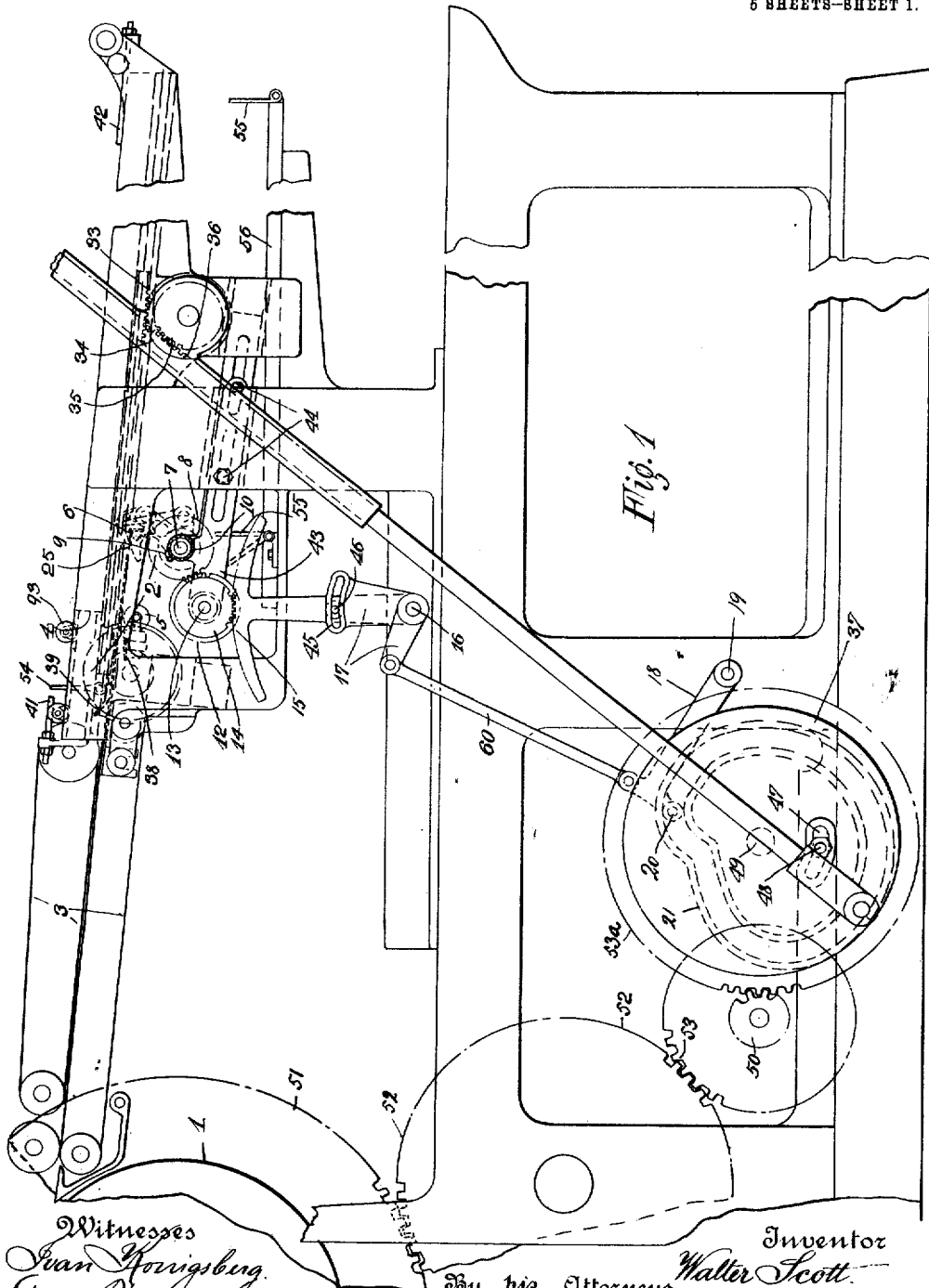


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I. & D. J. SCOTT, EXECUTORS.
DELIVERY MECHANISM.
APPLICATION FILED FEB. 17, 1904.

996,528.

Patented June 27, 1911.

5 SHEETS-SHEET 1.



Witnesses
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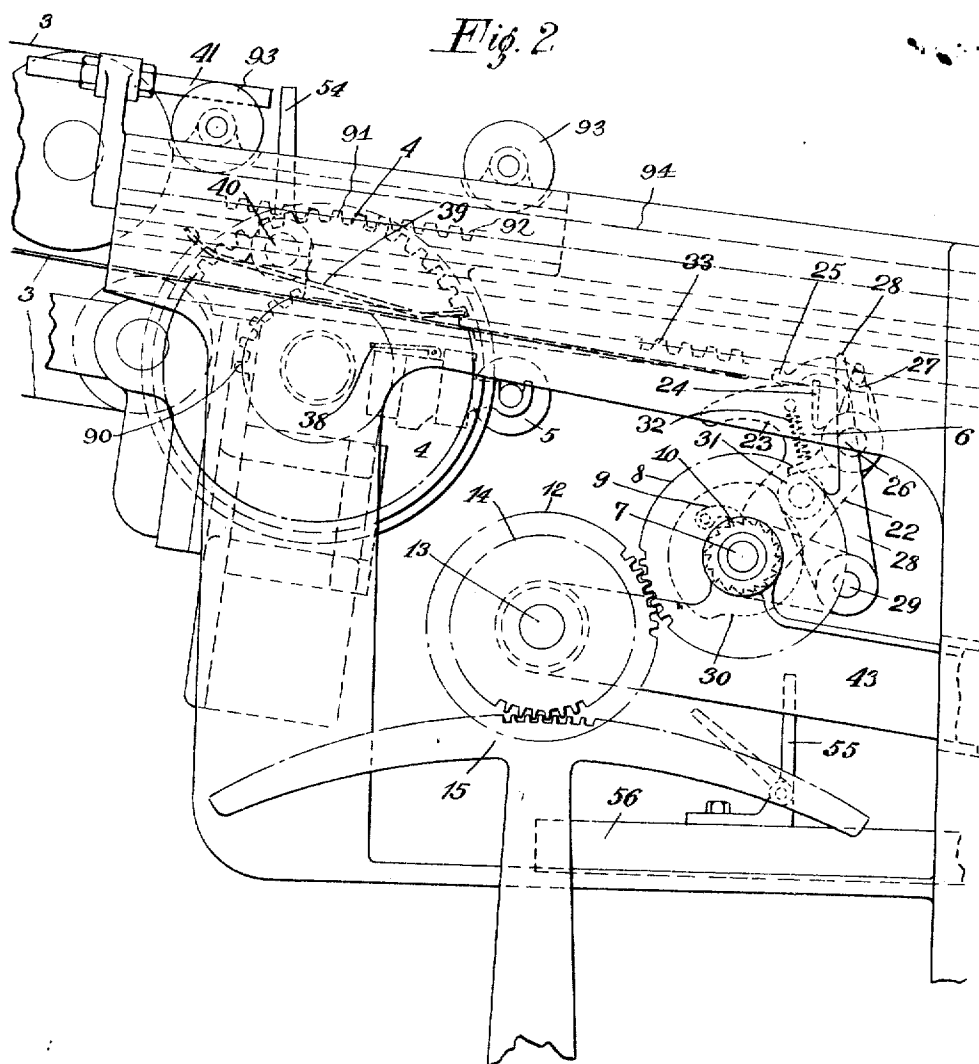
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5 SHEETS—SHEET 2.



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5 SHEETS-SHEET 3.

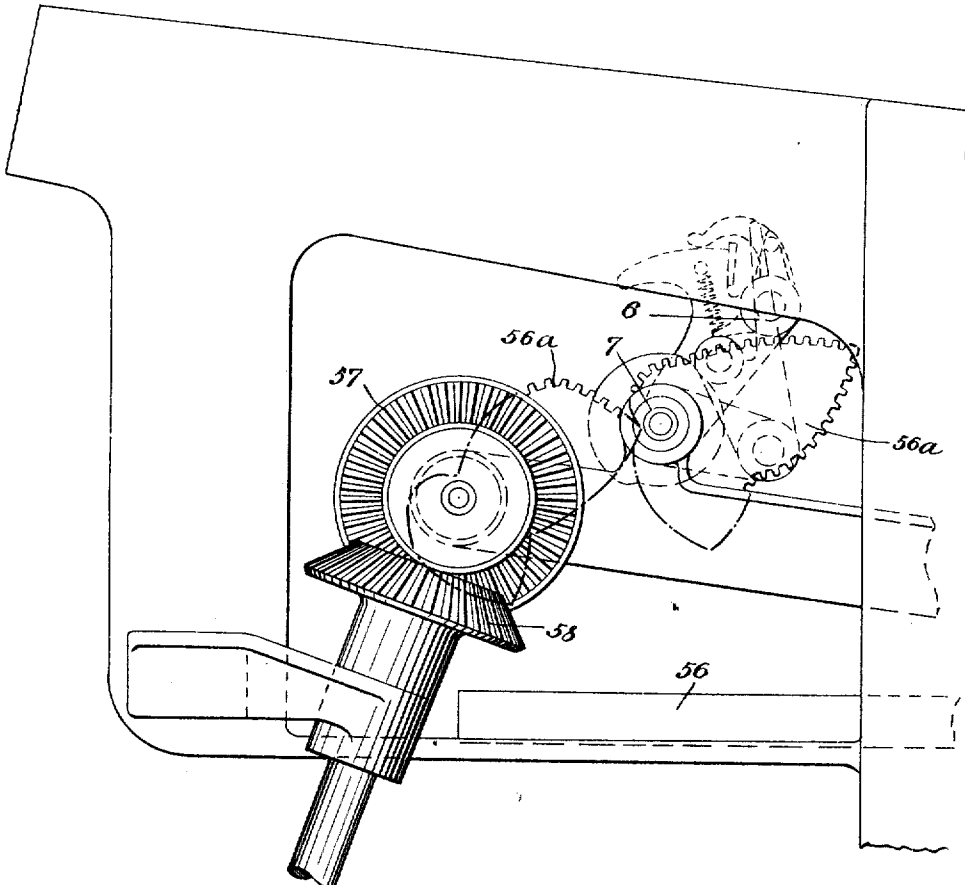
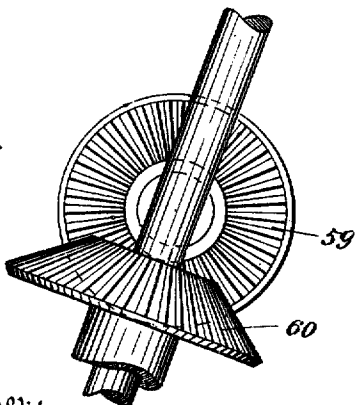


Fig. 3



Witnesses
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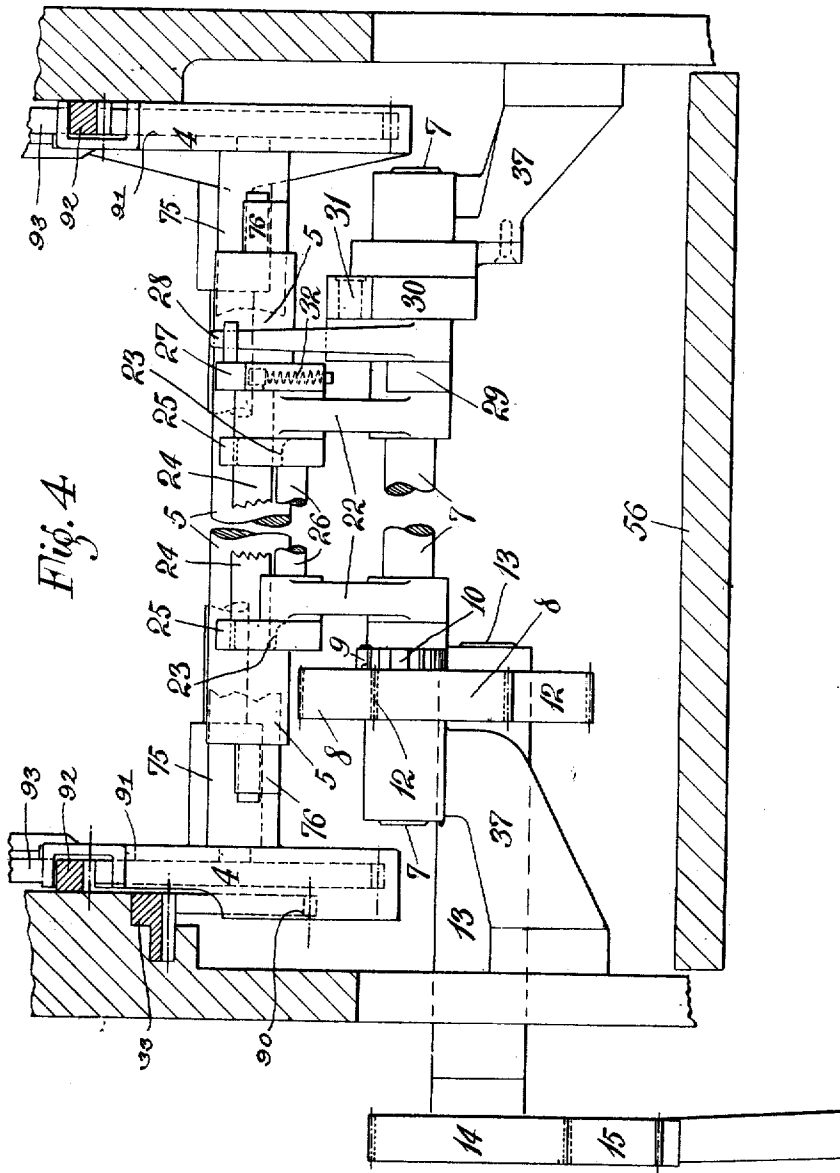
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5 SHEETS—SHEET 4.



Witnesses
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Anna D. Rossmann

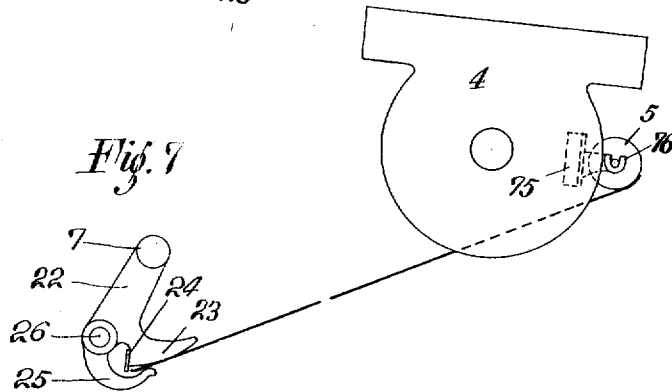
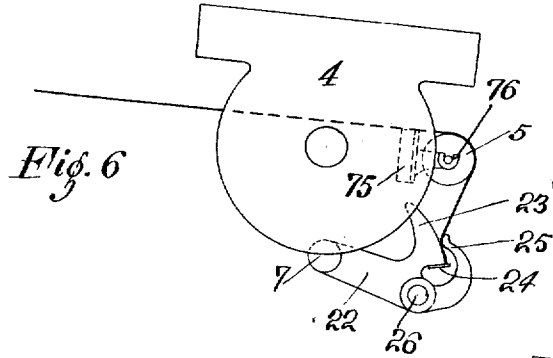
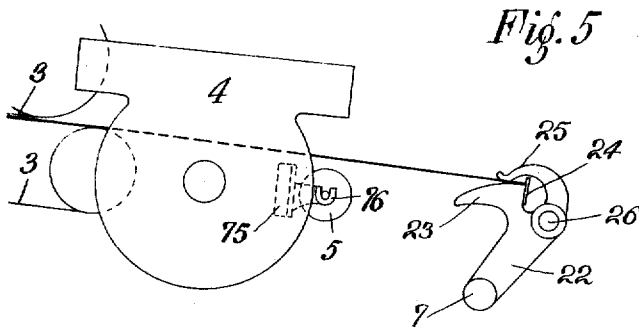
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6 SHEETS—SHEET 5.



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UNITED STATES PATENT OFFICE.

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DELIVERY MECHANISM.

996,528.

Specification of Letters Patent. Patented June 27, 1911.

Application filed February 17, 1904. Serial No. 194,025.

To all whom it may concern:

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

My invention relates generally to delivery mechanism for sheets of paper or other flexible material, and has more particular reference to sheet delivery mechanism used in printing machines.

In the class of printing machines known as "two-revolution", "stop cylinder" and similar machines, the printed sheets are generally delivered with the printed side up, sometimes, however, it is desirable to deliver the sheets with the printed side down. Furthermore, it is frequently desired to change from one style of delivery apparatus to another in the same machine, when doing different classes of work.

The object of my invention is to produce a structure of the character described capable of delivering the sheets with the printed side down, and also to provide interchangeable means whereby the sheets can be delivered either with the printed side up or down at will in the same machine.

In carrying out the above objects, my invention is characterized by a reciprocating sheet turning means, and a gripper mechanism extraneously of the said reciprocating means, for turning the leading edge of the sheet.

Other features of construction and combination of parts will appear as the specification proceeds.

In the drawings, I have embodied my invention in a suitable form, but changes of construction can of course be made and elements omitted, without departing from the spirit of my invention.

In the said drawings: Figure 1 is a side elevation of a machine, embodying my invention. Fig. 2 is a detail view on a large scale of the parts which more particularly embrace my invention. Fig. 3 is a view of a modification. Fig. 4 is a cross sectional view through the framework with parts broken away and omitted, showing the means for turning the leading edge of the sheet and its relation to the reciprocating

carriage. Figs. 5, 6, and 7 are diagrammatic views showing different positions of the means for turning the leading edge of the sheet and the reciprocating sheet turning means, and the manner in which the sheet is turned.

Similar characters of reference denote corresponding parts in the different views.

1 indicates the impression cylinder of a printing machine and 2 the delivery mechanism for the same. Interposed between the said impression cylinder and the delivery mechanism are tapes 3 or other means for conveying the sheet. The delivery mechanism comprises essentially a reciprocating carriage 4, sheet turning means 5 and a gripper mechanism 6 which may be suitably operated and is here shown as being rotatable, whose location is extraneous of the said carriage. The gripper mechanism is, in the present instance, constructed as follows: A shaft 7 is driven in any suitable way as means of the gear 8 mounted loosely on the shaft 7 and carrying the pawl 9 engaging with the ratchet 10 mounted fast on the shaft 7. The gear 8 receives its motion from the gear 12 mounted on the stud 13 which latter also carries a gear 14 meshing with the segment 15 mounted on the stud 16 operated by means of the bell crank 17 attached by means of rod 60 to the pivoted lever 18 pivoted at 19 and carrying the roll 20 operated by the cam 21. The shaft 7 carries two side frames 22, one at either end adapted to rotate with the said shaft 7. Mounted on the said side frames 22 is a support 23 having a registering plate 24 against which the sheet strikes.

25 indicates the grippers proper mounted on the spindle 26. Carried by the said spindle 26 is an arm 27 with which engages the lever 28 mounted on the stud 29 attached to the side frames 22. In the framework is located a cam 30 with which engages the roller 31 of the lever 28, for opening and closing the grippers proper. A spring 32 assists in closing the grippers.

The reciprocating carriage is operated in any suitable way, preferably through a rack 33 meshing with the gear 34 moving with the gear 35 which latter is operated by the rack 36, attached to the disk 37. The rack 33 slides or reciprocates in the framework

and imparts its motion to the pinion 90 on the reciprocating carriage. Moving with this pinion 90 are the gears 91 meshing with stationary racks 92. The carriage is provided with the hangers 93 traveling on rails 94. On the reciprocating carriage there is mounted a transverse bar 75 provided with bearings 76 supporting the sheet turning means, in this instance the roller 5. This carriage is further provided with a sheet holding means taking the form, in the present instance, of two opposed grippers 38 and 39, the latter of which is mounted on the stud 40 and is adapted to be closed by the fixed stop 41, acting against the arm 54 also on the stud 40 and to be opened by the other fixed stop 42.

The shaft 7 and stud 13 are both adjustable by being mounted on the adjustable brackets 43, removably attached to the framework by means of the bolts 44. The segment 15 is likewise adjustable by means of the slotted portion 45 and bolt 46. Finally the cam 21 and the disk 37 are adjustable by means of the slot 47 and bolt 48.

The shaft 49 which carries the cam 21 and disk 37 is timed so as to operate the delivery once to every two revolutions of the impression cylinder 1, and for other styles of machines once to each sheet printed, or if a collecting cylinder is used, once to every pack of sheets collected. In the present instance, the shaft 49 receives its motion by means of the pinion 50 and gears 51, 52, 53, and 53^a.

The operation of the device is as follows: When it is desired to deliver the sheet with the printed side down, the disk 37 is adjusted so that the carriage 4 is retarded so that it will be about in the position shown in Figs. 1 and 2 of the drawings when the leading edge of the sheet reaches the grippers 25. The arm 54 is removed or the stops 41 and 42 are removed, or the grippers 38 and 39, otherwise rendered inoperative, so that the said grippers will remain open and allow the sheet to pass to the grippers proper 25 of the rotating gripper mechanism. This rotating gripper mechanism will have commenced its movement when the sheet strikes the plate 24 which will then by the means hereinbefore described nip the sheet and rotate downward and out of the way of the carriage 4. When the reciprocating carriage moves forward, the roller 5 or other sheet turning means will pass in between the sheet and the rotatable gripper mechanism 6 and will turn the sheet over as it moves forward by pushing against the underside of the said sheet. The rotatable gripper mechanism will, in the present instance, rotate about one-half of a revolution and then dwell. The rotatable gripper mechanism will then resume its motion and release the sheet and pass in between

the stops 55 which will prevent the sheet from passing around with the said gripper mechanism. The gripper mechanism 6 will then continue its motion until it resumes its position shown in the drawings when the operation is again repeated. By this means, the sheets will drop with the printed side down on the receiving board 56. To accommodate the parts to different lengths of sheets, the brackets 43 and the segment 15 are adjusted in the manner previously specified.

The stops 55 which are mounted on the receiving board 56 or elsewhere, are of any suitable construction and can be operated in any well known way.

When it is desired to deliver the sheets with the printed side up, the parts will be so adjusted that the carriage 4 will be about in the position occupied by the gripper mechanism 6 in the drawings, when the leading edge of the sheet reaches the grippers 38 and 39. The stops 41 and 42 are placed in position and the sheet turning means is removed, as is also the rotatable gripper mechanism or the said elements are otherwise rendered inoperative. As the carriage comes to the end of its return stroke the leading edge of the sheet will reach the grippers 38 and 39, which latter are then closed by the stop 41 acting through arm 54 so as to seize the sheet. On the forward stroke of the carriage the grippers 38 and 39 remain closed by reason of the weight of the arm 54 so as to carry the sheet with them. When the reciprocating carriage reaches the end of its forward stroke, the grippers 38 and 39 are opened by the stop 42 acting on arm 54 thereby releasing the sheet.

In Fig. 3, I have shown a modification in which the shaft 7 is driven by means of lobe gears 56^a operated by means of the miter gears 57, 58, 59, and 60. In this modification, the lobe gears are so constructed that the rotation of the shaft 7 will be so timed as to cause the gripper mechanism to receive the sheet when it comes from the impression cylinder, after which it will rotate out of the way of the carriage 4 when the latter moves forward. The gripper mechanism will then remain in this position until the sheet is delivered, and will rotate at the proper time to come into position again to receive a sheet.

From the foregoing, it will appear that the sheets can be delivered either side up in my machine, interchangeably or the two devices can be used in independent machines. It will thus be seen that when the reciprocating carriage is used to draw the sheet out with the printed side up that the sheet is delivered onto the delivery board on the return stroke of the carriage, and that if the sheet is turned over by the means hereinbefore described to deliver it with the

printed side down, it is delivered onto the delivery board on the forward stroke of the carriage.

What I claim is:

- 5 1. In a printing or other machine, the combination with a reciprocating carriage, of a sheet turning means carried by the same, and a rotatable gripper mechanism located extraneously of the said carriage for
10 turning the leading edge of the sheet.
2. In a printing or other machine, the combination with a reciprocating carriage, of a sheet turning means carried by the same, and a gripper mechanism located ex-
15 traneously of the said carriage for turning the leading edge of the sheet.
3. In a printing or other machine, the combination with a reciprocating carriage, of means carried by the same for delivering
20 the sheet with the printed side up, means for delivering the sheet with the printed side down, comprising: a sheet turning means carried by the reciprocating carriage, and a gripper mechanism located extrane-
25 ously of the reciprocating carriage for turning the leading edge of the sheet, the means for delivering the sheet with the printed side up and the means for delivering the sheet with the printed side down being inter-
30 interchangeable.
4. In a printing or other machine, the combination with a reciprocating carriage, of means carried by the same for delivering
35 the sheet with the printed side up, means for delivering the sheet with the printed side down, comprising: a sheet turning means carried by the reciprocating carriage, and a rotatable gripper mechanism located extrane-
40 ously of the reciprocating carriage for turning the leading edge of the sheet, the means for delivering the sheet with the printed side up and the means for deliver-
45 ing the sheet with the printed side down being interchangeable.
5. In a printing or other machine, the combination with a gripper mechanism for
50 seizing the sheet and turning the leading edge of the same, of a reciprocating sheet turning means for turning over the main body of the sheet.
6. In a printing or other machine, the combination with a rotatable gripper mech-
55 anism for seizing the sheet and turning the leading edge of the same, of a reciprocating sheet turning means for turning over the main body of the sheet.
7. In a printing or other machine, the combination with a reciprocating carriage,
60 of a sheet turning means carried by the same, and a gripper mechanism located extraneously of said carriage for holding the sheet while the sheet turning means turns the sheet over as the reciprocating carriage moves forward.
8. In a printing or other machine, the

combination with a reciprocating carriage, of a sheet turning means carried by the same, and a rotatable gripper mechanism lo-
cated extraneously of said carriage for
70 holding the sheet while the sheet turning means turns the sheet over as the reciprocating carriage moves forward.

9. In a printing or other machine, the combination with a reciprocating carriage,
75 of a sheet turning means carried by the same, a gripper mechanism located in the path of the reciprocating carriage but extraneously of the same, means for moving the gripper mechanism out of the path of the reciprocating carriage before the latter
80 moves forward, means for closing the gripper mechanism to seize the sheet so as to turn the leading edge of the sheet over, the sheet turning means on the carriage turning over the body of the sheet as it moves for-
85 ward, and the gripper mechanism releasing the sheet when it has been turned.

10. In a printing or other machine, the combination with a reciprocating carriage,
90 of a sheet turning means carried by the same, a rotatable gripper mechanism located in the path of the reciprocating carriage but extraneously of the same, means for rotating the gripper mechanism out of the path of the reciprocating carriage before the latter
95 moves forward, means for closing the gripper mechanism to seize the sheet so as to turn the leading edge of the sheet over, the sheet turning means on the carriage turning over the body of the sheet as it moves for-
100 ward, and the gripper mechanism releasing the sheet when it has been turned.

11. In a printing or other machine, the combination with a rotatable gripper mech-
105 anism, of means for operating the same comprising, an adjustable bracket, two gears mounted on the said bracket meshing with each other, and a segment meshing with one of said gears adjustable to correspond with the adjustment of the said bracket.

12. In a printing or other machine, the combination with a reciprocating carriage, of
115 a sheet turning means carried by the same, a rotatable gripper mechanism located in the path of the said reciprocating carriage but extraneously of the same, means for rotating the gripper mechanism a part of a revolution so as to move it out of the path of the reciprocating carriage before the latter
120 moves forward and for closing the gripper mechanism to seize the sheet so as to turn the leading edge of the sheet over, the sheet turning means on the carriage turning over the body of the sheet as it moves forward, and the gripper mechanism releasing the sheet
125 when it has been turned after which the revolution of the gripper mechanism is completed.

13. In a printing or other machine, the combination with a reciprocating carriage, 130

of a sheet turning means carried by the same, a gripper mechanism located in the path of the said reciprocating carriage but extraneously of the same, means for turning the gripper mechanism so as to move it out of the path of the reciprocating carriage before the latter moves forward and for closing the gripper mechanism to seize the sheet so as to turn the leading edge of the sheet over, the sheet turning means on the carriage turning over the body of the sheet as it moves forward, and the gripper mechanism releasing the sheet when it has been turned after which the gripper mechanism resumes its normal position.

14. In a printing or other machine, the combination of a reciprocating carriage, means associated therewith but located extraneously thereof for turning the leading edge of the sheet, adapted to be rendered inoperative, whereby when the said turning means are operative the carriage will act to deliver the sheet with the printed side down on its forward stroke, and whereby when the turning means are inoperative, the carriage will act to deliver the sheet with the printed side up on its return stroke.

15. In a printing or other machine, the combination of a reciprocating carriage, and a rotating gripper mechanism associated therewith but located extraneously thereof for turning the leading edge of the sheet, adapted to be rendered inoperative, whereby when the said turning means are operative the leading edge of the sheet will be turned by the latter and the reciprocating carriage will act to turn over the body of the sheet and deliver it on its forward stroke with the printed side down, and whereby when the turning means are inoperative the carriage will draw out the sheet and deliver it printed side up on its return stroke.

16. In a sheet delivery mechanism, the combination of a reciprocating carrier and a gripping means for engaging the edge of the sheet and moving and holding the same below the carrier so that the carrier will turn the sheet while it is held by gripping means.

17. In a sheet delivery mechanism, the combination of a reciprocating carrier, a gripping or seizing means arranged to engage the edge of the sheet in front of the carrier, and means for moving the gripping or seizing means out of the way below the carrier, whereby as the carrier moves for-

ward the sheet will be turned over and delivered.

18. In a sheet delivery mechanism, the combination of a reciprocating carriage, means whereby the same may act to deliver sheets printed side up, and a bodily movable gripping or seizing mechanism arranged independently and in front of said carriage so that when thrown into operation the carriage will act to deliver sheets printed-side down.

19. In a sheet delivery mechanism, the combination of a reciprocating carriage, a gripping or seizing mechanism for engaging the sheet, and means for moving the gripping or seizing mechanism around out of the way of the carriage.

20. In a sheet delivery mechanism, the combination of a reciprocating carriage, a seizing or gripping mechanism arranged in front thereof, means for operating the same to engage the sheet and then to turn out of the way of the advancing carriage, and means for releasing the sheet substantially as the carriage reaches the end of its forward movement.

21. In a sheet delivery mechanism, the combination of a reciprocating carrier, and a gripping and seizing means independent of the carrier for gripping and holding the sheet in front of the carrier and located under the front end of the carrier when the latter is at its extreme rearward position.

22. In a sheet delivery mechanism, the combination of a reciprocating carrier, a gripping and seizing means independent of the carrier for gripping and holding the sheet in front of the carrier and located under the front end of the carrier when the latter is at its extreme rearward position, and means for rendering said gripping and seizing means inoperative.

23. In a sheet delivery mechanism, the combination of a carrier, a delivery table, a gripping and seizing means independent of the carrier, said gripping and seizing means being located in position to hold the forward end of the sheet at the rear of the delivery table, and means for rendering said gripping and seizing means inoperative.

Signed at New York this 16th day of February, 1904.

WALTER SCOTT.

Witnesses:

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RAYMOND C. SPAULDING.