

W. J. MAIN.
 SHEET DELIVERY MECHANISM.
 APPLICATION FILED JULY 3, 1908.

953,045.

Patented Mar. 29, 1910.

2 SHEETS—SHEET 1.

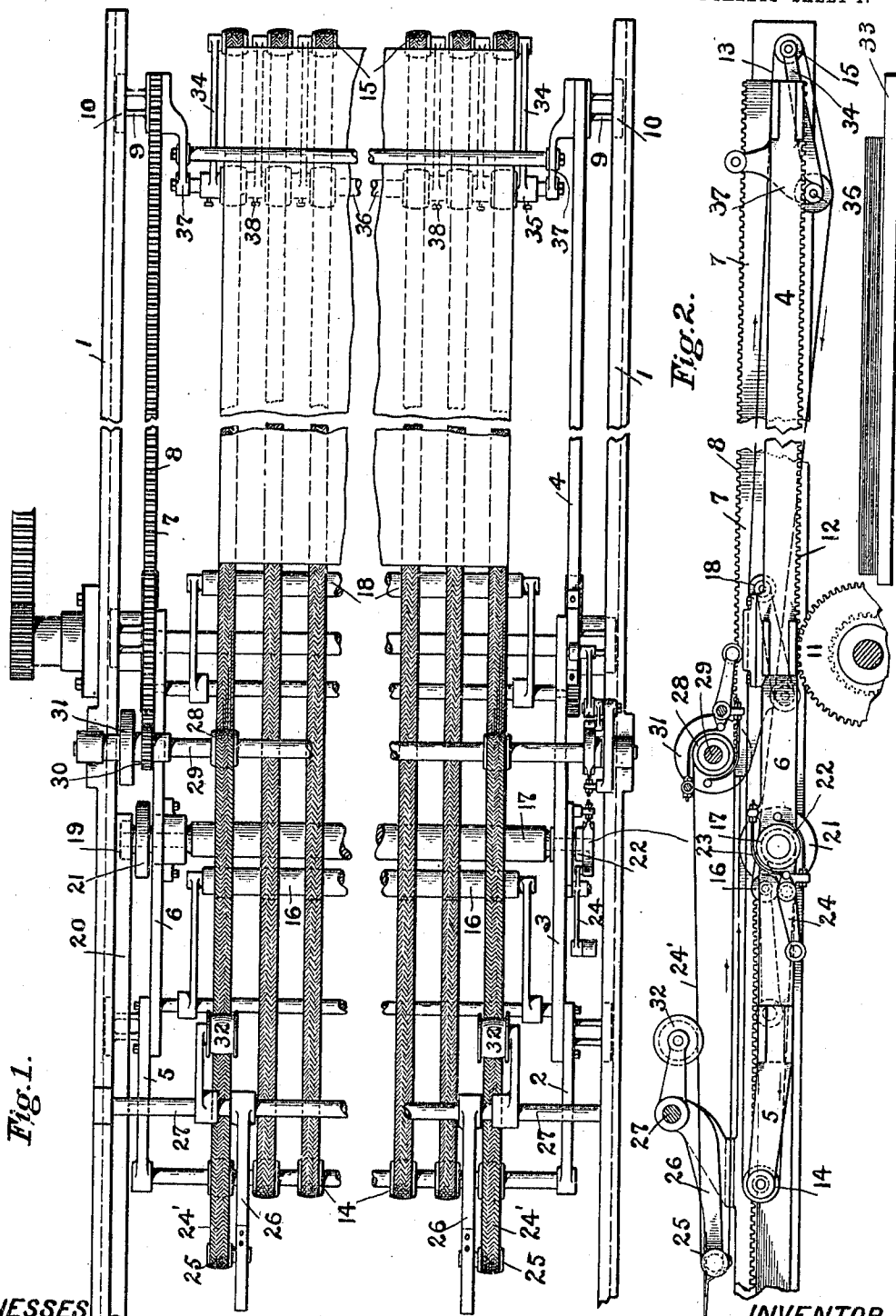


Fig. 1.

Fig. 2.

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INVENTOR
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 by Phillips Sawyer & Rice & Company
 Attys

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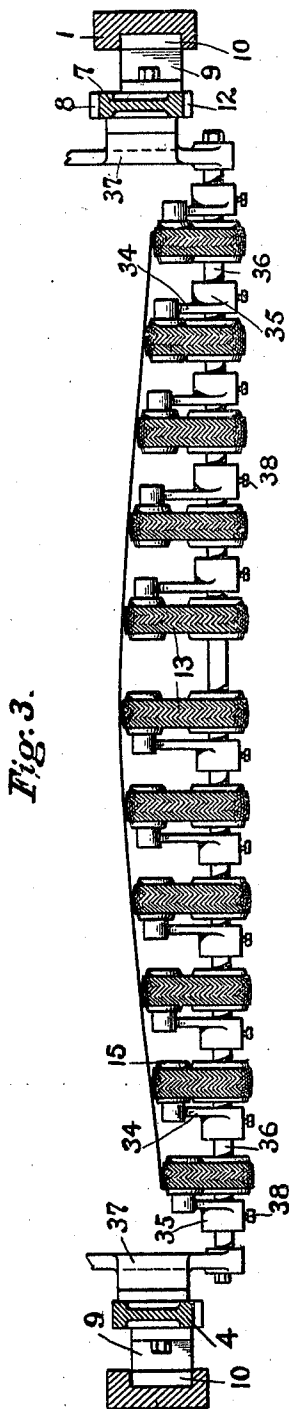


Fig. 3.

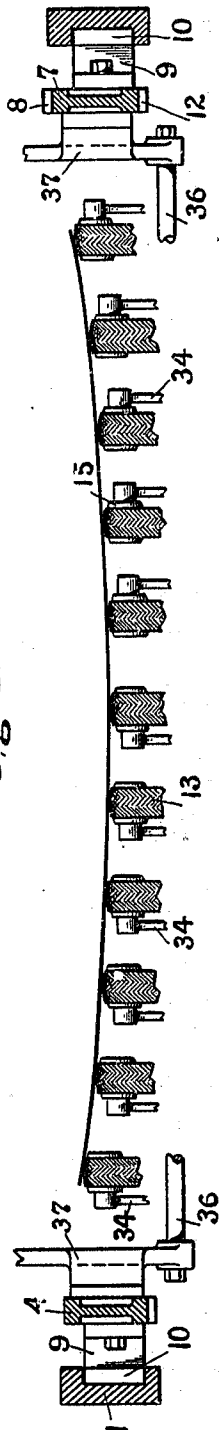


Fig. 4.

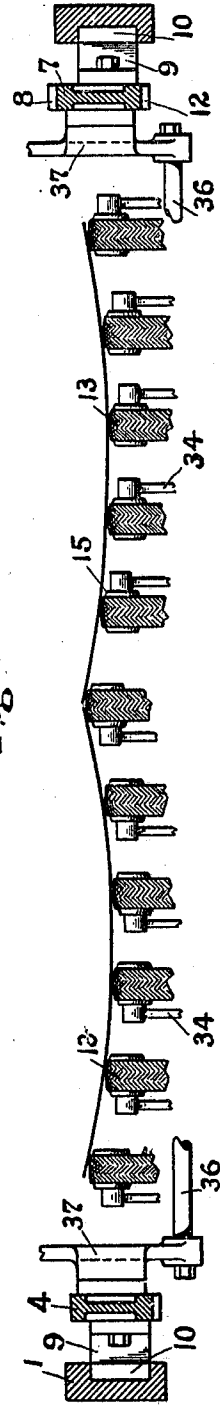


Fig. 5.

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UNITED STATES PATENT OFFICE.

WILLIAM J. MAIN, OF NEW YORK, N. Y., ASSIGNOR, BY MESNE ASSIGNMENTS, TO R. HOE AND CO., OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

SHEET-DELIVERY MECHANISM.

953,045.

Specification of Letters Patent. Patented Mar. 29, 1910.

Application filed July 3, 1908. Serial No. 441,810.

To all whom it may concern:

Be it known that I, WILLIAM J. MAIN, a citizen of the United States, residing at New York, county of New York, and State of New York, have invented certain new and useful Improvements in Sheet-Delivery Mechanisms, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention relates to certain improvements in sheet delivery mechanisms of the type usually characterized as "flat deliveries."

In certain classes of machines, deliveries are employed by which the sheet is delivered flat onto a sheet receiving table, the sheet being positively carried forward, usually by tapes, and dropped therefrom onto a table.

With deliveries of this character, difficulty has been experienced in properly effecting the delivery of the sheets to the receiving table, especially where wide sheets are being handled, for the reason that with some sheets the sides and corners have a tendency to drop on the receiver first and the corners also tend to curl under the body of the sheet.

Further, as the sides drop first, a certain amount of air is liable to be inclosed under the sheet, so that the sheet tends to float or swerve on the pile and blur the printing of the sheet underneath, it being understood that this class of deliveries are usually employed where particular pains are taken not to in any way mar the printing on the sheet.

It may also happen with this class of deliveries, when the sheet is delivered to the transporting tapes or other devices which are in turn to deliver it to the receiving table, that the sheet has a tendency to curl or bend transversely of its path, and to such an extent that its delivery is interfered with.

The object of this invention is to produce a delivery mechanism employing a sheet receiver on which the sheets are to be delivered flat, the sheets being transported to a receiver by suitable devices which will give the sheet a bend transversely to its path as it is delivered thereto, insuring its accurate delivery to the receiver.

A further object of the invention is to produce a delivery mechanism employing a receiver on which the sheets are to be laid flat, the sheets being delivered to the receiver by a series of transporting devices

which can be adjusted so as to permit the sheets to bend with respect to their path, thus insuring the accurate delivery of the sheets to the receiver.

With these and other objects not specifically referred to in view, the invention consists in certain constructions, and in certain parts, improvements and combinations as will be hereinafter fully described and then specifically pointed out in the claims.

Referring to the accompanying drawings—Figure 1 represents, in plan view, a construction embodying the improved delivery mechanism. Fig. 2 is a side elevation of the construction illustrated in Fig. 1. Figs. 3, 4 and 5 are end elevations of a portion of the construction illustrated in Fig. 1 showing various adjustments of the delivery tapes which may be obtained.

The delivery mechanism which has been selected to illustrate an embodiment of the invention is of the well-known reciprocating carriage type, the carriage being reciprocated between the printing machine and the receiving table and being supplied with movable tapes by which the sheet is advanced on the backward movement of the carriage.

Referring to the drawings, the rails or tracks are indicated at 1 on which the carriage is supported and moved. The carriage, in the construction illustrated, consists of suitable side bars 2, 3, 4, 5, 6, 7, the bar 7 being formed with teeth 8. The bars carry projections 9 which in turn support slides 10 which move in grooves in the rails 1. As illustrated, this carriage is reciprocated by pinions 11 which engage with racks 12 formed on the under sides of the bars 4 and 7.

Constructions embodying the invention will employ suitable sheet transporting devices which may be varied in construction. In the particular construction illustrated, these transporting devices include a set of tapes 13 which pass around pulleys 14 at the rear end of the carriage and pulleys 15 at the front end of the carriage. The under run of the tapes 13 passes around a roll 16, then around a driving roll 17 from which roll the tapes lead back to the roll 14. A suitable tightening roll, as 18, may be employed in connection with the tapes, if desired.

The shaft of the roll 17 is provided with

a pinion 19 (see dotted lines in Fig. 1) which meshes with a rack formed on the under side of a bar 20, this pinion being connected to and disconnected from the shaft 5 by means of a clutch construction, indicated at 21, and the shaft is further provided with a hub 22 which is engaged by a friction lock, such as a band brake 23 operated at suitable times from a lever 24. 10 The construction is such that as the carriage reciprocates toward the right, the pinion 19 runs free on the shaft of the roll 17 and there is no movement of the tapes, the roll being held stationary by the band brake mechanism referred to. When, however, the 15 carriage is reciprocated toward the left the clutch comes into action, the pinion is locked to its shaft and the roll is rotated, producing a movement of the tapes toward the right as the clutch travels toward the left, thus advancing the sheet with respect to the carriage.

If desired, there may be used in connection with the transporting tapes before referred 25 to holding tapes such as 24', these tapes passing around pulleys 25 carried on guide bars 26, these bars being fast on a rod 27 supported on the tracks on which the carriage moves. These tapes also pass around pulleys 30 28 fast on a shaft 29, this shaft being provided with a pinion 30 which meshes with a rack 7 before referred to. This pinion is connected with the shaft by means of a clutch construction, indicated at 31, this construction being similar to the clutch construction 21 before referred to, its operation being to permit the pinion to run loose on the shaft during the forward movement of the carriage or the movement to the right, and be locked to the shaft so as to drive the tapes on the backward movement of the carriage or its movement to the left. Suitable tighteners, as 32, may be employed in connection with these tapes 24'.

45 It is here remarked that the carriage delivery mechanism so far described is well-known in the art, and the details which have been described have no reference to the invention, the mechanism having been selected 50 merely to illustrate a type of mechanism in which the invention may be embodied.

Constructions embodying the invention will have the sheet transporting devices, whatever their construction may be, so arranged as to 55 bend or deflect the sheet transversely to its path of movement at the time of its delivery to the sheet receiver, this receiver being indicated at 33, in Fig. 2. When, as in the construction illustrated, the sheet transporting devices consist of tapes, the outer ends 60 or runs will be supported by pulleys 15.

The bend in the sheet may be effected by properly arranging these pulleys so as to produce the bend desired. In the particular 65 construction illustrated, the pulleys are car-

ried on arms 34, these arms extending from hubs 35 which are supported by a cross rod 36. The rod 36 is carried by brackets 37 extending from the bars of the carriage 4 and 7 before referred to. The hubs 35 are loose 70 on the rod 36 so as to be capable of adjustment axially about it, and may be secured in adjusted position in any suitable manner, as, for instance, by set screws 38. With the construction described, it will be understood 75 that, by adjusting the rolls 15, the sheet, as it is delivered to the table, will be given a transverse bend, and this bend may be of such a character as to produce the desired result in the delivery of the sheet. In the 80 construction shown in Fig. 4, for instance, the pulleys and tapes are so arranged that the sheet is allowed to have a downward bend in its center. As the sheet is delivered therefore, there is no tendency of the forward corners to curl or bend under the sheet and the air will escape from under the sheet in such a way as to permit the sheet to settle on the tapes beneath it without tendency to float or swerve. 90

In the construction shown in Fig. 5, the pulleys will be properly arranged for the delivery of two sheets to effect the result just described in connection with the arrangement shown in Fig. 4. 95

In carrying out the invention, the conditions most usually arising will be met by substantially the arrangement of tapes shown in Figs. 4 and 5. It may happen, however, that the sheet laid on the tapes will have a tendency to bend upward strongly at the edges. When this condition is found to exist, it may be corrected by arranging the tapes and pulleys as shown in Fig. 3, that is, the center pulleys may be moved upward 105 so as to permit the sheet to bend downward at the edges. As the sheet is delivered and passes off the tapes and pulleys, it will tend to resume its prior shape, that is, straighten itself, so that it will be properly delivered. 110

Changes and variations may be made in the construction by which the invention is carried into effect. The invention is not, therefore, to be limited to the specific constructions herein described and illustrated 115 in the accompanying drawings.

What is claimed is:—

1. In a delivery mechanism, the combination with a sheet receiver on which the sheets lie flat, of a series of movable tapes upon 120 which the sheet lies and by which it is delivered to the receiver, the runs of the tapes of the series being parallel to each other, and a series of adjustable supports for the tapes located at the ends of the outer runs 125 thereof, whereby the tapes may be adjusted so as to permit the sheet to bend transversely to its path as it is delivered.

2. In a delivery mechanism, the combination with a reciprocating delivery carriage, 130

of a plurality of sheet transporting tapes, a plurality of adjustable supports for the outer runs of the tapes, and a receiver to which the tapes deliver.

5 3. In a delivery mechanism, the combination with a reciprocating carriage, of a series of sheet transporting tapes carried thereon, a rod extending across the carriage at its delivery end, arms on the rod and
10 adjustable axially about it, a series of pulleys

around which the tapes pass carried on the arms, and a delivery table to which the tapes deliver the sheets.

In testimony whereof, I have hereunto set my hand, in the presence of two subscribing
15 witnesses.

WILLIAM J. MAIN.

Witnesses:

F. W. H. CRANE,
LOUIS ROEHM.