Nov. 15, 1966 R. E. LINDEMANN 3,285,607

SHEET DELIVERY MECHANISM HAVING AN AUXILIARY PILE SUPPORT

Filed Oct. 14, 1964 2 Sheets-Sheet 1

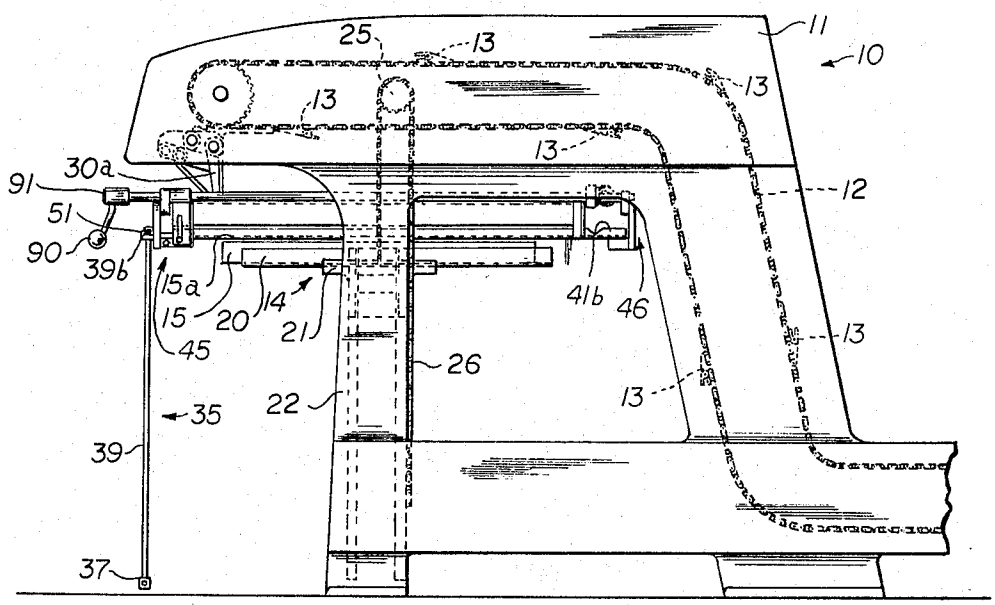

FIG. 1

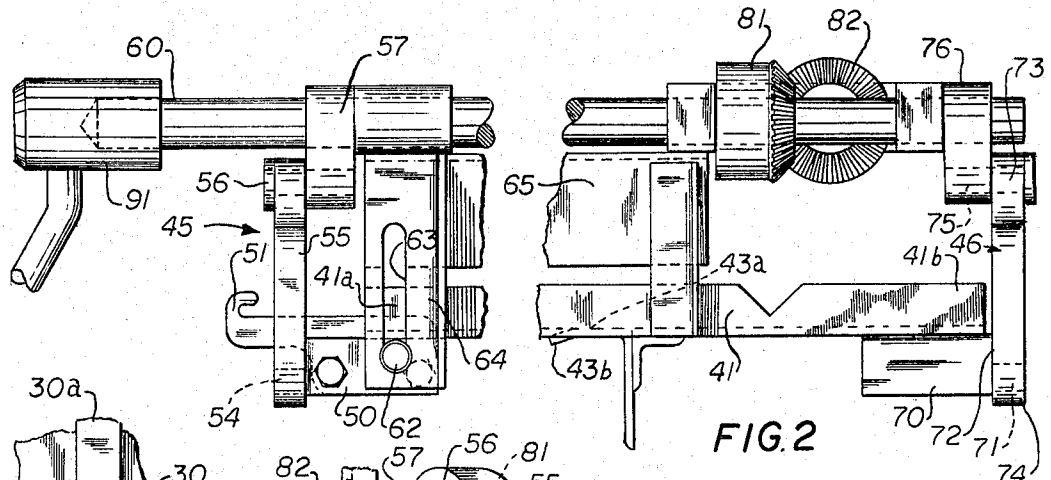

FIG. 2

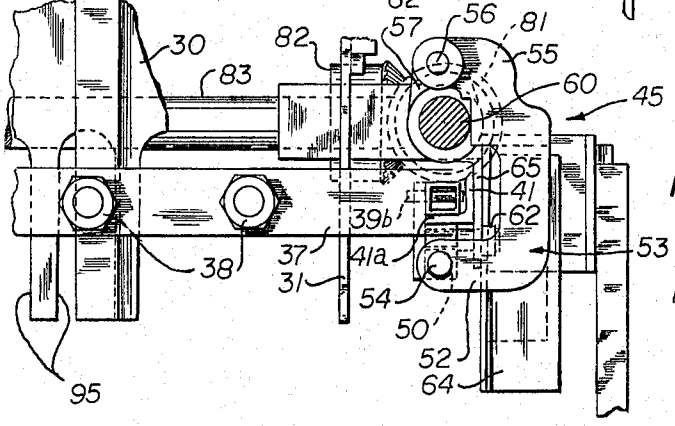

FIG. 4

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SHEET DELIVERY MECHANISM HAVING AN AUXILIARY PILE SUPPORT

Filed Oct. 14, 1964 2 Sheets-Sheet 2

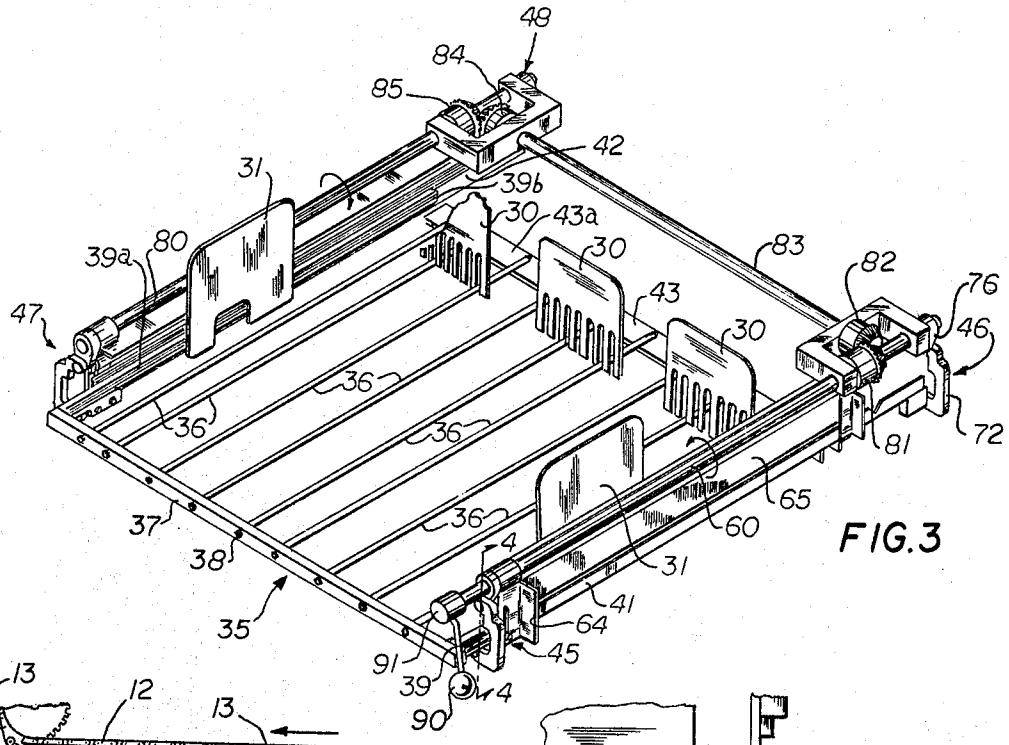

FIG. 3

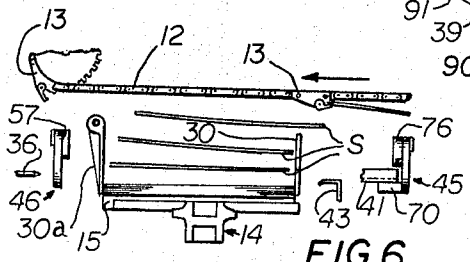

FIG. 6

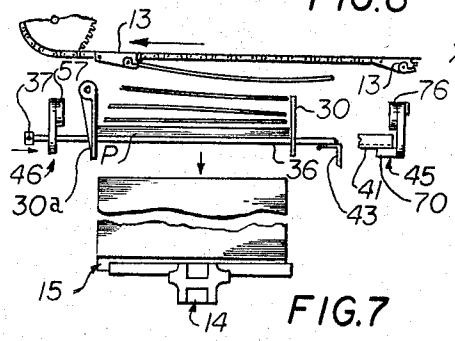

FIG. 7

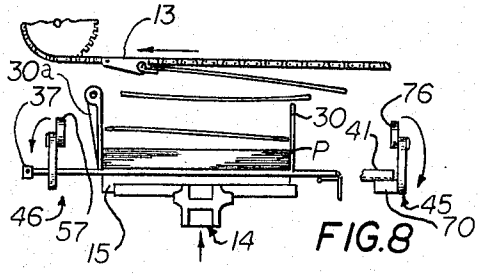

FIG. 8

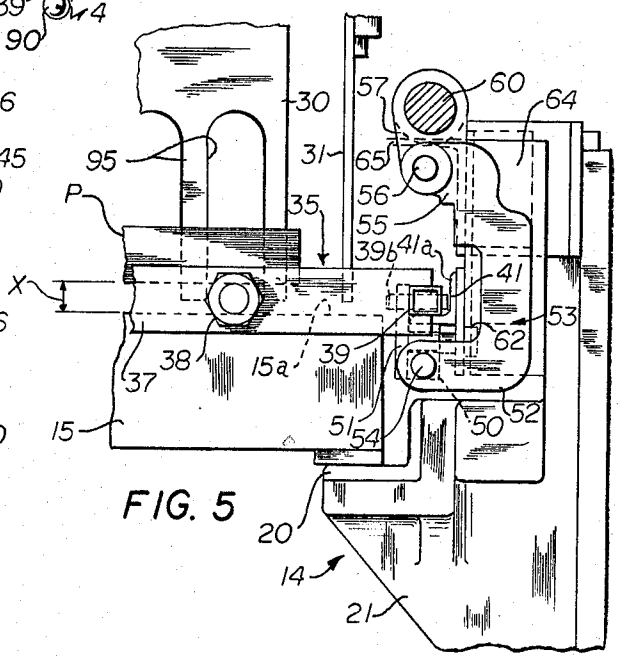

FIG. 5

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SHEET DELIVERY MECHANISM HAVING AN AUXILIARY PILE SUPPORT

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Filed Oct. 14, 1964, Ser. No. 403,735
15 Claims. (Cl. 271—68)

The present invention relates to a continuous sheet delivery mechanism having a sheet delivery conveyor which is operable to drop sheets from a position over a delivery hoist onto a pile-supporting platform on the delivery hoist to form a pile thereon, and wherein an auxiliary pile support is moved into position above the pile on the delivery hoist to catch sheets when the pile on the delivery hoist is removed therefrom.

Known continuous sheet delivery mechanisms include a main sheet pile support on which sheets are piled and an auxiliary pile support movable into position to receive sheets and support a pile thereon when the pile of sheets on the main hoist is removed from the delivery mechanism. The pile which builds up on the auxiliary pile support is then transferred to the main pile support which is moved into position under the auxiliary pile support after the pile of sheets has been removed therefrom. This transfer is effected by removing the auxiliary pile support and allowing the pile thereon to drop onto the main pile support thereunder.

The principal object of the present invention is the provision of a new and improved, simple delivery mechanism wherein the auxiliary pile support may be readily moved into its pile supporting position, the transfer of the pile from the auxiliary pile support to the main pile support is effected with a minimum of disarrangement thereof, and the pile on the auxiliary pile support may build to a relatively great height so as to permit the delivery mechanism to operate at relatively high speeds while the pile is being removed from the main pile support and without requiring rushing of the removal of the pile from the main pile support.

A further object of the present invention is the provision of a new and improved, simplified delivery mechanism having an auxiliary pile support movable into a first position above a main pile hoist and at a first distance from a delivery conveyor to receive sheets dropped from the delivery conveyor and hand-operated means effective to lower the auxiliary pile support to a second position above the main pile hoist at a second distance from the delivery conveyor to receive sheets dropped from the delivery conveyor and removable from the second position to a retracted position to transfer the sheets thereon to the main pile hoist thereunder.

Another object of the present invention is the provision of a new and improved sheet delivery mechanism, as noted in the next preceding paragraph, wherein support means is provided for supporting the auxiliary pile support in its first and second positions, and wherein the support means comprises rails located on opposite sides of the auxiliary pile support, which rails are movable between first and second positions corresponding with the first and second positions of the auxiliary pile support.

A still further object of the present invention is the provision of a new and improved sheet delivery mechanism having an auxiliary pile support movable between two vertically spaced positions and jogger means for arranging sheets deposited onto the support into a square pile and wherein the upper position of the auxiliary pile support is between the vertical extremities of the jogger means and the jogger means and auxiliary support are associated to enable positioning of the auxiliary support in its upper position from a location outside the jogger means.

Still another object of the present invention is the provision of a new and improved sheet delivery mechanism having a two-position auxiliary pile support which may be located at two different positions at different distances from the delivery conveyor and is movable between the two positions by hand-operated means, and wherein joggers are constructed and associated with the auxiliary pile support so as to jog the sheets delivered to the auxiliary pile support in both positions of the auxiliary pile support.

Further objects and advantages of the present invention will be apparent to those skilled in the art to which it relates from the following detailed description of the preferred embodiment thereof made with reference to the accompanying drawings forming a part of this specification and in which:

FIG. 1 is a fragmentary side elevational view of a delivery mechanism embodying the present invention;

FIG. 2 is a fragmentary side elevational view, with parts broken away, of a portion of the delivery mechanism of FIG. 1;

FIG. 3 is a fragmentary perspective view of a portion of the delivery mechanism in FIG. 1;

FIG. 4 is a sectional view of a portion of the delivery mechanism of FIG. 3, taken approximately along the section line 4—4 of FIG. 3, but with parts in a different position from that shown in FIG. 3;

FIG. 5 is a sectional view similar to FIG. 4 showing the parts in another operative position; and

FIGS. 6, 7, and 8 are schematic side elevational views illustrating different operative positions of the delivery mechanism shown in FIG. 1.

The present invention provides an improved delivery mechanism **10** for delivering sheets from a processing machine, such as a printing press, and piling the sheets. The delivery mechanism includes a suitable frame **11** for supporting the operating structures for handling the sheets being delivered by the mechanism. The delivery mechanism **10** also includes a chain conveyor **12** having a plurality of sheet grippers **13** supported thereon which grip the sheets and deliver the sheets to a release position over a pile-supporting hoist **14**. Suitable mechanism is provided at the release position for engaging the grippers to release a sheet carried thereby and a sheet released by the grippers **13** drops onto a support platform or skid **15** supported on the hoist **14**.

The delivery hoist **14** includes a pair of elongated spaced flange members **20** supported on a hoist member **21** which rides in a portion **22** of the frame **11**. The flange members **20** engage and support the skid **15**, the upper surface **15***a* of which receives the sheets and constitutes the sheet-supporting surface thereof. The delivery hoist **14** is lowered by operation of a suitable motor which turns a pair of sprockets **25** located on opposite sides of the delivery mechanism **10** and around each of which a chain **26** is trained and which is secured to the support member **21**. Upon movement of the sprocket, the chain **26** will either effect raising or lowering movement of the member **21** depending upon the direction of movement thereof and thereby raise or lower the skid **15**. A suitable detecting means for detecting the height of the pile may be provided for controlling the lowering of the hoist so that the top of the pile thereon stays at approximately the same level. Since these controls and mechanisms are well known in the art, they are not shown and will not be described in detail herein.

The delivery mechanism **10** also includes suitable pile squaring or jogger means which engage the edge of the sheets and align the sheets in the pile as they drop onto

the skid 15. The jogger means comprises a plurality of rear jogger plates 30 and a plurality of side jogger plates 31 located on opposite sides of the pile. The jogger plates 30, 31 are connected in a well-known manner to a suitable mechanism for moving the jogger plates inwardly and outwardly in a manner to engage the side edges of the sheets to jog and align the sheets with the other sheets in the pile. The jogger plates are also adjustable inwardly and outwardly of the pile in order to handle sheets of different dimensions.

The delivery mechanism 10 also includes a suitable front gate 30*a* which comprises a plurality of finger members extending vertically along the front edge of the pile of sheets. The front gate 30*a* is pivotally supported in the frame of the machine and may be pivoted from a vertically extending position, shown in FIG. 1, to a retracted position where sheets may be removed from the pile for inspection purposes. The front gate 30*a* when in its vertically extending position functions as a front stop again which the joggers align the sheets. The sheets as they build up on the delivery mechanism or the delivery hoist 14 and, specifically, on the skid 15 supported thereby form a pile which increases in height and which is removed from the delivery mechanism after reaching the desired height. To remove the pile from the delivery hoist 14, the delivery hoist is lowered to the floor level and the pile is removed therefrom and a new skid is positioned on the hoist and raised into pile-receiving position.

The delivery mechanism 10 is a so-called continuous delivery mechanism in that the conveyor 12 continuously delivers sheets from the processing machine, such as the printing press, to the delivery hoist 14 for piling thereon and is constructed so as to provide for catching or piling of the sheets delivered by the conveyor 12 during removal of the pile from the delivery hoist 14. The delivery mechanism 10 specifically includes an auxiliary pile supporting platen 35 which is movable into a position above the pile hoist 14 to intercept or catch sheets being dropped from the conveyor 12, while the main pile hoist 14 is lowered and the pile thereon is removed therefrom.

The platen 35, best shown in FIG. 3, comprises a plurality of tine members 36 which are suitably secured at one end to a base member 37 by means of suitable bolt and nut connecting means 38 and extend perpendicular thereto. The tine members 36 may be completely removed from the base member 37 or positioned thereon at different locations thereof, depending upon the size of the sheets being handled. The platen 35 also includes side support members 39, 39*a* which are connected to the base member 37 at the opposite ends thereof and extend substantially parallel to the tine members 36. The side support members 39, 39*a* each carry a small pin member 39*b* at the end thereof opposite the end connected to the base member 37, for a purpose to be described hereinbelow. The platen 35 receives sheets as they are being delivered thereto and a pile forms thereon while the main pile hoist 14 is being lowered for the removal of the previously formed pile therefrom. The main pile hoist 14 with a skid 15 thereon is then moved vertically into position under the platen 35 and the platen 35 is then removed from its position over the pile hoist 14, and the pile which has been formed thereon drops onto the skid 15 on the pile hoist 14 positioned therebeneath. The sheets which are then delivered by the conveyor 12 drop onto the pile which is now on the skid 15 and the operation is repeated when a pile builds up thereon.

In accordance with the present invention, the platen 35, when moved into a pile-supporting position to receive the sheets delivered by the conveyor 12, is located a relatively short distance from the delivery conveyor 12 so as to facilitate positioning thereof in position to receive sheets with a minimum sheet drop thereon. The platen 35 after being positioned over the delivery hoist 14 and relatively close to the delivery conveyor 12, may be lowered in order to permit a temporary pile of some substantial height to build up thereon. This also enables the delivery mechanism 10 to operate at a high speed without rushing the removal of the pile from the main hoist 14. Moreover, the distance through which the temporary pile on the platen drops when the platen 35 is withdrawn is relatively short, thereby minimizing disarrangement thereof.

The platen 35 is supported in a pile-receiving position above the main hoist 14 by a support means comprising a pair of rail guide tracks 41, 42 located on opposite sides of the delivery mechanism 10 and which extend parallel or substantially parallel to the delivery conveyor 12 and side support members 39, 39*a* of the platen 35. The rails 41, 42 extend the length of the pile and receive the side support members 39, 39*a* of the platen 35 to support the platen in pile-supporting position. The ends of the rails 41, 42 project beyond the rear jogger plates 30 and are interconnected by a rail or channel member 43 which extends therebetween. The channel member 43 has a tine-supporting surface 43*a* for supporting the ends of the tine members 36 opposite the ends connected to the base member 37. From the above description, it should be readily apparent that the platen 35 may be moved into its pile-receiving position by manually inserting the side members 39, 39*a* onto the members 41, 42, respectively, and pushing the platen 35 so as to cause the ends of the tines 36 to be supported on the upper supporting surface 43*a* of the channel member 43. The forward tip 43*b*, see FIG. 2, of the channel member 43 is bent downwardly so as to facilitate the positioning of the ends of the tine on the supporting surface 43*a* of the channel 43.

The rails 41 and 42 are supported for vertical movement relative to the conveyor 12 and relative to the delivery hoist 14 between two positions, in one of which the rails 41, 42 are located relatively close to the conveyor 12 for insertion of the platen 35 thereon and in the second of which the rails are located a greater distance from the conveyor 12 and in which position a pile of some height may be built up on the platen and from which the platen is removed for dropping of the temporary pile onto the main pile hoist. The rails 41, 42 are moved vertically by a suitable hand-operated linkage arrangement. The rail 41 is supported by linkage 45 at one end and by a linkage 46 at the other end thereof. Likewise, the rail 42 is supported by a linkage 47 at one end thereof and by a linkage 48 at the other end thereof. The linkages 45, 46 are similar in construction to the linkages 47, 48, respectively, and in view of the similarities, only the linkages 45, 46 will be described in detail, it being understood that the linkages 47, 48, respectively, are similar thereto and similar parts thereof are given similar reference numbers.

The linkage 45 supports the forward end of the rail 41 and includes a block member 50 to which the forward end 41*a* of the rail 41 is secured. The block member 50 has a hook portion 51 thereon projecting forwardly of the block 50, for a purpose to be described hereinbelow. The block member 50 is pivotally connected to one leg of a U-shaped link member 53 by means of a pin 54. The end 41*a* of the rail 41 is supported on the block member 50 at a position above the pin 54 and above the leg 52 of the U-shaped member 53. The other leg 55 of the U-shaped link member 53 is pivotally connected by means of a pin 56 to a link member 57 which is fixedly carried by a shaft 60 rotatably supported by the frame 11 of the delivery mechanism.

The block member 50 which forms a portion of the linkage mechanism 45 has a pin member 62 extending laterally therefrom and extending through a slot 63 in a guide plate 64 which extends vertically and is connected with a channel or support member 65 which extends along the side of the delivery mechanism 10. The pin member 62 cooperates with the guide plates 64 and specifically the surfaces thereof defining the slot 63 therein in order to guide the vertical movement of the block 50 and thereby guide the vertical movement of the rail 41.

The linkage means 46 which supports the rear end 41*b* of the rail 41 for vertical movement includes a block member 70 secured to the rear portion 41*b* of the rail member 41. The block member 70 is pivotally secured by means of a pin 71 to a link member 72 similar in construction to the link member 53. The U-shaped link member 72 has projecting arm members 73 and 74 defining an opening therebetween. The end of the arm 73 is pivotally connected by means of a pin 75 to a link member 76 which is fixedly secured on the shaft 60 at a location spaced from the location at which the link 57 is secured to the shaft 60. From the above description, it should be readily apparent that upon rotation of the shaft 60, the links 57 and 76 will be rotated therewith causing the pin members 56 and 75, respectively, connected therewith to be moved around the axis of the shaft 60. The pivoting movement of the links 56 and 75, respectively, effects movement of the link members 53 and 72 and due to the pivotal connection of the link members 53 and 72 to the link members 57 and 76, respectively, on the one hand, and to the block members 50 and 70, respectively, on the other hand, the rail member 41 will be moved vertically.

The shaft 60 is drivingly connected to a similar shaft 80 located on the side of the delivery mechanism opposite the side on which the shaft 60 is located and is operatively connected to effect actuation of the linkage mechanisms 47, 48 upon rotation thereof in a manner similar to that described hereinabove in connection with the linkage mechanisms 45, 46. The shaft 60 carries a bevel pinion gear 81 which meshes with a bevel pinion gear 82 which is fixedly secured on a shaft 83 which extends transverse of the conveyor 12 and carries a bevel pinion gear 84 on the end thereof opposite the end carrying the bevel pinion gear 82. The bevel pinion gear 84 meshes with a bevel pinion gear 85 carried on the shaft 80. It can, therefore, be seen that upon rotation of the shaft 60, through the bevel pinion gears and shaft 83, the shaft 80 is rotated therewith. Thus, upon rotation of the shaft 60 to effect raising or lowering movement of the rail 41, the rail 42 will likewise be raised or lowered therewith.

The rail members 41 and 42 may be raised and lowered between their respective extreme positions by manually effecting rotation of the shaft 60. A hand lever 90 is secured on the end of the shaft 60 by means of a hub 91, which is secured to the shaft 60 and to which the handle 90 is connected. It can be seen that the linkage mechanism for raising and lowering the rails 41, 42 is therefore hand-operated.

From the above description, it can be seen that the rails 41, 42 move vertically. As shown in FIG. 3, the rails are located in their lower position and movement of the handle 90 in a counterclockwise direction, as viewed in FIG. 3, effects rotation of the shafts 60 and 80 in the direction of the arrows shown in FIG. 3. Rotation of the shafts 60 and 80 in the direction of the arrows shown in FIG. 3 will effect raising movement of the rails 41 and 42 through the linkage mechanisms described hereinabove. The movement of the shafts is sufficient to cause the links 57 and 76 and the corresponding links for the linkage mechanisms 47 and 48 to move to a position over the center of the shafts 60, 80, respectively, as best shown in FIG. 4. The movement of the links 57 and 76 over the center of the shaft 60 causes the links to, in effect, be locked in their raised position in a manner so that they will not fall upon release of the handle 90 by the operator, and will not fall due to the weight of the pile of sheets supported on the platen 35. Movement of the handle so as to effect rotation of the shafts 60, 80 in the reverse direction, of course, causes the linkages to lower the rails and platen to the position shown in FIG. 5.

In accordance with the present invention, the actuation of the handle 90 effects raising movement of the rails 41 and 42 to a position relatively close to the delivery conveyor 12, in which position the platen 35 is inserted onto

the rails 41 and 42 and in position to receive sheets released from the delivery conveyor 12. In this position, the rail members are above the lowermost projecting portion of the rear jogger members and side jogger members 30 and 31, respectively, so that the sheets delivered onto the platen 35 may be jogged thereby. The rear jogger members 30 are provided with a plurality of slots 95 therein through which the tines 36 of the platen 35 project, as shown in FIG. 3. The lowering of the platen 35 effects lowering movement of the tines 36 in the slots 95 in the jogger member 30 to the position shown in FIG. 5. The tine members are circular in cross section and when in their lowermost position, as shown in FIG. 5, the lower end of the jogger members 30 lie on an extension of a horizontally extending diagonal of the tine members 36. Thus, the upper surface of the tine members 36 which support the sheets is above the end of the jogger plates 30, while the lower surface of the tine members is beneath the end of the jogger plates 30. From this position, the platen 35 is removed by sliding the platen manually from the rails 41, 42. The platen when slid from the rails 41 and 42 tends to drag the pile of sheets thereon with it. The front gate means 30*a*, however, engages the pile of sheets and holds the pile of sheets from movement with the platen 35. As the platen 35 is being removed from its position supporting the pile of sheets above the delivery hoist 14, the pile thereon drops onto the skid supported adjacent thereunder, as best shown in FIG. 5. The distance that the pile drops is equal to the diameter of the tine members and is specifically shown in FIG. 5 and designated X. It can be seen, therefore, that this distance is maintained at a minimum due to the fact that the platen 35 has been moved to its lower position adjacent to the skids supported on the delivery hoist 14. When the platen 35 has been fully removed from its position over the delivery hoist 14, the pin members 39*b* on the side support rods 39, 39*a* and engage in the hook members 51 on the block member 50 and the platen 35 hangs from the hook members in this manner in a retracted position, as shown in FIG. 1, until it is again to be used.

Reference to the schematic FIGS. 6, 7, and 8 will illustrate the operation of the delivery mechanism 10 and the advantages therof. In FIG. 6, the delivery mechanism 10 is shown delivering sheets S to a skid 15 on the delivery hoist 14. Of course, as the pile builds up thereon, the hoist 14 is incrementally lowered until a complete pile is formed thereon. When a complete pile is formed thereon and it is desired to remove the pile from the hoist 14, the platen 35 is inserted into position for receiving sheets delivered by the conveyor 12. Prior to the insertion of the platen 35 into position for receiving the sheets from the conveyor 12, the rails 41 and 42 are moved to their high position, as shown in FIG. 7, in order to be relatively closely adjacent to the conveyor 12 when the platen 35 is inserted into position over the delivery hoist 14.

The platen 35 then receives the sheets and a pile begins to build up thereon. As the pile builds up thereon, the handle 90 may be moved to its position shown in full lines in FIG. 3, thereby moving the rails 41 and 42 to their lowered position so that the pile of sheets on the platen 35 may become relatively high. This enables the removal of the pile of sheets from the main hoist 14 without any rush. As shown in FIG. 8, the main hoist 14 is then returned to a position beneath the platen 35, and the platen 35 is removed from the rails 41 and 42 to its retracted position and the pile P supported by the platen 35 is now dropped onto the skid 15 supported on the hoist 14.

While the description hereinabove has described the use of the platen 35 as one which permits the removal of the pile from the main hoist 14, it should be apparent to those skilled in the art that the platen 35 may be used for supporting sheets when the main hoist is lowered for other reasons, such as, for example, in racking. In racking, the main hoist is lowered so that a separator sheet or board may be placed above the pile on the skid 15 and the main

hoist is then raised to receive sheets on top of the separator sheet. This results in the formation of individual piles of sheets supported on the main hoist.

From the above description, it should be readily apparent that application has provided a new and improved delivery mechanism and it is to be understood that certain modifications, changes, and adaptations may be made therein by those skilled in the art to which it relates, and it is hereby intended to cover all such modifications, changes, and adaptations which come within the scope of the appended claims.

Having described my invention, I claim:

1. A sheet delivery mechanism comprising a main pile hoist for supporting a pile of sheets thereon, means for raising and lowering said main pile hoist, a sheet delivery conveyor for moving sheets to a position over said main pile hoist and at which the sheets are released by said delivery conveyor and dropped onto said main pile hoist, an auxiliary pile support movable to a location above said main pile hoist to receive sheets dropped from said delivery conveyor, support means for receiving and supporting said auxiliary pile support in a first position above said main pile hoist at a first distance from said conveyor and in a second position above said main pile hoist at a second distance from said conveyor greater than said first distance and for movement between said positions, manually operated means to vertically move said support means between first and second positions only so as to move said auxiliary pile support between its first and second positions only, and said auxiliary pile support having support portions insertable into supporting relation with said support means when said support means is in its first position and removable from said support means when said support means is in its second position to transfer the pile on said auxiliary pile support to the main hoist thereunder and including pile receiving portions.

2. A sheet delivery mechanism comprising a main pile hoist for supporting a pile of sheets thereon, means for raising and lowering said main pile hoist, a sheet delivery conveyor for moving sheets to a position over said main pile hoist and at which the sheets are released by said delivery conveyor and drop onto said main pile hoist, an auxiliary pile support movable to a location above said main pile hoist to receive sheets dropped from said delivery conveyor, support rails for supporting said auxiliary pile support in a first position above said main pile hoist at a first distance from said conveyor and at a second position above said main pile hoist at a second distance from said conveyor greater than said first distance, manually operated means to vertically move said support rails between first and second positions only so as to move said auxiliary pile support between its first and second positions only, and said auxiliary pile support having support portions insertable onto said support rails when said support rails are in their first position to support said auxiliary support in position to receive sheets dropped from said delivery conveyor and removable from said support rails when said support rails are in their second position to transfer the pile on said auxiliary pile support to the main hoist thereunder.

3. A sheet delivery mechanism comprising a main pile hoist for supporting a pile of sheets thereon, means for raising and lowering said main pile hoist, a sheet delivery conveyor for moving sheets to a position over said main pile hoist at which the sheets are released by said delivery conveyor and drop onto said main pile hoist, an auxiliary pile support movable to a location above said main pile hoist to receive sheets dropped from said delivery conveyor, support rails for supporting said auxiliary pile support in a first position above said main pile hoist at a first distance from said conveyor and at a second position above said main pile hoist at a second distance from said conveyor and for movement between said positions, manually operated linkage means operatively connected with said support rails for vertically moving said support rails between first and second positions only so as to move said auxiliary pile support between its said first and second positions, and said auxiliary pile support having support portions insertable onto rails when in their first position and removable from said rails when in their second position.

4. A sheet delivery mechanism as defined in claim 3 wherein said linkage means includes link members pivotally connected to the opposite ends of said support rails.

5. A sheet delivery mechanism as defined in claim 3 wherein said linkage means comprises first link members each having one end thereof pivotally connected to one end of said rails, a shaft member extending adjacent said rails, second link members pivotally connected to said first link members and fixed to said adjacent shaft member and rotatable with said shaft member to effect movement of said first link members and raising movement of said support rails upon rotation of said shaft.

6. A sheet delivery mechanism as defined in claim 5 wherein each of said first link members are substantially U-shaped and have leg portions extending outwardly from a base portion thereof with one leg portion being pivotally connected to its associated support rail and the other leg portion being pivotally connected to its corresponding second link, said leg members defining a space therebetween through which said auxiliary pile support portions are movable for insertion on said rails and removal from said rails.

7. A sheet delivery mechanism as defined in claim 5 wherein said second link members extend downwardly from said shaft when said support rails are in their second position and are rotatable to a position extending upwardly when said support rails are in said first position, said shaft means being rotatable a sufficient amount to move said pivotal connection between said first and second links beyond the center of said shaft when said support rails are in their said first position so as to prevent lowering of the link members under the weight of the sheets on said auxiliary support.

8. A sheet delivery mechanism comprising a main pile hoist for supporting a pile of sheets thereon, means for raising and lowering said main pile hoist, a sheet delivery conveyor for moving sheets to a position over said main pile hoist and at which the sheets are released by said delivery conveyor and drop onto said main pile hoist, jogger means below said conveyor and extending vertically for jogging the sheets delivered to said main pile hoist, an auxiliary pile support movable to a location above said main pile hoist to receive sheets dropped from said delivery conveyor, means for supporting said auxiliary pile support in a first position above said main pile hoist at a first distance from said conveyor and between the vertical extremities of said jogger means and at a second position above said main pile hoist at a second distance from said conveyor and for movement between said positions, said auxiliary support including pile receiving portions cooperable with said jogger means to provide for movement of said auxiliary support onto said support means and into its first position from a location remote therefrom.

9. A sheet delivery mechanism comprising a main pile hoist for supporting a pile of sheets thereon, means for raising and lowering said main pile hoist, a sheet delivery conveyor for moving sheets to a position over said main pile hoist and at which the sheets are released by said delivery conveyor and drop onto said main pile hoist, jogger means located below said conveyor and extending vertically for arranging sheets located adjacent thereto into a square pile, an auxiliary pile support movable to a location above said main pile hoist and having a sheet supporting surface to receive sheets dropped from said delivery conveyor, support means for supporting said auxiliary pile support in a first position above said main pile hoist at a first distance from said conveyor and intermediate the vertical extremities of said jogger means

and at a second position above said main pile hoist at a second distance from said conveyor and for movement between said positions, means operatively connected with said support means to vertically move said support means between first and second positions so as to move said auxiliary pile support between its said first and second positions, said auxiliary pile being insertable onto said support means when said support means is in its first position and having portions co-operable with said jogger means to provide for movement of said auxiliary support onto said support means and into its first position from a location remote therefrom.

10. A sheet delivery mechanism as defined in claim **9** wherein said jogger means and said portions of said auxiliary pile support have an interdigitated relation when said auxiliary pile support is in its first position.

11. A sheet delivery mechanism as defined in claim **9** wherein said means for moving said support means is manually operated.

12. A sheet delivery mechanism as defined in claim **9** wherein said jogger plate means has a lower edge extending below the sheet supporting surface of said auxiliary pile support when said auxiliary pile support is in its second position and terminating above said main pile support when in its position immediately under said auxiliary pile support.

13. A sheet delivery mechanism as defined in claim **9** wherein said auxiliary pile support comprises a plurality of time members extending beyond said jogger plates when in its first and second positions and said jogger plates have vertically extending slots therein through which said tines extend when said auxiliary pile support is in its first and second positions and in which said tines are movable when said auxiliary pile support is moved between its said positions.

14. A sheet delivery mechanism as defined in claim **13** wherein said tine members have a sheet supporting surface located above the lower edge of said jogger plate means when in said second position with the lowermost surface of the tine members extending beneath the lowermost edge of the jogger plate means.

15. In a continuous pile delivery, a main pile hoist including a horizontal platform and means for moving said platform between an upper sheet-receiving position and a lower pile-discharging position; a sheet conveyor traveling horizontally over and above said platform when it is in its upper position and said conveyor being adapted to deposit sheets singly on the platform in sequence; pile squaring means below said conveyor and extending vertically above said platform when in its upper position for arranging deposited sheets into a square pile having vertically aligned edges; an auxiliary pile hoist including a platen horizontally insertable above said platform, support means for said platen, and means for moving the support means and the platen between a lower pile-depositing position closely adjacent to the top of said platform when the platform is in its upper position and an upper sheet-receiving position spaced above the lower position of the platen; said upper position of said platen being between the upper and lower portions of the vertical pile squaring means; and said platen and said pile squaring means being constructed to enable horizontal insertion of the platen from a location outside the pile squaring means when the support means is in its upper position and to enable said moving means to move said support and said platen from its upper to its lower position, and being further constructed to enable said platen means to be withdrawn horizontally when in its lower position to deposit a pile supported on said platen onto said platform with a minimum of drop of said pile.

References Cited by the Examiner

UNITED STATES PATENTS

2,205,767	6/1940	Lamb	271—88
2,738,973	3/1956	Koch	271—89
2,884,246	4/1959	Kile et al.	271—89 X
2,988,236	6/1961	Shields	271—89 X
2,997,298	8/1961	Elliott et al.	271—89 X

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