W. SCOTT, DEC'D.

I. & D. J. SCOTT, EXECUTORS.

DELIVERY MECHANISM.

APPLICATION FILED MAR. 6, 1905.

956,193.

Patented Apr. 26, 1910.

4 SHEETS—SHEET 1.

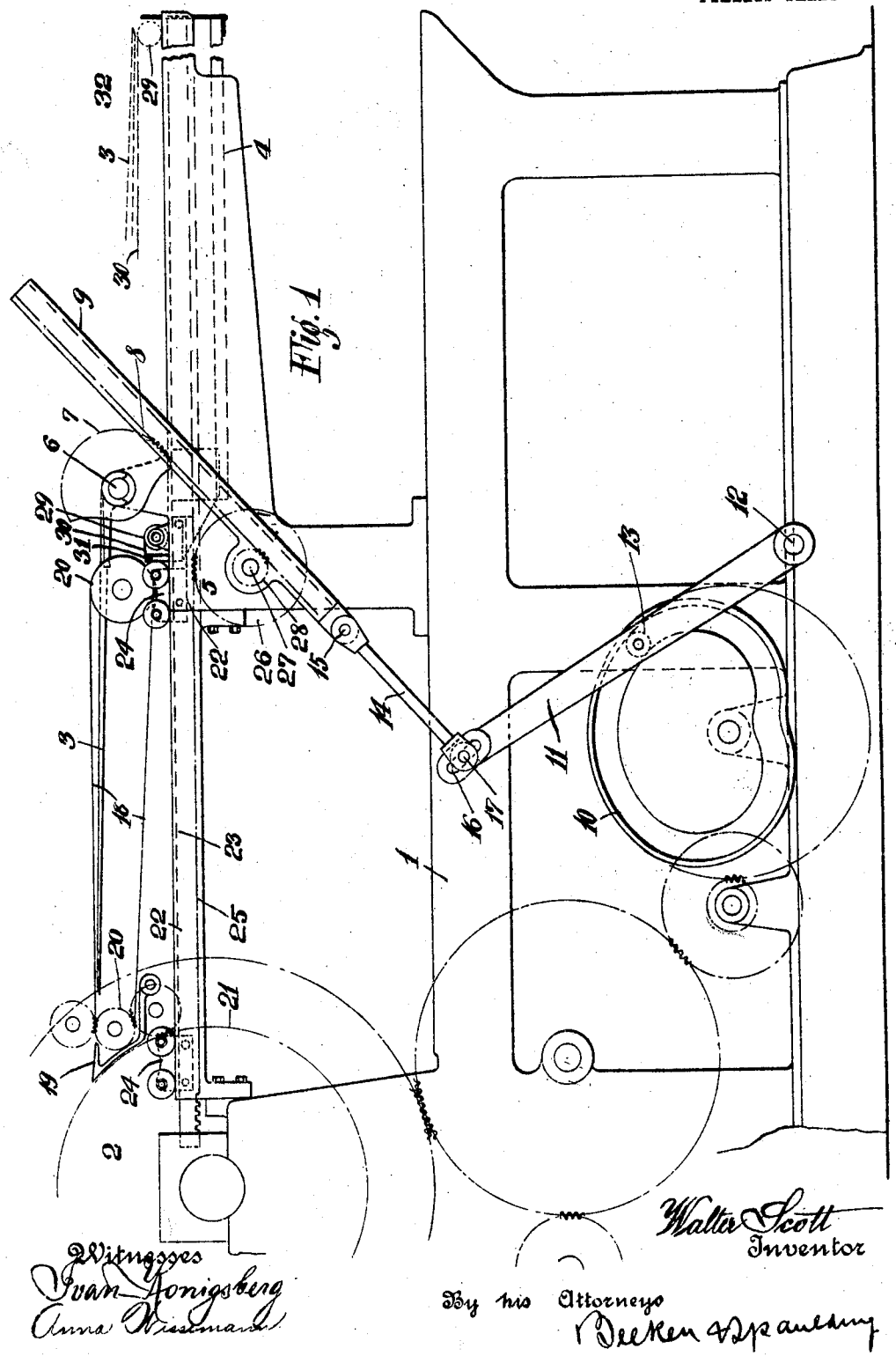


Fig. 1.

Witnesses
Ivan Konigsberg
Anna Wissmann

Walter Scott
Inventor

By his Attorneys
Deeken & Spaulding

ANDREW B. GRAHAM CO., PHOTO-LITHOGRAPHERS, WASHINGTON, D. C.

W. SCOTT, DEC'D.

I. & D. J. SCOTT, EXECUTORS.

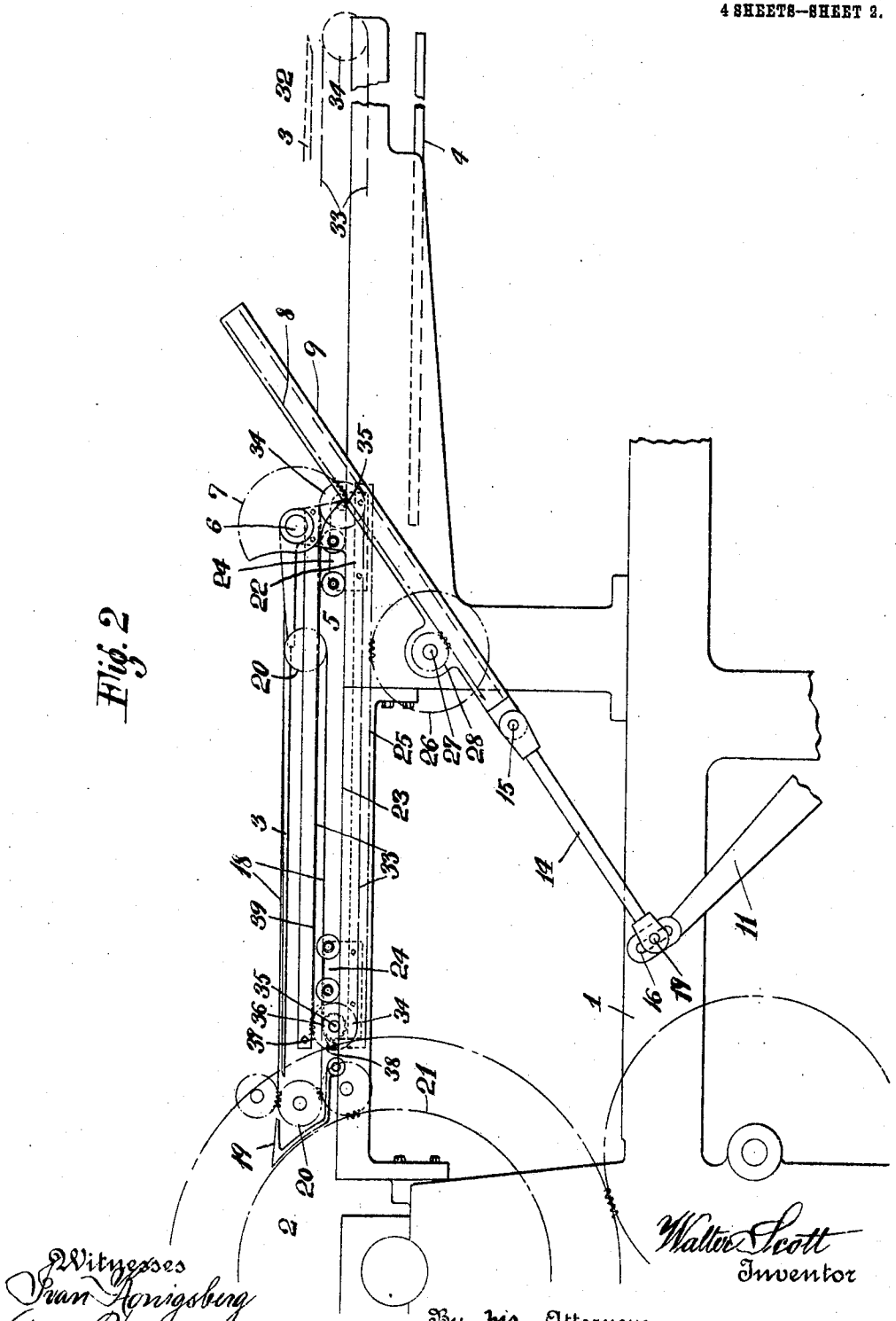
DELIVERY MECHANISM.

APPLICATION FILED MAR. 6, 1905.

956,193. Patented Apr. 26, 1910.

4 SHEETS—SHEET 2.

Fig. 2



Witnesses
Evan Konigsberg
Anna Wiseman

Walter Scott
Inventor

By his Attorneys
Deeken & Spaulding

W. SCOTT, DEC'D.

I. & D. J. SCOTT, EXECUTORS.

DELIVERY MECHANISM.

APPLICATION FILED MAR. 6, 1905.

956,193. **Patented Apr. 26, 1910.**

4 SHEETS—SHEET 3.

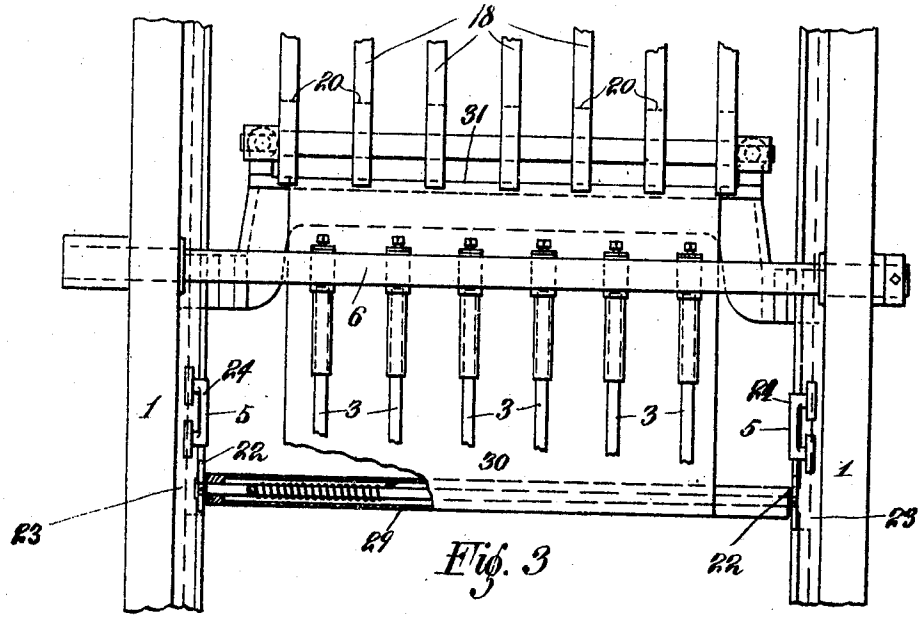


Fig. 3

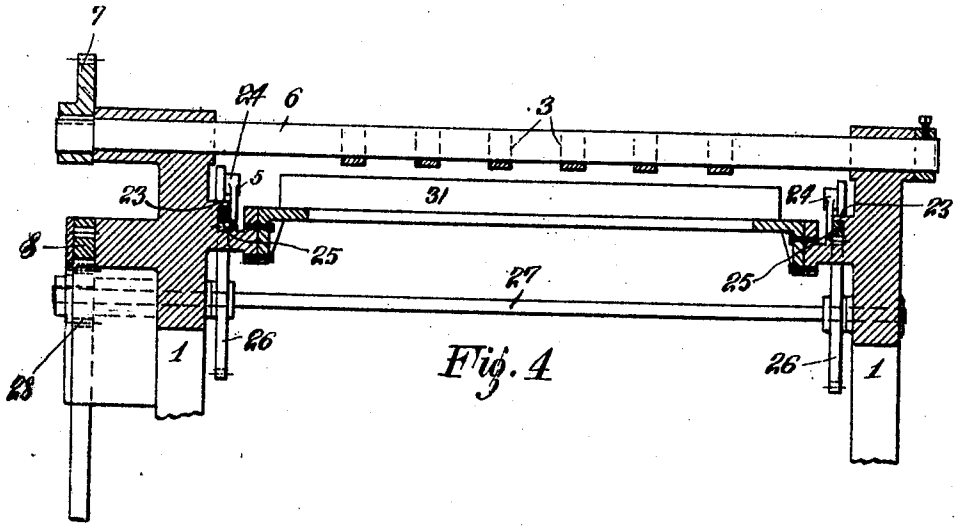


Fig. 4

Witnesses
Ivan Konigsberg.
Anna Kriesmann

Walter Scott Inventor

By his Attorneys
Deeken & Spaulding

W. SCOTT, DEC'D.

I. & D. J. SCOTT, EXECUTORS.

DELIVERY MECHANISM.

APPLICATION FILED MAR. 6, 1905.

956,193. Patented Apr. 26, 1910.

4 SHEETS—SHEET 4.

Fig. 5

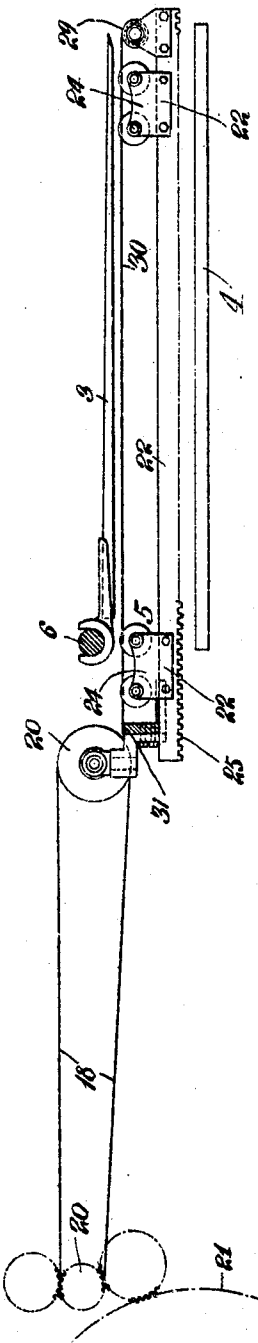


Fig. 7

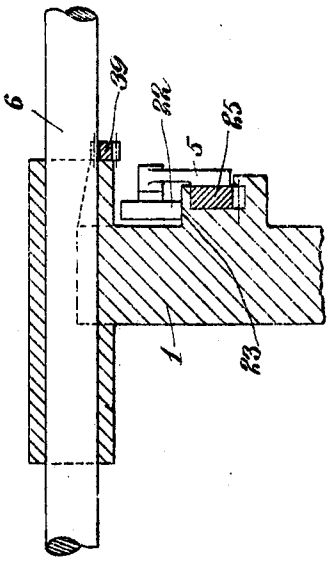
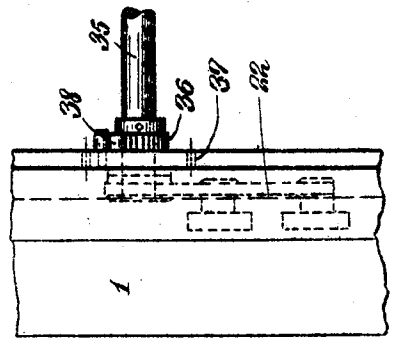


Fig. 6



Witnesses

Ivan Konigsberg

Anna Riedmann

Walter Scott Inventor

By his Attorneys

Deeken & Spaulding

UNITED STATES PATENT OFFICE.

WALTER SCOTT, OF PLAINFIELD, NEW JERSEY; ISABELLA SCOTT AND DAVID JOHN SCOTT EXECUTORS OF SAID WALTER SCOTT, DECEASED.

DELIVERY MECHANISM.

956,193. Specification of Letters Patent. Patented Apr. 26, 1910.

Application filed March 6, 1905. Serial No. 248,589.

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 Mechanisms, of which the following is a specification.

The present invention relates generally to delivery mechanisms for printing or other machines, and has more particular reference to means for delivering the sheet with the printed side down.

In delivering sheets of paper from a printing machine, a device known as a fly is commonly used. This device acts to turn the sheets over and throws them down quickly on a receiving table forcing the air out underneath and causing the sheets to adhere to each other. This is especially true when a fine quality of work is done, and a considerable amount of ink is used. The result of this adhesion is a smutting of the sheets, and a consequent deterioration in the quality of the work.

The object of the invention is to avoid this and to provide means whereby the sheets will fall gradually and easily upon the delivery board. To this end, it is proposed to interpose an intermediate means between the fly and delivery board which acts to receive the turned sheet from the fly and to drop it onto the delivery board without force, allowing it to settle on the said board by its own weight.

The structure disclosed in this application is characterized by a fly, a delivery board and a reciprocating sheet delivery mechanism, the latter preferably of a collapsible nature such as the well known collapsible apron, although the invention is not necessarily limited to a construction involving the latter. In order to give as little shock to the sheet as possible, it is preferable that this reciprocating delivery should be in a state of rest with relation to the sheet as it falls from the same. This is accomplished by moving the surface of the delivery in the opposite direction to that of the movement of the mechanism itself, these two motions neutralizing each other. Some time necessarily elapses while the sheet is fed onto the fly, and the driving means for the latter are therefore arranged so that a dwell is given to the fly sufficient to allow the sheet to be fed properly into position on the same. The fly and reciprocating delivery must of course be operated in unison and the reciprocating delivery mechanism partakes of this dwell which is imparted to the fly. Preferably the fly and reciprocating delivery mechanism are operated from the same cam.

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

In the accompanying drawings there is shown a structure embodying the invention in a concrete form, but this structure is not to be construed as an exact limitation of the invention.

In the said drawings: Figure 1 is a side elevation of a machine, embodying the invention. Fig. 2 shows a modification. Fig. 3 is a plan view of the fly shaft and adjacent elements, with parts broken away and in section. Fig. 4 is a transverse vertical sectional view through the shaft 6 of Fig. 1. Fig. 5 is a diagrammatic view of the parts showing the fly as having delivered the sheet to the reciprocating member. Fig. 6 is a plan view of a portion of the parts shown in Fig. 2 showing the means for imparting motion to the tapes. Fig. 7 is a transverse vertical sectional detail view through shaft 6 of Fig. 2.

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

1 indicates a framework of a suitable construction properly mounting the parts comprising the machine.

2 is an impression or other cylinder, while 3 indicates the fly, 4 the receiving table, and 5 the reciprocating delivery mechanism.

The fly is of any suitable construction and is mounted on the rockshaft 6 carrying the segment 7 operated by means of the rack 8 sliding in the guide 9 and receiving its motion from the cam 10 by means of the lever 11 pivoted at 12 and carrying the roll 13. The connection between the lever 11 and rack 8 is effected by means of the rod 14 pivoted to the rack at 15 and connected to the lever 11 by means of a slot 16 and pin 17 in a well known manner. This cam 10 is geared with relation to the printing cylinder so as to make one revolution to each two revolutions of the said impression cylinder.

Suitable sheet conveying means are of course interposed between the impression cylinder and fly. In the present instance

these means take the form of tapes 18 and the guide 19. These tapes pass over suitable rollers as 20 suitably operated from the gear 21 on the impression cylinder. The parts are so arranged that the fly will be slightly below the level of the tapes when in position to receive the sheets. The cam is provided with a dwell in a well known manner so as to allow the sheets to be fed onto the fly.

The reciprocating delivery mechanism consists of a carriage 22 sliding on tracks 23 on the framework by means of the hangers 24 and is provided with the racks 25 meshing with the gears 26 on the shaft 27 which latter carries a pinion 28 meshing with the rack 8. The reciprocating carriage further carries a roller 29 on which is wound a collapsible apron 30 whose other end is attached to the fixed bar 31 and is constructed with a spring tension in a well known manner so as to cause the apron to rewind on the return stroke and to be drawn out on the forward stroke of the carriage.

As the sheet comes from the impression cylinder it passes over the guide 19 and tapes 20 with the printed side up, the fly being in the position shown in Fig. 1 and being maintained in this position, together with the reciprocating delivery mechanism, by reason of the dwell on the cam 10. The fly now rises and the reciprocating delivery mechanism moves forward drawing out the collapsible apron 30. When the limit of this movement is reached as indicated at 32 in dotted lines and in Fig. 5, the apron will be completely drawn out and will receive the overturned sheet from the fly. Upon the return stroke, the fly will rise to move back to its original position and the reciprocating delivery mechanism will return thereby rewinding the apron and withdrawing it from underneath the sheet, thereby allowing the sheet to drop gently onto the receiving board with the printed side down. It will be understood that on this return stroke of the reciprocating delivery mechanism there is a double motion which results in a state of rest of the surface of the apron. This is caused by the fact that the whole device moves bodily backward while the upper surface moves forwardly by reason of the rewinding of the apron.

In Figs. 2, 6 and 7 there is shown a modification which is identical with the foregoing construction except for the reciprocating delivery mechanism. In this instance, there is provided a set of tapes as 33 mounted on rollers 34 on the shafts 35 of the reciprocating carriage. One of these shafts 35 is provided with a ratchet 36 mounted fast on the same and carries further a gear 37, loosely mounted, having the pawl 38 engaging with the said ratchet. The gear 37 is in mesh with the stationary rack 39 on the framework so that on the return stroke of the reciprocating carriage, motion will be imparted to the tapes in a forward direction whereby the surface on which the sheet lies will be at rest. If desired, this ratchet and pawl mechanism could be dispensed with and the tapes driven both on the forward and return stroke. In this modification the fly will deposit the sheet on the reciprocating delivery mechanism (that is the tapes) and on the return stroke the sheet will drop down on the delivery board.

The reciprocating delivery mechanism need not partake of the dwell which is imparted to the fly while the sheet is run out over it, but may be driven by a crank movement and may be operated from a separate cam.

The reciprocating delivery mechanism as shown in the modification may reach back to the impression cylinder and be operated as shown in Patents #594,054 and 673,363 or as shown in Patent #591,223.

In some cases the sheet will run onto the fly by the momentum of the impression cylinder without the aid of tapes to support the sheet. Likewise, the sheet supporters could be a series of rods or the like with means to crowd off the sheet as shown in Patent #610,491.

What is claimed is:

1. In a printing machine, the combination of a fly, a delivery board, and a reciprocating delivery mechanism adapted to receive the sheet from the fly and to deliver it printed side down to the delivery board.

2. In a printing machine, the combination of a fly, a delivery board, a reciprocating delivery mechanism adapted to receive the sheet from the fly and to deliver it to the delivery board printed side down, and a sheet conveying means for conveying the sheets to the fly.

3. In a printing machine, the combination of a fly, a delivery board, and a reciprocating delivery mechanism, the fly and delivery mechanism being mounted independent of each other, means for operating the fly and simultaneously therewith the reciprocating delivery mechanism whereby the latter moves forward over the board so as to receive the sheet from the fly, and on its return stroke moves from underneath the sheet and delivers it to the delivery board.

4. In a printing machine, the combination of a fly, a delivery board, and a reciprocating delivery mechanism, the fly and delivery mechanism being relatively stationary with respect to each other, means for operating the fly and simultaneously therewith the reciprocating delivery mechanism whereby the latter moves forward over the board so as to receive the sheet from the fly, and on its return stroke moves from underneath the sheet and delivers it to the delivery board,

and a sheet conveying means for conveying the sheets to the fly.

5. In a printing machine, the combination of a fly, a delivery board, an intermediate means adapted to receive the sheet from the fly printed side down, and means for withdrawing the said intermediate means from underneath the sheet thereby allowing it to drop onto the delivery board.

6. In a printing machine, the combination of a fly, a delivery board, an intermediate means adapted to receive the sheet from the fly printed side down, means for withdrawing the said intermediate means from underneath the sheet thereby allowing it to drop onto the delivery board, and a sheet conveying means for conveying the sheets to the fly.

7. In a printing machine, the combination of a fly, a reciprocating delivery mechanism adapted to receive sheets from the said fly, the fly being mounted independent of the delivery mechanism, a cam, and means for operating both the fly and reciprocating delivery mechanism simultaneously from the said cam.

8. In a printing machine, the combination of a fly, a reciprocating delivery mechanism, the fly and delivery mechanism being mounted independent of each other, means for imparting motion to both simultaneously, and for causing both to dwell while the fly receives the sheet.

9. In a printing machine, the combination of a fly, a reciprocating delivery mechanism adapted to receive sheets from the said fly printed side down, means for imparting motion to both simultaneously, and for causing both to dwell while the fly receives the sheet.

10. In a printing machine, the combination of a fly, a reciprocating delivery mechanism, the fly and delivery mechanism being mounted independent of each other, means for imparting motion to both simultaneously, and for causing both to dwell while the fly receives the sheet, and a sheet conveying means for conveying the sheets to the fly.

11. In a printing machine, the combination of a fly, a reciprocating delivery mechanism adapted to receive sheets from the said fly printed side down, means for imparting motion to both simultaneously, and for causing both to dwell while the fly receives the sheet, and a sheet conveying means for conveying the sheets to the fly.

12. In a printing machine, the combination of a fly, a reciprocating delivery mechanism, said fly being mounted relatively stationary with respect to the reciprocating delivery mechanism, means for operating the fly and reciprocating the delivery mechanism simultaneously, and means for moving the surface of the delivery mechanism on which the sheet rests in a direction opposite to that of the direction of movement of the mechanism itself.

13. In a printing machine, the combination of an impression cylinder, a sheet fly, a reciprocating delivery mechanism adapted to receive the sheet from the fly printed side down and deliver it to a delivery board.

14. In a printing machine, the combination of an impression cylinder, a sheet fly, a sheet support to receive the sheet from the fly printed side down, a receiving board and means rolling the support from under the sheet and allowing it to fall on the receiving board.

15. In a printing machine, the combination of a fly, a receiving board, an intermediate reciprocating sheet support receiving sheets from the fly, and on which the sheet rests without sliding thereon while being delivered to the receiving board the fly being relatively stationary with respect to the reciprocating sheet support.

16. In a printing machine, the combination of a fly, a receiving board, an intermediate sheet support receiving sheets from the fly with the printed side down, and on which the sheet rests without sliding thereon while being delivered to the receiving board.

17. In a printing machine, the combination of a fly, a receiving board, a sheet support on which the sheets are laid by the fly printed side down and remain at rest in the same relation thereto until they are delivered.

18. In a printing machine, the combination of a fly, a receiving board, an intermediate reciprocating sheet support which receives the sheet while at rest and supports the sheet without sliding under it while the sheet is being laid on the receiving board the fly being relatively stationary with respect to the reciprocating sheet support.

19. In a printing machine, the combination of a fly, a receiving table, a reciprocating sheet support adapted to receive the sheet printed side down while it is at rest and having a roller at its outer end, the upper side of which revolves outwardly at the same speed as the carriage turns backwardly, whereby the sheets are delivered without sliding over the roller said fly and sheet support being relatively stationary with respect to each other.

20. In a printing machine, the combination of a fly, and a reciprocating delivery mechanism adapted to receive the sheet from the fly printed side down.

21. In a printing machine, the combination of a fly, a reciprocating delivery mechanism adapted to receive the sheet from the fly printed side down, and sheet conveying means for conveying sheets to the fly.

22. In a printing machine, the combina-

tion of a fly, and a collapsible apron adapted to receive the sheet from the fly printed side down.

23. In a printing machine, the combination of a fly, a collapsible apron adapted to receive the sheet from the fly printed side down, and sheet conveying means for conveying sheets to the fly.

24. In a printing machine, the combination of a fly, a delivery board, and a collapsible apron adapted to receive the sheet from the fly printed side down and to deliver it to the delivery board.

25. In a printing machine, the combination of a fly, a delivery board, a collapsible apron adapted to receive the sheet from the fly printed side down and to deliver it to the delivery board, and sheet conveying means for conveying sheets to the fly.

26. In a printing machine, the combination of a fly, a delivery board, a reciprocating delivery mechanism adapted to receive the sheet from the fly and to deliver it to the delivery board, the fly being relatively stationary with respect to the reciprocating delivery mechanism, a sheet conveying means for conveying the sheets to the fly, and means for operating the fly and for causing it to dwell while it receives the sheet.

27. In a printing machine, the combination of a fly, a reciprocating delivery mechanism adapted to receive the sheet from the fly, the fly being mounted independent of the delivery mechanism, sheet conveying means for conveying sheets to the fly, and means for operating the fly and for causing it to dwell while it receives the sheet.

28. In a printing machine, the combination of a fly, a collapsible apron adapted to receive the sheet from the fly printed side down, sheet conveying means for conveying sheets to the fly, and means for operating the fly and for causing it to dwell while it receives the sheet.

29. In a printing machine, the combination of a fly, a delivery board, a collapsible apron adapted to receive the sheet from the fly printed side down and to deliver it to the delivery board, sheet conveying means for conveying sheets to the fly, and means for operating the fly and for causing it to dwell while it receives the sheet.

Signed at New York this 2nd day of March 1905.

WALTER SCOTT.

Witnesses:

IVAN KONIGSBERG,

GEO. A. HOFFMAN.