Aug. 23, 1960 W. F. GOLDING 2,950,108

PRINTING AND LIKE MACHINES

Filed May 27, 1958

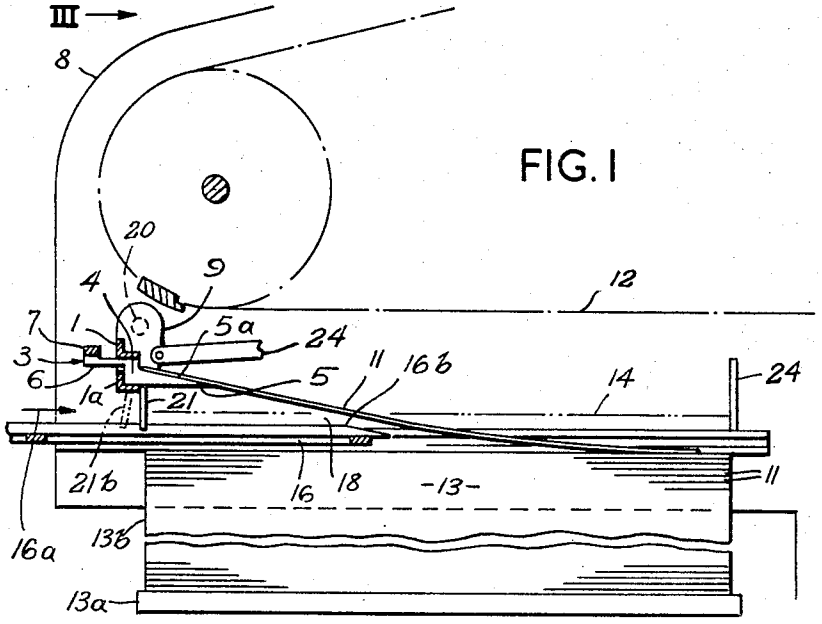

FIG. 1

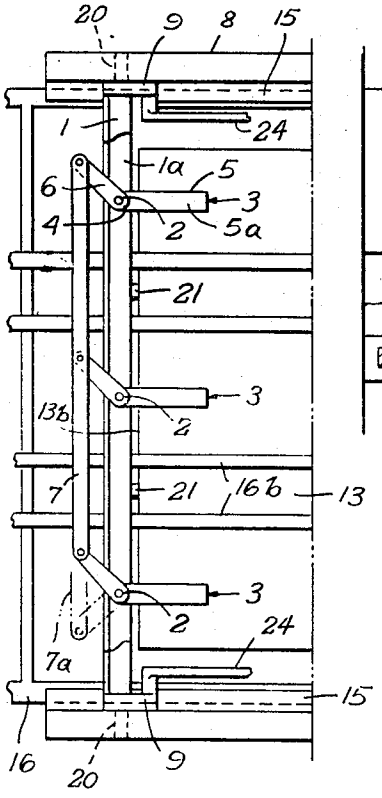

FIG. 2

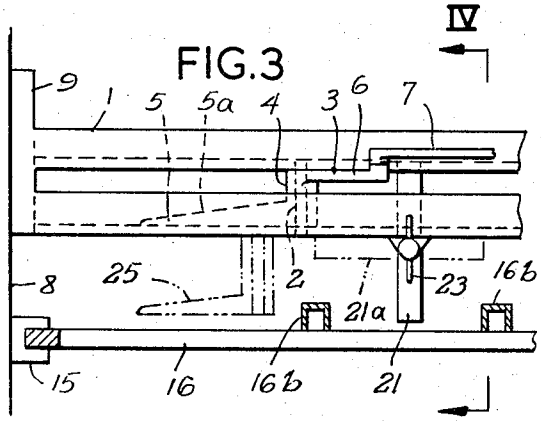

FIG. 3

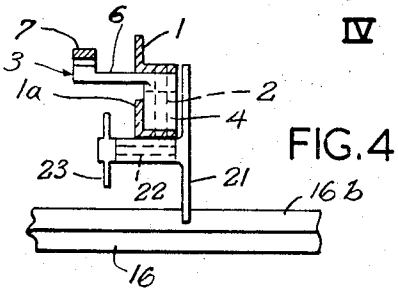

FIG. 4

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United States Patent Office 2,950,108 Patented Aug. 23, 1960

2,950,108

PRINTING AND LIKE MACHINES

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Filed May 27, 1958, Ser. No. 738,100

Claims priority, application Great Britain May 29, 1957

4 Claims. (Cl. 271—86)

This invention relates to printing and like machines including pile delivery apparatus of the kind wherein a platform supporting a pile of delivered sheets is progressively lowered as the pile increases so that the top of the pile remains at a constant level as delivery progresses, and wherein when the pile is full an auxiliary sheet receiver is introduced in a position above the pile while delivery continues so as to provide a temporary support for the sheets while the full pile and its platform are removed and a fresh platform is brought into position. Such apparatus is hereinafter referred to as "pile delivery apparatus of the kind specified."

In fast running machines there is a difficulty in introducing the auxiliary receiver into position between the sheets falling onto the pile and the main object of this invention is to provide means for overcoming this difficulty.

According to this invention pile delivery apparatus of the kind specified comprises a sheet separating member situated adjacent the front face of the pile near the top thereof, the member being movable from a position clear of the vertical projection of the pile rearwardly into a position extending across the top of the pile over an area adjacent to the front face thereof and at a level above that in which the auxiliary receiver is to be introduced, thereby to support the front edge portion of sheets falling towards the pile after the separating member has been so moved and to create a gap between the top of the pile and the front edge portions of the sheets so supported, said gap defining an entry for the introduction of the auxiliary receiver.

One form of apparatus according to this invention will now be described with reference to the accompanying drawing wherein:

Fig. 1 is a sectional elevation of the apparatus.

Fig. 2 is plan view of the apparatus.

Fig. 3 is an enlarged part view as seen in the direction of the arrow III in Fig. 1.

Fig. 4 is a section on the line IV—IV in Fig. 3.

Referring to the drawing there is provided a sheet separating device comprising two horizontal bars **1**, **1***a* supporting between them a row of pins **2** to each of which is pivoted a member **3** comprising a boss **4** integral with a sheet separating member or arm **5** and a lever **6**. Each arm **5** has an upper face **5***a* sloping downwardly and away from the boss **4**. The levers **6** are connected by a common parallel motion link or operating bar **7**. The ends of the bars **1**, **1***a* have secured thereto brackets **9** in turn connected to fixed side frames **8**. Figs. 1 and 2 show the arms **5** in an operative position, and by pushing the bar **7** into the position indicated **7***a*, the arms **5** are moved into an inoperative position (Figs. 3 and 4) in which the arms **5** lie between the bars **1**, **1***a* and extend in the direction of the length thereof.

The device is provided in respect of a pile delivery apparatus the general known features of which are as follows: Sheets **11** fed by a chain conveyor **12** are

released therefrom in a position above a pile **13** resting on a platform **13***a* supported by means (not shown) for automatically lowering the platform **13***a* in accordance with the rate of delivery of the sheets **11**, the top of the pile **13** being maintained at a level denoted **14**. Guides **15** are provided on the frames **8** (which are the general side frames of the apparatus) for slidably supporting a platform or frame **16** defining an auxiliary sheet receiver.

The front face of the pile **13** is denoted **13***b* and it will be seen that in the inoperative position the arms **5** are clear of the vertical projection of the face **13***b*, i.e. situated slightly in front thereof, whereas in the operative position the arms **5** extend rearwardly across the pile **13** intersecting said vertical projection. Moreover, the arms **5** are pivotal in a plane above the level at which the frame **16** is movable in the guides **15**.

In operation, when the pile **13** is full, the arms **5** are swung into the operative position by an operator moving the bar **7** whereby the first sheet **11** falling from the conveyor **12** after the arms **5** have been so moved comes to rest with its front edge portion on the faces **5***a* of the arms **5** substantially as shown in Fig. 1. Thereby there is created between the top of the pile **13** and the front edge portion of the sheet **11** a gap **18** (Fig. 1) defining an entry for the insertion of the frame **16**. Fig. 1 shows the leading portion of the frame **16** as the latter is in the course of being pushed into position in the direction of the arrow **16***a*.

Before the frame **16** is inserted it is of course necessary to lower the pile by an amount sufficient for the frame **16** to clear the top of the pile. Such lowering of the pile **13** is done by a mechanism well understood in the art.

After the frame **16** has been fully inserted the arms **5** are returned into the inoperative position, and while a small number of sheets accumulate on the frame **16** the pile **13** is removed and a fresh platform **13***a* is brought into position below the frame **16**. The frame **16** is then withdrawn whereby the sheets thereon are deposited on the new platform.

It is noted that in the example shown the frame **16** comprises raised portions or ribs **16***b* the tops of which define the actual surfaces supporting the sheets **11**.

The purpose of the ribs **16***b* is to provide space for stop members **21** the lower ends of which extend between the ribs **16***b* and locate the sheets **11** thereon in alignment with the front face **13***b* of the pile **13**. The upper end portions of the members **21** cooperate to align the front edges of any sheets **11** supported on the arms **5**. During ordinary delivery when the sheets **11** fall onto the pile **13** at the level **14**, the members **21** act of course likewise to locate the sheets **11**. The members **21** are conveniently connected to the bar **1***a* and are there supported on pivot pins **22** (Fig. 4) provided with a small tommy bar **23** whereby the members **21** may be turned into a position denoted **21***a* (Fig. 3) when it is desired to have access to the sheets **11** at the top of the pile, for example when a sheet has to be pulled out for inspection.

Corresponding stop members are provided at the back of the pile **13** where indicated at **24** in Fig. 1.

The provision of stop members for controlling the alignment of the pile is of course known per se and it is likewise known for either the front or the back stop members to be movable to jog the sheets into alignment.

The drawing shows an example wherein the front stop members are to be so movable, and to this end the brackets **9** are pivotally connected to the frames **8** by pins **20**, and the jogging movement of the members **21** comprises a pivotal movement of the bars **1**, **1***a* together with the members **21** about the pins **20**. The jogging movement of the members **21** takes place between the position shown

in full lines (Fig. 1) and that shown in chain-dotted lines, the latter position being denoted 21*b*.

The pivotal jogging movement is effected by a link 24 connected to each of the brackets 9, means (not shown) being provided to reciprocate the link substantially in the direction of its length.

In a modification instead of being positioned between the bars 1, 1*a*, the members 3 are positioned below the bar 1*a* as shown at 25 in Fig. 3. It will be seen that in this case the distance between the member 3 and the frame 16 is relatively small which is an advantage if the sheets 11 are relatively pliable.

What I claim and desire to secure by Letters Patent is:

1. In sheet delivery apparatus for printing and like machines wherein sheets are sequentially dropped onto a pile: a platform, guide means for supporting the platform for insertion from a position at one side of the pile and clear of the vertical projection thereof into a position above the pile there to support the oncoming sheets temporarily while the pile is removed upon having reached a maximum height, a support member situated at said one side of the pile and adjacent the top thereof, a plurality of arms, pivot means cooperating to connect the arms to the support member for pivotal movement of the arms in a substantially horizontal plane between an inoperative position wherein the arms lie clear of the vertical projection of the pile and an operative position wherein the arms point in the direction in which said platform is inserted, the arms being dimensioned to extend, when in the operative position, across the top of the pile over an area adjacent said one side thereof and at a level above that at which said platform is insertable along said guide means, and the arms cooperating to support adjacent edge portions of sheets dropped towards the pile after the arms have been moved into the operative position thereby to create a gap between the top of the pile and the sheets so supported, said gap defining an entry for the insertion of said platform.

2. Apparatus according to claim 1, comprising means for retaining the arms in a mutually parallel relationship.

3. Apparatus according to claim 1, comprising a link extending across the arms, a pivot pin provided on each of the arms between the arms and the link, said pivot pins being equi-distant from the pivotal connections between the arms and said support member, and the link thereby cooperating to retain the arms in mutually parallel positions.

4. Apparatus according to claim 1, each of said arms defining a supporting surface positioned for the sheets to rest thereon when the arm is in the operative position, and wherein each arm is dimensioned for said supporting surface to slope downwards and away from the connection between the arm and said support member, whereby, when the arms are in the operative position, the edge portions of sheets resting on the arms extend rearwardly and downwardly.

References Cited in the file of this patent

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