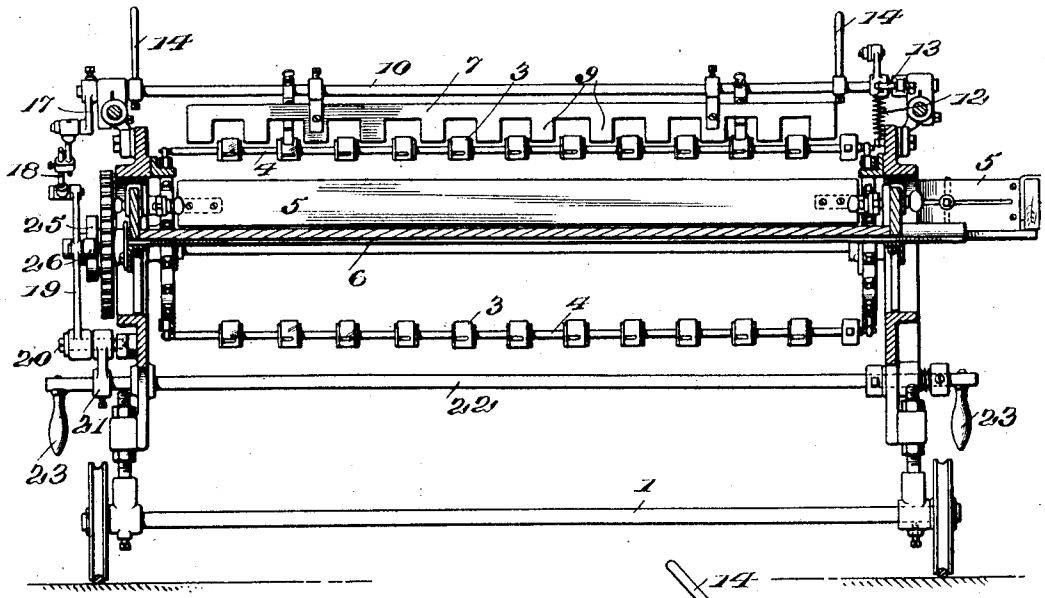
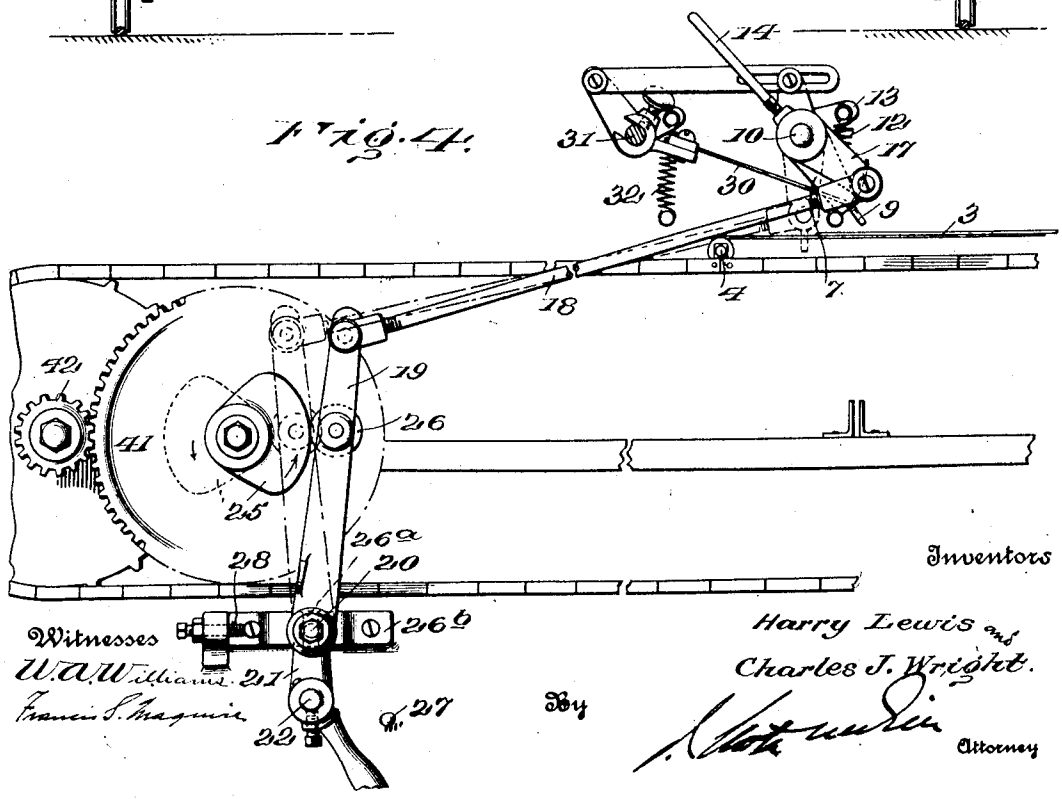


Fig. 4.



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4 SHEETS—SHEET 4.

Fig. 5.

POSITION WHEN FEEDING IN INNER TRAY.

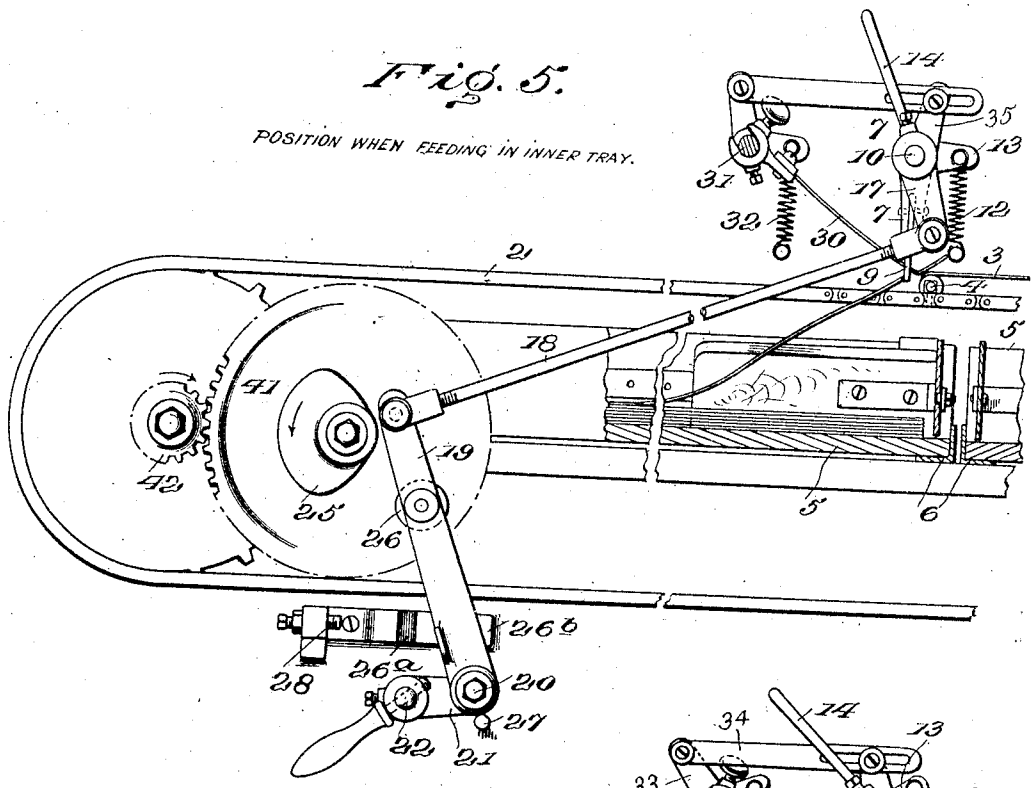
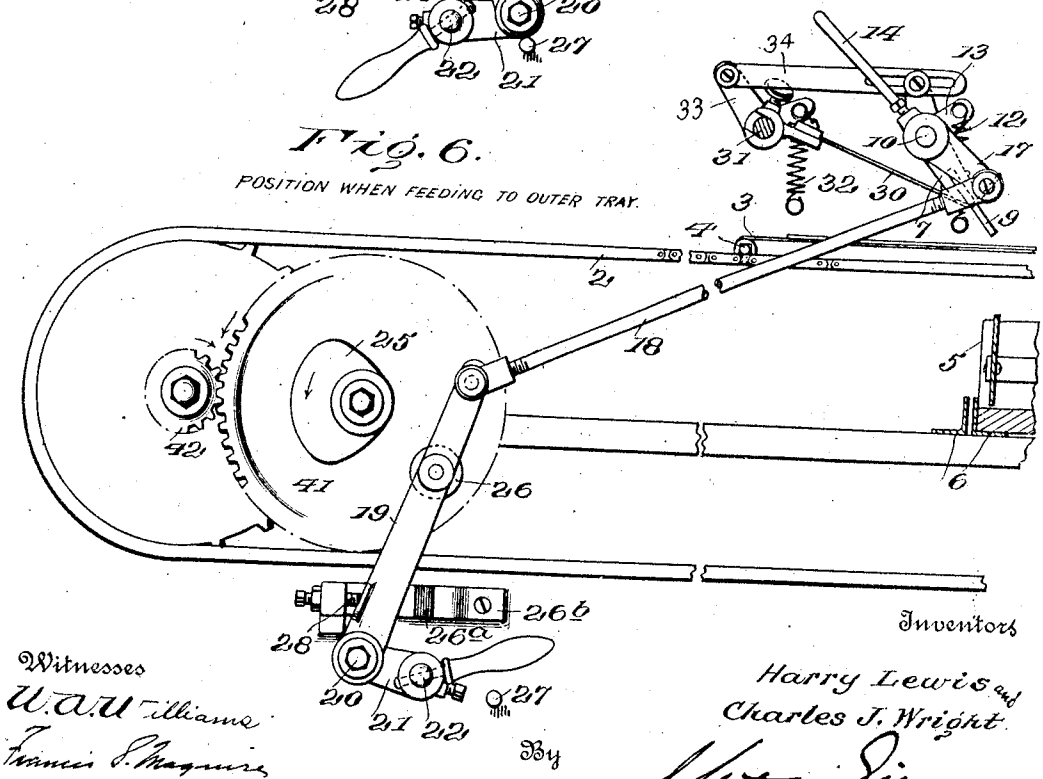


Fig. 6.

POSITION WHEN FEEDING TO OUTER TRAY.



Witnesses

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UNITED STATES PATENT OFFICE.

HARRY LEWIS AND CHARLES J. WRIGHT, OF NILES, OHIO, ASSIGNORS TO THE HARRIS AUTOMATIC PRESS COMPANY, OF NILES, OHIO, A CORPORATION OF OHIO.

DELIVERY MECHANISM FOR PRINTING-PRESSES.

1,084,019. Specification of Letters Patent. Patented Jan. 13, 1914.

Application filed March 17, 1911. Serial No. 615,040.

To all whom it may concern:

Be it known that we, HARRY LEWIS and CHARLES J. WRIGHT, both 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 we 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.

The primary object of this invention is to provide an improved deliverer for printing machines and the like capable of automatically delivering the printed stock alternately in different piles, or all of the stock in a single pile at one of a plurality of points.

The invention contemplates the employment of at least two separate stock receivers, preferably in the form of removable trays, and improved means for automatically discharging the stock successively into the receivers, or all of the stock into a single receiver.

The invention will be hereinafter fully set forth and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a side elevation showing the deliverer attached to a printing press. Fig. 2 is a central longitudinal sectional view. Fig. 3 is a transverse section. Fig. 4 is a fragmentary view, on an enlarged scale, showing the parts in position to secure the discharge of the stock alternately into the two trays, the gate being shown raised in full lines and lowered in dotted lines. Fig. 5 is a view of the same parts showing the gate fixedly held in its lowered position to insure the discharge of the stock into the inner tray. Fig. 6 shows the gate fixedly held in its open position to allow the stock to be discharged into the outer tray.

Referring to drawings, 1 designates a main frame or support which is shown in the form of a wheeled carriage which is designed to be detachably connected to a press frame. This frame supports suitable shafts carrying sprocket wheels with which engage opposite sprocket chains 2, and these chains support a series of spaced apart stock carriers 3 after the manner contemplated by Letters Patent No. 726,161 issued to Charles G. Harris April 21, 1903. These carriers are preferably three in number, and are shown as composed of tapes fastened by means of suitable collars on cross rods 4 secured at their ends to the endless chains 2. These carriers, or more properly speaking, their carrying chains 2, are driven by any suitable means, (preferably by the press gearing) at such speed as to properly position one of the carriers in proper relation to the press cylinders to receive a sheet at each cycle of operation of the press.

Located between the upper and lower flights of the carrier chain 2 are two stock receivers 5 which are shown in the form of separate trays, which latter are removable from their rests 6 (see Fig. 2) through one side of the frame, and their walls are usually made adjustable so as to accommodate stock of varying proportions.

7 and 8 are gates which extend transversely of the deliverer and intersect the plane of the carriers in their outward travel so as to cause sheets of stock supported by the latter to be stripped off into the receivers. The gate 7 is located about midway of the deliverer, that is to say, at a point above the adjacent sides of the two trays, while the gate 8 is located above the outer side of the outer tray. The particular formation of the gates is immaterial, and the same may be widely varied without departing from the spirit of our invention. As shown in Fig. 3 each gate comprises a plate having a series of spaced apart fingers 9 which are in vertical planes between the tapes composing the carriers 3, and when the gate is in its lowered position the fingers intercept the plane of the carrier tapes. The finger plates are suspended from rock shafts 10 mounted in bearings on the sides of frame 1, and the gates are normally held in their lowered position by springs 12, which are shown as secured to arms 13 mounted on said shafts. By means of handles 14 either shaft 10 may be manually turned to raise the respective gate as against the tension of its retaining spring 12. So far as concerns the outer gate 8 it is never raised out of the path of the stock except when the attendant desires to examine a piece of stock, in which event by manipulating the handle 14 the stock will be conveyed by its carrier to the outer end of the deliverer and fall therefrom as the carrier turns to start on its return travel.

The inner gate is intended to be permanently held in its lowered position when the stock is to be discharged into the inner tray; to be permanently held in its raised posi-

tion when all of the stock is to be discharged into the outer tray; or to be alternately raised and lowered when the stock is to be successively discharged into the two trays. While the means for accomplishing this purpose may be widely varied, yet we have found that shown to be best adapted to the purpose. An arm 17 of shaft 10 of the gate 7 is connected by a rod 18 to a lever 19 which is pivoted on a stud 20 carried by its short arm 21, which latter is carried by a shaft 22 having its bearings in the sides of frame 1 and extending transversely thereof with handles 23 on its ends so that the position of lever 19 may be readily shifted at either side of the machine. The lever is intended to occupy any one of the three positions shown in Figs. 4, 5 and 6. When lever 19 is in its approximately vertical position, Fig. 4, gate 7 will be periodically operated to cause the sheets to drop alternately in the two trays. A constantly rotating cam 25, which is revolved at half the speed of the press cylinder, is designed to engage a roller 26 carried by lever 19 and move it into the full line position, thereby swinging the gate 7 to allow the sheet to pass with its carrier and to be arrested by gate 8 and discharged in the outer tray. The proud portion of the cam is a little more than the equivalent of the length of a full sized sheet, thus allowing time for the largest sheet to pass before the proud portion of the cam disengages the roller 26, whereupon the gate is returned to its lowered position, shown in dotted lines Fig. 6, by the action of spring 12. The low part of the cam is also equal to the length of a full sized sheet, and hence the lever 19 remains in the dotted line position for a sufficient time to enable the gate 7 to cause the next sheet to drop in the inner tray. The stud 20 fits in a groove 26^a of a plate 26^b when the lever is set as in Fig. 4 to hold the short arm in its vertical position.

Fig. 5 shows gate 7 fixedly held in its closed or lowered position for which purpose lever 19 is moved downwardly and thrown into a rearwardly inclined position by the partial rotation of shaft 22, the downward movement being limited by a stop 27. When the lever is in this position roller 26 is out of the path of the actuating cam 25. When it is desired to discharge all the stock into the outer tray, the lever 19 is thrown into the forwardly inclined position shown in Fig. 6, shaft 22 being turned in the opposite direction to that required for giving the lever the position shown in Fig. 5. When being thrown into the position shown in Fig. 6 the lever 19 by engaging a stop 28, is forwardly inclined to permanently hold gate 7 in its opened or raised position. In this instance, also, the cam 25 is incapable of actuating the lever 19.

30 designates fingers which are designed to knock downward the forward ends of the sheets, toward the pile, as the carriers pass from thereunder. We preferably employ two fingers in connection with each gate, but the number is immaterial. They are shown as formed from metallic plates adjustably mounted on a rock shaft 31 having its bearings in the main frame, and at their forward ends these fingers are up-turned and extend between the fingers of the gates. They are so positioned that they are under slight tension of springs 32 when engaged and slightly raised by the carrier tapes. By extending the ends of the fingers through the gates they will not interfere with the front edge of the sheet at any time, but upon the rearward portion of a carrier passing from beneath the fingers the latter will strike against the front end of the sheet and direct it toward the pile. To enable the fingers to be elevated out of the way when either gate is raised, an arm 33 of each rocker shaft 31 is connected by means of a link 34 to an arm 35 fastened to the gate shaft 10.

We have shown in Figs. 1 and 2 an upper series of tapes or strings 40 carried by suitable pulleys at the inner and outer ends of the main frame, and driven by any suitable means, and preferably at a slightly greater speed than the carriers, the purpose of these tapes or strings being to keep the sheets, especially when they have a tendency to curl upwardly, down against the carriers.

It will be understood that the lever actuating cam 25 may be rotated by any suitable means. It is shown mounted on the shaft of a gear wheel 41 which is driven by a pinion 42 on the shaft of the sprocket wheel which is preferably operated by the press gearing.

The advantages of the present invention will be readily appreciated by those skilled in the art. It will be seen that by means thereof separate pieces of stock may be alternately deposited in two trays, or all of them may be deposited in either of the trays, it only being necessary to partially turn a single shaft to bring about a change in the operation of delivering the sheets. In all other respects the operation of the machine is automatic. Single, flat, unfolded sheets deposited on the carriers will be discharged therefrom tail end foremost through the gaps formed in the traveling device between the several carriers.

We claim as our invention:

1. A sheet deliverer comprising inner and outer receptacles for piles of sheets, an endless series of carriers movable over said receptacles, inner and outer stops located relatively to said receptacles for automatically discharging the sheets from the carriers into the receptacles, each stop being capable of being moved out of its normal position to allow of the uninterrupted passage of the

sheet, and means for automatically moving the inner stop out of its normal position to allow of the passage of each alternate sheet.

2. The combination with a plurality of receptacles for piles of sheets, and an endless series of carriers movable over said receptacles, of inner and outer stops located relatively to said receptacles for automatically discharging the sheets from the carriers into the receptacles, said inner stop being capable of being moved out of the path of the carriers, a lever connected to said inner stop, and means for holding said lever in either of two positions to retain said inner stop in its active or inactive positions.

3. The combination with a plurality of receptacles for piles of sheets, and an endless series of carriers movable over said receptacles, of inner and outer stops located relatively to said receptacles for automatically discharging the sheets from the carriers into the receptacles, shiftable means connected to said inner stop, means for acting on said shiftable means to move the inner stop out of its normal position to allow of the passage of each alternate sheet, and means for holding said shiftable means out of engagement with said actuating means to permit the inner stop to remain in its active position.

4. The combination with a plurality of receptacles for piles of sheets, and an endless series of carriers movable over said receptacles, of inner and outer stops located relatively to said receptacles for automatically discharging the sheets from the carriers into the receptacles, shiftable means connected to said inner stop, means for acting on said shiftable means to move the inner stop out of its normal position to allow of the passage of each alternate sheet, and means for holding said shiftable means out of engagement with said actuating means to permit the inner stop to remain in its inactive position.

5. The combination with a plurality of receptacles for piles of sheets, and an endless series of carriers movable over said receptacles, of inner and outer stops located relatively to said receptacles for automatically discharging the sheets from the carriers into the receptacles, shiftable means connected to said inner stop, means for acting on said shiftable means to move the inner stop out of its normal position to allow of the passage of each alternate sheet, and means for holding said shiftable means out of engagement with said actuating means to permit the inner stop to remain in its active or inactive position.

6. The combination with a plurality of receptacles for piles of sheets, and an endless series of carriers movable over said receptacles, of inner and outer stops located relatively to said receptacles for automatically discharging the sheets from the carriers into the receptacles, said inner stop being capable of being permanently held out of or in the path of the carriers, and means for automatically actuating said inner stop to allow of the passage of each alternate sheet, said latter means having no effect on said inner stop when permanently held out of or in the path of the carriers.

7. The combination with a plurality of receptacles for piles of sheets, and an endless series of carriers movable over said receptacles, of inner and outer stops located relatively to said receptacles for automatically discharging the sheets from the carriers into the receptacles, said inner stop being capable of being moved out of the path of the carriers, a lever connected to said inner stop, means for automatically actuating said lever and inner stop to allow of the passage of each alternate sheet, and means for holding said lever free of said actuating means to retain said inner stop in its opened or closed positions.

8. The combination with a plurality of receptacles for piles of sheets, and an endless series of carriers movable over said receptacles, of inner and outer stops located relatively to said receptacles for automatically discharging the sheets from the carriers into the receptacles, said inner stop being capable of being moved out of the path of the carriers, a lever connected to said inner stop, a shaft to which the short arm of said lever is connected, said lever being pivoted to said short arm, and means for turning said shaft in opposite directions to hold said lever in either of two positions to retain said inner stop in its opened or closed positions.

9. A sheet deliverer comprising a receptacle for a pile of sheets, a movable carrier having a series of tapes, a stop having fingers intersecting the plane of the carrier between the tapes, and spring pressed fingers projecting through the fingers of the stop and engaging tapes of the carrier for forcing sheets downwardly into the receptacle after the carrier has moved from beneath the sheet.

10. A sheet deliverer comprising a receptacle for a pile of sheets, a movable carrier, a stop for automatically discharging sheets from the carrier, fingers for forcing the sheets downwardly into the receptacle after they leave the carrier, and means for manually holding the stops and the fingers out of their normal positions.

11. A sheet deliverer comprising inner and outer receptacles for piles of sheets, an endless series of carriers movable over said receptacles, inner and outer stops located relatively to said receptacles for automatically discharging the sheets from the carriers into the receptacles, each stop being

capable of being moved out of its normal position to allow of the uninterrupted passage of the sheet, fingers for forcing the sheets downwardly into the receptacles after they leave the carriers, means connecting said fingers to said stops, and means for automatically moving the inner stop and its respective fingers out of normal position to allow of the passage of each alternate sheet.

12. Single, flat, sheet carrying and piling mechanism comprising in combination a plurality of sheet depositories arranged along a single path, endless traveling means to convey sheets flat and singly along said single path and provided with transverse gaps, means selective at the will of the operator to strip off and drop sheets one by one through said gaps into any of the said depositories, and means for automatically allowing the sheets to be deposited alternately in different depositories.

13. Single, flat, unfolded sheet carrying and piling mechanism comprising in combination a plurality of sheet depositories, endless sheet conveying means having alternate sheet supporting and transversely gapped portions, means to move said sheet conveying means out over and back under said depositories, the latter being placed wholly between the upper and lower paths of said sheet conveying means, means selective and manually operative at the will of the operator to direct sheets through said gaps, whereby they may be piled flat in register at any of said depositories without stopping the mechanism, and means for automatically allowing the sheets to be deposited alternately in different depositories.

14. Sheet carrying and piling mechanism comprising in combination a plurality of sheet depositories, sheet conveying means passing out above and back below said depositories and provided with spaced sheet supports and constituting the sole means for supporting and conveying the sheets between the point of in-take and a point directly over the selected pile depository, stops selective at the will of the operator to cause the discharge of said sheets tail end foremost but practically flatwise directly from said conveyer onto the piles in said depositories, and means for automatically allowing the sheets to be deposited alternately in different depositories.

15. Sheet carrying and piling mechanism comprising in combination a plurality of sheet depositories, sheet conveying means consisting of a traveling, gapped, apron-like device above said depositories, means selective at the will of the operator to slide sheets tail end foremost through gaps of said traveling device into depositories therebelow, and means for automatically allowing the sheets to be deposited alternately in different depositories.

16. Sheet carrying and piling mechanism comprising in combination a plurality of sheet depositories, sheet conveying means above said depositories and provided with spaced sheet supports, stops selective at the will of the operator to cause the discharge of said sheets tail end foremost from said spaced supports into said depositories, and means for automatically allowing the sheets to be deposited alternately in different depositories.

17. Sheet carrying and piling mechanism comprising in combination a plurality of sheet depositories, sheet conveying means above said depositories and provided with spaced sheet supports, stops selective at the will of the operator to cause the discharge of said sheets practically flatwise directly from the conveying means into said depositories, means for holding inactive the stops in respect to one of said depositories, and means for automatically actuating said latter stops to permit of the passage of each alternate sheet.

18. Sheet carrying and piling mechanism comprising in combination a plurality of sheet depositories, sheet conveying means above said depositories and provided with sheet supports, stops selective at the will of the operator to cause the discharge of said sheets practically flatwise from the conveying means into said depositories, supplemental means coöperative with said stops and engaging the sheets to assist in delivering the sheets into said depositories, and means for automatically allowing the sheets to be deposited alternately in different depositories.

19. Sheet carrying and piling mechanism comprising in combination a plurality of sheet depositories, sheet conveying means traveling in one direction only, over and then under said depositories, and means selective and manually operative at the will of the operator to direct sheets to any of said depositories without stopping the mechanism, whereby a full pile of sheets may be piled in one of said depositories, and means for automatically controlling such means whereby the sheets may be deposited alternately in such depositories without stoppage of the mechanism.

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

HARRY LEWIS.
CHARLES J. WRIGHT.

Witnesses:
CYNTHIA A. SIGERFOOS,
WALTER H. SMITH.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."