

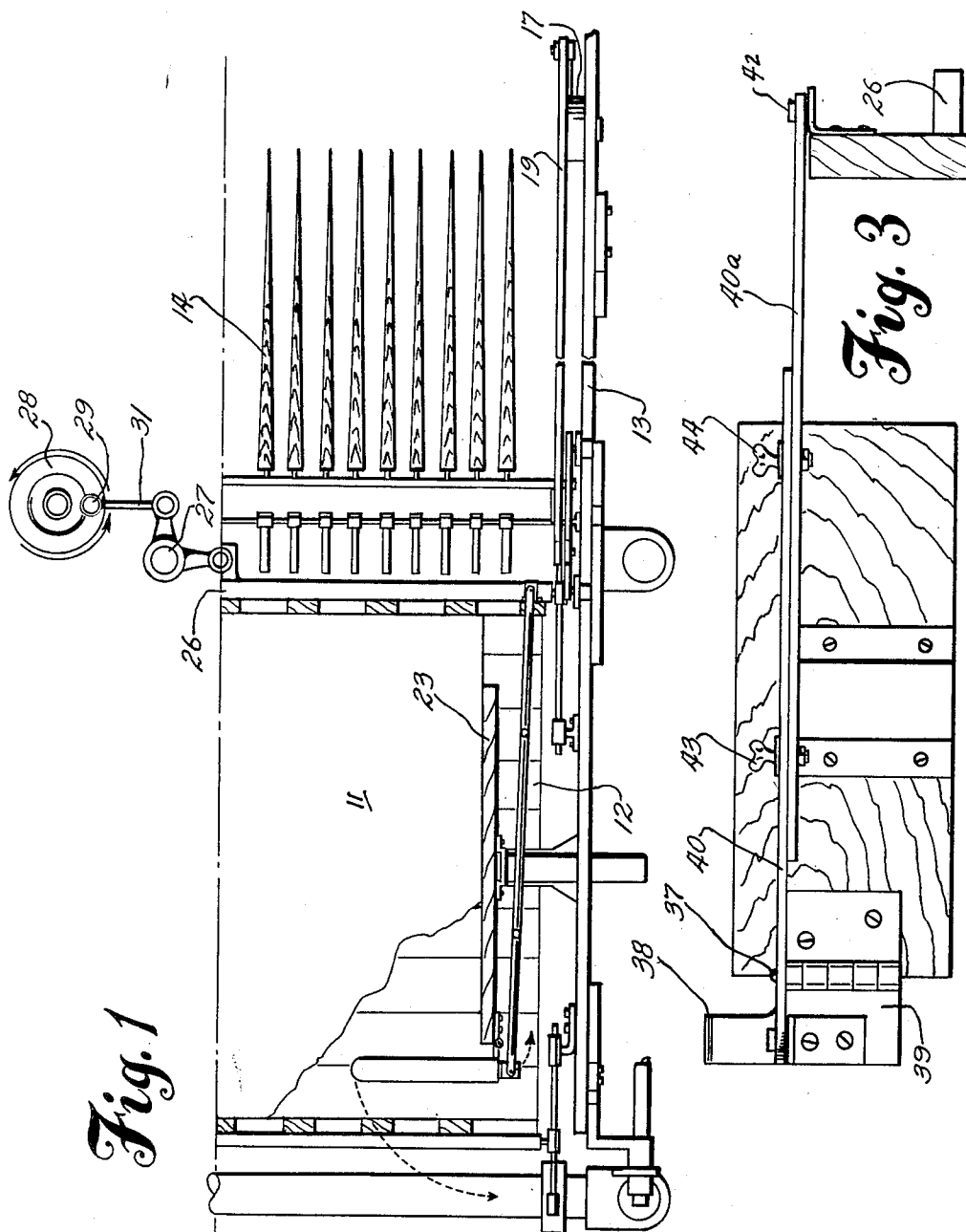
Dec. 21, 1954

P. VAN OUDENAREN
STACKING OF PRINTED SHEETS

2,697,602

Filed Jan. 2, 1951

2 Sheets-Sheet 1



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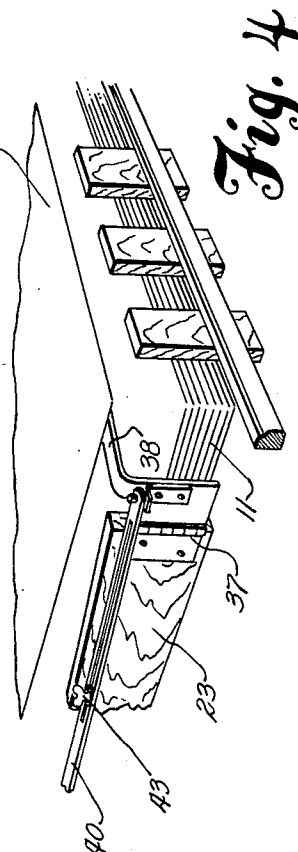
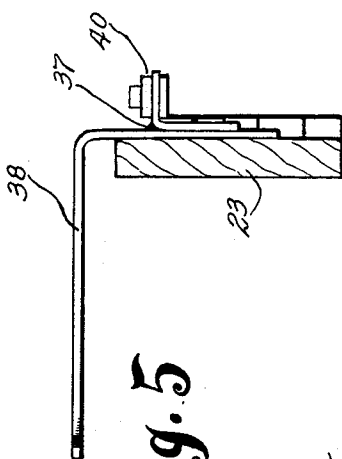
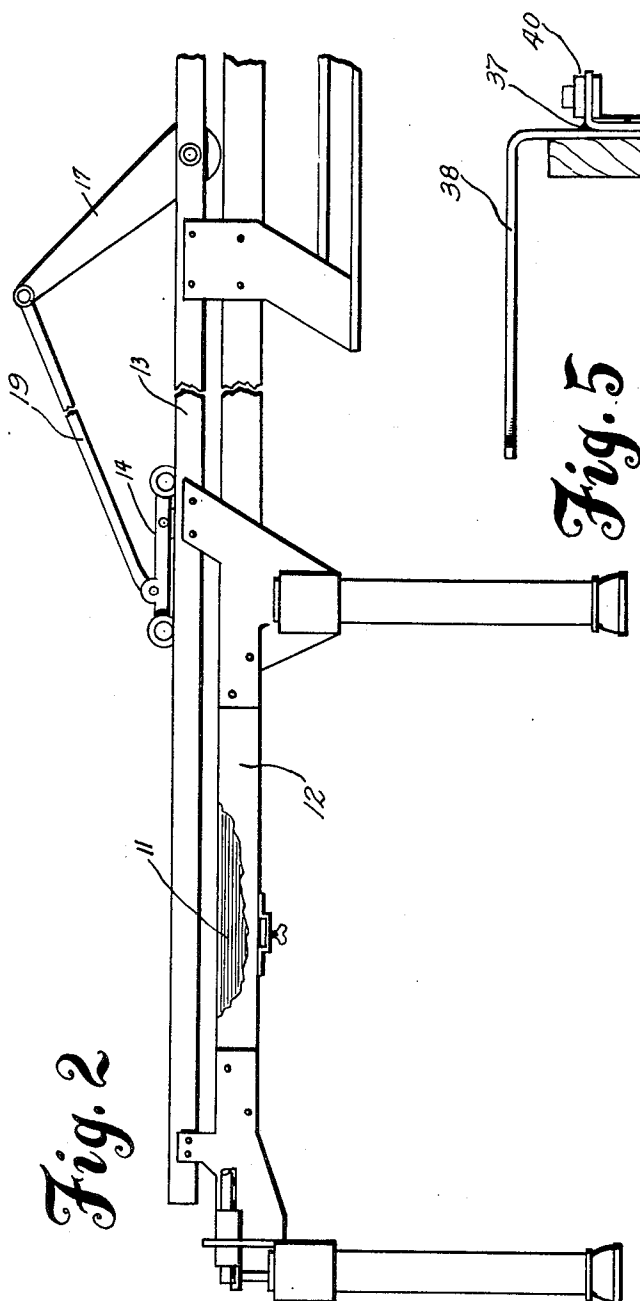
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STACKING OF PRINTED SHEETS

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1 Claim. (Cl. 271—89)

This invention relates to printing, and particularly to the stacking of relatively large printed sheets of paper as successive sheets are delivered from the printing press to the stacking table.

In the commonly employed standard types of printing machines, one of the machine components is a reciprocable carriage, or tray, upon which the printed sheet rides forward toward the stacking table until the tray reaches the forward limit of its stroke. When this forward limit is reached the tray operating linkage reverses its direction of motion and the tray begins its return travel to the point at which another sheet is delivered thereto from the printing press; the previously advanced sheet being in the meantime held against any tendency to ride back with the tray by the action of blocking fingers engaging the rear edge of the sheet when in its fore-most position. The said sheet, being thus held stationary as the tray rides out from under it, falls by its own weight onto the pile of other sheets which the tray had previously delivered to the stacking table; but as its forward corners fall they tend to curl under the main body of the sheet. This tendency is greatest in printed sheets that are lacking in any inherent stiffness or rigidity, and the weight of the ink on the corner portions of the sheet also seems to render the sheet more susceptible to the curling tendency.

The present invention provides a novel method of combating this curling tendency, the novel method consisting of (1) inserting props under the forward corners of the paper sheet prior to the moment when the tray's withdrawal leaves said forward corners unsupported, and (2) withdrawing said props after the main body of the sheet has dropped onto the pile, and before the tray has again advanced to deliver another sheet to the pile.

A further feature of the invention is the provision of novel means for operating the paper-supporting props above described, and for synchronizing their alternate insertion and withdrawal with the alternations in direction of travel of the paper-delivering tray.

Still another feature of the invention is the pivotal mounting of the paper-supporting props directly upon two of the four jogger-boards that move across the stacking table to engage the four sides of the stack of paper sheets; there being associated means cooperating with said pivotal mounting means to produce alternate inserting and withdrawing movements of said props as the said jogger boards—which are themselves synchronized with the reciprocating delivery tray—alternately engage and disengage the paper stack.

Other objects and features of the invention will be better understood upon reference to the following description of the preferred embodiment of the invention, as illustrated in the accompanying drawings wherein:

Fig. 1 is a top plan view of a printing machine embodying the invention;

Fig. 2 is a side elevation view;

Figs. 3 and 5 are additional views of the parts shown in Fig. 2; and

Fig. 4 is a view showing how the forward corners of a paper sheet are held against curling as they drop toward the previously stacked pile.

In these drawings there is indicated at 11 a pile of printed paper sheets resting upon a stacking table 12 disposed at one end of a printing machine carriage bed 13 over which a carriage or tray 15 is caused to slide by the rocking action of a pair of levers 17 and 19 from which extend links having pivotal connection with opposite sides

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of the tray 14, to impart reciprocatory motion to said tray as the levers are oscillated by the action of a rotatable cam element, not shown, in a manner well known in the art.

On opposite sides of the paper pile 11 the table 12 supports aligning walls or jogger boards 23 corresponding to the aligning walls 18 of U. S. Patent 1,560,015 to A. Broadmeyer, said boards 23 being reciprocable by eccentric driving means or other known means for operating such boards, such as the eccentric drive shown at 19, 20, 22 and 23 in said Broadmeyer patent. Such a drive may be actuated by a power take-off from the same driving mechanism that actuates levers 17 and 19, or from any other cyclically operating part of the machine, as taught by said Broadmeyer patent, to cause said jogger boards 23 to move in unison into abutting engagement with the four sides of the pile each time a new sheet is dropped onto the pile from the feeding tray 14; the jogger boards thus serving to keep all sheet edges in true vertical alignment on the pile, in accordance with the well-known function of such boards. Associated with the jogger boards is an actuating bar 26 having a lateral extension to receive one arm of a bell-crank 27 by which reciprocatory action is imparted to the bar in response to the rotation of a gear 28 carrying an eccentric pin or crank 29 upon which is pivotally mounted a link 31 constituting the operating connection between the said pin 29 and the bell-crank 27.

As one method of achieving the objects of the present invention, I attach to the forward end of each of the jogger boards a hinge 37 from one plate 39 of which extends an arm 38; the said two arms 38 constituting the sheet "props" above referred to. Each of the arms 38 has a swivel connection with a link 40 constructed in two adjustable sections, 40 and 40a, the section 40a carrying a terminal pin 42 pivotally received in a groove or channel formed in the bar 26; adjustment being effected by two screws 43, 44 passing through slots 45 of the links. Each set of links 40 and 40a thus constitute a toggle mechanism by which the associated arm or "prop" 38 is swung through an arc of about 90 degrees as the jogger boards 23 move from each extreme setting to the other, under the influence of operating gear 28 rotated by a driving means, not shown, in the usual manner.

On each forward stroke of tray 14 a printed sheet is carried to the pile 11, and as the tray reverses and starts back the forward corners of the sheet drop onto the "props" 38 which are, at that instant, extending directly across the stacking table, from their respective pivotal anchorage points at the forward edges of the jogger boards. The props 38 thus effectively forestall any tendency of the forward sheet corners to "curl under," and the continued reverse travel of the tray 14 permits the remainder of the sheet to drop onto the pile. Meanwhile the jogger boards will have begun their inward motion toward the pile and as such motion proceeds the props 38 are swung back toward their opposite limits of swing, until they completely clear the paper sheet corners resting thereon, thus permitting both said corners to drop on the pile.

In place of the two swinging props 38, there may be substituted a series of rectilinearly moving fingers, or even a flat, horizontally disposed rigid sheet, or shelf, shiftable into supporting relationship to the forward portion of the printed paper sheet as the latter begins to drop toward the pile. In any arrangement, however, the supporting element or elements will be inter-related to the actuating means for the jogger boards, or, alternatively, the actuating means for the feed-tray, so as to be extensible and retractable in synchronism therewith.

In a similar manner other changes may be made in the construction and relative positioning of component parts of the complete mechanism, within the broad principles of the invention as herein outlined.

What I claim is:

In combination with a stacking table and a delivery tray for conveying successively printed sheets to said stacking table, means for causing said tray to move forward toward said stacking table and then to return to its initial position, means for holding a delivered sheet against returning with the tray as the latter commences its return

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travel, so that said sheet tends to drop toward the stacking table as the tray draws back from under the sheet, in response to said tray moving means, a set of jogger boards movable across the stacking table from a withdrawn position to a stack-engaging position, a hinge having one of its leaves secured to one end of one of said jogger boards, means including a reciprocable cross-bar actuated by said tray moving means, and synchronized therewith, for moving said jogger boards, means including an adjustable link pivotally connected to said cross-bar for simultaneously rotating the other leaf of said hinge, and means extending radially from said other leaf for supporting the forward portion of a printed sheet as it drops off the retreating edge of the delivery tray, during the initial portion of the return travel of said delivery tray.

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References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
227,344	Binkard -----	May 11, 1880
930,097	Sheldon -----	Aug. 3, 1909
1,140,157	Hodgman -----	May 18, 1915
1,560,015	Broadmeyer -----	Nov. 3, 1925
1,845,384	Zebelean -----	Feb. 16, 1932

FOREIGN PATENTS

Number	Country	Date
148,673	Great Britain -----	Aug. 5, 1920
605,130	Germany -----	Feb. 17, 1933